

Uploaded Date	Channel	Video URL	Video Title	Description

2023 06 27	NASA Goddard	https://youtu.be/yPDqI8wDICc	High Above Down Under Episode 1 A Star Fit For Life	Episode 1: Follow two NASA rocket teams as they launch from Australia to study our nearest stellar neighbors – Alpha Centauri A & B – on a quest to understand how stars make the planets around them suitable for life.	Transcript Link

This is the first in a six-part series released weekly starting June 27, 2023.

To learn more about NASA’s Sounding Rockets Program - <https://www.nasa.gov/soundingrockets>

Music credits: “Epic Earth” by Andy Hopkins [PRS], Dean Mahoney [PRS], Jacob Nicholas Stonewall Jackson [PRS]; “Nature in Motion” and “Driving Motion” by Fred Dubois [SACEM]; “Social Issues” by Laurent Dury [SACEM]; “The Great Divide” by Ian Paul Livingstone [PRS] from Universal Production Music.

Credit: NASA’s Goddard Space Flight Center

Additional footage: Office of the Chief Minister of the Northern Territory government, Equatorial Launch Australia
Additional graphics: Vecteezy.com
Sound effects: Pixabay

Host: Miles Hatfield (NASA/GSFC)

Writers/Videographers:

2023 06 14	NASA Goddard	https://youtu.be/W7CvZMxsw8g	A Year in Climate	Understanding Earth gives us the means to better protect it. Join NASA, as we monitor, study, and observe our planet 24 hours a day, 7 days a week, 365 days a year – to learn more and to protect and improve life on Earth.	Transcript Link

Music credit: “Ad Infinitum” from Universal Production Music

Credit: NASA's Goddard Space Flight Center
Kathleen Gaeta (GSFC AIMMS): Lead Producer
Dr. Kate Calvin (NASA HQ): Lead Scientist
Dr. Peter Jacobs (NASA GSFC): Scientist

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2023 06 13	NASA Goddard	https://youtu.be/JiJOPjwFY	High Above Down Under Series Trailer	There are likely billions of planets in our galaxy. With over 5,000 already confirmed, how do we know which ones might hold life? Two NASA sounding rockets are launching from Australia to find out which stars make for habitable hosts. We're following these rocket teams Down Under to show you what it takes to launch a rocket and make groundbreaking scientific measurements. Hang on tight – we're going on an adventure High Above Down Under! Episodes released weekly starting June 27, 2023. Music credit: "Epic Earth" by Andy Hopkins (PRS), Dean Mahoney (PRS), Jacob Nicholas Stonewall Jackson (PRS) via Universal Production Music Credit NASA's Goddard Space Flight Center Host: Miles Hatfield (NASA/GSFC) Writers/Videographers: Miles Hatfield (NASA/GSFC) Mara Johnson-Groh (NASA/GSFC) Producers: Beth Anthony (NASA/GSFC) Joy Ng (NASA/GSFC) Lacey Young (NASA/GSFC)	Transcript Link
2023 06 10	NASA Goddard	https://youtu.be/jcxeQjP-iis	Hubble's Inside The Image Eta Carinae	The Hubble Space Telescope has taken over 1.5 million observations over the years. One of them is the breathtaking image of Eta Carinae. Eta Carinae was the site of a giant outburst about 150 years ago, when it became one of the brightest stars in the southern sky. Though the star released as much visible light as a supernova explosion, it survived the outburst. Somehow, the explosion produced two polar lobes and a large thin equatorial disk, all moving outward at about 1.5 million miles per hour. In this video, Dr. Keith Noll explains this breathtaking image and explains how important Hubble is to exploring the mysteries of the universe. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Producer & Director: James Leigh Editor: Lucy Lund Director of Photography: James Ball Additional Editing & Photography: Matthew Duncan	Transcript Link

2023 06 08	NASA Goddard	https://youtu.be/1xI5Z1d3wcQ	The Insanely Important World of Phytoplankton	Ivona Cetinić, the Science Lead for Ocean Biogeochemistry for PACE (Plankton, Aerosol, Cloud, ocean Ecosystem) describes the weird, wonderful and important world of phytoplankton and why it's important for the PACE mission to study these tiny creatures. Music: "Born to Hold On," "Busy Body," "Hidden Beings," "In Doubt," "Investigation," Universal Production Music Ryan Fitzgibbons (KBRwyle): Lead Producer Lead Animator Lead Writer Lead Editor Ivona Cetinic (USRA): Lead Scientist Lead Interviewee Jeremy Werdell (NASA/GSFC): Lead Scientist Greg Shirah (NASA/GSFC): Lead Visualizer Rob Andreoli (AIMM): Lead Videographer	Transcript Link
2023 06 01	NASA Goddard	https://youtu.be/rktZWV1h24E	NASA's Guide to Visiting a Gamma-Ray Burst	Are you looking for a new vacation spot? Perhaps one with spectacular fireworks? While gamma-ray bursts produce brilliant displays of light across the entire spectrum, we cannot recommend visiting one. Before making up your mind, watch this handy video to learn more about what gamma-ray bursts are, how to find them, and safety considerations for watching one. Music credit: "Wanna Be Hipster" from Universal Production Music Credit: NASA's Goddard Space Flight Center Krystofer Kim (KBRwyle): Lead Animator Barb Mattson (University of Maryland College Park): Producer Scott Wiessinger (KBRwyle): Producer Barb Mattson (University of Maryland College Park): Writer Scott Wiessinger (KBRwyle): Editor Paul Morris (KBRwyle): Narrator Chris Smith (KBRwyle): Series Creator This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14355. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14355. For	Transcript Link

2023 05 23	NASA Goddard	https://youtu.be/uzF3eFN-WdE	Hubble Hunts for Intermediate-Sized Black Hole Close to Home	Astronomers, using NASA’s Hubble Space Telescope have come up with what they say is some of their best evidence yet for the presence of a rare class of “intermediate-sized” black hole that may be lurking in the heart of the closest globular star cluster to Earth, located 6,000 light-years away. Like intense gravitational potholes in the fabric of space, virtually all black holes seem to come in two sizes: small and humongous. It’s estimated that our galaxy is littered with 100 million small black holes (several times the mass of our Sun) created from exploded stars. The universe at large is flooded with supermassive black holes, weighing millions or billions of times our Sun’s mass and found in the centers of galaxies. A long-sought missing link is an intermediate-mass black hole, weighing in somewhere between 199 and 10,000 solar masses. How would they form, where would they hang out, and why do they seem to be so rare? For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Music Credit Tesseract by Cody Johnson [ASCAP] and Gina Kouyoumdjian [BMI] via Emperia Alpha Publishing [ASCAP], Emperia Beta Publishing	Transcript Link
2023 05 19	NASA Goddard	https://youtu.be/E0XnW_41bnk	The Science of Snow Digging for Data	It takes a lot of field work in challenging conditions to gather important snow data. This is the story of NASA’s last SnowEx campaign and those who participated in it. In March, scientists traveled to research sites in the northern tundra and in Fairbanks, Alaska. Ground crews looked to validate data collected from airborne instruments, while the flight crews continued collecting snow data in order to see what instruments best measure snow globally. The goal for SnowEx is to determine the best remote-sensing techniques for a potential future satellite. Snow data is extremely important and can tell us things like how much spring runoff can be expected, which is vital for water resource management. Music credit: “Atmospheres” “Big Ocean Small World” “Avalanches” and “Machine Melody” from Universal Production Music Credit: NASA's Goddard Space Flight Center Kathleen Gaeta(GSFC AIMMS): Lead Producer Dr. Carrie Vuyovich (GSFC): Lead Scientist Sofie Bates (GSFC KBR): Social Media Support This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14351. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14351. For	Transcript Link

2023 05 19	NASA Goddard	https://youtu.be/ZZVu4vlyXdo	Sonification of V838 Monocerotis Light Echo	This data sonification of the star V838 Monocerotis, or V838 Mon, shows two Hubble images taken almost seven months apart. A pulse of light from the central star illuminates clouds of dust and gas surrounding V838 Mon. This star is located about 20,000 light-years away, at the outer edge of our Milky Way Galaxy. In this sonification, scientists mapped brightness to pitch and volume, and the surrounding stars are pitched to musical notes. Sonification credits: SYSTEM Sounds (M. Russo, A. Santaguida) For more information about the Hubble Space Telescope and its images, visit https://nasa.gov/hubble. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14353. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14353. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html. See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNIhOyGRzue8kN	Transcript Link
2023 05 17	NASA Goddard	https://youtu.be/c28wbtk4nhE	NASA Teams with Forest Service to Tally America's Oldest Trees	The White House recently challenged the stewards of the public lands of the United States, including the Forest Service and the Bureau of Land Management, to produce the first ever national inventory of mature and old growth forests. The next phase of the project will be augmented by NASA laser altimetry data from an instrument on the International Space Station. The GEDI instrument can provide detailed information on tree height and forest biomass, not just in the U.S., but all around the globe. Read more: https://www.nasa.gov/feature/esnt/2023/nasa-teams-with-us-forest-service-to-tally-america-s-oldest-trees Music credit: "Rising through the Storm" by Peter Hall [PRS], Ninja Tune Production Music, UPM "Unraveling" by Maksim Tyutmanov [PRS], Atmosphere Music Ltd., UPM Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Jefferson Beck (KBR Wyle): Lead Producer Sally Younger (KBR Wyle): Lead Writer Kel Elkins (USRA): Lead Visualizer Benjamin Poulter (NASA/GSFC): Scientist Marin Palmer (US Forest Service): Scientist Neil Pederson (Harvard University): Scientist Additional video footage courtesy Laura Smith, Harvard University; the US Forest Service; and Pond5.	Transcript Link

2023 05 15	NASA Goddard	https://youtu.be/6buQMvVXPHA	Cosmic Cycles Echoes of the Big Bang	NASA studies the makeup and workings of the universe, from the smallest particles of matter and energy to its large-scale structure and evolution. Scientists look far back in space and time to learn the full cosmic history of stars and galaxies. They tease out details of the environments around black holes and observe the most powerful explosions since the big bang. NASA is discovering numerous planets beyond our solar system, decoding how planetary systems form, and learning how environments hospitable for life develop. "Cosmic Cycles: A Space Symphony" is a groundbreaking collaboration between acclaimed composer Henry Dehlinger, NASA, and the National Philharmonic, featuring a unique fusion of music and video in seven multimedia works on the Sun, Earth, Moon, Planets, and Cosmos. This transformative project takes the audience on a captivating voyage through the universe, showcasing the beauty and power of the marriage between music and science. Music credit: "Echoes of the Big Bang" from Cosmic Cycles: A Space Symphony by Henry Dehlinger. Courtesy of the composer. Credit: NASA's Goddard Space Flight Center Producer: Scott Wiessinger (KBRwyle) Executive Producer: Wade Sisler (NASA/GSFC) Music Composer: Henry Dehlinger (National Philharmonic)	Transcript Link
2023 05 15	NASA Goddard	https://youtu.be/2YwH3vEJxY	Cosmic Cycles Travelers	Nomads of the solar system, small objects like asteroids and comets wander among the planets. Messengers from the distant past, many of these small bodies include debris from the formation of the solar system and carry clues about its origins and the rise of life on Earth. NASA has visited some of them, recently reaching and then touching the asteroid Bennu to collect samples of rock unchanged for nearly 5 billion years. "Cosmic Cycles: A Space Symphony" is a groundbreaking collaboration between acclaimed composer Henry Dehlinger, NASA, and the National Philharmonic, featuring a unique fusion of music and video in seven multimedia works on the Sun, Earth, Moon, Planets, and Cosmos. This transformative project takes the audience on a captivating voyage through the universe, showcasing the beauty and power of the marriage between music and science. Music credit: "Travelers" from Cosmic Cycles: A Space Symphony by Henry Dehlinger. Courtesy of the composer. Credit: NASA's Goddard Space Flight Center Producer: James Tralie (ADNET) Executive Producer: Wade Sisler (NASA/GSFC) Music Composer: Henry Dehlinger (National Philharmonic) This video can be freely shared and downloaded at https://www.nasa.gov/feature/goddard/2023/cosmic-cycles-a-space-symphony	Transcript Link

2023 05 15	NASA Goddard	https://youtu.be/WbmZhMZcrWE	Cosmic Cycles Planetary Fantasia	Earth’s siblings, the other planets were created at the birth of the solar system. They give us a glimpse of the variety possible in the universe and how rare Earth is. As we explore these other worlds, we fuel our adventurous spirit and discover new wonders at every turn: riverbeds on Mars, volcanoes on Jupiter’s moon Io, auroras on Saturn, and sulfuric-acid clouds on Venus. “Cosmic Cycles: A Space Symphony" is a groundbreaking collaboration between acclaimed composer Henry Dehlinger, NASA, and the National Philharmonic, featuring a unique fusion of music and video in seven multimedia works on the Sun, Earth, Moon, Planets, and Cosmos. This transformative project takes the audience on a captivating voyage through the universe, showcasing the beauty and power of the marriage between music and science. Music credit: “Planetary Fantasia" from Cosmic Cycles: A Space Symphony by Henry Dehlinger. Courtesy of the composer. Credit: NASA's Goddard Space Flight Center Producer: James Tralie (ADNET) Executive Producer: Wade Sisler (NASA/GSFC) Music Composer: Henry Dehlinger (National Philharmonic)	Transcript Link
2023 05 15	NASA Goddard	https://youtu.be/XrqsxQCOFlw	Cosmic Cycles The Moon	This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14321. While the video in its entirety can The Moon is on full display in this section of Cosmic Cycles. The lonely and bleak landscape, covered by creeping shadows, is full of mystery and wonder. At the same time, there is beauty in the rocky gray terrain, and the crowning achievement of being the only other celestial body in our solar system that humans have step foot on. In this video you will see visualizations of the terrain, created from data obtained by NASA's Lunar Reconnaissance Orbiter, high resolution images of fascinating craters taken by its camera system, and archival footage from the Apollo 17 mission. “Cosmic Cycles: A Space Symphony" is a groundbreaking collaboration between acclaimed composer Henry Dehlinger, NASA, and the National Philharmonic, featuring a unique fusion of music and video in seven multimedia works on the Sun, Earth, Moon, Planets, and Cosmos. This transformative project takes the audience on a captivating voyage through the universe, showcasing the beauty and power of the marriage between music and science. Music credit: “The Moon" from Cosmic Cycles: A Space Symphony by Henry Dehlinger. Courtesy of the composer. Credit: NASA's Goddard Space Flight Center Producer: David Ladd (AIMM) Visualizer: Ernie Wright (USRA) Executive Producer: Wade Sisler (NASA/GSFC) Music Composer: Henry Dehlinger (National Philharmonic)	Transcript Link

2023 05 15 NASA Goddard <https://youtu.be/l2sNqMjyIVQ> Cosmic Cycles Earth as Art

Starting in 1972, nine Landsat satellites have orbited Earth, taking images of the surface. This unprecedented coverage has been tremendously useful to the scientific community, but it has also produced thousands of beautiful high-resolution images of the complex patterns of our world. From the fractal patterns of mountain ranges and river deltas to the precise geometry of agriculture, Landsat has rendered Earth as a work of art.

[Transcript Link](#)

"Cosmic Cycles: A Space Symphony" is a groundbreaking collaboration between acclaimed composer Henry Dehlinger, NASA, and the National Philharmonic, featuring a unique fusion of music and video in seven multimedia works on the Sun, Earth, Moon, Planets, and Cosmos. This transformative project takes the audience on a captivating voyage through the universe, showcasing the beauty and power of the marriage between music and science.

Music credit: "Earth as Art" from Cosmic Cycles: A Space Symphony by Henry Dehlinger. Courtesy of the composer.

Credit: NASA's Goddard Space Flight Center

Producer: Ryan Fitzgibbons (KBRwyle)
Executive Producer: Wade Sisler (NASA/GSFC)
Music Composer: Henry Dehlinger (National Philharmonic)

This video can be freely shared and downloaded at <https://svs.gsfc.nasa.gov/14319>. While the video in its entirety can

2023 05 15 NASA Goddard <https://youtu.be/f-2F3QDUyA> Cosmic Cycles Earth, Our Home

Join us for a tour of Earth, as NASA sees it from space.. From photographs captured onboard the International Space Station, to stunning visualizations rendered from satellite data, we have a unique view of our home planet – a place perfect for life, billions of years in the making. From hundreds of miles up, we can see a hurricane gaining momentum over the Atlantic Ocean or generations of seabirds migrating to warmer climates. The data you're about to see represents decades of tireless work by thousands of scientists and engineers across NASA. And it continues -- there is still so much to learn about our home world, with NASA at the forefront of many amazing discoveries from our vantage point in space.

[Transcript Link](#)

This piece is divided into five chapters that represent the many facets of our planet. The composition begins with An Awakened Earth, in which views of the dark side of Earth reveal city lights that continue to burn brightly through the night. At dawn, the International Space Station captures footage of a bright, cloud-covered ocean.

Our world is alive and perpetually changing. A Violent Earth embodies this dynamic planet, characterized by giant dust storms, volcanic eruptions, hurricanes, and fire. When given the opportunity, Earth provides balance -- as seen in A Giving Earth. Rain, food, animal migration, global forests and ocean currents are inextricably linked to the mercurial power of the planet. Despite the resiliency of this wondrous world, it is still A Fragile

2023 05 15 NASA Goddard <https://youtu.be/SxTpX28dJA> Cosmic Cycles The Sun

Born from a swirling cloud of dust and gas some 4.6 billion years ago, our Sun seethes and boils like a living thing. It is the very center of our solar system, and large enough to encompass 1.3 million Earths. Explosions flash on its surface in colors of light beyond human vision and enormous loops of plasma stretch into space. The Sun's influence extends out beyond the planets, creating a protective cocoon within the galaxy.

[Transcript](#)
[Link](#)

"Cosmic Cycles: A Space Symphony" is a groundbreaking collaboration between acclaimed composer Henry Dehlinger, NASA, and the National Philharmonic, featuring a unique fusion of music and video in seven multimedia works on the Sun, Earth, Moon, Planets, and Cosmos. This transformative project takes the audience on a captivating voyage through the universe, showcasing the beauty and power of the marriage between music and science.

Music credit: "The "Sun from Cosmic Cycles: A Space Symphony by Henry Dehlinger. Courtesy of the composer.

Credit: NASA's Goddard Space Flight Center

Producer: Scott Wiessinger (KBRwyle)
Executive Producer: Wade Sisler (NASA/GSFC)
Music Composer: Henry Dehlinger (National Philharmonic)

2023 05 12 NASA Goddard <https://youtu.be/ZLDzvt7XRHQ> A Sea of Data The PACE Mission

This video can be freely shared and downloaded at

The data from PACE (Plankton, Aerosol, Cloud, ocean Ecosystem) will help us better understand how the ocean and atmosphere exchange carbon dioxide. In addition, it will reveal how aerosols might fuel phytoplankton growth in the surface ocean. Novel uses of PACE data will benefit our economy and society. For example, it will help identify the extent and duration of harmful algal blooms. PACE will extend and expand NASA's long-term observations of our living planet. By doing so, it will take Earth's pulse in new ways for decades to come.

[Transcript](#)
[Link](#)

Video descriptions available:
https://svs.gsfc.nasa.gov/vis/a010000/a014300/a014345/script_34323_01.html

Music: "Natural Time Cycles," "Anywhere But Here," "Discovering New Things," Universal Production Music

Ryan Fitzgibbons (KBRwyle):
Lead Producer
Lead Writer
Narrator

Jeremy Werdell (NASA/GSFC):
Lead Scientist
Interviewee

Chris Burns (KBRWyle):

2023 05 11	NASA Goddard	https://youtu.be/Pnve61_7aK0	Cosmic Cycles A Space Symphony	"Cosmic Cycles: A Space Symphony" is a groundbreaking collaboration between acclaimed composer Henry Dehlinger, NASA, and the National Philharmonic, featuring a unique fusion of music and video in seven multimedia works on the Sun, Earth, Moon, Planets, and Cosmos. This transformative project takes the audience on a captivating voyage through the universe, showcasing the beauty and power of the marriage between music and science. Music credit: "Earth, Our Home" from Cosmic Cycles: A Space Symphony by Henry Dehlinger. Courtesy of the composer. Credit: NASA's Goddard Space Flight Center Lead Producer: Scott Wiessinger (KBRwyle) Executive Producer: Wade Sisler (NASA/GSFC) Music Composer: Henry Dehlinger (National Philharmonic) Editor: Scott Wiessinger (KBRwyle) This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14343. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14343. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines.	Transcript Link
2023 05 03	NASA Goddard	https://youtu.be/8GnSF_AZD8YY	NASA Animation Sizes Up the Biggest Black Holes	Editor's Note: A previous version of this video mislabeled the orbit of Saturn as the orbit of Jupiter. This new NASA animation highlights the "super" in supermassive black holes. These monsters lurk in the centers of most big galaxies, including our own Milky Way, and contain between 100,000 and tens of billions of times more mass than our Sun. Any light crossing the event horizon – the black hole's point of no return – becomes trapped forever, and any light passing close to it is redirected by the black hole's intense gravity. Together, these effects produce a "shadow" about twice the size of the black hole's actual event horizon. The animation shows 10 supersized black holes that occupy center stage in their host galaxies, including the Milky Way and M87, scaled by the sizes of their shadows. Starting near the Sun, the camera steadily pulls back to compare ever-larger black holes to different structures in our solar system. First up is 1601+3113, a dwarf galaxy hosting a black hole packed with the mass of 100,000 Suns. The matter is so compressed that even the black hole's shadow is smaller than our Sun. The black hole at the heart of our own galaxy, called Sagittarius A* (pronounced ay-star), boasts the weight of 4.3 million Suns based on long-term tracking of stars in orbit around it. It's shadow	Transcript Link

2023 05 01	NASA Goddard	https://youtu.be/ZcNRi-Rh-Bw	Roman's Primary Structure Enters the Cleanroom	The primary structure that will serve as the "bones" of NASA's Nancy Grace Roman Space Telescope has moved into the big cleanroom at NASA's Goddard Space Flight Center in Greenbelt, Maryland. The Spacecraft bus, Roman's primary support element, will now be built upon this skeletal framework. Roman will help unravel the secrets of dark energy and dark matter, search for exoplanets and explore many topics in infrared astrophysics. Music credit: "By Design" by Ben Bein from Universal Production Music "Microworld" by Benji Paul Merrison and Will Slater from Universal Production Music Credit: NASA's Goddard Space Flight Center Sophia Roberts (AIMM) : Lead Producer, Videographer Adriana Manrique Gutierrez (KBRwyle): Lead Animator Claire Andreoli (NASA/GSFC): Lead Public Affairs Officer Scott Wiessinger (KBRwyle): Videography This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14342. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14342. For	Transcript Link
2023 04 27	NASA Goddard	https://youtu.be/yXiT9vc lo8	Vice President Harris and Republic of Korea President Visit NASA Goddard	Vice President Kamala Harris hosted South Korean President Yoon Suk Yeol at NASA's Goddard Space Flight Center. During the visit, the group met with Korean-American scientists and received a briefing on the importance of space to addressing climate change, including NASA's recently launched Tropospheric Emissions: Monitoring of Pollution (TEMPO) mission and the ROK's Geostationary Environment Monitoring Spectrometer (GEMS) mission that are improving life on Earth by revolutionizing the way scientists observe air quality from space. They also saw integration of NASA's Nancy Grace Roman Space Telescope, designed to unravel the secrets of dark energy and dark matter, search for and image exoplanets, and explore many topics in infrared astrophysics. Read more: https://www.nasa.gov/feature/goddard/2023/vp-harris-south-korea-president-yoon-visit-nasa-goddard Music provided by Universal Production Music Video credit: NASA's Goddard Space Flight Center Producer: Michael Starobin (KBRwyle) Editor: Mike Randazzo (Advocates in Manpower Management) Camera Crew: Rob Andreoli, John Philhaw, Sophia Roberts (KBRwyle) This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14340. While the video in its entirety can be shared without permission, the music and some individual	Transcript Link

2023 04 24	NASA Goddard	https://youtu.be/g4hWcpEEbNo	Hubble's 33rd Year in Orbit	The Hubble Space Telescope celebrated its 33rd year in orbit by premiering a stunning new Hubble image of a nearby star-forming region named NGC 1333. Even after all these years, Hubble continues to uncover the mysteries of the universe. These are a few science achievements from Hubble's latest year in orbit. For more information, visit nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Kascie Herron: Lead Producer Music Credit: Stock Music provided by AlexZavesa, from Pond5 This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14337. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14337. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html. See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN	Transcript Link
2023 04 21	NASA Goddard	https://youtu.be/4-OFNVTqCBA	From Orbit to A.I. - Harnessing Machine Learning with Landsat Data	Over the past few years, machine learning techniques have been increasingly used to analyze the vast amount of data collected by the Landsat mission, which has been circling the globe for over 50 years. The data has been used to classify different types of land cover, detect changes to landscapes over time, and map the impact of human activity on the environment. With the field constantly evolving, researchers are developing new deep learning models to improve the accuracy and efficiency of the analysis and extract even more information from the data. Here are just a few examples of how the combination of Landsat data and machine learning is providing a better understanding of our planet's past, present, and future. Music Credits: "One Hundred Days" Florian Moenks[GEMA] Matthew Anderson[PRS] Volta Music "Natural Response" Jonathan Elias[ASCAP] Sarah Trevinop [ASCAP] EVO "Artificial Intelligence" Mateo Pagamici [SUISA] Max Molling [SUISA] Nuvotone Stratos Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Chris Burns [KBRWyle]: Lead Producer Chris Burns [KBRWyle]: Lead Writer	Transcript Link

2023 04 20	NASA Goddard	https://youtu.be/gatNSVppgAw	Hubble's 33rd Anniversary Dark Nebula is a Cauldron of Star Birth	NASA is celebrating the Hubble Space Telescope's 33rd birthday with an ethereal image of a nearby star-forming region, NGC 1333. Located approximately 960 light-years away in the Perseus interstellar cloud, Hubble's colorful view unveils glowing gasses and pitch-black dust stirred up, colliding, and blown around by several hundred forming stars within the dark cloud. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Dr. Jennifer Wiseman: Narration Music Credit: "Sensory Submersion" by Alessandro Rizzo [PRS] and Elliot Greenway Ireland [PRS] via Pedigree Cuts [PRS] and Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14334. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14334. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines.	Transcript Link
2023 04 14	NASA Goddard	https://youtu.be/sNBbMWkSlh4	What Is an Annular Eclipse	On Oct. 14, 2023, an annular solar eclipse will cross North, Central, and South America. Visible in parts of the United States, Mexico, and many countries in South and Central America, millions of people in the Western Hemisphere can experience this eclipse. But what is an annular eclipse? Why does it happen? And why does it create a "ring of fire" in the sky? Music: "Insect Village" by Anthony Donje [PRS], Paul Simon Elliott [PRS] via Universal Production Music Video credit: NASA's Goddard Space Flight Center Producer: Joy Ng (KBRwyle) Writer: Vanessa J. Thomas (KBRwyle) Editor: Beth Anthony (KBRwyle) Animator: Beth Anthony (KBRwyle) Scientist: Michael S. Kirk (GSFC) This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14325. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14325 For more information on NASA's media guidelines, visit: https://nasa.gov/multimedia/guidelines.	Transcript Link

2023 04 12	NASA Goddard	https://youtu.be/G8nVHeoU2u4	Epic Shot! NASA and NBA Demonstrate Nothin' But Net	To become United States' first-ever mission to return an asteroid sample to Earth, NASA OSIRIS-REx must make all the right moves to shoot the sample return capsule through a 'space hoop' to land within a 250 square mile patch in the Utah desert. NASA invited Deni Avdija from the NBA's Washington Wizards to demonstrate what it takes to make the perfect shot. Credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Narrator Lead Editor Rob Andreoli (AIMM): Videographer John D. Philyaw (AIMM): Videographer Kenny Getzandanner (NASA/GSFC): Scientist Rani Gran (NASA/GSFC): Public Affairs Officer Walt Feimer (KBRwyle): Animator	Transcript Link
2023 04 06	NASA Goddard	https://youtu.be/aPAP2ewFR0A	Hubble Catches Possible Runaway Black Hole	There's an invisible monster on the loose! It's barreling through intergalactic space fast enough to travel from Earth to the Moon in 14 minutes. But don't worry, luckily this beast is very, very far away! This potential supermassive black hole, weighing as much as 20 million Suns, has left behind a never-before-seen 200,000 light-year-long trail of newborn stars. The streamer is twice the diameter of our Milky Way galaxy. It's likely the result of a rare, bizarre game of galactic billiards among three massive black holes. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Video Credit: Black Hole Animation NASA's Goddard Space Flight Center/Jeremy Schnittman Image of Chandra X-Ray Observatory NASA/CXC and J. Vaughan 3 Black Hole Orbits and Slingshots Image from paper "A candidate runaway supermassive black hole identified by shocks and star formation in its wake" by PI Pieter Von	Transcript Link

2023 04 03	NASA Goddard	https://youtu.be/Ztfph50vOhg	NASA's Laser Communications To the Space Station and Beyond	NASA is infusing laser communications technologies to provide missions with enhanced communications capabilities. Lasers communications enable missions to send back more data in a single link. More data means more discoveries. Producers / Music: Walter Feimer Swarupa Nune Michael Randazzo Writers: Katherine Schauer Mariah Pulver While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center Instagram http://www.instagram.com/nasagoddard	Transcript Link
2023 03 30	NASA Goddard	https://youtu.be/BS0NOgYtkZU	Hubble's Inside The Image Earendel	The Hubble Space Telescope has taken over 1.5 million observations over the years. One of them is the breathtaking image of the star known as Earendel. The star is positioned along a ripple in spacetime that gives it extreme magnification, allowing it to emerge into view from its host galaxy, which appears as a red smear across the sky. With this observation, NASA's Hubble Space Telescope has established an extraordinary new benchmark: detecting the light of a star that existed within the first billion years after the Universe's birth in the Big Bang (at a redshift of 6.2) — the most distant individual star ever seen. In this video, Dr. Brian Welch explains this fascinating phenomenon of nature, and goes over how important Hubble is to exploring the mysteries of the universe. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Producer & Director: James Leigh Editor: Lucy Lund	Transcript Link

2023 03 29	NASA Goddard	https://youtu.be/k3yoJ04GNmg	Hubble Women Making History Beverly Johnson	NASA's Hubble Space Telescope has an impressive group of women who have worked and continue to work on the historic mission. From Astronauts and engineers to IT and ground testers, Hubble continues its important mission thanks to some truly amazing women. One of these inspiring women is Hubble Payload Team Manager Beverly Johnson. Beverly works hard every day to ensure that Hubble performs at the peak of its capabilities. In this video Beverly quickly goes over what her job entails and important lessons she learned along the way. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Kascie Herron: Lead Producer Paul Morris: Support Beverly Johnson: Interviewee Music Credit: Stock music provided by AG_Music, from Pond5 Opening Montage Credit: Photo Row Template by By Tyler via Motion Array	Transcript Link
2023 03 24	NASA Goddard	https://youtu.be/gfEHHdUEwII	NASA Prepares for Historic Asteroid Sample Delivery on Sept. 24	NASA's OSIRIS-REx spacecraft is cruising back to Earth with a sample it collected from the rocky surface of asteroid Bennu. When its sample capsule parachutes down into the Utah desert on Sept. 24, OSIRIS-REx will become the United States' first-ever mission to return an asteroid sample to Earth. Credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Narrator Walt Feimer (KBRwyle): Animator Jonathan North (KBRwyle): Animator Michael Lentz (KBRwyle): Animator Adriana Manrique Gutierrez (KBRwyle): Animator Krystofer Kim (KBRwyle): Animator	Transcript Link

2023 03 22	NASA Goddard	https://youtu.be/tUSJaurJ7f0	Tracking Carbon from Wildfires to Ocean Blooms	Between September 2019 and March 2020, wildfires killed billions of animals and decimated more than 200 thousand square kilometers of Australian forest, an area larger than Nebraska. Later, thousands of kilometers away in the Southern Ocean, massive algae blooms covered a surface larger than the area of Australia itself. The connection between these major wildfires and the subsequent explosion of phytoplankton production is an example of the events NASA's upcoming Plankton, Aerosols, Clouds, and ocean Ecosystem (PACE) mission will help investigate. PACE's suite of instruments will allow scientists to get a clearer picture of carbon as it links land use and fires, atmospheric aerosols and marine communities, and ultimately improves those uncertain the data we put into climate models. Video descriptions available: https://svs.gsfc.nasa.gov/vis/a010000/a014300/a014315/script_34113_01.html Music: "On the Trail," "Idle at Midnight," "Synthetic Comfort," Universal Production Ryan Fitzgibbons (KBRwyle): Lead Producer Lead Writer Narrator Jeremy Werdell (NASA/GSFC):	Transcript Link
2023 03 22	NASA Goddard	https://youtu.be/iT04pMZGUqI	Hubble Women Making History Daria Outlaw	NASA's Hubble Space Telescope has an impressive group of women who have worked and continue to work on the historic mission. From Astronauts and engineers to IT and ground testers, Hubble continues its important mission thanks to some truly amazing women. One of these inspiring women is Hubble Information Systems Team member Daria Outlaw. Daria works hard every day to ensure that the Hubble team has their IT working smoothly, allowing them to keep Hubble at the peak of its capabilities. In this video Daria quickly goes over what her job entails, lessons she learned along the way, and some of the things she's passionate about. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Kascie Herron: Lead Producer Paul Morris: Support Daria Outlaw: Interviewee Music Credit: Stock music provided by RickyValadez, from Pond5 Opening Montage Credit:	Transcript Link

2023 03 17	NASA Goddard	https://youtu.be/jKcz5tb-DU	NASA Tracks Freddy, Longest-lived Tropical Cyclone on Record	Tropical Cyclone Freddy lasted more than five weeks. Once a very powerful Category 5 cyclone, Freddy first made landfall along the east coast of Madagascar on February 21st, 2023 just north of the town of Mananjary as a Category 3 cyclone with average winds reported at 130 km/h (~81 mph) with gusts up to 180 km/h (~112 mph). After crossing over Madagascar, Freddy continued westward over the Mozambique Channel before making landfall again and for the first time along the east coast of Mozambique just south of Vilankulos as a moderate tropical storm with sustained winds estimated at 50 mph. However, despite being weaker at landfall, Freddy has resulted in widespread flooding across parts of Mozambique due to the storm stalling out near the coast after making landfall. Incredibly, Freddy then drifted back out over the Mozambique Channel, nearly making landfall again along the southwest coast of Madagascar, before changing direction, re-intensifying, weakening, re-intensifying one last time, and making landfall for the 2nd time in Mozambique as a Category 1 cyclone near Quelimane with sustained winds reported at 90 mph on the 11th of March. Video Description: 0:00 Data visualization of the Southern Hemisphere with Australia & Indonesia to the right & "Indian Ocean" labeled on the left & center. Bars at the bottom shows accumulation & precipitation rates for Tropical Cyclone Freddy. The left bar says "NASA IMERG Accumulation since 6 February, 2023," with a scale from dark green (low) to dark purple (very high). The right scale reads "NASA IMERG	Transcript Link
2023 03 16	NASA Goddard	https://youtu.be/ZtjUPuc18kA	Hubble's Inside The Image Crab Nebula	The Hubble Space Telescope has taken over 1.5 million observations over the years. One of them is the breathtaking Crab Nebula. With an apparent magnitude of 8.4 and located 6,500 light-years from Earth in the constellation Taurus, the Crab Nebula can be spotted with a small telescope and is best observed in January. The nebula was discovered by English astronomer John Bevis in 1731, and later observed by Charles Messier who mistook it for Halley's Comet. Messier's observation of the nebula inspired him to create a catalog of celestial objects that might be mistaken for comets. In this video, Dr. Padi Boyd takes us on a journey through the Nebula, teaching us some of the interesting science behind this famous Hubble image. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Producer & Director: James Leigh Editor: Lucy Lund Director of Photography: James Ball Additional Editing & Photography: Matthew Duncan	Transcript Link

2023 03 15	NASA Goddard	https://youtu.be/664r6km_TXs	Arctic Sea Ice Hits 2023 Maximum	On March 6, 2023, the Arctic sea ice pack appeared to reach its maximum extent for this winter, at 14.62 million square kilometers, or 5.64 million square miles, according to the National Snow and Ice Data Center. Fieldwork and satellites like NASA's ICESat-2 satellite are monitoring the changing ice pack, and helping to predict how the ice will change in the future. Sea ice is frozen seawater that floats on the ocean surface. It forms in both the Arctic and the Antarctic in each hemisphere's winter; it retreats in the summer, but does not completely disappear. This floating ice has a profound influence on the polar environment, influencing ocean circulation, weather, and regional climate. Since 1979, satellites have provided a consistent continuous record of sea ice. Through 2015, the average monthly September extent of Arctic sea ice has declined by 13.4 percent per decade relative to the average from 1981 to 2010. Declines are occurring in every geographic area, in every month, and every season. Natural variability and rising temperatures linked to global warming appear to have played a role in this decline. The Arctic may be ice-free in summer before the end of this century. For more from the NSIDC: https://nsidc.org/arcticseaicenews/2023/03/arctic-sea-ice-maximum-at-fifth-lowest-on-satellite-record/	Transcript Link
2023 03 14	NASA Goddard	https://youtu.be/jorMha-ZE4M	Einstein Rings Optical Illusions	An Einstein Ring can be explained by a phenomenon called gravitational lensing, which causes light shining from a faraway galaxy to be warped by the gravity of an object between its source and the observer. This effect was first theorized by Albert Einstein in 1912, and later worked into his theory of general relativity. In this video, Dr. Brian Welch explains this fascinating phenomenon of nature, and goes over how important Hubble is to exploring the mysteries of the universe. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Producer & Director: James Leigh Editor: Lucy Lund Director of Photography: James Ball Additional Editing & Photography: Matthew Duncan Executive Producers: James Leigh & Matthew Duncan Production & Post: Origin Films Video Credit:	Transcript Link

2023 03 10 NASA Goddard <https://youtu.be/E3T2ldsdMg> What is Plasma

Description: Plasma makes up 99.9% of the visible universe, but what is it? This video discusses what plasma is, where it lives, and how NASA studies it.

[Transcript](#)
[Link](#)

Music: "Artificial Intelligence" by Matteo Pagamici [SUISA], Max Molling [SUISA] via Universal Production Music

Video credit: NASA's Goddard Space Flight Center
Beth Anthony (KBRwyle): Producer
Mara Johnson-Groh (Telophase): Writer
Barbara Giles (NASA/GSFC): Scientist
Genna Duberstein (ADNET): Writer

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2023 03 08 NASA Goddard <https://youtu.be/9Gc1npk1gWU> SnowEx Sets Sights on Alaska

NASA's SnowEx ground and airborne campaign is a multiyear effort using a variety of techniques to study snow characteristics, and the team concludes their final year in Alaska. Project Scientist Carrie Vuyovich previews the campaign ahead. Not only is SnowEx learning valuable information about how snow properties change by terrain and season, but they are also testing the tools NASA will need to sample snow from space.

[Transcript](#)
[Link](#)

Video descriptions available:
https://svs.gsfc.nasa.gov/vis/a010000/a014300/a014302/script_34114_01.html

Music: "World Citizens," "Geothermal Power," Universal Production Music

This video can be freely shared and downloaded at <https://svs.gsfc.nasa.gov/14302>. While the video in its entirety can be shared without permission, some individual imagery provided by pond5.com, Boise State University, Matt Crook and Harrison Bach and is obtained through permission and may not be excised or remixed in other products. For more information on NASA's media guidelines, visit <https://www.nasa.gov/multimedia/guidelines/index.html>.

Ryan Fitzgibbons (KBRwyle):
Lead Producer
Videographer

2023 03 08	NASA Goddard	https://youtu.be/fmb3z-tfhM	A Tour of NASA's Solar Eclipse Map for 2023 and 2024	Two solar eclipses will cross the United States in 2023 and 2024. On October 14, 2023, an annular solar eclipse will create a “ring of fire” in the sky from Oregon to Texas. On April 8, 2024, a total solar eclipse will darken the skies from Texas to Maine. On both dates, all 48 contiguous states in the U.S. will experience a partial solar eclipse. A map developed using data from a variety of NASA sources shows both eclipse paths as dark bands. Outside those paths, yellow and purple lines show how much of the Sun will become blocked by the Moon during the partial eclipses. View and download the eclipse map here: https://svs.gsfc.nasa.gov/5073. This video zooms in to different parts of the map, explaining these and other features that describe what observers across the country can expect to see during each eclipse. The map and video were updated on March 15, 2023, to correct times in Mexico along the total eclipse path. The updated video can be downloaded at https://svs.gsfc.nasa.gov/5086 Music credit: "Purple Sun" by Rainman [PRS] from Universal Production Music Credit: NASA's Goddard Space Flight Center	Transcript Link
2023 03 08	NASA Goddard	https://youtu.be/S4tl-HtJap4	Hubble Women Making History Colleen Townsley	NASA's Hubble Space Telescope has an impressive group of women who have worked and continue to work on the historic mission. From Astronauts and engineers to IT and ground testers, Hubble continues its important mission thanks to some truly amazing women. One of these inspiring women is Hubble Integration and Test Team Manager Colleen Townsley. Colleen works hard every day to ensure that Hubble remains at its peak capabilities. In this video Colleen quickly goes over what her job entails, lessons she learned along the way, and some of the things she's passionate about. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Kascie Herron: Lead Producer Paul Morris: Support Colleen Townsley: Interviewee Music Credit: Stock music provided by distressbear, from Pond5 Opening Montage Credit: Photo Row Template by By Tyler via Motion Array	Transcript Link

2023 03 03	NASA Goddard	https://youtu.be/gNnb5awZ5xU	Hubble's Inside The Image V838 Mon	The Hubble Space Telescope has taken over 1.5 million observations over the years. One of them is the breathtaking image sequence of V838 Monocerotis (V838 Mon). Called a light echo, the expanding illumination of interstellar dust around the star has been revealing remarkable structures in the dusty cloud ever since the star suddenly brightened in January 2002. V838 Mon temporarily became 600,000 times brighter than our Sun, until it faded in April 2002. It was one of the brightest stars in the entire Milky Way. The reason for the eruption is still unclear. In this video, Dr. Padi Boyd explains this fascinating piece of history, teaching us some of the interesting science behind this famous Hubble image. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Producer & Director: James Leigh Editor: Lucy Lund Director of Photography: James Ball Additional Editing & Photography: Matthew Duncan	Transcript Link
2023 03 01	NASA Goddard	https://youtu.be/ue8rfh3LqAw	NASA Maps Carbon of 10 Billion Individual Trees	Using commercial, high-resolution satellite images and artificial intelligence, a team of NASA-funded scientists mapped almost 10 billion individual trees in Africa's drylands in order to assess the amount of carbon stored outside of major forests. The result is the first comprehensive estimate of carbon density in the Saharan, Sahel, and Sudanian zones of Africa. Music credit: "The Journey Begins" and "Artificial Intelligence" from Universal Production Music Credit: NASA's Goddard Space Flight Center Kathleen Gaeta(GSFC AIMMS): Lead Producer Dr. Compton Tucker (GSFC SSO): Lead Scientist Kel Elkins (GSFC): Lead Visualizer Sofie Bates (KBR): Lead Writer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/5031. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/5031. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines. If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2023 03 01	NASA Goddard	https://youtu.be/xiTiFaO_7Kg	Hubble Women Making History Madison Brodnax	NASA’s Hubble Space Telescope has an impressive group of women who have worked and continue to work on the historic mission. From astronauts and engineers to IT and ground testers, Hubble continues its important mission thanks to some truly amazing women. One of these inspiring women is Hubble Electrical Power Systems Engineer Madison Brodnax. Madison works hard every day to ensure that Hubble remains at its peak capabilities. In this video Madison quickly goes over what her job entails, lessons she learned along the way, and some of the things she’s passionate about. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Kascie Herron: Lead Producer Paul Morris: Support Madison Brodnax: Interviewee Music Credit: Stock music provided by distressbear, from Pond5 Opening Montage Credit: Photo Row Template by By Tyler via Motion Array	Transcript Link
2023 03 01	NASA Goddard	https://youtu.be/rdt7PugWe90	NASA Prepares to Explore Venus with DAVINCI	Inspired by the Renaissance vision of Leonardo da Vinci, NASA is presently preparing its scientific return to Venus’ atmosphere and surface with a mission known as the “Deep Atmosphere of Venus Investigation of Noble gases, Chemistry, and Imaging” (DAVINCI). The DAVINCI mission will “take the plunge” into Venus’ enigmatic history using an instrumented deep atmosphere probe spacecraft that will carry five instruments for measuring the chemistry and environments throughout the clouds and to the surface, while also conducting the first descent imaging of a mountain system on Venus known as Alpha Regio, which may represent an ancient continent. In addition, the DAVINCI mission includes two science flybys of Venus during which it will search for clues to mystery molecules in the upper cloud deck while also measuring the rock types in some of Venus highland regions. All of these new and unique measurements will make the ‘exoplanet next door’ into a key place for understanding Earth and Venus sized exoplanets that may have similar histories to our sister planet. DAVINCI will pave the way for a series of missions by NASA and ESA in the 2030’s by opening the frontier as it searches for clues to whether Venus harbored oceans and how its atmosphere-climate system evolved over billions of years. DAVINCI’s science will address questions about habitability and how it could be “lost” as rocky planets evolve over time. NASA’s Goddard Space Flight center leads the DAVINCI Mission as the PI institution.	Transcript Link

2023 02 21	NASA Goddard	https://youtu.be/ha7oxMbDgi8	Leaders in Lidar Chapter 5 Masterpieces of Science	As the series wraps, we look to the future of lidar missions and reflect on what makes the Goddard Space Flight Center a great place to innovate, collaborate and build on the past, both the successes and failures, for the future. Video descriptions available: https://svs.gsfc.nasa.gov/vis/a010000/a014200/a014261/script_33797_02.html Music: "Curious by Nature," "Chasing Lights," "Planetary Planes," "Hidden Between the Pages," "Hope," Universal Production Music Ryan Fitzgibbons (KBRwyle): Producer, Writer, Editor, Animator, Researcher LK Ward (KBRwyle): Narrator, Project support James Garvin (NASA, Chief Scientist Goddard): Scientist, Interviewee, Project support Thomas A. Neumann (NASA/GSFC): Scientist, Interviewee, Project support Bryan Blair (NASA/GSFC): Interviewee David E. Smith (NASA/GSFC): Interviewee James Abshire (NASA/GSFC): Interviewee Jan McGarry (NASA/GSFC): Interviewee Jay Zwally (NASA/GSFC): Interviewee Ralph Dubayah (University of Maryland): Interviewee Xiaoli Sun (NASA/GSFC): Interviewee Jack L. Bufton (GST): Interviewee	Transcript Link
2023 02 21	NASA Goddard	https://youtu.be/QGf0yzdM5OA	How Hubble Images Are Made	As a cosmic photographer, NASA's Hubble Space Telescope has taken over a million snapshots documenting the universe. These images illustrate, explain, and inspire us with their grandeur. But how are those images taken and processed? This incredible video explains the answer to that question. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Miranda Chabot: Lead Producer Miranda Chabot: Writer Miranda Chabot: Narrator Paul Morris: Support Music & Sound Music Credit: "A Woven Narrative," Matthew James Jude Anderson [PRS], Ninja Tune Production Music, Universal Production Music This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14250. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14250. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html.	Transcript Link

2023 02 13	NASA Goddard	https://youtu.be/LH8mBtcTb0	Leaders in Lidar Chapter 4 All the Easy Missions Are Done	The Goddard team recounts the challenging paths that lead to the current lidar missions, the Global Ecosystems Dynamics Investigation (GEDI) and ICESat-2, which look to measure changes on our planet. Video descriptions available: https://svs.gsfc.nasa.gov/vis/a010000/a014200/a014261/script_33793_00.html Music: "Quick Rhythmic Stabs," "Chasing Lights," "Little Magic," "In Broad Daylight," "Hidden between the Pages," "Down Is Not Out," "Curious by Nature," "Correlating Combination," "Everyday Stories," Universal Production Music. Ryan Fitzgibbons (KBRwyle): Producer, Writer, Editor, Animator, Researcher LK Ward (KBRwyle): Narrator, Project support James Garvin (NASA, Chief Scientist Goddard): Scientist, Interviewee, Project support Thomas A. Neumann (NASA/GSFC): Scientist, Interviewee, Project support Bryan Blair (NASA/GSFC): Interviewee David E. Smith (NASA/GSFC): Interviewee James Abshire (NASA/GSFC): Interviewee Jan McGarry (NASA/GSFC): Interviewee Jay Zwally (NASA/GSFC): Interviewee Ralph Dubayah (University of Maryland): Interviewee	Transcript Link
2023 02 11	NASA Goddard	https://youtu.be/1DLJxpPEIA	Landsat 8 - A Decade of Service	This February marks the 10th anniversary of the launch of Landsat 8, launched by NASA in 2013 and operated by the US Geological Survey. Equipped with its Operational Land Imager (OLI) and Thermal Infrared Sensor (TIRS) onboard instruments, Landsat 8 represented a significant advance in remote sensing technology and was the first to allow everyone in the world fully free and open access to its data from first light. In celebration of a decade of service, let's take a look back at some of the remarkable ways Landsat 8 has fundamentally altered the way we see our world. Music credit: "Saving the Planet" Ty Unwin [PRS] BBC Production Music "Uplifting Jaunt" Lindsey Debra Wright [PRS] Chalk Music "Curious by Nature" Eddie Saffron [PRS] Being Human Music "Movement" Samuel William Hooper [PRS] Chalk Music "Patient Motion" Lucie Rose [PRS] Chalk Music "Tomorrow is Today" Jonathan Ellis [ASCAP] Sarah Trevino [ASCAP] Perfect Moment Music "Constant Motion" Ben Niblett [PRS] Jon Cotton [PRS] Nova Production Music "Climate Change" Fred Dubois [SACEM] Paul du Chaumont [SACEM] Koka Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Chris Burns [KBRWyle]: Lead Producer Chris Burns [KBRWyle]: Lead Writer	Transcript Link

2023 02 09	NASA Goddard	https://youtu.be/et1sMxVrpY	Saturn's Rings Are Acting Strange	New images of Saturn from NASA's Hubble Space Telescope herald the start of the planet's "spoke season" surrounding its equinox, when enigmatic features appear across its rings. The cause of the spokes, as well as their seasonal variability, has yet to be fully explained by planetary scientists. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Music Credit "Mind's Eye" by Paul Saunderson [PRS] via Abbey Road Masters [PRS] and Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14280. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14280. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html. See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOyGRzue8kN	Transcript Link
2023 02 06	NASA Goddard	https://youtu.be/nlpyy3uDc5Q	Leaders in Lidar Chapter 3 Take the Next Steps	Riding on the success of MOLA, the Goddard team develops new lidar instruments for Earth, the Moon and Mercury. Each new instrument is a major leap forward in technology and scientific ambition and equally fraught with challenges. Video descriptions available: https://svs.gsfc.nasa.gov/vis/a010000/a014200/a014261/script_33792_01.html Music: "Breakthrough Discovery," "Chasing Lights," "Prism Lights," "Ellipsis," "What Have We Done," "Resistor," "Starlight Andromeda," "Cascadia," "Everyday Stories," Universal Production Music. Ryan Fitzgibbons (KBRwyle): Producer, Writer, Editor, Animator, Researcher LK Ward (KBRwyle): Narrator, Project support James Garvin (NASA, Chief Scientist Goddard): Scientist, Interviewee, Project support Thomas A. Neumann (NASA/GSFC): Scientist, Interviewee, Project support Bryan Blair (NASA/GSFC): Interviewee David E. Smith (NASA/GSFC): Interviewee James Abshire (NASA/GSFC): Interviewee Jan McGarry (NASA/GSFC): Interviewee Jay Zwally (NASA/GSFC): Interviewee Ralph Dubayah (University of Maryland): Interviewee	Transcript Link

2023 01 30 NASA Goddard https://youtu.be/-WJH5NkVAE_k Leaders in Lidar Chapter 2 Go Back to Mars

After the devastating loss of Mars Observer, the Goddard team mourns and regroupes to build a second MOLA instrument for the Mars Global Surveyor mission. But before their laser altimeter goes to Mars, the team seizes an opportunity to test it on the Space Shuttle.

[Transcript Link](#)

Video descriptions available:
https://svs.gsfc.nasa.gov/vis/a010000/a014200/a014261/script_33791_02.html

Music: "Unanswered Questions," "Chasing Lights," "Curious Occasion," "Time Ticking Away," "Have You Seen Annie," "Down to the Wire," "Man Versus Clock," "Everyday Stories." Universal Production Music.

Ryan Fitzgibbons (KBRwyle): Producer, Writer, Editor, Animator, Researcher
LK Ward (KBRwyle): Narrator, Project support
James Garvin (NASA, Chief Scientist Goddard): Scientist, Interviewee, Project support
Thomas A. Neumann (NASA/GSFC): Scientist, Interviewee, Project support
Bryan Blair (NASA/GSFC): Interviewee
David E. Smith (NASA/GSFC): Interviewee
James Abshire (NASA/GSFC): Interviewee
Jan McGarry (NASA/GSFC): Interviewee
Jay Zwally (NASA/GSFC): Interviewee

2023 01 23 NASA Goddard <https://youtu.be/a4ZJJiYXkMc> Leaders in Lidar Chapter 1 The Laser Is Better

In this series, we dive into the legacy of Goddard's lead role in developing laser altimetry, which has revolutionized the way we map our planet, the Moon and other planets. Each chapter looks at the successes and failures of these lidar instruments, beginning with the Mars Observer Laser Altimeter (MOLA) in the late 1980s, through the current generation of laser altimeters on ICESat-2 and GEDI. Through dozens of interviews and archival footage, the history, challenges and legacy of lidar are uncovered.

[Transcript Link](#)

In this first episode, the scientists and engineers at Goddard Space Flight Center embark on a new technological and scientific journey, building and sending a laser altimeter to Mars with the MOLA-1 Instrument.

Video descriptions available:
https://svs.gsfc.nasa.gov/vis/a010000/a014200/a014261/script_33790_01.html

Music: "Fragment," "Chasing Lights," "Charming Noise," "Steady Pace," "The Cage," "Taking It All In," "The Archives," "Intriguing Coincidence," "Everyday Stories," Universal Production Music

Ryan Fitzgibbons (KBRwyle): Producer, Writer, Editor, Animator, Researcher
LK Ward (KBRwyle): Narrator, Project support
James Garvin (NASA, Chief Scientist Goddard): Scientist, Interviewee, Project support

2023 01 19 NASA Goddard <https://youtu.be/GMPu-g17-wm0> Leaders in Lidar Series Promo

In this series, we dive into the legacy of Goddard's lead role in developing laser altimetry, which has revolutionized the way we map our planet, the Moon and other planets. Each chapter looks at the successes and failures of these lidar instruments, beginning with the Mars Observer Laser Altimeter in the late 1980s, through the current generation of laser altimeters on ICESat-2 and GEDI. Through dozens of interviews and archival footage, the history, challenges and legacy of lidar are uncovered.

[Transcript](#)
[Link](#)

Video Description

0:00 Jim Garvin in front of a bright background.
0:03 Animation that looks like spacecraft blueprints, with a yellow line snaking through.
0:06 Archival footage of Noel Hinners at a lectern.
0:09 Pan across posed group photos.
0:12 Garvin again.
0:14 Jim Abshire on a video call.
0:16 Document that says MOLA Mars Observer Laser Altimeter.
0:17 Bryan Blair on a video call.
0:18 Vintage animation of a spacecraft flying above a planet, bouncing a red light off its surface.
0:20 Jan McGarry on a video call.
0:21 Zoom into an older picture of two people on a research aircraft.
0:22 Gold spacecraft with white components inside a clean room, with two people in clean room suits.
0:26 David E. Smith on a video call.
0:28 Rocket launching.

2023 01 19 NASA Goddard <https://youtu.be/6RoJLHX5lcM> Planetary Missions Fossils of our Solar System

When the Hubble Space Telescope launched, one of its main goals was to learn more about our incredible universe.

[Transcript](#)
[Link](#)

While we're used to Hubble images coming from thousands of light-years away, Hubble is also capable of looking at objects in our solar system. Using Hubble, astronomers have been able to help planetary missions, like New Horizons and Lucy, plan out their own discoveries.

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center

Producer & Director: James Leigh

Editor: Lucy Lund

Director of Photography: James Ball

Additional Editing & Photography: Matthew Duncan

Executive Producers: James Leigh & Matthew Duncan

Production & Post: Origin Films

Video Credits:

Hubble Space Telescope Animations

2023 01 12	NASA Goddard	https://youtu.be/Q6gYWFgal8k	Hubble Finds Hungry Black Hole Twisting Captured Star Into Donut Shape	Black holes are gatherers, not hunters. They lie in wait until a hapless star wanders by. When the star gets close enough, the black hole's gravitational grasp violently rips it apart and sloppily devours its gasses while belching out intense radiation. Astronomers using NASA's Hubble Space Telescope have recorded a star's final moments in detail as it gets gobbled up by a black hole. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Cassandra Morris: Narrator Music Credit "Solar Eclipse" by Alexander Ryder Mcnair [ASCAP] and Harry Gregson Williams [BMI] via Atmosphere Music Ltd. [PRS] and Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14272. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14272. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html.	Transcript Link
2023 01 12	NASA Goddard	https://youtu.be/GxXmIgcFn4	A Look Back 2022's Temperature Record	2022 effectively tied for Earth's 5th warmest year since 1880, and the last 9 consecutive years have been the warmest 9 on record. NASA looks back at how heat was expressed in different ways around the world in 2022. Music credit: "Ad Infinitum," "Arctic Blue," and "Recovery" from Universal Production Music Credit: NASA's Goddard Space Flight Center Kathleen Gaeta (GSFC AIMMS): Lead Producer Dr. Gavin Schmidt (GISS): Lead Scientist Dr. Peter Jacobs (GSFC): Scientist Lori Perkins (GSFC): Lead Visualizer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/14273 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc	Transcript Link

2023 01 10	NASA Goddard	https://youtu.be/tgUtKNKD8UM	TESS Finds System's Second Earth-Size Planet	Using data from NASA's Transiting Exoplanet Survey Satellite, scientists have identified an Earth-size world, called TOI 700 e, orbiting within the habitable zone of its star – the range of distances where liquid water could occur on a planet's surface. The world is 95% Earth's size and likely rocky. Music credit: "Dream Box" by Carl David Harms from Universal Production Music Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Sophia Roberts(AIMM): Lead Producer, Narrator Jeanette Kazmierczak (University of Maryland College Park) - Lead Science Writer Robert Hurt (JPL/Caltech): Animator Scott Wiessinger (KBRwyle) - Producer Aaron E. Lepsch (ADNET): Technical Support This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14264. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14264. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines.	Transcript Link
2023 01 09	NASA Goddard	https://youtu.be/C5BlhE8fM	Neutron Star Merger Simulation with Gravitational Wave Audio	This simulation tracks the gravitational wave and density changes as two orbiting neutron stars crash together. Dark purple colors represent the lowest densities, while yellow-white shows the highest. An audible tone and a visual frequency scale (at left) track the steady rise in the frequency of gravitational waves as the neutron stars close. When the objects merge at 42 seconds, the gravitational waves suddenly jump to frequencies of thousands of hertz and bounce between two primary tones (quasiperiodic oscillations, or QPOs). The presence of these signals in such simulations led to the search and discovery of similar phenomena in the light emitted by short gamma-ray bursts. Credit: NASA's Goddard Space Flight Center and STAG Research Centre/Peter Hammond Scott Wiessinger (KBRwyle) - Lead Producer Francis Reddy (University of Maryland College Park) - Lead Science Writer Peter Hammond (University of Southampton) - Lead Visualizer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14209. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14209. For more information on NASA's media guidelines, visit	Transcript Link

2023 01 05	NASA Goddard	https://youtu.be/Sv3eXRN7hLo	133 Days on the Sun	This video chronicles solar activity from Aug. 12 to Dec. 22, 2022, as captured by NASA's Solar Dynamics Observatory (SDO). From its orbit in space around Earth, SDO has steadily imaged the Sun in 4K x 4K resolution for nearly 13 years. This information has enabled countless new discoveries about the workings of our closest star and how it influences the solar system. With a triad of instruments, SDO captures an image of the Sun every 0.75 seconds. The Atmospheric Imaging Assembly (AIA) instrument alone captures images every 12 seconds at 10 different wavelengths of light. This 133-day time lapse showcases photos taken at a wavelength of 17.1 nanometers, which is an extreme-ultraviolet wavelength that shows the Sun's outermost atmospheric layer: the corona. Compiling images taken 108 seconds apart, the movie condenses 133 days, or about four months, of solar observations into 59 minutes. The video shows bright active regions passing across the face of the Sun as it rotates. The Sun rotates approximately once every 27 days. The loops extending above the bright regions are magnetic fields that have trapped hot, glowing plasma. These bright regions are also the source of solar flares, which appear as bright flashes as magnetic fields snap together in a process called magnetic reconnection. While SDO has kept an unblinking eye pointed toward the Sun, there have been a few moments it missed. Some of the dark frames in the video are caused by Earth or the Moon eclipsing SDO as they pass between the spacecraft and the Sun. Other blackouts are	Transcript Link
2022 12 21	NASA Goddard	https://youtu.be/1zfz-OEKH8	The Roman Space Telescope's Coronagraph Instrument	When a new NASA space telescope opens its eyes in the mid 2020s, it will peer at the universe through some of the most sophisticated sunglasses ever designed. This multi-layered technology, the coronagraph instrument, might more rightly be called "starglasses": a system of masks, prisms, detectors and even self-flexing mirrors built to block out the glare from distant stars — and reveal the planets in orbit around them. Normally, that glare is overwhelming, blotting out any chance of seeing orbiting planets. The star's photons — particles of light — swamp those from the planet when they hit the telescope. The Nancy Grace Roman Space Telescope's coronagraph just completed a major milestone: a preliminary design review by NASA. The instrument has met all design, schedule and budget requirements, and can now proceed to the next phase, building hardware for flight. The Roman mission's coronagraph is meant to demonstrate the power of increasingly advanced technology. As it captures light directly from large, gaseous exoplanets, and from disks of dust and gas surrounding other stars, it will point the way to the future: single pixel "images" of rocky planets the size of Earth. Then the light can be spread into a rainbow spectrum, revealing which gases are present in the planet's atmosphere — perhaps oxygen, methane, carbon dioxide, and maybe even signs of life.	Transcript Link

2022 12 21	NASA Goddard	https://youtu.be/eSTiSwPnjwQ	LCRD Resolutions	On Dec. 7, 2021, NASA launched the Laser Communications Relay Demonstration (LCRD), the agency's first ever optical relay. LCRD is showcasing the benefits of laser communications, which offer missions higher data rates. NASA transmitted New Years resolutions submitted to the @NASALaserComm Twitter account at the end of last year. These resolutions flowed from OGS-1 in Table Mountain, California to the LCRD payload then down to OGS-2 in Haleakalā, Hawaii. This user-generated content was part of the mission's launch campaign, which educated the public about the benefits of laser communications. Read more: https://esc.gsfc.nasa.gov/news/lcrd_resolutions/ Video credit: NASA's Goddard Space Flight Center - Danny Baird This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such media may be found here: https://svs.gsfc.nasa.gov/20285. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines.	Transcript Link
2022 12 21	NASA Goddard	https://youtu.be/339KeL29tig	Landsat's Next Chapter	If you liked this video, subscribe to the NASA Goddard YouTube With a trio of smaller satellites that can each detect 26 wavelengths of light, the Landsat Next mission is expected to look very different from its predecessors that have been observing Earth for 50 years. This new plan for Landsat Next, a joint mission of NASA and the U.S. Geological Survey, is designed to provide more frequent, and finer resolution, data of the changing surface of Earth. Music credit: "Brilliant Light" Lukas Knoebl [AKM] Nuvotone Publishing [UPM] Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Chris Burns (KBRWyle): Lead Producer Kate Ramsayer (Telophase): Lead Writer Ginger Butcher (SSAI): Lead Writer Ross Walter (Freelance): Lead Animator This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14262. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14262. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines.	Transcript Link

2022 12 15	NASA Goddard	https://youtu.be/aDeRFqZVgA	Introducing NASA's Earth System Observatory	NASA is developing the Earth System Observatory, the core of which is five satellite missions providing critical data on climate change, severe weather and other natural hazards, wildfires, and global food production. These observations will address the most pressing questions about our changing planet. Taken together as a single Observatory, NASA will have a holistic, 3D view of Earth to better understand how our planet's complex systems work together and improve our capability to predict how our climate may change. NASA's Open Source Science strategy is the key to bringing the data from these missions together into a single observatory to help understand the earth as a system and accelerate our ability to use this understanding. These observations will better inform decision-makers on how our planet is changing, with greater precision on previously unimaginable scales – from entire continents down to individual trees, from atmosphere to bedrock. Universal Production Music: Sky Castle [Instrumental] by Caleb Jordan Swift [ASCAP] Producer: Katie Jepson (KBRwyle) Producer: LK Ward (KBRwyle) Producer: Ellen T. Gray (NASA) Editor: Katie Jepson (KBRwyle) Narrator: LK Ward (KBRwyle) Animator: Chris Burns (KBRWyle)	Transcript Link
2022 12 15	NASA Goddard	https://youtu.be/jiywIBcP3I	Two Exoplanets May Be Water Worlds	Using data from NASA's Hubble and Spitzer Space Telescopes, astronomers have found evidence that two exoplanets orbiting a star 218 light-years away are "water worlds," where water makes up a large fraction of the entire planet. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Cassandra Morris: Narrator Image Credit: Water World next to Earth Benoit Gougeon, Université de Montréal Music & Sound "Space Museum" by Harry Gregson Williams [BMI] and Ho Ling Tang [BMI] via Atmosphere Music Ltd. [PRS] and Universal Production Music This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14259. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14259. For more information on NASA's media guidelines, visit https://svs.gsfc.nasa.gov/14259.	Transcript Link

2022 12 14 NASA Goddard <https://youtu.be/HV83Lh31Gmg> Methane Emissions from Wetlands

Methane is an important greenhouse gas that's contributed to around one third of global warming. About a third of total methane emissions comes from wetlands. Wetland habitats are filled with things like waterlogged soils and permafrost, which is what makes them sizable carbon sinks. But as a warming climate causes wetland soils to warm or flood, carbon is released into the atmosphere as methane.

[Transcript](#)
[Link](#)

Music credit: "Emerging Wave" from Universal Production Music

Credit: NASA's Goddard Space Flight Center
Kathleen Gaeta (AIMM): Lead Producer
Aaron E. Lepsch (ADNET): Technical Support
Mark SubbaRao (NASA/GSFC): Lead Animator
Benjamin Poulter (NASA/GSFC): Lead Scientist
Lesley Ott (NASA/GSFC): Scientist

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2022 12 14 NASA Goddard <https://youtu.be/w5lqQCtHF64> Hubble's Inside The Image Carina Nebula

The Hubble Space Telescope has taken over 1.5 million observations over the past 32 years. One of them is the breathtaking image of the Carina Nebula.

[Transcript](#)
[Link](#)

Hubble's view of the nebula shows star birth in a new level of detail. The fantasy-like landscape of the nebula is sculpted by the action of outflowing winds and scorching ultraviolet radiation from the monster stars that inhabit this inferno. In the process, these stars are shredding the surrounding material that is the last vestige of the giant cloud from which the stars were born.

In this video, Dr. Ken Carpenter takes us on a journey through the Nebula, teaching us some of the interesting science behind this famous Hubble image.

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center

Producer & Director: James Leigh

Editor: Lucy Lund

Director of Photography: James Ball

Additional Editing & Photography: Matthew Duncan

2022 12 09 NASA Goddard <https://youtu.be/LE9imV35q7w> Hubble's Inside The Image Mystic Mountain The Hubble Space Telescope has taken over 1.5 million observations over the past 32 years. One of them is the breathtaking Nebula known as Mystic Mountain. [Transcript Link](#)

This image, which is even more dramatic than fiction, captures the chaotic activity atop a pillar of gas and dust, three light-years tall, which is being eaten away by the brilliant light from nearby bright stars. The pillar is also being assaulted from within, as infant stars buried inside it fire off jets of gas that can be seen streaming from towering peaks.

In this video, Dr. Ken Carpenter takes us on a journey through the Nebula, teaching us some of the interesting science behind this famous Hubble image.

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center

Producer & Director: James Leigh

Editor: Lucy Lund

Director of Photography: James Ball

Additional Editing & Photography: Matthew Duncan

2022 12 07 NASA Goddard <https://youtu.be/FQLZPm34Chg> NASA's Fermi, Swift Capture Revolutionary Gamma-Ray Burst On Dec. 11, 2021, NASA's Neil Gehrels Swift Observatory and Fermi Gamma-ray Space Telescope detected a blast of high-energy light from the outskirts of a galaxy around 1 billion light-years away. The event has rattled scientists' understanding of gamma-ray bursts (GRBs), the most powerful events in the universe. This burst is called GRB 211211A. [Transcript Link](#)

Many research groups have delved into the observations collected by Swift, Fermi, the Hubble Space Telescope, and others. Some have suggested the burst's oddities could be explained by the merger of a neutron star with another massive object, like a black hole.

Music Credits: Finished Plate by Airglo and Binary Fission by Tom Kane

Credit: NASA's Goddard Space Flight Center

Sophia Roberts (AIMM): Lead Producer

Jeanette Kazmierczak (University of Maryland College Park): Lead Science Writer

Francis Reddy (University of Maryland College Park): Science Writer

Aurore Simonet (Sonoma State University): Artist

Scott Wiessinger (KBRwyle): Animator

This video can be freely shared and downloaded at <https://svs.gsfc.nasa.gov/14255>. While the video in its entirety can be shared without permission, the music and some individual

2022 12 05	NASA Goddard	https://youtu.be/XhvlITtzQXY	The 50th Anniversary of Apollo 17	This video celebrates the 50th anniversary of Apollo 17 by talking with Lunar Module Pilot Jack Schmitt about the significance of that mission and how it laid the groundwork for future human exploration of the Moon. Jack also discusses how the Lunar Reconnaissance Orbiter, which launched in 2009, has helped reinterpret Apollo-era data and given us new information about the lunar terrain that will help pave the way for the upcoming Artemis missions. Video Credit: NASA's Goddard Space Flight Center Produced and Edited by: David Ladd (AIMM) Data Visualizations by: Ernie Wright (USRA) LRO spacecraft animations by: Adriana Manrique Gutierrez (KBRwyle) Music provided by Universal Production Music: "Beyond the Clouds" – CRZYSND & William Lyons "Golden Hour" - Max Cameron Concors "Hope and Tomorrow" – Wally Gagel & Xandy Barry "Great Delicacy" – David Ohana This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14245. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here:	Transcript Link
2022 12 02	NASA Goddard	https://youtu.be/KDedUKyASQ0	NASA Names Mission in Honor of Apollo-Era Visionary Dr. George R. Carruthers	Dr. George R. Carruthers (1939 - 2020) was a visionary scientist, inventor, engineer and educator. On Dec. 2, he became the namesake of a new NASA mission. The Carruthers Geocorona Observatory will observe Earth from space. The mission will capture light from Earth's geocorona, the part of the outer atmosphere that emits ultraviolet light and will be ready to launch in 2025. Read more about Dr. George R. Carruthers: https://www.nasa.gov/image-feature/goddard/2022/sun/nasa-names-mission-in-honor-of-dr-george-r-carruthers-visionary-behind-first-moon/ Learn about NASA's Carruthers Geocorona Observatory: https://blogs.nasa.gov/carruthersgeocoronaobservatory Learn about the Heliophysics Big Year: https://solarsystem.nasa.gov/solar-system/sun/helio-big-year/ Image credits: U.S. Naval Research Laboratory Music credits: "Bright Life" Tristan Lewis Noon [PRS] Credit: NASA's Goddard Space Flight Center Lacey Young (KBRwyle): Lead Producer Lacey Young (KBRwyle): Writer Denise Hill (ADNET Systems Inc.): Writer Joy Ng (KBRwyle): Support	Transcript Link

2022 12 01	NASA Goddard	https://youtu.be/yIOZ-gluNUs	Globular Clusters Stellar Pockets	When the Hubble Space Telescope launched, one of its main goals was to learn more about our incredible universe. Using Hubble, astronomers have learned more about globular clusters. Globular clusters are stable, tightly gravitationally bound clusters of tens of thousands to millions of stars found in a wide variety of galaxies. The intense gravitational attraction between the closely packed stars gives globular clusters a regular, spherical shape. In this video, Dr. Ken Carpenter explains just how amazing these objects are. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Producer & Director: James Leigh Editor: Lucy Lund Director of Photography: James Ball Additional Editing & Photography: Matthew Duncan Executive Producers: James Leigh & Matthew Duncan	Transcript Link
2022 11 30	NASA Goddard	https://youtu.be/kjqd73nRjiU	NASA Goddard's Recipe for Fresh Baked Spacecraft	You've heard of baked potatoes, baked cakes, and baked ziti, but how about baked spacecraft? As we prepare the Plankton, Aerosol, and cloud Ecosystem satellite for launch, we're gathering all the ingredients, um...instruments, and baking ourselves a fresh new satellite. Follow along for our secret recipe for fresh baked spacecraft. Music credit: "Morning Coffee" from Universal Production Music Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Katy Mersmann (NASA/GSFC): Lead Producer LK Ward (KBRwyle): Producer Ryan Fitzgibbons (KBRwyle): Producer, Videographer Michael Starobin (KBRwyle): Producer, Videographer Rob Andreoli (AIMM): Videographer Jeremy Werdell (NASA/GSFC): Scientist This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14236. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14236. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines.	Transcript Link

2022 11 29	NASA Goddard	https://youtu.be/KAlm5UE3Rvg	Data Sonification Pismis 24	Pismis 24 is a stunning star cluster that lies within the nebula NGC 6357, which resides about 8,000 light-years away. In this sonification of the Hubble image, a top-down scan maps brightness to volume and pitch for both the stars and nebula. The stars are assigned to musical pitches played on a classical guitar (brighter stars are louder and higher pitched), and the nebula uses a continuous range of frequencies (brighter regions are louder and higher pitched). Red, green, and blue channels are mapped to low, medium, and high frequency ranges respectively. Credits: Image: NASA, ESA and Jesús Maíz Apellániz (Instituto de Astrofísica de Andalucía, Spain); Acknowledgment: Davide De Martin (ESA/Hubble); Sonification: SYSTEM Sounds (M. Russo, A. Santaguida) For more information about the Hubble Space Telescope and its images, visit https://nasa.gov/hubble. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14246. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14246. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html.	Transcript Link
2022 11 18	NASA Goddard	https://youtu.be/G03N5_13Os0	Hubble Constant An Expanding Universe	When the Hubble Space Telescope launched, one of its main goals was to measure the rate at which our universe is expanding. That rate is called the “Hubble Constant” – named after the astronomer Edwin Hubble, who contributed to the discovery of the universe’s expansion. Using the Hubble Space Telescope, astronomers have been able to measure the Hubble Constant and even found out that the expansion rate of our universe is accelerating due to a mysterious force known as dark energy. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Producer & Director: James Leigh Editor: Lucy Lund Director of Photography: James Ball Additional Editing & Photography: Matthew Duncan Executive Producers: James Leigh & Matthew Duncan Production & Post: Origin Films	Transcript Link

2022 11 18	NASA Goddard	https://youtu.be/aaJoF5X6a24	A Month at Sea Scientists Prepare to Set Sail for NASA's S-MODE Mission	In early October, the research vessel Bold Horizon set sail from Newport, Oregon, and joined a small fleet of planes, drones, and other high-tech craft chasing the ocean's shapeshifting physics. NASA's Sub-Mesoscale Ocean Dynamics Experiment (S-MODE) looks at whirlpools, currents, and other dynamics at the air-sea boundary. The goal is to understand how these dynamics drive the give-and-take of nutrients and energy between the ocean and atmosphere and, ultimately, help shape Earth's climate. Music credit: "Blue Switch," "The Journey Begins," "Sunbeams" from Universal Production Music Drone Footage Credit: Leon Delwiche of NewFields Credit: NASA's Goddard Space Flight Center Kathleen Gaeta (GSFC AIMMS): Lead Producer Dr. Andrey Shcherbina (APL): Lead Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/14242 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard	Transcript Link
2022 11 15	NASA Goddard	https://youtu.be/2Zk0lxhVI-Y	Creating Black Hole Jets With a NASA Supercomputer	NASA Goddard astrophysicists Ryan Tanner and Kim Weaver have used the NASA Center for Climate Simulation's Discover supercomputer to simulate weak jets produced by monster black holes, which can weigh up to billions of times the Sun's mass. As matter falls toward the black hole, some of it accelerates to near light speed and diverts into a narrow pair of jets flowing in opposite directions. In the grandest examples, these jets extend hundreds of thousands of light-years and are easily detected features in radio. But weaker jets, which are more difficult to detect, can greatly impact the central regions of their host galaxies. Astronomers suspected weak jets might be responsible for unusual gas motions or otherwise unexplainable optical and X-ray emission in some black-hole-powered galaxies. So Tanner and Weaver simulated weak jets under realistic conditions for a galaxy about the mass of our own Milky Way. To represent the gas distribution and properties related to the black hole's activity, they referenced spiral galaxies such as NGC 1386, NGC 3079, and NGC 4945. Tanner modified existing astrophysical hydrodynamics code to explore how the jets and the gas impact each other across 26,000 light-years of space, or about a quarter the diameter of the Milky Way, and 600,000 years of time. From the full set of 100 simulations, the team selected 19 – which consumed 800,000 core hours on Discover – for publication.	Transcript Link

2022 11 09	NASA Goddard	https://youtu.be/-oKN03uAd5c	2023 Moon Phases - Northern Hemisphere - 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2023, as viewed from the Northern Hemisphere. Each frame represents one hour. In addition, this visualization shows the Moon's orbit position, sub-Earth and subsolar points, and distance from the Earth at true scale. Craters near the terminator are labeled, as are Apollo landing sites, maria, and other albedo features in sunlight. Video credit: NASA's Goddard Space Flight Center Data visualization by Ernie Wright (USRA) Producer & Editor - David Ladd (AIMM) Music by Universal Production Music: "Pin Stripe Tease" – Alon Myson This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/5048. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/5048. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines. If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center	Transcript Link
2022 11 09	NASA Goddard	https://youtu.be/olw6fn-uEc	2023 Moon Phases - Southern Hemisphere - 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2023, as viewed from the Southern Hemisphere. Each frame represents one hour. In addition, this visualization shows the Moon's orbit position, sub-Earth and subsolar points, and distance from the Earth at true scale. Craters near the terminator are labeled, as are Apollo landing sites, maria, and other albedo features in sunlight. Video credit: NASA's Goddard Space Flight Center Data visualization by Ernie Wright (USRA) Producer & Editor - David Ladd (AIMM) Music by Universal Production Music: "Golden Opportunity" - Stefano Ruggeri This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/5049. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/5049. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines. If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center	Transcript Link

2022 11 09	NASA Goddard	https://youtu.be/LUII8bf9igw	Hubble Captures 3 Faces of Evolving Supernova	Through a “trick” of light-bending gravity, the Hubble Space Telescope captured three different moments in the explosion of a very far-off supernova—all in one snapshot! Einstein first predicted this phenomenon, called gravitational lensing, in his theory of general relativity. In this case, the immense gravity of the galaxy cluster Abell 370 acted as a cosmic lens, bending and magnifying the light from the more distant supernova located behind the cluster. The warping also produced multiple images of the explosion over different time periods that all arrived at Hubble simultaneously. They show the unfolding supernova over the course of a week. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Music & Sound “Distant Messages” by Anne Nikitin [PRS] via BBC Production Music [PRS] and Universal Production Music This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14239. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not	Transcript Link
2022 11 04	NASA Goddard	https://youtu.be/AqOk0UxYym4	JPSS Weathering Launch Day at Vandenberg Space Force Base	In the days leading up to a launch at Vandenberg Space Force Base, most of the attention is focused on preparing the rocket and payload for their trip to space. In this case, that’s NOAA’s Joint Polar Satellite System-2 (JPSS-2) satellite, and its secondary payload, LOFTID. NASA and its commercial partners have the task of designing, building, and launching the satellite. The Joint Polar Satellite System (JPSS) is the nation’s advanced series of polar-orbiting environmental satellites. Considered the backbone of the global observing system, JPSS satellites circle Earth from pole to pole and cross the equator 14 times daily—providing full global coverage twice a day. But there’s another operation happening at the base that makes these launches possible. About 1.5 miles north of the Visitor’s Center is the Weather Operations Center, or “The Weather Shop,” where a 15-member team monitors the weather around the clock. And in a meeting of worlds, satellites from the JPSS series provide an important source of the data that feeds their weather forecast. For more on the story: https://www.nesdis.noaa.gov/news/forecasting-weather-the-weather-satellite-launch Music credits: “Paradigm” by Laurent Dury [SACEM], Koka Media [UPM France] “Getting the Day Started” by Matthew Fletcher [ASCAP] & Patrick	Transcript Link

2022 11 02 NASA Goddard <https://youtu.be/XMidISoHoNY> How NASA Decodes the Secrets of the Arctic

Since 2015, scientists with NASA's Arctic Boreal Vulnerability Experiment (ABOVE) project have been studying how climate change is affecting Arctic and boreal regions. The team is studying permafrost thaw, changes in plant cover, wildfires, shifting animal migration patterns and more. With research aircraft flying over Alaska and northwestern Canada and scientists conducting field experiments on the ground below, ABOVE is collecting data that will help researchers understand how these events are intertwined – and how they are impacted by climate change.

[Transcript Link](#)

Universal Production Music: Home To You by William Baxter Noon [PRS]; Pluck Up Courage by John Griggs [PRS], Philip Michael Guyler [PRS]; Wafer Thin by Adam Leslie Gock [APRA], Dinesh David Wicks [APRA], Mitchell Stewart [APRA]; The Magpie's Pie by Quentin Bachelet [SACEM], Romain Sanson [SACEM]; Ticking Tension by Quentin Bachelet [SACEM], Romain Sanson [SACEM]; Reward Drawer by Ehren Ebbage [BMI]

Katie Jepson (KBRwyle): Lead Producer, Lead Videographer, Editor, Narration

Sofie Bates (KBR): Lead Writer, Videographer

Elizabeth Hoy (GST): Scientist

Peter Griffith (SSAI): Scientist

Franz J. Meyer (University of Alaska Fairbanks): Scientist

Katey Walter Anthony (University of Alaska Fairbanks): Scientist

Alison York (Alaska Fire Science Consortium): Scientist

Jefferson Beck (KBRwyle): Videographer

2022 11 02 NASA Goddard <https://youtu.be/shfv0ilFwac> Hubble's Inside The Image N44 Superbubble

The Hubble Space Telescope has taken over 1.5 million observations over the past 32 years. One of them is the breathtaking Nebula known as the N44 Superbubble.

[Transcript Link](#)

N44 is a complex nebula filled with glowing hydrogen gas, dark lanes of dust, massive stars, and many populations of stars of different ages. One of its most distinctive features, however, is the dark, starry gap called a "superbubble," visible in the upper central region.

In this video, Dr. Ken Carpenter takes us on a journey through the Nebula, teaching us some of the interesting science behind this famous Hubble image.

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center

Producer & Director: James Leigh

Editor: Lucy Lund

Director of Photography: James Ball

Additional Editing & Photography: Matthew Duncan

Executive Producers: James Leigh & Matthew Duncan

2022 11 01 NASA Goddard <https://youtu.be/RWx0o8-qNAE> Clouds 101

Clouds can tell us a lot about what weather we might expect to see, but they're actually quite mysterious. The question is: Because clouds are produced by the climate, how will a changing climate impact clouds? And, conversely, clouds have an impact on our climate, so how will changing clouds affect a changing climate? Welcome to Clouds 101.

[Transcript](#)
[Link](#)

Music credit: "Big Found" "Emerging Mystery" "Busy Day" from Universal Production Music

Credit: NASA's Goddard Space Flight Center
Kathleen Gaeta (GSFC AIMM): Lead Producer
Norman Loeb (GSFC): Lead Scientist
Jenny McElligott (AIMM): Lead Animator

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2022 10 28 NASA Goddard <https://youtu.be/ELAS2aKVUwo> The Great NASA Engineer Build-off

We gave six NASA engineers 10 minutes and a bin of magnetic building tiles to see what they could create! The same engineers were part of a team who developed NOAA's Joint Polar Satellite System-2 spacecraft, the nation's newest weather and climate satellite. For more on JPSS: <https://www.nesdis.noaa.gov/current-satellite-missions/currently-flying/joint-polar-satellite-system>

[Transcript](#)
[Link](#)

Music credit: "Could You Care" by John Jorgenson & Martha L Amado [BMI], Revision West, Universal Production Music

Credit: NASA's Goddard Space Flight Center
Chris Burns (KBRWyle): Lead Producer, Editor
Jenny Marder (Telophase): Producer
Jefferson Beck (KBRWyle): Lead Producer
Rob Andreoli (AIMM): Videographer
John Philyaw (AIMM): Videographer

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2022 10 27	NASA Goddard	https://youtu.be/iwDRkQMOU0	Chasing Sprites in Electric Skies	Paul Smith is a night-sky fanatic and photographer. His obsession is sprites: immense jolts of light that flicker high above thunderstorms. Last October, he guided NASA scientist Dr. Burcu Kosar through the backroads of Oklahoma to catch one herself. Although she'd studied sprites for more than 15 years, she hadn't yet chased one. Read more about chasing sprites with Paul and Burcu: https://blogs.nasa.gov/sunspot/2022/10/27/the-great-sprites-chase/ Learn about NASA's citizen science project Spritacular: https://www.nasa.gov/feature/goddard/2022/sun/spritacular-nasa-s-new-citizen-science-project-to-capture-elusive-upper-atmospheric Learn about the Heliophysics Big Year: https://solarsystem.nasa.gov/solar-system/sun/helio-big-year/ Image credits: Paul Smith, Frankie Lucena, Panagiotis Tsouras, Thomas Ashcraft. All imagery of sprites is copyrighted and used with permission. Music credits: "The Beauty Beyond" by Jeremy Noel William Abbott [PRS], Vasco [PRS]; "Outer Orbit" by Alexander Ryder McNair [ASCAP], Harry Gregson Williams [BMI], Ho Ling Tang [BMI]; "Wonderful Orbit" by Tom Furse Fairfax Cowan [PRS]; "Starlights" by Marc Teitler [PRS], Vasco [PRS]; "A Tranquil End" by Luke Gordon	Transcript Link
2022 10 21	NASA Goddard	https://youtu.be/ygZNa8maTh0	Sun Time Science Big Sun Little Moon	How can the small Moon cover up the big Sun? Explore how solar eclipses can happen by using items from your own home in this do it yourself science activity. To do this activity, you will need two objects of similar shape, a bit of space and either someone to hold one object in place or some wall safe tape. To learn more about the Sun, visit: https://spaceplace.nasa.gov/menu/sun/ To learn more about eclipses, visit: https://solarsystem.nasa.gov/eclipses Video Credit: Host: Susannah Darling (ADNET) Writers: Susannah Darling (ADNET), Vanessa Thomas (KBR) Editors: Susannah Darling (ADNET), Joy Ng (USRA) Music Credits: "Icelandic Arpeggios" by DivKid [Youtube Audio Library] This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14229. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines.	Transcript Link

2022 10 19 NASA Goddard <https://youtu.be/xeMugNZ1xHY> Artemis I Empowered by NASA's Networks

NASA's Artemis missions are returning humanity to the Moon and beginning a new era of lunar exploration. This year, the agency plans to launch the Artemis I mission, an uncrewed test flight that will take a human-rated spacecraft farther than any before.

[Transcript Link](#)

Throughout its journey, the Artemis I mission, including Orion and SLS, will receive comprehensive communications and navigation services from NASA's two networks: the Near Space Network and the Deep Space Network.

Music is from Epidemic Sound via iStock

Video credit: NASA's Goddard Space Flight Center

Subject Matter Experts: Derek Otermat, Suzanne Dodd

David Ryan (ASRC): Video Producer

Katherine Schauer (ASRC): Voiceover

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2022 10 14 NASA Goddard <https://youtu.be/BD7SV OQA440> Lucy Spacecraft Will Slingshot Around Earth

NASA's Lucy mission is heading to the Jupiter Trojans – two swarms of primitive asteroids trapped in Jupiter's orbit that may hold clues to the formation of the planets. Lucy launched on October 16, 2021. After a year in orbit around the Sun, it is returning home on its launch anniversary for the first of three Earth gravity assists. On October 16, 2022, Lucy will fly by the Earth like a partner in a swing dance, boosting its speed and elongating its orbit around the Sun. At 7:04 am, Eastern Time, Lucy will make its closest approach at just 219 miles above the planet: lower than the International Space Station. This exceptionally close shave will increase its velocity by four-and-a-half miles per second, setting Lucy on track to gain even more speed when it returns to Earth for its second gravity assist in December 2024.

[Transcript Link](#)

Read more: <https://www.nasa.gov/feature/goddard/2022/lucy-ega>

Credit: NASA's Goddard Space Flight Center
Dan Gallagher (KBRwyle): Producer
Kel Elkins (USRA): Lead Visualizer
Walt Feimer (KBRwyle): Lead Animator
Jenny McElligott (AIMM): Animator
Krystofer Kim (KBRwyle): Animator
Jonathan North (KBRwyle): Animator
Katherine Kretke (SwRI): Support
Ernie Wright (USRA): Support
Aaron E. Lepsch (ADNET): Technical Support

2022 10 12	NASA Goddard	https://youtu.be/RXUy0StPeFs	Hubble Reveals Ultra-Relativistic Jet	Astronomers using NASA’s Hubble Space Telescope have found a jet propelled through space at nearly the speed of light by the titanic collision between two neutron stars, which are the collapsed cores of massive supergiant stars. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Cassandra Morris: Voiceover Music & Sound “Grip the Nation” by JKyle Gabbidon [PRS] via Ninja Tune Production Music [PRS] and Universal Production Music This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14220. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14220. For more information on NASA’s media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html. See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN	Transcript Link
2022 10 12	NASA Goddard	https://youtu.be/8f0gt24Tlog	NASA's Mars Mission Shields Up for Tests	Set far away from residents and surrounded by dunes, the Remote Hypervelocity Test Laboratory at NASA’s White Sands Test Facility in Las Cruces, New Mexico, has supported every human spaceflight program from the Space Shuttle to Artemis. A team designing shields to protect NASA's Mars Earth Entry System from micrometeorites and space debris traveled to this facility to safely recreate dangerous impacts, and to test the team’s shields and computer models. Video Credit: NASA’s Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Videographer Sam Molleur (NASA/JPL): Producer Videographer Dave Hendon (NASA/White Sands): White Sands Videographer Support Marcus Sandy (NASA/White Sands): Manager, White Sands Hypervelocity Testing Dennis Garcia (NASA/White Sands): ...	Transcript Link

2022 10 11 NASA Goddard <https://youtu.be/nOmPNvrpxFE> Lucy's Journey Episode 7 - Earth Gravity Assist Meet Lucy as she prepares for the first ever journey to the Trojan asteroids, a population of primitive small bodies orbiting in tandem with Jupiter. [Transcript Link](#)

Video credit: NASA's Goddard Space Flight Center

James Tralie (ADNET):
Lead Producer
Lead Editor
Writer
Sound Editor

Alex Bodnar:
Animator

Krystofer Kim (KBRwyle):
Animator

Walt Feimer (KBRwyle):
Animator

Michael Lentz (KBRwyle):
Art Director

Sophia Roberts (AIMM):
Narrator

2022 10 03 NASA Goddard <https://youtu.be/QRaI2jHeUYw> Hubble Views Aftermath of DART Impact The DART mission deployed a kinetic impactor to smack the small moon Dimorphos of the asteroid Didymos on the evening of Sept. 26. [Transcript Link](#)

This was an on-orbit demonstration of asteroid deflection, a key test of NASA's kinetic impactor technology, designed to impact an asteroid to adjust its speed and path.

This particular asteroid moon is NOT a threat to Earth, but is technology being explored to use for when we DO find a potentially hazardous asteroid.

The Hubble Space Telescope captured these extraordinary views of the asteroid moon soon after the successful impact.

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center
Paul Morris: Lead Producer

Music & Sound
"The Beauty Beyond" by Jeremy Noel William Abbott [PRS] and Vasco [PRS] via Freshworx Music Limited [PRS] and Universal Production Music

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2022 10 01	NASA Goddard	https://youtu.be/Ouh_gPLO3NU	2022 International Observe the Moon Night	This broadcast features numerous Moon-themed videos and presentations in celebration of International Observe the Moon Night 2022. International Observe the Moon Night is a time to come together with fellow Moon enthusiasts and curious people worldwide to learn about lunar science and exploration, take part in celestial observations, and honor cultural and personal connections to the Moon. This broadcast showcases videos about NASA's Lunar Reconnaissance Orbiter Mission, Apollo 17, VIPER and the Artemis missions, as well as video submissions from those celebrating this night around the world. For more information on International Observe the Moon Night, visit: moon.nasa.gov/observe Video Credit: NASA's Goddard Space Flight Center Production Produced, Directed & Edited by: David Ladd Host: Andrea Jones Studio assistants: John Philyaw, Alex Velle, Dan Gallagher Event Support: Staci Tiedeken, Molly Wasser, Caela Barry International Observe the Moon Night Graphics: Vi Nguyen This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14216. Video Compilation Credits: 1) Happy International Observe the Moon Night Music Provided by Universal Production Music: "Moonlit Night" - Justyna Kelley	Transcript Link
2022 09 21	NASA Goddard	https://youtu.be/xAYEnDrV8zc	How NASA Sees the Life Cycle of Volcanic Island Hunga Tonga-Hunga Ha'apai	When the Hunga Tonga-Hunga Ha'apai volcano erupted on Jan. 15, it sent a tsunami racing around the world and set off a sonic boom that circled the globe twice. The underwater eruption in the South Pacific Ocean also blasted an enormous plume of water vapor into Earth's stratosphere – enough to fill more than 58,000 Olympic-size swimming pools. The sheer amount of water vapor could be enough to temporarily affect Earth's global average temperature. So outside of its sheer magnitude, what makes this eruption so unique? Well, it's really a matter of our ability to see it through NASA and ESA satellites. Music credit: "Color Chart" and "Bright Horizons" from Universal Production Music Credit: NASA's Goddard Space Flight Center Emily Watkins (GSFC Interns): Lead Producer Kathleen Gaeta(GSFC AIMMS): Producer Dr. James Garvin (NASA Chief Scientist Goddard): Lead Scientist This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14214. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14214. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html.	Transcript Link

2022 09 08 NASA Goddard https://youtu.be/KGK8UThH_nw Hubble Spots Spiraling Stars

Nature likes spirals — from the whirlpool of a hurricane, to pinwheel-shaped protoplanetary disks around newborn stars, to the vast realms of spiral galaxies across our universe.

[Transcript](#)
[Link](#)

Now astronomers are bemused to find young stars that are spiraling into the center of a massive cluster of stars in the Small Magellanic Cloud, a satellite galaxy of the Milky Way.

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center
Paul Morris: Lead Producer

Music & Sound
“Distant Messages” by Anne Nikitin [PRS] via BBC Production Music [PRS] and Universal Production Music

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See more Hubble videos on YouTube:

2022 09 05 NASA Goddard https://youtu.be/P6eNC_o72FUQ A Box of Treasure from Asteroid Ryugu

Asteroid 162173 Ryugu is a carbon-rich pile of rubble, with an orbit that passes between Earth and Mars and a shape that resembles a kilometer-wide spinning top. Scientists think that Ryugu contains pristine organic material from the dawn of the solar system – and that it could hold clues to the formation and evolution of life. That’s why the Japan Aerospace Exploration Agency (JAXA) sent the Hayabusa2 spacecraft to study Ryugu and collect a sample, which it delivered to the Australian Outback in December 2020. Now, NASA scientist Heather Graham has received a box of Ryugu’s treasures from her JAXA colleagues, bringing a relic of the early solar system to a lab on Earth.

[Transcript](#)
[Link](#)

Credit: NASA’s Goddard Space Flight Center
Dan Gallagher (KBRwyle): Producer
John Caldwell (AIMM): Videographer
Heather Graham (Catholic University of America): Scientist
LK Ward (KBRwyle): Narrator
William Steigerwald (NASA/GSFC): Science Writer
Yoshiko Sugahara: Support
Jason Dworkin (NASA/GSFC): Support
Daniel Glavin (NASA/GSFC): Support
Lonnie Shekhtman (ADNET): Support
Aaron E. Lepsch (ADNET): Technical Support

Universal Production Music: “The Ocean and the Moon” & “On Your Game” by Andy Blythe and Marten Joustra

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2022 09 01	NASA Goddard	https://youtu.be/fWG6NVbJuN0	A Week Filled with Flares	During the week of Friday, August 12, to Thursday, August 18, 2022, the Sun was particularly busy. Several bright active regions were present, and starting on the 15th, they were responsible for 11 M-class flares. M-class flares are one level below X-class, the highest-energy designation. This imagery is all captured by the Solar Dynamics Observatory in the 171-angstrom wavelength of extreme-ultraviolet light. This wavelength is particularly good at showing loop structures in the Sun's corona, or atmosphere. At times, the image of the Sun disappears from view. SDO is in a geosynchronous orbit and occasionally Earth gets in between SDO and the Sun, blocking the view. Careful observation will reveal a fuzzy edge to the blackness that travels across the solar disk. This is Earth's atmosphere. Music: "Rhombus" from Geometric Shapes. Written and produced by Lars Leonhard. Credit: NASA's Goddard Space Flight Center/SDO Scott Wiessinger (KBRwyle): Producer Scott Wiessinger (KBRwyle): Editor Tom Bridgman (GST): Visualizer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14202. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not	Transcript Link
2022 08 30	NASA Goddard	https://youtu.be/BYhlfZQcNk0	Orbits Interweave Unveiled at the NASA Goddard Visitor Center	Located on the outer edge of the Rocket Garden at the NASA Goddard Visitor Center, a new exhibit by the Joint Polar Satellite System (JPSS) program and the Geostationary Operational Environmental Satellite - R (GOES-R) Series program features an abstract kinetic sculpture highlighted by three polished stainless steel spheres. This sculpture, titled "Orbits Interweave," is now open to the public to educate about these missions' roles in weather forecasting and how they help us in our everyday lives. Reflecting the world back to anyone looking at them, the spheres move gently in response to the wind and can be loosely interpreted to represent the Sun, Earth, and the satellites. JPSS and GOES-R are part of a collaboration between NOAA and NASA. Music credit: "Favor" from Universal Production Music Credit: NASA's Goddard Space Flight Center Jefferson Beck (KBRwyle): Lead Producer Rob Andreoli (AIMM): Lead Videographer John Caldwell (AIMM): Lead Videographer Emily S Watkins (Intern): Videographer Cate Maynard (Alexton Inc.): Videographer James Acevedo (ASRC Federal System Solutions): Videographer Julie Hoover (ASRC Federal System Solutions): Videographer Andrew Perry: Photographer Adlai Perry: Photographer	Transcript Link

2022 08 19	NASA Goddard	https://youtu.be/VodekvglwVc	Looking Back at NASA's Copernicus	This vintage segment on NASA's Copernicus mission comes from a 1973 edition of "The Science Report," a long-running film series produced by the U.S. Information Agency. The heaviest and most complex space telescope of its time, Copernicus launched into orbit on Aug. 21, 1972. Initially known as Orbiting Astronomical Observatory C, it was renamed to honor the 500th anniversary of the birth of Nicolaus Copernicus (1473–1543), the Polish astronomer who formulated a model of the solar system with the Sun in the central position instead of Earth. Fitted with the largest ultraviolet telescope ever orbited at the time as well as four co-aligned X-ray instruments, Copernicus was arguably NASA's first dedicated multi-wavelength astronomy observatory. The UV telescope produced a treasure trove of information about interstellar gas and the ionized outflows of hot stars. Copernicus measured the UV light of stars to sample the gases between them, finding evidence that most of it comes in the form of molecular hydrogen. The X-ray experiment discovered several long-period pulsars, including X Persei. Pulsars – typically spinning neutron stars – swing a beam of radiation in our direction each time they rotate, usually at tens to thousands of times a second. Oddly, the X Persei pulsar takes a leisurely 14 minutes per spin. The mission performed long-	Transcript Link
2022 08 19	NASA Goddard	https://youtu.be/ocDzndmmE8I	Artemis III Landing Region Candidates	NASA has announced the selection of 13 regions near the Moon's South Pole as candidate landing regions for Artemis III, the first crewed mission to the Moon's surface since 1972. The visuals here show the locations of all 13 regions. Learn more: https://www.nasa.gov/press-release/nasa-identifies-candidate-regions-for-landing-next-americans-on-moon Credit: NASA's Goddard Space Flight Center Video Produced & Edited by: David Ladd (AIMM) Visualizations by: Ernie Wright (USRA) LRO spacecraft animations by: Adriana Manrique Gutierrez (KBRwyle) Orion/Artemis I animation by: Liam Yanulis Narration by: Lauren Ward (KBRwyle) Music by Universal Production Music: "Best Days to Come" – Matteo Pagamici & Max Molling This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/5013. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/5013. For more information on NASA's media guidelines, visit https://www.nasa.gov/press-release/nasa-identifies-candidate-regions-for-landing-next-americans-on-moon	Transcript Link

2022 08 18	NASA Goddard	https://youtu.be/rcGeOkiF2GU	Deep Concern About Food Security in Eastern Africa	According to a July 29, 2022 report from the International Food Security and Nutrition Working Group, the worst drought conditions in 70 years across the Horn of Africa have more than 16 million people coping with a shortage of drinking water. Yields of key crops are down for the third year in a row, milk production is in decline, and more than 9 million livestock animals have been lost due to a lack of water and suitable forage land. At the same time, regional conflicts, COVID-19, locusts, and the Ukraine War have caused price spikes and shortages of basic commodities. An estimated 18 to 21 million people now "face high levels of acute food insecurity" in Ethiopia, Kenya, and Somalia. Read more: https://earthobservatory.nasa.gov/images/150217/deep-concern-about-food-security-in-eastern-africa Music credit: "Perpetual Ocean" from Universal Production Music Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio LK Ward (KBR/Wyle): Lead Producer Greg Shirah (NASA/GSFC): Lead Visualizer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/5014. While the video in its entirety can be shared without permission,	Transcript Link
2022 08 11	NASA Goddard	https://youtu.be/-gVBllgdX7M	Listening to the Amazon Tracking Deforestation Through Sound	From space, parts of the Amazon rainforest that have previously been logged or burned may look lush and green, like a place buzzing with activity and full of sounds. But inside the rainforest, the animal life may tell a different story, of a harsh environment and a quieter soundscape. Scientists from NASA's Goddard Space Flight Center in Greenbelt, Maryland, and the University of Maryland recorded sounds within diverse regions of the affected Amazon rainforest to better understand how the acoustics of a forest can be a cost-effective indicator of its health. Media provided by Danielle Rappaport Music credit: "Panoramic Visions" and "Natural Time Cycles" from Universal Production Music Credit: NASA's Goddard Space Flight Center Kathleen Gaeta (GSFC AIMMS): Lead Producer Erica McNamee (Telophase Corp): Lead Writer Danielle Rappaport (Conservation 4.0): Lead Scientist Doug C. Morton (NASA/GSFC): Scientist This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14198. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here:	Transcript Link

2022 08 10 NASA Goddard https://youtu.be/oYm-OMX_3HE Found A PeVatron Years of data from NASA's Fermi Gamma-ray Space Telescope confirms that one supernova remnant makes some of the highest-energy protons in our galaxy. [Transcript Link](#)

Fermi has shown that the shock waves of exploded stars boost particles to speeds comparable to light. Called cosmic rays, these particles mostly take the form of protons, but can include atomic nuclei and electrons. Because they all carry an electric charge, their paths become scrambled as they whisk through our galaxy's magnetic field, so astronomers can no longer determine their birthplace. But when these particles collide with interstellar gas near the supernova remnant, they produce a tell-tale glow in gamma rays — the highest-energy light there is.

Theorists say the highest-energy cosmic ray protons in the Milky Way reach a million billion electron volts, or petaelectronvolt (PeV) energies. But the precise nature of their sources, which astronomers call PeVatrons, has been difficult to pin down.

G106.3+2.7, a comet-shaped remnant located about 2,600 light-years away in the constellation Cepheus, has long been suspect.

By combining 12 years of Fermi observations, astronomers have confirmed that the highest-energy gamma rays produced by G106.3+2.7 must result from protons boosted to PeV energies, crowning the remnant as a PeVatron.

2022 08 09 NASA Goddard <https://youtu.be/vBl3MZC8liw> Artemis I Communications Profile NASA's Artemis I mission will need communications and navigation services during its journey to the lunar region. NASA's Deep Space Network and Near Space Network will be there to support all phases of the mission, using direct-to-Earth and space relay capabilities. [Transcript Link](#)

Music is from Epidemic Sound via iStock

Video credit: NASA's Goddard Space Flight Center

Subject Matter Experts: Derek Otermat

Dave Ryan (ASRC): Video Producer

Katherine Schauer (ASRC): Voiceover

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2022 08 08	NASA Goddard	https://youtu.be/MBGnmXT06o	Lunar IceCube - An Artemis Secondary Payload	NASA's water-scouting CubeSat is now poised to hitch a ride to lunar orbit. Not much bigger than a shoe box, Lunar IceCube's data will have an outsized impact on lunar science. The satellite is integrated into the Space Launch System (SLS) rocket and ready to journey to the Moon as part of the uncrewed Artemis I mission, slated for launch in 2022. Music is from Epidemic Sound via iStock Video credit: NASA's Goddard Space Flight Center Subject Matter Experts: Mark Lupisella, Ben Malphrus Dave Ryan (ASRC): Video Producer Katherine Schauer (ASRC): Voiceover This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14195. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14195. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines. If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center	Transcript Link
2022 08 08	NASA Goddard	https://youtu.be/v-9P04Nvdbk	A Web Around Asteroid Bennu in 360°	Experience the "Web Around Asteroid Bennu" in this interactive, 360° video, optimized for mobile devices and desktop browsers. Bennu is one of Earth's closest planetary neighbors – an asteroid roughly the height of a skyscraper, and for nearly two-and-a-half years, the place that NASA's OSIRIS-REx mission called home. From late 2018 to mid-2021, OSIRIS-REx wrapped Bennu in a growing web of observations, performing maneuvers never before attempted in a microgravity environment. This 360° video follows the spacecraft as it weaves a continuous path around Bennu, allowing viewers to explore the asteroid from within the web. Learn about the making of this video: https://www.nasa.gov/feature/goddard/2022/nasa-goddard-s-web-around-asteroid-bennu-shows-in-siggraph-film-fest Watch the original version: https://youtu.be/nx1r3HPGC_c Data provided by: NASA/University of Arizona/CSA/York University/Open University/MDA Universal Production Music: "Visionary" by Andy Blythe and Marten Joustra; "Babel" by Max Cameron Concors Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kel Elkins (USRA): Producer Dan Gallagher (USRA): Producer Kel Elkins (USRA): Lead Data Visualizer	Transcript Link

2022 08 03	NASA Goddard	https://youtu.be/wKlitjLjEpM	Lucy's Solar Powered Journey Continues	NASA's Lucy mission is heading to the Jupiter Trojans – two swarms of unexplored asteroids trapped in Jupiter's orbit. Lucy made a picture-perfect launch on October 16, 2021, but when the spacecraft began to unfurl its solar arrays, it encountered an anomaly. One of the arrays failed to fully deploy and latch shut, putting the mission at risk. For months, Lucy's flight operations team worked meticulously to address the issue and put Lucy back on its solar-powered journey to the Jupiter Trojans. Read more: https://www.nasa.gov/feature/goddard/2022/nasa-team-troubleshoots-asteroid-bound-lucy-across-millions-of-miles Credit: NASA's Goddard Space Flight Center Dan Gallagher (KBRwyle): Producer Jonathan North (KBRwyle): Animator Kel Elkins (USRA): Data Visualizer Chris Tucker (Lockheed Martin): Videographer Dan Gallagher (KBRwyle): Narrator Ned Barbee (Lockheed Martin): Support Lauren Duda (Lockheed Martin): Public Affairs Nancy Neal-Jones (NASA/GSFC): Public Affairs Aaron E. Lepsch (ADNET): Technical Support Universal Production Music: "Hypervelocity" by Sophy Olivia Purnell This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14186. While the video in its entirety can	Transcript Link
2022 07 27	NASA Goddard	https://youtu.be/6Aq-n6nHz7I	2022 NASA Goddard Summer Film Festival	This year's 13th Annual Goddard Film Festival includes highlights of Goddard's achievements over the past year in astrophysics, Earth science, heliophysics and planetary science. Highlights include missions such as the James Webb Space Telescope, OSIRIS-REx, Landsat 9, Fermi, Lunar Reconnaissance Orbiter, Hubble Space Telescope, Parker Solar Probe, ICESat-2, Lucy and much more. 00:00 Intro 01:00 OSIRIS-REx Sheds Light on Hazardous Asteroid Bennu 03:25 NASA's Visions of the Future 04:46 Pinpointing the Moon's South Pole 05:51 A Trip Through Time with Landsat 9 10:31 Elements of Webb Episode 4: Beryllium 14:13 Behind the Scenes of the "Elements of Webb" 17:18 NASA's Fermi Spots 'Fizzled' Burst from Collapsing Star 20:10 Unboxing Apollo Samples 24:13 The Solar Wind: A Heliophysics Sea Shanty 26:23 Snack Time with NASA: Space Salad 31:14 Lucy's Journey Episode 4: Instruments 33:13 "What is your Favorite Hubble Image?" 40:15 Photon Phriday: Pholcanoes 43:01 Behind the Scenes of "An Orrery of Black Holes and Their Companions" 45:52 A 3D View of an Atmospheric River from an Earth System Model 50:40 NASA's New Views of Venus' Surface From Space 54:06 29 Days on the Edge	Transcript Link

2022 07 22	NASA Goddard	https://youtu.be/dwNKFcGdS0M	Virginia Norwood and the Little Scanner That Could	Virginia T. Norwood, known as the person who could solve impossible problems, played a crucial role in the development of the first space-based multispectral scanner instrument that flew on Landsat 1 and made the mission a success. Working together with NASA, USGS, university researchers, and her team at Hughes, Norwood successfully yoked the pioneering technology that made regular digital imagery of Earth from space possible. Read more: https://landsat.gsfc.nasa.gov/article/virginia-t-norwood-the-mother-of-landsat/ Lead Producers: Evangeline Koonce (NASA/GSFC Interns) Ashley Lobao (NASA/GSFC Intern) Producer: Matthew Radcliff (KBRwyle) Narrator: Ginger Butcher (SSAI) Project Support: LK Ward (KBRwyle) Liz Wilk (KBRwyle) Jacob Richmond (NASA/GSFC) Writers:	Transcript Link
2022 07 11	NASA Goddard	https://youtu.be/S9fAk8OKpWU	How Climate Patterns Thousands of Miles Away Affect US Bird Migration	Every spring, migratory birds arrive in the continental United States from south and central America to breed. But precisely when they arrive each spring varies from year to year. To better understand what is driving variability, scientists decided to turn to climate models, radar stations and a little bit of math. By studying the link between climate patterns and bird migration, scientists can better prepare to protect these birds and the habitats on which they rely. Universal Production Music: “Two Ticks” by Michael Lesirge [PRS] and Tarek Christopher Modi [PRS] Trent L. Schindler (USRA): Visualizer Amin Dezufli (SSAI): Scientist Katie Jepson (KBRwyle): Lead Producer, Editor, Narration, Animator Esprit Smith (KBR): Lead Writer John Caldwell (AIMM): Videographer Aaron E. Lepsch (ADNET): Technical Support This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14177. While the video in its entirety can be shared without permission, some individual imagery provided by pond5.com is obtained through permission and may not be excised or remixed in other products. For more information on NASA’s media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2022 07 07	NASA Goddard	https://youtu.be/42EwbQ3afPA	Asteroid Bennu's Surprising Surface Revealed by NASA Spacecraft	Near-Earth asteroid Bennu is a rubble pile of rocks and boulders left over from the formation of the solar system. On October 20, 2020, NASA's OSIRIS-REx spacecraft briefly touched down on Bennu and collected a sample for return to Earth. During this "TAG event," the spacecraft's arm sank far deeper into the asteroid than expected, confirming that Bennu's surface is incredibly weak. Now, scientists have used data from OSIRIS-REx to revisit the TAG event and better understand how Bennu's loose upper layers are held together. Read more: https://www.nasa.gov/feature/goddard/2022/surprise-again-asteroid-bennu-reveals-its-surface-is-like-a-plastic-ball-pit/ Credit: NASA's Goddard Space Flight Center/CI Lab/SVS Dan Gallagher (KBRwyle): Producer Jonathan North (KBRwyle): Lead Animator Kel Elkins (USRA): Lead Data Visualizer Alexander Bodnar (AIMM): Animator Adriana Manrique Gutierrez (KBRwyle): Animator Walt Feimer (KBRwyle): Animator Lisa Poje (Freelance): Animator Dan Gallagher (KBRwyle): Narrator Dante Lauretta (The University of Arizona): Lead Scientist Kevin Walsh (SwRI): Scientist Ronald Ballouz (JHUAPL): Scientist Olivier Barnouin (JHUAPL): Scientist Rani Gran (NASA/GSFC): Public Affairs Officer Nancy Neal-Jones (NASA/GSFC): Public Affairs Officer	Transcript Link
2022 07 07	NASA Goddard	https://youtu.be/wCO1y_GNo98	How Far Did OSIRIS-REx Plunge Into Asteroid Bennu	On October 20, 2020, NASA's OSIRIS-REx spacecraft collected a sample of near-Earth asteroid Bennu. This "TAG event" revealed surprising details about Bennu's loosely-packed surface. The spacecraft's arm sank almost half a meter into the asteroid, far deeper than expected, confirming that Bennu's surface is incredibly weak. During the event, OSIRIS-REx collected a handful of material and kicked up roughly six tons of loose rock. It will return its sample of Bennu to Earth in September 2023. Read more: https://www.nasa.gov/feature/goddard/2022/surprise-again-asteroid-bennu-reveals-its-surface-is-like-a-plastic-ball-pit/ Credit: NASA's Goddard Space Flight Center/CI Lab Dan Gallagher (KBRwyle): Producer Jonathan North (KBRwyle): Animator Kel Elkins (USRA): Data Visualizer Dante Lauretta (The University of Arizona): Lead Scientist Kevin Walsh (SwRI): Scientist Ronald Ballouz (JHUAPL): Scientist Olivier Barnouin (JHUAPL): Scientist Rani Gran (NASA/GSFC): Public Affairs Officer Nancy Neal-Jones (NASA/GSFC): Public Affairs Officer Aaron E. Lepsch (ADNET): Technical Support Universal Production Music: "Subsurface" by Ben Niblett and Jon Cotton	Transcript Link

2022 06 29	NASA Goddard	https://youtu.be/IWdx-bWfSRw	13 Years and More at the Moon	This year, the Lunar Reconnaissance Orbiter (LRO) celebrates its 13th anniversary orbiting the Moon. This mission has given scientists the largest volume of data ever collected by a planetary science mission at NASA. Considering that success and the continuing functionality of the spacecraft and its instruments, NASA has awarded the mission an extended mission phase to continue operations. This is LRO's 5th extended science mission (ESM5), and during this time there will be 4 major areas of focus. This video dives into those details and shows how LRO continues to be one of NASA's most valuable tools for advancing lunar science. Credit: NASA's Goddard Space Flight Center Produced and Edited by: David Ladd (AIMM) Data Visualizations by: Ernie Wright (USRA) Spacecraft Animations by: Adriana Manrique Gutierrez (KBRwyle) Music provided by Universal Production Music: "We're Getting Started" - Frederick Kron; "Whoop It Up" - Paul Joseph Smith. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14171. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14171. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines.	Transcript Link
2022 06 15	NASA Goddard	https://youtu.be/mUb8SZh5Q5w	Dead Star Caught Ripping Up Planetary System	A star's death throes have so violently disrupted its planetary system that the dead star left behind, called a white dwarf, is siphoning off debris from both the system's inner and outer reaches. This is the first time astronomers have observed a white dwarf star that is consuming both rocky-metallic and icy material, the ingredients of planets. Archival data from NASA's Hubble Space Telescope and other NASA observatories were essential in diagnosing this case of cosmic cannibalism. The findings help describe the violent nature of evolved planetary systems and can tell astronomers about the makeup of newly forming systems. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Music & Sound "Through a Computer Screen" by Raphael Olivier [SACEM] via KTSA Publishing [SACEM] and Universal Production Music ESA Credit: Ring of rocky debris around a white dwarf star (artist's impression) Credit: NASA, ESA, STScI, and G. Bacon (STScI) Evaporating extrasolar planet, from Video (artist's impression) Credit: ESA, Alfred Vidal-Madjar (Institut d'Astrophysique de Paris, CNRS, France) and NASA.	Transcript Link

2022 06 14	NASA Goddard	https://youtu.be/DVYWwASIOXc	The Heliophysics Big Year	The Heliophysics Big Year is a global celebration of solar science and the Sun’s influence on Earth and the entire solar system. During the Heliophysics Big Year, you will have the opportunity to participate in many solar science events such as watching solar eclipses, experiencing an aurora, participating in citizen science projects, and other fun Sun-related activities. Join us from October 2023 to December 2024! https://go.nasa.gov/HelioBigYear Credit: NASA’s Goddard Space Flight Center Producer: Denise Hill (ADNET Systems) Editor: Joy Ng (KBRwyle) Music credit: “Time Passing Marimba” by Eric Chevalier [SACEM] by Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14168. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14168. For more information on NASA’s media guidelines, visit https://nasa.gov/multimedia/guidelines.	Transcript Link
2022 06 10	NASA Goddard	https://youtu.be/eOSv-FhaDOA	Hubble Measures Potential Isolated Black Hole Roaming Galaxy	Our Milky Way galaxy is haunted. The vast gulf of space between the stars is plied by the dead, burned-out and crushed remnants of once glorious stars. These black holes cannot be directly seen because their intense gravity swallows light. Like legendary wandering ghosts, their presence can only be deduced by seeing how they affect the environment around them. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Music Credits: “Celestial Spaces 2” by Joel Goodman [ASCAP] via Medley Lane Music [ASCAP] and Universal Production Music Visualization of Multiple Black Holes ESA/Hubble, N. Bartmann This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14165. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14165. For more information on NASA’s media guidelines, visit	Transcript Link

2022 06 08	NASA Goddard	https://youtu.be/mQ1-0aioNAg	NASA's Sounds of the Sea Coral Sea	This composition was created using spectral ocean reflectance data, extracted from a series of rolling 32-day average global composites from MODIS-Aqua. The averages are computed every 8-days, making for 48 images per year. The actual data that are extracted represent the mean of a 10x10 box of 9 km² resolution data (which equals a box of 8,100 km²), in order to help fill in gaps that may arise from cloud cover throughout the year. The center location of that 10x10 box is -16.625o, 153.292o. Credit: NASA's Goddard Space Flight Center Image from MODIS, onboard NASA's Aqua satellite. Sonification: Jon Vandermeulen and Ryan Vandermeulen. Image credit: Ryan Vandermeulen. This video is public domain. If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfc	Transcript Link
2022 06 08	NASA Goddard	https://youtu.be/zU0mm55QQA	NASA's Sounds of the Sea Bering Sea Eddy Sonification Explained	This is a frozen moment in time - a transect across a beautiful swirling eddy off the coast of the Kamchatka Peninsula in the Western Bering Sea, as seen from space. The melody corresponds directly to the intensity of red (Rrs-667), green (Rrs-547), and blue (Rrs-443) spectral ocean reflectance data, as detected by the Moderate Resolution Imaging Spectroradiometer (MODIS) onboard the Aqua satellite. Listen closely as the colors harmonize and diverge, manifesting the natural patterns created by microscopic life in the ocean. Credit: NASA's Goddard Space Flight Center Image from MODIS, onboard NASA's Aqua satellite. Sonification: Jon Vandermeulen and Ryan Vandermeulen. Image credit: Norman Kuring. This video is public domain. If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfc	Transcript Link

2022 06 07	NASA Goddard	https://youtu.be/i6ycBT EVDHo	Gulf of Maine's Phytoplankton Productivity Down 65%	The Gulf of Maine is growing increasingly warm and salty, due to ocean currents pushing warm water into the gulf from the Northwest Atlantic, according to a new NASA-funded study. These temperature and salinity changes have led to a substantial decrease in the productivity of phytoplankton that serve as the basis of the marine food web. Specifically, phytoplankton are about 65% less productive in the Gulf of Maine than they were two decades ago, scientists at Bigelow Laboratory for Ocean Sciences in East Boothbay, Maine, report. Music credit: "Unto Motion" from Universal Music LK Ward (KBR): Lead Producer Greg Shirah (NASA/GSFC): Lead Visualizer Catherine Mitchell (Bigelow Laboratory for Ocean Sciences): Scientist Aaron E. Lepsch (ADNET): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/4971 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link
2022 05 30	NASA Goddard	https://youtu.be/JwYJV0ksB5o	NASA's New Scientific Breakdown of Dramatic Caldor and Dixie Fires	This visualization shows the spread of the Caldor fire between August 15 and October 6, 2021, and the Dixie fire between July 14 and October 22, 2021, updated every 12 hours from a new fire detection and tracking approach based on near-real time active fire detections from the VIIRS sensor on the Suomi-NPP satellite. The yellow outlines track the position of the active fire lines for the last 60 hours, with the latest location of the fire front in the brightest shade of yellow. The red points show the location of active fire detections, while the grey region shows the estimated total area burned. The graph shows the cumulative burned area in square kilometers. Editor's Note: The spelling of Eldorado National Forest appears incorrectly in the visualization. Music credit: "Color Chart" and "Abstract Dimensions" from Universal Production Music Credit: NASA's Goddard Space Flight Center Kathleen Gaeta (GSFC AIMMS): Lead Producer Cindy Starr (GST): Lead Animator Doug Morton (NASA GSFC): Lead Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/31184	Transcript Link

2022 05 26 NASA Goddard <https://youtu.be/zyf1UDm-GyU> Sonification of NGC 1300

The majestic spiral galaxy NGC 1300's arms hold blue clusters of young stars, pink clouds of star formation, and dark lanes of dust.

[Transcript](#)
[Link](#)

To represent this image with sound, scientists assigned louder volume to brighter light. Light farther from the center is pitched higher as a counterclockwise radar scans across the galaxy. NGC 1300 resides nearly 70 million light-years away in the constellation Eridanus.

Sonification credits: SYSTEM Sounds (M. Russo, A. Santaguida)

For more information about the Hubble Space Telescope and its images, visit <https://nasa.gov/hubble>.

This video can be freely shared and downloaded at <https://svs.gsfc.nasa.gov/14157>. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: <https://svs.gsfc.nasa.gov/14157>. For more information on NASA's media guidelines, visit <https://www.nasa.gov/multimedia/guidelines/index.html>.

See more Hubble videos on YouTube:

<https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN>

2022 05 25 NASA Goddard https://youtu.be/VV_dhCwyic Simulated Image Demonstrates the Power of NASA's Nancy Grace Roman Space Telescope

NASA's Nancy Grace Roman Space Telescope will capture the equivalent of 100 high-resolution Hubble images in a single shot, imaging large areas of the sky more than 1,000 times faster than Hubble. In several months, the Roman Space Telescope could survey as much of the sky in near-infrared light—in just as much detail—as Hubble has over its entire three decades.

[Transcript](#)
[Link](#)

Although Roman has not yet opened its wide, keen eyes on the universe, astronomers are already running simulations to demonstrate what it will be able to see and plan their observations.

This simulated image of a portion of our neighboring galaxy Andromeda (M31) provides a preview of the vast expanse and fine detail that can be covered with just a single pointing of the Roman Space Telescope. Using information gleaned from hundreds of Hubble observations, the simulated image covers a swath roughly 34,000 light-years across, showcasing the red and infrared light of more than 50 million individual stars detectable with Roman.

While it may appear to be a somewhat haphazard arrangement of 18 separate images, the simulation actually represents a single shot. Eighteen square detectors, 16-megapixels each, make up Roman's Wide Field Instrument (WFI) and give the telescope its unique window into space.

With each pointing, the Roman Space Telescope will cover an area roughly 1½ times that of the full Moon. By comparison, each

2022 05 19	NASA Goddard	https://youtu.be/W805TLOhVVE	Take a Spin With NASA's Nancy Grace Roman Space Telescope	On schedule to launch no later than May 2027, NASA's Nancy Grace Roman Space Telescope mission will help uncover some of the biggest mysteries in the cosmos. The state-of-the-art telescope on the Roman spacecraft will play a significant role in this, providing the largest picture of the universe ever seen with the same depth and precision as the Hubble Space Telescope. The Nancy Grace Roman Space Telescope has successfully passed its critical design review, signaling that all design and developmental engineering work is now complete. The Roman Space Telescope is a high-precision survey mission that will advance our understanding of fundamental physics. Roman is similar to other space telescopes, like Spitzer and the James Webb Space Telescope, in that it will detect infrared light, which is invisible to human eyes. Earth's atmosphere absorbs infrared light, which presents challenges for observatories on the ground. Roman has the advantage of flying in space, above the atmosphere. The Roman Space Telescope will collect and focus light using a primary mirror that is 2.4 meters in diameter. While it's the same size as the Hubble Space Telescope's main mirror, it is only one-fourth the weight, showcasing an impressive improvement in telescope technology. The mirror gathers light and sends it on to a pair of science instruments. The spacecraft's giant camera, the Wide Field	Transcript Link
2022 05 16	NASA Goddard	https://youtu.be/w8rr5lDOnly	Sonification of NGC 1569	Welcome to one of the most active galaxies in our cosmic neighborhood, NGC 1569. This starburst galaxy creates stars at a rate 100 times faster than in our own galaxy, the Milky Way! Scientists represented information in this Hubble image with sound to create a beautiful sonification with a bottom to top scan. Brighter light is higher pitched and louder. The three color channels used to process this image are each given their own pitch range, with red representing lower pitches, green in medium pitches, and blue in high pitches. Sonification credits: SYSTEM Sounds (M. Russo, A. Santaguida) For more information about the Hubble Space Telescope and its images, visit https://nasa.gov/hubble. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14156. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14156. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html. See more Hubble videos on YouTube:	Transcript Link

2022 05 13	NASA Goddard	https://youtu.be/08hU8CvFxNE	The Goddard Visitor Center Come In and Explore!	Take a peek at what’s going on at the Goddard Visitor Center as we welcome guests to come in and explore! No reservation is necessary to walk in and view indoor and outdoor exhibits, or to see what’s playing in the theater. To schedule a virtual group field trip or in-person program, email GSFC-VisitorCenter@mail.nasa.gov. Music Credit: “Let's Shake It” by Simon James [PRS], Von Hemingway [PRS], William Riddims [PRS] Universal Production Music. Lead Producer: Swarupa Nune (InuTeq) Technical Support: Aaron E. Lepsch (ADNET) Lead Videographers: Rob Andreoli (AIMM) John Caldwell (AIMM) Talent: Dhyan J. Emmanuel (Paragon TEC) Writer: Cate Maynard (Alexton Inc.) Please give credit for this item to:	Transcript Link
2022 05 11	NASA Goddard	https://youtu.be/1rbdKiPS-IA	Hubble's Servicing Mission 4	The fifth & final astronaut servicing mission to Hubble launched #OTD in 2009! 🚀 This mission brought Hubble to the apex of its scientific capabilities. Find out more: https://www.nasa.gov/content/goddard/hubble-servicing-mission-4 Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Music Credits: “Distant Hours” by Magnum Opus [ASCAP] via Atmosphere Music Ltd. [PRS] and Universal Production Music. “Inspiring Hope 2” by Joel Goodman [ASCAP] via Medley Lane Music [ASCAP] and Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14114. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14114. For more information on NASA’s media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html. See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNI	Transcript Link

2022 05 09	NASA Goddard	https://youtu.be/VXcnG06GmcY	Hubble's Field Guide to Galaxies	Galaxies are the visible foundation of the universe; each one a collection of stars, planets, gas, dust, and dark matter held together by gravity. Hubble's observations give us insight into how galaxies form, grow, and evolve through time. Hubble's namesake, astronomer Edwin Hubble, pioneered the study of galaxies based simply on their appearance. He divided galaxies into three basic forms: This "Field Guide" will quickly teach you those three basic forms, and some new ones that astronomers have added over the years! For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Miranda Chabot: Lead Producer Andrea Gianopoulos: Lead Writer Additional Credits: Images of Edwin Hubble via Edwin P. Hubble Papers of the Huntington Library, San Mario, California. Music Credits: "Gravity Cruise - Underscore" by Jon Buster Cottam [PRS], and Samuel William John Walker [PRS] via Ninja Tune Production Music, and Universal Production Music	Transcript Link
2022 05 05	NASA Goddard	https://youtu.be/cHmXu039qz4	A Black Hole's Magnetic Reversal	A rare and enigmatic outburst from a galaxy 236 million light-years away may have been sparked by a magnetic reversal, a spontaneous flip of the magnetic field surrounding its central black hole. At the end of 2017, a galaxy called 1ES 1927+654 brightened by nearly 100 times in visible light. When NASA's Neil Gehrels Swift Observatory first examined the galaxy in May 2018, its UV emission was also 12 times higher but steadily declining, indicating an earlier unobserved peak. Then, in June, the galaxy's higher-energy X-ray emission disappeared, later reappearing in October. An international science team has linked these unusual observations to changes in the black hole's environment that likely would be triggered by a magnetic switch. Most big galaxies, including our own Milky Way, host a supermassive black hole weighing millions to billions of times the Sun's mass. When matter falls toward one, it first collects into a vast, flattened structure called an accretion disk. As the material slowly swirls inward, it heats up and emits visible, UV, and lower-energy X-ray light. Near the black hole, a cloud of extremely hot particles called the corona produces higher-energy X-rays. The brightness of these emissions depends on how much material streams toward the black hole. The scientists think a magnetic reversal, where the north pole becomes south and vice versa, best fits the observations. The field	Transcript Link

2022 05 03	NASA Goddard	https://youtu.be/tF5UCvEA1q8	Unboxing Apollo Samples	Scientists at NASA’s Goddard Space Flight Center in Greenbelt, Maryland, recently received samples of the lunar surface that have been curated in a freezer at NASA’s Johnson Space Center in Houston since Apollo 17 astronauts returned them to Earth in December 1972. This research is part of the Apollo Next Generation Sample Analysis Program, or ANGSA, an effort to study the samples returned from the Apollo Program in advance of the upcoming Artemis missions to the Moon’s South Pole. Video Credit: NASA’s Goddard Space Flight Center James Tralie (ADNET): Lead Producer Editor Lead Videographer Nancy Neal-Jones (NASA/GSFC): Public Affairs Officer Rob Andreoli (AIMM): Videographer John Caldwell (AIMM): Videographer Jamie Cook (NASA/GSFC):	Transcript Link
2022 05 02	NASA Goddard	https://youtu.be/rQJiaH3iyM	NASA Simulation Suggests Some Volcanoes Might Warm Climate, Destroy Ozone Layer	A new NASA climate simulation suggests that extremely large volcanic eruptions called “flood basalt eruptions” might significantly warm Earth’s climate and devastate the ozone layer that shields life from the Sun’s ultraviolet radiation. The result contradicts previous studies indicating these volcanoes cool the climate. It also suggests that while extensive flood-basalt eruptions on Mars and Venus may have helped warm their climates, they could have doomed the long-term habitability of these worlds by contributing to water loss. Video Credit: NASA’s Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Narrator William Steigerwald (NASA/GSFC): Lead Writer Nancy Neal-Jones (NASA/GSFC): Public Affairs Officer Scott Guzewich (NASA/GSFC): Scientist Music is "Good Omens" by Count Zero and Rohan Stevenson and "Blue Moons" by Gresby Race Nash of Universal Production Music	Transcript Link

2022 05 02	NASA Goddard	https://youtu.be/NqOhCBRnrnA	NASA's Black Hole Orrery	Learn more about the best-known black hole systems in our galaxy and its neighbor, the Large Magellanic Cloud. This visualization presents 22 X-ray binary systems that host confirmed black holes at the same scale, with their orbits sped up by about 22,000 times. The view of each system reflects how we see it from Earth. Star colors ranging from blue-white to reddish represent temperatures from 5 times hotter to 45% cooler than our Sun. In most of these systems, a stream of matter from the star forms an accretion disk around the black hole. In others, like the famous system called Cygnus X-1, the star produces a hefty outflow that is partly swept up by the black hole's gravity to form the disk. The accretion disks use a different color scheme because they sport even higher temperatures than the stars. The largest disk shown, belonging to a binary called GRS 1915, spans a distance greater than that separating Mercury from our Sun. The black holes themselves are shown larger than in reality using spheres scaled to reflect their masses. Music: "Event Horizon" from Gravity. Written and produced by Lars Leonhard Credit: NASA's Goddard Space Flight Center and Scientific Visualization Studio Scott Wiessinger (KBRwyle): Producer Andrew J Christensen (SSAI): Lead Visualizer: Lead Visualizer Mark SubbaRao (NASA/GSFC): Visualizer Francis Reddy (University of Maryland College Park): Science Writer	Transcript Link
2022 04 27	NASA Goddard	https://youtu.be/tAlnVWEichE	Hubble Not Yet Imagined	Hubble's launch and deployment in April 1990 marked the most significant advance in astronomy since Galileo's telescope. Thanks to five servicing missions and more than 30 years of operation, our view of the universe and our place within it has never been the same. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Grace Weikert: Lead Producer Music & Sound "The Hope That Remains" by Frederik Wiedmann [BMI] via Killer Tracks [BMI] and Universal Production Music. Soundbite of Carl Sagan George C. Marshall Space Flight Center's Space Telescope: An Observatory in Space ESA Credit 2.5D Edwin Hubble Hubblecast 89 Edwin Hubble 2.5D Nancy Grace Roman Hubblecast 113 Nancy Roman — The mother of Hubble Flythrough #1 FROM Hubblecast 104 Illustrating Hubble's discoveries	Transcript Link

2022 04 22 NASA Goddard <https://youtu.be/wXj8yVkFOEM> Hubble's 32nd Year in Orbit

The Hubble Space Telescope celebrated its 32nd year in orbit by premiering a stunning new Hubble image of a collection of five galaxies, known as Hickson Compact Group 40. Even after all these years, Hubble continues to uncover the mysteries of the universe. These are a few science achievements from Hubble's latest year in orbit.

[Transcript Link](#)

For more information, visit nasa.gov/hubble.

Credit: NASA's Goddard Space Flight Center
Paul Morris; Miranda Chabot

Music & Sound

"Fiber Optics" by Andrew Michael Britton [PRS] and David Stephen Goldsmith [PRS] via Atmosphere Music Ltd., and Universal Production Music.

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See more Hubble videos on YouTube:

2022 04 21 NASA Goddard <https://youtu.be/cMebvUgbqU> Goddard Scientific Colloquium The Final Day of the Cretaceous, Led by Robert DePalma

Paleontologist Robert DePalma, Postgraduate researcher at University of Manchester UK and Adjunct Professor for the Florida Atlantic University Geosciences Department, gave a guest talk at NASA's Goddard Space Flight Center in Greenbelt, Maryland, on April 6, 2022. DePalma discussed his team's excavations in North Dakota and shared findings they tie to an asteroid strike off the coast of present-day Mexico that led to the mass extinction of the dinosaurs 66 million years ago. Robert's presentation is followed by a question and answer session exploring potential connections to NASA research by Goddard scientists Michelle Thaller, Jim Garvin, Christa Peters-Lidard, John Mather, and Gavin Schmidt.

[Transcript Link](#)

Learn more:

<https://www.nasa.gov/feature/goddard/2022/paleontologist-robert-depalma-presents-in-nasa-goddard-colloquium-on-novel-fossil-findings-tied-to-asteroid-impact>

For more information on the NASA Goddard Science Colloquium <https://scicolloq.gsfc.nasa.gov>

Video Credit: NASA's Goddard Space Flight Center
Wade Sisler (NASA/GSFC): Lead Producer
Compton Tucker (NASA/GSFC): Producer
Rich Melnick (KBRwyle): Lead Director
Michael Randazzo (AIMM): Lead Video Editor
Alexander Velle (SAIC): Lead Engineer
Aaron E. Lepsch (ADNET): Lead Technical Support

2022 04 19	NASA Goddard	https://youtu.be/laVU857ZB6o	Hubble's 32nd Anniversary An Eclectic Galaxy Grouping	NASA is celebrating the Hubble Space Telescope's 32nd birthday with a stunning look at five galaxies, a close-knit collection called the Hickson Compact Group 40. This amazing assembly includes a giant elliptical galaxy, glowing with blended light from billions of stars. Several spiral galaxies show prominent dusty lanes that outline their winding spiral arms, regions where star formation is active. We see one galaxy oriented edge-on, showing off its prominent dust along its flattened starry disk. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Dr. Jennifer Wiseman: Narrator Music & Sound "Fractions Through Time" by Olivia Broadfield [PRS] via Abbey Road Masters [PRS], and Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14138. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14138. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html.	Transcript Link
2022 04 15	NASA Goddard	https://youtu.be/qKOCdsYVV48	Apollo 16 Lands in the Lunar Highlands	Thanks to data provided by the Lunar Reconnaissance Orbiter mission, we are able to visualize the Apollo 16 landing site in the Descartes highlands on the nearside of the Moon, where the astronauts landed in April 1972. The mission was crewed by Commander John Young, Lunar Module Pilot Charles Duke, and Command Module Pilot Thomas K. Mattingly. This visualization contains audio transmissions from portions of the mission between the astronauts and CapCom James Irwin, and a view of the 3 EVA (extravehicular activity) routes the astronauts took over the course of three days, including their visit to North Ray crater. The experiments conducted and lunar samples collected by the crew are still providing valuable data about our Moon to scientists today. Video Credit: NASA's Goddard Space Flight Center Data visualization by: Ernie Wright (USRA) Produced and Edited by: David Ladd (AIMM) Music Provided by Universal Production Music: "The Orion Arm" - Christian Telford, David Travis Edwards, Matthew St Laurent, & Robert Anthony Navarro. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/4989. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here:	Transcript Link

2022 04 12	NASA Goddard	https://youtu.be/fAEjtd7pgAE	Hubble Confirms Largest Comet Nucleus Ever Seen	NASA's Hubble Space Telescope has determined the size of the largest icy comet nucleus ever found. And, it's big! With a diameter of approximately 80 miles across, it's about 50 times larger than typical comets. Its 500-trillion-ton mass is a hundred thousand times greater than the average comet. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Music Credits: "Ash Cloud" by Samuel Sim [PRS] via Sound Pocket Music [PRS] and Universal Production Music Additional Credits: Pop Sound Effects by erhnbcc via Motion Array Illustration of comet by NOIRLab/NSF/AURA/J. da Silva (Spaceengine) This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14135. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14135. For	Transcript Link
2022 03 31	NASA Goddard	https://youtu.be/mBXeA3v1NLY	NASA Tracks COVID-19's Atmospheric Fingerprint	The COVID-19-related lockdowns granted scientists an unexpected and detailed glimpse as to how human activities impact atmospheric composition. Two recent studies, one focusing on nitrogen oxide and the other examining CO2 concentrations, were able to detect the atmospheric 'fingerprint' of the lockdowns in unprecedented detail. Music: The Mysterious Staircase by Brice Davoli [SACEM], Suspended in Time by Brice Davoli [SACEM], Universal Production Music Kazuyuki Miyazaki (JPL): Lead Scientist Kevin Bowman (JPL): Scientist Lesley Ott (NASA/GSFC): Lead Scientist Brad Weir (USRA): Scientist Katie Jepson (KBRwyle): Lead Producer Trent L. Schindler (USRA): Lead Visualizer Ellen T. Gray (ADNET): Writer Jessica Merzdorf Evans (NASA/GSFC): Writer Katie Jepson (KBRwyle): Narration This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14056. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: at https://svs.gsfc.nasa.gov/14056. For	Transcript Link

2022 03 30	NASA Goddard	https://youtu.be/0YMRu772IA	Record Broken Hubble Spots Farthest Star Ever Seen	NASA's Hubble Space Telescope has established an extraordinary new benchmark: detecting the light of a star that existed within the first billion years after the universe's birth in the big bang—the farthest individual star ever seen to date. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Music Credits: “Beautiful Planet” by Andreas Andreas Bolldén [STIM] via Koka Media [SACEM], Universal Production Music France [SACEM], and Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14125. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14125. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html. See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN	Transcript Link
2022 03 29	NASA Goddard	https://youtu.be/54AgCRhdwvo	The Geocenter of the Earth Is Changing (And Why That Matters)	At the foundation of virtually all airborne, space-based and ground-based Earth observations is the TRF, or Terrestrial Reference Frame. The TRF relies on an accurate calculation of the geocenter of the Earth (the center mass of the Earth). However, one complication is that the geocenter is constantly changing with respect to the Earth's surface. By using a network of ground stations equipped with telescopes and lasers that fire pulses at specific satellites, scientists can calculate where the geocenter of the Earth is at any given time to a few millimeters to ensure our Earth observations are accurate. Credit: NASA's Goddard Space Flight Center Katie Jepson (KBRwyle): Lead Producer, Editor, and Narration Trent L. Schindler (USRA): Lead Visualizer Stephen Merkowitz (NASA/GSFC): Lead Scientist Music: Kinda Frantic by Steve Rucker, Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14121. While the video in its entirety can be shared without permission, some individual imagery provided by pond5.com is obtained through permission and may not be excised or remixed in other products. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2022 03 28 NASA Goddard <https://youtu.be/Cig-FNmydMk> Michelle Thaller Explains Cosmic Dawn Bringing astrophysics into everyone's home: That is the goal with NASA's Roman Space Telescope series "Celestial Sunday." In this video, astronomer and science communicator Michelle Thaller explains the complex topic of Cosmic Dawn. [Transcript Link](#)

Music credit: "Blessed Evening 7" by Universal Production Music

Lead Editor: Courtney Lee
Graphics/ animations: Scott Wiessinger
Credit: NASA Goddard Space Flight Center

Follow NASA's Nancy Grace Roman Space Telescope On Social
Twitter: <https://twitter.com/NASARoman>
Facebook: <https://www.facebook.com/NASARoman>

2022 03 24 NASA Goddard <https://youtu.be/lieuUpl1NJ8> What Mercury's Unusual Orbit Reveals About the Sun As the closest planet to the Sun -- and with the most oblong orbit in the solar system -- Mercury orbits through a region where the Sun's influence is changing dramatically. [Transcript Link](#)

Two NASA researchers looked to Mercury to study how the Sun's influence on planets changes throughout space. Here's what they learned.

Full paper: go.nasa.gov/3NfK0Xt

Credit: NASA's Goddard Space Flight Center

Miles Hatfield (Telophase): Producer
Anna Blaustein (NASA Interns): Producer
Norberto Romanelli (NASA's Goddard Space Flight Center/University of Maryland, College Park): Scientist
Gina DiBraccio (NASA's Goddard Space Flight Center): Scientist

Music credits: "Swirling Blizzard" by Laurent Dury [SACEM]; "Sparkle Shimmer" by William Henries [PRS] and Michael Holborn [PRS] from Universal Production Music

This video can be freely shared and downloaded at <https://svs.gsfc.nasa.gov/14123>. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such

2022 03 18	NASA Goddard	https://youtu.be/5iu1Zmc9M6c	Two Scientists Have a Frank and Honest Discussion about Antarctica	NASA Glaciologists Kelly Brunt and Alex Gardner discuss the history, challenges, and evolution of mapping the Antarctic continent and what it means for science and society. Credit: NASA's Goddard Space Flight Center Ryan Fitzgibbons (KBRwyle): Lead Producer, Lead Writer, and Lead Editor Alex S. Gardner (NASA/JPL CalTech): Lead Scientist and Lead Interviewee Kelly Brunt (Earth System Science Interdisciplinary Center/University of Maryland): Lead Scientist and Lead Interviewee Adriana Manrique Gutierrez (KBRwyle): Lead Animator Kel Elkins (USRA): Lead Visualizer LK Ward (KBRwyle): Lead Narrator and Lead Technical Support Jefferson Beck (KBRwyle): Videographer Brooke Medley (NASA/GSFC): Videographer Music: "Man vs. Clock," "Curious," "Transitions," "Phosphorus," "Hypervelocity," "Double Agent," "Bloom," "Mirroring Thought," Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14116. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. These providers include	Transcript Link
2022 03 16	NASA Goddard	https://youtu.be/Qh63UBJsXrU	Tribute to Eugene Parker, Namesake of NASA's Parker Solar Probe	Dr. Eugene N. Parker, visionary of heliophysics and namesake of NASA's Parker Solar Probe, passed away on March 15, 2022. He was 94. As a young professor at the University of Chicago in the mid-1950s, Parker developed a mathematical theory that predicted the solar wind, the constant outflow of solar material from the Sun. Throughout his career, Parker revolutionized the field time and again, advancing ideas that addressed the fundamental questions about the workings of our Sun and stars throughout the universe. More information: https://www.nasa.gov/press-release/nasa-mourns-passing-of-visionary-heliophysicist-eugene-parker Credit: NASA's Goddard Space Flight Center Producer: Joy Ng (KBRwyle) Additional imagery from the University of Chicago. Music credit: "Closer to You" by Sam Cleeve [PRS] by Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14120. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14120. For	Transcript Link

2022 03 10	NASA Goddard	https://youtu.be/2DYbQ568Bkk	NASA and Agriculture From Seeds to Satellites	NASA satellites, data, missions, and programs have been put to use for decades to strengthen food security, track droughts and flooding, determine plant and soil health and otherwise support agriculture decision making. With observations from space and aircraft, combined with high-end computer modeling, NASA works with partner agencies, organizations, farmers, ranchers, and decision makers to share our understanding of the relationship between the Earth system and the environments that provide us food. Working with local communities and decision makers to determine their needs and how they can best use Earth observation data, NASA supports those who address issues like water management for irrigation, crop-type identification and land use, coastal and lake water quality monitoring, drought preparedness, and famine early warnings. More about NASA’s agriculture work can be found at: https://appliedsciences.nasa.gov/what-we-do/food-security-agriculture/inside-food-security-agriculture Music credit: “Herald of Fortune” from Universal Production Music Credit: NASA's Goddard Space Flight Center Kathleen Gaeta (GSFC AIMMS): Lead Producer Aries Keck (ADNET): Writer Christopher Thorne (ADNET): Writer	Transcript Link
2022 03 08	NASA Goddard	https://youtu.be/gj6tx5N-L2k	NASA's NICER Tracks a Magnetar's Hot Spots	For the first time, NASA’s Neutron star Interior Composition Explorer (NICER) has observed the merging of multimillion-degree X-ray spots on the surface of a magnetar, a supermagnetized stellar core no larger than a city. Read more: https://www.nasa.gov/feature/goddard/2022/nasa-s-nicer-telescope-sees-hot-spots-merge-on-a-magnetar NICER tracked how three bright, X-ray-emitting hot spots slowly wandered across the object’s surface while also decreasing in size, providing the best look yet at this phenomenon. The largest spot eventually coalesced with a smaller one, which is something astronomers haven’t seen before. A magnetar is a type of isolated neutron star, the crushed core left behind when a massive star explodes. Compressing more mass than the Sun’s into a ball about 12 miles (20 kilometers) across, a neutron star is made of matter so dense that a teaspoonful would weigh as much as a mountain on Earth. What sets magnetars apart is that they sport the strongest magnetic fields known, up to 10 trillion times more intense than a refrigerator magnet’s and a thousand times stronger than a typical neutron star’s. The magnetic field represents an enormous storehouse of energy that, when disturbed, can power an outburst of enhanced X-ray activity lasting from months to years.	Transcript Link

2022 02 28	NASA Goddard	https://youtu.be/HUMLpSknWj8	Pinpointing the Moon's South Pole	This video is a data visualization showing the location of the Moon's South Pole. In the system of lunar latitude and longitude adopted by the Lunar Reconnaissance Orbiter (LRO) mission, the Moon's South Pole is located on the rim of Shackleton crater at a point marked by a red pin in this visualization. The definition and wide adoption of this standard coordinate system for the Moon is vital for mapping and exploring our nearest neighbor. With such a system, we can confidently pinpoint any feature on the Moon, including the exact location of its South Pole. LRO data will be a critical tool in helping NASA return humans to the lunar surface. Video Credit: NASA's Goddard Space Flight Center Data visualization by: Ernie Wright (USRA) Produced and Edited by: David Ladd (AIMM) Narrated by: David Ladd (AIMM) Music provided by Universal Production Music: "Unmatched Skills" – John K Sands, Marc Ferrari, Michael A Tremante. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/4969. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/4969 For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html.	Transcript Link
2022 02 23	NASA Goddard	https://youtu.be/yjHmTvLPOY	IMPACTS 2022 NASA Planes Fly into Snowstorms to Study Snowfall	NASA's Investigation of Microphysics and Precipitation for Atlantic Coast-Threatening Storms (IMPACTS) mission, which began in January and is planned to wrap up at the end of February, has seen upwards of 10 flights so far. Ultimately, what the IMPACTS team learns about snowstorms will improve meteorological models and our ability to use satellite data to predict how much snow will fall and where. Music credit: "Struggles" and "Natural Time Cycles" from Universal Production Music Credit: NASA's Goddard Space Flight Center Kathleen Gaeta (GSFC AIMMS): Lead Producer Sofie Bates (KBR): Lead Writer Ellen T. Gray (ADNET): Writer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14098. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14098. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html. If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link

2022 02 22	NASA Goddard	https://youtu.be/bcEqD1NVvws	Galaxy Collision Creates “Space Triangle” in New Hubble Image	A spectacular head-on collision between two galaxies fueled an unusual triangular-shaped star-birthing frenzy, as captured in a new image from NASA’s Hubble Space Telescope. The interacting galaxy duo is collectively called Arp 143. The pair contains the glittery, distorted, star-forming spiral galaxy NGC 2445 at right, along with its less flashy companion, NGC 2444 at left. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Music Credits: “Enticing Occultism 2” by Joel Goodman [ASCAP] via Medley Lane Music [ASCAP] and Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14106. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14106. For more information on NASA’s media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html. See more Hubble videos on YouTube:	Transcript Link
2022 02 10	NASA Goddard	https://youtu.be/S4eNvy3UmlU	Landsat 9 Data Available!	The data from Landsat 9 is available for anyone to download. With both Landsat 9 and Landsat 8 in orbit, there will be high-quality, medium-resolution images of Earth’s landscapes and coastal regions every eight days. Landsat 9 was launched on Sept. 27, 2021, and the mission team then tested and calibrated the new satellite and its instruments. One of the commissioning activities was flying Landsat 9 under its sister satellite, Landsat 8, which allowed the team to confirm that the data align as expected. They also calibrated the instruments through a variety of methods, including tilting Landsat 9’s spacecraft to image the full Moon – a steady source of light to ensure the instruments are detecting light consistently. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth’s changing landscapes for the benefit of all. Music: Amazing Discoveries by Damien Deshayes [SACEM], published by KTSA Publishnig [SACEM] available from Universal Production Music; The Troubleshooter by Anders Johan Greger Lewen [STIM], published by Primetime Productions, Ltd [PRS];	Transcript Link

2022 02 09	NASA Goddard	https://youtu.be/rkOPZ1gnLXw	NASA's New Views of Venus' Surface From Space	NASA's Parker Solar Probe has taken its first visible light images of the surface of Venus from space. Smothered in thick clouds, Venus' surface is usually shrouded from sight. But in two recent flybys of the planet, Parker used its Wide-Field Imager, or WISPR, to image the entire nightside in wavelengths of the visible spectrum – the type of light that the human eye can see – and extending into the near-infrared. The images, combined into a video, reveal a faint glow from the surface that shows distinctive features like continental regions, plains, and plateaus. A luminescent halo of oxygen in the atmosphere can also be seen surrounding the planet. More information: https://www.nasa.gov/feature/goddard/2022/sun/parker-solar-probe-captures-its-first-images-of-venus-surface-in-visible-light-confirmed/ Link to paper: https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2021GL096302 Credit: NASA's Goddard Space Flight Center Scientists: Brian Wood (U.S. Naval Research Laboratory)	Transcript Link
2022 01 31	NASA Goddard	https://youtu.be/RBoqdyphK_U	Cinematic Science Helps Researchers Explore Data From NASA's CAMP2Ex Field Campaign	Bringing together data from numerous sensor nodes and visualizing it is a critical part of the scientific process. But creating accessible visualizations is not easy, especially when those sensor nodes communicate complex Earth-science data. Researchers collaborated with programmers and designers from the Advanced Visualization Lab (AVL) at the University of Illinois Urbana-Champaign National Center for Supercomputing Applications (NCSA) to prototype a new process for communicating data from NASA field expeditions. The prototype uses a combination of commercially available, open source, and home-grown software to transform raw data from NASA's recent Cloud, Aerosol and Monsoon Processes Philippines Experiment (CAMP2Ex) into a 3D animation and a data dashboard video. These visualizations made it easier for researchers to explore data gathered by all the instrument teams during their time in the Philippines. The final product package included a three-minute video in 3D and a longer data dashboard video depicting 76 different data variables. The project was supported by the Advanced Information Systems Technology (AIST) program in NASA's Earth Science Technology Office (ESTO). Music credit: "Relentless Data" by Jay Price [Universal Production Music]	Transcript Link

2022 01 19	NASA Goddard	https://youtu.be/YJbxldZ-3fg	Hubble finds a Black Hole Igniting Star Formation in a Dwarf Galaxy Black holes are often described as the monsters of the universe—tearing apart stars, consuming anything that comes too close, and holding light captive. Detailed evidence from NASA's Hubble Space Telescope, however, shows a black hole in a new light: fostering, rather than suppressing, star formation. Hubble imaging and spectroscopy of the dwarf starburst galaxy Henize 2-10 clearly show a gas outflow stretching from the black hole to a bright star birth region like an umbilical cord, triggering the already dense cloud into forming clusters of stars. Astronomers have previously debated that a dwarf galaxy could have a black hole analogous to the supermassive black holes in larger galaxies. Further study of dwarf galaxies, which have remained small over cosmic time, may shed light on the question of how the first seeds of supermassive black holes formed and evolved over the history of the universe. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Music Credits: “Champagne Age” by Damon Bradley [BMI] via Network Production Music Publishing [BMI] and Universal Production Music	Transcript Link
2022 01 13	NASA Goddard	https://youtu.be/pLU8v8fAw7s	Temperature Record 101 How We Know What We Know about Climate Change 2021 was tied for the sixth warmest year on NASA’s record, stretching more than a century. But, what is a temperature record? GISTEMP, NASA’s global temperature analysis, takes in millions of observations from instruments on weather stations, ships and ocean buoys, and Antarctic research stations, to determine how much warmer or cooler Earth is on average from year to year. Stretching back to 1880, NASA’s record shows a clear warming trend. However, individual weather events and La Niña — a pattern of cooler waters in the Pacific that was responsible for slightly cooling 2021’s average temperature — can affect individual years. Because the record is global, not every place on Earth experienced the sixth warmest year on record. Some places had record-high temperatures, and we saw record droughts, floods and fires around the globe. Universal Production Music: Knock and Wait (Instrumental) by Brice Davoli [SACEM], Well That’s Difference (Instrumental) by Jeff Cardoni [ASCAP], Wanna Be Hipster (Instrumental) by Jeff Cardoni [ASCAP], Curiosity Killed Kitty (Instrumental) by Robert Leslie Bennett [ASCAP], Eco Issues (Instrumental) by Max van Thun [GEMA]	Transcript Link

2022 01 10	NASA Goddard	https://youtu.be/1BO8mTLTOUQ	Envisioning an Ultra-Deep Field from NASA's Roman Space Telescope	A team of astrophysicists has created a simulated image that shows how the Nancy Grace Roman Space Telescope could conduct a mega-exposure similar to but far larger than Hubble's celebrated Ultra-Deep Field Image. This Hubble observation transformed our view of the early universe, revealing galaxies that formed just a few hundred million years after the big bang.	Transcript Link

By capturing the Hubble Ultra-Deep Field Image, astronomers pulled aside the cosmic curtains to reveal that a tiny, seemingly empty slice of the sky was actually teeming with thousands of galaxies, each containing billions of stars. The Hubble team harnessed the power of a long-exposure time – hundreds of hours between 2002 and 2012 – which allowed the telescope to collect more light than it could in a single, short observation. The resulting image helped us see more than 13 billion years back in time.

Hubble's Ultra-Deep Field Image offers an incredible window to the early universe, but an extremely narrow one, covering less than one ten millionth of the whole sky. The new simulation showcases Roman's power to perform a similar observation on a much larger scale, revealing millions of galaxies instead of thousands. While a Roman ultra-deep field would be just as sharp as Hubble's and peer equally far back in time, it could reveal an area 300 times larger, offering a much broader view of cosmic ecosystems.

To generate their simulated Roman ultra-deep field image, researchers created a synthetic catalog of galaxies, complete with

2021 12 20	NASA Goddard	https://youtu.be/PJRyMLASwsQ	Hubble and Webb A New Golden Age of Astronomy	The scientific community is incredibly excited to have these two highly complementary observatories operating together. With their collaboration, they will push the boundaries of knowledge on the backdrop of a rapidly evolving astronomical landscape.	Transcript Link

A wealth of multiwavelength and now multi-messenger astrophysical observatories, from space and from the ground, are currently operating or being planned, Hubble and Webb will work together to advance our collective understanding of the universe, ushering in a new golden age of astronomy!

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center
 Paul Morris: Lead Producer

Additional Credits:
 Comparison of Hubble and James Webb mirror: ESA/M. Kornmesser

ESO ALMA Timelapse: ESO

Music Credits:
 "Wonderful Nature" by July Turret [SACEM] via Koka Media [SACEM], Universal Production Music France [SACEM], and Universal Production Music.

This video can be freely shared and downloaded at

2021 12 16	NASA Goddard	https://youtu.be/rmTotw5zpnQ	Chasing an Asteroid's Shadow	Observing occultations from Earth is one of the tools scientists have for gathering precise information about the size and shape of Lucy's target destinations, known as "Trojan" asteroids. More information: https://www.nasa.gov/feature/goddard/2021/watching-the-blink-of-a-star-to-size-up-asteroids-for-nasa-s-lucy-mission/ Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Animator Lead Editor Narrator Allison Gasparini (NASA/Intern): Writer Lonnie Shekhtman (ADNET): Writer Music is "No Lights" from Claude Samard of Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14054. While the video in its entirety can	Transcript Link
2021 12 16	NASA Goddard	https://youtu.be/bRkpWQcYaKk	Where in the Solar System are the Trojan Asteroids	Lucy is headed to Jupiter's Trojan asteroids! But where exactly in our solar system are these Trojans? They're probably not quite where you think they are. Watch this video to see the 12-year path our Lucy spacecraft is taking over its mission to fly by the Trojan asteroids and uncover the secrets of planetary formation. Read more about the Lucy mission: https://www.nasa.gov/feature/goddard/2021/watching-the-blink-of-a-star-to-size-up-asteroids-for-nasa-s-lucy-mission/ Video Credit: NASA's Goddard Space Flight Center Allison Gasparini (NASA): Lead Producer Editor Lonnie Shekhtman (ADNET): Editor Nancy Neal Jones (NASA/GFSC): Public Affairs Officer Music Credits: "Nanofiber" by Andrew Michael Britton [PRS] and David Stephen Goldsmith [PRS] via Universal Production Music	Transcript Link

2021 12 14	NASA Goddard	https://youtu.be/LkaLfbuB_6E	NASA's Parker Solar Probe Touches The Sun For The First Time	For the first time in history, a spacecraft has touched the Sun. NASA's Parker Solar Probe has now flown through the Sun's upper atmosphere – the corona – and sampled particles and magnetic fields there. The new milestone marks one major step for Parker Solar Probe and one giant leap for solar science. Just as landing on the Moon allowed scientists to understand how it was formed, touching the very stuff the Sun is made of will help scientists uncover critical information about our closest star and its influence on the solar system. More information: https://www.nasa.gov/feature/goddard/2021/nasa-enters-the-solar-atmosphere-for-the-first-time-bringing-new-discoveries Credit: NASA's Goddard Space Flight Center Scientists: Nour Raouafi (Johns Hopkins University/APL) Justin Kasper (University of Michigan) Stuart Bale (University of California, Berkeley) Kelly Korreck (Johns Hopkins University/APL) Adam Szabo (NASA/GSFC) Producer: Joy Ng (KBRwyle)	Transcript Link
2021 12 13	NASA Goddard	https://youtu.be/VPvwWELRNis	Tour 2022 NASA's Upcoming Earth Missions	NASA has a unique view of our planet from space. NASA's fleet of Earth-observing satellites provide high quality data on different parts of Earth's interconnected environment from air quality to sea ice. Take a tour of missions launching in 2022, including SWOT, TROPICS, EMIT, and JPSS-2. Music credit: "Kitchen Preparations," "Kinky Boots," "Bossa Baby," "Pleasantville" and "Exotic Encounter" from Universal Production Music Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathryn Mersmann (KBRwyle): Lead Producer Katie Jepson (KBRwyle): Lead Producer Kathleen Gaeta (AIMM): Lead Producer Jefferson Beck (KBRwyle): Lead Producer Alison Gold (NASA): Writer Ellen T. Gray (ADNET): Writer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14043. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14043. For	Transcript Link

2021 12 09	NASA Goddard	https://youtu.be/zxgQ4G0NOhI	Mini-Jet Found Near Milky Way's Supermassive Black Hole	Our Milky Way's central black hole has a leak! This supermassive black hole, over 4 million times more massive than our Sun, looks like it still has the remnants of a blowtorch-like jet dating back several thousand years. NASA's Hubble Space Telescope hasn't photographed the phantom jet yet, but it has helped find circumstantial evidence that the jet is still pushing feebly into a huge hydrogen cloud. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Music Credits: "Never Sure of Anything" by Andrew Potterton [PRS], via Ninja Tune Production Music [PRS], and Universal Production Music This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14042. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/14042. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html.	Transcript Link
2021 12 03	NASA Goddard	https://youtu.be/UTLPCuqVDM	NASA's Near Space Network Overview	NASA's Near Space Network fulfills the essential needs of user missions, empowering them with mission-critical communications and navigation services and enabling the transmission of science and exploration data to and from space. As a single point of service for missions in the near-space region — out to two million kilometers away — the network connects users with either government or commercial service providers. As a single, end-to-end network, the Near Space Network orchestrates communications services, space links, and data transports for users. Additionally, the network serves missions throughout their entire lifecycle, providing requirements analysis, spectrum management, communications analysis, service agreements, mission design, mission planning, launch, operations, and post-mission support activities. As a result, the network ensures its users have robust and reliable services that fully support their mission objectives. With the Near Space Network, missions no longer need to independently research service providers. The Near Space Network leverages the broad spectrum of capabilities available through government and commercial service providers and negotiates with providers on behalf of all missions to lower costs. Users can confidently rely on the expertise of NASA's Goddard Space Flight Center, which has a legacy of excellence in managing NASA communications services.	Transcript Link

2021 12 02	NASA Goddard	https://youtu.be/fYsDDBhk4gg	NASA's S-MODE Takes to the Air and Sea to Study Ocean Eddies	After being delayed over a year due to the pandemic, a NASA field campaign to study the role of small-scale whirlpools and ocean currents in climate change is taking flight and taking to the seas. Music: "Graceful Play" via Universal Production Music Video credit: NASA's Goddard Space Flight Center Kathleen Gaeta (GSFC AIMMS): Lead Producer Sofie Bates (KBR): Lead Writer Ellen T. Gray (ADNET): Producer Aaron E. Lepsch (ADNET): Technical Support Jesse Carpenter (Mori Associates Inc): Videographer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13978. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such media may be found here: https://svs.gsfc.nasa.gov/13978. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines. If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard	Transcript Link
2021 12 01	NASA Goddard	https://youtu.be/Q15t5NQ1Aik	Ozone 101 What Is the Ozone Hole	Ozone 101 is the first in a series of explainer videos outlining the fundamentals of popular Earth science topics. Let's back up to the basics and understand what caused the Ozone Hole, its effects on the planet, and what scientists predict will happen in future decades. Music credit: "Glacial Shifts," "Crystallize," and "Morning Dew" from Universal Production Music Credit: NASA's Goddard Space Flight Center Kathleen Gaeta(GSFC AIMMS): Lead Producer Paul Newman NASA/GSFC): Lead Scientist Adriana Manrique Gutierrez (KBRwyle): Lead Animator Walt Feimer (KBRwyle): Animator Alexander Bodnar (AIMM): Animator Susan Strahan (USRA): Scientist This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14037. While the video in its entirety can be shared without permission, some individual imagery provided by pond5.com is obtained through permission and may not be excised or remixed in other products. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link

2021 11 30 NASA Goddard <https://youtu.be/UyPFJp65L18> LCRD Podcast Season Trailer The Invisible Network

NASA's Space Communications and Navigation (SCaN) podcast, The Invisible Network, is back with a new season about NASA's Laser Communications Relay Demonstration (LCRD). LCRD will showcase the capabilities of high data rate optical communications technologies, relaying data over infrared laser links.

[Transcript Link](#)

Join us on a journey where lasers light the way! Find the show on most podcasting platforms or at www.nasa.gov/invisible

Music credit: Danny Baird

Credit: NASA's Goddard Space Flight Center

Producer: Danny Baird

LCRD Visualizations:

Rich Melnick (KBRwyle): Lead Producer

Brian Monroe (USRA): Lead Animator

LK Ward (KBRwyle): Narration

Rob Andreoli (AIMM): Videographer

Aaron E. Lepsch (ADNET): Technical Support

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2021 11 30 NASA Goddard <https://youtu.be/wySmu7mOA3k> Tour Stunning Hubble Nebulae Images

Over the years, the Hubble Space Telescope has taken hundreds of images of different kinds of incredible nebulae in our universe.

[Transcript Link](#)

A nebula is a giant cloud of dust and gas in space. There are different types of nebulae, ranging from sites where stars are being born under gravitational pressures to expanding gaseous remnants thrown off by dying stars.

Hubble Senior Project Scientist, Dr. Jennifer Wiseman, takes us on a tour of some of our universe's most incredible Nebulae.

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center

Paul Morris: Lead Producer

Dr. Jennifer Wiseman: Narration

Additional Credits:

Zoom in to Orion Nebula:

Ground-based image taken by Akira Fujii, zoom in on the star formation region of the Orion Nebula observed by Martin Kornmesser

Zoom in to the Cat's Eye Nebula:

NASA, ESA, HEIC, NOT, Digitized Sky Survey 2, the Hubble Heritage Team (STScI/AURA) and Romano Corradi (Isaac Newton Group of Telescopes, Spain)

2021 11 26	NASA Goddard	https://youtu.be/ALnlZcRoQDY	Supercomputer Simulations Test Star-destroying Black Holes	Watch as eight stars skirt a black hole 1 million times the mass of the Sun in these supercomputer simulations. As they approach, all are stretched and deformed by the black hole's gravity. Some are completely pulled apart into a long stream of gas, a cataclysmic phenomenon called a tidal disruption event. Others are only partially disrupted, retaining some of their mass and returning to their normal shape after their horrific encounter. These simulations are the first to combine the physical effects of Einstein's theory of general relativity with realistic stellar density models. The virtual stars range from about one tenth to 10 times the Sun's mass. The division between stars that fully disrupt and those that endure isn't simply related to mass. Instead, survival depends more on the star's density. Scientists investigated how other characteristics, such as different black hole masses and stellar close approaches, affect tidal disruption events. The results will help astronomers estimate how often full tidal disruptions occur in the universe and will aid them in building more accurate pictures of these calamitous cosmic occurrences. Music credit: "Lava Flow Instrumental" from Universal Production Music Credit: NASA's Goddard Space Flight Center/Taeho Ryu (MPA)	Transcript Link
2021 11 24	NASA Goddard	https://youtu.be/buCP1UtT9I0	Sonification of the Bubble Nebula	In this Hubble image, a super-hot, massive star is blowing an enormous bubble into space. Fittingly named the Bubble Nebula, this beautiful cosmic object is roughly seven light-years across and resides 7,100 light-years from Earth. Scanned from top to bottom, color is mapped to pitch in this sonification of the nebula. The bright blue of the bubble can be heard as higher pitches; the red and orange regions' lower pitches are heard most clearly at the beginning on the left and in the top half of the bubble in the middle. Brightness controls the volume and stars are represented by chimes. Sonification credits: SYSTEM Sounds (M. Russo, A. Santaguida) For more information about the Hubble Space Telescope and its images, visit https://nasa.gov/hubble. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13999. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/13999. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html. See more Hubble videos on YouTube:	Transcript Link

2021 11 19 NASA Goddard <https://youtu.be/2OY3PHJ4bhc> Terra's Orbital Drift

In 2020, Terra completed its final inclination maneuver, using some of its limited fuel supply, to maintain that crossing time. Since that final inclination maneuver, Terra has continuously drifted to an earlier equatorial crossing time. To ensure Terra, with limited fuel supplies, is a safe distance from other missions in the Earth Observing Satellite constellation orbit, Terra will be lowered to a new orbit in 2022, where it will be able to collect valuable data at an even earlier crossing time. As Terra's crossing time creeps earlier, small changes will be noticeable in the data and imagery collected by the instruments aboard Terra. The impact on science is expected to be minimal. In fact, some impacts could prove beneficial to some areas of research, like land morphology, surface temperature, and climate research.

[Transcript](#)
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Read more: <https://terra.nasa.gov/about/terra-orbital-drift>

Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio

Liz Wilk (KBRwyle): Lead Producer
Kel Elkins (USRA): Lead Visualizer
Tassia Owen (GST): Lead Project Support
Scott Wiessinger (KBRwyle): Narrator
Lahouari Bounoua (NASA/GSFC): Scientist
Robert E Wolfe (NASA): Scientist
Kurtis Thome (NASA): Scientist
Dimitrios Mantziaras (NASA): Engineer
Jason Hendrickson (KBRwyle): Engineer

2021 11 18 NASA Goddard https://youtu.be/Vvfk_cHXPM0 Hubble's Grand Tour of the Outer Solar System

From its vantage point high above Earth's atmosphere, NASA's Hubble Space Telescope has completed its annual grand tour of the outer solar system – returning crisp images that are almost as good as earlier snapshots from interplanetary spacecraft. This is the realm of the giant planets — Jupiter, Saturn, Uranus, and Neptune – extending as far as 30 times the distance between Earth and the Sun.

[Transcript](#)
[Link](#)

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center
Paul Morris: Lead Producer

Music Credits:
"Crescent Moon" by Laetitia Frenod [SACEM] via Koka Media [SACEM], Universal Production Music France [SACEM], and Universal Production Music

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2021 11 18	NASA Goddard	https://youtu.be/c4Xky6tIFyY	Moon Phases 2022 – Northern Hemisphere – 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2022, as viewed from the Northern Hemisphere. Each frame represents one hour. In addition, this visualization shows the Moon's orbit position, sub-Earth and subsolar points, and distance from the Earth at true scale. Craters near the terminator are labeled, as are Apollo landing sites, maria, and other albedo features in sunlight. Video credit: NASA's Goddard Space Flight Center Data visualization by Ernie Wright (USRA) Producer & Editor - David Ladd (AIMM) Music provided by Universal Production Music: "Build the Future" – Alexander Hitchens This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/4955. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/4955. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines. If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center	Transcript Link
2021 11 18	NASA Goddard	https://youtu.be/8VOb10JCKI	Moon Phases 2022 – Southern Hemisphere – 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2022, as viewed from the Southern Hemisphere. Each frame represents one hour. In addition, this visualization shows the Moon's orbit position, sub-Earth and subsolar points, and distance from the Earth at true scale. Craters near the terminator are labeled, as are Apollo landing sites, maria, and other albedo features in sunlight. Video credit: NASA's Goddard Space Flight Center Data visualization by Ernie Wright (USRA) Producer & Editor - David Ladd (AIMM) Music provided by Universal Production Music: "Blossom Hills" – Achille Richard This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/4956. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/4956. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines. If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link

2021 11 16	NASA Goddard	https://youtu.be/GR_KWvtyUbM	Sonification of the Butterfly Nebula	This spectacular Hubble image of the Butterfly Nebula shows a colorful view of star death. The "wings" of the butterfly are regions of gas heated to more than 36,000° F (about 20,000° C) that are tearing across space at more than 600,000 miles an hour (966,000 kph)! Vertical position is mapped to pitch – meaning that light towards the top of the image is higher pitched. The nebula is played on strings and synthetic tones, while stars are represented by digital harp. Brightness controls the volume, and the tilted hourglass orientation of the nebula produces an overall rising motion, with the prominent iron-rich jet producing a quick rise near the center. Sonification credits: SYSTEM Sounds (M. Russo, A. Santaguida) For more information about the Hubble Space Telescope and its images, visit https://nasa.gov/hubble. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13998. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/13998. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html.	Transcript Link
2021 11 10	NASA Goddard	https://youtu.be/NONDwKx6ax8	VP Kamala Harris at NASA's Goddard Space Flight Center	The urgency of Earth science and climate studies took the spotlight Friday, Nov. 5, 2021, as U.S. Vice President Kamala Harris visited NASA's Goddard Space Flight Center in Greenbelt, Maryland. Alongside NASA Administrator Bill Nelson, the vice president received a firsthand look at how NASA studies climate change and provides crucial information to understand our planet's changes and their impacts on our lives. Read more: https://www.nasa.gov/press-release/vice-president-harris-visits-nasa-to-see-vital-climate-science-work Music: "Social Matters" via Universal Production Music Video credit: NASA's Goddard Space Flight Center Wade Sisler (NASA/GSFC): Lead Public Affairs Officer Rich Melnick (KBRwyle): Lead Producer Michael Randazzo (AIMM): Editor Rob Andreoli (AIMM): Videographer John Caldwell (AIMM): Production Assistant Pat Kennedy (KBRwyle): Video Engineer Aaron E. Lepsch (ADNET): Technical Support This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/14017. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. For more information on	Transcript Link

2021 11 09	NASA Goddard	https://youtu.be/ETm-hildOo4	The DAVINCI Mission to Venus	Launching in 2029, NASA's Deep Atmosphere Venus Investigation of Noble gases, Chemistry and Imaging (DAVINCI) mission will bring a rich suite of instruments to Venus to address long standing questions about Earth's sister planet. Some scientists think Venus may once have been more Earth-like in the past, with oceans and pleasant surface temperatures -- DAVINCI data will help us determine if this intriguing possibility is true. Clues to Venus' mysterious past may be hidden in atmospheric gases or in surface rocks formed in association with ancient water in the planet's mountainous highlands. During two flybys, the DAVINCI carrier, relay, and imaging spacecraft will collect data on the planet's day side of unknown compounds that absorb ultraviolet light in the Venus upper atmosphere with an instrument called the Compact Ultraviolet to Visible Imaging Spectrometer (CUVIS); on the planet's night side, the Venus Imaging System for Observational Reconnaissance (VISOR) will sense heat from Venus' surface emerging from beneath the clouds to help us better understand the composition of diverse geological highlands regions across Venus. VISOR will also study clouds on the Venus day side in the ultraviolet, producing cloud motion movies. Venus has a scorching surface hotter than your home oven, and a complex atmosphere 90 times thicker than Earth's made mostly of carbon dioxide and with sulfuric acid clouds. Two years after launch, the DAVINCI descent sphere will be dropped by the carrier spacecraft into this extreme environment to provide new direct measurements of the Venus atmosphere, and to reveal a bird's eye	Transcript Link
2021 11 05	NASA Goddard	https://youtu.be/sxa_dcq5IQg	Sonification of NGC 2392	About 5,000 light-years from Earth, the stunning nebula NGC 2392 formed after the demise of a star like our Sun. In this sonification, the image is scanned clockwise like a radar. The radius is mapped to pitch, so light farther from the center is higher pitched. The outline of the nebula's shell can be heard in the rising and falling of pitch, punctuated by its spokes. Brightness controls the volume. Sonification credits: SYSTEM Sounds (M. Russo, A. Santaguida) For more information about the Hubble Space Telescope and its images, visit https://nasa.gov/hubble. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13997. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/13997. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html. See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN	Transcript Link

2021 11 04	NASA Goddard	https://youtu.be/t-rxDU-KE_E	Hubble Science Starbirth Nebulae, Cosmic Cradles	For the past 31 years, the Hubble Space Telescope has continued its important mission of uncovering the mysteries of the universe. One of those mysteries that Hubble has helped us begin to understand are the beautiful nebulae in space. For more information, visit https://nasa.gov/hubble. Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund Production & Post: Origin GSFC Support: Lynn Bassford	Transcript Link
2021 11 01	NASA Goddard	https://youtu.be/-NZIvvhGIRO	Climate Change Could Affect Global Agriculture Within 10 Years	Average global crop yields for maize, or corn, may see a decrease of 24% by late century, with the declines becoming apparent by 2030, with high greenhouse gas emissions, according to a new NASA study. Wheat, in contrast, may see an uptick in crop yields by about 17%. The change in yields is due to the projected increases in temperature, shifts in rainfall patterns and elevated surface carbon dioxide concentrations due to human-caused greenhouse gas emissions, making it more difficult to grow maize in the tropics and expanding wheat's growing range. Music: "Futurity" from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathryn Mersmann (KBRwyle): Lead Producer Ellen T. Gray (ADNET): Lead Writer Mark SubbaRao (NASA/GSFC): Lead Visualizer Jonas Jaegermeyer (Columbia University): Lead Scientist Alexander C. Ruane (NASA/GISS): Scientist This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13979. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such media may be found here: https://svs.gsfc.nasa.gov/13979. For more information on NASA's media guidelines, visit https://svs.gsfc.nasa.gov/13979.	Transcript Link

2021 11 01	NASA Goddard	https://youtu.be/PYRDjR7peLw	Hubble's Field Guide to Nebulae	Nebulae are some of the most resplendent objects in the universe, but it's easy to confuse which one is an "emission nebula," and which one is an "absorption nebula." Thankfully, this "Field Guide" will give you a quick rundown so you can impress all of your friends with your nebulae Knowledge! And thanks to the Hubble Space Telescope, we can study all sorts of nebulae in all of their magnificent forms. For more information, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Andrea Gianopoulos: Lead Writer Cassandra Morris: Narration Additional Credits: Photo Logo Opener by Tony Ivonin via Motion Array Music Credits: "Himalayan Temple" by Jan Pham Huu Tri [SACEM] via Koka Media [SACEM], Universal Production Music France [SACEM], and Universal Production Music	Transcript Link
2021 10 29	NASA Goddard	https://youtu.be/E8csg9YSMkk	Active October Sun Releases X-Class Flare	This video can be freely shared and downloaded at Brighter than a shimmering ghost, faster than the flick of a black cat's tail, the Sun cast a spell in our direction, just in time for Halloween. This imagery captured by NASA's Solar Dynamics Observatory covers a busy few days of activity between Oct. 25-28 that ended with a significant solar flare. From late afternoon Oct. 25 through mid-morning Oct. 26, an active region on the left limb of the Sun flickered with a series of small flares and petal-like eruptions of solar material. Meanwhile, the Sun was sporting more active regions at its lower center, directly facing Earth. On Oct. 28, the biggest of these released a significant flare, which peaked at 11:35 a.m. EDT. Solar flares are powerful bursts of radiation. Harmful radiation from a flare cannot pass through Earth's atmosphere to physically affect humans on the ground, however — when intense enough — they can disturb the atmosphere in the layer where GPS and communications signals travel. This flare was classified as an X1-class flare. X-class denotes the most intense flares, while the number provides more information about its strength. An X2 is twice as intense as an X1, an X3 is three times as intense, and so on. Flares that are classified X10 or stronger are considered unusually intense. This was the second X-class flare of Solar Cycle 25, which began in	Transcript Link

2021 10 29	NASA Goddard	https://youtu.be/kBGoZtBnFnc	Photon Phright-day Ghost Islands	Remote, recently formed (via volcanic eruptions) oceanic islands in the deep ocean can be studied by satellite lidar altimetry as ICESat2 has been doing, but especially with the satellite lidar bathymetry of the shallows where even ship-based sonars cannot go due to shallow, rough waters. At Hunga Tonga Hunga Ha’apai (HTHH), the interior crater lake probably represents a vent complex for the tuff cone volcano that erupted over about one month in late 2014 into January 2015, forming the first “surtseyan” island that has survived for more than one year in more than 50 years. This crater lake can now be explored via ICESat-2 satellite lidar bathymetry using precision-targeted transections that can show submarine topography to depths greater than 10 meters. Our raft-based low-resolution sonar sounder depth readings from October 2019 SEA/NASA field expedition to HTHH suggest max depth are 12-15 meters with 1-2 meter vertical errors on these values. The high precision ICESat2 lidar bathymetry measured depths of greater than 10 meters on the inner crater walls and over time could develop a map of bathymetric points to fully characterize the crater without requiring costly and logistically complex field operations at the remote island. ICESat2’s agility in measuring uniquely dynamic and sometimes short-lived phenomena is unique	Transcript Link
2021 10 28	NASA Goddard	https://youtu.be/Oonwt7YG0AQ	A Decade of Discovery for Suomi-NPP	Since its launch on Oct. 28, 2011, the remarkable instruments on the Suomi-NPP satellite have captured a wealth of valuable data and beautiful images of our home planet. Suomi-NPP is the first of a series of polar-orbiting weather satellites known as the Joint Polar Satellite System, a mission to provide valuable weather and environmental data into the 2030s. Video credit: NASA's Goddard Space Flight Center Jefferson Beck (KBRwyle): Lead Producer Jenny Marder Fadoul (Telophase): Lead Writer Music: "Galore" by Lee Groves and Peter George Marett [PRS], Universal Production Music. "Final Words" by Florian Moenks [GEMA] and Mathhew Anderson [PRS], Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13981. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such media may be found here: https://svs.gsfc.nasa.gov/13981. For more information on NASA’s media guidelines, visit https://nasa.gov/multimedia/guidelines. If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2021 10 28	NASA Goddard	https://youtu.be/ZjluTNDPKyM	Hubble Spotted Something 'Scary'	A hypnotizing vortex? A peek into a witch's cauldron? A giant space-spider web? In reality, it's a look at the red giant star CW Leonis as photographed by NASA's Hubble Space Telescope — just in time for celebrating Halloween with creepy celestial sights! Be careful, this video is spooky! For more information: https://nasa.gov/hubble Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Additional Credits: -Pumpkin Animation by HU Shahir via Motion Array -Spider Transition by VitApSwF via Motion Array -Halloween Cartoon Opener (Bat) by Timur Yakupov via Motion Array -Ghost Animation from Halloween Instagram Stories Pack Vol.1 by UmutU via Motion Array -Black Cat by Zlajs via Motion Array -Spider Web on Alpha Loop by Mushni via Motion Array Sound Effects Credits: -Bats for Halloween by Beison via Motion Array -Cat Meow by Beison via Motion Array -Demonic Scream by Media_M via Motion Array	Transcript Link
2021 10 25	NASA Goddard	https://youtu.be/7bz03OnyD2A	29 Days on the Edge	The greatest origin story of all unfolds with the James Webb Space Telescope. Webb's launch is a pivotal moment that exemplifies the dedication, innovation, and ambition behind NASA and its partners, the European Space Agency (ESA) and Canadian Space Agency (CSA), but it is only the beginning. The 29 days following liftoff will be an exciting but harrowing time. Thousands of parts must work correctly, in sequence, to unfold Webb and put it in its final configuration, all while it flies through the expanse of space alone, to a destination nearly one million miles away. As the largest and most complex telescope ever sent into space, the James Webb Space Telescope is a technological marvel. By necessity, Webb takes on-orbit deployments to the extreme. Each step can be controlled expertly from the ground, giving Webb's Mission Operations Center full control to circumnavigate any unforeseen issues with deployment. Video credit: NASA Goddard Space Flight Center Michael McClare (KBRwyle): Producer Michael McClare (KBRwyle): Director Michael McClare (KBRwyle): Writer Michael McClare (KBRwyle): Video Editor Aaron E. Lepsch (ADNET): Technical Support This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13952. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not	Transcript Link

2021 10 20	NASA Goddard	https://youtu.be/MAwtM_aq-1U	Ten Mysteries of Venus	The surface of Venus is completely inhospitable for life: barren, dry, crushed under an atmosphere about 90 times the pressure of Earth's and roasted by temperatures two times hotter than an oven. But was it always that way? Could Venus once have been a twin of Earth — a habitable world with liquid water oceans? This is one of the many mysteries associated with our shrouded sister world. 27 years have passed since NASA's Magellan mission last orbited Venus. That was NASA's most recent mission to Earth's sister planet, and while we have gained significant knowledge of Venus since then, there are still numerous mysteries about the planet that remain unsolved. NASA's DAVINCI (Deep Atmosphere Venus Investigation of Noble gases, Chemistry, and Imaging) mission hopes to change that. Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Narrator Brooke Hess (NASA/Interns): Lead Writer William Steigerwald (NASA/GSFC):	Transcript Link
2021 10 19	NASA Goddard	https://youtu.be/eXcT71wYYT0	Behind the Scenes of Creating Visions of the Future	Behind-the-scenes views of models shot in the studio and the final effect in the video. To see the posters: https://www.jpl.nasa.gov/galleries/visions-of-the-future Music: "Downloading Landscapes" from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Chris Smith (KBRwyle) and NASA/JPL-Caltech Chris Smith (KBRwyle): Lead Producer Chris Smith (KBRwyle): Lead Animator Chris Smith (KBRwyle): Videographer Chris Smith (KBRwyle): Editor Francis Reddy (University of Maryland College Park): Science Writer Scott Wiessinger (KBRwyle): Additional Assistance This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13947. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/13947. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines. If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2021 10 19	NASA Goddard	https://youtu.be/VQ5ujHQ888o	NASA's Visions of the Future	At NASA, our mission is to explore. We visit destinations in our solar system and study worlds beyond to better understand big questions. How did we get here? Where are we headed? Are we alone? While our robotic explorers have toured our solar system, the only place beyond Earth where humans have stood is the Moon. That's also the next place we'll send astronauts. But not the last! While humans haven't yet visited Mars, we're planning to add boot prints to the rover tire tracks there now. We also dream of traveling to distant worlds, and what they might be like. This video shows fanciful, imagined adventures to real places we've studied. Inspired by a series of travel posters produced by NASA's Jet Propulsion Laboratory in Southern California, Goddard video maven Chris Smith employed green screens and computer graphics to bring these scenes to life. To see the posters: https://www.jpl.nasa.gov/galleries/visions-of-the-future Music: "Life Choices" from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Chris Smith (KBRwyle) and NASA/JPL-Caltech Chris Smith (KBRwyle): Lead Producer Chris Smith (KBRwyle): Lead Animator	Transcript Link
2021 10 19	NASA Goddard	https://youtu.be/QFQQKAtI4UQ	Comparing Visions of the Future to the Posters that Inspired It	Side-by-side views of the original JPL travel posters and their animated versions. To see the posters: https://www.jpl.nasa.gov/galleries/visions-of-the-future Music: "Luminance" from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Chris Smith (KBRwyle) and NASA/JPL-Caltech Chris Smith (KBRwyle): Lead Producer Chris Smith (KBRwyle): Lead Animator Chris Smith (KBRwyle): Videographer Chris Smith (KBRwyle): Editor Francis Reddy (University of Maryland College Park): Science Writer Scott Wiessinger (KBRwyle): Additional Assistance This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13947. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/13947. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines. If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2021 10 18	NASA Goddard	https://youtu.be/OAFkd5DdLZU	Laser Communications Relay Demonstration (LCRD) Overview	The Laser Communications Relay Demonstration (LCRD) will fly as a hosted payload aboard a Department of Defense spacecraft as part of the Space Test Program (STP-3) mission. LCRD will continue NASA's exploration of laser communications to support future missions to the Moon and beyond. Laser communications will enable better data rates, making possible new capabilities such as 4K ultra-high-definition streaming from beyond Earth orbit. It will also allow communications systems to become smaller, lighter, and more efficient. LCRD will demonstrate the technology over several years before laser communications becomes operational for future NASA missions. Read more: https://www.nasa.gov/feature/goddard/2021/nasas-laser-communications-relay-demonstration-gears-up-for-launch Music: "Time Shift Equalibrium," "Frames of Motion," "Inducing Waves," all via Universal Production Music Video credit: NASA's Goddard Space Flight Center Conceptual Image Lab Rich Melnick (KBRwyle): Lead Producer Brian Monroe (USRA): Lead Animator LK Ward (KBRwyle): Narration Rob Andreoli (AIMM): Videographer Aaron E. Lepsch (ADNET): Technical Support	Transcript Link
2021 10 18	NASA Goddard	https://youtu.be/5ZMcdg1WyXs	Lucy's Journey	This video can be freely shared and downloaded at https://www.nasa.gov/feature/goddard/2021/nasas-lucys-journey-to-the-trojan-asteroids Meet Lucy as she prepares for the first ever journey to the Trojan asteroids, a population of primitive small bodies orbiting in tandem with Jupiter. Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Writer Krystofer Kim (KBRwyle): Lead Animator Walt Feimer (KBRwyle): Animator Michael Lentz (KBRwyle): Art Director Sophia Roberts (AIMM): Narrator Aaron E. Lepsch (ADNET): Technical Support Music is "Fizzy and Witty" by Fabien Langard and Philippe Villar, ...	Transcript Link

2021 10 18	NASA Goddard	https://youtu.be/aD1OQ9UBwuU	Earth, Sun from Moon's South Pole	This visualization shows the unusual motions of Earth and the Sun as viewed from the South Pole of the Moon. The animation compresses three months (a little over three lunar days) into two minutes. The virtual camera is on the rim of Shackleton Crater, partially visible in the bottom right, and is aimed at the Earth. The mountain on the horizon, about 85 miles away, is unofficially known as Mons Malapert. Here, the Sun glides around the horizon, never more than 1.5 degrees above or below it, while the Earth bobs up and down, never veering far from 0° longitude. The Earth appears to be upside-down and rotating backwards. The perpetually low Sun angle produces extremely long shadows that rotate across the rugged lunar terrain. In the second month of the visualization, Earth passes in front of the Sun, creating an eclipse. For observers on Earth, this is a lunar eclipse, in which the Moon passes through the shadow cast by Earth. Viewed from the Moon, however, this is an eclipse of the Sun. Video credit: NASA's Goddard Space Flight Center Visualizations by: Ernie Wright (USRA) Narrated by: Ernie Wright (USRA) Produced & Edited by: David Ladd (AIMM) Lead Scientist: Noah Petro (NASA/GSFC) Technical Support: Laurence Schuler (ADNET), Ian Jones (ADNET) Music Provided by Universal Production Music: "Enduring Faith" –	Transcript Link
2021 10 15	NASA Goddard	https://youtu.be/xp0dlo6HieQ	Lucy Launch Trailer	On Oct. 16, 2021, our Lucy spacecraft will begin its journey to visit a record-breaking number of asteroids. The 12-year mission starts from NASA's Kennedy Space Center in Florida, where it'll launch aboard a United Launch Alliance Atlas V 401 rocket. Lucy's first launch attempt in its 21-day launch window is scheduled for 5:34 a.m. EDT on Oct. 16. Launch coverage starts at 5 a.m. EDT at nasa.gov/live, on NASA TV, the NASA app, and @NASA social media. Be a part of Lucy's historic launch day by using the hashtag #LucyMission! Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Sami Aziz (NASA/Kennedy Space Center): Producer Music is "Funky Spy" from Gothic Storm Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13967. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such	Transcript Link

2021 10 14	NASA Goddard	https://youtu.be/uAGSoAX8FUw	Water Vapor Detected In Europa's Atmosphere	Observations of Jupiter's icy moon Europa from NASA's Hubble Space Telescope have revealed the presence of persistent water vapor — but, mysteriously, only in one hemisphere. Europa harbors a vast ocean underneath its icy surface, which might offer conditions hospitable for life. This result advances astronomers' understanding of the atmospheric structure of icy moons, and it helps lay the groundwork for planned science missions to the Jovian system to, in part, explore whether an environment half-a-billion miles from the Sun could support life. For more information, visit https://www.nasa.gov/feature/goddard/2021/hubble-finds-evidence-of-persistent-water-vapor-in-one-hemisphere-of-europa. Video credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Additional credits: Artist's Impressions of a Water Atmosphere on Europa: ESA/Hubble, J. da Silva Galileo Spacecraft's Image of Europa: NASA/JPL-Caltech/SETI Institute Music: "Maps of Deception" by Idriss-El-Mehdi Bennani [SACEM], Olivier	Transcript Link
2021 10 14	NASA Goddard	https://youtu.be/hvRGMWtvTs	Lucy's Journey Episode 6 - Into the Unknown	Meet Lucy as she prepares for the first ever journey to the Trojan asteroids, a population of primitive small bodies orbiting in tandem with Jupiter. Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Writer Krystofer Kim (KBRwyle): Lead Animator Walt Feimer (KBRwyle): Animator Michael Lentz (KBRwyle): Art Director Sophia Roberts (AIMM): Narrator Aaron E. Lepsch (ADNET): Technical Support Music is "Flying Squad" by Steve Martin and "Extra Terrestrial" by	Transcript Link

2021 10 13	NASA Goddard	https://youtu.be/GODxYZMueoQ	International Observe the Moon Night 2021	Friends from across the world will #ObserveTheMoon this Saturday evening, Oct. 16, 2021. Hear from a few of them and comment to let us know what observing the Moon means to you! Learn more about International Observe the Moon Night and how to participate: https://moon.nasa.gov/observe-the-moon-night/ Music: "A Better World" by L. Minelli via Universal Production Music Video credit: NASA's Goddard Space Flight Center Madison Dean (NASA Intern): Lead Producer Lead Editor Staci Tiedeken (ADNET): Editor Video contributors: Victoriano Canales Cerdá - Spain Andy Shaner - Houston, Texas Japan Aerospace Exploration Agency (JAXA) - Japan NDLOVU Youth Choir - South Africa Unione Astrofili Italiani & Associazione Astrofili di Piombino - Piombino, Italy Polish Space Agency - Warsaw, Poland Professor Jorge Muñoz and students Javiera, Allison, and Tatiana -	Transcript Link
2021 10 13	NASA Goddard	https://youtu.be/ME2AWUCmutA	Working on a NASA Mission Lucy Goes to Space	Discover the mysteries of the solar system through the eyes of the Lucy mission and its team members. This fifth episode features a variety of team members who discuss their roles on the Lucy mission. Video credit: NASA's Goddard Space Flight Center Lead Producer: James Tralie (ADNET) Lead Editor: James Tralie (ADNET) Lead Animator: Krystofer Kim (KBRwyle) Animator: Walt Feimer (KBRwyle) Interviewees: Donya Douglas Bradshaw (NASA/GSFC) Carly Howett (New Horizons/Southwest Research Institute) Cory Prykull (Lockheed Martin) Michael Sekerak (NASA/GSFC) Tiffany Kapler (SWRI) Rick Berry (NASA/GSFC) Elizabeth McCall (NASA/GSFC)	Transcript Link

2021 10 11	NASA Goddard	https://youtu.be/7w0Enb-hxo4	Goddard Space Flight Center Virtual Tour	NASA's Goddard Space Flight Center in Greenbelt, Maryland, is one of the few space organizations that can manage a mission from beginning to end: imagine it, build it, test it, launch it and reap the scientific benefits. Come take a behind-the-scenes look at our facilities and meet some of the people who are working every day to make the impossible possible. Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Swarupa Nune (InuTeq): Lead Producer Swarupa Nune (InuTeq): Lead Editor Michael Randazzo (AIMM): Lead Editor Rob Andreoli (AIMM): Lead Videographer John Caldwell (AIMM): Videographer Courtney A. Lee (ADNET): Lead Talent Travis Wohlrab (NASA): Lead Talent Music: After Party by Morgan Prudhomme [SACEM] Publishers KTSA Publishing [SACEM] Riviera by Armand Falco [SACEM] Khatchadour Babelian [SACEM] Publishers KTSA Publishing [SACEM] Digital Dreamscape by Josselin Bordat [SACEM] Publishers Koka Media [SACEM] Universal Production Music France [SACEM] Up On the Mountain by Bruce Driscoll [BMI] Marie Seyrat [BMI] Publishers Killer Tracks [BMI] Natural Time Cycles by Laurent Dury [SACEM] Publishers Koka	Transcript Link
2021 10 08	NASA Goddard	https://youtu.be/k7C49Varg3w	Teaser — The Most Important Instrument You've Never Heard Of	The Advanced Technology Microwave Sounder. This little-known tool affects our daily lives and helps us understand our weather and climate. Orbiting 512 miles over our head on a pair of sister satellites, ATMS helps improve weather forecasts and confirms that our climate is changing. This video is a teaser for an interactive feature on the life-changing contributions of microwave sounders. The story is here: https://storymaps.arcgis.com/stories/90de52ccc6e04ba1b50b68e0d1057bf7 Music: Cellular Navigation by Jack Wade [PRS], via Universal Production Music Video credit: NASA's Goddard Space Flight Center Jefferson Beck (KBRwyle): Lead Producer Jenny Marder Fadoul (Telophase): Lead Writer Cindy Starr (GST): Lead Visualizer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13960. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such media may be found here: https://svs.gsfc.nasa.gov/13960. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines.	Transcript Link

2021 10 07	NASA Goddard	https://youtu.be/Ww-U-qfsTs4	Lucy's Journey Episode 5 - The First Flyby	Meet Lucy as she prepares for the first ever journey to the Trojan asteroids, a population of primitive small bodies orbiting in tandem with Jupiter. Music is "Frantic Funk Out" by Anders Johan Greger Lewen, "Jewel" by Arnaud Rignon and Sebastien Langolff and "Shaken and Stirred" by Steve Martin, via Universal Production Music Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Writer Krystofer Kim (KBRwyle): Lead Animator Walt Feimer (KBRwyle): Animator Michael Lentz (KBRwyle): Art Director Sophia Roberts (AIMM): Narrator	Transcript Link
2021 10 06	NASA Goddard	https://youtu.be/21Xh24lnWds	Driving a Spacecraft Lucy Goes to Space	Discover the mysteries of the solar system through the eyes of the Lucy mission and its team members. This fourth episode features Lucy Flight Navigator Coralie Adam, who discusses how the team directs Lucy on its journey to the Trojan asteroids. Music is "256 Kenaston Ave" by Jean-Christophe Beck, "Scientist" by Axel Coon and Ralf Goebel, and "Laboratory" By Axel Coon and Ralf Goebel, via Universal Production Music. Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Coralie Adam (KinetX): Scientist Krystofer Kim (KBRwyle): Lead Animator Walt Feimer (KBRwyle): Animator Michael Lentz (KBRwyle): Art Director	Transcript Link

2021 10 05	NASA Goddard	https://youtu.be/k0e-z43kTOW	Designing Lucy's Path to the Trojan Asteroids	Lucy is the first mission to explore the Jupiter Trojans – two swarms of asteroids that share Jupiter's orbit, leading and trailing the giant planet by sixty degrees. These primitive bodies are thought to be the "fossils" of planet formation, trapped by Jupiter's gravity at the dawn of the solar system. Now, NASA is sending Lucy on a winding, twelve-year-long path to visit one main-belt asteroid and seven Jupiter Trojans. Lucy will provide the first up-close look at these mysterious objects, helping scientists to better understand the evolution of the solar system. Learn more about Lucy's path to eight asteroids: https://solarsystem.nasa.gov/news/2007/nasas-lucy-mission-a-journey-to-the-young-solar-system/ Music: "Ocean Simulation" and "The Sequencer Paradox" by Laetitia Frenod; "The Chess Game" by David James Elliott and Martin Gratton; "Tale of Time" by Markus Gleissner, via Universal Production Music Asteroid Ryugu imagery provided by: JAXA Hayabusa 2 Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Dan Gallagher (KBRwyle): Lead Producer Kel Elkins (USRA): Lead Visualizer Ned Barbee (Lockheed Martin): Producer Cathy Olkin (SwRI): Interviewee	Transcript Link
2021 10 04	NASA Goddard	https://youtu.be/vs8DoUPm30A	What's in Your %23LucyTimeCapsule	Where will you be and what will you be up to in August of 2027? What about March of 2033? The NASA Lucy mission invites you follow along with Lucy on this 12-year journey by building your very own #LucyTimeCapsule. What will you put in yours? Learn more: https://www.nasa.gov/feature/goddard/2021/nasa-lucy-team-invites-public-to-build-own-time-capsule Video credit: NASA's Goddard Space Flight Center Madison Dean (NASA Interns): Lead Producer Sarah Readdean (NASA Interns): Script Writer James Tralie (ADNET): Narrator Nancy Neal-Jones (NASA/GSFC): Public Affairs Officer Music: "Fanfare for Lucy" by Ben Boatwright, via SoundCloud (Lucy Soundscapes submission: https://www.nasa.gov/lucy-soundscape) This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13953. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/13953. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html	Transcript Link

2021 10 04	NASA Goddard	https://youtu.be/bYfaGjSJEc8	Observe the Moon — by P!NK & Ndlovu Youth Choir	In celebration of International Observe the Moon Night (Oct. 16, 2021), NASA’s Lunar Reconnaissance Orbiter mission created this music video featuring the song "A Million Dreams," performed by the musical artist P!NK and the Ndlovu Youth Choir from South Africa. On this day, we recognize all of the beautiful aspects of observing the Moon, from the scientific to the inspirational. MUSIC LICENSED AND USED WITH PERMISSION: “A Million Dreams” Performed by P!NK and the Ndlovu Youth Choir P!NK appears courtesy of RCA Records By arrangement with Sony Music Entertainment Courtesy of UNICEF Written by Benj Pasek [ASCAP], Justin Paul [ASCAP] Published by Pick in a Pinch Music [ASCAP], Breathelike Music [ASCAP] Admin by Kobalt Songs Music Publishing Published by T C F Music Publishing, Inc. (ASCAP) VIDEO CREDITS: NASA’s Goddard Space Flight Center Produced and Edited by David Ladd (AIMM) Moon visualizations by Ernie Wright (USRA) Animations by NASA’s Conceptual Image Lab Cinematography by David Ladd Lowell Discovery Telescope footage by Stephen Tegler Stock Footage provided by Pond5	Transcript Link
2021 10 04	NASA Goddard	https://youtu.be/Ab2L1ktl8v0	Hubble Science Dark Energy, A Mysterious Force	For the past 31 years, the Hubble Space Telescope has continued its important mission of uncovering the mysteries of the universe. One of those mysteries that Hubble has helped us begin to understand is dark energy and dark matter. For more information, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund Production & Post: Origin	Transcript Link

2021 10 01	NASA Goddard	https://youtu.be/Mp87Kr8NpEc	NASA Celebrates International Music Day	Happy #InternationalMusicDay! To celebrate, we're listening to this mashup of Gustav Holst's "Jupiter" that some out-of-this-world content creators participated in on repeat. Music: Gustav Holst's "Jupiter," with performances by April Kae, Andrew Ascenzo, Joanna Serenko & Tyler Dale, and University of Colorado Golden Buffalo Marching Band. Video credit: NASA's Goddard Space Flight Center If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC · Flickr http://www.flickr.com/photos/gsfcr	Transcript Link
2021 09 30	NASA Goddard	https://youtu.be/65-eai3nlo	Lucy's Journey Episode 4 - Instruments	Meet Lucy as she prepares for the first ever journey to the Trojan asteroids, a population of primitive small bodies orbiting in tandem with Jupiter. Music is "Lazy Days" by Arch Bacon, via Universal Production Music Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Writer Krystofer Kim (KBRwyle): Lead Animator Walt Feimer (KBRwyle): Animator Michael Lentz (KBRwyle): Art Director Sophia Roberts (AIMM): Narrator Aaron E. Lepsch (ADNET): Technical Support	Transcript Link

2021 09 29	NASA Goddard	https://youtu.be/mwr4d3QZJhM	Planning for a Spacecraft Launch Lucy Goes to Space	Discover the mysteries of the solar system through the eyes of the Lucy mission and its team members. This third episode features Project Manager Donya Douglas-Bradshaw, who discusses the preparation involved in getting the Lucy spacecraft ready for launch. Music is "256 Kenaston Ave" by Jean-Christophe Beck, "Secret Admirer Flowers" by Brice Davoli, and "Strangely Calm" by Brice Davoli, via Universal Production Music Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Donya Douglas Bradshaw (NASA/GSFC): Scientist Krystofer Kim (KBRwyle): Lead Animator Walt Feimer (KBRwyle): Animator Michael Lentz (KBRwyle): Art Director	Transcript Link
2021 09 27	NASA Goddard	https://youtu.be/7dlfQIDitOg	Hubble Observes Jupiter's Great Red Spot Changing	Like the speed of an advancing race car driver, the winds in the outermost "lane" of Jupiter's Great Red Spot are accelerating – a discovery only made possible by NASA's Hubble Space Telescope, which has monitored the planet for more than a decade. Researchers analyzing Hubble's regular "storm reports" found that the average wind speed just within the boundaries of the storm, known as a high-speed ring, has increased by up to 8% from 2009 to 2020. In contrast, the winds near the red spot's innermost region are moving significantly more slowly, like someone cruising lazily on a sunny Sunday afternoon. For more information, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Music: "Underneath the same Moon" by JC Lemay [SACEM] via Koka Media [SACEM], Universal Production Music France [SACEM], and Universal Production Music. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13939. While the video in its entirety can be shared without permission, individual imagery provided by ESA (the European Space Agency) is obtained through permission. Their own media guidelines must be adhered to in its use. The music and	Transcript Link

2021 09 26	NASA Goddard	https://youtu.be/DGE-N8_LQBo	9 Things About Landsat 9	In anticipation of the launch of Landsat 9, we count down 9 things about the Landsat mission, the science, the technology and the people who continue its legacy. Music: "Thought and Passion," "Hot Air Balloon Trip," "Cristal Delight," "Flying Aloft," "Castles and Cathedrals," "On Going Steps," "Ongoing Journey," "Home Staging," "Arpology," "All Life Long," "Luv Beam," "Interchangeable Parts," "Electricity Tracks," "Digital Travelers," "Hyperion," Universal Production Music. Matthew Radcliff (KBRwyle): Lead Producer Lead Writer LK Ward (KBRwyle): Lead Producer Lead Writer Kate Ramsayer (Telophase): Lead Writer Ryan Fitzgibbons (KBRwyle): Lead Animator Lead Editor Adriana Manrique Gutierrez (KBRwyle): Animator	Transcript Link
2021 09 23	NASA Goddard	https://youtu.be/51YYnalWzsU	Einstein Ring Spotted by Hubble	This image, taken with the Hubble Space Telescope, shows a distant galaxy located in the constellation Fornax. It is the largest and one of the most complete Einstein rings ever discovered. This object's unusual shape is the result of gravitational lensing. Albert Einstein, in his general theory of relativity, first theorized that a large gravitational field could act as a lens. For more information, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Additional Acknowledgements and Credits: ESA/Hubble & NASA, S. Jha, L. Shatz Gravitational lensing in action video: NASA, ESA & L. Calçada Albert Einstein video: Pond 5 Music: "Finder" by Jamal Steven Pilgrim [ASCAP] via Open Note [ASCAP], and Universal Production Music This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13924. While the video in its entirety can be shared without permission, individual imagery provided by ESA (the European Space Agency) is obtained through permission. Their	Transcript Link

2021 09 23	NASA Goddard	https://youtu.be/XbZBsjviK0k	Lucy's Journey Episode 3 - The Trojan Asteroids	Meet Lucy as she prepares for the first ever journey to the Trojan asteroids, a population of primitive small bodies orbiting in tandem with Jupiter. Watch more episodes in "Lucy's Journey": https://www.youtube.com/playlist?list=PL_8hVmWnP_O0NJF7vd2ASOsqiaFURif_Z Music is "Nip and Tuck" by Arch Bacon, via Universal Production Music Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Writer Krystofer Kim (KBRwyle): Lead Animator Walt Feimer (KBRwyle): Animator Michael Lentz (KBRwyle): Art Director	Transcript Link
2021 09 22	NASA Goddard	https://youtu.be/U-REWv1UhO8	Arctic Sea Ice Reaches 2021 Minimum Extent	Arctic sea ice reached its minimum extent on Sept. 16, 2021, at 4.72 million square kilometers (1.82 million square miles). Read more: https://www.nasa.gov/feature/esnt/2021/nasa-finds-2021-arctic-summer-sea-ice-12th-lowest-on-record Music: "Celestial Vault" from Universal Production Music Video credit: NASA's Goddard Space Flight Center Kathleen Gaeta (GSFC AIMMS): Lead Producer Trent L. Schindler (USRA): Lead Animator Roberto Molar (KBR): Lead Writer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/4941. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/4941. For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines. If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard	Transcript Link

2021 09 22 NASA Goddard <https://youtu.be/gLtgrQvcQOA> Investigating Asteroids with Lucy's Scientific Instruments

This video highlights the suite of instruments aboard the Lucy spacecraft that will be used to collect data on the Trojan asteroids. Since Lucy will be the first space mission to explore the Trojans, the information gathered will provide extraordinary insight into the history of our solar system. The three main science instruments are L'LORRI, L'TES, and L'Ralph, and the mission will also utilize a High Gain Antenna and a terminal tracking camera (T2CAM) to carry out its investigations. The mission will launch in October 2021.

[Transcript Link](#)

Video credit: NASA's Goddard Space Flight Center
Produced & Edited by: David Ladd (AIMM)
Videographer: Rob Andreoli (AIMM)
Videographer: Christopher Tucker (Lockheed Martin)
Animations by: Walt Feimer (KBRwyle), Michael Lentz (KBRwyle), Jacquelyn DeMink (USRA), Jonathan North (KBRwyle), David Ladd (AIMM)

Music provided by Universal Production Music:
"Holy" - Martin Richter and Virginia Ernst
"Fired Up" - David Schwartz

This video can be freely shared and downloaded at <https://svs.gsfc.nasa.gov/13918>. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: <https://svs.gsfc.nasa.gov/13918>. For

2021 09 22 NASA Goddard https://youtu.be/gSY_RWphrXM Lagrange Points Lucy Goes to Space

Discover the mysteries of the solar system through the eyes of the Lucy mission and its team members. This second episode features Principal Investigator Hal Levison, who discusses the Trojan Asteroids located at Jupiter's Lagrange Points and how the Lucy mission will plot its trajectory out to visit them.

[Transcript Link](#)

Music is "256 Kenaston Ave" by Jean-Christophe Beck and "It's Decision Time" by Peter Keith Yelland-Brown of Universal Production Music.

Video credit: NASA's Goddard Space Flight Center

James Tralie (ADNET):
Lead Producer
Lead Editor

Krystofer Kim (KBRwyle):
Lead Animator

Walt Feimer (KBRwyle):
Animator

Michael Lentz (KBRwyle):
Art Director

Harold Levison (SwRI):
Scientist

2021 09 16	NASA Goddard	https://youtu.be/nM08TpkzSVk	Lucy's Journey Episode 2 - 'The Adventure Begins'	Meet Lucy as she prepares for the first ever journey to the Trojan asteroids, a population of primitive small bodies orbiting in tandem with Jupiter. Watch more episodes in "Lucy's Journey": https://www.youtube.com/playlist?list=PL_8hVmWnP_O0NJF7vd2ASOsqiaFURif_Z Music is "Kitschorama" from Denny Savage and Henrik Lars Wikstrom, via Universal Production Music. Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Writer Krystofer Kim (KBRwyle): Lead Animator Walt Feimer (KBRwyle): Animator Michael Lentz (KBRwyle): Art Director	Transcript Link
2021 09 15	NASA Goddard	https://youtu.be/brjoDRRAHf8	Thousands of Ancient Super Eruptions on Mars, Scientists Confirm	By studying the topography and mineral composition of a portion of the Arabia Terra region in northern Mars, scientists recently found evidence for thousands of “super eruptions,” which are the most violent volcanic explosions known. Spewing water vapor, carbon dioxide, and sulfur dioxide into the air, these explosions tore through the Martian surface over a 500-million-year period about 4 billion years ago, the scientists estimated. Read more: https://www.nasa.gov/feature/goddard/2021/nasa-confirms-thousands-of-massive-ancient-volcanic-eruptions-on-mars Music is "Big Wide World" by Joe Hearson, via Universal Production Music. Video credit: NASA's Goddard Space Flight Center Madison Dean (NASA): Lead Producer Editor Lonnie Shekhtman (ADNET) Editor Jacob Richardson (NASA, GSFC): Narrator Nancy Neal-Jones (NASA/GSFC):	Transcript Link

2021 09 15	NASA Goddard	https://youtu.be/ul5K74CladU	Exploring the Solar System Lucy Goes to Space	Discover the mysteries of the solar system through the eyes of the Lucy mission and its team members. This first episode features Deputy Principal Investigator Cathy Olkin, who discusses Lucy's journey out to explore the Trojan asteroids and what we hope to learn about our solar system. Music is "Cloud Stream" by Paul Saunderson and "256 Kenaston Ave" by Jean-Christophe Beck, via Universal Production Music. Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Cathy Olkin (SwRI): Scientist Krystofer Kim (KBRwyle): Lead Animator Walt Feimer (KBRwyle): Animator Michael Lentz (KBRwyle): Art Director	Transcript Link
2021 09 01	NASA Goddard	https://youtu.be/up9oDz49QXI	A Trip Through Time With Landsat 9	For half a century, the Landsat mission has shown us Earth from space. Now, come along with us on a "roadtrip" through the decades to see how the technology on this NASA and U.S. Geological Survey partnership has evolved with the times to provide an unbroken data record. Our roadtrip begins with the idea for an Earth-observing sensor in the 1960s and then cruises through the first game-changing launches in the 1970s, the advent of natural color composite images in the 1980s, the increased global coverage in the 1990s, the move to free and open data archives in the 2000s, the modern era of Landsat observations in the 2010s, and now the launch of Landsat 9 in 2021. Landsat satellites have allowed us to better manage our natural resources, and will continue to help people track the effects of climate change into the future. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. Music: --Silent Soul by Stanislaw Syrewicz [PRS], published by Atmosphere Music Ltd. [PRS]; --Raspberry Sunshine by Mickey Bruce [PRS] and Treana Morris	Transcript Link

2021 08 25 NASA Goddard <https://youtu.be/mVHLa mP5Nes> How NASA Satellites Help Model the Future of Climate

Continuing key observations of the Earth is really important to see how our atmosphere, land and oceans are changing over time. A long-term record, combined with cutting edge observations from the new NASA Earth System Observatory, will continue to push boundaries to better understand our ever-changing planet.

[Transcript Link](#)

Music: "Connections Established," "Data Visions," Universal Production Music

Ryan Fitzgibbons (KBRwyle): Lead Producer, Writer, Editor
LK Ward (KBRwyle): Lead Narrator
Kate Marvel (NASA/GSFC GISS): Lead Scientist, Interviewee
Dalia B Kirschbaum (NASA/GSFC): Lead Scientist
Greg S Elsaesser (Columbia University): Scientist, Interviewee
Min-Jeong Kim (Morgan State University): Scientist, Interviewee

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If you liked this video, subscribe to the NASA Goddard YouTube channel: <https://www.youtube.com/NASAGoddard>

2021 08 22 NASA Goddard <https://youtu.be/rYebpo gLg6w> 5 Things Hubble Space Telescope

Have questions about the Hubble Space Telescope?

[Transcript Link](#)

Comment with your questions for a Q&A!

The universe is a wild and wonderful place. 🌌 Hubble has shown us that the cosmos is more colorful and often stranger than we ever could have imagined.

Credit: NASA's Goddard Space Flight Center
Lead Producer: Haley Reed
Scientist: Megan McArthur
Scientist: John Grunsfeld
Producer: Paul Morris
Producer: Teresa Johnson
Animation: Bailee DesRocher
Videographer: Rob Andreoli
Videographer: John Caldwell
Public Affairs: Claire Andreoli
Aaron E. Lepsch: Technical Support

Music: Universal Music Production
"Percs and Pizz," Nicolas Montazaud
"Quirky Morning," Yoann Le Dantec
"Ticking Tension," Quentin Bachelet and Romain Sanson
"Autumn Rush," Scott Salinas and Tobias Enhus

This video can be freely shared and downloaded at

2021 08 20	NASA Goddard	https://youtu.be/3pSctnQy3B4	Go Now! Landsat & the Calypso Caper	During the summer of 1975, Jacques Cousteau and his divers helped NASA determine if Landsat could measure the depth of shallow ocean waters. The story of this NASA-led satellite bathymetry experiment unfolds through the photography and expedition documents preserved by David Lychenheim, the expedition's communications engineer. Research done during that expedition determined that in certain conditions Landsat could measure depths up to 22 meters (72 feet), which gave birth to the field of satellite-derived bathymetry. This new technology enabled charts in clear water areas around the world to be revised, helping boats and deep-drafted supertankers avoid running aground on hazardous shoals or seamounts. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. Music: "Science of Life," "Moving In Thought," and "The Right Move" by Andrew Michael Britton [PRS] & David Stephen Goldsmith [PRS], "Midsummer" by Uwe Buschkotter [GEMA], "The Grand Opening" by Laurent Dury [SACEM], "Drifting Satellite" by Théo Boulenger [SACEM], "Man and Machine" by Larry Groupe [BMI], "A Little Optimism 1" by Joel Goodman [ASCAP], "Easy Does It" by Alchemist [SIAE], "Variations" by Stephan Sechi [ASCAP], "Bright	Transcript Link
2021 08 18	NASA Goddard	https://youtu.be/WUEFocglWoU	Snacktime with NASA Space Salad	Snacktime with NASA digs into the science behind what's on your plate from a tasty cheese board, to seafood, to fresh produce, to chips and dip. Food can bring us a sense of home, and it connects people all around the world. With observations from space and aircraft, combined with high-end computer modeling, NASA scientists work together with partner agencies, organizations, farmers, ranchers, fishermen, and decision makers to understand the relationship between the Earth system and the environments that provide us food. Music: Cakes & Buns Underscore by Lewis Reed [UPM], Light and Playful Instrumental by Lo Brutto [UPM] Credit: NASA's Goddard Space Flight Center Katie Jepson (KBR): Lead Producer Kathleen Gaeta (AIMM): Host Matt Romeyn (NASA/KSC): Lead Scientist Christine Lee (JPL): Lead Scientist Katy Mersman (KBR): Producer Kathleen Gaeta (AIMM): Producer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13910. While the video in its entirety can be shared without permission, the music and some individual	Transcript Link

2021 08 11	NASA Goddard	https://youtu.be/ujOrbk9mJCY	Snacktime with NASA Cheese Board	Snacktime with NASA digs into the science behind what’s on your plate from a tasty cheese board, to seafood, to fresh produce, to chips and dip. Food can bring us a sense of home, and it connects people all around the world. With observations from space and aircraft, combined with high-end computer modeling, NASA scientists work together with partner agencies, organizations, farmers, ranchers, fishermen, and decision makers to understand the relationship between the Earth system and the environments that provide us food. Music credit: "Tiny Creatures" and "Cakes & Buns" from Universal Production Music Credit: NASA's Goddard Space Flight Center Katy Mersmann (KBR): Lead Producer Kathleen Gaeta (AIMM): Host Matthew Rodell (NASA GSFC): Lead Scientist Katie Jepson (KBR): Producer Lauren Ward (KBR): Producer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such	Transcript Link
2021 08 11	NASA Goddard	https://youtu.be/Cb9IL8AqrGA	OSIRIS-REx Sheds Light on Hazardous Asteroid Bennu	On September 25, 2135, an asteroid called Bennu will make a close flyby of Earth. Our planet’s gravity will tweak Bennu’s path, making it a challenge to calculate its future trajectory. During the flyby, there is an extremely small chance that Bennu will pass through a “gravitational keyhole” – a region of space that would set it on just the right path to impact Earth, late in the 22nd century. Although it is difficult to determine the odds of this actually happening, new data from NASA’s OSIRIS-REx spacecraft have allowed scientists to better model how Bennu’s orbit will evolve over time, and to better calculate the probability of an impact. Read more: https://www.nasa.gov/press-release/nasa-spacecraft-provides-insight-into-asteroid-bennu-s-future-orbit/ Music: “Time Particles” by Laetitia Frenod, via Universal Production Music Video credit: NASA's Goddard Space Flight Center Dan Gallagher (KBRwyle): Producer Josh Masters (Freelance): Lead Animator Rani Gran (NASA/GSFC): Public Affairs Officer Davide Farnocchia (JPL): Lead Scientist Steven Chesley (JPL): Scientist Dante Lauretta (The University of Arizona): Scientist Dan Gallagher (KBRwyle): Narrator Chris Smith (KBRwyle): Animator Walt Feimer (KBRwyle): Animator	Transcript Link

2021 08 09	NASA Goddard	https://youtu.be/JqtsUWGxMzc	Exploring Asteroid Bennu Through Technology	It's hard to imagine what the surface of a dark, distant asteroid might look like, but NASA's "Tour of Asteroid Bennu" brings us on a journey to see this landscape up close. The video, which was released in October 2020, uses elevation data and high-resolution imagery from the OSIRIS-REx spacecraft to provide viewers with stunning 3D vistas of Bennu's rugged terrain. On August 9 and 11, 2021, "Tour of Asteroid Bennu" will be featured in the SIGGRAPH awards electronic theater. Producer Dan Gallagher and data visualizer Kel Elkins discuss the making of the video, and how data-driven animation is enabling viewers to explore new worlds like Bennu. Read more: https://www.nasa.gov/feature/nasas-tour-of-asteroid-bennu-selected-for-prestigious-computer-graphics-film-festival Music: "Spindrift" by Max Cameron Concors; "Unearthing Dark Secrets" by Andrew Joseph Carpenter and Mark Richmond Phillips, via Universal Production Music Data provided by: NASA/University of Arizona/CSA/York University/Open University/MDA Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Dan Gallagher (KBRwyle): Producer Kel Elkins (USRA): Lead Visualizer Rob Andreoli (AIMM): Videographer	Transcript Link
2021 08 05	NASA Goddard	https://youtu.be/40eYjNFdWU	Snacktime with NASA Ceviche	***To watch with English captions, select the Settings button and select English (United States).*** Snacktime with NASA digs into the science behind what's on your plate from a tasty cheese board, to seafood, to fresh produce, to chips and dip. Food can bring us a sense of home, and it connects people all around the world. With observations from space and aircraft, combined with high-end computer modeling, NASA scientists work together with partner agencies, organizations, farmers, ranchers, fishermen, and decision makers to understand the relationship between the Earth system and the environments that provide us food. Music credit: "Tea on the Lawn Underscore" by Paul Reeves [PRS], UPM "Sunlights and Coconuts" by Damien Deshayes [SACEM], UPM "Cheeky Chops" by Matthew Anderson [PRS] and Florian Moenks [GEMA], UPM "Creatures of the Deep" by Sam Dodson [PRS], UPM Credit: NASA's Goddard Space Flight Center Kathleen Gaeta (GSFC AIMMS): Lead Producer Katherine Jepson (GSFC KBR): Lead Producer Jocelyn Argueta (JPL): Host Dr. Laura Lorenzoni (NASA): Lead Scientist Jefferson Beck (GSFC KBR): Lead Editor	Transcript Link

2021 08 05	NASA Goddard	https://youtu.be/rgVKp8ahU4A	We Asked NASA Scientists and Astronauts “What is your Favorite Hubble Image ”	Over the years, Hubble video producer Paul Morris has had the amazing opportunity to interview some of the brightest minds in astrophysics, and some of the coolest astronauts and people in the world. As a rule, he always asked every single person this one question. Every single time: “What is your favorite Hubble image?” He began to see a pattern in their answers. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Jennifer Wiseman: Interviewee Jim Garvin: Interviewee Charlie Bolden: Interviewee Michelle Thaller: Interviewee Additional Visualizations: Time Lapse of Sun Setting: Pond 5 Diatom Movement: Credit: Brenden Seah Hubble: Galaxies Across Space and Time: Credit: NASA, ESA and F.	Transcript Link
2021 08 03	NASA Goddard	https://youtu.be/eKAfVjyNiU	Sonification of Hubble Ultra Deep Field (2014)	This sonification of the Hubble Ultra Deep Field (2014) image plays a note for each galaxy when it emitted the light captured in this image. The farther away the galaxy is, the longer its light has traveled before reaching the Hubble Space Telescope. In just under a minute, we can hear back nearly 13 billion years to the farthest galaxies in that photo. The light we receive from those galaxies was emitted when the universe was only a few hundred million years old. Sonification credits: SYSTEM Sounds (M. Russo, A. Santaguida) For more information about the Hubble Space Telescope and its images, visit https://nasa.gov/hubble. This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13893. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/13893. For more information on NASA’s media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html. See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN	Transcript Link

2021 08 02 NASA Goddard <https://youtu.be/M0tYfMjxeAM> NASA Finds Cause of Florida Mangrove Forests Die-off Mangroves are resilient trees tolerant of salt water and high wind and wave energy, which is why they can typically withstand hurricanes in tropical and subtropical environments. In 2017, NASA scientists noticed mangrove forest die-off in southern Florida after Hurricane Irma. Using NASA's G-LiHT instrument and satellite data from Landsat, they learned that pooling, stagnant water was the cause.

[Transcript Link](#)

Music credit: "Envision" from Universal Production Music

Credit: NASA's Goddard Space Flight Center
Kathleen Gaeta(GSFC AIMMS): Lead Producer
Dr. Lola Fatoyinbo (GSFC): Lead Scientist
Dr. Lola Fatoyinbo (GSFC): Narrator

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If you liked this video, subscribe to the NASA Goddard YouTube channel: <https://www.youtube.com/NASAGoddard>

2021 08 02 NASA Goddard <https://youtu.be/GrAFAB1AU> The Hubble Deep Field Looking Back In Time The Hubble Space Telescope has made over 1.5 million observations since its launch in 1990, capturing stunning subjects such as the Eagle Nebula and producing data that has been featured in almost 18,000 scientific articles. But no image has revolutionized the way we understand the universe as much as the Hubble Deep Field.

[Transcript Link](#)

Taken over the course of 10 days in 1995, the Hubble Deep Field captured roughly 3,000 distant galaxies varying in their stages of evolution, stunning the world. This video features some of the scientists and engineers that work on Hubble, and how the Hubble Deep Field changed everything.

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center

Lead Producer and Editor
Paul Morris

Producer
James Leigh

Director of Photography:
James Ball

Sound Recordist:
Alex Jennings

2021 07 30 NASA Goddard <https://youtu.be/O8WhmRvEEME> Apollo 15 Stand-Up EVA

In celebration of the 50th anniversary of the Apollo 15 mission, this video pairs historical audio with a visualization of the landing site created from Lunar Reconnaissance Orbiter (LRO) data to showcase a part of the stand-up extravehicular activity (SEVA) conducted by Commander Dave Scott. This was the only Apollo mission to conduct a SEVA. It took place approximately two hours after landing on July 31, 1971. After opening the upper hatch of the lunar module, Commander Scott spoke with NASA Mission Control's CAPCOM Joe Allen, describing what he saw on the lunar surface and taking photographs. This Stand-Up EVA would play a role in helping the crew plan their subsequent EVAs on the Moon. The Apollo 15 astronauts were able to conduct extensive geological exploration at the Hadley-Apennine landing site, which featured a wide variety of surface features. This was the first Apollo-era mission to use a lunar roving vehicle, which helped the crew travel a total distance of 17 miles and collect 170 pounds of soil and rock samples. Thanks to the data provided by LRO spacecraft, we can now piece together the stunning views Commander Scott saw of St. George crater, Hadley Delta, Hadley Rille, Pluton crater, and other features visible in the landing region.

[Transcript](#)
[Link](#)

Video credit: NASA's Goddard Space Flight Center
Visualizations by: Ernie Wright (USRA)
Produced & Edited by: David Ladd (AIMM)
Lead Scientist: Noah Petro (NASA/GSFC)
Technical Support: Laurence Schuler (ADNET), Ian Jones (ADNET)

2021 07 30 NASA Goddard <https://youtu.be/PEOfUzkNjv0> Lyman Spitzer Making Space For Hubble

Seventy-five years ago, astronomer Lyman Spitzer envisioned a future for space exploration that deepened humanity's curiosity about the cosmos. A visionary behind the Hubble Space Telescope, Spitzer was among the earliest astronomers pioneering a revolutionary way to explore the universe through astronomical satellites.

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His vision came over a decade before the launch of the first satellite, Sputnik, as well as the establishment of NASA itself. While the fundamental concept of sending a large telescope into space wasn't new, the reality of doing so was. Seventy-five years ago, astronomer Lyman Spitzer envisioned a future for space exploration that deepened humanity's curiosity about the cosmos.

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center
Paul Morris: Lead Producer
Anisha Engineer: Lead Writer
Grace Weikert: Narration

Image Credits of Dr. Spitzer:
The Princeton Plasma Physics Laboratory
Don Morton
Denise Applewhite

Music Credits:

2021 07 28	NASA Goddard	https://youtu.be/f-eYZ1r-u4	Snacktime with NASA Chips and Dip	Snacktime with NASA digs into the science behind what's on your plate from a tasty cheese board, to seafood, to fresh produce, to chips and dip. Food can bring us a sense of home, and it connects people all around the world. With observations from space and aircraft, combined with high-end computer modeling, NASA scientists work together with partner agencies, organizations, farmers, ranchers, fishermen, and decision makers to understand the relationship between the Earth system and the environments that provide us food. Music credit: "Happy Accident" from Universal Production Music Credit: NASA's Goddard Space Flight Center Kathleen Gaeta (GSFC AIMMS): Lead Producer Jocelyn Argueta (JPL): Host Dr. Inbal Becker-Reshef (NASA Harvest): Lead Scientist Lauren Ward (GSFC): Lead Writer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov. For more information on NASA's media guidelines, visit https://svs.gsfc.nasa.gov.	Transcript Link
2021 07 27	NASA Goddard	https://youtu.be/aXLKyoXQR8g	DAVINCI Probe's Eye View	The Deep Atmosphere Venus Investigation of Noble gases, Chemistry and Imaging, or DAVINCI, mission will bring the best possible instrumentation to the massive Venus atmosphere to decipher its evolutionary history, the role of water perhaps as oceans, and how it may inform how we investigate exoplanets around nearby stars. Named in honor of the Renaissance visionary Leonardo da Vinci, this new NASA mission to Venus will send a meter-diameter "probe" to Venus in 2029 bristling with instruments that can measure the atmosphere and surface in ways not possible in the past 50 years of exploration, building off what has been successful at Mars on the Curiosity rover. DAVINCI's transect of the Venus atmosphere from near the cloud tops to the surface in an ancient continental region known as Alpha Regio (more than two times the size of Texas) will put Venus into context relative to Earth and Mars. This will enable our sister planet Venus to contribute to the understanding of rocky, atmosphere-bearing exoplanets that will be explored by new Astrophysical observatories such as the James Webb Space Telescope (JWST). It will be 40+ years since humanity last visited Venus as of our time of probe entry in 2031. DAVINCI's mission includes two compelling flybys of Venus prior to "taking the plunge" with the Probe spacecraft which will acquire video of cloud motions and search for clues to mystery chemical absorbers in the highest altitude clouds. The descent camera on DAVINCI will enable human-scale imaging of the enigmatic "tessera" highlands of Venus with direct information on composition and relief. These measurements will serve as a legacy for decades to	Transcript Link

2021 07 26 NASA Goddard <https://youtu.be/lvQr7PUSQ5g> Keeping Track of Food Production From Space While USDA has monitored crops around the world for almost a century, the discovery that satellites can “see” greening of vegetation has revolutionized agricultural monitoring for food security. The development of the GLAM system in the 1980s, a collaboration with USDA and the International Production Assessment Division, has helped governments to assess whether or not there will be enough basic food crops to feed their populations, as well as provide international food aid organizations with a tool to predict where food shortages might occur.

[Transcript Link](#)

Music: Building Ideas [Instrumental] by Todd James Carlin Baker

LK Ward (KBRwyle): Lead Producer

Inbal Becker Reshef (University of Maryland): Scientist

Mary Mitkish: Writer

Cindy Starr (GST): Visualizer

Greg Shirah (NASA/GSFC): Visualizer

Aaron E. Lepsch (ADNET): Technical Support

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2021 07 26 NASA Goddard <https://youtu.be/Af8gJ0RVyaY> Landsat 9 At Work Landsat 9, which NASA is launching in September 2021, will collect the highest quality data ever recorded by a Landsat satellite, while still ensuring that these new measurements can be compared to those taken by previous generations of the Earth-observing satellite.

[Transcript Link](#)

For nearly half a century, the Landsat mission has shaped our understanding of Earth. Since the launch of the first Landsat satellite in 1972, the mission has gathered and archived more than 8 million images of our home planet’s terrain, including crop fields and sprawling cities, forests and shrinking glaciers. Landsat 9 will continue and extend that long-running mission to map our home planet.

The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth’s changing landscapes for the benefit of all.

Music: The Waiting Room by Sam Dodson [PRS], Afterglow by Christopher Timothy White [PRS], both published by Atmosphere Music Ltd [PRS]; and Inner Strength by Brava/Dsilence/Input/Output [SGAE], published by El Murmullo Sarao [SGAE] and Universal Sarao [SGAE]. Available from Universal Production Music

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2021 07 26 NASA Goddard <https://youtu.be/gkJUy-iLe78> NASA's Fermi Spots 'Fizzled' Burst from Collapsing Star

On Aug. 26, 2020, NASA's Fermi Gamma-ray Space Telescope detected a pulse of high-energy radiation that turned out to be one for the record books – the shortest gamma-ray burst (GRB) caused by the death of a massive star ever seen.

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GRBs are the most powerful events in the universe. Astronomers classify them as long or short based on whether the event lasts for more or less than two seconds. They observe long bursts in association with the demise of massive stars, while short bursts have been linked to a different scenario.

Named GRB 200826A, the event is definitely a short-duration GRB, but other properties point to its origin from a collapsing star.

When a star much more massive than the Sun runs out of fuel, its core suddenly collapses and forms a black hole. As matter swirls toward the black hole, some of it escapes in the form of two powerful jets that rush outward at almost the speed of light in opposite directions. Astronomers only detect a GRB when one of these jets happens to point almost directly toward Earth. Each jet drills through the star, producing a pulse of gamma rays – the highest-energy form of light – that can last up to minutes. Following the burst, the disrupted star then rapidly expands as a supernova.

To prove the blast came from a dying star, a team led by Tomás Ahumada, a doctoral student at the University of Maryland, College Park and NASA's Goddard Space Flight Center in Greenbelt,

2021 07 26 NASA Goddard <https://youtu.be/SxvJ3a0bCbY> Hubble Finds Evidence of Water Vapor at Jupiter's Moon Ganymede

Astronomers have used new and archival datasets from NASA's Hubble Space Telescope to uncover evidence of water vapor in the atmosphere of Jupiter's moon Ganymede.

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The vapor is present due to the thermal excitation of water molecules from the moon's icy surface.

Previous research has offered circumstantial evidence for the moon containing more water than all of Earth's oceans. However, temperatures there are so cold that water on the surface freezes and the ocean lies roughly 100 miles below the crust.

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center
Paul Morris: Lead Producer
Andrea Gianopoulos: Science Writer
Tracy Vogel: Science Writer

Additional Credits:

Artist's Impression of Ganymede: Credit: ESA/Hubble, M. Garlick

Artist's Impression of a Sublimated Water Atmosphere on Ganymede: Credit: ESA/Hubble, J. daSilva

NASA's Juno Spacecraft Observation of Ganymede in June 2021

2021 07 21	NASA Goddard	https://youtu.be/9Ty2lnHnKhg	An EPIC View of the Moon's Shadow During the June 10 Solar Eclipse	NASA's EPIC, Earth Polychromatic Imaging Camera (EPIC), sits aboard NOAA's Deep Space Climate Observatory Satellite (DSCOVR). EPIC provides high-quality, color images of Earth, which are useful for monitoring factors like the planet's vegetation, cloud height, and ozone. And every once in a while – most recently, June 10, 2021 – it has the opportunity to capture a solar eclipse.	Transcript Link

A solar eclipse occurs when the Moon is positioned between the Sun and Earth, leading the Moon's shadow to be projected onto Earth. During a total solar eclipse, the Moon completely blocks the Sun. During an annular solar eclipse, like the one on June 10, the Moon is near its farthest point from Earth and appears smaller than the Sun in the sky. As the two align, the Sun appears as a ring of fire surrounding the dark disk of the Moon.

On June 10, viewers in parts of Canada, Greenland, and Russia were treated to a full annular eclipse. People in a handful of other locations, including parts of the Caribbean, Asia, Europe, eastern United States, Alaska, and northern Africa, were able to catch a partial solar eclipse, where only part of the Sun is blocked by the Moon, leaving behind a crescent-shaped piece of Sun. EPIC didn't have too bad a view, either.

You can find more photos and videos from EPIC, including a few lunar photobombs at: <https://epic.gsfc.nasa.gov/galleries>

2021 07 19	NASA Goddard	https://youtu.be/onYsPY-n-3M	NASA Returns Hubble to Science Operations	Music: "Cherry on Top" by Ben Beiny [PRS] from Universal On June 13, 2021, the Hubble Space Telescope's payload computer unexpectedly came to a halt. However, the Hubble team methodically identified the possible cause and how to compensate for it.	Transcript Link

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center
Paul Morris: Lead Producer

Music Credits:

"New Opportunities 2" by Joel Goodman [ASCAP] via Medley Lane Music [ASCAP], and Universal Production Music.

"Soaring Beyond" by Dan Phillipson [PRS] via Atmosphere Music Ltd. [PRS], and Universal Production Music.

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See more Hubble videos on YouTube:

2021 07 19	NASA Goddard	https://youtu.be/RAJ9ORwf0oM	NASA Lucy Mission's Message to the Future	In the 1970s four spacecraft began their one way trips out of our Solar System. As the first human-built objects to ever venture into interstellar space, NASA chose to place plaques on Pioneer 10 and 11 and golden records on Voyager 1 and 2 spacecraft. Continuing this legacy, NASA's Lucy Spacecraft will carry a similar plaque. However, because Lucy will not be venturing outside of our Solar System, Lucy's plaque is a time capsule featuring messages to our descendants. Music is "All is Good" by Anders Niska and Klas Johan Wahl of Universal Production Music James Tralie (ADNET): Lead Producer Lead Editor Nancy Neal-Jones (NASA/GSFC): Public Affairs Officer Aaron E. Lepsch (ADNET): Technical Support This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13881. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such	Transcript Link
2021 07 13	NASA Goddard	https://youtu.be/yEYHDSYuhzc	12th Annual Goddard Film Festival	This year's 12th Annual Goddard Film Festival will highlight Goddard's achievements over the past year in astrophysics, Earth science, heliophysics and planetary science. Highlights include recent and upcoming missions such as the Nancy Grace Roman Space Telescope, OSIRIS-REx, Landsat, PACE, IBEX, Lunar Reconnaissance Orbiter, Hubble Space Telescope and much more. 00:00 Intro 01:09 Lucy's Journey: Episode 1 02:55 Earth from Orbit: von Kármán Vortices 04:13 Moonscapes 07:23 11 Years Charting Edge of Solar System 11:35 Imagining A Roman Space Telescope Ultra Deep Field Image 13:05 ANIMATION INTERSTITIAL 14:07 Landsat Helps Warn of Algae in Lakes and Rivers 19:36 Distant Planet May Be On Its Second Atmosphere, Hubble Finds 21:42 Plants Are Struggling to Keep Up with Rising Carbon Dioxide Concentrations 23:27 How to Track the Sun's Solar Cycle 29:26 Field Study Sheds New Light on Melt Zone (EXCERPT) 33:09 25 Years of Sun from ESA/NASA's SOHO 36:33 SVS Demo Reel 2020 39:16 Making the Tour of Bennu 42:36 NASA's Black Hole Field Guide: Episode 1 - Basic Black Holes 43:49 The key to understanding solar explosions 45:55 SPEXone: The Delivery	Transcript Link

2021 07 12 NASA Goddard <https://youtu.be/RE-NpbAW3IM> TESS Finds Related Stars Have Young Exoplanets

Thanks to data from NASA's Transiting Exoplanet Survey Satellite (TESS), an international collaboration of astronomers has identified four exoplanets, worlds beyond our solar system, orbiting a pair of related young stars called TOI 2076 and TOI 1807.

[Transcript Link](#)

These worlds may provide scientists with a glimpse of a little-understood stage of planetary evolution.

TOI 2076 and TOI 1807 reside over 130 light-years away with some 30 light-years between them, which places the stars in the northern constellations of Boötes and Canes Venatici, respectively. Both are K-type stars, or dwarf stars more orange than our Sun, and around 200 million years old, or less than 5% the Sun's age. In 2017, using data from ESA's (the European Space Agency's) Gaia satellite, scientists showed that the stars are traveling through space in the same direction.

Astronomers think the stars are too far apart to be orbiting each other, but their shared motion suggest they are related, born from the same cloud of gas.

Both TOI 2076 and TOI 1807 experience stellar flares that create strong bursts of X-ray and UV light.

Scientists discovered three mini-Neptunes, worlds between the diameters of Earth and Neptune, orbiting the star. Innermost planet TOI 2076 b is about three times Earth's size and circles its star every

2021 07 08 NASA Goddard <https://youtu.be/6134DZuPrGc> SPeXone Dutch Instrument Arrives for PACE Mission

Aerosols are small solid or liquid particles suspended in the air that affect climate change directly through interactions with solar radiation. Aerosols affect climate indirectly by changing the micro- and macro-physical properties of clouds. Scientists who study climate change rely on detailed data to properly characterize the amount of radiative forcing that aerosols cause. SPeXone is a new instrument designed to pursue that data with superb accuracy. It's a polarimeter, intended to measure the intensity, Degree of Linear Polarization (DoLP) and Angle of Linear Polarization (AoLP) of sunlight reflected back from Earth's atmosphere, land surface, and ocean. Built by engineers at The Netherlands Institute for Space Research (SRON) and Airbus Defence and Space Netherlands (Airbus DS NL), SPeXone will fly on the PACE spacecraft as one of that mission's suite of sensors.

[Transcript Link](#)

Michael Starobin (KBRwyle): Lead Producer
Aaron E. Lepsch (ADNET): Technical Support
Michael Starobin (KBRwyle): Lead Editor
Michael Starobin (KBRwyle): Lead Writer
Michael Starobin (KBRwyle): Videographer
Rob Andreoli (AIMM): Videographer
John Caldwell (AIMM): Production Assistant

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2021 07 07	NASA Goddard	https://youtu.be/52p4luTvYw0	New Lakes Discovered Under Antarctic Ice with NASA's ICESat-2	Hundreds of meltwater lakes hide deep beneath the expanse of Antarctica's ice sheet. With a powerful laser altimeter system in space, NASA's Ice Cloud and land Elevation Satellite-2 (ICESat-2) is helping scientists "see" under the ice. Read more: https://www.nasa.gov/feature/goddard/2021/nasa-space-lasers-map-meltwater-lakes-in-antarctica-with-striking-precision Music credit: "Orbital Connection" by Eddy Pradelles and Pierre Tan Teng Ha [both SACEM], Universal Production Music. Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Jefferson Beck (KBRwyle): Lead Producer Roberto Molar Candanosa (KBR): Lead Writer Helen-Nicole Kostis (USRA): Lead Visualizer Helen Amanda Fricker (Scripps Institution of Oceanography, University of California, San Diego): Lead Scientist Matthew R. Siegfried (Colorado School of Mines): Lead Scientist This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13877. While the video in its entirety can be shared without permission, the music and some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/13877. For	Transcript Link
2021 06 28	NASA Goddard	https://youtu.be/USOAVQL1TIA	How a Squad of Small Satellites Will Help NASA Study Storms	Hurricanes are some of the most powerful and destructive weather events on Earth. To help study these powerful storms, NASA is launching TROPICS (Time-Resolved Observations of Precipitation structure and storm Intensity with a Constellation of Smallsats), a collection of six small satellites designed to measure storm strength by detecting the thermal radiation naturally emitted by the oxygen and water vapor in the air. In June 2021, NASA launched a test version of the satellite, called a pathfinder, ahead of the constellation of six weather satellites planned for launch in 2022. When launched, the TROPICS satellites will work together to provide near-hourly microwave observations of a storm's precipitation, temperature, and humidity. The mission is expected to help scientists understand the factors driving tropical cyclone intensification and to improve forecasting models. Universal Production Music: Patisserie Pressure by Benjamin James Parsons [PRS] Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Katie Jepson (KBRwyle): Producer Ellen T. Gray (ADNET): Writer William Blackwell (MIT): Scientist Jonathan North (KBRwyle): Animator Adriana Manrique Gutierrez (USRA): Animator Katie Jepson (KBRwyle): Animator Taylor Johnson: Narration	Transcript Link

2021 06 18	NASA Goddard	https://youtu.be/Wp-dNoHwFSw	Why Does NASA Observe the Sun in Different Colors	The Solar Dynamics Observatory, or SDO, spacecraft was launched on Feb. 11, 2010, and began collecting science data a few months later. With two imaging instruments – the Atmospheric Imaging Assembly and the Helioseismic and Magnetic Imager, which were designed in concert to provide complementary views of the Sun – SDO sees the Sun in more than 10 distinct wavelengths of light, showing solar material at different temperatures. SDO also measures the Sun’s magnetic field and the motion of solar material at its surface, and, using a technique called helioseismology, allows scientists to probe deep into the Sun’s interior, where the Sun’s complex magnetic fields sprout from. And with more than a decade of observation under its belt, SDO has provided scientists with hundreds of millions of images of our star. For more information: https://www.nasa.gov/feature/goddard/2021/sun-science-stamps-highlight-a-decade-of-sun-watching-from-space/ Music credits: “Swirling Blizzard” and “Endless Swirl” by Laurent Dury [SACEM] from Universal Production Music Video credit: NASA's Goddard Space Flight Center Joy Ng (KBRwyle): Lead Producer William D. Pesnell (NASA/GSFC): Lead Scientist C. Alex Young (NASA/GSFC): Lead Scientist Mara Johnson-Groh (Wyle Information Systems): Support	Transcript Link
2021 06 17	NASA Goddard	https://youtu.be/UhIClxskOg	Mystery of Galaxy’s Missing Dark Matter Deepens	When astronomers using NASA’s Hubble Space Telescope uncovered an oddball galaxy that looks like it doesn’t have much dark matter, some thought the finding was hard to believe and looked for a simpler explanation. Dark matter, after all, is the invisible glue that makes up the bulk of the universe’s contents. All galaxies are dominated by it; in fact, galaxies are thought to form inside immense halos of dark matter. So, finding a galaxy lacking the invisible stuff is an extraordinary claim that challenges conventional wisdom. It would have the potential to upset theories of galaxy formation and evolution. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Andrea Gianopoulos: Science Writer Tracy Vogel: Science Writer Additional Visualizations: Galaxy Motion Simulation: Credit: ESO/L. Calçada. Dark Matter Simulation: Credit: Wu, Hahn, Wechsler, Abel(KIPAC), Visualization: Kaehler (KIPAC) Music Credits: "Aphelion Horizon" by Alistair Hetherington [PRS] via Atmosphere	Transcript Link

2021 06 10 NASA Goddard https://youtu.be/7h4_7tduA3c The Roman Space Telescope's Wide Field Instrument In order to know how the universe will end, we must know what has happened to it so far. This is just one mystery NASA's forthcoming Nancy Grace Roman Space Telescope mission will tackle as it explores the distant cosmos. The spacecraft's giant camera, the Wide Field Instrument (WFI), will be fundamental to this exploration.

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The Roman Space Telescope that will survey the infrared universe from beyond the orbit of the Moon. Its two instruments are a technology demonstration called a coronagraph, and the WFI. The WFI features the same angular resolution as Hubble, allowing it to capture infrared images that will be around 200 times larger than Hubble can provide while revealing the same level of rich detail. Data it gathers will enable scientists to discover new and uniquely detailed information about planetary systems around other stars. The WFI will also map how matter is structured and distributed throughout the cosmos, which should ultimately allow scientists to discover the fate of the universe.

The WFI is designed to detect faint infrared light from across the universe. Infrared light is observed at wavelengths longer than the human eye can detect. The expansion of the universe stretches light emitted by distant galaxies, causing visible or ultraviolet light to appear as infrared by the time it reaches us. Such distant galaxies are difficult to observe from the ground because Earth's atmosphere blocks some infrared wavelengths, and the upper atmosphere glows brightly enough to overwhelm light from these

2021 06 09 NASA Goddard <https://youtu.be/fIM39i3Ni-E> NASA Finds Local Lockdowns Brought Global Ozone Reductions

As the coronavirus pandemic slowed global commerce to a crawl in early 2020, emissions of nitrogen oxides (NOx) – which create ozone, a danger to human health and to climate – decreased 15% globally with local reductions as high as 50%, according to a study led by scientists at NASA's Jet Propulsion Laboratory. As a result of the lower NOx emissions, by June 2020 global ozone levels had dropped to a level that policymakers thought it would take at least 15 years to reach by conventional means, such as regulations.

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Music credit: Universal Production Music: Waiting For Results - Adam John Salkeld [PRS], Neil Pollard [PRS]

Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio

Katie Jepson (KBRwyle): Lead Producer
Carol Rasmussen (NASA/JPL CalTech): Lead Writer
Trent L. Schindler (USRA): Lead Visualizer
Kazuyuki Miyazaki (JPL): Scientist
Kevin W Bowman (JPL): Scientist
Kathryn Mersmann (KBRwyle): Associate Producer
Katie Jepson (KBRwyle): Editor

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2021 06 07 NASA Goddard https://youtu.be/a_947c7OC9I The key to understanding solar explosions

An unusual eruption on the Sun may offer clues to understanding our star's mysterious explosions. The new research studied an event named the "Rosetta Stone" of solar eruptions. Just as the Rosetta Stone was the key to understanding Egyptian hieroglyphics, studying this eruption could be the key to understanding all types of solar eruptions.

Credit: NASA
Music credit: Universal Music Production
"Early Birds," Edwards Tschuggnall

Credits: Producer: Haley Reed
Writer: Mara Johnson-Grohl
Public Affairs: Genna Duberstein
Scientist: Emily Mason

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2021 06 02 NASA Goddard <https://youtu.be/3JFR70YQv0> NASA's New DAVINCI+ Mission to Venus

NASA has selected the DAVINCI+ (Deep Atmosphere Venus Investigation of Noble-gases, Chemistry and Imaging +) mission as part of its Discovery program, and it will be the first spacecraft to enter the Venus atmosphere since NASA's Pioneer Venus in 1978 and USSR's Vega in 1985.

Named for visionary Renaissance artist and scientist, Leonardo da Vinci, the DAVINCI+ mission will bring 21st-century technologies to the world next door. DAVINCI+ may reveal whether Earth's sister planet looked more like Earth's twin planet in a distant, possibly hospitable past with oceans and continents.

The mission combines a spacecraft, developed by Lockheed-Martin, and a descent probe, developed at NASA's Goddard Space Flight Center. The spacecraft will map the cloud motions and surface composition of mountainous regions, including the Australia-sized Ishtar Terra. The descent probe will take a daring hour-long plunge through the massive and largely unexplored atmosphere to the surface, making detailed measurements of the atmosphere and surface the whole way down. These measurements include atmospheric samples and images that will allow scientists to deduce the planet's history, its possible watery past, and trace gases as fingerprints of the planet's inner workings. The probe will descend over Alpha Regio, an intriguing highland terrain known as a "tessera" standing nearly 10,000 feet tall above the surrounding plains, which might be a remnant of an ancient continent. All of these measurements will help connect Earth's next door neighbor

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2021 05 26	NASA Goddard	https://youtu.be/kOkC-KfIRVc	OSIRIS-REx Heads Home with Sample of Asteroid Bennu	After nearly five years in space, NASA's OSIRIS-REx spacecraft is on its way back to Earth with an abundance of rocks and dust from the near-Earth asteroid Bennu. On Monday, May 10, 2021, at 4:23 p.m. EDT the spacecraft fired its main engines full throttle for seven minutes – its most significant maneuver since it arrived at Bennu in 2018. This burn thrust the spacecraft away from the asteroid at 600 miles per hour (nearly 1,000 kilometers per hour), setting it on a 2.5-year cruise towards Earth. After orbiting the Sun twice, the OSIRIS-REx spacecraft is due to reach Earth Sept. 24, 2023. Upon return, the capsule containing pieces of Bennu will separate from the rest of the spacecraft and enter Earth's atmosphere. The capsule will parachute to the Utah Test and Training Range in Utah's West Desert, where scientists will be waiting to retrieve it. Learn more: https://www.nasa.gov/osiris-rex Music: "Arise" by Jose Tomas Novoa Espinosa and Sebastian Felipe Olivares de Simone, via Universal Production Music Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Editor	Transcript Link
2021 05 26	NASA Goddard	https://youtu.be/QSmuqBiAQ4c	NASA's Roman Mission Will Use Exploding Stars to Measure Cosmic Distances	NASA's upcoming Nancy Grace Roman Space Telescope will see thousands of exploding stars called supernovae across vast stretches of time and space. Using these observations, astronomers aim to shine a light on several cosmic mysteries, providing a window onto the universe's distant past and hazy present. Read more: http://www.nasa.gov/feature/goddard/2021/nasa-s-roman-mission-to-probe-cosmic-secrets-using-exploding-stars Roman's supernova survey will help clear up clashing measurements of how fast the universe is currently expanding, and even provide a new way to probe the distribution of dark matter, which is detectable only through its gravitational effects. One of the mission's primary science goals involves using supernovae to help pin down the nature of dark energy – the unexplained cosmic pressure that's speeding up the expansion of the universe. Roman will use multiple methods to investigate dark energy. One involves surveying the sky for a special type of exploding star, called a type Ia supernova. Many supernovae occur when massive stars run out of fuel, rapidly collapse under their own weight, and then explode because of strong shock waves that propel out of their interiors. These supernovae occur about once every 50 years in our Milky Way galaxy. But evidence shows that type Ia supernovae originate from some binary star systems that contain at least one white dwarf –	Transcript Link

2021 05 20	NASA Goddard	https://youtu.be/Fj44JQvE4EQ	Hubble Tracks Origins Of Energy Blasts	Fast radio bursts, or FRBs, are extraordinary events that generate as much energy in a thousandth of a second as the Sun does in an entire year! Astronomers using NASA’s Hubble Space Telescope have traced the locations of five brief, powerful FRBs, which are near or on their host galaxies' spiral arms. The research helped rule out some of the possible stellar objects originally thought to cause these brilliant flares. For more information: https://www.nasa.gov/feature/goddard/2021/hubble-tracks-down-fast-radio-bursts-to-galaxies-spiral-arms Video credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Andrea Gianopoulos: Science Writer Cassandra Morris: Narrator Additional Visualizations: Sunrise over the Pacific: Artbeats Animation of Magnetar: Scott Wiessinger FRB Locations Animation: Scott Wiessinger and Chris Smith Gamma Ray Burst Illustration: Michael Starobin Neutron Star Merger: Michael Starobin Magnetar Flyby Animation: Chris Smith Magnetar Flare Sequence: Chris Smith	Transcript Link
2021 05 13	NASA Goddard	https://youtu.be/ZfTGPT3n-qA	Centrifuge Concert - Chromatics 'Dance of the Planets'	When not spinning space payloads up to launch-like speeds, it turns out our massive centrifuge and its cylindrical wall can add some nifty echo to an impromptu a capella performance, as demonstrated by the Chromatics. The Chromatics are a high-energy vocal band whose feature astronomically correct music in their "AstroCapella" performances — that's when they're not working their day jobs at Goddard and the Johns Hopkins University Applied Physics Laboratory in neighboring Laurel, Maryland. This video was recorded at Goddard in early 2020. Video credit: NASA's Goddard Space Flight Center Haley Reed (ADNET): Lead Producer John Caldwell (AIMM): Lead Videographer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13862 . While the video in its entirety can be shared without permission, some individual imagery and music may have been obtained through permission and may not be excised or remixed in other products. Specific details may be found here https://svs.gsfc.nasa.gov/13862 . For more information on NASA’s media guidelines, visit https://nasa.gov/multimedia/guidelines . If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2021 05 13	NASA Goddard	https://youtu.be/PH7NyZ9ABdE	Snow Scientists in the Windswept Montana Prairie	NASA's SnowEx ground and airborne campaign is a multiyear effort using a variety of techniques to study snow characteristics, and the team began their new field study year in January 2021. Not only is SnowEx learning valuable information about how snow properties change by terrain and season, but they are also testing the tools NASA will need to sample snow from space. Read more: https://blogs.nasa.gov/earthexpeditions/2021/05/12/snowex-little-blogs-from-the-prairie-part-1/ Music: "Timelapse," "A New Dawn," via Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Ryan Fitzgibbons (USRA): Lead Producer, Lead Editor Harrison Bach (Montana State University): Lead Videographer, Producer Eric Sproles (Montana State University): Scientist, Interviewee, Project Support Carrie Vuyovich (NASA/GSFC): Scientist Hans-Peter Marshall (Boise State University): Scientist This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13851. While the video in its entirety can be shared without permission, some individual imagery provided by	Transcript Link
2021 05 11	NASA Goddard	https://youtu.be/5dA15GCrAXk	Imaging Asteroid Bennu	OSIRIS-REx has imaged Bennu in higher resolution than we have Earth and our own Moon. Since its arrival at the asteroid on Dec. 3, 2018, the spacecraft has discovered boulders the size of buildings, and imaged the surface down to 5 centimeter-per-pixel resolution. Its cameras captured stunning footage of the sample collection event on Oct. 20, 2020. OSIRIS-REx imaged Bennu for the last time on April 7, 2021, and will return to Earth in 2023 with samples it collected from the asteroid's surface. More: https://nasa.gov/osiris-rex Music: "Greatest Divide" from Andrew Leslie Spiller, Daniel Burrows, Daniel William David Mallender, and Thomas Richard Hill, via Universal Production Music. Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Narrator Editor Animator Walt Feimer (KBRwyle): Animator Jonathan North (USRA):	Transcript Link

2021 05 11	NASA Goddard	https://youtu.be/xgbUb dC6kbo	Hubble's Servicing Mission 4	The Hubble Space Telescope was reborn with Servicing Mission 4 (SM4), the fifth and final servicing of the orbiting observatory. During SM4, two new scientific instruments were installed – the Cosmic Origins Spectrograph (COS) and Wide Field Camera 3 (WFC3). Two failed instruments, the Space Telescope Imaging Spectrograph (STIS) and the Advanced Camera for Surveys (ACS), were brought back to life. With these efforts, Hubble has been brought to the apex of its scientific capabilities. For more information: https://nasa.gov/hubble Video credit: NASA's Goddard Space Flight Center Grace Weikert: Lead Producer Grace Weikert: Writer Grace Weikert: Editor Grace Weikert: Voiceover Artist Paul Morris: Support Music: "Aquarius" by Fred Dubois [SACEM] via Koka Media [SACEM], Universal Publishing Production Music France [SACEM], and Universal Production Music. "Adam and Eve" by Laurent Dury [SACEM] via Koka Media [SACEM], Universal Publishing Production Music France [SACEM], and Universal Production Music.	Transcript Link
2021 05 10	NASA Goddard	https://youtu.be/RkJ06BXfbmA	Farewell to Asteroid Bennu	A look back at OSIRIS-REx's time at Asteroid Bennu starting with the Touch-and-Go (TAG) sample acquisition event from Oct. 20, 2020, and leading up to its departure from the asteroid on May 10, 2021. More: https://nasa.gov/osiris-rex Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Animator Narrator Walt Feimer (KBRwyle): Animator Jonathan North (USRA): Animator Michael Lentz (USRA): Animator Krystofer Kim (USRA): Animator Adriana Manrique Gutierrez (USRA):	Transcript Link

2021 05 10	NASA Goddard	https://youtu.be/nx1r3HPGC_c	OSIRIS-REx Slings Orbital Web Around Asteroid to Capture Sample 4K	101955 Bennu is one of Earth’s closest planetary neighbors – an asteroid roughly the height of a skyscraper, and since late 2018, the place that NASA’s OSIRIS-REx mission has called home. When OSIRIS-REx arrived on Dec. 3, 2018, it began wrapping Bennu in a complex web of observations. OSIRIS-REx departs Bennu on May 10, 2021, on a return voyage to Earth, bringing with it over 60 grams of sample collected from the asteroid. This narrated video presents the mission’s complete trajectory during its time at Bennu. More: https://nasa.gov/osiris-rex Music: “Visionary” by Andy Blythe and Marten Joustra; “Babel” by Max Cameron Concors, via Universal Production Music Data provided by: NASA/University of Arizona/CSA/York University/Open University/MDA Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Dan Gallagher (USRA): Producer Kel Elkins (USRA): Producer Kel Elkins (USRA): Lead Data Visualizer Dan Gallagher (USRA): Narrator Michael Moreau (NASA/GSFC): Deputy Project Manager Dante Laurretta (The University of Arizona): Principal Investigator Kenny Getzandanner (NASA/GSFC): Engineer	Transcript Link
2021 05 07	NASA Goddard	https://youtu.be/4e2plCS9Fn4	Hubble Science Gravitational Lensing, Nature’s Boost	For the past 31 years, the Hubble Space Telescope has continued its important mission of uncovering the mysteries of the universe. One of those mysteries that Hubble has helped us begin to understand is gravitational lensing. For more information, visit https://nasa.gov/hubble. Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund Production & Post: Origin GSFC Support: Lynn Bassford	Transcript Link

2021 05 07	NASA Goddard	https://youtu.be/LP3qzKGh1AM	The Solar Wind A Heliophysics Sea Shanty (The Wellerman parody)	Parodying the classic sea shanty "The Wellerman," "The Solar Wind: A Heliophysics Sea Shanty" illuminates one of the primary connections between the Sun and Earth, the solar wind. The solar wind is a constant outflow of magnetized material released by the Sun and causes a cascade of effects on space and Earth. The most visible of these from our planet is the aurora borealis, displays of colorful light in the sky that provide a stunning example of the Sun-Earth connection. Find the latest NASA heliophysics research at https://www.nasa.gov/sunearth . Participants (in order of appearance): Douglas E. Rowland (NASA/GSFC) Ashley Greeley (USRA) Ian Richardson (UMD) Jeff Klenzing (NASA/GSFC) Susannah Darling (ADNET) Video credit: NASA's Goddard Space Flight Center Susannah Darling (ADNET): Producer Joy Ng (USRA): Editor Nick Leonard (Freelance): Audio Engineer Miles Hatfield (Telophase): Drums Aaron E. Lepsch (ADNET): Technical Support Lyrics: [Verse 1]	Transcript Link
2021 05 05	NASA Goddard	https://youtu.be/gFzOp8k82Rw	OSIRIS-REx Departure from Bennu Trailer	At approximately 4:16 p.m. EDT on May 10, 2021, the Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer (OSIRIS-REx) spacecraft will fire its main thrusters for seven minutes and start its long journey home with more than 60 grams (2.1 ounces) of asteroid material in its Sample Return Capsule. NASA invites the public and the media to watch NASA's first asteroid sample return mission leave Bennu and begin its cruise home on NASA TV and www.nasa.gov/live May 10 at 4 p.m. EDT. The public can ask questions about the mission on NASA's Solar System Instagram account: https://www.instagram.com/nasasolarsystem/ More on OSIRIS-REx: https://nasa.gov/osiris-rex Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Narrator Animator Walt Feimer (KBRwyle): Animator Adriana Manrique Gutierrez (USRA):	Transcript Link

2021 05 03	NASA Goddard	https://youtu.be/z5vK6-wuoOE	NASA's Parker Solar Probe Discovers Natural Radio Emission in Venus' Atmosphere	During a brief swing by Venus, NASA's Parker Solar Probe detected a natural radio signal that revealed the spacecraft had flown through the planet's upper atmosphere. This was the first direct measurement of the Venusian atmosphere in nearly 30 years — and it looks quite different from Venus' past. A study published today in Geophysical Research Letters confirms that Venus' upper atmosphere undergoes puzzling changes over a solar cycle, the Sun's 11-year activity cycle. This marks the latest clue to untangling how and why Venus and Earth are so different. The data sonification in the video translates data from Parker Solar Probe's FIELDS instrument into sound. FIELDS detected a natural, low-frequency radio emission as it moved through Venus' atmosphere that helped scientists calculate the thickness of the planet's electrically charged upper atmosphere, called the ionosphere. Understanding how Venus' ionosphere changes will help researchers determine how Venus, once so similar to Earth, became the world of scorching, toxic air it is today. For more information: https://nasa.gov/feature/goddard/2021/radio-signal-nasa-first-look-venus-atmosphere-parker-solar-probe Link to paper: https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2020GL092243	Transcript Link
2021 04 29	NASA Goddard	https://youtu.be/mvgE5o2vdCM	NASA Sees Tides Under Ocean's Surface	Internal tides, or internal waves, can reach hundreds of feet underneath the ocean surface, but might only be a few inches high on the surface. Even though they're underwater, NASA can see these tides from satellites. They provide oceanographers with a unique way to map and study the much larger internal water motion. Music: "Delightful Joy" from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathleen Gaeta (GSFC Interns): Lead Producer Eleni Kostis (USRA): Lead Visualizer Richard Ray (NASA/GSFC): Lead Scientist This video can be shared and downloaded at https://svs.gsfc.nasa.gov/13848 . Some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on stock footage may be found here https://svs.gsfc.nasa.gov/13848 . For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines . If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center	Transcript Link

2021 04 23	NASA Goddard	https://youtu.be/vkFe4wjRIY	Hubble's 31st Anniversary Giant Star on the Edge of Destruction	In celebration of the 31st anniversary of the launching of NASA's Hubble Space Telescope on April 24, 1990, astronomers aimed the renowned observatory at a brilliant "celebrity star," one of the brightest stars seen in our galaxy, surrounded by a glowing halo of gas and dust. Hubble's senior project scientist, Dr. Jennifer Wiseman, takes us on a tour of this stunning new image, describes the telescope's current health, and summarizes some of Hubble's contributions to astronomy from the past year. For more information, visit https://www.nasa.gov/feature/goddard/2021/hubble-captures-giant-star-on-the-edge-of-destruction Video credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Dr. Jennifer Wiseman (NASA/GSFC): Narrator Aaron E. Lepsch (ADNET): Technical Support Additional Visualizations: Flyby of AG Carinae Video credit: Leah Hustak, Frank Summers, Alyssa Pagan, Joseph DePasquale, Greg Bacon (STSci) Artist's Impression of the Black Hole Concentration in NGC 6397 Video credit: ESA/Hubble, N. Bartmann	Transcript Link
2021 04 21	NASA Goddard	https://youtu.be/WCMsdz8wMQc	NASA Explores Earth's Connections	For Earth Day 2021, we explore the connections of Earth systems and NASA's ability to observe them in a changing world, highlighting the links between dust transport, vegetation, water quality, conservation and human health, the cryosphere, and disasters. Music: "Ellipsis" and "Terrafirma" by Ben Niblett and Jon Cotton [PRS] via Universal Production Music Video credit: NASA's Goddard Space Flight Center Jefferson Beck (USRA): Lead Producer Ellen T. Gray (ADNET): Writer Sofie Bates (KBR): Writer Roberto Molar Candanosa (KBR): Writer This video can be shared and downloaded at https://svs.gsfc.nasa.gov/13842 . While the video in its entirety can be shared without permission, some individual imagery and music may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/13842 . For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines . If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link

2021 04 21	NASA Goddard	https://youtu.be/2r9EZGwB_bk	Explore with Landsat Where Would You Go	With 50 years of Landsat data tracking our changing planet, scientists study how we're all #ConnectedByEarth. But we wonder - what will the next generation explore? Curious kids can make a video to ask Landsat scientists questions about our home planet! Submit here: https://socialforms.nasa.gov/submit Music: "Strangely Calm" from Universal Production Music Video credit: NASA's Goddard Space Flight Center LK Ward (USRA): Lead Producer Jessica Merzdorf (Telophase): Host Kate Ramsayer (Telophase): Supervising Producer Matt Radcliff (USRA): Supervising Producer Ryan Fitzgibbons (USRA): Lead Animator Aaron E. Lepsch (ADNET): Technical Support This video can be shared and downloaded at https://svs.gsfc.nasa.gov/13843 . Some individual imagery provided by pond5 and is obtained through permission and may not be excised or remixed in other products. Specific details on stock footage may be found here https://svs.gsfc.nasa.gov/13843 . For more information on NASA's media guidelines, visit https://nasa.gov/multimedia/guidelines . If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link
2021 04 19	NASA Goddard	https://youtu.be/c4-KpR1HrNs	Tracking Amazon Deforestation	The NASA/USGS Landsat satellite mission is helping scientists study how the Amazon rainforest has changed over decades. The Amazon is the largest tropical rainforest in the world, but every year, less of that forest is still standing. Today's deforestation across the Amazon frontier is tractors and bulldozers clearing large swaths to make room for industrial-scale cattle ranching and crops. So far, the amount of area that's been deforested in the Brazilian Amazon alone is equivalent to the size of the state of California. Scientists like Tasso Azevedo of MapBiomas and Doug Morton of NASA use satellite data to map land cover in Brazil with a historical perspective. Using the Landsat archive, they can precisely identify where the massive forest has been cleared and if it was permitted. The aim of MapBiomas is to enable better decisions for managing their natural resources. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. Read more: https://www.nasa.gov/feature/goddard/2021/earth-day-connections-nasa-investigates-vegetation Music: Organic Circuit by Richard Birkin [PRS]; Into the Atmosphere	Transcript Link

2021 04 19 NASA Goddard <https://youtu.be/mQatg6JxQMk> Discovering Eurybates' Satellite

On Jan. 9, 2020, the Lucy Mission officially announced that it would be visiting not seven, but eight asteroids. As it turns out, Eurybates, one of the asteroids along Lucy's path, has a small satellite. Shortly after the Lucy team discovered the satellite, both it and Eurybates moved behind the Sun, preventing the team from observing it further. However, the asteroids emerged from behind the Sun in July 2020, and since then, the Lucy team has been able to observe the satellite with Hubble on multiple occasions, allowing the team to precisely define the satellite's orbit and allowing the little satellite to finally get an official name – Queta.

[Transcript](#)
[Link](#)

Read more: <https://www.nasa.gov/feature/goddard/2021/hide-and-seek-how-nasa-s-lucy-mission-team-discovered-eurybates-satellite>

Video credit: NASA's Goddard Space Flight Center
James Tralie (ADNET):
Lead Producer
Lead Editor
Lead Animator
Narrator

Keith Noll (NASA/GSFC):
Scientist

Katherine Kretke (SwRI):
Public Affairs

2021 04 19 NASA Goddard <https://youtu.be/o-TCK9peAA> Warmer Ocean Temperatures May Decrease Saharan Dust Crossing the Atlantic

Every year millions of tons of dust from the Sahara Desert are swirled up into the atmosphere by easterly trade winds, and carried across the Atlantic. The plumes can make their way from the African continent as far as the Amazon rainforest, where they fertilize plant life.

[Transcript](#)
[Link](#)

As the climate changes, dust activity will continue to be affected. In a new study, NASA researchers predict that within the next century we will see dust transport approach a 20,000-year minimum.

Read more: <https://www.nasa.gov/feature/esnt/2021/nasa-study-predicts-less-saharan-dust-in-future-winds>

Music: "Dawn Drone" from Universal Production Music

Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio
Katy Mersmann (USRA): Lead Producer
Lara Streiff (Telophase): Lead Writer
Helen-Nicole Kostis (USRA): Visualizer
Kel Elkins (USRA): Visualizer

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This video can be freely shared and downloaded at

2021 04 17 NASA Goddard https://youtu.be/Ha_xMhoKprU NASA's NICER Tests Matter's Limits

Matter in the hearts of neutron stars – dense remnants of exploded massive stars – takes the most extreme form we can measure. Now, thanks to data from NASA's Neutron star Interior Composition Explorer (NICER), an X-ray telescope on the International Space Station, scientists have discovered that this mysterious matter is less squeezable than some physicists predicted.

The finding is based on NICER's observations of PSR J0740+6620 (J0740 for short), the most massive known neutron star, which lies over 3,600 light-years away in the northern constellation Camelopardalis. Previous observations place the neutron star's mass at about 2.1 times the Sun's.

At a neutron star's surface, an atmosphere of hydrogen or helium rests on an iron crust. A mile or so down is the outer core, where atoms brake down into their building blocks: neutrons, protons, and electrons. Here, the immense pressure has crushed together protons and electrons to form a sea of mostly neutrons – packed together at up to twice the density of an atomic nucleus.

But what form does matter take in the inner core? Is it neutrons all the way down, or do the neutrons break into their own component parts, called quarks?

In traditional models of a typical neutron star, one with about 1.4 times the Sun's mass, physicists expect the inner core to be mostly filled with neutrons. The lower density ensures that neutrons

2021 04 16 NASA Goddard <https://youtu.be/HTHjrt9y-Go> NASA's Black Hole Field Guide Episode 5 - Black Hole Records

Even though you've learned about basic black holes, and fancy black holes, and social black holes, and giant black holes, there are always stranger things out there! In this final chapter, you can learn about some of the rarest black holes – biggest, smallest, farthest, strangest, and more!

Music: "Playground Intrigue" from Universal Production Music

Video credit: NASA's Goddard Space Flight Center

Chris Smith (USRA): Lead Producer

Krystofer Kim (USRA): Lead Animator

Chris Smith (USRA): Lead Writer

Jeanette Kazmierczak (University of Maryland College Park): Lead Science Writer

Scott Noble (NASA/GSFC): Scientist

John G. Baker (NASA/GSFC): Scientist

Bernard J. Kelly (UMBC): Scientist

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2021 04 15	NASA Goddard	https://youtu.be/J8yIW0SVpIM	OSIRIS-REx Leaves its Mark on Bennu	Like boot prints on the Moon, NASA's OSIRIS-REx spacecraft left its mark on asteroid Bennu. Now, new images — taken during the spacecraft's final fly-over on April 7, 2021 — reveal the aftermath of the historic Touch-and-Go (TAG) sample acquisition event from Oct. 20, 2020.	Transcript Link
				Read more: https://www.nasa.gov/feature/goddard/2021/nasas-osiris-rex-leaves-its-mark-on-asteroid-bennu	
				Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Narrator	
				Mikayla Kelley (The University of Arizona): Writer	
				Rani Gran (NASA/GSFC): Writer	
				Walt Feimer (KBRwyle): Animator	
				Jonathan North (USRA): Animator	
2021 04 15	NASA Goddard	https://youtu.be/rQcKIN9vj3U	The Doubly Warped World of Binary Black Holes	A pair of orbiting black holes millions of times the Sun's mass perform a hypnotic dance in this NASA visualization. The movie traces how the black holes distort and redirect light emanating from the maelstrom of hot gas — called an accretion disk — that surrounds each one.	Transcript Link
				Read more: http://www.nasa.gov/feature/goddard/2021/new-nasa-visualization-probes-the-light-bending-dance-of-binary-black-holes	
				Viewed from near the orbital plane, each accretion disk takes on a characteristic warped look. But as one passes in front of the other, the gravity of the foreground black hole transforms its partner into a rapidly changing sequence of arcs. These distortions play out as light from the accretion disks navigates the tangled fabric of space and time near the black holes.	
				The simulated binary contains two supermassive black holes, a larger one with 200 million solar masses and a smaller companion weighing half as much. Astronomers think this kind of black hole system is one in which both members could maintain a long-lived accretion disk.	
				The disks have different colors, red and blue, to make it easier to track the light sources, but the choice also reflects reality. Gas orbiting lower-mass black holes experiences stronger effects that produce higher temperatures. For these masses, both accretion disks would actually emit most of their light in the UV, with the blue	

2021 04 15	NASA Goddard	https://youtu.be/4y_oQ-dSJ8s	NASA's Black Hole Field Guide Episode 4 - Social Supermassive Black Holes	It's not just smaller black holes that have all the fun – really, really massive black holes also enjoy being the center of attention! Watch this chapter to learn more about these giant black holes and all their companions! Music: "Cutesy Forest" from Universal Production Music Video credit: NASA's Goddard Space Flight Center Chris Smith (USRA): Lead Producer Chris Smith (USRA): Lead Animator Chris Smith (USRA): Lead Writer Jeanette Kazmierczak (University of Maryland College Park): Lead Science Writer Scott Noble (NASA/GSFC): Scientist John G. Baker (NASA/GSFC): Scientist Bernard J. Kelly (UMBC): Scientist This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13834 . While the video in its entirety can be shared without permission, some individual imagery and music may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/13834 . For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link
2021 04 14	NASA Goddard	https://youtu.be/IYkaEDvq2Qs	NASA's Black Hole Field Guide Episode 3 - Social Black Holes	Watching black holes by themselves is fun, but what about ones that like being more social? Some black holes really LOVE to dance with other objects in the universe. Learn more about them by watching this helpful video! Music: "Tango Seduction" from Universal Production Music Video credit: NASA's Goddard Space Flight Center Chris Smith (USRA): Lead Producer Chris Smith (USRA): Lead Animator Chris Smith (USRA): Lead Writer Jeanette Kazmierczak (University of Maryland College Park): Lead Science Writer Scott Noble (NASA/GSFC): Scientist John G. Baker (NASA/GSFC): Scientist Bernard J. Kelly (UMBC): Scientist This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13834 . While the video in its entirety can be shared without permission, some individual imagery and music may have been obtained through permission and may not be excised or remixed in other products. Specific details on such imagery may be found here: https://svs.gsfc.nasa.gov/13834 . For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2021 04 13 NASA Goddard <https://youtu.be/KR61o6Z-m0> NASA's Black Hole Field Guide Episode 2 - Fancy Black Holes Once you've gotten the hang of basic black holes, you might want to search for some fancier ones. That's great! But, before you do, refer to this convenient chapter to learn just how fancy some black holes can be.

[Transcript](#)
[Link](#)

Music: "Oh Really" from Universal Production Music

Video credit: NASA's Goddard Space Flight Center
Chris Smith (USRA): Lead Producer
Chris Smith (USRA): Lead Animator
Chris Smith (USRA): Lead Writer
Jeanette Kazmierczak (University of Maryland College Park): Lead Science Writer
Scott Noble (NASA/GSFC): Scientist
John G. Baker (NASA/GSFC): Scientist
Bernard J. Kelly (UMBC): Scientist

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2021 04 12 NASA Goddard <https://youtu.be/9G5hEtJlpA> NASA's Black Hole Field Guide Episode 1 - Basic Black Holes

If you're looking to find some black holes, it's always helpful to know exactly what you're looking for! To get started on your black hole hunt, first watch this handy video to learn the basics about these strange cosmic objects.

[Transcript](#)
[Link](#)

Music: "Perfect Little Monsters" from Universal Production Music

Video credit: NASA's Goddard Space Flight Center
Chris Smith (USRA): Lead Producer
Chris Smith (USRA): Lead Animator
Chris Smith (USRA): Lead Writer
Jeanette Kazmierczak (University of Maryland College Park): Lead Science Writer
Scott Noble (NASA/GSFC): Scientist
John G. Baker (NASA/GSFC): Scientist
Bernard J. Kelly (UMBC): Scientist

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2021 04 08	NASA Goddard	https://youtu.be/U9GT0IAcjCk	NASA's NICER Finds X-ray Boosts in the Crab Pulsar's Radio Bursts	Scientists using data from NASA's Neutron star Interior Composition Explorer (NICER) telescope on the International Space Station have discovered X-ray surges accompanying radio bursts from the pulsar in the Crab Nebula. The finding shows that these bursts, called giant radio pulses, release far more energy than previously suspected. Read more: https://www.nasa.gov/feature/goddard/2021/nasa-s-nicer-finds-x-ray-boosts-in-the-crab-pulsar-s-radio-bursts A pulsar is a type of rapidly spinning neutron star, the crushed, city-sized core of a star that exploded as a supernova. A young, isolated neutron star can spin dozens of times each second, and its whirling magnetic field powers beams of radio waves, visible light, X-rays, and gamma rays. If these beams sweep past Earth, astronomers observe clock-like pulses of emission and classify the object as a pulsar. Located about 6,500 light-years away in the constellation Taurus, the Crab Nebula and its pulsar formed in a supernova explosion. The neutron star spins 30 times each second, and at X-ray and radio wavelengths it is among the brightest pulsars in the sky. Out of more than 2,800 pulsars cataloged, the Crab pulsar is one of only a few that emit giant radio pulses, which occur sporadically and can be hundreds to thousands of times brighter than the regular pulses. And after decades of observations, only the Crab has been shown to enhance its giant radio pulses with emission from other	Transcript Link
2021 04 05	NASA Goddard	https://youtu.be/3twOCNP1Gdg	Field Study Sheds New Light on Melt Zone	Five years after a NASA-funded field study returned to to set up camp once again in the melt zone of the Greenland Ice Sheet, a new study adds to the rich findings from this innovative project. We look back on this bold undertaking, which featured helicopters, floating drifters plunging into holes in the ice, and all-night shifts operating a sonic boogie board under endless daylight. Scientist Larry Smith, at the time with UCLA and now with Brown University, takes us back to the challenges on the ice and the important findings made with the hard-won data. Read more: https://www.nasa.gov/feature/goddard/2021/what-a-glacial-river-reveals-about-the-greenland-ice-sheet Music: "Bittersweet Reflection" by Max Cameron Concors [ASCAP], Universal Production Music "Hypertension" by Andrew Michael Britton [PRS], Universal Production Music "Frozen Waves" by Matthew Nicholson and Suki Jeanette Finn [PRS], Universal Production Music "Insights" by Axel Coon and Ralf Goebel [GEMA], Universal Production Music "A City Asleep" by Timothy Elliott Larcombe and Wayne Anthony Murray [PRS], Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio; Additional field footage courtesy UCLA	Transcript Link

2021 04 01	NASA Goddard	https://youtu.be/0GCTOHu4OrQ	Shadows Near The Moon's South Pole	This video shows the movement of shadows near the Moon's South Pole over the course of two lunar days, which is approximately two months on Earth. The visualization was created from data gathered by the Lunar Reconnaissance Orbiter spacecraft. Video credit: NASA's Goddard Space Flight Center Visualizations by: Ernie Wright (USRA) Produced, Edited, and Narrated by: David Ladd (USRA) Lead Scientist: Noah Petro (NASA/GSFC) Technical Support: Laurence Schuler (ADNET), Ian Jones (ADNET) Music provided by Universal Production Music: "Two Horizons" – Anthony d’Amario This video can be shared and downloaded from NASA Goddard's Scientific Visualization studio at: https://svs.gsfc.nasa.gov/4893 For more information on NASA’s media guidelines, visit: https://www.nasa.gov/multimedia/guidelines If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA’s Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix	Transcript Link
2021 03 30	NASA Goddard	https://youtu.be/s3r1sjNRJp4	2021 Arctic Sea Ice Maximum Extent Ranks 7th-Lowest on Record	On March 21, 2021, Arctic sea ice reached its maximum extent for winter 2020-2021, tying with 2007 for the seventh-lowest maximum on record. Read more: https://www.nasa.gov/feature/goddard/2021/nasa-finds-2021-arctic-winter-sea-ice-tied-for-7th-lowest-on-record Music: "Amazing Discoveries" from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathleen Gaeta (GSFC Interns): Lead Producer Trent L. Schindler (USRA): Lead Visualizer Kathryn Mersmann (USRA): Producer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13825. While the video in its entirety can be shared without permission, some individual imagery may have been obtained through permission and may not be excised or remixed in other products. Specific details on stock footage may be found here https://svs.gsfc.nasa.gov/13825. For more information on NASA’s media guidelines, visit https://nasa.gov/multimedia/guidelines. If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link

2021 03 29	NASA Goddard	https://youtu.be/x1n4Elmr7No	How NASA Data Helps Study Animals on the Move	MoveBank provides a free online database that enables animal tracking researchers to manage, share, protect, analyze and store their data. The system includes a set of online tools that help ecologists link animal movement data with information from NASA and other Earth observing satellites, and view global environmental data, such as global precipitation and weather models. The project has over 20,000 users, and this number continues to grow as advances in technology allow the collection and analysis of increasingly high-resolution data. Having a wide range of data sets make it easier for ecologists to track animals and study their movement and distribution. Funding through Ohio State University supported EnvDATA and Dr. Peter Mahoney's analysis. Mahoney was also supported by the NASA ABoVE campaign. Music: "The Morning Mist," "Big Data," Universal Production Music Video credit: NASA's Goddard Space Flight Center Ryan Fitzgibbons (USRA): Lead Producer, Editor Sarah Davidson (Max Planck Institute of Animal Behavior): Lead Interviewee Dalia B Kirschbaum (NASA/GSFC): Lead Scientist This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13756. While the video in its entirety can be shared without permission, some individual imagery provided by	Transcript Link
2021 03 26	NASA Goddard	https://youtu.be/JyOeiVDUPXk	Celebrating 25 Years of the GLOBE Program	GLOBE, now celebrating its 25th anniversary, is an international program that not only engages students and interested members of the public in hands-on science, but also gives them the opportunity to contribute their observations to a collective database used by other students, scientists, and researchers. “One of the reasons the science community started looking to students and to citizen scientists for the collection of data was because there just weren’t enough scientists to collect data from every single place around the world,” said Tony Murphy, GLOBE Implementation Office director. “To date, participants in the GLOBE program have used our scientist-developed protocols to contribute nearly 200 million Earth science observations.” Those observations span the entire Earth system – from the air we breathe to the soil beneath our feet. GLOBE offers two paths for participation: one for students in the educational setting, the other for people of all ages interested in contributing. Read more: https://www.nasa.gov/feature/esnt/2021/nasa-s-globe-program-celebrates-25-years Music: "Collecting Raindrops," by Magnum Opus [ASCAP]; Sound Pocket Music; UPM Video credit: NASA's Goddard Space Flight Center Liz Wilk (USRA): Lead Producer	Transcript Link

2021 03 22	NASA Goddard	https://youtu.be/OGawz01Fpk4	Landsat Helps Warn of Algae in Lakes, Rivers	From space, satellites such as the NASA and USGS Landsat 8 can help scientists identify where an algal bloom has formed in lakes or rivers. It's a complicated data analysis process, but one that researchers are automating so resource managers around the country can use the satellite data to identify potential problems. Nima Pahlevan and his team at NASA's Goddard Space Flight Center in Greenbelt, Maryland, have developed an algorithm to take the data collected by Landsat 8 over water, analyze it, and create a product for distribution. There are multiple, computationally-intensive steps to get from the raw data to the usable product. This free-to-use data product makes it easier for more people to work with quality Landsat data. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. Read more: https://www.nasa.gov/feature/goddard/2021/landsat-satellite-data-warns-of-harmful-algal-blooms Music: Light From Dark by Adam Salkedi, Neil Pollard [PRS], published by Atmosphere Music Ltd.; Experimental Design by Laurent Dury [SACEM], published by Koka Media; Against The Wall	Transcript Link
2021 03 18	NASA Goddard	https://youtu.be/rO-mcWsqLaQ	Hubble Shows Torrential Outflows from Infant Stars May Not Stop Them from Growing	Though our galaxy is an immense city of at least 200 billion stars, the details of how they formed remain largely cloaked in mystery. Scientists know that stars form from the collapse of huge hydrogen clouds that are squeezed under gravity to the point where nuclear fusion ignites. But only about 30 percent of the cloud's initial mass winds up as a newborn star. Where does the rest of the hydrogen go during such a terribly inefficient process? For more information: https://www.nasa.gov/feature/goddard/2021/hubble-shows-torrential-outflows-from-infant-stars-may-not-stop-them-from-growing Video credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Rogelio Bernal Andreo: Astrophotographer Martin Kornmesser (ESA): Visualizer Lars Lindberg Christensen (ESA): Visualizer Aaron E. Lepsch (ADNET): Technical Support Additional Visualizations: Zoom In To Star Formation: ESA, Silicon Worlds Wide Image of Orion Complex: Image courtesy of Rogelio Bernal Andreo, DeepSkyColors.com Herschel and Rosette Nebula: ESA - C. Carreau Space Cloud: ESA/Hubble (M. Kornmesser & L. L. Christensen)	Transcript Link

2021 03 11	NASA Goddard	https://youtu.be/VCG5sQoVPqs	Economics of Nature Mapping Liberia's Ecosystems to Understand Their Value	NASA is working alongside Conservation International and the Liberian Government through the Environmental Protection Agency (EPA) to pilot an innovative and replicable approach to more accurately map ecosystems to support effective planning and sustainable decision-making. NASA's satellite data and expert analysis will provide a country-wide picture of Liberia's hardwood forests, mangroves, and other ecosystems; Conservation International and the Liberian Government through the EPA will augment that data with their expertise in ecosystem accounting, field studies, and local knowledge to quantify the value of the country's natural resources and related ecosystem services. Read more: https://www.nasa.gov/feature/goddard/2021/economics-of-nature-mapping-liberia-s-ecosystems-to-understand-their-value Music: Universal Production Music: In Doubt (Instrumental) by Claire Leona Batchelor [PRS], Find the Truth (Instrumental) by Paul Russell [PRS] Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Katie Jepson (USRA): Lead Producer Sofie L. Bates (Intern): Lead Writer Trent L. Schindler (USRA): Lead Visualizer Celio De Sousa (USRA): Scientist Trond Larsen (Conservation International): Scientist	Transcript Link
2021 03 11	NASA Goddard	https://youtu.be/9VuNmjXfmXE	Distant Planet May Be On Its 2nd Atmosphere, NASA's Hubble Finds	Scientists using NASA's Hubble Space Telescope have found evidence that a planet orbiting a distant star that may have lost its atmosphere but gained a second one through volcanic activity. The planet, GJ 1132 b, is hypothesized to have begun as a gaseous world with a thick hydrogen blanket of atmosphere. Starting out at several times the diameter of Earth, this so-called "sub-Neptune" is believed to have quickly lost its primordial hydrogen and helium atmosphere due to the intense radiation of the hot, young star it orbits. In a short period of time, such a planet would be stripped down to a bare core about the size of Earth. That's when things got interesting. For more information, visit: https://www.nasa.gov/feature/goddard/2021/distant-planet-may-be-on-its-second-atmosphere-nasas-hubble-finds Video credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Additional Visualizations: Artist's impression of Exoplanet GJ 1132 b: Robert Hurt Atmosphere escaping an exoplanet (artist's impression): NASA, ESA, M. Kornmesser Artist's impression of WASP-107b: ESA/Hubble, NASA, M. Kornmesser Video animation of of Exoplanet GJ 1132 b: Robert Hurt	Transcript Link

2021 03 09	NASA Goddard	https://youtu.be/ve0jLXEzFXE	Juno Discovers Mars' Dust Storms Fill Solar System (by Vangelis)	Look up to the night sky just before dawn, or after dusk, and you might see a faint column of light extending up from the horizon. That luminous glow is the zodiacal light, or sunlight reflected toward Earth by a cloud of tiny dust particles orbiting the Sun. Astronomers have long thought that the dust is brought into the inner solar system by a few of the asteroid and comet families that venture in from afar. But now, a team of Juno scientists argues that the planet Mars may be the culprit. An instrument aboard the Juno spacecraft serendipitously detected dust particles slamming into the spacecraft during its journey from Earth to Jupiter. The impacts provided important clues to the origin and orbital evolution of the dust, resolving some mysterious variations of the zodiacal light. Read more: https://www.nasa.gov/feature/goddard/2021/serendipitous-juno-spacecraft-detections-shatter-ideas-about-origin-of-zodiacal-light Original musical score by Vangelis, used with permission. Video credit: NASA's Goddard Space Flight Center Dan Gallagher (USRA): Lead Producer Michael Lentz (USRA): Lead Animator Kel Elkins (USRA): Lead Data Visualizer Lonnie Shekhtman (ADNET): Writer Rani Gran (NASA/GSFC): Public Affairs Officer John Connerney (NASA/GSFC): Scientist David Agle (JPL): Support	Transcript Link
2021 03 03	NASA Goddard	https://youtu.be/5D7plijH-4M	NASA Satellite Measures Human Impact in Water Storage	To investigate humans' impact on freshwater resources, scientists have now conducted the first global accounting of fluctuating water levels in Earth's lakes and reservoirs – including ones previously too small to measure from space. Scientists used these height measurements to study 227,386 water bodies over 22 months and discovered that, from season to season, the water level in Earth's lakes and ponds fluctuate on average by about 8.6 inches (0.22 m). At the same time, the water level of human-managed reservoirs fluctuate on average by nearly quadruple that amount – about 34 inches (0.86 m). For further reading: https://www.nasa.gov/feature/goddard/2021/nasa-scientists-complete-first-global-survey-of-freshwater-fluctuation Music: "Cycle of the Moon," "Domestic Idyll," Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Ryan Fitzgibbons (USRA): Producer, Editor Sarah Cooley (Stanford University): Scientist Trent Schindler (USRA): Visualizer This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13824. While the video in its entirety can be shared without permission, some individual imagery provided by	Transcript Link

2021 03 03	NASA Goddard	https://youtu.be/EhMS-mo9w3o	NASA's Roman Space Telescope Deepens Its Infrared View	NASA's Nancy Grace Roman Space Telescope will be able to explore even more cosmic questions, thanks to a new near-infrared filter. The upgrade will allow the observatory to see longer wavelengths of light, opening up exciting new opportunities for discoveries from the edge of our solar system to the farthest reaches of space. Read more: https://www.nasa.gov/feature/goddard/2021/new-eyewear-to-deepen-the-view-of-nasa-s-roman-space-telescope With the new filter, Roman's wavelength coverage will span 0.5 to 2.3 microns – a 20% increase over the mission's original design. This range will also enable more collaboration with NASA's other big observatories, each of which has its own way of viewing the cosmos. The Hubble Space Telescope can see from 0.2 to 1.7 microns, which allows it to observe the universe in ultraviolet to near-infrared light. The James Webb Space Telescope, launching in October, will see from 0.6 to 28 microns, enabling it to see near-infrared, mid-infrared, and a small amount of visible light. Roman's improved range of wavelengths, along with its much larger field of view, will reveal more interesting targets for Hubble and Webb to follow up on for detailed observations. Expanding Roman's capabilities to include much of the near-infrared K band, which extends from 2.0 to 2.4 microns, will help us peer farther across space, probe deeper into dusty regions, and view more types of objects. Roman's sweeping cosmic surveys will unveil countless celestial bodies and phenomena that would otherwise be	Transcript Link
2021 03 01	NASA Goddard	https://youtu.be/ckjh5CBsi2w	Hubble's Servicing Mission 3B	Servicing Mission 3B was actually the fourth visit to Hubble. NASA split the original Servicing Mission 3 into two parts and conducted 3A in December of 1999. During SM3B a new science instrument would be installed: the Advanced Camera for Surveys (ACS). Several other activities were accomplished as well over a 12-day mission with 5 spacewalks. Four astronauts trained for five scheduled spacewalks to upgrade and service the Hubble Space Telescope during the STS-109 mission in early 2002. Three veteran astronauts, John M. Grunsfeld, James H. Newman, and Richard M. Linnehan, were joined by Michael J. Massimino, who made his first space flight. Scott Altman, (Cmdr., U.S. Navy), a two-time shuttle veteran, commanded the STS-109 mission. He was joined on the flight deck by pilot Duane Carey, (Lt. Col., U.S. Air Force), making his first space flight, and flight engineer Nancy Currie (Lt. Col, U.S. Army, Ph.D.). Currie had three previous space flights to her credit. For more information, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Grace Weikert: Lead Producer Grace Weikert: Writer Grace Weikert: Editor Grace Weikert: Voiceover Artist Paul Morris: Support	Transcript Link

2021 02 25	NASA Goddard	https://youtu.be/x-lkmr5IPys	Hubble Spots Comet Near Jupiter	After traveling several billion miles toward the Sun, a wayward young comet-like object orbiting among the giant planets has found a temporary parking place along the way. The object has settled near a family of captured ancient asteroids, called Trojans, that are orbiting the Sun alongside Jupiter. This is the first time a comet-like object has been spotted near the Trojan population. Read more: https://www.nasa.gov/feature/goddard/2021/comet-makes-a-pit-stop-near-jupiters-asteroids Video credit: NASA's Goddard Space Flight Center Paul Morris (USRA): Lead Producer Additional Visualizations: Jupiter orbit with Trojan Asteroids: Kel Elkins (USRA) Jupiter orbit with Trojan Asteroids: Ernie Wright (USRA) Kupier Belt Visualization: Scott Wiessinger (USRA) Jupiter's Wake Visualization: Dan Gallagher (USRA) Music: "Infinity" by Axel Tenner [GEMA], Michael Schluecker [GEMA], and Raphael Schalz [GEMA] via Ed.Berlin Production Music / Universal Production Music GmbH [GEMA] and Universal Production Music	Transcript Link
2021 02 24	NASA Goddard	https://youtu.be/Ay0tI7gusUw	NASA and Partners Get Back into Snow Business	This video can be shared and downloaded at NASA's SnowEx ground and airborne campaign is a multiyear effort using a variety of techniques to study snow characteristics, and the team began their new field study year in January 2021. Not only is SnowEx learning valuable information about how snow properties change by terrain and season, but they are also testing the tools NASA will need to sample snow from space. Read more: https://www.nasa.gov/feature/goddard/2021/nasa-snow-campaign-digs-deep-in-2021/ Music: "Frozen Waves," "Beautiful Serenity," Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio/Boise State University Matthew Crook (Boise State University): Lead Producer, Lead Videographer, Lead Editor Ryan Fitzgibbons (USRA): Producer, Editor, Videographer Jessica Merzdorf (Telophase): Lead Writer Carrie Vuyovich (NASA/GSFC): Scientist, Interviewee Hans-Peter Marshall (Boise State University): Scientist, Interviewee Maggi Kraft (Boise State University): Interviewee This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13820. While the video in its entirety can be shared without permission, some individual imagery provided by pond5.com and Boise State University and is obtained through	Transcript Link

2021 02 22	NASA Goddard	https://youtu.be/-dFQYQCmqk	Swift Links Neutrino to Star-destroying Black Hole	For only the second time, astronomers have linked an elusive particle called a high-energy neutrino to an object outside our galaxy. Using ground- and space-based facilities, including NASA's Neil Gehrels Swift Observatory, they traced the neutrino to a black hole tearing apart a star, a rare cataclysmic occurrence called a tidal disruption event. Read more: https://www.nasa.gov/feature/goddard/2021/nasa-s-swift-helps-tie-neutrino-to-star-shredding-black-hole Neutrinos are fundamental particles that far outnumber all the atoms in the universe but rarely interact with other matter. Astrophysicists are particularly interested in high-energy neutrinos, which have energies up to 1,000 times greater than those produced by the most powerful particle colliders on Earth. They think the most extreme events in the universe, like violent galactic outbursts, accelerate particles to nearly the speed of light. Those particles then collide with light or other particles to generate high-energy neutrinos. The first confirmed high-energy neutrino source, announced in 2018, was a type of active galaxy called a blazar. Tidal disruption events occur when an unlucky star strays too close to a black hole. Gravitational forces create intense tides that break the star apart into a stream of gas. The trailing part of the stream escapes the system, while the leading part swings back around, surrounding the black hole with a disk of debris. In some cases, the black hole launches fast-moving particle jets. Scientists	Transcript Link
2021 02 22	NASA Goddard	https://youtu.be/bO6EXEklFjw	Hubble Science Exoplanets, Alien Atmospheres	For the past 30 years the Hubble Space Telescope has continued its important mission of uncovering the mysteries of the universe. One of those mysteries that Hubble has helped us understand are exoplanets. For more information, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund Production & Post: Origin	Transcript Link

2021 02 18	NASA Goddard	https://youtu.be/9Mbp07wDz-0	Interning at Goddard - Virtually	Our interns unmuted themselves to talk about their awesome #NASAinternships. Listen to what they have to say about working at Goddard. Our virtual interns completed projects ranging from pandemic-era pollution levels to the intersection of technology and conservation, and you can join their ranks this summer with a NASA internship. Apply at https://intern.nasa.gov. View our unofficial application guide here: https://docs.google.com/document/d/1Bzl-7FrR8Q7GP3witL_LPgqvaJ8WFPg1MMCoT_tmStY/edit?usp=sharing Credits: NASA's Goddard Space Flight Center Kathleen Gaeta Lara Streif If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC · Flickr http://www.flickr.com/photos/gsfcc	Transcript Link
2021 02 17	NASA Goddard	https://youtu.be/4ILKQftcuvo	NASA Helps Scientists Identify Uptick in Emissions of Ozone-Depleting Compounds	NASA computer models help scientists identify an uptick in emissions of CFC-11, an ozone-depleting gas, in the atmosphere. NASA and NOAA, the National Oceanic and Atmospheric Administration, work together, as part of a long-running research partnership, monitoring efforts on stratospheric ozone. This research continues their partnership, joining scientists from MIT and the University of Bristol. Read more: https://www.nasa.gov/feature/goddard/2021/nasa-funded-network-tracks-the-recent-rise-and-fall-of-ozone-depleting-pollutants Music: "Hidden Movement" from Universal Production Music Video credit: NASA's Goddard Space Flight Center Kathleen Gaeta (GSFC Interns): Lead Producer Lara Streiff (GSFC Interns): Lead Writer Qing Liang (USRA): Lead Scientist Paul Newman (NASA/GSFC): Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: 7 This video can be freely shared and downloaded at https://svs.gsfc.nasa.gov/13807. While the video in its entirety can be shared without permission, some individual imagery may have	Transcript Link

2021 02 16	NASA Goddard	https://youtu.be/j4r4rS5aaf0	Hubble's Servicing Mission 2	The Second Servicing Mission, launched Feb. 11, 1997, greatly improved Hubble's productivity. The installation of new instruments extended Hubble's wavelength range into the near infrared for imaging and spectroscopy, allowing us to probe the most distant reaches of the universe. The replacement of failed or degraded spacecraft components increased efficiency and performance. A seven-member STS-82 crew took part in this mission. Four astronauts conducted the planned spacewalks: Mark Lee, Gregory Harbaugh, Steven Smith and Joseph Tanner were part of the extravehicular activity crew. Kenneth Bowersox was the commander, Scott Horowitz was the pilot, and Steven Hawley was the Remote Manipulator System operator. For more information, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Grace Weikert: Lead Producer Grace Weikert: Writer Grace Weikert: Editor Grace Weikert: Voiceover Artist Paul Morris: Support Music: "Cristal Delight" by Fred Dubois [SACEM] via Koka Media [SACEM], Universal Publishing Production Music France [SACEM] and Universal Production Music	Transcript Link
2021 02 12	NASA Goddard	https://youtu.be/xxS1D4vsLYI	Ahead of its Time Hubble's Control Center	Dedicated on Feb. 14, 1984, at NASA Goddard's Space Flight Center, the STOCC, or the Space Telescope Operations Control Center, operates the Hubble Space Telescope on its important mission. The Operations Team members at the STOCC continue to operate the telescope, capturing data and images of the cosmos for all of us to enjoy, allowing Hubble to continue its mission of unravelling the mysteries of the universe. For more information, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Cassandra Morris: Narration Music: "Heroes Welcome" by John K. Sands [BMI], Marc Ferrari [BMI], and Michael A Tremante [ASCAP] via Base Camp [BMI], Big Sands Music [ASCAP], and Universal Production Music This video can be shared and downloaded at https://svs.gsfc.nasa.gov/13811. This video in its entirety can be shared without permission. For more information on NASA's media guidelines, visit https://www.nasa.gov/multimedia/guidelines/index.html. See more Hubble videos on YouTube:	Transcript Link

2021 02 11	NASA Goddard	https://youtu.be/ifwJ9ueDgBs	Hubble Uncovers Concentration of Small Black Holes	Astronomers on the hunt for an intermediate-mass black hole at the heart of the globular cluster NGC 6397, found something they weren't expecting: a concentration of smaller black holes lurking there instead of one massive black hole. Read more: https://www.nasa.gov/feature/goddard/2021/hubble-uncovers-concentration-of-small-black-holes For more information, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer Music: "Glass Ships" by Chris Constantinou [PRS] and Paul Frazer [PRS] via Killer Tracks [BMI] and Universal Production Music. Visual Credits: Artist's Impression of the Black Hole Concentration in NGC 6397 Video credit: ESA/Hubble, N. Bartmann Callout of the Black Hole Concentration in NGC 6397 Video credit: ESA/Hubble, N. Bartmann Artist Rendition of Gaia Spacecraft Image credit: ESA, C. Carreau	Transcript Link
2021 02 10	NASA Goddard	https://youtu.be/G64M26VPTC0	Exploring Our Solar System with Dr. Amy Simon	Dr. Amy Simon has always been fascinated with space. From a young age she dreamed of lifting off in the space shuttle, just like her hero, astronaut Sally Ride. Over the years her interest in space remained, and she eventually found herself working at NASA. Simon is the senior scientist for planetary atmospheres research in the Solar System Exploration Division at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Her scientific research involves the study of the composition, dynamics, and cloud structure in Jovian (Jupiter-like) planet atmospheres, primarily from spacecraft observations like the Hubble Space Telescope. Simon is also involved in multiple robotic flight missions, as well as future mission concept development. She was a co-investigator on the Cassini Composite Infrared Spectrometer (CIRS) and is the deputy instrument scientist for the OSIRIS-REx Visible and near-IR Spectrometer (OVIRS), as well as the Landsat 9 TIRS2 instrument, and the Lucy L'Orpheus instrument deputy principal investigator. She is principal investigator of the Hubble Outer Planet Atmospheres Legacy (OPAL) program. She recently served as science co-lead of the NASA Ice Giants Mission Concept study. For more information, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Evangeline Koonce: Lead Producer Evangeline Koonce: Co-Editor	Transcript Link

2021 02 08	NASA Goddard	https://youtu.be/gmCz7vfnXWI	Apollo 14 Hike to Cone Crater	After landing on the Moon in February 1971, the Apollo 14 astronauts set out on a hike toward Cone crater. Navigating this terrain proved to be a difficult task, and they didn't quite reach the crater edge, but they did manage to meet their science goals along the way. Now, using data gathered from NASA's Lunar Reconnaissance Orbiter, we can retrace their moonwalk, showing how close the astronauts actually came to the rim of Cone crater. The visualization in this video uses LRO images and elevation data to recreate the outbound path of their second moonwalk, and shows the astronauts' stops along the way, labeled with distance from the lander and elevation information. While the Apollo 14 crew missed their chance to see into Cone crater from the surface, LRO now gives us a great aerial view. Video credit: NASA's Goddard Space Flight Center Visualizations by: Ernie Wright (USRA) Produced, Edited, and Narrated by: David Ladd (USRA) Lead Scientist: Noah Petro (NASA/GSFC) Technical Support: Laurence Schuler (ADNET), Ian Jones (ADNET) Music provided by Universal Production Music: "Taking Flight" – Ben Beiny This video can be shared and downloaded from NASA Goddard's Scientific Visualization studio at: https://svs.gsfc.nasa.gov/4883 For more information on NASA's media guidelines, visit: https://www.nasa.gov/multimedia/guidelines/index.html	Transcript Link
2021 01 17	NASA Goddard	https://youtu.be/XFjkVBpMkDs	Moonscapes	Dr. Noah Petro, the project scientist of NASA's Lunar Reconnaissance Orbiter mission, takes viewers on tour of several interesting sights on lunar surface, revealing both the scientific value and visual beauty of the terrain. This video is being featured as part of the National Philharmonic's Chamber Series event, "Music That Travels Through Space." The event's broadcast can be found here: https://www.youtube.com/watch?v=NpAM5V3OgHs Video credit: NASA's Goddard Space Flight Center Produced & Edited by: David Ladd (USRA) Visualizations by: Ernie Wright (USRA) Narration by: Dr. Noah Petro (NASA/GSFC) Music provided by Universal Production Music: "Broad Horizons" - Benjamin Krause & Scott Goodman This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13796 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix	Transcript Link

2021 01 14	NASA Goddard	https://youtu.be/Ni0lppUr_BQ	NASA Finds 2020 Tied for Hottest Year on Record	Globally, 2020 was the hottest year on record, effectively tying 2016, the previous record. Overall, Earth's average temperature has risen more than 2 degrees Fahrenheit since the 1880s. Temperatures are increasing due to human activities, specifically emissions of greenhouse gases, like carbon dioxide and methane. Read more: https://www.nasa.gov/press-release/2020-tied-for-warmest-year-on-record-nasa-analysis-shows Music: "Organic Machine" from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathryn Mersmann (USRA): Lead Producer Katie Jepson (USRA): Lead Producer Jessica Merzdorf (Telophase): Lead Writer Sofie L. Bates (Intern): Lead Writer Peter H. Jacobs (NASA/GSFC): Public Affairs Officer Gavin A. Schmidt (NASA/GSFC GISS): Lead Scientist Lesley Ott (NASA/GSFC): Scientist Lori Perkins (NASA/GSFC): Lead Visualizer Trent L. Schindler (USRA): Visualizer Jefferson Beck (USRA): Producer Kathleen Gaeta (GSFC Interns): Producer Jacob Richmond (NASA/GSFC): Public Affairs Officer	Transcript Link
2021 01 14	NASA Goddard	https://youtu.be/exG922m445Q	A Look Back How Heat Shaped 2020	This video is public domain and along with other supporting By most accounts, 2020 has been a rough year for the planet. It was the warmest year on record, just barely exceeding the record set in 2016 by less than a tenth of a degree according to NASA's analysis. Massive wildfires scorched Australia, Siberia, and the United States' west coast – and many of the fires were still burning during the busiest Atlantic hurricane season on record. Read more: https://www.nasa.gov/feature/goddard/2021/the-climate-events-of-2020-show-how-excess-heat-is-expressed-on-earth Music: "In Doubt Instrumental," "It's Decision Time Underscore," "Getting Bad Instrumental," "Inducing Waves Main Track," "A City Asleep Instrumental," from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Lead Producer: Katie Jepson (USRA) Lead Producer: Kathryn Mersmann (USRA) Lead Writer: Jessica Merzdorf (Telophase) Lead Writer: Sofie L. Bates (Intern) Narration: Lesley Ott (NASA/GSFC) Public Affairs Officer: Peter H. Jacobs (NASA/GSFC) Lead Scientist: Gavin A. Schmidt (NASA/GSFC GISS) Scientist: Lesley Ott (NASA/GSFC) Lead Visualizer: Lori Perkins (NASA/GSFC) Visualizer: Trent L. Schindler (USRA)	Transcript Link

2021 01 13	NASA Goddard	https://youtu.be/yXYvhYXBeP0	NASA Missions Unveil Magnetar Eruptions in Nearby Galaxies	On April 15, a brief burst of high-energy light swept through the solar system, triggering instruments on many NASA missions. Now, multiple international science teams conclude that the blast came from a supermagnetized stellar remnant known as a magnetar located in a neighboring galaxy. Read more: https://www.nasa.gov/feature/goddard/2021/nasa-missions-unmask-magnetar-eruptions-in-nearby-galaxies This finding confirms long-held suspicions that some gamma-ray bursts (GRBs) – cosmic eruptions detected somewhere in the sky almost daily – are in fact powerful flares from magnetars relatively close to home. The April 15 event is a game changer because its estimated location lies entirely within the disk of the galaxy NGC 253, located 11.4 million light-years away GRBs, the most powerful explosions in the cosmos, can be detected across billions of light-years. Those lasting less than about two seconds, called short GRBs, occur when a pair of orbiting neutron stars both the crushed remnants of exploded stars spiral into each other and merge. Magnetars are neutron stars with the strongest-known magnetic fields, with up to a thousand times the intensity of typical neutron stars and up to 10 trillion times the strength of a refrigerator	Transcript Link
2021 01 12	NASA Goddard	https://youtu.be/4esMWZZAaA8	Swift, TESS Catch Eruptions From an Active Galaxy	Using data from facilities including NASA's Neil Gehrels Swift Observatory and Transiting Exoplanet Survey Satellite (TESS), scientists have studied 20 instances and counting of regular outbursts of an event called ASASSN-14ko. Read more: https://www.nasa.gov/feature/goddard/2021/nasa-missions-help-investigate-an-old-faithful-active-galaxy Astronomers classify galaxies with unusually bright and variable centers as active galaxies. These objects can produce much more energy than the combined contribution of all their stars, including higher-than-expected levels of visible, ultraviolet, and X-ray light. Astrophysicists think the extra emission comes from near the galaxy's central supermassive black hole, where a swirling disk of gas and dust accumulates and heats up because of gravitational and frictional forces. The black hole slowly consumes the material, which creates random fluctuation in the disk's emitted light. But astronomers are interested in finding active galaxies with flares that happen at regular intervals, which might help them identify and find new phenomena and events. ASASSN-14ko was first detected on Nov. 14, 2014, by the All-Sky Automated Survey for Supernovae (ASAS-SN), a global network of 20 robotic telescopes. It occurred in ESO 253-3, an active galaxy over 570 million light-years away in the southern constellation Pictor. At the time, astronomers thought the outburst was most	Transcript Link

2021 01 11 NASA Goddard <https://youtu.be/u0ihatxXQFI> One Image, One Million Galaxies

One of the Hubble Space Telescope's most iconic images is the Hubble Ultra Deep Field, which unveiled myriad galaxies across the universe, stretching back to within a few hundred million years of the Big Bang. Hubble peered at a single patch of seemingly empty sky for hundreds of hours beginning in September 2003, and astronomers first unveiled this galaxy tapestry in 2004, with more observations in subsequent years.

[Transcript](#)
[Link](#)

NASA's upcoming Nancy Grace Roman Space Telescope will be able to photograph an area of the sky at least 100 times larger than Hubble with the same crisp sharpness. Among the many observations that will be enabled by this wide view on the cosmos, astronomers are considering the possibility and scientific potential of a Roman Space Telescope "ultra-deep field." Such an observation could reveal new insights into subjects ranging from star formation during the universe's youth to the way galaxies cluster together in space.

Roman will enable new science in all areas of astrophysics, from the solar system to the edge of the observable universe. Much of Roman's observing time will be dedicated to surveys over wide swaths of the sky. However, some observing time will also be available for the general astronomical community to request other projects. A Roman ultra deep field could greatly benefit the scientific community, say astronomers.

2020 12 23 NASA Goddard <https://youtu.be/M40GIn1FV6c> Hubble's 30th Anniversary Celebration

As an example, a Roman ultra-deep field could be similar to the In 2020, the Hubble Space Telescope achieved its 30th year in orbit. Hubble's unique design, allowing it to be repaired and upgraded with advanced technology by astronauts, has made it one of NASA's longest-living and most valuable space-based observatories, beaming transformational astronomical images to Earth for decades.

[Transcript](#)
[Link](#)

Hubble has fundamentally changed our understanding of the cosmos, and its story — filled with challenges overcome by innovation, determination, and the human spirit — inspires us.

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center
Paul R. Morris (USRA): Lead Producer

Music Credits:
"One Destiny" by Mark Petrie [ASCAP] via Soundcast Music [SESAC] and Universal Production Music

"Never Give Up" by Michael James Burns [PRS] via Atmosphere Music Ltd [PRS] and Universal Production Music

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2020 12 18	NASA Goddard	https://youtu.be/POXMTDTw46o	Plants Are Struggling to Keep Up with Rising Carbon Dioxide Concentrations	Plants play a key role in mitigating climate change. The more carbon dioxide they absorb during photosynthesis, the less carbon dioxide remains trapped in the atmosphere where it can cause temperatures to rise. But scientists have identified an unsettling trend – 86% of land ecosystems globally are becoming progressively less efficient at absorbing the increasing levels of CO2 from the atmosphere. Music credit: "A Curious Incident" from Universal Production Music Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathryn Mersmann (USRA): Lead Producer Esprit Smith (KBR): Lead Writer Benjamin Poulter (NASA/GSFC): Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13781 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix	Transcript Link
2020 12 18	NASA Goddard	https://youtu.be/oo_1aW6ecel	Hubble's Servicing Mission 3A	What was originally conceived as a mission of preventive maintenance turned more urgent on Nov. 13, 1999, when the fourth of six gyros failed and Hubble temporarily closed its eyes on the universe. Unable to conduct science without three working gyros, Hubble entered a state of dormancy called safe mode. Essentially, Hubble "went to sleep" while it waited for help. NASA decided to split the Third Servicing Mission (SM3) into two parts, SM3A and SM3B, after the third of Hubble's six gyroscopes failed. In accordance with NASA's flight rules, a "call-up" mission was quickly approved and developed and executed in a record seven months! The crew of STS-103 including astronauts Curtis L. Brown Jr., Scott J. Kelly, John M. Grunsfeld, Jean-François Clervoy, Michael Foale, Steven L. Smith, and Claude Nicollier ensured that the Hubble Space Telescope continued its mission into the 21st century. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Grace Weikert: Lead Producer Grace Weikert: Writer Grace Weikert: Editor Grace Weikert: Voiceover Artist Paul Morris: Support	Transcript Link

2020 12 15	NASA Goddard	https://youtu.be/Oq56EJq6cSE	The Outer Planets Hubble's Continuing Legacy	What is OPAL? OPAL (Outer Planet Atmospheres Legacy) is a project to obtain long time baseline observations of the outer planets in order to understand their atmospheric dynamics and evolution as gas giants. The yearly observations from OPAL throughout the remainder of Hubble's operation will provide an important legacy of time-domain images for use by planetary scientists. Viewers might notice that some of the images of the same planets appear to be different colors. This is due to the fact that over the years, from Voyager to Hubble, many different instruments, and many different filters have been used. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Evangeline Koonce: Lead Producer Evangeline Koonce: Editor Dr. Amy Simon: Interviewee Paul Morris: Support Music Credits: "The Granted Wish" by Nicholas Techer [BMI] via Koka Media [SACEM], Universal Publishing Production Music France [SACEM], and Universal Production Music.	Transcript Link
2020 12 11	NASA Goddard	https://youtu.be/b6B0pAzJyPs	Explore New Hubble Images of Celestial Objects From the Caldwell Catalog	Hubble turned 30 this year, and it has a birthday present to share with you! Newly released Hubble images of 30 celestial objects from the Caldwell Catalog show stunning cosmic sights, many of which you can see with a backyard telescope! Explore some of these beautiful images with experts, as well as learn more about the Caldwell Catalog and the science within these gorgeous views from Hubble. Read more: https://www.nasa.gov/feature/goddard/2020/for-30th-anniversary-hubble-releases-images-of-30-celestial-gems Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC · Flickr http://www.flickr.com/photos/gsfcr	Transcript Link

2020 12 09	NASA Goddard	https://youtu.be/v8XbhiA5WfY	NASA's ICESat-2 Looks Beyond the Icy Poles	ICESat-2's main science objective is ice, but the mission is also able to measure the heights of other features, including ocean bathymetry, trees and mountain glaciers.	Transcript Link
Ryan Fitzgibbons (USRA): Lead Producer Aaron E. Lepsch (ADNET): Technical Support Kate Ramsayer (Telophase): Lead Writer Thomas A. Neumann (NASA/GSFC): Lead Scientist Nathan T. Kurtz (NASA/GSFC): Lead Scientist Amy Neuenschwander (University of Texas at Austin): Interviewee Lori Magruder (University of Texas at Austin): Interviewee Alex S. Gardner (NASA/JPL CalTech): Interviewee This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13779 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc					
2020 12 08	NASA Goddard	https://youtu.be/nuMO4_nJqzw	International Observe the Moon Night 2020	International Observe the Moon Night 2020 welcomed participants from all 7 continents, 103 countries, all 50 U. S. states, Guam, Puerto Rico, the U. S. Virgin Islands, and Washington, D.C. Hear from observers around the world, and view lunar artwork submitted to our community gallery.	Transcript Link
Music is "Delicately Delightful" by David Westlake of Universal Production Music. Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Aaron E. Lepsch (ADNET): Technical Support Caela Barry (ADNET): Outreach Coordinator Andrea Jones: Outreach Coordinator Molly Wasser (ADNET): Outreach Coordinator					

2020 12 04	NASA Goddard	https://youtu.be/EGzjeu-9EF4	NASA's SDO Captures Brilliant Solar Eruption	This imagery captured by NASA's Solar Dynamics Observatory shows a solar flare and a subsequent eruption of solar material that occurred over the left limb of the Sun on November 29, 2020. From its foot point over the limb, some of the light and energy was blocked from reaching Earth – a little like seeing light from a lightbulb with the bottom half covered up. Also visible in the imagery is an eruption of solar material that achieved escape velocity and moved out into space as a giant cloud of gas and magnetic fields known as a coronal mass ejection, or CME. A third, but invisible, feature of such eruptive events also blew off the Sun: a swarm of fast-moving solar energetic particles. Such particles are guided by the magnetic fields streaming out from the Sun, which, due to the Sun's constant rotation, point backwards in a big spiral much the way water comes out of a spinning sprinkler. The solar energetic particles, therefore, emerging as they did from a part of the Sun not yet completely rotated into our view, traveled along that magnetic spiral away from Earth toward the other side of the Sun. While the solar material didn't head toward Earth, it did pass by some spacecraft: NASA's Parker Solar Probe, NASA's STEREO and ESA/NASA's Solar Orbiter. Equipped to measure magnetic fields and the particles that pass over them, we may be able to study fast-moving solar energetic particles in the observations once they are downloaded. These sun-watching missions are all part of a larger heliophysics fleet that help us understand both what causes such	Transcript Link
2020 12 03	NASA Goddard	https://youtu.be/4_iql4jByQM	Landsat 9, part 4 Plays Well With Others	Landsat is not the only satellite orbiting Earth and sending back data. It takes a team of data sets to get the full picture of what's happening down on the surface of Earth. Episode 4 shows how Landsat is combined with other data sets to reveal what is happening as well as why. In this episode, we're introduced to Danielle Rappaport, who uses audio recordings with Landsat data to measure biodiversity in rainforests. Jeff Masek, the Landsat 9 Project Scientist at NASA, describes using Landsat and other data to understand depleted groundwater. As NASA builds Landsat 9, and other countries launch their own Earth observing satellites, the Landsat legacy continues to grow stronger than ever. Additional footage courtesy of Pond5, Danielle Rappaport, and the U.S. Geological Survey. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. Music: "Intrigues and Plots," "Finding You," "Very Fast Swing," "Fence Trespassing," "Organic Circuit," "Show Me" from Universal Production Music Credit: NASA's Goddard Space Flight Center	Transcript Link

2020 12 02	NASA Goddard	https://youtu.be/fovlg9Vd8nU	Landsat 9, part 3 More Than Just A Pretty Picture	It's not enough just to record data with a satellite; you also need to analyze it here on Earth. Episode 3 shows the efforts of the USGS to downlink and archive the five decades of Landsat data we've collected, as well as make it available for scientists and other data users. In this episode, we're introduced to Mike O'Brien, who is on the receiving end of daily downloads, as well as Kristi Kline, who is in charge of making Landsat data available at no cost to the user. Jeff Masek, the Landsat 9 Project Scientist at NASA, describes how access to data has revolutionized what we can learn about our home planet. More than just pictures, Landsat's verified scientific data is giving us a slice of human history and the changes on Earth's surface. Additional footage courtesy of Pond5 and the US Geological Survey. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. Music: "Small Secrets," "Take A Little Look," "The Archives," "Golden Temple," "Orchestra Groove," "Perpetual Wonder," "Patisserie Pressure" from Universal Production Music Credit: NASA's Goddard Space Flight Center	Transcript Link
2020 12 02	NASA Goddard	https://youtu.be/o-DHwNFDgOU	Decades of Sun from ESA & NASA's SOHO	December 2, 2020 marks the 25th anniversary of the Solar and Heliospheric Observatory, or SOHO — a joint mission of the European Space Agency and NASA. Since its launch on that date, the mission has kept watch on the Sun. This view of the Sun has been processed by scientists at the Naval Research Lab in Washington, D.C., which manages SOHO's LASCO instrument, to merge views from two of LASCO's coronagraphs: C2, which images closer to the Sun's surface but has a smaller field of view, and C3, which has a wider field of view. Throughout the video, the Sun releases bursts of material called coronal mass ejections: fast-moving clouds of solar material that can trigger space weather effects on Earth — like auroras, communications problems, and even power outages — and for spacecraft in their path. These storms are more frequent near solar maximum, the period approximately every 11 years when the Sun's activity is at a high point. The dark area that migrates between the lower left and the upper right of the image is caused by the coronagraph's occulter arm, which holds the disk to block out the Sun's face. It appears to change positions periodically as the spacecraft rolls to keep its high-gain antenna, used to transmit data, pointed towards Earth. The occasional blank squares are caused by corrupted data. The bright, horizontally elongated objects that pass through the field of view are planets, which can be so bright that they saturate pixels along	Transcript Link

2020 12 02	NASA Goddard	https://youtu.be/2X0Hg_hI3SYk	Hubble's Servicing Mission 1	Shortly after the Hubble Space Telescope was deployed in 1990, the observatory's primary mirror was discovered to have an aberration that affected the clarity of the telescope's early images. Fortunately, Hubble, orbiting 353 miles (569 km) above the surface of the Earth, was the first telescope designed to be visited in space by astronauts to perform repairs, replace parts, and update its technology with new instruments. Servicing Mission 1, launched in December 1993, was the first opportunity to conduct planned maintenance on the telescope. In addition, new instruments were installed and the optics of the flaw in Hubble's primary mirror was corrected. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Grace Weikert: Lead Producer Grace Weikert: Writer Grace Weikert: Editor Grace Weikert: Voiceover Artist Paul Morris: Support Music Credits: "Sleep Patterns" by Oliver Worth [PRS] via Atmosphere Music Ltd [PRS] and Universal Production Music.	Transcript Link
2020 12 01	NASA Goddard	https://youtu.be/QoWg68FCjm8	Landsat 9 part 2, Designing For The Future	The soon-to-be-launched Landsat 9 is the intellectual and technical product of eight generations of Landsat missions, spanning nearly 50 years. Episode 2 takes us inside the spacecraft, showing how Landsat instruments collect carefully calibrated data. Scientists have used the data to manage natural resources and answer questions about changes since the program started in 1972. In this episode, we're introduced to Matt Bromley, who studies water usage in the western United States, as well as Phil Dabney and Melody Djam, who have worked on designing and building Landsat 9. Together, they are making sure that Landsat continues to deliver game-changing data and continues to help manage Earth's precious resources. Additional footage courtesy of Gordon Wilkinson/Texas Archive of the Moving Image and the US Geological Survey. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. Music: "Crocodile Creek," "Clicking Into Place," "Playground Intrigue," "Fading Memories," "Innocent Activities," "Patisserie Pressure," from Universal Production Music	Transcript Link

2020 11 30	NASA Goddard	https://youtu.be/FIRf17Egexo	Landsat 9 part 1, Getting Off The Ground	Every legacy has a compelling origin. The soon-to-be-launched Landsat 9 is the intellectual and technical product of eight generations of Landsat missions, spanning nearly 50 years. Episode One answers the question “why?” Why did the specific years between 1962 and 1972 call for a such a mission? Why did leadership across agencies commit to its fruition? Why was the knowledge it could reveal important to the advancing study of earth science? In this episode, we’re introduced to William Pecora and Stewart Udall, two men who propelled the project into reality, as well as Virginia Norwood who breathed life into new technology. Like any worthwhile endeavor, Landsat encountered its fair share of resistance. Episode one explores how those challenges were overcome with the launch of Landsat 1, signifying a bold step into a new paradigm. Additional footage courtesy of Gordon Wilkinson/Texas Archive of the Moving Image and the US Geological Survey. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. Music: "The Missing Star," "Brazenly Bashful," "Light Tense Weight," "It's Decision Time," "Patisserie Pressure," from Universal	Transcript Link
2020 11 27	NASA Goddard	https://youtu.be/NwQ5oyhX0jg	Hubble Science Black Holes, From Myth to Reality	For the past 30 years the Hubble Space Telescope has continued its important mission of uncovering the mysteries of the universe. One of those mysteries that Hubble has helped us understand is black holes. For more information, visit https://nasa.gov/hubble. Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund Production & Post: Origin GSFC Support: Lynn Bassford	Transcript Link

2020 11 25	NASA Goddard	https://youtu.be/SW-1caCnA9o	Hubble Trivia 17) How wide is Hubble's primary mirror	The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: How wide is Hubble's primary mirror? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund	Transcript Link
2020 11 24	NASA Goddard	https://youtu.be/NIHJV2OyxII	Lucy's Journey Episode 1 – 'Launch'	Episode 1: Launch. Meet Lucy as she prepares for the first ever journey to the Trojan asteroids, a population of primitive small bodies orbiting in tandem with Jupiter. Music is "Fizzy and Witty" by Fabien Langard and Philippe Villar and "Lost in Space" by Arch Bacon from Universal Production Music Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Editor Writer Bailee DesRocher (USRA): Lead Animator Walt Feimer (KBRwyle): Animator Michael Lentz (USRA): Art Director Sophia Roberts (AIMM): Narrator This video is public domain and along with other supporting	Transcript Link

2020 11 23	NASA Goddard	https://youtu.be/GYE2P7BWBA	Moon Phases 2021 – Northern Hemisphere – 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2021, as viewed from the Northern Hemisphere. Each frame represents one hour. In addition, this visualization shows the Moon's orbit position, sub-Earth and subsolar points, and distance from the Earth at true scale. Craters near the terminator are labeled, as are Apollo landing sites, maria, and other albedo features in sunlight. Video credit: NASA's Goddard Space Flight Center Data visualization by Ernie Wright (USRA) Producer & Editor - David Ladd (USRA) Music provided by Universal Production Music: "Nothing Can Stop Us Now" - Anders Johan Greger Lewen & Henrik Lars Wikstrom This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/4874 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2020 11 23	NASA Goddard	https://youtu.be/B22I9Z45yrM	Moon Phases 2021 – Southern Hemisphere – 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2021, as viewed from the Southern Hemisphere. Each frame represents one hour. In addition, this visualization shows the Moon's orbit position, sub-Earth and subsolar points, and distance from the Earth at true scale. Craters near the terminator are labeled, as are Apollo landing sites, maria, and other albedo features in sunlight. Video credit: NASA's Goddard Space Flight Center Data visualization by Ernie Wright (USRA) Producer & Editor - David Ladd (USRA) Music Provided by Universal Production Music: "Fly To The Moon" - Thomas Edward Sheppard This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/4875 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link

2020 11 20	NASA Goddard	https://youtu.be/8zkaOasBhJE	Hubble Voyage of Discovery	The Hubble Space Telescope has transformed our understanding of the universe, its view from orbit unleashing a flood of cosmic discoveries that have changed astronomy forever. From its discovery of dark energy to its quest to determine the age of the universe, Hubble has helped answer some of the most compelling astronomical questions of our time and revealed even stranger phenomena, opening our eyes to the grandeur and mystery of space. For more information, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Tracy Vogel: Lead Writer Paul R. Morris (USRA): Lead Producer Music: "Above the Stars" by Magnum Opus [ASCAP] via Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13418 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN	Transcript Link
2020 11 18	NASA Goddard	https://youtu.be/Y8W9T6ahwSU	Echoes of the Universe's Creation	Follow NASA's Hubble Space Telescope: Sound waves from the nascent universe, called baryon acoustic oscillations (BAOs), left their imprint on the cosmos by influencing galaxy distribution. Researchers have explored this imprint back to when the universe was three billion years old, or roughly 20% of its current age of 13.8 billion years. For most of its first half-million years, the universe looked extremely different than it does today. Instead of being speckled with stars and galaxies, the cosmos was filled with a sea of plasma – charged particles – that formed a dense, almost uniform fluid. There were tiny fluctuations of about one part in 100,000. What few variations there were took the form of slightly denser kernels of matter, like a single ounce of cinnamon sprinkled into about 13,000 cups of cookie dough. Since the clumps had more mass, their gravity attracted additional material. It was so hot that particles couldn't stick together when they collided – they just bounced off each other. Alternating between the pull of gravity and this repelling effect created waves of pressure – sound – that propagated through the plasma. Over time, the universe cooled and particles combined to form neutral atoms. Because the particles stopped repelling each other, the waves ceased. Their traces, however, still linger, etched on the cosmos.	Transcript Link

2020 11 18	NASA Goddard	https://youtu.be/b2do68iIRDY	Hubble Trivia 16) What has Hubble helped reveal about Jupiter's Great Red Spot	The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: What has Hubble helped reveal about Jupiter's Great Red Spot? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund	Transcript Link
2020 11 17	NASA Goddard	https://youtu.be/-95NJdX5PPE	NASA Technology Aids Wildlife Conservation	In a constantly changing world, the protection of our planet's endangered species and ecosystems is a priority for ecologists. Recently, a group of researchers at the University of Idaho have worked to combine their extensive on-the-ground research of the endangered Yuma Ridgway's rail with Landsat's vast archive, to create a habitat suitability model that can be used by land managers. Using this model gives land managers the tools and data to make decisions of how to best carry out conservation for the Yuma Ridgway's rail on a year to year basis. With the success of this initial model, it's hypothesized that this tool will be able to help additional species in the area and others down the road. To view the habitat map https://sites.google.com/view/habitatsuitability-yrr/home The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. Music: "Throwing Light," by Paul Werner [BMI], Published by Ingenious Music Publishing Ltd. [PRS], available from Universal Production Music "Into the Atmosphere," by Sam Joseph Delves [PRS], published by	Transcript Link

2020 11 17	NASA Goddard	https://youtu.be/OWRx_a5eQTUw	NASA Studies How COVID-19 Shutdowns Affect Emissions	Pandemic-related shutdowns have affected how people act, so scientists began monitoring how that's affected the planet — specifically nitrogen dioxide emissions. How do COVID-19 pollution patterns play into NASA computer models? NASA's GEOS atmospheric composition model shows us the answer. Read more: https://www.nasa.gov/feature/goddard/2020/nasa-model-reveals-how-much-covid-related-pollution-levels-deviated-from-the-norm Music: "Lab Analysis" from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathleen Gaeta (GSFC Interns): Lead Producer Lara Streiff (GSFC Interns): Lead Writer Trent Schindler (USRA): Lead Visualizer Christoph Keller (USRA): Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13753 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center	Transcript Link
2020 11 10	NASA Goddard	https://youtu.be/vYmgmU8STVY	Hubble Trivia 15) What are forming in the Eagle Nebula's 'Pillars of Creation'	The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: What are forming in the Eagle Nebula's 'Pillars of Creation'? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund	Transcript Link

2020 11 05	NASA Goddard	https://youtu.be/G-ZodfZ-mdU	High Tide Flooding	Sea level rise is often spoken of in future terms, including projections for impacts we're likely to see by the end of the century. But in many communities in the U.S., sea level rise is already a factor in people's lives in the form of high-tide flooding. Also known as sunny day or nuisance flooding, this flooding can occur when slightly higher sea levels – due to melting glaciers and ice sheets, as well as the water in the oceans expanding when it gets warmer – meet a particularly high tide or moderate onshore breeze. We visit Annapolis, Maryland, a state capitol, home of the U.S. Naval Academy, and seaside tourist town that has seen a dramatic increase in floods in recent years. Waters sometimes breach flood walls, or more often, back up through storm sewers to flood nearby streets. City engineers and a Naval Academy team, working with data from NOAA and NASA, are already working on flood mitigation efforts. Annapolis is not alone in its planning for a more flood-prone future. Cities like Boston; New York; Philadelphia; Norfolk, Virginia; Charleston, South Carolina; Savannah, Georgia; and Miami are also faced with increased flooding or flood potential. For more on high tide flooding: https://nasa.gov/feature/esnt/2020/beating-back-the-tides Video credit: NASA's Goddard Space Flight Center Jefferson Beck (USRA): Lead Producer	Transcript Link
2020 11 05	NASA Goddard	https://youtu.be/JTbIxiTn8RI	Rising Waters Out-of-Balance Ice Sheets	Greenland and Antarctica are home to most of the world's glacial ice – including its only two ice sheets – making them areas of particular interest to scientists. Combined, the two regions also contain enough ice, that if it were to melt all at once, would raise sea levels by nearly 215 feet (65 meters) – making the study and understanding of them not just interesting, but crucial to our near-term adaptability and our long term survival in a changing world. Music: "Marimba Rhythms" via Universal Production Music Video credit: NASA's Goddard Space Flight Center LK Ward (USRA): Lead Producer Esprit Smith (JPL): Lead Writer Cindy Starr (USRA): Visualizer Aaron E. Lepsch (ADNET): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13761 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard	Transcript Link

2020 11 05	NASA Goddard	https://youtu.be/7e7QAQVHb0Y	Rising Waters A Warmer World	Earth's global sea levels are rising – and are doing so at an accelerating rate. Waters in the ocean are expanding as they absorb massive amounts of heat trapped by greenhouse gases in Earth's atmosphere. Glaciers and ice sheets are adding hundreds of gigatons of meltwater into the oceans each year. With satellites, airborne missions, shipboard measurements, and supercomputers, NASA has been investigating sea level rise for decades. Together with our international and interagency partners, we're monitoring the causes of sea level rise with high accuracy and precision. Global sea level is rising approximately 0.13 inches (3.3 millimeters) a year. That's 30% more than when NASA launched its first satellite mission to measure ocean heights in 1992. Music: "Rain over the Sea" from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathryn Mersmann (USRA): Lead Producer Ellen T. Gray (ADNET): Producer Kate Ramsayer (Telophase): Writer Jefferson Beck (USRA): Videographer Trent L. Schindler (USRA): Visualizer Bailee DesRocher (USRA): Animator Kevin A. Anderson (LAMPS 2): Videographer	Transcript Link
2020 11 05	NASA Goddard	https://youtu.be/Lm8ZSfnrUzA	Rising Waters on the West Coast	This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13762 Music: "Solitude" by Kate Elizabeth Lloyd Video credit: NASA James Round (NASA/JPL CalTech): Lead Producer Bailee DesRocher (USRA): Animator Alan Buis (NASA/JPL CalTech): Writer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13762 Subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcr	Transcript Link

2020 11 05 NASA Goddard <https://youtu.be/IF85NG3Sv30> Our Dynamic Earth Rebound and Subsidence

It's not only water processes that play a role in global sea level rise – [Transcript Link](#)
ground movements can play a significant role as well. On a continental scale, Earth's crust is still recovering from the last ice age. Around 20,000 years ago, Canada, the northeast United States, Scandinavia and other regions were weighed down by ice sheets. As these ice sheets melted and the weight on the continents eased, the land surface slowly rebounded. This rebounding process, and related subsidence, continues to alter the shape of ocean basins today.

Subsidence can also result from human activity, like resource extraction. The Mississippi River Delta, for example, is essentially drowning as sinking ground is combined with higher sea levels. NASA is studying this case with an airborne campaign designed to study how sediments are accumulating on the delta.

Music: "Patisserie Pressure" by Benjamin James Parsons [PRS]

Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio

Katie Jepson (USRA): Lead Producer

Jacquelyn DeMink (USRA): Lead Animator

Kate Ramsayer (Telophase): Writer

Lambert Caron (JPL): Science Support

Kelly Brunt (Earth System Science Interdisciplinary Center/University of Maryland): Science Support

Michael Gleeson: Aerial Videographer

2020 11 05 NASA Goddard <https://youtu.be/dd7gHufoiPI> Hubble's Extraordinary ULLYSES Program

The universe would be a pretty boring place without stars. Without them, the universe would remain a diffuse plasma of mostly hydrogen and helium from the big bang. [Transcript Link](#)

To better understand stellar evolution, a new Hubble initiative has been launched called ULLYSES (UV Legacy Library of Young Stars as Essential Standards).

This is the largest observing program ever undertaken by NASA's Hubble Space Telescope, which will be used to look at over 300 stars. Ultraviolet (UV) light from the target stars will be used to produce a library of the spectral fingerprints of young, low-mass stars from eight star-forming regions in the Milky Way, as well as fully mature high-mass stars in several nearby dwarf galaxies including the Magellanic Clouds.

More information:

<https://www.nasa.gov/feature/goddard/2020/hubble-launches-large-ultraviolet-light-survey-of-nearby-stars/>

Video credit: NASA's Goddard Space Flight Center

Paul R. Morris (USRA): Lead Producer

Special thanks to Dr. William Fischer

Music: "Red Giant" by Christian Tschuggnall [AKM] and Michael Edwards [APRA] via Atmosphere Music Ltd [PRS] and Universal Production Music

2020 11 04 NASA Goddard <https://youtu.be/CiGi-gtygDU> NASA Missions Team Up to Study Unique Magnetar Outburst On April 28, a supermagnetized stellar remnant known as a magnetar blasted out a simultaneous mix of X-ray and radio signals never observed before. The flare-up included the first fast radio burst (FRB) ever seen from within our Milky Way galaxy and shows that magnetars can produce these mysterious and powerful radio blasts previously only seen in other galaxies. [Transcript Link](#)

A magnetar is a type of isolated neutron star, the crushed, city-size remains of a star many times more massive than our Sun. What makes a magnetar so special is its intense magnetic field. The field can be 10 trillion times stronger than a refrigerator magnet's and up to a thousand times stronger than a typical neutron star's. This represents an enormous storehouse of energy that astronomers suspect powers magnetar outbursts.

The X-ray portion of the synchronous bursts was detected by several satellites, including NASA's Wind mission.

The radio component was discovered by the Canadian Hydrogen Intensity Mapping Experiment (CHIME), a radio telescope located at Dominion Radio Astrophysical Observatory in British Columbia and led by several Canadian universities. It was also detected by the NASA-funded Survey for Transient Astronomical Radio Emission 2 (STARE2), a trio of detectors in California and Utah operated by Caltech and NASA's Jet Propulsion Laboratory in Pasadena, California. The STARE2 data showed that the burst's energy was comparable to FRBs.

2020 11 04 NASA Goddard <https://youtu.be/1uEmNjxTQ> Hubble Trivia 14) Hubble observed what kind of explosion created by two neutron stars merging The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: Hubble observed what kind of explosion created by two neutron stars merging? You might be surprised! [Transcript Link](#)

See if you know the trivia question before the answer comes up on the screen!

Video credit: NASA's Goddard Space Flight Center

Director, Producer & Editor:
James Leigh

Director of Photography:
James Ball

Additional Photography, Coloring & Mix:
Matthew Duncan

Sound Recordist:
Alex Jennings

Production & Edit Assistant:
Lucy Lund

2020 10 30	NASA Goddard	https://youtu.be/4aq_F9Ma0DQ	2020 Weather Patterns Push Antarctic Ozone Hole to 12th-Largest on Record	A cold and stable Antarctic vortex supported the development of the 12th-largest ozone hole on record in 2020. The hole reached its peak extent on Sept. 20 at 24.8 million square kilometers. Music: "Solar Winds" from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathleen Gaeta (GSFC Interns): Lead Producer Eric Nash (SSAI): Visualizer Kathryn Mersmann (USRA): Graphics Paul Newman (NASA/GSFC): Scientist Susan Strahan (USRA): Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13752 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc	Transcript Link
2020 10 30	NASA Goddard	https://youtu.be/0fa7ZCjZTQ	What the Heck is That - Moon Edition	From mysterious swirls of pale dust to oblong craters and oddly-shaped ridges, numerous sights on the lunar landscape are subject to a wide range of inquiry. In this video, Dr. Noah Petro, the Project Scientist of the Lunar Reconnaissance Orbiter mission, examines some of these strange and unusual looking features on the Moon to answer the most profound question of them all: "What the heck is that?" The Moon is not made of cheese, but this production definitely is. Don't say we didn't warn you. Video credit: NASA's Goddard Space Flight Center Produced & Edited by: David Ladd (USRA) Visualizations by: Ernie Wright (USRA) Animations by: David Ladd (USRA) Host: Dr. Noah Petro (NASA/GSFC) Music provided by Universal Production Music: "Folky Mood" – Karl Thomas Rundqvist "Appreciate Ur Patience" – Nathan Foreman, Sebastian Barnaby Robertson "Bar Humbug" – Christopher Mark Salt, Philip Guyler "Edutaining" – Anders Johan Greger Lewen "Let's Shake It" – Simon James, Von Hemingway, William Riddims This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13728	Transcript Link

2020 10 29 NASA Goddard <https://youtu.be/82-kA0urBB8> Why Observe Tree Height

"Why Observe?: Tree Height" explores surface height measurement missions and the role that citizen science can play within the scientific community.

[Transcript](#)
[Link](#)

NASA uses field campaigns and sensors on satellites and the International Space Station (ISS) to improve our understanding of how much carbon is being stored in terrestrial ecosystems and how this could change as patterns of drought, fire, and forest ecosystems shift in a changing climate. For example, NASA has launched satellites such as the Ice, Cloud and land Elevation Satellite-2 (ICESat-2) as well as instruments on the International Space Station such as the Global Ecosystem Dynamics Investigation (GEDI), which use lasers to measure the height of Earth's surface below them as they orbit our planet. These different datasets from field campaigns and sensors can inform scientists of nuances in data and verify one another. This data can also help to develop and adjust the algorithms that satellites and instruments use to differentiate what environment they are measuring such as an ice sheet versus a forest.

Measuring this third dimension of forest structure improves estimates of how much carbon is stored above ground in large forests. Ground sources of data are also needed to verify the measurements from satellites, and observations from citizen scientists can help fill in gaps in that data. For example, tree height measurements will help scientists working on NASA missions like ICESat-2, which is measuring the heights of forest canopies

2020 10 29 NASA Goddard <https://youtu.be/8ePEuXQClxo> Hubble Spots Giant Space 'Pumpkin'

Halloween is scarier with Hubble! What looks like two glowing eyes and a crooked carved smile is a snapshot of the early stages of a collision between two galaxies. The entire view is nearly 109,000 light-years across, approximately the diameter of the Milky Way. This new image is just one of several spooky views Hubble has captured in the universe.

[Transcript](#)
[Link](#)

For more information:

<https://www.nasa.gov/feature/goddard/2020/hubble-finds-greater-pumpkin-galaxy-pair>

Music: "Come Alive" by Donn Wilkerson [BMI] via Killer Tracks [BMI] and Universal Production Music

Video credit: NASA's Goddard Space Flight Center
Paul R. Morris (USRA): Lead Producer

Additional Credits:

Video of Pumpkin by Artbeats

Sound Effect Credits:

Horror Hit by PashaStriker

Scart Wobbling Effect by JiltedG

Evil Gnome Laugh by WARP EFX

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization

2020 10 28	NASA Goddard	https://youtu.be/yzF8QOpWhtc	Hubble Trivia 13) What does Hubble's infrared vision help astronomers see	The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: What does Hubble's infrared vision help astronomers see? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Music: "Frozen Waves" by Matthew Nicholson [PRS] and Suki Jeanette Finn [PRS] via Atmosphere Music Ltd [PRS] and Universal Production Music Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings	Transcript Link
2020 10 21	NASA Goddard	https://youtu.be/xj00-fLSV7c	OSIRIS-REx Touches Asteroid Bennu	NASA's Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer (OSIRIS-REx) spacecraft unfurled its robotic arm Oct. 20, 2020, and in a first for the agency, briefly touched an asteroid to collect dust and pebbles from the surface for delivery to Earth in 2023. This well-preserved, ancient asteroid, known as Bennu, is currently more than 200 million miles (321 million kilometers) from Earth. Bennu offers scientists a window into the early solar system as it was first taking shape billions of years ago and flinging ingredients that could have helped seed life on Earth. https://www.nasa.gov/feature/goddard/2020/osiris-rex-tags-surface-of-asteroid-bennu Music: "Event Horizon" by Jochen Reinhold Flach, via Universal Production Music Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Kel Elkins (USRA): Visualizer	Transcript Link

2020 10 21	NASA Goddard	https://youtu.be/hYRh9xxL8og	Hubble Trivia 12) Hubble witnessed plumes of water vapor on which of Jupiter's moons	The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: Hubble witnessed plumes of water vapor on which of Jupiter's moons? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund	Transcript Link
2020 10 16	NASA Goddard	https://youtu.be/NLB M6Z83iE	NASA Supercomputing Study Breaks Ground for Tree Mapping, Carbon Research	Scientists from NASA's Goddard Space Flight Center in Greenbelt, Maryland, and international collaborators demonstrated a new method for mapping the location and size of trees growing outside of forests, discovering surprisingly high numbers of trees in semi-arid regions and laying the groundwork for more accurate global measurement of carbon storage on land. Read more: https://www.nasa.gov/feature/goddard/2020/nasa-supercomputing-study-breaks-ground-for-tree-mapping-carbon-research/ Music credit: "Fence Trespassing" from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio LK Ward (USRA): Lead Producer Jessica Merzdorf (Telophase): Lead Writer Greg Shirah (NASA/GSFC): Lead Visualizer Compton Tucker (NASA/GSFC): Scientist Aaron E. Lepsch (ADNET): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13736 If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2020 10 16	NASA Goddard	https://youtu.be/KGdooPr8Xfl	Sample Asteroid Bennu in 360	NASA's first asteroid sample return mission, OSIRIS-REx, will make a daring attempt to "TAG" asteroid Bennu on Oct. 20 – touch its surface and collect a sample for return to Earth. Experience the sample collection event in 360 and watch as OSIRIS-REx contacts the rocky surface of sample site Nightingale on Asteroid Bennu. https://www.nasa.gov/osiris-rex Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Narrator Jonathan North (USRA): Animator Walt Feimer (KBRwyle): Animator Michael Lentz (USRA): Art Director Kel Elkins (USRA): Lead Visualizer Aaron E. Lepsch (ADNET):	Transcript Link
2020 10 16	NASA Goddard	https://youtu.be/wecNAyDxhjQ	Photon Phriday One Phull Orbit	Follow an entire orbit of the ICESat-2 mission as it measures the elevation of oceans, sea ice, mountains, and islands around the Earth. This video shows the same orbit (ground reference track 1352) on two different dates (Dec. 26, 2018, and Sept. 24, 2019) to capture the clearest, least-cloudy data examples. Each frame shows a different aspect of the orbit. The upper left frame is the entire photon cloud standardized on a global scale. The upper right frame shows selected photon cloud granules that sync with the global scale within a degree in order to show more spatial detail. In many cases, the zoomed-in photon clouds in this frame have been slowed down in order to show details clearly. The bottom right frame shows video examples of the terrain that correspond with where the orbit is. The bottom left terrain is the continuous orbit on a blue marble with labels for countries and other geographic features that represent where the orbit went over or very nearby. https://nasa.gov/icesat2 Music: "Sun Age," "Data Visions," "Water Memory," via Universal Production Music Video credit: NASA's Goddard Space Flight Center Lead Producer: Ryan Fitzgibbons (USRA) Lead Visualizer:	Transcript Link

2020 10 14	NASA Goddard	https://youtu.be/FvXDTnw1Pno	Hubble Trivia 11) How much data can Hubble store on board	The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: How much data can Hubble store on board? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund	Transcript Link
2020 10 14	NASA Goddard	https://youtu.be/ONIZIJAVnDA	NASA's Asteroid Heist The Challenges of TAG	NASA's first asteroid sample return mission, OSIRIS-REx, will make a daring attempt to "TAG" asteroid Bennu on Oct. 20 – touch its surface and collect a sample for return to Earth. Sample site Nightingale, the mission's targeted touch down spot, is only a few parking spaces wide and surrounded by building-sized boulders that pose a hazard to OSIRIS-REx. The spacecraft will carefully navigate down to the sample site with its sampling arm extended and touch Bennu's surface for several seconds. Upon contact, the collector head will fire a bottle of nitrogen gas to agitate loose material, which is then caught in the spacecraft's collector head. After this brief touch, OSIRIS-REx will fire its thrusters to back away from Bennu, navigating to a safe distance from the asteroid. The spacecraft will depart Bennu in 2021 and deliver the sample to Earth on Sep. 24, 2023. https://nasa.gov/osiris-rex Music: "Avenger" by Max Cameron Concors and "Fight for Earth" by Peter Nickalls, via Universal Production Music Video credit: NASA's Goddard Space Flight Center Lead Producer: Dan Gallagher (USRA) Producer: James Tralie (ADNET)	Transcript Link

2020 10 08	NASA Goddard	https://youtu.be/QunVAWABQSc	Tour of Asteroid Bennu	When NASA's OSIRIS-REx spacecraft arrived at asteroid Bennu in December 2018, its close-up images confirmed what mission planners had predicted nearly two decades before: Bennu is made of loose material weakly clumped together by gravity, and shaped like a spinning top. This major validation, however, was accompanied by a major surprise. Scientists had expected Bennu's surface to consist of fine-grained material like a sandy beach, but were instead greeted by a rugged world littered with boulders – the size of cars, the size of houses, the size of football fields. Now, thanks to laser altimetry data and high-resolution imagery from OSIRIS-REx, we can take a tour of Bennu's remarkable terrain. Unlock the secrets of asteroid Bennu: https://www.nasa.gov/feature/goddard/2002/osiris-rex-unlocks-more-secrets-from-asteroid-bennu Universal Production Music: "Timelapse Clouds" by Andy Blythe and Marten Joustra; "The Wilderness" by Benjamin James Parsons; "Maps of Deception" by Idriss-El-Mehdi Bennani, Olivier Louis Perrot, and Philippe Andre Vandenhende Credit: NASA's Goddard Space Flight Center Data provided by NASA/University of Arizona/CSA/York University/Open University/MDA Dan Gallagher (USRA): Producer Kel Elkins (USRA): Lead Visualizer	Transcript Link
2020 10 07	NASA Goddard	https://youtu.be/3DVvTeU9ozE	Hubble Trivia 10) How Much Exposure Time Did it Take to Capture the Hubble Ultra Deep Field Image	The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: How much exposure time did it take to capture the Hubble Ultra Deep Field image? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund	Transcript Link

2020 10 06	NASA Goddard	https://youtu.be/QbyKJlmQQbY	The James Webb Space Telescope Completes its Final Environmental Tests	The fully assembled James Webb Space Telescope has completed its environmental tests at Northrop Grumman in Redondo Beach, CA. The environmental tests are a combination of acoustic and sine vibration tests. These tests simulate the conditions the telescope will encounter during launch. Completing these tests ensures that the telescope will survive launch. Prior to testing, engineers lifted the telescope onto the transport fixture and covered the telescope with a protective tent cover, sometimes referred to as the clamshell cover. The tent cover keep the telescope safe from contamination particles while it was being moved to the testing area. Next up for Webb, engineers will conduct the final sunshield deployment tests. Music credit: Amazing Discoveries, Universal Music/KillerTracks, Damien Deshayes Credit: NASA's Goddard Space Flight Center Michael P. Menzel (AIMM): Producer Aaron E. Lepsch (ADNET): Technical Support Michael McClare (KBRwyle): Videographer Michael P. Menzel (AIMM): Videographer Von Bonilla (Northrop Grumman): Videographer Jaclyn Moy (Northrop Grumman): Videographer James Farrally (Northrop Grumman): Videographer Robert Brown (Northrop Grumman): Videographer Michael P. Menzel (AIMM): Video Editor	Transcript Link
2020 10 05	NASA Goddard	https://youtu.be/aKSvBJzCdU	TESS's Northern Sky Vista	Familiar stars shine, nebulae glow, and nearby galaxies tantalize in a new panorama of the northern sky assembled from 208 images from NASA's Transiting Exoplanet Survey Satellite (TESS). Within this starry scene, TESS has discovered 67 new exoplanets. Astronomers are sifting through some 1,200 additional exoplanet candidates, potential new worlds that await confirmation. More than 600 of these candidates lie in the northern sky. The northern mosaic covers less of the sky than its southern counterpart, which was imaged during the mission's first year of operations. For about half of the northern sectors, the team decided to angle the cameras further north to minimize the impact of scattered light from Earth and the Moon. This results in an obvious gap along the mosaic's outer edge. TESS has now begun its extended mission, during which it will spend another year imaging the southern sky. The satellite will revisit planets discovered in its first year, discover new worlds, and fill in coverage gaps from its initial survey. Improvements to the satellite's data collection and processing now allow TESS to return full sector images every 10 minutes and measure the brightness of thousands of stars every 20 seconds – all while continuing its previous strategy of measuring the brightness of tens of thousands of stars every two minutes. Read more: https://www.nasa.gov/image-	Transcript Link

2020 10 05	NASA Goddard	https://youtu.be/7WqFwZ40t8w	Goddard's Support of Artemis and Humanity's Return to the Moon	At NASA's Goddard Space Flight Center in Greenbelt, Maryland, we're leveraging our scientific and technical expertise across multiple capacities, including lunar and planetary science, sun science and space weather, space communications and navigation, astronaut search and rescue, agile launch support, and in-space services, to support NASA's Artemis initiative for a new era of crewed lunar exploration. Music: "Know Your Limits" [NM335], via Universal Production Music Video credit: NASA's Goddard Space Flight Center Rich Melnick (KBRwyle): Lead Producer Lora Bleacher (NASA/GSFC): Lead Associate Producer Rob Andreoli (AIMM): Narrator Aaron E. Lepsch (ADNET): Technical Support Lora Bleacher (NASA/GSFC): Writer Peter H. Jacobs (NASA/GSFC): Writer Amber C Jacobson (ASRC Federal Research and Technology Solutions): Writer Vanessa Lloyd (InuTeq, LLC): Writer Nancy Neal-Jones (NASA/GSFC): Writer Joy Ng (USRA): Writer Keith Koehler (NASA/WFF): Writer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13683	Transcript Link
2020 09 30	NASA Goddard	https://youtu.be/qJLOIV_Bp4s	Planet Patrol Join the Hunt for New Worlds	Help NASA find exoplanets, worlds beyond our solar system, through a newly launched website called Planet Patrol. This citizen science platform allows members of the public to collaborate with professional astronomers as they sort through a stockpile of star-studded images collected by NASA's Transiting Exoplanet Survey Satellite (TESS). TESS uses its four cameras to take full images of one patch of sky, called a sector, every 30 minutes for a month at a time. This long star allows TESS to see when planets pass in front of their stars, or transit, and dim their light. Over the course of a year, TESS collects hundreds of thousands of snapshots, each containing thousands of possible planets — too many for scientists to examine without help. Computers are very good at analyzing such data sets, but they're not perfect. Even the most carefully crafted algorithms can fail when the signal from a planet is weak. Some of the most interesting exoplanets, like small worlds with long orbits, can be especially challenging. Planet Patrol volunteers will help discover such worlds and will contribute to scientists' understanding of how planetary systems form and evolve throughout the universe. Planets aren't the only source of changes in starlight, though. Some stars naturally change brightness over time, for example. In other cases, a star could actually be an eclipsing binary, where two orbiting stars alternately transit or eclipse each other. Or there may be an eclipsing binary in the background that creates the illusion of	Transcript Link

2020 09 30	NASA Goddard	https://youtu.be/Cpo3x5Oqsnk	Hubble Trivia 9) Hubble Has Helped Confirm That the Milky Way Will Merge With Which Nearby Galaxy The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: Hubble has helped confirm that the Milky Way will merge with which nearby galaxy? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund	Transcript Link
2020 09 26	NASA Goddard	https://youtu.be/PYTkcZJmG6s	International Observe the Moon Night 2020 This broadcast features numerous Moon-themed videos and presentations by scientists in celebration of International Observe the Moon Night 2020. Our experts will be on hand to answer your questions in the comments live, 7 p.m. to 8 p.m. EDT on Saturday, Sept. 26! International Observe the Moon Night is a time to come together with fellow Moon enthusiasts and curious people worldwide. Everyone on Earth is invited to learn about lunar science and exploration, take part in celestial observations, and honor cultural and personal connections to the Moon. This video showcases NASA Goddard's International Observe the Moon Night 2020 event. In particular, the following are featured: a discussion on geology and the elements of art, a presentation on the SOFIA mission and its connection to Artemis and lunar water, and a demonstration on volcanoes and how to build and erupt your own volcano at home. For more information on International Observe the Moon Night, please see moon.nasa.gov/observe. Video credit: NASA's Goddard Space Flight Center Music via Universal Production Music --- Video Compilation Credits:	Transcript Link

2020 09 25	NASA Goddard	https://youtu.be/B3_UJ6dfyQ4	Happy International Observe the Moon Night!	The Lunar Reconnaissance Orbiter mission wishes everyone a happy International Observe the Moon Night. Music Provided by Universal Production Music: "Moonlit Night" - Justyna Kelley Video Credits: NASA's Goddard Space Flight Center Produced & Edited by: David Ladd (USRA) Videographers: David Ladd (USRA), Rob Andreoli (AIMM), Michael Randazzo (AIMM) Animations: Bob Sauls (Frassanito and Associates) This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13695 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc	Transcript Link
2020 09 24	NASA Goddard	https://youtu.be/vZxGP_yh-4_g	OSIRIS-REx TAG Trailer	On Oct. 20, the OSIRIS-REx mission will perform the first attempt of its Touch-And-Go (TAG) sample collection event. Not only will the spacecraft navigate to the surface using innovative navigation techniques, but it could also collect the largest sample since the Apollo missions. https://nasa.gov/osiris-rex Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Animator Narrator Aaron E. Lepsch (ADNET): Technical Support Walt Feimer (KBRwyle): Animator Jonathan North (USRA): Animator Krystofer Kim (USRA): Animator	Transcript Link

2020 09 23 NASA Goddard https://youtu.be/j_hSNBmpuqY OSIRIS-REx Meets Bennu's Surprises The OSIRIS-REx team has already pushed the boundaries of scientific exploration — going from ground-based radar images from Arecibo in Puerto Rico all the way to orbiting a few hundred meters from asteroid Bennu. The team is mere days away from a sample collection attempt at the asteroid surface. Before this attempt, we take a look back at some of the major achievements, surprises and challenges of sampling an asteroid with OSIRIS-REx.

[Transcript](#)
[Link](#)

<https://www.nasa.gov/osiris-rex>

Video credit: NASA's Goddard Space Flight Center

James Tralie (ADNET):
Lead Producer
Lead Editor
Animator
Narrator

Aaron E. Lepsch (ADNET):
Technical Support

Michael Lentz (USRA):
Animator

Lisa Poje (USRA):
Animator

2020 09 23 NASA Goddard <https://youtu.be/Dg5ITjiWsEg> Hubble Trivia 8) When Was the Last Space Shuttle Servicing Mission to Hubble The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own!
The question is: When was the last space shuttle servicing mission to Hubble? You might be surprised!

[Transcript](#)
[Link](#)

See if you know the trivia question before the answer comes up on the screen!

Video credit: NASA's Goddard Space Flight Center

Director, Producer & Editor:
James Leigh

Director of Photography:
James Ball

Additional Photography, Coloring & Mix:
Matthew Duncan

Sound Recordist:
Alex Jennings

Production & Edit Assistant:
Lucy Lund

2020 09 22	NASA Goddard	https://youtu.be/htzq2QbTKtw	Arctic Greening Driven By Warmer Temperatures	As Arctic summers warm, Earth's northern landscapes are changing. Using Landsat satellite data to track global tundra ecosystems over decades, a new study found the region has become greener, as warmer air and soil temperatures lead to increased plant growth. Landsat data can be used to determine how much actively growing vegetation is on the ground – greening can represent plants growing more, becoming denser, and/or shrubs encroaching on typical tundra grasses and moss. Between 1985 and 2016, about 38% of the tundra sites across Alaska, Canada, and western Eurasia showed greening. Only 3% showed the opposite browning effect, which would mean fewer actively growing plants. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. Read more: https://www.nasa.gov/feature/goddard/2020/warming-temperatures-are-driving-arctic-greening Music: "The Rework," by Josslin Bordat [SACEM], published by Koka Media [SACEM], available from Universal Production Music Video credit: NASA's Goddard Space Flight Center	Transcript Link
2020 09 21	NASA Goddard	https://youtu.be/vtM9KTVGFVw	NASA Sees High Temperatures, Wildfires, Sea Ice Minimum Extent in Warming Arctic	On Sept. 15, 2020, Arctic sea ice reached its annual minimum extent -- the second-lowest on record. This summer, temperatures soared in the Siberian Arctic, and intense fires burned through peatland. The Arctic region is warming three times faster than the rest of the planet. Read more: https://www.nasa.gov/feature/goddard/2020/2020-arctic-sea-ice-minimum-at-second-lowest-on-record Music: "Curves Ahead" and "Genetic Analyzer," via Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathleen Gaeta (GSFC Interns): Lead Producer Kate Ramsayer (Telophase): Lead Writer Elizabeth Hoy (GST): Scientist Rachel Tilling (University of Maryland): Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13722 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center	Transcript Link

2020 09 21	NASA Goddard	https://youtu.be/RRDObFMY9ak	Meteorites From Vesta Found on Asteroid Bennu	In an interplanetary faux pas, it appears some pieces of asteroid Vesta ended up on asteroid Bennu, according to observations from NASA's OSIRIS-REx spacecraft. The new result sheds light on the intricate orbital dance of asteroids and on the violent origin of Bennu, which is a "rubble pile" asteroid that coalesced from the fragments of a massive collision. Read more: https://www.nasa.gov/feature/goddard/2020/bennu-vesta-meteorites Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Animator Narrator Lead Editor William Steigerwald (NASA/GSFC): Lead Writer Daniella DellaGiustina (University of Arizona/LPL): Scientist Hannah Kaplan (NASA/GSFC): Scientist Aaron E. Lepsch (ADNET):	Transcript Link
2020 09 18	NASA Goddard	https://youtu.be/O7ZruHLlvR0	OSIRIS-REx Above and Beyond	Since arriving at asteroid Bennu in Dec. 2018, NASA's OSIRIS-REx mission has achieved many feats – from setting a record-breaking orbit, to mapping the asteroid's surface better than any planetary body. The mission is now preparing to collect a sample of Bennu, which will be the first time that NASA has gathered pieces of an asteroid. On Oct. 20, the OSIRIS-REx mission will perform the first attempt of its Touch-And-Go (TAG) sample collection event. Not only will the spacecraft navigate to the surface using innovative navigation techniques, but it could also collect the largest sample since the Apollo missions. The spacecraft will deliver the sample to Earth on Sep. 24, 2023. More about the mission: https://www.nasa.gov/osiris-rex Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Animator Narrator Lead Editor Aaron E. Lepsch (ADNET): Technical Support Walt Feimer (KBRwyle): Animator	Transcript Link

2020 09 17	NASA Goddard	https://youtu.be/Z0ulcLZ5rh8	The Solar Cycle As Seen From Space	The Sun is stirring from its latest slumber. As sunspots and flares, signs of a new solar cycle, bubble from the Sun's surface, scientists are anticipating a flurry of solar activity over the next few years. Roughly every 11 years, at the height of this cycle, the Sun's magnetic poles flip — on Earth, that'd be like the North and South Poles' swapping places every decade — and the Sun transitions from sluggish to active and stormy. At its quietest, the Sun is at solar minimum; during solar maximum, the Sun blazes with bright flares and solar eruptions. In this video, view the Sun's disk from our space telescopes as it transitions from minimum to maximum in the solar cycle. Music credit: "Observance" by Andrew Michael Britton [PRS], David Stephen Goldsmith [PRS] from Universal Production Music Video credit: NASA's Goddard Space Flight Center Joy Ng (USRA): Producer Tom Bridgman (GST): Data Visualizer Maria-Jose Vinas Garcia (Telophase): Support Pedro Cota (ADNET Systems): Support This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13716 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link
2020 09 16	NASA Goddard	https://youtu.be/fDhG0ppvQ2g	TESS, Spitzer Spot Potential Giant World Circling Tiny Star	An international team of astronomers has reported what may be the first example of an intact planet closely orbiting a white dwarf, a dense leftover of a Sun-like star that's only 40% bigger than Earth. The detection of the Jupiter-size body was made using data from NASA's Transiting Exoplanet Survey Satellite (TESS) and retired Spitzer Space Telescope. Read more: https://www.nasa.gov/press-release/nasa-missions-spy-first-possible-survivor-planet-hugging-white-dwarf-star The object, called WD 1856 b, is about seven times larger than the white dwarf. Based on the object's size, astronomers think it's a giant gaseous planet, which future observations and research may confirm. They also estimate it's no more than 14 times Jupiter's mass. The potential world circles the white dwarf every 34 hours, over 60 times faster than Mercury orbits our Sun. The system may have looked very different prior to 6 billion years ago, though. When a Sun-like star runs out of fuel, it swells up to hundreds to thousands of times its original size, forming a cooler red giant star. Eventually it ejects its outer layers of gas, losing up to 80% of its mass. The remaining hot core becomes a white dwarf. Any nearby objects are engulfed and incinerated during this process, which in this system would have included WD 1856 b in its current orbit. Astronomers estimate the possible planet must have originated at least 50 times farther away.	Transcript Link

2020 09 16	NASA Goddard	https://youtu.be/VxXmMWctj44	Hubble Trivia 7) How Many Times Does Hubble Orbit Earth in a Day	The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: How many times does Hubble orbit Earth in one day? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund	Transcript Link
2020 09 15	NASA Goddard	https://youtu.be/rx9m6H6GeLs	How To Track The Solar Cycle	Understanding the Sun's behavior is an important part of life in our solar system. The Sun's powerful outbursts can disturb the satellites and communications signals traveling around Earth, or one day, Artemis astronauts exploring distant worlds. NASA scientists study the solar cycle so we can better predict solar activity. As of 2020, the Sun has begun to shake off the sleep of minimum, which occurred in December 2019, and Solar Cycle 25 is underway. Scientists use several indicators to track solar cycle progress. Read more: https://www.nasa.gov/feature/goddard/2020/how-scientists-around-world-track-solar-cycle-sunspots-sun Music: "Infinite" by Joseph Pincus [ASCAP]; "Reflective Sensations", "Ideas For Tomorrow", "Think Tank" by Laurent Dury [SACEM]; "Wonderful Orbit" by Tom Furse Fairfax Cowan [PRS], via Universal Production Music Video credit: NASA's Goddard Space Flight Center Lisa Upton (Space Systems Research Corporation): Scientist Doug Biesecker (NOAA): Scientist Natchimuthuk Gopalswamy (NASA/GSFC): Scientist Joy Ng (USRA): Producer Krystofer Kim (USRA): Lead Animator Joy Ng (USRA): Animator Kathalina Tran (SGT): Writer This video is public domain and along with other supporting	Transcript Link

2020 09 10	NASA Goddard	https://youtu.be/Rwhv38BVjUM	Hubble Makes Unexpected Dark Matter Discovery	Astronomers seem to have revealed a puzzling detail in the way dark matter behaves. They found small, dense concentrations of dark matter that bend and magnify light much more strongly than expected. Read more: https://www.nasa.gov/feature/goddard/2020/hubble-observations-suggest-a-missing-ingredient-in-dark-matter-theories Video credit: NASA's Goddard Space Flight Center Paul Morris (USRA): Lead Producer Cassandra Morris: Voice over Talent Visualizations and Additional Footage: ESA/Hubble — Gravitational Lensing Animation ESA/Hubble — Gravitational Lensing Simplified Visualization R. Wesson/ESO — Very Large Telescope Footage Music: "On the Path" by Bernhard Hering [GEMA] and Matthias Kruger [GEMA] via Berlin Production Music/Universal Production Music GmbH [GEMA] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13713 See more Hubble videos on YouTube:	Transcript Link
2020 09 09	NASA Goddard	https://youtu.be/9Hs7kPoMiz4	Hubble Trivia 6) What Has Hubble Helped to Reveal About the Expansion of the Universe	The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: What has Hubble helped to reveal about the expansion of the universe? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund	Transcript Link

2020 09 08	NASA Goddard	https://youtu.be/Y2eysSmn9VU	Fly Above Alaskan Glaciers in 360	The area of coastline where the glacier-laden mountains of Alaska meet the Pacific Ocean has some of the most stunning scenery on Earth. This 360 video takes you flying low over the landscape of Icy Bay from a vantage point just under the wing of a bright-red, single-engine De Havilland Otter, decked out with science instruments designed to measure changes in Alaskan glaciers. A small team of NASA-funded researchers has been surveying dozens of glaciers in the region since 2009, and has put some dramatic numbers on the overall net loss of ice from the state: 75 billion tons of ice every year from 1994 to 2013. In 2018, Chris Larsen and Martin Truffer, both of the University of Alaska Fairbanks, conducted the science campaign along with the University of Arizona's Jack Holt and University of Texas student Michael Christoffersen, and NASA communicators were along to document their efforts. The team headed out again in August of 2020 to conduct its surveys as part of NASA's larger Operation IceBridge campaign. IceBridge has been measuring Earth's changing glaciers and ice sheets since 2009 using a range of large and small aircraft and a wide variety of scientific instruments, from laser altimeters, to radar, to magnetometers and gravimeters. IceBridge was conceived to avoid a gap in measurements of ice height between two satellite missions: NASA's Ice, Cloud, and land Elevation Satellite (ICESat), which stopped collecting data in 2009, and its ICESat-2, which launched in 2018.	Transcript Link
2020 09 04	NASA Goddard	https://youtu.be/Jr5uggzKlDs	International Observe the Moon Night 2020 Trailer	International Observe the Moon Night is a time to come together with fellow Moon enthusiasts and curious people worldwide. Everyone on Earth is invited to learn about lunar science and exploration, take part in celestial observations, and honor cultural and personal connections to the Moon. International Observe the Moon Night occurs annually in September or October, when the Moon is around first quarter — a great phase for evening observing. Furthermore, a first-quarter Moon offers excellent viewing opportunities along the terminator (the line between night and day), where shadows enhance the Moon's cratered landscape. You can join International Observe the Moon Night from wherever you are. Attend or host virtual or in-person event, or observe the Moon from home. Connect with fellow lunar enthusiasts around the world through #ObserveTheMoon on your preferred social media platform. However you choose to observe, please follow local guidelines on health and safety. For more information, visit https://moon.nasa.gov/observe Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor	Transcript Link

2020 09 02	NASA Goddard	https://youtu.be/gguMg9PGCKI	Hubble Trivia 5) What Does Hubble Use to Turn Itself and Point at a Target	The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: What does Hubble use to turn itself and point at a target? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund	Transcript Link
2020 08 31	NASA Goddard	https://youtu.be/rvRCKgw2B8k	Tracking 3 Decades of Dramatic Glacial Lake Growth	In the largest-ever study of glacial lakes, researchers using a 30-year satellite data record have found that the volume of these lakes worldwide has increased by about 50% since 1990 as glaciers melt and retreat due to climate change. Read more: https://www.nasa.gov/press-release/global-survey-using-nasa-data-shows-dramatic-growth-of-glacial-lakes Music: "Dew" by Matthew Nicholson [PRS], Suki Jeanette Finn [PRS] Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Dan Shugar (University of Calgary): Lead Scientist Umesh Haritashya (University of Dayton): Scientist Jeffrey S. Kargel (Planetary Science Institute): Scientist Katie Jepson (USRA): Lead Producer Ellen T. Gray (ADNET): Lead Writer Helen-Nicole Kostis (USRA): Lead Visualizer Greg Shirah (NASA/GSFC): Lead Visualizer Lucas Zurbuchen (GSFC Interns): Visualizer Alex Kekesi (GST): Visualizer Erin Guilteneane (University of Calgary): Communications Advisor Katie Jepson (USRA): Narrator This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13699	Transcript Link

2020 08 27	NASA Goddard	https://youtu.be/NR0fXlZ096Q	Satellites See Fires Burning Across California	In August 2020, California is facing several major fires, including the LNU Lightning Complex Fire, which grew into the second-largest wildfire in California history. The state's heat waves, droughts, and lightning all played a role in the devastating fire season. Music: "Risky Case" from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathleen Gaeta (NASA Interns): Lead Producer Amber Soja (NASA/Langley): Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13702 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc	Transcript Link
2020 08 26	NASA Goddard	https://youtu.be/zGk1wBmAQsE	Hubble Trivia 4) What Wavelengths of Light Can Hubble See	The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: What wavelengths of light can Hubble see? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund	Transcript Link

2020 08 20	NASA Goddard	https://youtu.be/KSeAA0lgS2w	GLOBE Observer Getting Started Mosquito Habitat Mapper - Sample Collection	In many parts of the world, mosquitoes are more than just a summertime nuisance. Their ability to carry and spread disease to humans causes millions of deaths every year. (World Health Organization). Using the GLOBE Observer Mosquito Habitat Mapper, citizen scientists will be able to augment broad scale satellite-based research with targeted ground-based observations at a high level of granularity. “Satellites don’t see mosquitoes,” says Dr. Assaf Anyamba, a scientist using satellite data to study mosquitoes at NASA Goddard Space Flight Center, Greenbelt, Maryland. “However, satellites provide us observation platforms from which to monitor the environmental variables that indicate where mosquito populations can flourish. This helps us identify areas where disease can emerge.” Learn how to use GLOBE Observer to take Mosquito Habitat Mapper observations in your own community! Submit your own observations whether or not mosquito larvae are found. Take it a step further and collect a sample of mosquito larvae to identify later. “By generating local, ground-based data with the help of citizen scientists, the app gives scientists supplementary data as they model mosquito population outbreaks,” says Dr. Rusty Low of the Institute for Global Environmental Strategies, Arlington, Virginia, one of the NASA-funded organizations that helped develop the Mosquito Habitat Mapper.	Transcript Link
2020 08 19	NASA Goddard	https://youtu.be/C0QWnTHDf4	Hubble Trivia 3) What Advantage Does Hubble Space Telescope Have Over Ground-based Telescopes	The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: What advantage does the Hubble Space Telescope have over ground-based telescopes? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings Production & Edit Assistant: Lucy Lund	Transcript Link

2020 08 17	NASA Goddard	https://youtu.be/gpdQcw_52iM	NASA Explores Earth's Magnetic 'Dent'	Earth's magnetic field acts like a protective shield around the planet, repelling and trapping charged particles from the Sun. But over South America and the southern Atlantic Ocean, an unusually weak spot in the field – called the South Atlantic Anomaly, or SAA – allows these particles to dip closer to the surface than normal. Currently, the SAA creates no visible impacts on daily life on the surface. However, recent observations and forecasts show that the region is expanding westward and continuing to weaken in intensity. The South Atlantic Anomaly is also of interest to NASA's Earth scientists who monitor the changes in magnetic strength there, both for how such changes affect Earth's atmosphere and as an indicator of what's happening to Earth's magnetic fields, deep inside the globe. Read more: https://www.nasa.gov/feature/nasa-researchers-track-slowly-splitting-dent-in-earth-s-magnetic-field Music: "Now We Wait" by Kamal David Kamruddin [PRS] Video credit: NASA's Goddard Space Flight Center Jessica Merzdorf (Telophase): Lead Writer Mara Johnson-Groh (Wyle Information Systems): Lead Writer Katie Jepson (USRA): Lead Producer Weijia Kuang (NASA/GSFC): Lead Scientist	Transcript Link
2020 08 17	NASA Goddard	https://youtu.be/086N-X1Bd2o	Ocean Worlds The Search for Life	Life as we know it requires three ingredients: energy, organic molecules, and liquid water. Astrobiology, our search for life beyond Earth, is a search for planets, dwarf planets, and moons that harbor substantial liquid water. We call these places “ocean worlds.” We’re learning that ocean worlds could be ubiquitous in the galaxy. Just in our solar system, we have found evidence of oceans on Saturn’s moons Titan and Enceladus; Jupiter’s moons Europa, Ganymede, and Callisto; Neptune’s moon Triton; and on Pluto. We also believe that Venus and Mars may have had oceans billions of years ago. Could they have supported life? NASA’s research on oceans also includes our own planet and helps us to better understand the role of Earth’s ocean in our planet’s climate system. As we learn more about our own oceans, we will better understand worlds beyond Earth. Music: “Superluminal” by Lee Groves and Peter George Maret; “Earthrise,” “Prism Lights,” and “Uncertain Ahead” by Ben Niblett and Jon Cotton; “Infinite Sky” and “Human Architecture” by Andy Blythe and Marten Joustra; “Imagine If” by Paul Werner; via Universal Production Music Video Credit: NASA's Goddard Space Flight Center Producers: Dan Gallagher (USRA) James Tralie (ADNET)	Transcript Link

2020 08 14	NASA Goddard	https://youtu.be/l4u4wV_dOi0	NASA's Guide to Near-light-speed Travel	So, you've just put the finishing touches on upgrades to your spaceship, and now it can fly at almost the speed of light. We're not quite sure how you pulled it off, but congratulations! Before you fly off on your next vacation, however, watch this handy video to learn more about near-light-speed safety considerations, travel times, and distances between some popular destinations around the universe. You can also download shorter clips from the video and printable postcards to send to your friends here: https://svs.gsfc.nasa.gov/13653 Music: "The Tiptoe Strut" from Universal Production Music Credit: NASA's Goddard Space Flight Center Chris Smith (USRA): Lead Producer Chris Smith (USRA): Lead Writer Krystofer Kim (USRA): Lead Animator Scott Noble (NASA/GSFC): Scientist Ryan Derosa (NASA/GSFC): Scientist If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard	Transcript Link
2020 08 14	NASA Goddard	https://youtu.be/fwE02OBWoKQ	NASA Spacecraft Uncover Mystery Behind Auroral Beads	A special type of aurora, draped east-west across the night sky like a glowing pearl necklace, is helping scientists better understand the science of auroras and their powerful drivers out in space. Known as auroral beads, these lights often show up just before large auroral displays, which are caused by electrical storms in space called substorms. Until now, scientists weren't sure if auroral beads are somehow connected to other auroral displays as a phenomenon in space that precedes substorms, or if they are caused by disturbances closer to Earth's atmosphere. But powerful new computer models, combined with observations from NASA's Time History of Events and Macroscale Interactions during Substorms – THEMIS – mission, have provided the first direct evidence of the events in space that lead to the appearance of these beads and demonstrated the important role they play in our local space environment. Read more: https://www.nasa.gov/feature/aurora-mysteries-unlocked-with-nasa-s-themis-mission Music: "Intrigues and Plots" and "Repetitive Motion" by Laurent Dury [SACEM] from Universal Production Music Video credit: NASA's Goddard Space Flight Center Joy Ng (USRA): Lead Producer Mara Johnson-Groh (SESDA): Producer Kareem Sorathia (JHUAPL): Scientist	Transcript Link

2020 08 13	NASA Goddard	https://youtu.be/M1A4PPyiVg	How We Prepare OSIRIS-REx and WNBA	An inside look into how an elite athlete and a NASA engineer prepare for the challenges ahead. Natasha Cloud, a professional basketball player for the Washington Mystics of the WNBA, and Nayi Castro, a mission operations manager for NASA's OSIRIS-REx mission, share how they prepare for a critical moment in their careers. For Natasha Cloud, it is about how the team starts a new season after winning a championship. For Nayi Castro, it is about the careful preparation for the OSIRIS-REx Touch and Go maneuver (TAG) that will seek to collect a sample from asteroid Bennu and return it back to Earth. The journey is challenging and pushes each person to sustain their efforts over a long period of time to reach their goals. En español: https://youtu.be/t0pMFeOSeXQ Music: "Cordelia Approaching" by Alistair Hetherington, "I Know You are Here" by Victoria Beits, "Behind the Door" by Claude Samard, "Aphelion Horizon" by Alistair Hetherington, and "Be Unstoppable" by Lisa van Hal; Universal Production Music Video credit: NASA's Goddard Space Flight Center; gameplay footage provided courtesy WNBA, used with permission James Tralie (ADNET): Lead Producer Lead Video Editor Lead Videographer	Transcript Link
2020 08 12	NASA Goddard	https://youtu.be/L-mGKFx0A4	5 Things That Changed Weather Forecasting Forever	Our ability to predict the weather, though still imperfect, would astound our ancestors. And decades of improvements in weather satellite technology, driven by teams of fiercely dedicated scientists and engineers, have made that possible. In this video, we talk to some of the pioneers in the field who were behind advances in that technology, advances that now inform our planning and daily commutes, but also farming, construction projects, military strategy, disaster response and travel by air and sea. We also talk to scientists who are working on today's weather satellites and instruments, like those in the Joint Polar Satellite System (JPSS) and the Geostationary Operational Environmental Satellite (GOES) series. This video tells the story of our nation's weather satellites by highlighting some of the paradigm-shifting moments that shaped their rich history. Music: "Wonderous Planet," Corbett and Wilkie; "Discovering Galaxies," Lethbridge; "Mysteries of the Sea," Lethbridge; "Feathered Migration," Salisbury; "Drifting Sands," Lethbridge; "Our Beautiful Earth," Lethbridge; "Endless Vista," Tzur; "Insights," Coon and Goebel; all via Universal Production Music Video credit: NASA's Goddard Space Flight Center; John F. Kennedy footage courtesy of the John F. Kennedy Library Foundation Jefferson Beck (USRA): Lead Producer Jenny Marder Fadoul (Telophase): Lead Writer Greg Mandt (NOAA-JPSS): Lead Scientist	Transcript Link

2020 08 12	NASA Goddard	https://youtu.be/beOVK6vs814	Hubble Trivia 1) How Big is the Hubble Space Telescope	The Hubble Space Telescope has been answering questions about the universe for over 30 years. The question is: How big is the Hubble Space Telescope? You might be surprised! See if you can answer each trivia question before the answer is revealed! Music: “Equinox Sunlight” by Andreas Andreas Bolldén [STIM], via Koka Media [SACEM], Universal Publishing Production Music France [SACEM], Universal Production Music Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings	Transcript Link
2020 08 12	NASA Goddard	https://youtu.be/RClvU3G9CPo	Hubble Trivia 2) How Far Has Hubble Seen Into the Universe	The Hubble Space Telescope has been revealing the secrets of the universe for over 30 years, but it turns out Hubble has some secrets of its own! The question is: How far has Hubble seen into the universe? You might be surprised! See if you know the trivia question before the answer comes up on the screen! Music: “In the Beginning” by Christophe La Pinta [SACEM], via Koka Media [SACEM], Universal Publishing Production Music France [SACEM], Universal Production Music Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix: Matthew Duncan Sound Recordist: Alex Jennings	Transcript Link

2020 08 11 NASA Goddard <https://youtu.be/uOxuTLPAIzI> TESS Completes its Primary Mission

On July 4, NASA's Transiting Exoplanet Survey Satellite (TESS) completed its primary mission, a two-year-long survey that imaged about 75% of the starry sky. In capturing this giant mosaic, TESS has found 66 new exoplanets, or worlds beyond our solar system, as well as nearly 2,100 candidates astronomers are working to confirm.

[Transcript Link](#)

TESS monitors 24-by-96-degree strips of the sky, called sectors, for about a month using its four cameras. The mission spent its first year observing 13 sectors comprising the southern sky and then spent another year imaging the northern sky.

Now in its extended mission, TESS has turned around to resume surveying the south. In addition, the TESS team has introduced improvements to the way the satellite collects and processes data. Its cameras now capture a full image every 10 minutes, or three times faster than during the primary mission. The faster measurements will allow TESS to better resolve brightness changes caused by stellar oscillations and to capture explosive flares from active stars in greater detail.

These changes will remain in place for the duration of the extended mission, which will be completed in September 2022. After spending a year imaging the southern sky, TESS will take another 15 months to collect additional observations in the north and to survey areas along the ecliptic — the plane of Earth's orbit around the Sun — that have not yet been imaged by TESS.

2020 08 11 NASA Goddard <https://youtu.be/MOHic20TKuc> Hubble and Whale Sharks

While you might not think that sharks and the Hubble Space Telescope have a lot in common, it turns out they share an incredible bond!

[Transcript Link](#)

To learn more about this incredible tech transfer, please visit: <https://www.nasa.gov/feature/goddard/star-mapping-algorithms-track-endangered-animals/>.

For more information, visit <https://nasa.gov/hubble>.

Music: "Happy Tulip" by Stéphane Caisson [SACEM], Koka Media [SACEM], via Universal Publishing Production Music France [SACEM], and Universal Production Music

Video credit: NASA's Goddard Space Flight Center
Paul Morris (USRA): Lead Producer

Videos, Images, and Audio Effects:

Page Turning Whoosh by dauzkobza via Motion Array

Wind by LuLuProduction via Motion Array

Camera Sound Pack 1 by Blue Kangaroo via Motion Array

Crunchy Bite SFX Pack by WARP EFX via Motion Array

Water Splash by Motion Audio via Motion Array

Flying Through the Realistic Clouds(Left-Right) by MambaTV via Motion Array

POV Water Surface by v_creative via Motion Array

Ding by Media_M via Motion Array

2020 08 06 NASA Goddard <https://youtu.be/OHbiPO8bAts> Hubble Views Moon to Study Earth

Taking advantage of the total lunar eclipse of January 2019, astronomers, using NASA's Hubble Space Telescope, have measured the amount of ozone in Earth's atmosphere.

[Transcript](#)
[Link](#)

The method used serves as a proxy for how they will observe Earth-like planets around other stars in search for worlds similar to our own.

Read more: <https://www.nasa.gov/feature/goddard/2020/hubble-uses-earth-as-a-proxy-for-identifying-oxygen-on-potentially-habitable-planets-around>

Music: "Life Unplanned" by Paul Saunderson [PRS], Abbey Road Masters [PRS]; Universal Production Music

Video credit: NASA's Goddard Space Flight Center
Paul Morris (USRA): Lead Producer
Krystofer Kim (USRA): Lead Animator
Cassandra Morris: Voice over Talent

Visualizations:

NASA/GSFC: K. Kim — Moonbounce Animation
ESA, NASA and L. Calçada (ESO) — Artist's concept of exoplanet orbiting Fomalhaut
ESA, Hubble, M. Kornmesser — Absorption Lines & Exoplanets
NASA/GSFC: Chris Smith — TOI 700 system transit Animation
ESA, Hubble, M. Kornmesser & L. L. Christensen — HD 189733b

2020 08 05 NASA Goddard <https://youtu.be/FSEQfgYBzKk> Greenland's Extreme Melt, 1 Year Later

Last spring, NASA's Operation IceBridge flew over one of Greenland's earliest melt seasons on record. This year, the melt is progressing more typically, despite warm temperatures in the Arctic. Brooke Medley reflects on the differences between 2019 and 2020 melt in Greenland.

[Transcript](#)
[Link](#)

Music credit: "White Lights" from Universal Production Music

Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio
Kathleen Gaeta (NASA): Lead Producer
Jefferson Beck (USRA): Lead Videographer
Brooke Medley (NASA): Scientist

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2020 08 05	NASA Goddard	https://youtu.be/Anpgg02zknnQ	NASA Captures Isaias Twice Along East Coast	After forming into a tropical storm in the eastern Caribbean, Isaias crossed over Hispaniola and back into the western Atlantic heading northwest toward the Bahamas. During this time, Isaias strengthened into a Category 1 hurricane before then passing through the southern and central Bahamas. As it crossed Andros Island in the central Bahamas, Isaias also came under the effects of southwesterly wind shear, which together with the land interaction caused Isaias to weaken back to a strong tropical storm. After regaining hurricane intensity over the Gulf Stream, Hurricane Isaias made landfall on the south coast of North Carolina on Monday, Aug. 3, at 11:10 p.m. EDT near Ocean Isle Beach. This animation, using NASA's IMERG rainfall product, shows Isaias as it makes its way northward from the Bahamas to the coast of North Carolina. With IMERG, precipitation estimates from the GPM core satellite are used to calibrate precipitation estimates from microwave and infrared sensors on other satellites to produce half-hourly precipitation maps at 0.1-degree horizontal resolution. After making landfall, Isaias continued tracking northward over eastern North Carolina in response to a large upper-level trough located over the eastern half of the U.S. Video credit: NASA's Goddard Space Flight Center Ryan Fitzgibbons (USRA): Lead Producer Alex Kekesi (GST): Lead Visualizer Stephen Lang (NASA/GSFC): Lead Writer George Huffman (NASA/GSFC): Lead Scientist	Transcript Link
2020 08 03	NASA Goddard	https://youtu.be/ROjnwRjzoZo	Studying Trojan Asteroids With Lucy	NASA's Lucy mission is launching in 2021 and will fly by seven different Trojan asteroids that are orbiting the same distance from the Sun as Jupiter. This video highlights the four main science objectives and the instruments aboard the spacecraft that will be utilized. Lucy will be the first space mission to study the Trojan asteroids, which are remnants of our early solar system. Music: "Feels Good" - Wally Gagel & Xandy Barry [ASCAP], provided by Universal Production Music Video credits: NASA's Goddard Space Flight Center Produced & Edited by: David Ladd (USRA) Animations by: David Ladd (USRA), Walt Feimer (KBRwyle), Jacquelyn DeMink (USRA), Michael Lentz (USRA), Jonathan North (USRA) This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13651 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix	Transcript Link

2020 07 28	NASA Goddard	https://youtu.be/-VMTJBfRGLM	Satellites See Hurricanes Douglas, Hanna	The weekend of July 25-26, hurricanes swirled in both the Atlantic and Pacific oceans. Satellites from NASA and NOAA tracked as Hurricanes Douglas and Hanna formed, grew, and traveled across the oceans. Music: "Images Grow" by Andrew Michael Britton [PRS] and David Stephen Goldsmith [PRS] Video credit: NASA's Goddard Space Flight Center Katie Jepson (USRA): Lead Producer Alex Kekesi (GST): Visualizer Kathryn Mersmann (USRA): Social Media Support Aaron E. Lepsch (ADNET): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13675 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcr	Transcript Link
2020 07 23	NASA Goddard	https://youtu.be/PthDXZDRL9c	Episode 3 Time Machines (Hubble – Eye in the Sky miniseries)	Episode 3: Time Machines – Hubble has looked back billions of years in time to see some of the earliest galaxies in their infancy, and it has fundamentally changed what we know about the universe itself. Find out from Nobel laureate John Mather and Hubble Senior Project Scientist Jennifer Wiseman how Hubble will work with the future James Webb Space Telescope to revolutionize our understanding of the universe even further. This series, Hubble – Eye in the Sky, takes you behind the scenes into the world of Hubble Space Telescope operations. Discover the strategies needed to run a bus-sized observatory as it speeds around Earth at 17,000 miles per hour, and find out how Hubble collects the incredible images and groundbreaking data that have transformed humanity's vision of space. Witness the ingenuity that keeps such a complex and remote machine working to investigate the mysteries of the universe for more than 30 years. For more information about this miniseries, visit: https://www.nasa.gov/content/mission-operations-hubble-eye-in-the-sky. Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: ..	Transcript Link

2020 07 23 NASA Goddard <https://youtu.be/k3biSynSBgo> Landsat 9 Continuing the Legacy Promo

Landsat 9 is the latest satellite to continue the legacy of global observations of Earth's land surface. With unmatched longevity, accuracy, and coverage, the Landsat program has been the cornerstone of global land imaging since 1972. Landsat 9 continues this tradition, and will carry us into the next 50 years of Earth observations. The two instruments aboard will make the most advanced measurements of any Landsat satellite.

[Transcript](#)
[Link](#)

Design and construction of the spacecraft and its instruments is managed by NASA's Goddard Space Flight Center in Greenbelt, Maryland, and operation and archiving of the data is managed by the U.S. Geological Survey. Goddard and Ball Aerospace each built one of the instruments, and the spacecraft was built by Northrop Grumman.

The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all.

Music: Marble Place by Matias Suescun [SACEM], published by KTSA Publishing [SACEM], available from Universal Production Music

Video credit: NASA's Goddard Space Flight Center
Matthew R. Radcliff (USRA): Lead Producer

2020 07 21 NASA Goddard <https://youtu.be/o-KMLF-OPtg> Venus in a Minute

Our sister planet Venus could serve as a model for many exoplanets soon to be discovered in the upcoming era of new space telescopes, such as James Webb and others. Venus may have been far more Earth-like than its present climate state, which is inhospitable and more like that inside a pressure-cooker oven with surface temperatures of 450 C (842 F) and pressures equivalent to 1,000 meters (0.62 miles) under the sea. How did Venus evolve from a past "habitable" state to its present one, and how does that help us understand our own destiny?

[Transcript](#)
[Link](#)

Video credit: NASA's Goddard Space Flight Center
James Tralie (ADNET):
Lead Producer
Lead Editor

James Garvin (NASA, Chief Scientist Goddard):
Scientist

Stephanie Getty (NASA/GSFC):
Scientist
Narrator

Giada Arney (NASA):
Scientist

Natasha Johnson (NASA/GSFC):
Scientist

2020 07 20	NASA Goddard	https://youtu.be/mwynl6EiY9c	Episode 2 An Unexpected Journey (Hubble – Eye in the Sky miniseries)	Episode 2: An Unexpected Journey – With five servicing missions, upgraded instruments, and new ways of operating, Hubble is not the same telescope it was when it launched. Discover the innovative ways astronomers and engineers use Hubble today. This series, "Hubble – Eye in the Sky," takes you behind the scenes into the world of Hubble Space Telescope operations. Discover the strategies needed to run a bus-sized observatory as it speeds around Earth at 17,000 miles per hour, and find out how Hubble collects the incredible images and groundbreaking data that have transformed humanity's vision of space. Witness the ingenuity that keeps such a complex and remote machine working to investigate the mysteries of the universe for more than 30 years. For more information about this miniseries, visit: https://www.nasa.gov/content/mission-operations-hubble-eye-in-the-sky. Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball Additional Photography, Coloring & Mix:	Transcript Link
2020 07 17	NASA Goddard	https://youtu.be/PdOOC AOaZZg	PACE Persistence and Perseverance Despite Pandemic	In the Spring of 2020, the physical construction of the PACE spacecraft moved into high gear, with engineers working hard to build, assemble, and test the actual machine. When the global COVID-19 pandemic forced social distancing among the development teams, the challenge was how to keep making progress on this extremely important research initiative, even though most engineers and others involved with the mission's development could not actually work together in fabrication areas. It turns out that the extraordinary team bring PACE to life were not about to give up their goals, and in this video we hear from a range of NASA pros talk about how to keep going, keep standards high, and see their plans through even the most challenging of circumstances. PACE is a world class climate observatory. With a collection of advanced sensors, PACE will study ocean color, aerosols, clouds, climate change, and other aspects of Earth's overall health. The backbone of the mission is the satellite itself, providing data to a robust network of scientists in a wide range of disciplines. Read more: https://pace.gsfc.nasa.gov Music: "Thought and Passion; A Look Ahead; Hope and Happiness" from Universal Production Music Video Credit: NASA's Goddard Space Flight Center Michael Starobin (KBRwyle): Lead Producer	Transcript Link

2020 07 16 NASA Goddard <https://youtu.be/hf5ZkRE7wVc> The Webb Telescope is Folded for Final Testing

NASA's James Webb Space Telescope is folded and ready for its final suite of testing. [Transcript Link](#)

The James Webb Space Telescope will be the world's premier space science observatory and will solve mysteries in our solar system, look beyond to distant worlds around other stars, and probe the mysterious structures and origins of our universe and our place in it. Webb is an international program led by NASA with its partners, ESA (European Space Agency) and the Canadian Space Agency.

Music: "Suspensions" by Thaddeus Cork from Universal Production Music

Video credit: NASA's Goddard Space Flight Center
Sophia Roberts (AIMM): Lead Producer
Michael McClare (KBRWyle): Producer
Sophia Roberts (AIMM): Lead Editor
Sophia Roberts (AIMM): Lead Writer
Michael McClare (KBRWyle): Lead Videographer
Michael P. Menzel (AIMM): Videographer
Brian Monroe (USRA): Lead Animator
Aaron E. Lepsch (ADNET): Technical Support

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2020 07 16 NASA Goddard <https://youtu.be/h90m7knUHoA> NASA Laser, ESA Radar Sync Up for Sea Ice

In July 2020, ESA elected to slightly perturb the orbit of CryoSat-2 to increase the overlap with ICESat-2. Given their different orbit altitudes, the result is a roughly 1,864-mile (3,000-km) stretch of sea ice that is measured by both ICESat-2 and CryoSat-2. By combining data from these two sensors, scientists can measure the snow layer thickness, and produce substantially improved sea ice thickness estimates. [Transcript Link](#)

Music: "Beautiful Serenity," Universal Production Music

Video credit: NASA's Goddard Space Flight Center
Ryan Fitzgibbons (USRA): Lead Producer
Thomas A. Neumann (NASA/GSFC): Lead Scientist
Nathan T. Kurtz (NASA/GSFC): Lead Scientist
Kel Elkins (USRA): Lead Visualizer
Kate Ramsayer (Telophase): Lead Writer

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2020 07 15	NASA Goddard	https://youtu.be/e2r2jFtBetl	2020 Goddard Summer Film Festival	Presented virtually, the festival highlights Goddard’s achievements over the past year in astrophysics, Earth science, heliophysics, and planetary science, including recent and upcoming missions such as the James Webb Space Telescope, Operation IceBridge, Landsat, TESS, MAVEN, Hubble Space Telescope, and much more. The festival also features bonus never-before-seen, behind-the-scenes videos from producers, animators and data visualizers. Music: "To Do or Not to Do," Universal Production Music; "Purple Kush," Universal Production Music Video credit: NASA's Goddard Space Flight Center Rob Andreoli: Videographer Sofie Bates: Producer Tom Bridgman: Visualizer John Caldwell: Videographer Jacquelyn DeMink: Animator Bailee DesRocher: Animator Genna Duberstein: Producer Kel Elkins: Visualizer Walt Feimer: Animator Ryan Fitzgibbons: Producer Dan Gallagher: Producer Katie Jepson: Producer Alex Kekesi: Visualizer Krystofer Kim: Animator	Transcript Link
2020 07 15	NASA Goddard	https://youtu.be/WuVYVXdV0vQ	Episode 1 Driving The Telescope (Hubble – Eye in the Sky miniseries)	Episode 1: Driving the Telescope – Visit Hubble’s control center to learn about the challenges and techniques of performing extraordinarily detailed observations with an orbiting space telescope. Tour the rarely seen, life-size simulator at NASA that helps engineers and operators investigate problems and test new solutions before implementing them on the real telescope in space. This series, Hubble – Eye in the Sky, takes you behind the scenes into the world of Hubble Space Telescope operations. Discover the strategies needed to run a bus-sized observatory as it speeds around Earth at 17,000 miles per hour, and find out how Hubble collects the incredible images and groundbreaking data that have transformed humanity’s vision of space. Witness the ingenuity that keeps such a complex and remote machine working to investigate the mysteries of the universe for more than 30 years. For more information about this miniseries, visit: https://www.nasa.gov/content/mission-operations-hubble-eye-in-the-sky. Video credit: NASA's Goddard Space Flight Center Director, Producer & Editor: James Leigh Director of Photography: James Ball	Transcript Link

2020 07 13	NASA Goddard	https://youtu.be/IrXbPEKLW54	New Hubble Video Miniseries Goes Behind the Scenes of Our 'Eye in the Sky'	A new video miniseries explores the intricate world of operating the Hubble Space Telescope. In Hubble – Eye in the Sky, viewers get an inside look at the challenges of operating the telescope, along with an understanding of the groundbreaking discoveries that forever changed the way we view space. Leading scientists, engineers and a Nobel prize winner take us through the innovation and strategies that keep the telescope in prime condition. Starting on July 15, the first episode, “Driving the Telescope,” visits Hubble’s control center to find out how a telescope in space is managed and operated from Earth. The following two episodes will premiere on July 20 and 23. They explore the riveting discoveries, technological updates and “time machine” capabilities of Hubble. Watch Hubble – Eye in the Sky starting on July 15 at https://www.nasa.gov/content/mission-operations-hubble-eye-in-the-sky/ Positioned above Earth’s murky atmosphere, Hubble fundamentally changed the field of astronomy and our understanding of the universe. For more information, visit NASA’s Hubble Space Telescope website at https://nasa.gov/hubble and follow NASAHubble on Instagram, Twitter, and Facebook. · Instagram: https://www.instagram.com/NASAHubble · Twitter: https://twitter.com/NASAHubble	Transcript Link
2020 07 09	NASA Goddard	https://youtu.be/4K9qGH2dApk	Flying Alaska’s Glaciers with Operation IceBridge	After the launch of ICESat-2 in 2018, Operation IceBridge mostly came to a close. However, Operation IceBridge Alaska continues to work in the field studying and recording ice thickness in the region. Scientists from University Alaska Fairbanks observe sea ice, glaciers, and ice sheets via specially retrofitted aircrafts. Music credit: “Smart Future” from Universal Production Music Video credit: NASA’s Goddard Space Flight Center/Scientific Visualization Studio Kathleen Gaeta (NASA Interns): Lead Producer Jefferson Beck (USRA): Videographer Emily Fischer (NASA Interns): Writer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13660 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA’s Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcr	Transcript Link

2020 07 09	NASA Goddard	https://youtu.be/c_suLRjtSVA	Precision & Design Making Blankets for Hubble	NASA's Thermal Blanket Lab is a vital part of ensuring that the important equipment that we send into space remains protected from getting either too hot or too cold. Paula Cain is one of the talented thermal blanket technicians who uses her skillful hands to correctly cover all sorts of spacefaring instruments. Over a decade ago, when she was new to the job, she had a special project related to the Hubble Space Telescope and its fifth and final servicing mission. For more information, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Johnny Holder: Lead Producer / Editor / Videographer Paul Morris (USRA): Associate Producer Rob Andreoli: Videographer John Caldwell: Videographer Paula Cain: Talent Music: "Alien Species" by Théo Boulenger [SACEM]. Koka Media [SACEM], Universal Publishing Production Music France [SACEM], and Universal Production Music "Cascades" by Air Jared [ASCAP], Sebastian Barnaby Robertson [BMI]. Killer Tracks [BMI], Open Note [ASCAP], and Universal Production Music	Transcript Link
2020 07 02	NASA Goddard	https://youtu.be/WH-tzUVk9eE	NASA Satellites Help Farmers in Central America's Dry Corridor	Unexpected shocks from natural hazards can affect populations throughout the globe, threatening sustainable development and resilience. However, the impacts of these events, such as extreme precipitation or drought, disproportionately affect the developing world where individuals often are not insured and live and work in conditions that leave them vulnerable to natural disasters. This can lead to significant economic and environmental challenges if preventive measures or mitigating measures are not taken in time. To reduce risks from natural disasters and build climate resilience, decision makers are using NASA Earth observations to develop index-based insurance products and protect low-income customers in Central America, especially in the region known as the Dry Corridor. En español: https://ciencia.nasa.gov/satelites-nasa-ayudan-agricultores-en-el-corredor-seco https://youtu.be/tp61G0KQRoo Music credit: "Beautiful Serenity," Samuel Karl Bohn & Anthony Phillips," Universal Production Music Additional footage courtesy of World Food Programme Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Ryan Fitzgibbons (USRA): Lead Producer, Editor, Writer	Transcript Link

2020 07 02	NASA Goddard	https://youtu.be/zdDeN65oSc4	Intergalactic Elegance Hubble's Universe	Hubble has seen galaxies at the edge of the visible universe. It has unlocked a cosmos so vast and filled with wonder that it boggles the mind. The Hubble Telescope has learned how galaxies merge, and found the powerful jets from massive black-holes. It has uncovered the "dark energy" behind universal expansion and mapped the dark matter that connects galaxies. Through it all, it has revealed an intergalactic elegance that stretches across the universe. For more information, visit https://nasa.gov/hubble. Music: "Silver Lining" by Bernhard Hering [GEMA] and Matthias Kruger [GEMA], Ed Berlin Production Music and Universal Production Music Video credit: NASA's Goddard Space Flight Center Bradley A. Hague (USRA): Producer / Editor This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13609 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOyGRzue8kN Follow NASA's Hubble Space Telescope: · Facebook: https://www.facebook.com/NASAHubble	Transcript Link
2020 07 01	NASA Goddard	https://youtu.be/0bcSVSXcndQ	Satellites See Saharan Dust from Space	From space, we can see a swirling brown mass making its way across the Atlantic – dust from the Sahara Desert – the largest hot desert in the world. It's a normal phenomenon. Every year, winds carry millions of tons of dust from North Africa, usually during spring and summer in the Northern Hemisphere. Music credit: "Investigation - Ticking Suspense" from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathleen Gaeta (NASA): Lead Producer Jessica Merzdorf (Telophase): Photographer Katy Mersmann (USRA): Writer Colin Seftor (SSAI): Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13656 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix	Transcript Link

2020 07 01	NASA Goddard	https://youtu.be/pwHUbftMPvg	NASA Prepares to Explore Moon Spacesuits, Tools	Preparing to explore the surface of the Moon goes well beyond designing and building safe spacecraft and spacesuits. NASA also has to ensure the surface vehicles and suits have the mobility required to do science, and that astronauts have the tools they need to identify and scoop up rock and soil samples. Additionally, NASA astronauts are trained in geology, spending countless hours practicing doing science at locations on Earth that resemble regions they might see on the Moon. All this is done in an effort to establish a long-term presence on the Moon and to help answer some outstanding science questions about the history of Earth and of the solar system. For more information: Ten Things we Learn about Earth by Studying the Moon: https://solarsystem.nasa.gov/news/812/10-things-what-we-learn-about-earth-by-studying-the-moon/ Moon's South Pole in NASA's Landing Sites: https://www.nasa.gov/feature/moon-s-south-pole-in-nasa-s-landing-sites A Few Things Artemis Will Teach Us About Living and Working on the Moon: https://www.nasa.gov/feature/goddard/2019/a-few-things-artemis-will-teach-us-about-living-and-working-on-the-moon	Transcript Link
2020 07 01	NASA Goddard	https://youtu.be/gWawsIVeW8	Milky Way Marvels Hubble's Universe	30 years ago, the Hubble Space Telescope unlocked a window on the universe. Through that window we've seen the wonders of our Milky Way and expanded our vision across the galaxy. From the birth and death of stars to the baby pictures of planets, these are some of Hubble's Milky Way marvels. For more information, visit https://nasa.gov/hubble. Music: "Limitless" by Andre Tavarez [BMI], Sebastian Barnaby Robertson [BMI], Universal Production Music Video credit: NASA's Goddard Space Flight Center Bradley A. Hague (USRA): Producer / Editor This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13603 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNIhOhOygRzue8kN Follow NASA's Hubble Space Telescope: · Facebook: https://www.facebook.com/NASAHubble · Twitter: https://twitter.com/NASAHubble · Instagram: https://www.instagram.com/NASAHubble · Flickr: https://www.flickr.com/photos/nasahubble	Transcript Link

2020 06 30	NASA Goddard	https://youtu.be/bLMlo9Q5mDA	NASA's TESS Delivers New Insights Into an Ultrahot World	Measurements from NASA's Transiting Exoplanet Survey Satellite (TESS) have enabled astronomers to greatly improve their understanding of the bizarre environment of KELT-9 b, one of the hottest planets known. Located about 670 light-years away in the constellation Cygnus, KELT-9 b was discovered in 2017 because the planet passed in front of its star for a part of each orbit, an event called a transit. Transits regularly dim the star's light by a small but detectable amount. Between July 18 and Sept. 11, 2019, as part of the mission's yearlong campaign to observe the northern sky, TESS observed 27 transits of KELT-9 b, and these observations allowed the team to model the system's unusual star and its impact on the planet. KELT-9 b is a gas giant world about 1.8 times bigger than Jupiter, with 2.9 times its mass. Tidal forces have locked its rotation so the same side always faces its star. The planet swings around its star in just 36 hours on an orbit that carries it almost directly above both of the star's poles. The close orbit means the planet's dayside temperature is around 7,800 degrees Fahrenheit (4,300 C), hotter than the surfaces of some stars. This intense heating also causes the planet's atmosphere to stream away into space.	Transcript Link
2020 06 30	NASA Goddard	https://youtu.be/WP5rh1bnc	Solar System Surprises Hubble's Universe	Its odd host star is about twice the size of the Sun and averages Celebrating 30 years in orbit, the Hubble Space Telescope has revealed astonishing secrets about our universe. Yet, while its most famous pictures may reveal galaxies and nebulae across the cosmos, it's also unlocked secrets here in our own solar system. For more information, visit https://nasa.gov/hubble. Music: "Minimal Fiber (Loop)" Paul Lipson [BMI], Universal Production Music Video credit: NASA's Goddard Space Flight Center Bradley A. Hague (USRA): Producer / Editor This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13602 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOyGRzue8kN Follow NASA's Hubble Space Telescope: · Facebook: https://www.facebook.com/NASAHubble · Twitter: https://twitter.com/NASAHubble · Instagram: https://www.instagram.com/NASAHubble · Flickr: https://www.flickr.com/photos/nasahubble	Transcript Link

2020 06 26	NASA Goddard	https://youtu.be/1TKNo9Pkp4	NASA Tracks the Arizona Bush Fire	On the afternoon of June 13, 2020, a vehicle fire near the intersection of Bush Highway and State Route 87 ignited the brush and grass nearby. As of June 25, 2020, the Bush Fire is one of the five largest fires in Arizona's history. NASA's satellite instruments are often the first to detect wildfires burning in remote regions, and the locations of new fires are sent directly to land managers worldwide within hours of the satellite overpass. Together, NASA instruments detect actively burning fires, track the transport of smoke from fires, provide information for fire management, and map the extent of changes to ecosystems, based on the extent and severity of burn scars. NASA has a fleet of Earth-observing instruments, many of which contribute to our understanding of fire in the Earth system. Music credit: "Solar Winds" by Ben Niblett [PRS] and Jon Cotton [PRS] courtesy of Universal Production Music. Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Amber Soja (NASA/LaRC): Scientist Katie Jepson (USRA): Lead Producer Trent L. Schindler (USRA): Visualizer Lori Perkins (NASA/GSFC): Visualizer Greg Shirah (NASA/GSFC): Visualizer Aaron E. Lepsch (ADNET): Technical Support	Transcript Link
2020 06 25	NASA Goddard	https://youtu.be/SVb0V4tin64	Hubble Spots Giant Flapping Shadow	In 2017, NASA's Hubble Space Telescope captured an image of a huge wing-shaped shadow cast by a fledgling star's unseen, planet-forming disk. The young star, called HBC 672, is casting the shadow across a more distant cloud in a star-forming region—like a fly wandering into the beam of a flashlight shining on a wall. Now, after observing the shadow again, astronomers report that they see the giant shadow flapping its "wings"! Read more: https://www.nasa.gov/feature/goddard/2020/hubble-sees-cosmic-flapping-bat-shadow En español: https://ciencia.nasa.gov/el-hubble-observa-el-aletéo-cosmico-de-la-sombra-de-un-murcielago Video credit: NASA's Goddard Space Flight Center Paul Morris (USRA): Producer / Editor Visualization Credit: NASA, ESA, and A. James and G. Bacon (STScI) Music credits: "Floating Freefall" by Jason Steele [ASCAP], Soundcast Music [SESAC] and Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13638 See more Hubble videos on YouTube:	Transcript Link

2020 06 25	NASA Goddard	https://youtu.be/URPzd29SGmE	NASA, ESA, JAXA Reveal New COVID-19 Dashboard	The collective power of space-based Earth observations from NASA, ESA (the European Space Agency), and the Japan Aerospace Exploration Agency (JAXA) to see global changes around the world has been harnessed to produce the COVID-19 Earth Observation Dashboard, released on June 25. In this video, leaders from each agency – Thomas Zurbuchen (NASA), Josef Aschbacher (ESA), and Koji Terada (JAXA) – discuss their unprecedented collaboration. Credits: NASA/ESA/JAXA Lauren Ward (USRA): Lead Producer Steve Cole (NASA): Producer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13650 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcr	Transcript Link
2020 06 25	NASA Goddard	https://youtu.be/3jjaJcSI9GI	COVID-19 Earth Observation Dashboard Tutorial	COVID-19 led to changes in human activities around the globe. Some bodies of water have run clearer, emissions of pollutants have temporarily declined, and transportation and shipment of goods have decreased. We can see some of these changes from space. NASA, ESA (the European Space Agency) and the Japan Aerospace Exploration Agency (JAXA) are making satellite data available on the new COVID-19 Earth Observation Dashboard. Learn what data are available and how to navigate the dashboard in this tutorial video. Music credit: "Transitions," from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Katy Mersmann (USRA): Lead Producer Steve Cole (NASA): Producer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13650 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard	Transcript Link

2020 06 24	NASA Goddard	https://youtu.be/u7VnZL5wJfk	NASA's TESS, Spitzer Missions Discover World Orbiting Unique Young Star	NASA's Transiting Exoplanet Survey Satellite (TESS) and retired Spitzer Space Telescope have found a young Neptune-size world orbiting AU Microscopii, a cool, nearby M dwarf star surrounded by a vast disk of debris. The discovery makes the system a touchstone for understanding how stars and planets form and evolve. Read more: https://www.nasa.gov/feature/goddard/2020/nasa-s-tess-spitzer-missions-discover-a-world-orbiting-a-unique-young-star En español: http://ciencia.nasa.gov/las-misiones-tess-y-spitzer-de-la-nasa-descubren-un-planeta-orbitando-una-joven-e-inusual-estrella https://youtu.be/26lY-kjxWW0 Music: "Web Of Intrigue" from Universal Production Music. Video credit: NASA's Goddard Space Flight Center Chris Smith (USRA): Lead Producer Chris Smith (USRA): Lead Animator Francis Reddy (University of Maryland College Park): Science Writer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13648 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link
2020 06 24	NASA Goddard	https://youtu.be/l3QQQu7QLoM	A Decade of Sun	As of June 2020, NASA's Solar Dynamics Observatory — SDO — has now been watching the Sun non-stop for over a full decade. From its orbit in space around the Earth, SDO has gathered 425 million high-resolution images of the Sun, amassing 20 million gigabytes of data over the past 10 years. This information has enabled countless new discoveries about the workings of our closest star and how it influences the solar system. With a triad of instruments, SDO captures an image of the Sun every 0.75 seconds. The Atmospheric Imaging Assembly (AIA) instrument alone captures images every 12 seconds at 10 different wavelengths of light. This 10-year time lapse showcases photos taken at a wavelength of 17.1 nanometers, which is an extreme ultraviolet wavelength that shows the Sun's outermost atmospheric layer — the corona. Compiling one photo every hour, the movie condenses a decade of the Sun into 61 minutes. The video shows the rise and fall in activity that occurs as part of the Sun's 11-year solar cycle and notable events, like transiting planets and eruptions. The custom music, titled "Solar Observer," was composed by musician Lars Leonhard (https://www.lars-leonhard.de/). While SDO has kept an unblinking eye pointed towards the Sun, there have been a few moments it missed. The dark frames in the video are caused by Earth or the Moon eclipsing SDO as they pass between the spacecraft and the Sun. A longer blackout in 2016 was caused by a temporary issue with the AIA instrument that was successfully resolved after a week. The images where the Sun is off-	Transcript Link

2020 06 22	NASA Goddard	https://youtu.be/vrLfHv6sze0	NASA Scientist Simulates Kaleidoscope of Sunsets on Other Worlds	Geronimo Villanueva, a NASA planetary scientist, created these sunset simulations while building a computer modeling tool for a possible future mission to Uranus, an icy-cold planet in the outer solar system. To check the accuracy of his tool, Villanueva simulated known sky colors of various planets and moons, some of which are shown in this video. The simulations show these worlds turning away from the light of the Sun, which is what's happening when we see a sunset. As these worlds rotate, photons get scattered in different directions depending on the energy of the photons and the types of molecules in the atmospheres. The result is a lovely palette of colors that would be visible to those standing on these worlds. For more information on the sunset simulations, go here: https://www.nasa.gov/feature/goddard/2020/nasa-scientist-simulates-sunsets-on-other-worlds/ Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Geronimo Villanueva (Catholic University of America): Lead Scientist Lead Visualizer	Transcript Link
2020 06 22	NASA Goddard	https://youtu.be/BlxxkDaLOGM	Eyes in the Sky	Revolutions in satellite capabilities and atmospheric models have resulted in dramatic improvements in hurricane forecasting in the last few decades. Read more: https://www.nasa.gov/feature/goddard/2020/satellites-have-dramatically-changed-how-we-forecast-hurricanes Video credit: NASA's Goddard Space Flight Center Jefferson Beck (USRA): Lead Producer Jenny Marder Fadoul (Telophase): Lead Writer Dalia B Kirschbaum (NASA/GSFC): Scientist Edward Kim (NASA/GSFC): Scientist Greg Mandt (NOAA-JPSS): Scientist Pam Sullivan (NOAA): Scientist James Sims (NOAA): Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13649 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard	Transcript Link

2020 06 17 NASA Goddard <https://youtu.be/2wT4ZQG19S0> Four of Our Favorite SOHO-discovered Comets

On June 15, 2020, a citizen scientist spotted a never-before-seen comet in data from the Solar and Heliospheric Observatory, or SOHO — the 4,000th comet discovery in the spacecraft's 25-year history.

[Transcript](#)
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The comet is nicknamed SOHO-4000, pending its official designation from the Minor Planet Center. Like most other SOHO-discovered comets, SOHO-4000 is part of the Kreutz family of sungrazers. The Kreutz family of comets all follow the same general trajectory, one that carries them skimming through the outer atmosphere of the Sun. SOHO-4000 is on the small side, with a diameter in the range of 15-30 feet, and was extremely faint and close to the Sun when discovered — meaning SOHO is the only observatory that has spotted the comet, as it's impossible to see from Earth with or without a telescope.

More: <https://www.nasa.gov/feature/goddard/2020/4000th-comet-discovered-by-esa-nasa-solar-observatory>

SOHO is a joint mission of ESA (the European Space Agency) and NASA. Launched in 1995, SOHO studies the Sun from its interior to its outer atmosphere, with an uninterrupted view from its vantage point between the Sun and Earth, about a million miles from our planet. But over the past two and half decades, SOHO has also become the greatest comet finder in human history.

2020 06 11 NASA Goddard <https://youtu.be/ZY8D71NW1wM> 11 Years Charting Edge of Solar System

SOHO's comet-hunting prowess comes from a combination of its Far, far beyond the orbits of the planets lie the hazy outlines of the magnetic bubble in space that we call home.

[Transcript](#)
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This is the heliosphere, the vast bubble that is generated by the Sun's magnetic field and envelops all the planets. The borders of this cosmic bubble are not fixed. In response to the Sun's gasps and sighs, they shrink and stretch over the years.

Now, for the first time, scientists have used an entire solar cycle of data from NASA's IBEX spacecraft to study how the heliosphere changes over time. Solar cycles last roughly 11 years, as the Sun swings from seasons of high to low activity, and back to high again. With IBEX's long record, scientists were eager to examine how the Sun's mood swings play out at the edge of the heliosphere. The results show the shifting outer heliosphere in great detail, deftly sketch the heliosphere's shape — a matter of debate in recent years, and hint at processes behind one of its most puzzling features. These findings, along with a newly fine-tuned data set, are published in The Astrophysical Journal Supplements on June 10, 2020.

Read more: <https://www.nasa.gov/feature/goddard/2020/nasa-ibex-charts-11-years-change-at-boundary-interstellar-space-heliosphere-sun/>

Music credits: "End of Days - Joe Mason Remix" by Connor Shambrook [BMI], Cyrus Reynolds [BMI], Flynn Hase Spence

2020 06 04	NASA Goddard	https://youtu.be/jfkjwhClpg4	NASA Ocean Ecosystem Mission Ready to Make Waves	After passing its last critical design review in February 2020, PACE has entered its integration and testing phase of development. PACE's primary sensor, the Ocean Color Instrument (OCI), is a highly advanced optical spectrometer that will be used to measure properties of light over portions of the electromagnetic spectrum. It will enable continuous measurement of light at finer wavelength resolution than previous NASA satellite sensors, extending key system ocean color data records for climate studies. The color of the ocean is determined by the interaction of sunlight with substances or particles present in seawater such as chlorophyll, a green pigment found in most phytoplankton species. By monitoring global phytoplankton distribution and abundance with unprecedented detail, the OCI will help us to better understand the complex systems that drive ocean ecology. For more information please visit: https://pace.gsfc.nasa.gov Music Credit: Universal Production Music Video Credit: NASA's Goddard Space Flight Center Michael Starobin (KBRwyle): Lead Producer Michael Starobin (KBRwyle): Lead Narrator Michael Starobin (KBRwyle): Lead Writer Michael Starobin (KBRwyle): Lead Editor Michael Starobin (KBRwyle): Lead Videographer Rob Andreoli (AIMM): Videographer	Transcript Link
2020 05 28	NASA Goddard	https://youtu.be/mfbOREnZi84	Hubble's Brand New Image of Saturn (2019)	This video features a new Hubble Space Telescope view of Saturn, taken in late June of 2019, which reveals the giant planet's iconic rings. Saturn's amber colors come from summer smog-like hazes, produced in photochemical reactions driven by solar ultraviolet radiation. Below the haze lie clouds of ammonia ice crystals, as well as deeper, unseen lower-level clouds of ammonium hydrosulfide and water. The planet's banded structure is caused by winds and clouds at different altitudes. Hubble's Wide Field Camera 3 observed Saturn on June 20, 2019, as the planet made its closest approach to Earth, at about 845 million miles away. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Music credits: "Momentum" by Guillaume Bernard [SACEM]; Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13307 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNI	Transcript Link

2020 05 28	NASA Goddard	https://youtu.be/WBk42U4c5d0	Hubble's Brand New Image of Eta Carinae	In the mid-1800s, mariners sailing the southern seas navigated at night by a brilliant star in the constellation Carina. The star, named Eta Carinae, was the second brightest star in the sky for more than a decade. Those mariners could hardly have imagined that by the mid-1860s the brilliant orb would no longer be visible. Eta Carinae was enveloped by a cloud of dust ejected during a violent outburst named "The Great Eruption." Because of Eta Carinae's violent history, astronomers have kept watch over its activities. Although Hubble has monitored the volatile superstar for 25 years, it still is uncovering new revelations. Using Hubble to map the ultraviolet-light glow of magnesium embedded in warm gas, astronomers were surprised to discover the gas in places they had not seen it before. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Aaron E. Lepsch (ADNET): Technical Support Music credits: "Transcode" by Lee Groves [PRS], and Peter George Marett [PRS]; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13244	Transcript Link
2020 05 28	NASA Goddard	https://youtu.be/4QxGeJxwvdc	Hubble Finds Water Vapor On Distant Exoplanet	With data from the Hubble Space Telescope, water vapor has been detected in the atmosphere of an exoplanet within the habitable zone of its host star. K2-18b, which is eight times the mass of Earth, is the only planet orbiting a star outside the solar system (or "exoplanet") within the habitable zone. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Music credits: "Only Human" by Guillaume Bernard [SACEM]; Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13312 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOyGRzue8kN Follow NASA's Hubble Space Telescope: · Facebook: https://www.facebook.com/NASAHubble · Twitter: https://twitter.com/NASAHubble	Transcript Link

2020 05 28	NASA Goddard	https://youtu.be/kFRr9U_JYok	Hubble's Brand New Image of Jupiter	This new Hubble Space Telescope view of Jupiter, taken on June 27, 2019, reveals the giant planet's trademark Great Red Spot, and a more intense color palette in the clouds swirling in Jupiter's turbulent atmosphere than seen in previous years. The colors, and their changes, provide important clues to ongoing processes in planetary atmospheres. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center/Paul Morris/Tracy Vogel Music credits: "Solaris" by Axel Tenner [GEMA], Michael Schluecker [GEMA] and Raphael Schalz [GEMA]; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13279 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN Follow NASA's Hubble Space Telescope: · Facebook: https://www.facebook.com/NASAHubble · Twitter: https://twitter.com/NASAHubble · Instagram: https://www.instagram.com/NASAHubble · Flickr: https://www.flickr.com/photos/nasahubble	Transcript Link
2020 05 28	NASA Goddard	https://youtu.be/yPMadwaSls0	Hubble's New Image Of Interstellar Object	NASA's Hubble Space Telescope has given astronomers their best look yet at an interstellar visitor – Comet 2I/Borisov – whose speed and trajectory indicates it is from outside of our Solar System. This Hubble image, taken on October 12, is the sharpest ever view of the comet. Hubble reveals a central concentration of dust around the solid icy nucleus. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Music Credits: "Solar Pilgrims" by Francois Vey [SACEM] Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13341 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN Follow NASA's Hubble Space Telescope: · Facebook: https://www.facebook.com/NASAHubble · Twitter: https://twitter.com/NASAHubble	Transcript Link

2020 05 25	NASA Goddard	https://youtu.be/KkKak9bNGjU	First Map of Mars Electric Currents	Five years after NASA’s MAVEN spacecraft entered into orbit around Mars, data from the mission has led to the creation of a map of electric current systems in the Martian atmosphere. Unlike Earth, Mars lacks a protective global magnetic field to shield its upper atmosphere from the solar wind. Instead, the solar wind crashes into the upper atmosphere and its magnetic field lines drape around the planet. This creates an induced magnetosphere that tugs on charged particles in the Mars upper atmosphere, generating electric currents. Now, MAVEN’s detailed measurements of the magnetic environment surrounding Mars have revealed the shape of these electric currents for the first time. Read more: https://www.nasa.gov/press-release/goddard/2020/mars-electric-currents Music credit: “A Lucid Dream” and “Shimmer Oscillations” by James Joshua Otto, via Universal Production Music Video credit: NASA/Goddard/MAVEN/CU Boulder/SVS Producer: Dan Gallagher (USRA) Lead Data Visualizer: Cindy Starr (GST) Data Visualizers:	Transcript Link
2020 05 22	NASA Goddard	https://youtu.be/X3wX30oIKvY	Launching America Goddard's Role in Keeping Astronauts Connected to Earth	NASA’s Human Space Flight Network stands ready to support the launch of astronauts from U.S. soil for the first time since the end of the space shuttle program in 2011, coordinating communications across multiple network elements to provide robust and reliable communications to the crew. Overseen by the Space Communications and Navigation (SCaN) program, NASA’s communications networks are supporting this historic human spaceflight milestone, just as they will support all commercial crew missions. https://www.nasa.gov/specials/dm2/ One of those elements, NASA’s Space Network, consists of a constellation of relay communications satellites and ground stations to provides data and voice communications. Thanks to the Space Network, SpaceX’s Dragon crew and spacecraft will stay connected to the ground and the International Space Station from launch to station docking, through re-entry and splashdown. NASA recently made improvements to the Space Network to enhance relay satellite pointing capabilities to actively respond to potential abort scenarios. Additionally, the Human Space Flight Network collaborates with the U.S. Space Force’s Eastern Range and 45th Space Wing to provide independent ground-based orbit determination in the event of off-nominal operations conditions.	Transcript Link

2020 05 22	NASA Goddard	https://youtu.be/8D6OYcQJl7k	NASA Names Upcoming Telescope to Honor the 'Mother of Hubble'	In a time when women were discouraged from studying math and science, Nancy Grace Roman became a research astronomer and the first chief of astronomy at NASA. Known today as the “Mother of Hubble,” she was instrumental in taking the Hubble Space Telescope from an idea to reality and establishing NASA’s program of space-based astronomical observatories. Now, NASA has honored her by giving her name to one of its most powerful upcoming missions. Formerly known as WFIRST, the Nancy Grace Roman Space Telescope will lead the way in studying dark energy, dark matter, and exoplanets. Learn more about the incredible woman it is named for. https://www.nasa.gov/roman Music credit: "Rising Tides" from Universal Production Music Video credit: NASA's Goddard Space Flight Center Scott Wiessinger (USRA): Lead Producer Claire Andreoli (NASA/GSFC): Public Affairs Officer Nancy Grace Roman (NASA/GSFC Retired): Interviewee Barb Mattson (University of Maryland College Park): Narrator Francis Reddy (University of Maryland College Park): Science Writer Michael Lentz (USRA): Animator Scott Wiessinger (USRA): Writer Scott Wiessinger (USRA): Editor Katrina Jackson (USRA): Editor	Transcript Link
2020 05 21	NASA Goddard	https://youtu.be/aB7X0AzDEqQ	Meet the Goddard Instrument Field Team	This video is an introduction into the world of the Goddard Instrument Field Team, known as GIFT. This team of scientists conducts fieldwork all over the world at sites that resemble the Moon, Mars, and other planetary surfaces. These scientists are responsible for developing and testing scientific instrumentation relevant to NASA's exploration goals, and for carrying out a wide variety of experiments. Note: This video contains NASA archival footage, as well as GIFT footage shot between 2017-2019. Credits: NASA's Goddard Space Flight Center Produced & Edited by: David Ladd (USRA) Videographers: Robert Andreoli (AIMM), David Ladd (USRA), Molly Wasser (ADNET) Iceland Drone Footage by: Stephen Scheidt (Howard University) Animations by: Michael Lentz (USRA) & Krystofer Kim (USRA) Lead Scientist: Kelsey Young (NASA/GSFC) Scientist: Jacob Bleacher (NASA/GSFC) Narrated by: Jerome Hruska Music Provided by Universal Production Music: "Let Me Love You Again" - Matthew Anderson "Crushing It" - Erica Driscoll, Wally Gagel, Xandy Barry "Behind The Stars" - Danny McCarthy "To New Heights" - Mark Petrie	Transcript Link

2020 05 20	NASA Goddard	https://youtu.be/6J1qTQHBZ4s	A New Portrait of the Cosmos is Coming	The Nancy Grace Roman Space Telescope, formerly known as WFIRST, is an upcoming space telescope designed to perform wide-field imaging and spectroscopy of the infrared sky. One of the Roman Space Telescope's objectives will be looking for clues about dark energy — the mysterious force that is accelerating the expansion of the universe. Another objective of the mission will be finding and studying exoplanets. https://www.nasa.gov/roman The Roman Space Telescope uses the same 2.4-meter primary mirror size as Hubble, but with 18 cutting-edge fourth-generation image sensors compared to Hubble's single first-generation sensor. As a result, each image from the Wide Field Instrument will cover over 100 times as much as a Hubble Wide Field Camera 3/IR image and be 300 megapixels in size. Hubble images reveal thousands of galaxies; a single Roman Space Telescope image will uncover millions. To help uncover the mystery of dark energy, the Roman Space Telescope will make incredibly precise measurements of the universe. These measurements, like the distance and position of galaxies, can be compared to other measurements — such as the cosmic microwave background from the WMAP mission — to determine how dark energy has changed over time. The Roman Space Telescope can also measure the slight distortions in light from distant galaxies as it passes more nearby mass concentrations.	Transcript Link
2020 05 20	NASA Goddard	https://youtu.be/jPq2VVU_Pjk	NASA's Nancy Grace Roman Space Telescope Broadening Our Cosmic Horizons	Scheduled to launch in the mid-2020s, the Nancy Grace Roman Space Telescope, formerly known as WFIRST, will function as Hubble's wide-eyed cousin. While just as sensitive as Hubble's cameras, the Roman Space Telescope's 300-megapixel Wide Field Instrument will image a sky area 100 times larger. This means a single Roman Space Telescope image will hold the equivalent detail of 100 pictures from Hubble. https://www.nasa.gov/roman The mission's wide field of view will allow it to generate a never-before-seen big picture of the universe, which will help astronomers explore some of the greatest mysteries of the cosmos, like why the expansion of the universe seems to be accelerating. Some scientists attribute the speed-up to dark energy, an unexplained pressure that makes up 68% of the total content of the cosmos. The Wide Field Instrument will also allow the Roman Space Telescope to measure the matter in hundreds of millions of distant galaxies through a phenomenon dictated by Einstein's relativity theory. Massive objects like galaxies curve space-time in a way that bends light passing near them, creating a distorted, magnified view of far-off galaxies behind them. The Roman Space Telescope will paint a broad picture of how matter is structured throughout the universe, allowing scientists to put the governing physics of its assembly to the ultimate test.	Transcript Link

2020 05 19	NASA Goddard	https://youtu.be/JpMo4lhEvEs	Counting Comets	The Solar and Heliospheric Observatory, a joint mission between ESA (the European Space Agency) and NASA, was not designed to find comets — its original goal was to study the Sun from its deep core to the outer layers of its atmosphere. But nearly 25 years since its launch, data from this space-based solar observatory has led to the discovery of well over half of all known comets — upwards of 3,950 new comets found. The huge number of SOHO-discovered comets comes thanks to a combination of well-designed instruments, a long lifespan, the hard work of citizen scientists and a little bit of luck. Read more: https://www.nasa.gov/feature/goddard/2020/why-esa-and-nasas-soho-spacecraft-spots-so-many-comets Music credit: Birds in The Rain by Robert Guerrier Video credit: NASA's Goddard Space Flight Center Karl Battams (Naval Research Laboratory): Lead Scientist Genna Duberstein (ADNET): Lead Producer Genna Duberstein (ADNET): Animator Scott Wiessinger (USRA): Narrator Genna Duberstein (ADNET): Writer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13622	Transcript Link
2020 05 18	NASA Goddard	https://youtu.be/gE7jjxXk5g8	40 Years of Watching Mount St. Helens	It has been 40 years since Mount St. Helens erupted on May 18, 1980, in southwestern Washington, near the Oregon border. Fifty-seven people lost their lives in the disaster, and huge swaths of the surrounding forest were levelled. Both before and after the eruption, Landsat satellites were taking regular observations of the area, and their data is being used to study how forests recover from a very large disturbance. Sean Healey is a research ecologist with the Rocky Mountain Research Service, United State Forest Service. Along with his colleague Zhiqiang Yang, Sean has been studying the forests in the area to determine how the structure of the forest changes with disturbances. He is interested in knowing the changes in carbon stocks and the dynamics of forest recovery. Sean and Zhiqiang have used Landsat data to create predictions of the percent tree cover as the trees and other vegetation regrows. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. Music: The Waiting Room by Sam Dodson [PRS], published by Atmosphere Music Ltd [PRS]; Inner Strength by Brava [SGAE], Dsilence [SGAE], Input [SGAE] , Output [SGAE], published by El	Transcript Link

2020 05 14	NASA Goddard	https://youtu.be/Li6We0I5pYQ	Folding the James Webb Space Telescope to Fit Inside the Ariane V Rocket Fairing	This video shows how NASA’s James Webb Space Telescope is designed to fold to a much smaller size in order to fit inside the Ariane V rocket for launch to space. The largest, most complex space observatory ever built, must fold itself to fit within a 17.8-foot (5.4-meter) payload fairing, and survive the rigors of a rocket ride to orbit. After liftoff, the entire observatory will unfold in a carefully choreographed series of steps before beginning to make groundbreaking observations of the cosmos. Read more: https://www.nasa.gov/feature/goddard/2020/first-look-nasa-s-james-webb-space-telescope-fully-stowed Credit: NASA's Goddard Space Flight Center If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA’s Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcr	Transcript Link
2020 05 13	NASA Goddard	https://youtu.be/e58zAhLNTw	5 Things Space Servicing	Just as cars need maintenance on Earth, sometimes spacecraft need fixing, too. 🛠️ When astronauts work on spacecraft in orbit, it's called space servicing. Want to know more about space servicing? Leave your questions in the comments below for a Q&A from 12-2 p.m. EDT on 5/14 with NASA astronauts and experts! 💡 Fun fact! Astronauts traveled to the Hubble Space Telescope for five servicing missions. Their work is the reason why Hubble has lasted 30 years in space, showing us images of the universe as a more colorful and stranger place than we ever imagined. Credit: NASA's Goddard Space Flight Center Producer: Haley Reed Expert: Christy Hansen Associate Producer: Paul Morris Associate Producer: Teresa Johnson Animation: Bailee DesRocher Videographer: Rob Andreoli Videographer: John Caldwell Public Affairs: Claire Andreoli Aaron E. Lepsch: Technical Support Music credit: Universal Music Production “Percs & Pizz,” Nicolas Montazaud [SACEM] “In Light of Things,” Matthew Charles Gilbert Davidson [PRS] - -	Transcript Link

2020 05 01	NASA Goddard	https://youtu.be/iKg-bO9MKPO	How to Make a Webb Telescope Flip-book	Make your own deployment animation of NASA's James Webb Space Telescope with these handy-dandy, home-printable, flip-book instructions. Piece the images together, flip them quickly and watch Webb blossom! In order to observe the darkest regions of the universe, the Webb telescope must be large. The spacecraft is engineered to unfold in space, where it will be three stories high and as wide as a tennis court. For the Webb telescope to fit into a rocket, it must be folded up. After launch, Webb will deploy during its roughly 30-day, million-mile journey out to the second Lagrange point (L2). This 48-frame flip-book highlights how Webb deploys unfolds once in space. It can be made at home using paper and a binder clip. As you quickly flip through the frames, you can see an animation of how Webb will deploy in space! Instructions: https://jwst.nasa.gov/content/features/flipBook.html Credit: NASA's Goddard Space Flight Center Sophia Roberts (AIMM): Lead Producer Aaron E. Lepsch (ADNET): Technical Support Michael McClare (KBRwyle): Graphics Sophia Roberts (AIMM): Lead Video Editor Sophia Roberts (AIMM): Lead Videographer Sophia Roberts (AIMM): Lead Writer	Transcript Link
2020 04 30	NASA Goddard	https://youtu.be/IP_SCsMsxZI	NASA Mission Maps 16 Years of Ice Loss	This video is public domain and along with other supporting Using the most advanced Earth-observing laser instrument NASA has ever flown in space, scientists have made precise, detailed measurements of how the elevation of the Greenland and Antarctic ice sheets have changed over 16 years. The results provide insights into how the polar ice sheets are changing, demonstrating definitively that small gains of ice in East Antarctica are dwarfed by massive losses in West Antarctica. The scientists found the net loss of ice from Antarctica, along with Greenland's shrinking ice sheet, has been responsible for 0.55 inches (14 millimeters) of sea level rise between 2003 and 2019 – slightly less than a third of the total amount of sea level rise observed in the world's oceans. Music credit: "Frozen Waves," Universal Production Music Video credit: NASA's Goddard Space Flight Center Lead Producer: Ryan Fitzgibbons (USRA) Lead Writer: Kate Ramsayer (Telophase) Scientist: Thomas A. Neumann Ph.D. (NASA/GSFC) Lead Scientists: Benjamin E. Smith (University of Washington Applied Physics Lab Polar Science Center) Helen Amanda Fricker (Scripps Institution of Oceanography, University of California, San Diego) Alex S. Gardner (NASA/JPL CalTech) Lead Visualizer: Kel Elkins (USRA) Lead Editor: Ryan Fitzgibbons (USRA)	Transcript Link

2020 04 28	NASA Goddard	https://youtu.be/y1G5xZv5DVw	A Day in the Life of a NASA Satellite Team	Launched on Nov. 20, 2004, NASA's Neil Gehrels Swift Observatory has been on the hunt to uncover the mystery of the universe's most powerful explosions: gamma-ray bursts. These extreme events are some of the farthest objects we've ever detected and are associated with some of the most dramatic events in our cosmos, like the collapse of massive stars or the mergers of two neutron stars. In celebration of fifteen years of excellent science, join a Swift team member for a day in the life of the Swift satellite. Read more: https://www.nasa.gov/feature/goddard/2020/nasa-s-swift-satellite-celebrates-15-years-of-multiwavelength-science Want to know more about Swift? Visit https://www.nasa.gov/swift. Music credit: "Fiber Optics" from Universal Production Music Video credit: NASA's Goddard Space Flight Center Chris Smith (USRA): Lead Producer Chris Smith (USRA): Lead Animator Regina Caputo (NASA/GSFC): Narrator Regina Caputo (NASA/GSFC): Scientist Brad Cenko (NASA/GSFC): Lead Scientist Joshua E. Schlieder (NASA/GSFC): Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13594	Transcript Link
2020 04 27	NASA Goddard	https://youtu.be/BtmYIzJuSI4	Swift Tracks Water From Interstellar Comet Borisov	For the first time, NASA's Neil Gehrels Swift Observatory tallied the water lost from an interstellar comet as it approached and rounded the Sun. The object, 2I/Borisov, traveled through the solar system in late 2019. Read more: https://www.nasa.gov/feature/goddard/2020/nasa-s-swift-mission-tallied-water-from-interstellar-comet-borisov Comets are frozen clumps of gases mixed with dust, often called "dirty snowballs." As a one approaches the Sun, frozen material on its surface warms and converts to gas. When sunlight breaks apart water molecules, one of the fragments is hydroxyl, a molecule composed of one oxygen and one hydrogen atom. Swift detects the fingerprint of ultraviolet light emitted by hydroxyl using its Ultraviolet/Optical Telescope (UVOT). Between September and February, Swift made six observations of Borisov with Swift. It saw a 50% increase in the amount of hydroxyl — and therefore water — Borisov produced between Nov. 1 and Dec. 1, which was just seven days from the comet's closest brush with the Sun. At peak activity, Borisov shed eight gallons (30 liters) of water per second, enough to fill a bathtub in about 10 seconds. During its trip through the solar system, the comet lost nearly 61 million gallons (230 million liters) of water — enough to fill over 92 Olympic-size swimming pools. As it moved away from the Sun, Borisov's water	Transcript Link

2020 04 27	NASA Goddard	https://youtu.be/-B1gSTU7W1E	Hubble's 30th Year in Orbit	On April 24, 2020, the Hubble Space Telescope celebrated its 30th year in orbit by premiering a never-before-seen view of two stunning nebulae named NGC 2020 and NGC 2014. Even after all these years, Hubble continues to uncover the mysteries of the universe. These are a few science achievements from Hubble's latest year in orbit. For more information about the Hubble Space Telescope and its images, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Aaron E. Lepsch (ADNET): Technical Support Music credits: "Twist of Fate" by Axel Tenner [GEMA], Michael Schluecker [GEMA], and Raphael Schalz [GEMA]. Berlin Production Music and Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13593 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN	Transcript Link
2020 04 24	NASA Goddard	https://youtu.be/403-XMKwgk4	Hubble's 30th Anniversary Image	On April 24, 2020, the Hubble Space Telescope celebrates its 30th year in orbit by premiering a never-before-seen view of two beautiful nebulae named NGC 2020 and NGC 2014. Hubble's senior project scientist, Dr. Jennifer Wiseman, takes us on a tour of this stunning new image, describes the telescope's current health, and summarizes some of Hubble's contributions to astronomy during its 30-year career. Read more: https://www.nasa.gov/feature/goddard/2020/hubble-marks-30-years-in-space-with-tapestry-of-blazing-starbirth For more information about the Hubble Space Telescope and its images, visit https://nasa.gov/hubble Video credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Jennifer Wiseman (NASA/GSFC): Narrator Aaron E. Lepsch (ADNET): Technical Support Music credits: "Perpetual Twilight" by Christophe La Pinta [SACEM], Koka Media [SACEM], Universal Publishing Production Music France [SACEM], and Universal Production Music. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization	Transcript Link

2020 04 23	NASA Goddard	https://youtu.be/T1NSKpORI5E	Guiding Farmers With NASA Satellites	Agriculture in Pakistan is dependent on irrigation from the Indus River. But over the years, these freshwater resources have become scarce. Today, it is one of the world's most depleted basins. To tackle this, farmers are attempting to predict and track freshwater resources with the help of NASA satellites and cell phones. Music credits: "Billy" by Rob Jager [BUMA]; "Perfect Space" by Anthony Edwin Phillips [PRS], Samuel Karl Bohn [PRS]; "Games Show Spheres 07" by Anselm Kreuzer [GEMA]; "Hope Will Save Us" by Christopher John Hutchings [PRS] Additional imagery credit: University of Washington Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Faisal Hossain (University of Washington): Scientist Dalia Kirschbaum (GSFC): Scientist Joy Ng (USRA): Producer Trent L. Schindler (USRA): Lead Visualizer Greg Shirah (NASA/GSFC): Visualizer Aaron E. Lepsch (ADNET): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13592 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link
2020 04 23	NASA Goddard	https://youtu.be/AwCNGU1Xy9I	Build Your Own Fermi Satellite	Building paper models of spacecraft is a fun, interactive way to learn more about NASA's missions. Watch this video to see how NASA's Fermi Gamma-ray Space Telescope paper model comes together, then try making your own. (If you like this project, you can explore making models of other NASA spacecraft here: https://go.nasa.gov/papermodels.) Launched on June 11, 2008, Fermi observes the cosmos using the highest-energy form of light. Mapping the entire sky every three hours, Fermi provides an important window into the most extreme phenomena of the universe, from gamma-ray bursts and black-hole jets to pulsars, supernova remnants and the origins of cosmic rays. Want to know more about Fermi? Check out these links: Follow Fermi news: https://nasa.gov/fermi Meet Fermi: Our Eyes on the Gamma-Ray Sky: https://nasa.tumblr.com/post/169348234794/meet-fermi-our-eyes-on-the-gamma-ray-sky Fermi Learning Center: https://imagine.gsfc.nasa.gov/observatories/learning/fermi/ And watch #NASAatHome to find out about some other fun ways to interact with NASA science and missions at home.	Transcript Link

2020 04 23 NASA Goddard <https://youtu.be/t03o3T9zXQ8> Venus Forgotten Sister Planet or Our Next Frontier [Transcript Link](#)

Venus, our nearby “sister” planet, beckons today as a compelling target for exploration that may connect the objects in our own solar system to those discovered around nearby stars. Yet, humanity’s exploration of Venus has been hampered by confusion, technological challenges, and lack of tenacity. In an era that will soon witness a return of people (women and men) to the surface of the Moon and the arrival of samples from the planet Mars to Earth laboratories, together with space tourism and perhaps a new space-based economy, Venus stands out as the least explored of the planets in our solar system. That must change. Building – but woefully incomplete – evidence suggests Venus may have harbored oceans as recently as 1 billion years ago, yet today is as uninhabitable as any location we have explored in the past 60 years of the current space age. Thus, Venus may offer glimpses of Earth’s distant past, while holding insights into our own planet’s environmental destiny.

As humanity pushes the frontiers of exploration here on Earth and commemorates the 500th anniversary of Magellan’s circumnavigation, a new “frontier” looms – that of Venus and its massive, chemically complex atmosphere, hellishly hot surface, and mysterious mountainous regions. It is conceivable that over the next decade or so, robotic emissaries from Earth will return to Venus to unravel her untold secrets and illuminate her Earth-relevant history. These missions of exploration will connect Earth and Mars to our sister world, and arm scientists with perspectives needed to understand how ocean-bearing planets evolve,

2020 04 21 NASA Goddard <https://youtu.be/BqA1iXYFRIU> NASA Looks Back at 50 Years of Earth Day [Transcript Link](#)

It’s been five decades since Apollo 8 astronaut William Anders photographed Earth peaking over the Moon’s horizon. The iconic image, dubbed Earthrise, inspired a new appreciation of the fragility of our place in the universe. Two years later, Earth Day was born to honor our home planet. As the world prepares to commemorate the 50th anniversary of Earth Day, NASA reflects on how the continued growth of its fleet of Earth-observing satellites has sharpened our view of the planet’s climate, atmosphere, land, polar regions and oceans.

To view the full data visualizations that appear throughout, go to: https://www.youtube.com/playlist?list=PL55HrL0eJVEYcWKvMk_-NWViXJ4b37Do

En español: <https://www.youtube.com/watch?v=k96DOrLSRkl>

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Ryan Fitzgibbons (USRA): Lead Producer, Editor

Jefferson Beck (USRA): Lead Producer

Kathryn Mersmann (USRA): Lead Producer

Aaron E. Lepsch (ADNET): Technical Support

Samson K. Reiny (Wyle Information Systems): Producer

Greg Shirah (NASA/GSFC): Lead Visualizer

Alex Kekesi (GST): Lead Visualizer

2020 04 20	NASA Goddard	https://youtu.be/opjOMXqjWdI	The Largest Group of Earth Scientists on Earth	NASA's Goddard Space Flight Center has the largest collection of Earth scientists on the planet. Their job is to be the nation's trusted source of comprehensive environmental information about the current state and the future of Earth. They build, design, launch and operate scientific missions, including satellites and airborne campaigns, as well as ground campaigns, to understand how the Earth works and how to predict how the Earth will change in the future. Credit: NASA's Goddard Space Flight Center. Video produced for Goddard by Webs Edge Productions Matthew R. Radcliff (USRA): Lead Producer Aaron E. Lepsch (ADNET): Technical Support Christa Peters-Lidard (NASA/GSFC): Scientist Nathan T. Kurtz (NASA/GSFC): Scientist Doug C. Morton (NASA/GSFC): Scientist Susan Strahan (USRA): Scientist Jeremy Werdell (NASA/GSFC): Scientist Lesley Ott (NASA/GSFC): Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13523 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link
2020 04 20	NASA Goddard	https://youtu.be/NNOb3xrjOhE	NASA Reveals Alien Composition of 2I Borisov, 1st Interstellar Comet	When amateur astronomer Gennady Borisov discovered an interstellar comet zipping through our solar system on Aug. 30, 2019, scientists promptly turned their telescopes toward it hoping to catch a glimpse of this rare and ephemeral event. After all, no one had ever set eyes on a confirmed comet from a foreign star system, and it was clear from its projected trajectory that the alien visitor, named 2I/Borisov, would soon disappear from the sky forever. Before it dimmed from view, a team of international scientists led by Martin Cordiner and Stefanie Milam at NASA's Goddard Space Flight Center in Greenbelt, Maryland, probed it with the world's most powerful radio telescope: the Atacama Large Millimeter/submillimeter Array (ALMA) in northern Chile. The comet was near its closest approach to Earth at about 180 million miles, or nearly 300 million kilometers, away. When the scientists peeked inside the halo of gas that formed around the comet as it came closer to the Sun and its ices began to vaporize, they detected something peculiar: 2I/Borisov was releasing gas with a greater concentration of carbon monoxide (CO) than anyone had detected in any comet at a similar distance from the Sun (within less than 186 million miles, or 300 million kilometers). 2I/Borisov's CO concentration was estimated to be between nine and 26 times higher than that of the average solar system comet.	Transcript Link

2020 04 17	NASA Goddard	https://youtu.be/xkVG79xSJUE	Getting a Bird's-Eye View of Biodiversity With Landsat	Global temperatures are rising, putting bird species across America in danger of extinction as their habitats change. To understand how temperature affects birds across the country, scientists at the University of Wisconsin-Madison compared data from the thermal sensor on Landsat 8, TIRS, to bird biodiversity across the country. Turns out, having a habitat with pockets of different temperatures – like a grove of trees in an open field, or a nest or snow burrow – is especially important for small-bodied bird species and those threatened by climate change. This bird's-eye view of the relationship between temperature and bird biodiversity will help conservationists figure out where to prioritize their efforts in a warming world. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. Music: Life Cycles by Theo Golding [PRS], published by Atmosphere Music Ltd [PRS] available from Universal Production Music Credit: NASA's Goddard Space Flight Center Matthew R. Radcliff (USRA): Lead Producer Aaron E. Lepsch (ADNET): Technical Support	Transcript Link
2020 04 16	NASA Goddard	https://youtu.be/Lo43GgXe1M	NASA's Incredible Discovery Machine The Story of the Hubble Space Telescope	Hubble's launch and deployment in April 1990 marked the most significant advance in astronomy since Galileo's telescope. Thanks to five servicing missions and more than 30 years of operation, our view of the universe and our place within it has never been the same. This documentary celebrates not only the scientific and technological achievements of this telescope, but also the human spirit that's helped to keep it up and operational for all these years. Along with its views on YouTube, this documentary has gone on to receive over 400,000 combined views across the Hubble Space Telescope's other social media platforms. For more information about the Hubble Space Telescope and its images, visit https://nasa.gov/hubble. Video credit: NASA's Goddard Space Flight Center Paul Morris: Lead Producer / Editor Bradley Hague: Associate Producer Elizabeth Wilks: Videographer / Interviewer Katrina Jackson: Videographer / Interviewer Johnny Holder: Videographer John Caldwell: Videographer Robert Andreoli: Videographer Additional Video Credits: Mary Estacion: Videographer / Interviewer	Transcript Link

2020 04 15 NASA Goddard <https://youtu.be/uF9dJJmdlgk> A Kid's Guide to Making Sunspot Cookies

The Sun is a star, made of trillions upon trillions of tons of ionized gas, called plasma. That's a little hard to make at home, so our version trades in helium and hydrogen for butter and sugar! For these cookies, we're using chocolate chips for sunspots, but what are the real ones made of? Sunspots are areas on the Sun where the solar magnetic field is particularly twisted up — this actually cools down the gas in these regions, making them appear dark to our eyes. Sunspots help scientists study the Sun's activity, too! The Sun goes through cycles of activity that last about 11 years. During periods of high activity, it often releases bursts of fast-moving particles, gigantic flashes of light, and billion-ton clouds of solar material that go speeding off into space! These events are less common during periods of low activity. All of these events are connected to the state of the Sun's magnetic field: when it's more tangled and twisted, there are more of these events — and that also means more sunspots. That means the Sun sometimes have lots of spots, and sometimes it has very few, or even none at all, and it's all related to how active the Sun is.

[Transcript](#)
[Link](#)

To make sunspot cookies, you'll need a sugar cookie recipe of your choice! One recipe, along with instructions for solar decoration, is available here: <https://spaceplace.nasa.gov/sunspot-cookies/en/>

For the cookie and icing recipe in this video, you'll need:

- ¼ cup butter
- ¼ cup sugar
- 1 egg

2020 04 15 NASA Goddard https://youtu.be/WxfQxDrX_vY View and Share Your Planet with Worldview

This Earth Day, learn how you can view and share your home planet with Worldview.

[Transcript](#)
[Link](#)

<https://worldview.earthdata.nasa.gov/>

Music credit: "Common Destiny" from Universal Production Music

Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio

Katy Mersmann (USRA): Lead Producer

Ryan Boller (NASA/GSFC): Image Processing

Jennifer Brennan (ADNET): Writer

Minnie Wong (SSAI): Image Processing

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2020 04 14	NASA Goddard	https://youtu.be/JQv2B0lwCQ0	NASA Models the Complex Chemistry of Earth's Atmosphere	Air pollution can appear as a gray or orange haze enveloping a city. What the naked eye can't see are the hundreds of chemical reactions taking place to produce that pollution. NASA science can reveal a more complete picture of atmospheric chemistry. A NASA visualization shows 96 chemical species that help form one common air pollutant — surface ozone. While ozone in the stratosphere is critical to maintaining life on earth, surface ozone is a toxic gas to most plant and animal species. This visualization uses the GEOS Composition Forecasting (GEOS-CF) computer model, which incorporates 240 chemical species and how they interact with each other and the weather through over 700 chemical reactions. All of these chemical reactions directly or indirectly impact the formation of ozone. Music credit: "Interconnecting Threads" by Axel Tenner [GEMA] and "Night Drift" by Andrew Michael Britton [PRS], David Stephen Goldsmith [PRS], from Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Lead Producer: Katie Jepson (USRA) Lead Visualizer: Greg Shirah (NASA/GSFC) Writer: Jarrett Cohen (GST) Writer: Esprit Smith (KBR) Scientist: Lesley Ott (NASA/GSFC) Scientist: Christoph A. Keller (USRA)	Transcript Link
2020 04 13	NASA Goddard	https://youtu.be/bsfITaEonIU	NASA Missions Study Shock Waves in Nova Explosion	Unprecedented observations of a nova outburst in 2018 by a trio of satellites, including NASA's Fermi and NuSTAR space telescopes, have captured the first direct evidence that most of the explosion's visible light arose from shock waves — abrupt changes of pressure and temperature formed in the explosion debris. A nova is a sudden, short-lived brightening of an otherwise inconspicuous star. It occurs when a stream of hydrogen from a companion star flows onto the surface of a white dwarf, a compact stellar cinder not much larger than Earth. The 2018 outburst originated from a star system later dubbed V906 Carinae, which lies about 13,000 light-years away in the constellation Carina. Over time — perhaps tens of thousands of years for a so-called classical nova like V906 Carinae — the white dwarf's deepening hydrogen layer reaches critical temperatures and pressures. It then erupts in a runaway reaction that blows off all of the accumulated material. Fermi detected its first nova in 2010 and has observed 14 to date. Gamma rays the highest-energy form of light require processes that accelerate subatomic particles to extreme energies, which happens in shock waves. When these particles interact with each other and with other matter, they produce gamma rays. Because the gamma rays appear at about the same time as a nova's peak in visible light, astronomers concluded that shock waves play a more fundamental role in the explosion and its aftermath.	Transcript Link

2020 04 06	NASA Goddard	https://youtu.be/AR1LeC77mzk	The Apollo 13 Booster Impact Experiment - with Newly-Discovered Audio	The story of Apollo 13 goes beyond a tale of survival. The mission also successfully completed a science investigation that is still helping to inform our understanding of the Moon to this day. Early in Apollo 13's voyage, Mission Control sent the spacecraft's empty S-IVB rocket booster on a collision course with the lunar surface, where a seismometer set up by the Apollo 12 mission would measure the tremors. This video highlights the beginning and end of that impact experiment, and shows how current data and imagery from NASA's Lunar Reconnaissance Orbiter mission helps us better interpret and analyze the results. This video not only contains archival footage captured by the crew of Apollo 13, but also newly-uncovered audio of a humorous exchange between astronauts Jim Lovell, Fred Haise, and Capcom Vance Brand at Mission Control. This booster impact experiment audio had been recorded and sent to the National Archives and Records Administration in 1970, but was unplayable at that facility due to differences in audio equipment, so it sat in storage. The only machine capable of playback is located at NASA's Johnson Space Center, but that equipment had been out of service for decades. In 2015 an effort funded by the National Science Foundation saw the equipment refurbished, and all 7,200 hours of Apollo 13 audio was digitized. This material was first made publicly available in early 2020 at ApolloInRealTime.org. Among this never-before-heard material we were able to find the conversation covered in this video.	Transcript Link
2020 03 31	NASA Goddard	https://youtu.be/xHTciBIEtmY	The James Webb Space Telescope's Folding Mirrors	Performed in early March, this most recent test involved commanding the spacecraft's internal systems to fully extend, and latch Webb's iconic 21 feet 4 inch (6.5 meter) primary mirror into the same configuration it will have when in space. Read more: https://www.nasa.gov/feature/goddard/2020/nasa-s-james-webb-space-telescope-full-mirror-deployment-a-success Video credit: NASA's Goddard Space Flight Center Sophia Roberts (AIMM): Producer Sophia Roberts (AIMM): Videographer Michael P. Menzel (AIMM): Videographer Sophia Roberts (AIMM): Video Editor Michael McClare (KBRwyle): Lead Videographer Bailee DesRocher (USRA): Animator This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13498 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix	Transcript Link

2020 03 31	NASA Goddard	https://youtu.be/WvnNa1j_bxA	Hubble Finds Evidence of Mid-Sized Black Hole	Astronomers have found the best evidence for a black hole of an elusive class known as “intermediate-mass,” which betrayed its existence by tearing apart a wayward star that passed too close. This exciting discovery opens the door to the possibility of many more lurking undetected in the dark, waiting to be given away by a star passing too close. Read more: https://www.nasa.gov/feature/goddard/2020/hubble-finds-best-evidence-for-elusive-mid-sized-black-hole For more information about the Hubble Space Telescope and its images, visit https://nasa.gov/hubble Music credit: “Struck by the Beauty” by Emmanuel David Lipszyc [SACEM], Sébastien Lipszyc [SACEM] and Thomas Bloch [SACEM]. Koka Media [SACEM] and Universal Production Music Video credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Aaron E. Lepsch (ADNET): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13576 See more Hubble videos on YouTube:	Transcript Link
2020 03 31	NASA Goddard	https://youtu.be/3IJOYhYibeQ	Global Maps of Dryness Help Prepare for Water Use Around Globe	Using measurements from two satellite missions assimilated into a computer model, researchers have created global maps of terrestrial water around the planet. In addition, they can forecast water availability in the United States up to three months out. Music credit: "Lines of Enquiry" from Universal Production Music Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathryn Mersmann (USRA): Lead Producer Ellen T. Gray (ADNET): Lead Writer Trent L. Schindler (USRA): Lead Visualizer Matthew Rodell (NASA/GSFC): Lead Scientist Aaron E. Lepsch (ADNET): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13574 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA’s Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard	Transcript Link

2020 03 30	NASA Goddard	https://youtu.be/XZ_WeTGCU9o	The Hubble Space Telescope 360° Tour	Pay a visit to the Hubble Space Telescope in its orbit above Earth's surface and take a tour of the technology behind Hubble's spectacular cosmic images. This 360 degree video points out Hubble's instruments, mirrors, and other major components, and explains their purpose.	Transcript Link

Credit:

Animation and Video Production:

Eric Anderson, Northrop Grumman Space Systems

Modeling:

Benjamin Gavares, Northrop Grumman Space Systems

Narration:

Scott Wiessinger (USRA)

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2020 03 27	NASA Goddard	https://youtu.be/5t_028zX_ig	'Photon Phriday' Digs Deep for Western U.S. SnowEx Campaign	Snow is vital for Earth's ecosystems and humans, from its temperature-regulating reflection of sunlight and insulating properties, to its life-sustaining water as it melts in the springtime. Snow provides freshwater for drinking, agriculture and hydropower for about 1 billion people worldwide. To dig deeper into snow, NASA and its partners have teamed up for SnowEx, a field campaign in the western United States that takes coordinated measurements on the ground and in the air to compare how well different instruments work in different conditions.	Transcript Link

One of the ways researchers are studying snow is by looking at its depth and how the different physical properties of snow affect the snow water equivalent (SWE), or the amount of liquid water in a snowpack. SnowEx researchers are also using ICESat-2 measurements to look at snow depth in some of the study regions to see how the data compares at larger scales.

Music credit: "Spectral Surfing," Universal Production Music

Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio

Ryan Fitzgibbons (USRA): Lead Producer

Tom Neumann (GSFC): Lead Scientist

Carrie Vuyovich (GSFC): Lead Scientist

This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific

2020 03 23	NASA Goddard	https://youtu.be/c2_nZx1pLhw	NASA Models Methane Sources, Movement Around Globe	NASA's new three-dimensional portrait of methane shows the world's second-largest contributor to greenhouse warming as it travels through the atmosphere. Combining multiple data sets from emissions inventories and simulations of wetlands into a high-resolution computer model, researchers now have an additional tool for understanding this complex gas and its role in Earth's carbon cycle, atmospheric composition and climate system. The new data visualization builds a fuller picture of the diversity of methane sources on the ground as well as the behavior of the gas as it moves through the atmosphere. Music credit: "Reported Missing" by Andrew Michael Britton [PRS] and David Stephen Goldsmith [PRS] Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Lead Producer: Katie Jepson (USRA) Lead Writer: Ellen T. Gray (ADNET) Lead Visualizer: Cindy Starr (GST) Scientist: Lesley Ott (NASA/GSFC) Scientist: Benjamin Poulter (NASA/GSFC) Scientist: Abhishek Chatterjee (USRA) Videographer: John Caldwell (AIMM) Visualizer: Trent L. Schindler (USRA)	Transcript Link
2020 03 16	NASA Goddard	https://youtu.be/wzz_jaVMpX8	Why Observe Land Cover	Nearly every aspect of our lives is fundamentally tied to the land on which we live. Citizens using GLOBE Observer can observe land cover in much greater detail and more frequently than scientists can using satellite data alone. But why do scientists use land cover observations from satellites, and why do they need help from citizen scientists? Find out the answer to these questions in Why Observe?: Land Cover and learn what is land cover and about the questions scientists are looking to answer. Learn more about GLOBE Observer at: observer.globe.gov Music credits: "Life Choices" - Instrumental (Full Length) Eric Chevalier [SACEM]; Koka Media/Universal Publishing Production Music; Universal Production Music "Evolution of Life" - Instrumental (Full Length) David Stephen Goldsmith [PRS]; Atmosphere; Universal Production Music "Time Ticking Away" - Instrumental (Full Length) Adam Paul Courtenay Burns [PRS] and Jez Burns [PRS]; Atmosphere; Universal Production Music "Shadow Lands" - Instrumental (Full Length) Anthoney Edwin Philips [PRS] and Samuel Karl Bohn [PRS]; Atmosphere; Universal Production Music "The Remaining Shadows" Mark Russell [PRS]; Atmosphere Ltd.; Universal Production Music	Transcript Link

2020 03 09	NASA Goddard	https://youtu.be/nfGJzjSGSM8	How OSIRIS-REx will Steer Itself to Sample an Asteroid	In late August, the OSIRIS-REx spacecraft will navigate to asteroid Bennu’s surface for its first sample collection attempt. To do this, it will use an onboard image software known as Natural Feature Tracking (NFT) — a form of optical navigation that is completely autonomous. NFT guides the spacecraft by comparing an onboard image catalog with the real-time navigation images it takes during descent, looking for specific landmarks on Bennu’s surface in order to orient itself. This navigation technique allows the spacecraft to accurately target small sites while dodging potential hazards. Music Credit: "Steppenwolf" from Universal Production Music. Credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Animator Lead Editor Krystofer Kim (USRA): Animator Kel Elkins (USRA): Visualizer Michael Moreau (NASA/GSFC): Scientist	Transcript Link
2020 03 06	NASA Goddard	https://youtu.be/daTUS0H6Nr8	How Does NASA Model Atmospheric Patterns	Better and faster computers have improved how we model and study Earth. More information is the other piece of the puzzle improving how we model and forecast our planet’s atmosphere. Since 1980, the 10th anniversary of Earth Day, the number of observing systems, which include satellites, weather balloons, and even instruments flown on commercial airlines, have dramatically increased — from 175,000 observations gathered over a six-hour period in 1980 to around 5 million observations in 2018. The Global Modeling and Assimilation Office (GMAO) at NASA's Goddard Space Flight Center in Greenbelt, Maryland, uses the Goddard Earth Observing System (GEOS) modeling and data assimilation system to produce estimates of Earth’s atmospheric state by combining short-term forecasts with observations from numerous observing systems. The GEOS modeling system helps us see Earth more clearly and better understand our atmosphere and how it changes. Music credit: “Favor” by Victor Maitre [SACEM], Universal Production Music Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Katie Jepson (USRA): Producer Will McCarty (NASA/GSFC): Scientist Will McCarty (NASA/GSFC): Animator	Transcript Link

2020 03 02	NASA Goddard	https://youtu.be/Erry315Awml	OSIRIS-REx Observes a Black Hole	University students and researchers working on a NASA mission orbiting a near-Earth asteroid have made an unexpected detection of a phenomenon 30,000 light-years away. Last fall, the student-built Regolith X-Ray Imaging Spectrometer (REXIS) aboard NASA's OSIRIS-REx spacecraft detected a newly flaring black hole in the constellation Columba while making observations off the limb of asteroid Bennu. The glowing object turned out to be a newly flaring black hole X-ray binary – discovered just a week earlier by Japan's MAXI telescope – designated MAXI J0637-430. Read more: https://www.nasa.gov/feature/goddard/2020/osiris-rex-students-catch-unexpected-glimpse-of-black-hole Music is "Castles and Cathedrals" from Universal Production Music. Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Narrator Brittany Enos (University of Arizona): Lead Writer John Caldwell (AIMM): Videographer	Transcript Link
2020 02 27	NASA Goddard	https://youtu.be/hFP3eqRgsus	Asteroid Bennu Selecting Site Nightingale	OSIRIS-REx is a NASA mission to explore near-Earth asteroid Bennu and return a sample to Earth. Prior to arriving at Bennu, mission planners had expected the asteroid's surface to consist largely of fine-grained material, like a sandy beach. When OSIRIS-REx arrived in December 2018, however, it was greeted by a rocky world covered with boulders. This unexpected roughness means that there are few places on Bennu where OSIRIS-REx can safely touch down and collect a sample. After a year of studying the asteroid, the mission announced a primary sample collection site, which they designated "Nightingale," along with a backup site called "Osprey." In August 2020, OSIRIS-REx will descend to Nightingale and attempt to collect up to four-and-a-half pounds of loose material, for return to Earth in 2023. Universal Production Music: "Extreme Measures" by John Sands and Marc Ferrari, "Ice Echoes" by Dominik Luke Marsden Johnson, "Look at the Mirror" by Jonathan Figoli Read more: https://www.nasa.gov/osiris-rex, https://www.asteroidmission.org/?latest-news=x-marks-the-spot-nasa-selects-site-for-asteroid-sample-collection Credit: NASA's Goddard Space Flight Center Data provided by NASA/University of Arizona/CSA/York	Transcript Link

2020 02 26	NASA Goddard	https://youtu.be/4rJdhiDTIq4	Time-Lapse of NASA's James Webb Space Telescope Assembly, Sunshield Deployment	This time-lapse video reveals NASA's James Webb Space Telescope is now a fully assembled observatory, and is accomplishing large-scale deployments and movements that it will perform while in space. In 2019, NASA's James Webb Space Telescope celebrated the full mechanical https://go.nasa.gov/2znr2JV and electrical assembly of the world's largest, most powerful space science observatory ever built. Meaning that Webb's two halves have been physically put together and its wiring harnesses and electrical interfaces have been connected. Following assembly, the Webb team moved on to successfully send deployment and tensioning commands to all five layers of its sunshield https://go.nasa.gov/2J9pfgM, which is designed to protect the observatory's mirrors and scientific instruments from light and heat, primarily from the Sun. Ensuring mission success for an observatory of this scale and complexity is a challenging endeavor. All of the telescope's major components have been tested individually through simulated environments they would encounter during launch, and while orbiting a million miles away from Earth. Now that Webb is fully assembled, it must meet rigorous observatory-level standards. The complete spacecraft reacts and performs differently to testing environments than when its components are tested individually.	Transcript Link
2020 02 25	NASA Goddard	https://youtu.be/GlwzLPytW9A	The Science of Dragonfly	Dragonfly is a NASA mission to explore the chemistry and habitability of Saturn's largest moon, Titan. The fourth mission in the New Frontiers line, Dragonfly will send an autonomously-operated rotorcraft to visit dozens of sites on Titan, investigating the moon's surface and shallow subsurface for organic molecules and possible biosignatures. To carry out its mission, Dragonfly is equipped with a neutron spectrometer, a drill system, and a mass spectrometer, allowing scientists to make a detailed survey of Titan's chemical makeup. Dragonfly is scheduled to launch in 2026 and arrive at Titan in 2034. Universal Production Music: "Clediss" by Thomas Stempfle and Tom Sue, "Downloading Landscapes" by Andrew Michael Britton and David Stephen Goldsmith Read more: https://solarsystem.nasa.gov/news/1184/why-is-nasa-sending-dragonfly-to-titan-here-are-five-reasons/ Credit: NASA's Goddard Space Flight Center/Johns Hopkins APL Dan Gallagher (USRA): Producer Narrator Writer Jonathan North (USRA): Lead Animator	Transcript Link

2020 02 24	NASA Goddard	https://youtu.be/Ilifg26TZrl	Apollo 13 Views of the Moon in 4K	This video uses data gathered from the Lunar Reconnaissance Orbiter spacecraft to recreate some of the stunning views of the Moon that the Apollo 13 astronauts saw on their perilous journey around the farside in 1970. These visualizations, in 4K resolution, depict many different views of the lunar surface, starting with earthset and sunrise and concluding with the time Apollo 13 reestablished radio contact with Mission Control. Also depicted is the path of the free return trajectory around the Moon, and a continuous view of the Moon throughout that path. All views have been sped up for timing purposes — they are not shown in "real-time." Credits: Data Visualization by: Ernie Wright (USRA) Video Produced & Edited by: David Ladd (USRA) Music provided by Universal Production Music: "Visions of Grandeur" - Frederick Wiedmann This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13537 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard	Transcript Link
2020 02 12	NASA Goddard	https://youtu.be/VGXRSReliUM	Landsat Farming Data From Space	NASA's fleet of satellites has been watching over Earth for more than half a century, collecting valuable data about the crops that make up our food supply and the water it takes to grow them. This wealth of information allows scientists to monitor farmland — tracking the overall food supply, where specific crops are grown, and how much water it takes to grow them with data from the Landsat satellites and others. And with that data, farmers can find new ways to grow more crops with less water. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey (USGS). Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. Music credit: "Lines of Enquiry" by Theo Golding [PRS], published by Atmosphere Music [PRS] available from Universal Production Music Credit: NASA's Goddard Space Flight Center Matthew R. Radcliff (USRA): Lead Producer Aaron E. Lepsch (ADNET): Technical Support Sofie L. Bates (Intern): Producer Jeffrey Masek (NASA/GSFC): Scientist Sofie L. Bates (Intern): Editor	Transcript Link

2020 02 11	NASA Goddard	https://youtu.be/NeZxJEYeM2g	SDO Celebrates a Decade of Watching Sun	Capturing an image in 10 different wavelengths of light every 12 seconds, NASA's Solar Dynamics Observatory — SDO — has provided an unprecedentedly clear picture of how massive explosions on the Sun grow and erupt ever since its launch on Feb. 11, 2010. The imagery is also captivating, allowing one to watch the constant ballet of solar material through the Sun's atmosphere, the corona. This year marks the 10th anniversary of SDO's launch and the start of its decade watching the Sun. Music: "Encompass" from Universal Production Music Credit: NASA's Goddard Space Flight Center Scott Wiessinger (USRA): Lead Producer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13524 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfsc	Transcript Link
2020 02 11	NASA Goddard	https://youtu.be/mvPHgDMarw	Highlights From SDO's 10 Years of Solar Observation	In February 2020, NASA's Solar Dynamics Observatory — SDO — is celebrating its 10th year in space. Over the past decade the spacecraft has kept a constant eye on the Sun, studying how the Sun creates solar activity and drives space weather — the dynamic conditions in space that impact the entire solar system, including Earth. Since its launch on Feb. 11, 2010, SDO has collected millions of scientific images of our nearest star, giving scientists new insights into its workings. SDO's measurements of the Sun — from the interior to the atmosphere, magnetic field, and energy output — have greatly contributed to our understanding of our closest star. SDO's images have also become iconic — if you've ever seen a close-up of activity on the Sun, it was likely from an SDO image. Read more: https://www.nasa.gov/feature/goddard/2020/ten-things-we-ve-learned-about-the-sun-from-nasa-s-sdo-this-decade Music: "Unseen Husband" from Universal Production Music Credit: NASA's Goddard Space Flight Center Scott Wiessinger (USRA): Lead Producer Mara Johnson-Groh (Wyle Information Systems): Science Writer Barb Mattson (University of Maryland College Park): Narrator This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13524	Transcript Link

2020 02 04 NASA Goddard <https://youtu.be/ZaDQRKd8ORg> Solar Orbiter Trailer

Solar Orbiter is the ESA/NASA collaboration soon to start its journey to the Sun. Solar Orbiter has uniquely tilted orbit that will enable it to capture the first images of the Sun's North and South poles and tackle major solar mysteries with its comprehensive suite of ten different instruments.

Music: Find Her by Yuri Sazonoff
Animation by ESA/ATG Medialab

Read more: <https://www.nasa.gov/feature/goddard/2020/how-esa-nasa-solar-orbiter-beats-the-heat-shield-sun>

Credit: NASA's Goddard Space Flight Center
Genna Duberstein (ADNET): Lead Producer
Maria-Jose Vinas Garcia (Telophase): Translator
Aaron E. Lepsch (ADNET): Technical Support
Scott Wiessinger (USRA): Technical Support

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2020 02 03 NASA Goddard <https://youtu.be/Y6RBFhjinV4> MAVEN Explores Mars to Understand Radio Interference at Earth

NASA's MAVEN (Mars Atmosphere and Volatile Evolution) spacecraft has discovered "layers" and "rifts" in the electrically charged part of the upper atmosphere (the ionosphere) of Mars. The phenomenon is very common at Earth and causes unpredictable disruptions to radio communications. However, we do not fully understand them because they form at altitudes that are very difficult to explore at Earth. The unexpected discovery by MAVEN shows that Mars is a unique laboratory to explore and better understand this highly disruptive phenomenon.

Read more: <https://www.nasa.gov/press-release/goddard/2020/mars-layers-and-rifts/>

Music from Universal Production Music. Songs include: "Alpha and Omega," "Break the News" and "Waiting for a Sensation"

Video credit: NASA's Goddard Space Flight Center

James Tralie (ADNET):
Lead Producer
Lead Editor
Narrator

Bailee DesRocher (USRA):
Lead Animator

Michael Lentz (USRA):

[Transcript](#)
[Link](#)

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2020 01 29	NASA Goddard	https://youtu.be/Jh_chDc_HCE	GLOBE Observer's Basic Mosquito Habitat Mapper Getting Started	In many parts of the world, mosquitoes are more than just a summertime nuisance. Their ability to carry and spread disease to humans causes millions of deaths every year, according to the World Health Organization. Using the GLOBE Observer Mosquito Habitat Mapper, citizen scientists will be able to augment broad scale satellite-based research with targeted ground-based observations at a high level of granularity. Learn how to use GLOBE Observer to take Mosquito Habitat Mapper observations in your own community! Submit your own observations, even if larvae are not found in the mosquito habitat. Learn more: https://observer.globe.gov/do-globe-observer/mosquitoes Music credit: "Underwater Lights" from Universal Production Music Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Liz Wilk (USRA): Lead Producer Heather Mortimer (SSAI): Production Assistant Holli Riebeek Kohl (SSAI): Support Mark Branch(NASA/GSFC): Talent Rusty Low (IGES): Science Advisor Aaron E. Lepsch (ADNET): Technical Support	Transcript Link
2020 01 27	NASA Goddard	https://youtu.be/eDDhPeCI5Po	New Mission Will Take First Peek at Sun's Poles	This video is public domain and along with other supporting A new spacecraft is journeying to the Sun to snap the first pictures of the Sun's north and south poles. Solar Orbiter, a collaboration between ESA (the European Space Agency) and NASA will have its first opportunity to launch from Cape Canaveral on Feb. 7, 2020, at 11:15 p.m. EST. Launching on a United Launch Alliance Atlas V rocket, the spacecraft will use Venus' and Earth's gravity to swing itself out of the ecliptic plane — the swath of space, roughly aligned with the Sun's equator, where all planets orbit. From there, Solar Orbiter's bird's eye view will give it the first-ever look at the Sun's poles. Read more: https://www.nasa.gov/feature/goddard/2020/new-mission-will-take-first-peek-at-sun-s-poles Music credits: "Oxide" and "Virtual Tidings" by Andrew Michael Britton [PRS], David Stephen Goldsmith [PRS]; "Progressive Practice" by Emmanuel David Lipszc [SACEM], Franck Lascombes [SACEM], Sebastien Lipszyc [SACEM]; "Political Spectrum" by Laurent Dury [SACEM] from Universal Production Music. Credit: NASA's Goddard Space Flight Center Holly Gilbert (NASA/GSFC): Scientist Teresa Nieves-Chinchilla (Catholic University of America): Scientist Chris St. Cyr (NASA/GSFC): Scientist Joy Ng (USRA): Producer Tom Bridgman (GST): Data Visualizer	Transcript Link

2020 01 25 NASA Goddard <https://youtu.be/T0pdoFYKp5E> Happy Lunar New Year From Hubble Hubble welcomes the Year of the Rat with a view of its own favorite rodents, NGC 4676A and B, and highlights the planetary origins of the Chinese zodiac's 12-year timetable. [Transcript Link](#)

For more information about the Hubble Space Telescope and its images, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center
Bradley Hague (GSFC Interns): Lead Producer

Music Credits:
"Milky Way Travel" by July Turret [SACEM]. Koka Media [SACEM], and Universal Production Music.

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2020 01 24 NASA Goddard <https://youtu.be/VzyfvE6zEow> Earth Climate Models Bring Exoplanet To Life In a generic brick building on the northwestern edge of NASA's Goddard Space Flight Center campus in Greenbelt, Maryland, thousands of computers packed in racks the size of vending machines hum in a deafening chorus of data crunching. Day and night, they spit out five quadrillion calculations per second. Known collectively as the Discover supercomputer, these machines are tasked with running sophisticated climate models to predict Earth's future climate. [Transcript Link](#)

But now, they're also sussing out something much farther away: whether any of the more than 4,000 curiously weird planets beyond our solar system — or exoplanets — discovered in the past two decades could have the ingredients necessary to support life.

Read more: <https://www.nasa.gov/feature/goddard/2020/how-earth-climate-models-help-scientists-picture-life-on-unimaginable-worlds>

Music: "Machine Learning" by Jon Cotton and Ben Niblett; "No Wave" by Julien Vignon; "The Missing Star" by Matthew Charles Gilbert Davidson; all from Universal Production Music

Credit: NASA's Goddard Space Flight Center
LK Ward (USRA): Lead Producer
Claire Andreoli (NASA/GSFC): Lead Public Affairs Officer
Lonnie Shekhtman (ADNET): Lead Writer
Alex Kekesi (GST): Lead Visualizer

2020 01 21	NASA Goddard	https://youtu.be/LWJ-ZAbeAas	Science on Thin Ice	ICESat-2 Deputy Project Scientist Nathan Kurtz recounts his time on the initial leg of the MOSAiC Arctic expedition. MOSAiC is the Multidisciplinary drifting Observatory for the Study of Arctic Climate. Music: "Crystalline," "Simple Truths," "Afterlife," "Echoes on Echoes," Universal Production Music. Complete transcript available.	Transcript Link
				Spearheaded by the Alfred-Wegener-Institute, MOSAiC is the Multidisciplinary drifting Observatory for the Study of Arctic Climate.	
				This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13525	
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2020 01 15	NASA Goddard	https://youtu.be/10H2ILuXiO8	2019 Was the 2nd-Hottest Year on Record	Earth's global surface temperatures in 2019 ranked second-warmest since 1880, according to independent analyses by NASA and the National Oceanic and Atmospheric Administration (NOAA). Global temperatures in 2019 were 2 degrees Fahrenheit (1.1 degrees Celsius) warmer than the late 19th century, according to scientists at NASA's Goddard Institute for Space Studies (GISS) in New York. 2019's temperatures were second only to those of 2016 and continued the planet's long-term warming trend: the five warmest years on the instrumental record have been the five last years. Read more: https://www.nasa.gov/press-release/nasa-noaa-analyses-reveal-2019-second-warmest-year-on-record Music credit: "Avalanches" from Universal Production Music Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathryn Mersmann (USRA): Lead Producer Maria-Jose Viñas (Telophase): Lead Writer Lori Perkins (NASA/GSFC): Lead Visualizer Gavin A. Schmidt (NASA/GSFC GISS): Lead Scientist Aaron E. Lepsch (ADNET): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific	Transcript Link

2020 01 15	NASA Goddard	https://youtu.be/6VqG3Jazrfs	An Introduction to the James Webb Space Telescope Mission	A look at the James Webb Space Telescope, its mission and the incredible technological challenge this mission presents. Credit: NASA's Goddard Space Flight Center Michael McClare (KBRwyle): Lead Producer Michael McClare (KBRwyle): Lead Writer Adriana Manrique Gutierrez (USRA): Animator Jonathan North (USRA): Animator Walt Feimer (KBRwyle): Animator Michael Lentz (USRA): Animator Bailee DesRocher (USRA): Animator Michael McClare (KBRwyle): Lead Editor Michael McClare (KBRwyle): Lead Videographer Kristen Carney (Self): Narrator This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13367 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2020 01 14	NASA Goddard	https://youtu.be/ZByrKV4tamY	NASA's IMPACTS Campaign Seeks to Decode East Coast Winter Storms	This winter, NASA is sending a team of scientists, a host of ground instruments, and two research aircraft to study the inner workings of snow storms. The Investigation of Microphysics Precipitation for Atlantic Coast-Threatening Snowstorms, or IMPACTS, field campaign will be the first comprehensive study of East Coast snowstorms in 30 years. Music credit: "Snowfall" by Andy Blythe [PRS], Marten Joustra [PRS], "Snow Blanket" by Benjamin James Parsons [PRS] from Universal Production Music Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Katie Jepson (USRA): Lead Producer, Narrator Ellen T. Gray (ADNET): Lead Writer Jacquelyn DeMink (USRA): Lead Animator Kathryn Mersmann (USRA): Project Support LK Ward (USRA): Project Support Aaron E. Lepsch (ADNET): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13519 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link

2020 01 13	NASA Goddard	https://youtu.be/57aLfX3ZX2I	Lucy Mission Overview Journey to Explore the Trojan Asteroids	Launching in late 2021, Lucy will be the first space mission to explore the Trojan asteroids. These are a population of small bodies that are left over from the formation of the solar system. They lead or follow Jupiter in their orbit around the Sun, and may tell us about the origins of organic materials on Earth. Lucy will fly by and carry out remote sensing on six different Trojan asteroids and will study surface geology, surface color and composition, asteroid interiors/bulk properties, and will look at the satellites and rings of the Trojans. Learn more about the Lucy mission: https://www.nasa.gov/lucy Music: "Life Choices" by Universal Production Music Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Aaron E. Lepsch (ADNET): Technical Support Kel Elkins (USRA): Lead Data Visualizer	Transcript Link
2020 01 07	NASA Goddard	https://youtu.be/wNOrDVfVL0g	NASA's 5 Newest Earth Expeditions Ready for Takeoff	NASA is sending five airborne campaigns across the United States in 2020 to investigate fundamental processes that ultimately impact human lives and the environment, from snowstorms along the East Coast to ocean eddies off the coast of San Francisco. Music credit: "Speed Jazz," "Spirit of Africa" and "Snowfall Instrumental" from Universal Production Music Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathryn Mersmann (USRA): Lead Producer Jacquelyn DeMink (USRA): Lead Animator Samson K. Reiny (Wyle Information Systems): Lead Writer Ellen T. Gray (ADNET): Producer Aaron E. Lepsch (ADNET): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13515 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix	Transcript Link

2020 01 07 NASA Goddard <https://youtu.be/QU0qsIGS6MQ> TESS Mission's First Earth-size World in Star's Habitable-zone

NASA's Transiting Exoplanet Survey Satellite (TESS) has discovered its first Earth-size planet in its star's habitable zone, the range of distances where conditions may be just right to allow the presence of liquid water on the surface. Scientists confirmed the find, called TOI 700 d, using NASA's Spitzer Space Telescope and have modeled the planet's potential environments to help inform future observations.

[Transcript Link](#)

TOI 700 is a small, cool M dwarf star located just over 100 light-years away in the southern constellation Dorado. It's roughly 40 of the Sun's mass and size and about half its surface temperature. The star appears in 11 of the 13 sectors TESS observed during the mission's first year, and scientists caught multiple transits by its three planets.

The innermost planet, called TOI 700 b, is almost exactly Earth-size, is probably rocky and completes an orbit every 10 days. The middle planet, TOI 700 c, is 2.6 times larger than Earth -- between the sizes of Earth and Neptune -- orbits every 16 days and is likely a gas-dominated world. TOI 700 d, the outermost known planet in the system and the only one in the habitable zone, measures 20 larger than Earth, orbits every 37 days and receives from its star 86% of the energy that the Sun provides to Earth. All of the planets are thought to be tidally locked to their star, which means they rotate once per orbit so that one side is constantly bathed in daylight.

2020 01 07 NASA Goddard <https://youtu.be/8FrIhrtVEW8> TESS Satellite Discovered Its 1st World Orbiting 2 Stars

The Spitzer data increased scientists' confidence that TOI 700 d is a Researcher working with data from NASA's Transiting Exoplanet Survey Satellite (TESS) have discovered the mission's first circumbinary planet, a world orbiting two stars. The planet, called TOI 1338b, is around 6.9 times larger than Earth, or between the sizes of Neptune and Saturn. It lies in a system 1,300 light-years away in the constellation Pictor.

[Transcript Link](#)

The stars in the system make an eclipsing binary, which occurs when the stellar companions circle each other in our plane of view. One is about 10% more massive than our Sun, while the other is cooler, dimmer and only one-third the Sun's mass.

TOI 1338b's transits are irregular, between every 93 and 95 days, and vary in depth and duration thanks to the orbital motion of its stars. TESS only sees the transits crossing the larger star — the transits of the smaller star are too faint to detect. Although the planet transits irregularly, its orbit is stable for at least the next 10 million years. The orbit's angle to us, however, changes enough that the planet transit will cease after November 2023 and resume eight years later.

Read more: <https://www.nasa.gov/feature/goddard/2020/nasa-s-tess-mission-uncovers-its-1st-world-with-two-stars>

Music: "Albatross" from Universal Production Music.

Video credit: NASA's Goddard Space Flight Center

2020 01 05	NASA Goddard	https://youtu.be/Cvf72tJihPY	Simulated Image Shows the Power of NASA's WFIRST	NASA's Wide Field Infrared Survey Telescope, WFIRST, will capture the equivalent of 100 high-resolution Hubble images in a single shot, imaging large areas of the sky 1,000 times faster than Hubble. In several months, WFIRST could survey as much of the sky in near-infrared light—in just as much detail—as Hubble has over its entire three decades. Although WFIRST has not yet opened its wide, keen eyes on the universe, astronomers are already running simulations to demonstrate what it will be able to see and plan their observations. This simulated image of a portion of our neighboring galaxy Andromeda (M31) provides a preview of the vast expanse and fine detail that can be covered with just a single pointing of WFIRST. Using information gleaned from hundreds of Hubble observations, the simulated image covers a swath roughly 34,000 light-years across, showcasing the red and infrared light of more than 50 million individual stars detectable with WFIRST. While it may appear to be a somewhat haphazard arrangement of 18 separate images, the simulation actually represents a single shot. Eighteen square detectors, 16-megapixels each, make up WFIRST's Wide Field Instrument (WFI) and give the telescope its unique window into space. With each pointing, WFIRST will cover an area roughly 1½ times that of the full Moon. By comparison, each individual infrared Hubble	Transcript Link
2019 12 23	NASA Goddard	https://youtu.be/7AFMj66tNfw	The Best Gift of All A Box of Moon Soil	Astrochemist Jamie Elsila, at NASA's Goddard Space Flight Center in Greenbelt, Maryland, unwraps pristine Moon soil. Apollo 17 astronauts collected it in 1972 by driving tubes down to 10.6 inches (27 centimeters) below the Moon's surface and pulling out soil that they vacuum-sealed inside the tube right on the Moon. That tube had never been opened ... until recently. Read more: https://www.nasa.gov/feature/goddard/2019/the-best-holiday-gift-of-all-50-year-old-moon-soil In this video, Elsila and her colleague, Goddard planetary scientist Danielle Simkus, are preparing 2 grams of Moon soil, which is called regolith, for analysis in their lab, the Astrobiology Analytical Laboratory. Besides Moon soil, the scientists are also preparing lab-made Earth soil that will serve as a control in their experiments, helping increase the reliability of the results. The soils are first crushed with a mortar and pestle and transferred to glass capsules. Then, scientists add water, flame-seal the capsules, and cook them in a special oven to extract organic compounds. Over the next few months, they will study the extracted compounds to shed light on the primordial chemistry of the solar system. Music: "Fairy Christmas" from Universal Production Music Video credit: NASA's Goddard Space Flight Center	Transcript Link

2019 12 19	NASA Goddard	https://youtu.be/BInimiulZQk	NASA's Fermi Finds Vast 'Halo' Around Nearby Pulsar	A new study of observations from NASA's Fermi Gamma-ray Space Telescope has discovered a faint but sprawling glow around a nearby pulsar. If visible to the human eye, this gamma-ray "halo" would appear larger in the sky than the famed Big Dipper star pattern. Read more: https://www.nasa.gov/feature/goddard/2019/nasa-s-fermi-mission-links-nearby-pulsar-s-gamma-ray-halo-to-antimatter-puzzle/ The halo suggests this same pulsar could be responsible for a decade-long puzzle about one type of cosmic particle arriving from beyond the solar system that is unusually abundant near Earth — positrons, the antimatter version of electrons. A neutron star is the crushed core left behind when a star much more massive than the Sun runs out of fuel, collapses under its own weight and explodes as a supernova. We see some neutron stars as pulsars, rapidly spinning objects emitting beams of radio waves, light, X-rays and gamma rays that, much like a lighthouse, regularly sweep across our line of sight from Earth. Geminga (pronounced geh-MING-a) is among the brightest pulsars at gamma-ray energies. To study its halo, scientists had to subtract out all other sources of gamma rays, including diffuse light produced by cosmic ray	Transcript Link
2019 12 19	NASA Goddard	https://youtu.be/ciqItotMJIM	How Hubble's Servicing Mission 3A Saved the Day	After Hubble's important gyroscopes began to fail, a Hubble emergency was declared and Servicing Mission 3 was quickly split into two separate launches. So on Dec. 19, 1999, the brave crew of space shuttle Discovery lifted off to switch out the broken gyros and get Hubble working again. The mission was an incredible success, and thanks to everyone involved with SM3A, the Hubble Space Telescope was able to do science once again and open the world to the mysteries of the universe. For more information, visit https://nasa.gov/hubble Video Credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Music Credits: "Run to the Hills" by Magnum Opus [ASCAP], Atmosphere Music Ltd. [PRS], Universal Production Music "Crystalised Fortune" by Paul Leonard Morgan [PRS], Universal Production Music "History in Motion" by Fred Dubois [SACEM], Koka Media [SACEM], Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13508	Transcript Link

2019 12 18	NASA Goddard	https://youtu.be/vFLpSVIOcTI	Master Plan Envision Goddard, Modernizing for the Future.	We are modernizing Goddard Space Flight Center (GSFC) and its six sites for the future. A comprehensive Facilities Master Plan is an essential element in developing a blueprint for the future of our Center. Goddard recognizes the importance of fostering a work environment that is enjoyable, rewarding and aligned with meeting the challenges of tomorrow. The Master Plan will develop the infrastructure to support our business goals and missions, inform future investment decisions and respond to the growth and diversity of our mission and customer requirements. Its content will be informed by site visits, stakeholder interviews and workshops at all campuses, starting at the Greenbelt campus. This will be followed by similar efforts at the Columbia Scientific Balloon Facility in Texas, White Sands Complex in New Mexico, Wallops Flight Facility in Virginia, Goddard Institute for Space Studies in New York, and Katherine Johnson Independent Verification & Validation Facility in West Virginia. Goddard's master plan process is scheduled to continue through 2021. Credits: NASA's Goddard Space Flight Center Swarupa Nune (InuTeq): Lead Producer Rob Andreoli (AIMM): Lead Videographer John Caldwell (AIMM): Lead Videographer Swarupa Nune (InuTeq): Lead Editor	Transcript Link
2019 12 17	NASA Goddard	https://youtu.be/dGAHJXLbKA	A New Kind of Explosion on the Sun	Scientists have just seen a new type of magnetic explosion, known as forced or controlled magnetic reconnection. Read more: https://www.nasa.gov/feature/goddard/2019/nasa-sdo-sees-new-kind-of-magnetic-explosion-on-sun Music credit: Light Hearted Angst by Dewey Dellay Video credit: NASA's Goddard Space Flight Center Genna Duberstein (USRA): Producer Mara Johnson-Groh (Wyle Information Systems): Lead Writer Tom Bridgman (GST): Data Visualizer Chris Smith (USRA): Narrator Aaron E. Lepsch (ADNET): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13422 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard	Transcript Link

2019 12 13	NASA Goddard	https://youtu.be/p-UaJsfkQsQ	Moon Phases 2020 - Northern Hemisphere - 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2020, as viewed from the Northern Hemisphere. Each frame represents one hour. In addition, this visualization shows the moon's orbit position, sub-Earth and subsolar points, and distance from the Earth at true scale. Craters near the terminator are labeled, as are Apollo landing sites, maria, and other albedo features in sunlight. Credits: Data visualization by Ernie Wright (USRA) Producer & Editor - David Ladd (USRA) Music: "Calling It a Night" - Written by Matt Cusson. Vocal and Piano by Matt Cusson. 23 Jump Shots ASCAP. copyright2017 This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/4768 Credit: NASA's Goddard Space Flight Center/David Ladd If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard	Transcript Link
2019 12 13	NASA Goddard	https://youtu.be/AUprhMBRZ7Q	Moon Phases 2020 - Southern Hemisphere - 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2020, as viewed from the Southern Hemisphere. Each frame represents one hour. In addition, this visualization shows the moon's orbit position, sub-Earth and subsolar points, and distance from the Earth at true scale. Craters near the terminator are labeled, as are Apollo landing sites, maria, and other albedo features in sunlight. Credits: Data visualization by Ernie Wright (USRA) Producer & Editor - David Ladd (USRA) Music Provided By: Universal Production Music - "Weightless" Composers: Erica Driscoll [BMI], Wally Gagel [ASCAP], Xandy Barry [ASCAP] Publishers: Killer Tracks [BMI], Open Note [ASCAP] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/4769 Credit: NASA's Goddard Space Flight Center/David Ladd If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center	Transcript Link

2019 12 13 NASA Goddard <https://youtu.be/pW08bPTEUus> Asteroid Bennu Sample Site Nightingale

The main science goal of NASA's OSIRIS-REx mission is to briefly touch down on near-Earth asteroid Bennu and collect a sample of fine-grained material, but the asteroid's unexpected roughness could pose a hazard to the spacecraft. After a year of scoping out Bennu's boulder-scattered surface, the OSIRIS-REx team has officially selected a sample collection site. The team concluded that a site designated "Nightingale" – located in a crater high in Bennu's northern hemisphere – is the best spot for the OSIRIS-REx spacecraft to snag its sample.

[Transcript](#)
[Link](#)

Nightingale's regolith – or rocky surface material – is dark, and images show that the crater is relatively smooth. Because it is located so far north, temperatures in the region are lower than elsewhere on the asteroid and the surface material is well-preserved. The crater also is thought to be relatively young, and the regolith is freshly exposed. This means that the site would likely allow for a pristine sample of the asteroid, giving the team insight into Bennu's history. OSIRIS-REx will collect its sample of Bennu in mid-2020, and return it to Earth in late 2023.

Learn more about sample site Nightingale:

<https://www.nasa.gov/press-release/x-marks-the-spot-nasa-selects-site-for-asteroid-sample-collection>

Learn more about OSIRIS-REx: <https://www.nasa.gov/osiris-rex>

Credit: NASA/Goddard/University of Arizona/CSA/York

2019 12 12 NASA Goddard <https://youtu.be/wjxOhCeb9bl> Mars Wind Currents Reveal a Surprising Feature

MAVEN is the first spacecraft specifically designed to study the Mars upper atmosphere, in order to better understand the evolution of its climate. By measuring windspeed and direction near the top of the atmosphere, MAVEN has discovered that high-altitude wind currents are being disturbed by terrain features far below. This unexpected and surprising finding means that MAVEN can sense the presence of mountains and valleys on the surface of Mars while skimming the edge of space.

[Transcript](#)
[Link](#)

Universal Production Music: "Glacial Shifts" by James Joshua Otto

Credit: NASA/Goddard/MAVEN/CU Boulder/University of Michigan

Dan Gallagher (USRA): Producer

Greg Shirah (NASA/GSFC): Lead Data Visualizer

Jonathan North (USRA): Lead Animator

Ernie Wright (USRA): Visualizer

Horace Mitchell (NASA/GSFC): Visualizer

Michael Lentz (USRA): Animator

Walt Feimer (KBRwyle): Animator

Chris Smith (USRA): Animator

John Blackwell (LPI): Animator

Dan Gallagher (USRA): Narrator

Michael Lentz (USRA): Art Director

Mehdi Benna (UMBC): Lead Scientist

Kali Roeten (UM): Scientist

Paul Mahaffy (NASA/GSFC): Support

Bruce Jakosky (LASP): Principal Investigator

2019 12 12	NASA Goddard	https://youtu.be/zukBXehGHas	NASA's NICER Reveals 1st-ever Pulsar Surface Map	Scientists have reached a new frontier in our understanding of pulsars, the dense, whirling remains of exploded stars, thanks to observations from NASA's Neutron star Interior Composition Explorer (NICER). Data from this X-ray telescope aboard the International Space Station has produced the first precise and dependable measurements of both a pulsar's size and its mass. The pulsar in question, J0030+0451 (J0030 for short), is a solitary pulsar that lies 1,100 light-years away in the constellation Pisces. While measuring the pulsar's heft and proportions, NICER revealed that the shapes and locations of million-degree hot spots on the pulsar's surface are much stranger than generally thought. Using NICER observations from July 2017 to December 2018, two groups of scientists mapped J0030's hot spots using independent methods and converged on nearly identical results for its mass and size. One team, led by researchers at the University of Amsterdam, determined the pulsar is around 1.3 times the Sun's mass, 15.8 miles (25.4 kilometers) across and has two hot spots — one small and circular, the other long and crescent-shaped. A second team found J0030 is about 1.4 times the Sun's mass, about 16.2 miles (26 kilometers) wide and has two or three oval-shaped hot spots. All spots in all models are in the pulsar's southern hemisphere — unlike textbook images where the spots lie on opposite sides other at each magnetic poles. Read more: https://www.nasa.gov/feature/goddard/2019/nasa-s-	Transcript Link
2019 12 11	NASA Goddard	https://youtu.be/c4CNJx7FRM	NASA's Operation IceBridge Completes 11 Years of Polar Surveys	For 11 years from 2009 to 2019, the planes of NASA's Operation IceBridge flew above the Arctic, Antarctic and Alaska, gathering data on the height, depth, thickness, flow and change of sea ice, glaciers and ice sheets. As the team and planes move on to their next assignments, the scientists and engineers reflected on a decade of IceBridge's most significant accomplishments. Music credit: "Foraging At Dusk" by Benjamin James Parsons [PRS] "Orchestra Groove" by James Alexander Dorman [PRS] "Watching Ladybirds" by Benjamin James Parsons [PRS] "Nanofiber" by Andrew Michael Britton [PRS], David Stephen Goldsmith [PRS] Video credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Lead Producer: Katie Jepson (USRA) Technical Support: Aaron E. Lepsch (ADNET) Lead Writer: Jessica Merzdorf (Telophase) Lead Videographer: Jefferson Beck (USRA) Videographer: Kate Ramsayer (Telophase) Lead Project Scientist: Joe MacGregor (NASA/GSFC) Lead Deputy Project Scientists: Linette Boisvert, Brooke Medley (NASA/GSFC) Project Manager: Eugenia De Marco (ATA Aerospace) Scientist: John Sonntag (EGG) Animators: Greg Shirah (NASA/GSFC), Cindy Starr (GST), Megan ...	Transcript Link

2019 12 10	NASA Goddard	https://youtu.be/rPsBs6EUFy0	How NASA Studies The Space Near Earth	NASA studies the space around our home planet, a region we call geospace. It might appear empty, but geospace is bustling with electrically charged particles and magnetic fields -- all of which can impact the technology and satellites we have flying through it. NASA uses specialized tools to study changing conditions in geospace, known as space weather. Each examines geospace in its own way. Together, they help us visualize, and better understand, the invisible processes shaping the space that is closest to home. Music credit: "Inner Strength" by Brava [SGAE], Dsilence [SGAE], Input [SGAE], Output [SGAE] from Killer Tracks This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13503 Credit: NASA's Goddard Space Flight Center/Joy Ng If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC · Flickr http://www.flickr.com/photos/gsfcr	Transcript Link
2019 12 10	NASA Goddard	https://youtu.be/JMFLWTcBsi8	XMM-Newton Celebrates 20 Years in Space	Scientists reflect on XMM-Newton's 20th anniversary. The mission, led by ESA (European Space Agency), has dramatically improved our understanding of the cosmos thanks to detailed X-ray observations. NASA funded two of its three instruments, including the Optical/UV Monitor Telescope, which made XMM-Newton one of the first multiwavelength observatories in space. Read more: https://www.nasa.gov/feature/goddard/2019/x-ray-satellite-xmm-newton-celebrates-20-years-in-space Music: "Passionate Research" and "Wondrous Planet" both from Universal Production Music Credit: NASA's Goddard Space Flight Center Scott Wiessinger (USRA): Lead Producer Jeanette Kazmierczak (University of Maryland College Park): Science Writer Kim Weaver (NASA/GSFC): Scientist Chris Smith (USRA): Animator This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13199 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link

2019 12 10 NASA Goddard <https://youtu.be/4qJf3wmps3Y> OSIRIS-REx Sample Site Selection Trailer

On Sept. 8, 2016, from Cape Canaveral, Florida, OSIRIS-REx began its journey -- the most ambitious sample collection mission since the Apollo Program. Now, with just months to go before sample collection on asteroid Bennu, the team has narrowed its target down to four potential sites: Osprey, Kingfisher, Nightingale and Sandpiper. Tune in to [nasa.gov/live](https://www.nasa.gov/live) on Thursday, Dec. 12 at 1 p.m. EST/10 a.m. PST to see the final sample site selection announcement.

[Transcript](#)
[Link](#)

Music credit: "Oceana" from Universal Production Music

This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: <https://svs.gsfc.nasa.gov/13429>

Video credit: NASA's Goddard Space Flight Center

James Tralie (ADNET):

Lead Producer

Lead Editor

Animator

Narrator

Aaron E. Lepsch (ADNET):

Technical Support

Michael Lentz (USRA):

2019 12 09 NASA Goddard https://youtu.be/E4Zc_KuXMkA 48 Years of Alaska's Glaciers

New time-lapse videos of Earth's glaciers and ice sheets as seen from space -- spanning nearly 50 years -- are providing scientists with new insights into how the planet's frozen regions are changing.

[Transcript](#)
[Link](#)

Using images from the NASA-USGS Landsat program dating back to 1972 and continuing through 2019, glaciologist Mark Fahnestock of the University of Alaska Fairbanks, has stitched together six-second time-lapses of every glacier in Alaska and the Yukon. The videos clearly illustrate what's happening to Alaska's glaciers in a warming climate. Some show surges that pause for a few years, or lakes forming where ice used to be, or even the debris from landslides making its way to the sea. Other glaciers show patterns that give scientists hints of what drives glacier changes.

Read more: <https://www.nasa.gov/feature/goddard/2019/ice-in-motion-satellites-capture-decades-of-change>

Music credits: Inducing Waves, composer Ben Niblett [PRS] Jon Cotton [PRS]; Critical Pathway, composer Rik Carter [PRS]; Emerging Discovery, composer Rik Carter [PRS], all published by Atmosphere Music Ltd [PRS].

Credit: NASA's Goddard Space Flight Center

Time-lapse videos courtesy of Mark Fahnestock, Geophysical Institute, University of Alaska Fairbanks

Matthew R. Radcliff (USRA): Producer

Kate Ramsayer (Telophase): Writer

2019 12 04	NASA Goddard	https://youtu.be/ReQAUocScw0	5 New Discoveries from NASA's Parker Solar Probe	NASA's Parker Solar Probe mission has returned unprecedented data from near the Sun, culminating in new discoveries published on Dec. 4, 2019, in the journal Nature. Among the findings are new understandings of how the Sun's constant outflow of material, the solar wind, behaves. Seen near Earth -- where it can interact with our planet's natural magnetic field and cause space weather effects that interfere with technology -- the solar wind appears to be a relatively uniform flow of plasma. But Parker Solar Probe's observations reveal a complicated, active system not seen from Earth. Music Credit: Smooth as Glass by The Freeharmonic Orchestra Read more: https://www.nasa.gov/feature/goddard/2019/nasas-parker-solar-probe-sheds-new-light-on-the-sun/ Video Credit: NASA's Goddard Space Flight Center Karen Fox (ADNET): Writer Sarah Frazier (ADNET): Writer Genna Duberstein (USRA): Producer Genna Duberstein (USRA): Editor Chris Smith (USRA): Narrator Adriana Manrique Gutierrez (USRA): Animator Jonathan North (USRA): Animator Scott Wiessinger (USRA): Animator Adam Szabo (NASA/GSFC): Scientist Russ Howard (NRL): Scientist	Transcript Link
2019 12 02	NASA Goddard	https://youtu.be/rhBaNTEzNHg	Surprises from Asteroid Bennu	The OSIRIS-REx team has already pushed the boundaries of scientific exploration -- going from ground-based radar images from Arecibo in Puerto Rico all the way to orbiting a few hundred meters from asteroid Bennu. The team is mere months away from a sample collection attempt at the asteroid surface. Before this attempt, we take a look back at some of the major achievements, surprises and challenges of sampling an asteroid with OSIRIS-REx. Learn more: https://www.nasa.gov/osiris-rex Music: "Growing Idea" from Universal Production Music Credits: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer Lead Editor Animator Narrator Aaron E. Lepsch (ADNET): Technical Support Michael Lentz (USRA): Animator Lisa Poje (USRA):	Transcript Link

2019 11 29 NASA Goddard https://youtu.be/26ilf0jO_ZM 5 Things Black Holes

Black holes are one of the most mysterious objects in the universe. © Here are five things to know!

[Transcript Link](#)

Have questions about black holes on #BlackFriday? 🗨️ Leave your questions in the comments below! Join NASA Goddard scientists later today from 1 to 3 p.m. EDT for a #BlackHoleFriday Q&A.

Music credit: Dramedy Percs and Pizz from Universal Music Production

Credit: NASA's Goddard Space Flight Center
Producer: Haley Reed
Producer: Madison Arnold
Scientist: Regina Caputo
Videographer: Paul Morris
Animation: Bailee DesRocher
Public Affairs: Claire Andreoli

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Follow NASA's Goddard Space Flight Center
· Instagram <http://www.instagram.com/nasagoddard>

2019 11 27 NASA Goddard <https://youtu.be/vOAuMkprG7k> NASA Satellites Keep Watch on U.S. Food Supply

Since 2008, the USDA's National Agricultural Statistics Service, or NASS, has drawn on Landsat data to monitor dozens of crops in the lower 48 states as part of NASS's Cropland Data Layer program. The Cropland Data layer uses Landsat and similar sensors to identify what crop is growing where in the country. Separately, NASS uses NASA's Moderate Resolution Imaging Spectroradiometer (MODIS) instruments aboard the Aqua and Terra satellites to monitor daily vegetation health and growth stage, all indicators of crop yield.

[Transcript Link](#)

Music: "Downloading Landscapes" by Andrew Michael Britton [PRS] and David Stephen Goldsmith [PRS]. Published by Atmosphere Music Ltd [PRS].

Video Credit: NASA's Goddard Space Flight Center. Data from the USDA National Agricultural Statistics Service Cropland Data Layer.
Matthew R. Radcliff (USRA): Lead Producer
Kel Elkins (USRA): Animator
Horace Mitchell (NASA/GSFC): Animator
Jessica Merzdorf (Telophase): Writer
Rani Gran (NASA/GSFC): Writer
Jefferson Beck (USRA): Narrator

This video is public domain and can be downloaded from NASA Goddard's Scientific Visualization Studio at: <https://svs.gsfc.nasa.gov/13417>

If you liked this video, subscribe to the NASA Goddard YouTube

2019 11 19 NASA Goddard <https://youtu.be/hx8JSqTtA7s> The Apollo 12 Landing Site

This video showcases the Apollo 12 landing site, visualized in three dimensions using photography and a stereo digital elevation model from the Lunar Reconnaissance Orbiter Camera. The locations of the flag shadow, experiment package, astronaut paths, and the Surveyor 3 spacecraft are marked. This visualization uses LROC NAC image M175428601 (40 cm per pixel) and a digital terrain model derived from NAC stereo image pairs (2 meters per pixel) to fly over the Apollo 12 landing site. Because the Lunar Module in the NAC image looks oddly flat when viewed at an oblique angle, a 3D model of the descent stage was added.

[Transcript Link](#)

Credits:

Data Visualization by: Ernie Wright (USRA)

Video Produced and Edited by: David Ladd (USRA)

Scientist: Noah Petro

Music provided by Universal Production Music: "The Return" - Axel Tenner, Michael Sch luecker, Raphael Schalz.

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/4767>

Credit: NASA's Goddard Space Flight Center/David Ladd

If you liked this video, subscribe to the NASA Goddard YouTube channel: <http://www.youtube.com/NASAEplorer>

2019 11 19 NASA Goddard <https://youtu.be/SyttX8x1OUk> NASA's James Webb Space Telescope Clears Critical Sunshield Deployment Testing

In October 2019, technicians and engineers successfully performed a critical test on NASA's James Webb Space Telescope by fully deploying and properly tensioning each of its five uniquely sized sunshield layers, putting them into the same positions they will have in space. To observe distant parts of the universe humans have never seen before, the Webb observatory is equipped with an arsenal of revolutionary technologies, making it the most sophisticated and complex space science telescope ever created. Among the most challenging of these technologies is the five-layer sunshield, designed to protect the observatory's mirrors and scientific instruments from light and heat, primarily from the Sun. Due to the telescope's size, shape and thermal performance requirements, the sunshield must be both big and complex. As if that's not challenging enough, it also must be very lightweight, fit inside a standard 5-meter (16-foot) diameter rocket fairing, survive the perils of launch, and accurately deploy into its required shape, with only a single chance to get it right. Following Webb's successful sunshield test within Northrop Grumman's Redondo Beach, California facility, team members have begun the long process of perfectly folding the sunshield back into its stowed configuration for flight, which occupies a drastically smaller volume than when it is fully deployed.

[Transcript Link](#)

Read more: <https://www.nasa.gov/feature/goddard/2019/nasa-s-james-webb-space-telescope-clears-critical-sunshield-deployment-testing>

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2019 11 18	NASA Goddard	https://youtu.be/CQeVHg4aA0s	How LISA Pathfinder Detected Dozens of 'Comet Crumbs'	LISA Pathfinder, a mission led by ESA (the European Space Agency) that included NASA contributions, successfully demonstrated technologies needed to build a future space-based gravitational wave observatory, a tool for detecting ripples in space-time produced by, among other things, merging black holes. A team of NASA scientists leveraged LISA Pathfinder's record-setting sensitivity for a different purpose much closer to home — mapping microscopic dust shed by comets and asteroids. Most of these particles, known as micrometeroids, have masses measured in micrograms, similar to a small grain of sand. But at speeds reaching 40,000 mph (64,000 kph), even micrometeoroids pack a punch. The NASA team, led by Ira Thorpe at NASA's Goddard Space Flight Center in Greenbelt, Maryland, detected 54 impacts during the mission, which lasted from 2015 to 2017. Modeling the strikes allowed the researchers to determine what kinds of objects shed the dust. The findings are broadly consistent with existing ideas of what generates micrometeroids found near Earth. The dusty culprits are mostly short-period comets whose orbits are determined by Jupiter. Comets with longer periods, like Halley's comet, also contributed dust that LISA Pathfinder sensed. The new measurements could help refine dust models used by researchers in a variety of studies, from understanding the physics of planet formation to estimating impact risks for current and	Transcript Link
2019 11 18	NASA Goddard	https://youtu.be/AEyOoZ7JpyY	Water Vapor Plumes on Europa	What makes Jupiter's moon Europa so alluring is the possibility that it may possess all the ingredients necessary for life. Scientists have evidence that one of these ingredients, liquid water, is present under the icy surface and may sometimes erupt into space in huge geysers. However, no one has been able to confirm the presence of water in these plumes by direct measurement of the water molecule itself. Now, an international research team led out of NASA's Goddard Space Flight Center in Greenbelt, Maryland has detected the water vapor for the first time above Europa's surface. The team measured the vapor by peering at Europa through one of the world's biggest telescopes in Hawaii. Confirming that water vapor is present above Europa helps scientists better understand the inner workings of the moon. Science Paper: https://www.nature.com/articles/s41550-019-0933-6 Read more: https://www.nasa.gov/feature/goddard/2019/nasa-scientists-confirm-water-vapor-on-europa Video Credits: Produced and Edited by: David Ladd (USRA/NASA's Goddard Space Flight Center) Animations by: NASA's Conceptual Image Lab - Michael Lentz (USRA), Walt Feimer (KBRwyle), Bailee DesRocher (USRA) & NASA's Jet Propulsion Laboratory Lead Scientist: Lucas Paganini	Transcript Link

2019 11 14	NASA Goddard	https://youtu.be/bSt5peITUBo	Launching Rockets Through the Leak in Earth's Atmosphere	NASA scientists are seeking a strange breed of northern lights in the Arctic. When these auroras shine, Earth's atmosphere leaks into space. Read more from our blog from Ny-Ålesund - the closest town to the North Pole: https://blogs.nasa.gov/sunspot/2019/11/14/a-shot-in-the-dark-part-i/ In the tiny Arctic town of Ny-Ålesund, where polar bears outnumber people, winter means three months without sunlight. NASA scientists traveled to Ny-Ålesund to launch rockets through these auroras and witness oxygen particles right in the middle of their escape. Piercing these fleeting auroras, some 300 miles high, would require strategy, patience — and a fair bit of luck. This was NASA's VISIONS-2 mission, and this is their story. VISIONS-2 was just the first of many. Over the coming months, rocket teams from all over the world will launch rockets into this region as part of the Grand Challenge Initiative—Cusp, an international collaboration to study the mysteries of the polar atmosphere. You can also listen to the story here: https://soundcloud.com/nasa/a-shot-in-the-dark-chasing-the-aurora-from-the-worlds-northernmost-rocket-range	Transcript Link
2019 11 11	NASA Goddard	https://youtu.be/0yNzSwlnQ2Q	Mercury Transit 2019 - 4K	Starting around approximately 1200 - 1808 UTC (7:00 am - 1:38pm ET) November 11, 2019, NASA's Solar Dynamics Observatory watched as Mercury move across the Sun. The Solar Dynamics Observatory views the Sun in a variety of wavelengths of light in the extreme ultraviolet. Music Credit: Frosted Lace by Matthew Charles Gilbert Davidson This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13425 Credit: NASA's Goddard Space Flight Center/Genna Duberstein If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC · Flickr http://www.flickr.com/photos/gsfcc	Transcript Link

2019 11 07	NASA Goddard	https://youtu.be/1FkoWncpMYg	NICER Catches Milestone X-ray Burst	A thermonuclear blast on a pulsar called J1808 resulted in the brightest burst of X-rays seen to date by NASA's Neutron star Interior Composition Explorer (NICER) telescope. The explosion, which occurred on a pulsar known as J1808 on Aug. 20, 2019, released as much energy in 20 seconds as our Sun does in almost 10 days. Watch to see how scientists think this incredible explosion occurred. Credit: NASA's Goddard Space Flight Center Read more: https://www.nasa.gov/feature/goddard/2019/nasas-nicer-catches-record-setting-x-ray-burst Credit: NASA's Goddard Space Flight Center Chris Smith (USRA): Lead Producer Francis Reddy (University of Maryland College Park): Lead Science Writer Chris Smith (USRA): Lead Animator Walt Feimer (KBRwyle): Animator This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13419 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer	Transcript Link
2019 11 05	NASA Goddard	https://youtu.be/P3KeyBr4go4	Dive Into TESS's Southern Sky Panorama	The glow of the Milky Way -- our galaxy seen edgewise -- arcs across a sea of stars in a new mosaic of the southern sky produced from a year of observations by NASA's Transiting Exoplanet Survey Satellite (TESS). Constructed from 208 TESS images taken during the mission's first year of science operations, completed on July 18, the southern panorama reveals both the beauty of the cosmic landscape and the reach of TESS's cameras. Within this scene, TESS has discovered 29 exoplanets, or worlds beyond our solar system, and more than 1,000 candidate planets astronomers are now investigating. TESS divided the southern sky into 13 sectors and imaged each one of them for nearly a month using four cameras, which carry a total of 16 charge-coupled devices (CCDs). Remarkably, the TESS cameras capture a full sector of the sky every 30 minutes as part of its search for exoplanet transits. Transits occur when a planet passes in front of its host star from our perspective, briefly and regularly dimming its light. During the satellite's first year of operations, each of its CCDs captured 15,347 30-minute science images. These images are just a part of more than 20 terabytes of southern sky data TESS has returned, comparable to streaming nearly 6,000 high-definition movies. In addition to its planet discoveries, TESS has imaged a comet in our solar system, followed the progress of numerous stellar explosions called supernovae, and even caught the flare from a star ripped	Transcript Link

2019 10 30	NASA Goddard	https://youtu.be/ovlTDwobM6I	Sustaining Women in STEM	In an era when the workplace is shifting toward the promise of innovation and creativity for future generations, diversity must be a critical component of success. Nowhere is this more vital than in STEM fields, where women are still underrepresented. Goddard deputy director Christyl Johnson envisions the tech that will shape NASA's missions of the future. She's passionate about creating inclusive work environments that promote innovation and is part of the Sustaining Women in STEM roundtable. The theme of this year's event is "Making the Shift," highlighting the cultural shifts that can help organizations prepare for the future. You can watch the event live on Nov. 7 and find the recording afterwards here: https://livestream.com/viewnow/sustainingwomeninstem Credit: NASA's Goddard Space Flight Center Courtney A. Lee (ADNET): Lead Producer Sara Blumberg (InuTeq): Lead Designer Swarupa Nune (InuTeq): Videographer Rob Andreoli (AIMM): Videographer John Caldwell (AIMM): Videographer Aaron E. Lepsch (ADNET): Technical Support Music credits: "A New Hope" instrumental, David Panades Garcia	Transcript Link
2019 10 28	NASA Goddard	https://youtu.be/p0Mhf3TCklc	Hubble's Scary New Halloween Image	This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13412 NASA's Hubble Space Telescope has unveiled a spooky new image staring out from the depths of the cosmos. The new image reveals the twin galaxies AM 2026-424 — a pair of interacting galaxies that may foreshadow our Milky Way's own frightening fate. For more information, visit https://nasa.gov/hubble. https://www.nasa.gov/image-feature/goddard/2019/menacing-looking-face-formed-by-titanic-smashup-between-two-galaxies Credit: NASA's Goddard Space Flight Center Bradley A. Hague (USRA): Producer / Editor Music Credits: "Bad and Spooky" by Brett Engel [ASCAP], Universal Production Music "Scream Dreams" by Matthew Harris [PRS], Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13412 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN Follow NASA's Hubble Space Telescope:	Transcript Link

2019 10 28	NASA Goddard	https://youtu.be/X57ebvnxwQ	The Mysterious Planet	By studying this mysterious planet, scientists could learn a great deal more about exoplanets, as well as the past, present, and possible future of our own. This video unveils this world and calls on current and future scientists to explore its many features. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13339 Credits: NASA's Goddard Space Flight Center/David Ladd Produced and Edited by: David Ladd (USRA) Animations by: Mike Mirandi & Michael Lentz (USRA/NASA's Conceptual Image Lab) Lead Scientist: Giada Arney Music provided by Killer Tracks: "The Power of Pride" - Matthew St Laurent If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC · Flickr http://www.flickr.com/photos/gsfcr	Transcript Link
2019 10 22	NASA Goddard	https://youtu.be/nnjbvf12pfU	Unusual Winds Drive a Small 2019 Ozone Hole	Every year, NASA and NOAA track the hole in the ozone layer over Antarctica as it grows to its annual winter maximum. This year, the hole was smaller than expected, due to an unusual weather pattern in the stratosphere. Music credit: "Life Choices" from Killer Tracks Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathryn Mersmann (USRA): Lead Producer Ellen T. Gray (ADNET): Lead Writer Eric Nash (SSAI): Visualizer Paul Newman (NASA/GSFC): Scientist Susan Strahan (USRA): Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13349 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard	Transcript Link

2019 10 21	NASA Goddard	https://youtu.be/4ZHCwSaBzd8	Fossils of Planet Formation Lucy Mission Teaser	Beyond the asteroid belt are "fossils of planet formation" known as the Trojan asteroids. These primitive bodies share Jupiter's orbit in two vast swarms, and may hold clues to the formation and evolution of our solar system. Now, NASA is preparing to explore the Trojan asteroids for the first time. A mission called Lucy will launch in 2021 and visit seven asteroids over the course of twelve years - one in the main belt and six in Jupiter's Trojan swarms. Lucy is named for the famous hominid fossil that shed light on our early human ancestors; by making the first exploration of the Trojan asteroids, the Lucy mission will improve our understanding of the early solar system, and be the first to uncover these fossils of planet formation. Learn more about the Lucy mission: https://www.nasa.gov/lucy Universal Production Music: Canyon of Dreams This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13352 Credit: NASA's Goddard Space Flight Center/Dan Gallagher If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link
2019 10 17	NASA Goddard	https://youtu.be/AsE7Cpy0rhc	NASA's New View of the Daily Cycle of Rain	The most detailed view of our daily weather has been created using NASA's newest extended precipitation record known as the Integrated Multi-satellitE Retrievals for GPM, or IMERG analysis. The IMERG analysis combines almost 20 years of rain and snow data from the Tropical Rainfall Measuring Mission (TRMM) and the joint NASA-JAXA Global Precipitation Measurement mission (GPM). The daily cycle of weather, also known as the diurnal cycle, shapes how and when our weather develops and is fundamental to regulating our climate. Music Credits: "Battle For Our Future" and "Wonderful Orbit" by Tom Furse Fairfax Cowan [PRS], "Transitions" by Ben Niblett [PRS] and Jon Cotton [PRS], "Emerging Discovery" by "Rik Carter [PRS] from Killer Tracks This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13348 Credit: NASA's Goddard Space Flight Center/Joy Ng If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center	Transcript Link

2019 10 16	NASA Goddard	https://youtu.be/qNlRQgACTFg	NASA Remasters Nearly 20 Years of Global Rain	NASA has just released its newest and most comprehensive estimate of rain and snow covering nearly 20 years. Version 6 of NASA's IMERG -- the Integrated Multi-satellitE Retrievals for Global Precipitation Measurement (GPM) -- combines information from a constellation of satellites are operating in Earth orbit, at a given time, to estimate precipitation over the majority of the Earth's surface. This algorithm is particularly valuable over the majority of the Earth's surface that lacks precipitation-measuring instruments on the ground. What is new in Version 6 IMERG is that the algorithm can now fuse the early precipitation estimates collected in 2000-2014 during the operation of the TRMM satellite with more recent precipitation estimates collected during operation of the GPM satellite. The longer the record, the more valuable it is, as researchers and application developers will attest. TRMM and GPM are two satellites specially designed to provide the most reliable space-based estimates of precipitation, and both satellites are joint missions between NASA and the Japan Aerospace Exploration Agency (JAXA). Music: "Synchronicity," "The Ocean and the Moon," "Cloud Surfing," Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13345 Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons	Transcript Link
2019 10 16	NASA Goddard	https://youtu.be/JG9x6tkf8mg	Hubble's New Image of Interstellar Object	NASA's Hubble Space Telescope has given astronomers their best look yet at an interstellar visitor – Comet 2I/Borisov – whose speed and trajectory indicates it is from outside of our solar system. This Hubble image, taken on Oct. 12, is the sharpest ever view of the comet. Hubble reveals a central concentration of dust around the solid icy nucleus. For more information, visit: https://nasa.gov/hubble Credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Music Credits: "Solar Pilgrims" by Francois Vey [SACEM] Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13341 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN Follow NASA's Hubble Space Telescope: · Facebook: https://www.facebook.com/NASAHubble · Twitter: https://twitter.com/NASAHubble	Transcript Link

2019 10 12	NASA Goddard	https://youtu.be/OXkxQbZEn5E	Who Works At NASA What It Means To Be a NASA Employee	Paula Cain, Joy Ng and Geronimo Villanueva tell the story of how life led them to NASA and share what qualities make a great NASA employee. Paula Cain is a thermal blanket technician at NASA's Goddard Space Flight Center. She builds custom thermal blankets that protect satellites in space. Joy Ng is a multimedia producer at NASA's Goddard Space Flight Center. She tells stories about NASA's Earth and heliophysics research. Geronimo Villanueva is a planetary scientist at NASA's Goddard Space Flight Center who specializes in the search for organic molecules on Mars and on icy bodies. Credits: NASA's Goddard Space Flight Center Harrison Bach (Intern): Lead Producer Courtney A. Lee (ADNET): Producer Paula Cain (Sierra Lobo): Talent Joy Ng (USRA): Talent Geronimo Villanueva (Catholic University of America): Talent Aaron E. Lepsch (ADNET): Technical Support Music Credit: Brett Engel, "All Over The City"; Regis Ceccarellie and Laurent Vernerey, "Ready Set Play"; Franck Fossey, "Home Makeover Challenge"; Laurent Dury, "Chambord Exploration"	Transcript Link
2019 10 10	NASA Goddard	https://youtu.be/SXi0AOMI33E	How The Visually Impaired Experience Hubble Images	The Hubble Space Telescope is well known for its incredible images. But what of those among us who are visually impaired? To help spread awareness as a part of World Sight Day, this video is meant to share the importance of different ways to share Hubble's astounding images. The book "Touch the Universe" by Noreen Grice features some of Hubble's most well-known photographs; but all of these photos were specially made to include everyone. For more information, visit https://nasa.gov/hubble Credit: NASA's Goddard Space Flight Center Rebecca Roth (InuTeq): Lead Producer Courtney Lee (ADNET): Lead Producer Paul R. Morris (USRA): Producer / Editor Rob Andreoli (AIMM): Videographer John Caldwell (AIMM): Videographer Bradley Hague (USRA): Videographer Music Credits: "Hercules" by Christian Ort [GEMA], Matthew Tasa [GEMA], Meyer Anthony [GEMA], Siulapwa Cisha [BMI]; Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13340	Transcript Link

2019 10 09	NASA Goddard	https://youtu.be/a0hyeOH9TiE	Landmark Achieved as NASA's Webb Telescope Comes Together	The most powerful and complex space science telescope ever created by humankind is one step closer to launch. As seen in a new video, NASA's James Webb Space Telescope recently reached a key milestone after its two halves were mechanically and electronically connected at Northrop Grumman's facilities in Redondo Beach, California. "This short video represents a culmination of over 15 years of work by thousands of engineers, scientists, technicians, and support personnel from the U.S., Canada, and Europe, all striving to achieve the same goal...to understand the beginning of things, how we humans got here, and if we are alone. Our journey on terra firma is not done. We have about another year of testing to go before we are ready to launch this beautiful observatory, but that cannot diminish the awesomeness of what this achievement represents," said John Durning, Deputy Project Manager for the James Webb Space Telescope Mission, at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Prior to assembly, all of Webb's major components were tested individually throughout a wide network of NASA, and its partner's facilities to simulate the varied environments they are expected to encounter during launch, and while in orbit one million miles away from Earth. Now that Webb is a fully assembled observatory, it will go through additional environmental and deployment testing to ensure mission success. Following a successful assembly, testing teams have electrically connected the various interfaces,	Transcript Link
2019 10 03	NASA Goddard	https://youtu.be/NGTa-Xi3Jz8	NASA Has All Eyes on Sea Ice	In April, instruments aboard NASA's Operation IceBridge airborne campaign and the Ice, Cloud and Land Elevation Satellite-2 succeeded in measuring the same Arctic sea ice at the same time, a tricky feat given the shifting sea ice. Scientists have now analyzed airborne and spaceborne height measurements, and found that the two datasets match almost exactly, demonstrating how precisely ICESat-2 can measure the heights of the sea ice's bumpy, cracked surface. Music: "Coveted Jewels," Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13330 Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC · Flickr http://www.flickr.com/photos/gsfcc	Transcript Link

2019 09 30	NASA Goddard	https://youtu.be/AYz38iNVxs	International Observe the Moon Night Trailer	International Observe the Moon Night is a worldwide celebration of lunar science and exploration, celestial observation, and our cultural and personal connections to the Moon. One day each year, everyone on Earth is invited to observe, learn about, and celebrate the Moon together. You can participate by attending or hosting an International Observe the Moon Night event, or by registering as a lunar observer. Connect with fellow lunar enthusiasts around the world through our Facebook page, #ObserveTheMoon on your preferred social media platform, and the International Observe the Moon Night Flickr group: https://www.flickr.com/groups/observethemoon2019/ This event occurs in September or October, when the Moon is around first quarter – a great phase for evening observing. Furthermore, the best lunar observing is typically along the Moon's terminator (the line between night and day) where shadows are the longest, rather than at full Moon. International Observe the Moon Night is sponsored by NASA's Lunar Reconnaissance Orbiter mission and the Solar System Exploration Division at NASA's Goddard Space Flight Center, with many contributing partners. Music: Cristal Delight from Universal Production Music Video credit: NASA's Goddard Space Flight Center James Tralie (ADNET): Lead Producer	Transcript Link
2019 09 27	NASA Goddard	https://youtu.be/D2_w38e-o_g	OLI-2 Ships From Ball Aerospace	The Landsat 9 instrument that will help scientists detect deforestation, monitor crops and track potentially toxic algal blooms, among many other uses, is now built, tested, and in place to be assembled onto the spacecraft. The Operational Land Imager 2, or OLI-2, will detect visible and infrared light from Earth's surface, providing data on our changing planet. OLI-2 was built and tested at Ball Aerospace in Boulder, Colorado. On Sept. 18, 2019, it was trucked from Boulder to the Northrop Grumman facility in Gilbert, Arizona, arriving the next day. Engineers at Northrop Grumman assemble and test the complete Landsat 9 spacecraft with OLI-2 and another instrument, the Thermal Infrared Sensor 2, or TIRS-2, which was built at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Landsat, a partnership between NASA and the U.S. Geological Survey, is a series of satellites that began with Landsat 1 in 1972. Music: Bit Streaming, composed by David Edwards [ASCAP], published by Soundcast Music [SESAC] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13329 Credit: NASA's Goddard Space Flight Center/Matthew Radcliff	Transcript Link

2019 09 25	NASA Goddard	https://youtu.be/85tdoDt1Qh0	TESS Catches its First Star-destroying Black Hole	For the first time, NASA's planet-hunting Transiting Exoplanet Survey Satellite (TESS) watched a black hole tear apart a star from start to finish, a cataclysmic phenomenon called a tidal disruption event. The blast, named ASASSN-19bt, was found on Jan. 29 by the All-Sky Automated Survey for Supernovae (ASAS-SN), a worldwide network of 20 robotic telescopes. Shortly after the discovery, ASAS-SN requested follow-up observations by NASA's Swift satellite, ESA's (European Space Agency's) XMM-Newton and ground-based 1-meter telescopes in the global Las Cumbres Observatory network. The disruption occurred in TESS's continuous viewing zone, which is always in sight of one of the satellite's four cameras. This allowed astronomers to view the explosion from beginning to end. This video shows images of a tidal disruption event called ASASSN-19bt taken by NASA's Transiting Exoplanet Survey Satellite (TESS) and Swift missions, along with an animation illustrating how it unfolded. Because ASASSN-19bt occurred in the TESS continuous viewing zone, the satellite observed the full duration of the event. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13237 Read more: https://www.nasa.gov/feature/goddard/2019/nasa-s-telescope-watches-black-hole-tear-apart-star	Transcript Link
2019 09 24	NASA Goddard	https://youtu.be/nUU1oCGo09A	WFIRST's Coronagraph Instrument	When a new NASA space telescope opens its eyes in the mid 2020s, it will peer at the universe through some of the most sophisticated sunglasses ever designed. This multi-layered technology, the coronagraph instrument, might more rightly be called "starglasses": a system of masks, prisms, detectors and even self-flexing mirrors built to block out the glare from distant stars -- and reveal the planets in orbit around them. Normally, that glare is overwhelming, blotting out any chance of seeing orbiting planets. The star's photons -- particles of light -- swamp those from the planet when they hit the telescope. WFIRST's coronagraph just completed a major milestone: a preliminary design review by NASA. The instrument has met all design, schedule and budget requirements, and can now proceed to the next phase, building hardware for flight. The WFIRST mission's coronagraph is meant to demonstrate the power of increasingly advanced technology. As it captures light directly from large, gaseous exoplanets, and from disks of dust and gas surrounding other stars, it will point the way to the future: single pixel "images" of rocky planets the size of Earth. Then the light can be spread into a rainbow spectrum, revealing which gases are present in the planet's atmosphere -- perhaps oxygen, methane, carbon dioxide, and maybe even signs of life.	Transcript Link

2019 09 23	NASA Goddard	https://youtu.be/2XKYdSgf2ss	Arctic Sea Ice Reaches 2019 Minimum Extent	Arctic sea ice likely reached its 2019 minimum extent of 1.60 million square miles (4.15 million square kilometers) on Sept. 18, tied for second lowest summertime extent in the satellite record, according to NASA and the National Snow and Ice Data Center. The Arctic sea ice cap is an expanse of frozen seawater floating on top of the Arctic Ocean and neighboring seas. Every year, it expands and thickens during the fall and winter and grows smaller and thinner during the spring and summer. But in the past decades, increasing temperatures have caused marked decreases in the Arctic sea ice extents in all seasons, with particularly rapid reductions in the minimum end-of-summer ice extent. The shrinking of the Arctic sea ice cover can ultimately affect local ecosystems, global weather patterns, and the circulation of the oceans. Credits: Lead Producer: Katie Jepson (USRA) Technical Support: Aaron E. Lepsch (ADNET) Scientists: Nathan T. Kurtz (NASA/GSFC) Walt Meier (NASA/GSFC)	Transcript Link
2019 09 23	NASA Goddard	https://youtu.be/aMTwtb3TVIk	NASA's Guide To Black Hole Safety	Have you ever thought about visiting a black hole? We sure hope not. However, if you're absolutely convinced that a black hole is your ideal vacation spot, watch this video before you blast off to learn more about them and (more importantly) how to stay safe. You can also click the link below to download a handy safety brochure, watch short clips to learn different things about black holes, and even get some short glimpses into the lives of black holes and the explorers that want to visit them. Hope you enjoy your trip, and please...stay safe out there. Download the video, brochure, and more here: https://svs.gsfc.nasa.gov/13322 Credit: NASA's Goddard Space Flight Center Chris Smith (USRA): Lead Producer Chris Smith (USRA): Lead Animator Chris Smith (USRA): Lead Writer Travis C. Fischer (USRA): Lead Scientist Jeanette Kazmierczak (University of Maryland College Park): Lead Science Writer If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard	Transcript Link

2019 09 17	NASA Goddard	https://youtu.be/hJMsgRnb1JU	Apollo Moon Soil Radiation Experiment	When a stream of charged particles known as the solar wind careens into the Moon's surface at nearly 280 miles per second (450 kilometers per second), it enriches it in ingredients that could make water. Planetary scientists Jason McLain and William Farrell use an ion gun at NASA's Goddard Space Flight Center to shoot simulated solar wind at Moon soil collected by astronauts during the Apollo program. They are testing how this process works at the Moon and the chemical signatures it leaves behind. Music Credits: "Gateway Identified" from Universal Production Music. James Tralie (ADNET): Lead Producer Lead Videographer Lead Video Editor Lonnie Shekhtman (ADNET): Producer Writer Jason McLain (University of Maryland, College Park): Scientist William Farrell (NASA/GSFC): Scientist	Transcript Link
2019 09 16	NASA Goddard	https://youtu.be/t3MWfuaDAgc	ICESat-2 Celebrates One Year for Photon Phriday	Photon Phriday is a weekly look at what ICESat-2 is measuring as it orbits the Earth. ICESat-2 Project Scientist Tom Neumann takes a look back at some recent passes in celebration of the first year on orbit for the mission. Follow @NASA_ICE for new Photon Phridays and results from NASA's ice-observing missions. Gilbert, Arizona Music: "Neon Rider," "Palm Tree City," Universal Production Music. Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13301 Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC · Flickr http://www.flickr.com/photos/gsfcc	Transcript Link

2019 09 13	NASA Goddard	https://youtu.be/wnSVBLXaoO8	Unraveling the Mysteries of Dark Energy with NASA's WFIRST	Scientists have discovered that a mysterious pressure dubbed "dark energy" makes up about 68 percent of the total energy content of the cosmos, but so far we don't know much more about it. Exploring the nature of dark energy is one of the primary reasons NASA is building the Wide Field Infrared Survey Telescope (WFIRST), a space telescope whose measurements will help illuminate the dark energy puzzle. With a better understanding of dark energy, we will have a better sense of the past and future evolution of the universe. Astronomers have measured the rate of of the universe's expansion by using ground-based telescopes to study relatively nearby supernova explosions. The mystery escalated in 1998 when Hubble Space Telescope observations of more distant supernovae helped show that the universe actually expand ed more slowly in the past than it does today. The expansion of the universe is not slowing down due to gravity, as everyone thought. It's speeding up. While we still don't know what exactly is causing the acceleration, it has been given a name -- dark energy. This mysterious pressure remained undiscovered for so long because it is so weak that gravity overpowers it on the scale of humans, planets and even the galaxy. It is only on an intergalactic scale that dark energy becomes noticeable, acting like a sort of weak opposition to gravity. What exactly is dark energy? More is unknown than known, but theorists are chasing down a couple of possible explanations.	Transcript Link
2019 09 12	NASA Goddard	https://youtu.be/Abtghj3AWWc	Hubble's Brand New Image of Saturn	This new Hubble Space Telescope view of Saturn, taken in late June of 2019, reveals the giant planet's iconic rings. Saturn's amber colors come from summer smog-like hazes, produced in photochemical reactions driven by solar ultraviolet radiation. Below the haze lie clouds of ammonia ice crystals, as well as deeper, unseen lower-level clouds of ammonium hydrosulfide and water. The planet's banded structure is caused by winds and clouds at different altitudes. Hubble's Wide Field Camera 3 observed Saturn on June 20, 2019, as the planet made its closest approach to Earth, at about 845 million miles away. For more information, visit https://go.nasa.gov/30eSrbH Credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Music credits: "Momentum" by Guillaume Bernard [SACEM]; Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13307 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN	Transcript Link

2019 09 11	NASA Goddard	https://youtu.be/amOdtYv5G4E	Hubble Finds Water Vapor On Distant Exoplanet	With data from the Hubble Space Telescope, water vapor has been detected in the atmosphere of an exoplanet within the habitable zone of its host star. K2-18b, which is eight times the mass of Earth, is the only planet orbiting a star outside the solar system (or “exoplanet”) within the habitable zone. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Music credits: "Only Human" by Guillaume Bernard [SACEM]; Universal Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13312 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN Follow NASA's Hubble Space Telescope: · Facebook: https://www.facebook.com/NASAHubble · Twitter: https://twitter.com/NASAHubble	Transcript Link
2019 08 28	NASA Goddard	https://youtu.be/YulCMpGs2LU	Take a Spin With NASA's WFIRST Spacecraft	On schedule to launch in the mid-2020s, NASA's Wide Field Infrared Survey Telescope (WFIRST) mission will help uncover some of the biggest mysteries in the cosmos. The state-of-the-art telescope on the WFIRST spacecraft will play a significant role in this, providing the largest picture of the universe ever seen with the same depth and precision as the Hubble Space Telescope. The telescope for WFIRST has successfully passed its preliminary design review, a major milestone for the mission. This means the telescope has met the performance, schedule, and budget requirements to advance to the next stage of development, where the team will finalize its design. WFIRST is a high-precision survey mission that will advance our understanding of fundamental physics. WFIRST is similar to other space telescopes, like Spitzer and the James Webb Space Telescope, in that it will detect infrared light, which is invisible to human eyes. Earth's atmosphere absorbs infrared light, which presents challenges for observatories on the ground. WFIRST has the advantage of flying in space, above the atmosphere. The WFIRST telescope will collect and focus light using a primary mirror that is 2.4 meters in diameter. While it's the same size as the Hubble Space Telescope's main mirror, it is only one-fourth the weight, showcasing an impressive improvement in telescope technology.	Transcript Link

2019 08 26	NASA Goddard	https://youtu.be/Fxggu3weOOg	NASA's CAMP2Ex Heads to the Philippines for Monsoon Season	NASA, the Naval Research Laboratory and the Manila Observatory are working together in the Philippines to study how tiny particles in the atmosphere affect cloud formation. Music credit: "After the Sun" from Killer Tracks Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Katy Mersmann (USRA): Lead Producer Samson Reiny (Wyle Information Systems): Lead Writer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13289 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc	Transcript Link
2019 08 23	NASA Goddard	https://youtu.be/qd8CZctgXBM	TIRS-2 Ships From Goddard	From orbit aboard the Landsat 9 satellite, the Thermal Infrared Sensor-2, or TIRS-2, will measure the temperature of Earth's land surfaces, detecting everything from a smoldering wildfire, to the amount of irrigation used on crop fields, to wispy clouds that are all but invisible to other instruments. First, however, it had to survive tests that simulated the harsh environment of space. This month, TIRS-2 successfully passed the stringent 12-week testing process at NASA's Goddard Space Flight Center in Greenbelt, Maryland. It was shipped to Northrop Grumman's facility in Arizona, where it and the Operational Land Imager-2 will be assembled onto the Landsat 9 spacecraft. Landsat 9 is a joint effort of NASA and the U.S. Geological Survey. Like digital cameras on a smart phone, the TIRS-2 instrument is an imager, said Joel McCorkel, the instrument's deputy project scientist. But while a camera detects light reflected off an object, TIRS-2 detects the thermal energy that an object emits. The hotter a surface is, the more energy the instrument will detect. The Landsat mission has been observing Earth since 1972, building the longest continuous record from space of the planet's forests, farms, cities, and other surfaces. Starting with Landsat 5 and continuing through the first TIRS instrument on Landsat 8, the satellites have carried instruments that can detect thermal energy as well as visible and infrared light – and water managers and others have put these observations to work.	Transcript Link

2019 08 23 NASA Goddard <https://youtu.be/MapRNOZltFo> NASA's New Solar Scope Is Ready For Balloon Flight NASA and the Korea Astronomy and Space Science Institute, or KASI, are getting ready to test a new way to see the Sun, high over the New Mexico desert. [Transcript Link](#)

A pearlescent balloon — large enough to hug a football field — is scheduled to take flight no earlier than Aug. 26, 2019, carrying beneath it a solar scope called BITSE. BITSE is a coronagraph, a kind of telescope that blocks the Sun's bright face in order to reveal its dimmer atmosphere, called the corona. Short for Balloon-borne Investigation of Temperature and Speed of Electrons in the corona, BITSE seeks to explain how the Sun spits out the solar wind.

Read more: <https://www.nasa.gov/feature/goddard/2019/nasa-bitse-solar-scope-ready-for-balloon-flight-new-mexico-coronagraph-solar-wind-eclipse>

Music credit: "Gear Wheels" by Fabrice Ravel Chapuis [SACEM] from Killer Tracks

Credits: NASA's Goddard Space Flight Center/Joy Ng Scientists:

Natchimuthuk Gopalswamy (NASA/GSFC)
Nelson Reginald (Catholic University of America)
Jeff Newmark (NASA/GSFC)
Qian Gong (NASA/GSFC)

Producer:

Joy Ng (USRA)

2019 08 16 NASA Goddard <https://youtu.be/wPDvAJzoK4> Students Work with NASA to Forecast Dust Storms

Four Maryland high school students were inspired by a documentary to find a way to let people know when a potentially hazardous dust storm is incoming. Using National Weather Service forecasts improved by NASA data, their Dust Watch app alerts people about incoming dust storms.

[Transcript Link](#)

Music credit: Discovering New Worlds by Nicolas Montazard [SACEM]

Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio

Katy Mersmann (USRA): Lead Producer
Ellen T. Gray (ADNET): Lead Writer

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2019 08 13	NASA Goddard	https://youtu.be/KFI97nfVMFc	NASA Studies How Arctic Fires Change the World	Wildfires in the Arctic often burn far away from population centers, but their impacts are felt around the globe. From field and laboratory work to airborne campaigns and satellites, NASA is studying how climate change is contributing to more frequent and powerful boreal forest and Arctic fires and what that means for climate forecasting, ecosystems and human health. To learn more about ABoVE, visit: https://above.nasa.gov Music: Stepping Stone Bridge by Timothy Michael Hammond [PRS], Wayne Roberts [PRS] Watching Ladybirds by Benjamin James Parsons [PRS] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13281 Credit: NASA's Goddard Space Flight Center If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard	Transcript Link
2019 08 12	NASA Goddard	https://youtu.be/M9NrzyTKaCE	Asteroid Bennu Sample Site Finalists	Since arriving at near-Earth asteroid Bennu in December 2018, NASA's OSIRIS-REx mission has been studying this small world of boulders, rocks, and loose rubble - and looking for a place to touch down. The goal of OSIRIS-REx is to collect a sample of Bennu in mid-2020, and return it to Earth in late 2023. Bennu turned out to be rockier than anticipated, but mission planners have now identified four sites on its surface that are smooth enough for OSIRIS-REx to collect a sample. The mission will down-select to the final two sites - a primary and a backup - in December 2019. Like the mythological Bennu bird for which the asteroid is named, all of the candidate sample sites refer to birds that can be found in Egypt. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/4744 Credit: NASA/Goddard/Kel Elkins/University of Arizona/CSA/York University/MDA If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard	Transcript Link

2019 08 08	NASA Goddard	https://youtu.be/NoQ0CIXrx8k	Brand New Hubble Observation Teaches Us More About Jupiter's Great Red Spot	This new Hubble Space Telescope view of Jupiter, taken on June 27, 2019, reveals the giant planet's trademark Great Red Spot, and a more intense color palette in the clouds swirling in Jupiter's turbulent atmosphere than seen in previous years. The colors and their changes provide important clues to ongoing processes in planetary atmospheres. For more information, visit https://www.nasa.gov/feature/goddard/2019/hubble-new-portrait-of-jupiter Credit: NASA's Goddard Space Flight Center/Paul Morris/Tracy Vogel Music credits: "Solaris" by Axel Tenner [GEMA], Michael Schluecker [GEMA] and Raphael Schalz [GEMA]; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13279 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN Follow NASA's Hubble Space Telescope: · Facebook: https://www.facebook.com/NASAHubble · Twitter: https://twitter.com/NASAHubble	Transcript Link
2019 08 07	NASA Goddard	https://youtu.be/vpNa4u997xA	How NASA Will Protect Astronauts From Space Radiation	August 1972, as NASA scientist Ian Richardson remembers it, was hot. In Surrey, England, where he grew up, the fields were brown and dry, and people tried to stay out of the Sun, indoors and televisions on. But for several days that month, his TV picture kept breaking up. "Do not adjust your set," he recalls the BBC announcing. "Heat isn't causing the interference. It's sunspots." The same sunspots that disrupted the television signals led to enormous solar flares — powerful bursts of radiation from the Sun — Aug. 4-7 that year. Between the Apollo 16 and 17 missions, the solar eruptions were a near miss for lunar explorers. Had they been in orbit or on the Moon's surface, they would have sustained dangerous levels of solar radiation sparked by the eruptions. Today, the Apollo-era flares serve as a reminder of the threat of radiation exposure for technology and astronauts in space. Understanding and predicting solar eruptions is crucial for safe space exploration. Almost 50 years since those 1972 storms, the data, technology and resources available to NASA have improved, enabling advancements towards space weather forecasts and astronaut protection — key to NASA's Artemis program to return astronauts to the Moon. Music credits: "Boreal Moment" by Benoit Scarwell [SACEM]; "Sensory Questioning", "Natural Time Cycles", "Emerging Designer", and "Experimental Design" by Laurent Dury [SACEM]; "Superluminal" by Lee Groves [PRS], Peter George Marett [PRS] from Killer Tracks	Transcript Link

2019 08 07	NASA Goddard	https://youtu.be/DxQ3QlOs6sc	The Webb Telescope's Unfolding Secondary Mirror	In order to do groundbreaking science, NASA's James Webb Space Telescope must first unpack itself in deep space. In its full configuration, Webb would be too big too fit in any available rocket. So, engineers designed the observatory to fold up to a much smaller size during transport. After Webb Launches, the observatory's delicate parts will unfold and arrange themselves through a series of carefully choreographed steps. When deployed, the secondary mirror will sit out in front of Webb's 18 primary mirrors, collect their light and focus it into a beam. That beam is then sent down into the tertiary and fine steering mirrors, and finally to Webb's four scientific instruments. This video shows the flurry of engineers and technicians examining the hinges and movement of the secondary mirror as it deploys. This is one of a final series of tests the Webb Telescope must perform to prove that it is ready to operate in space. Credits: NASA's Goddard Space Flight Center: Sophia Roberts (AIMM): Producer Sophia Roberts (AIMM): Videographer Sophia Roberts (AIMM): Video Editor Christopher Gunn (InuTeq, LLC): Photographer Read more: https://www.nasa.gov/feature/goddard/2019/critical-deployment-of-nasa-webb-s-secondary-mirror-a-success	Transcript Link
2019 08 06	NASA Goddard	https://youtu.be/nEirVWNwk-E	Conversations with Goddard Jody Davis	Jody Davis, deputy payload systems engineer for the Wide Field Infrared Survey Telescope (WFIRST), inspires and uplifts the world. Davis supports the design, development, build and test of the WFIRST payload including collaborating with our many WFIRST partners especially about critical interfaces. She thrives on challenges - from never-done-before engineering feats, to being a pilot, climbing Kilimanjaro, doing STEM outreach in South Africa and Tanzania and running marathons on each continent. Credit: NASA's Goddard Space Flight Center Producer: Harrison Bach (Intern) Producer: Elizabeth M Jarrell (NASA/GSFC) Support: Liz Wilk (USRA) Talent: Jody Davis (NASA/GSFC) Music credit: "Next Level" [Instrumental] by Kelly Mac [BMI] and John Shapiro [BMI], Killer Tracks Production Music; "Showman" [Instrumental] by Charles Stephens III [ASCAP], Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13268 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link

2019 07 31	NASA Goddard	https://youtu.be/6bWra2Wvudk	TESS Helps Reveal Multiple Planets, Including Promising World	Tour the GJ 357 system, located 31 light-years away in the constellation Hydra. Astronomers confirming a planet candidate identified by NASA's Transiting Exoplanet Survey Satellite subsequently found two additional worlds orbiting the star. The outermost planet, GJ 357 d, is especially intriguing to scientists because it receives as much energy from its star as Mars does from the Sun. Credit: NASA's Goddard Space Flight Center/ Chris Smith (USRA): Lead Producer Chris Smith (USRA): Lead Animator Francis Reddy (University of Maryland College Park): Lead Science Writer Read more: https://www.nasa.gov/feature/goddard/2019/confirmation-of-toasty-tess-planet-leads-to-surprising-find-of-promising-world This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13266 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard	Transcript Link
2019 07 29	NASA Goddard	https://youtu.be/I-kvnFP8ptI	Satellites Aid Active Fire Response	Front-line responders do the heavy lifting when it comes to fighting and managing wildfires, but they're often helped by the view from higher up. Each year, a coordinated effort from US Forest Service aircraft teams and satellite teams from NASA and NOAA provide valuable information that help fire management teams on the ground make the best decisions possible. Satellite observations and data from new NASA airborne field campaigns also help us understand the role, frequency, and intensity of fires in a changing world. For more information on tracking wildfires: https://www.nasa.gov/feature/goddard/2019/nasa-tracks-wildfires-from-above-to-aid-firefighters-below Producer: Jefferson Beck Writer: Jenny Marder This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13264 Credit: NASA's Goddard Space Flight Center/Jefferson Beck If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center	Transcript Link

2019 07 25 NASA Goddard <https://youtu.be/7LLyFFsY7ZY> Highlights From TESS's First Year

NASA's Transiting Exoplanet Survey Satellite (TESS) has discovered 21 planets outside our solar system and captured data on other interesting events occurring in the southern sky during its first year of science. TESS has now turned its attention to the northern hemisphere to complete the most comprehensive planet-hunting expedition ever undertaken.

[Transcript Link](#)

TESS began hunting for exoplanets (or worlds orbiting distant stars) in the southern sky in July of 2018, while also collecting data on supernovae, black holes and other phenomena in its line of sight. Along with the planets TESS has discovered, the mission has identified over 800 candidate exoplanets that are waiting for confirmation by ground-based telescopes.

To search for exoplanets, TESS uses four large cameras to watch a 24-by-96-degree section of the sky for 27 days at a time. Some of these sections overlap, so some parts of the sky are observed for almost a year. TESS is concentrating on stars closer than 300 light-years from our solar system, watching for transits, which are periodic dips in brightness caused by an object, like a planet, passing in front of the star.

On July 18, the southern portion of the survey was completed and the spacecraft turned its cameras to the north. When it completes the northern section in 2020, TESS will have mapped over three quarters of the sky.

2019 07 25 NASA Goddard <https://youtu.be/4uCy9ulJtzA> RockOn! 2019

Students from across the United States witnessed the launching of their experiments aboard a NASA suborbital sounding rocket Thursday, June 20, 2019, from the Wallops Flight Facility in Virginia. The rocket will carry 28 experiments (measuring acceleration, humidity, pressure, temperature and radiation counts) from the RockOn! Program. Participants in RockOn! receive instruction on the basics required to develop a scientific payload for flight on a suborbital rocket. After learning the basics in RockOn!, students may then participate in RockSat-C, where during the school year they design and build a more complicated experiment.

[Transcript Link](#)

Conducted with the Colorado and Virginia Space Grant Consortia, RockOn! is in its twelfth year and RockSat-C its eleventh year.

Music: On the Run Instrumental [Instrument] Artist: Brice Davoli [SACEM], Valerie Deniz [SUISA]: Enjoyers Day [Main Track] Artist: Dean McGinnes [PRS], Charles Morton [PRS] (via Killer Tracks)

Credit: NASA's Goddard Space Flight Center
Swarupa Nune (InuTeq): Lead Producer, Videographer
Liz Wilk (USRA): Producer, Videographer
Rob Andreoli (AIMM): Lead Videographer
Harrison Bach (Intern): Lead Editor
Chelsey Ballarte (GSFC Interns): Lead Project Support

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization

2019 07 24	NASA Goddard	https://youtu.be/vgl7qs0x6FY	Apollo 11 This Is Goddard	On July 24, 1969, the Apollo 11 mission concluded with a splashdown in the Pacific Ocean. This 1969 documentary showcases how NASA's Goddard Space Flight Center in Greenbelt, Maryland, supported the historic mission. Throughout Apollo 11, Goddard control centers monitored and operated the worldwide complex of ground stations that made Apollo mission communications possible. This network was charged with furnishing reliable and near-instantaneous contact with the astronauts, from liftoff, to the giant leap, to splashdown. Goddard is proud of its role in keeping Apollo's lines of communications open — a task we continue to support with today's astronauts. As the Apollo 11 mission unfolded, Goddard scientists eagerly awaited Moon rock samples to analyze, and we're excited now for the chance to study other Apollo-era samples that have been sealed since that time, to benefit from analysis techniques and technologies today that didn't exist in 1969. Watch this video, preserved and digitized by the US National Archives, and flash back to 1969, to relive Apollo 11 as it happened, as Goddard saw it!	Transcript Link
2019 07 22	NASA Goddard	https://youtu.be/kX_KqKWfUSo	NASA and NOAA Take to the Air to Chase Smoke	NASA, NOAA and university partners are taking to the skies, and the ground, to chase smoke from fires burning across the United States. The Fire Influence on Regional to Global Environments and Air Quality (FIREX-AQ) is starting in Boise, Idaho, with a long-term goal of improving our understanding of how smoke from fires affects air quality across North America. Music credit: Music: "Broad Horizons" by Chris White [PRS] from Killer Tracks Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Kathryn Mersmann (USRA): Lead Producer Samson K. Reiny (Wyle Information Systems): Lead Writer Alex Kekesi (GST): Lead Visualizer LK Ward (USRA): Producer Ellen T. Gray (ADNET): Producer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13262 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard	Transcript Link

2019 07 18	NASA Goddard	https://youtu.be/ooQC5M6x6RE	NASA's Webb Telescope Shines with American Ingenuity	The James Webb Space Telescope is the most complex spacecraft ever made. Over 100 different companies, and multiple NASA facilities throughout the United States have contributed to its development. Each in some way have helped to build and provide parts for the telescope, or assemble them, and many have built testing and clean room facilities specifically for the spacecraft. Others helped provide equipment, personnel, and supplies for testing the telescope and its various parts. As a result of this collective group effort, scientist will be able to use the world's most advance telescope to break new grounds in science, and both discover and observe new parts of space that have never been seen before. Read more: https://www.nasa.gov/feature/goddard/2019/nasa-s-webb-telescope-shines-with-american-ingenuity Credit: NASA's Goddard Space Flight Center Michael P. Menzel (AIMM): Producer Aaron E. Lepsch (ADNET): Technical Support Michael P. Menzel (AIMM): Animator Michael P. Menzel (AIMM): Video Editor This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13165 If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link
2019 07 15	NASA Goddard	https://youtu.be/rUvDf-DB_is	Hubble and Going Forward to the Moon	We are going forward to the Moon by 2024, but did you know that back in 2005, Dr. Jim Garvin and his team of scientists pointed the Hubble Space Telescope at our nearest celestial neighbor for a very important reason? The Hubble team used the telescope's powerful instruments to work as a prospector for the Moon's surface, searching for resources that would help future human-led missions mine and utilize those materials to "live off the land" of the Moon. Hubble's lunar research led the way for future missions, such as the Lunar Reconnaissance Orbiter, helping men and women to go forward to the Moon by 2024! For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Music credits: "Tracer" by Max Cameron Concors [ASCAP]; Killer Tracks Production Music. "Transitions" by Ben Niblett [PRS], Jon Cotton [PRS] Killer Tracks Production Music. "Interstellar Spacecraft" by JC Lemay [SACEM] Killer Tracks Production Music. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13258	Transcript Link

2019 07 11 NASA Goddard https://youtu.be/gkktCO44_40 Through Smoke and Fire, NASA Searches for Answers

For years, NASA has used the vantage point of space, combined with airborne and ground-based field campaigns, to decipher the impact of fires—from first spark to final puff of smoldering smoke—and help other agencies protect life and property.

[Transcript](#)
[Link](#)

But the effects of fires linger long after they're extinguished: They can upend ecosystems, influence climate and disrupt communities. While NASA keeps an eye on today's fires, it also tackles the big-picture questions that help fire managers plan for the future.

This summer, NASA is embarking on several field campaigns across the world to investigate longstanding questions surrounding fire and smoke. Aircraft will fly through smoke and clouds to improve air quality, weather and climate forecasting, and investigate fire-burned forests to capture ecosystem changes that have global impact.

Music: Motion Blur by Sam Dodson, End of the Quarter by Austin Jordan

Credit: NASA's Goddard Space Flight Center/LK Ward

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2019 07 09 NASA Goddard <https://youtu.be/q6FlcuBMVWU> A Drier Future Sets the Stage for More Wildfires

Droughts can create ideal conditions for wildfires. Dry trees and vegetation provide fuel. Low soil and air moisture make it easier for fires to spread quickly. In these conditions, a spark from lightning, electrical failures, human error or planned fires can quickly get out of control. As Earth's climate warms and precipitation patterns change, increasingly severe droughts will leave some areas of the world vulnerable to increasingly severe fires. Understanding how fires behave in dry conditions can help firefighters, first responders and others prepare for a hotter, drier future.

[Transcript](#)
[Link](#)

Read more: <https://www.nasa.gov/feature/goddard/2019/a-drier-future-sets-the-stage-for-more-wildfires>

Music: "Motion Blur" by Sam Dodson, "Spring Into Life" by Oliver Worth, "Critical Pathway" by Rik Carter

Credits: NASA's Goddard Space Flight Center
LK Ward (USRA): Lead Producer
Jessica Merzdorf (Telophase): Lead Writer
Ben Cook (NASA/GSFC): Scientist
Kate Marvel (NASA/GSFC GISS): Scientist
Cindy Starr (GST): Visualizer
Greg Shirah (NASA/GSFC): Visualizer
Kel Elkins (USRA): Visualizer
Aaron E. Lepsch (ADNET): Technical Support

This video is public domain and along with other supporting

2019 07 03	NASA Goddard	https://youtu.be/mCNcxu8MXzo	Connect the Drops with NASA Data	The varied landscapes of the United States have unique relationships with water. On the East Coast, rain is a regular occurrence. In the West, drought is a constant threat. Rivers and lakes fed by rainfall, snowmelt or a mix of both provide two-thirds of the country's drinking water while also supporting agriculture. Managing these water resources requires balancing growing demand for water in the face of shifting availability and changing climate. Many state and federal agencies and other organizations turn to NASA research, satellite data and analytical tools to help tackle these issues. Since the 1960s, NASA has been steadily expanding its view of how fresh water moves around the planet. Early satellites that imaged clouds and snow cover evolved to more recent missions that quantify rain and snowfall worldwide every half-hour, make daily observations of global snow cover, detect changes in aquifers deep underground, and monitor moisture in soils every few days. These observations are some of the most powerful assets scientists have when studying the water cycle, how it affects people and their water supplies, and how it may change in a warming climate. At NASA, researchers maintain and refine these data sets, providing them to the public at no cost. NASA researchers also help to interpret the information with sophisticated computer programs that integrate the disparate data sets and fill gaps to create a coherent picture of where and how water moves around the planet every day.	Transcript Link
2019 07 01	NASA Goddard	https://youtu.be/JEX54EHBUHo	Using NASA Data to Monitor Drought and Food Insecurity	NASA's satellite imagery and model forecasts play an important role in monitoring the performance of crops worldwide and preparing for food shortages. NASA's view from space helps government agencies forecast food insecurity, like during the drought in Southern Africa in 2018. Read more: https://www.nasa.gov/feature/goddard/2019/when-drought-threatens-crops-nasa-s-role-in-famine-warnings Music credit: Anticipating Outcomes by Simon Begg [PRS] Credit: NASA's Goddard Space Flight Center Kathryn Mersmann (USRA): Lead Producer Maria-Jose Vinas Garcia (Telophase): Lead Writer Ellen T. Gray (ADNET): Producer Trent L. Schindler (USRA): Lead Visualizer Christa Peters-Lidard (NASA/GSFC): Scientist John D. Bolten (NASA/GSFC): Scientist Amy McNally (SAIC): Scientist This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13242 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard	Transcript Link

2019 07 01	NASA Goddard	https://youtu.be/eVI0rZFPEpo	Hubble's Brand New Image of Eta Carinae	In the mid-1800s, mariners sailing the southern seas navigated at night by a brilliant star in the constellation Carina. The star, named Eta Carinae, was the second brightest star in the sky for more than a decade. Those mariners could hardly have imagined that by the mid-1860s the brilliant orb would no longer be visible. Eta Carinae was enveloped by a cloud of dust ejected during a violent outburst named "The Great Eruption." Because of Eta Carinae's violent history, astronomers have kept watch over its activities. Although Hubble has monitored the volatile superstar for 25 years, it still is uncovering new revelations. Using Hubble to map the ultraviolet-light glow of magnesium embedded in warm gas, astronomers were surprised to discover the gas in places they had not seen it before. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center Paul R. Morris (USRA): Lead Producer Aaron E. Lepsch (ADNET): Technical Support Music credits: "Transcode" by Lee Groves [PRS], and Peter George Marett [PRS]; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13244	Transcript Link
2019 06 27	NASA Goddard	https://youtu.be/6wkNlv5nDLE	TESS Discovers Its Tiniest World To Date	NASA's Transiting Exoplanet Survey Satellite (TESS) has discovered a world between the sizes of Mars and Earth orbiting a bright, cool, nearby star. The planet, called L 98-59b, marks the smallest found by TESS yet. Two other worlds orbit the same star. While all three planets' sizes are known, further study with other telescopes will be needed to determine if they have atmospheres and, if so, which gases are present. The L 98-59 worlds nearly double the number of small exoplanets -- that is, planets beyond our solar system -- that have the best potential for this kind of follow-up. L 98-59b is around 80 Earth's size and about 10 smaller than the previous record holder discovered by TESS. Its host star, L 98-59, is an M dwarf about one-third the mass of the Sun and lies about 35 light-years away in the southern constellation Volans. While L 98-59b is a record for TESS, even smaller planets have been discovered in data collected by NASA's Kepler satellite, including Kepler-37b, which is only 20 larger than the Moon. The two other worlds in the system, L 98-59c and L 98-59d, are respectively around 1.4 and 1.6 times Earth's size. All three were discovered by TESS using transits, periodic dips in the star's brightness caused when each planet passes in front of it. Credit: NASA's Goddard Space Flight Center/Chris Smith (USRA): producer and lead animator	Transcript Link

2019 06 26	NASA Goddard	https://youtu.be/2Ci84sPsJQU	NASA Tracks the Future of Asia's Glaciers	Asia's high mountains are a crucial freshwater source to one-seventh of the world's population. Snow and glaciers in these mountains contain the largest volume of freshwater outside of Earth's polar ice sheets, leading hydrologists to nickname this region the "third pole." Rapid changes in the region's climate, however, are affecting glacier flows and snowmelt. Local people are already modifying their land-use practices in response to the changing supply, and the region's ecology is transforming. Scientists estimate that by 2100, these glaciers could be up to 75% smaller in volume. NASA's satellites observe and measure snow and ice cover remotely with multiple types of sensors. This allows scientists to create an authoritative estimate of the water budget of this region and a set of products local policy makers can use in responding to hazards and planning for a changing water supply. Read more: https://www.nasa.gov/feature/goddard/2019/the-water-future-of-earths-third-pole Music credit: "The Mystery Novelist" by Quentin Bachelet [SACEM] Credit: NASA's Goddard Space Flight Center Katie Jepson (USRA): Lead Producer Carol Rasmussen (NASA/JPL CalTech): Lead Writer Bailee DesRocher (USRA): Animator	Transcript Link
2019 06 26	NASA Goddard	https://youtu.be/s0jxY8MihZM	WFIRST's Wide Field Instrument	In order to know how the universe will end, we must know what has happened to it so far. This is just one mystery NASA's forthcoming Wide Field Infrared Survey Telescope (WFIRST) mission will tackle as it explores the distant cosmos. The spacecraft's giant camera, the Wide Field Instrument (WFI), will be fundamental to this exploration. The WFI has just passed its preliminary design review, an important milestone for the mission. It means the WFI successfully met the design, schedule and budget requirements to advance to the next phase of development, where the team will begin detailed design and fabrication of the flight hardware. WFIRST is a next-generation space telescope that will survey the infrared universe from beyond the orbit of the Moon. Its two instruments are a technology demonstration called a coronagraph, and the WFI. The WFI features the same angular resolution as Hubble but with 100 times the field of view. Data it gathers will enable scientists to discover new and uniquely detailed information about planetary systems around other stars. The WFI will also map how matter is structured and distributed throughout the cosmos, which should ultimately allow scientists to discover the fate of the universe. The WFI is designed to detect faint infrared light from across the universe. Infrared light is observed at wavelengths longer than the human eye can detect. The expansion of the universe stretches light	Transcript Link

2019 06 21	NASA Goddard	https://youtu.be/zNzZxv1hcaw	NASA Helps Warn of Harmful Algal Blooms	With limited resources to dedicate to monitoring for harmful algal blooms, water managers are looking to new technologies from NASA and its partners to detect and monitor potential hazards in lakes and reservoirs. Music: Picking Locks by James Alexander Dorman [PRS] Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13192 Credit: NASA's Goddard Space Flight Center/Katie Jepson If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC · Flickr http://www.flickr.com/photos/gsfcr	Transcript Link
2019 06 19	NASA Goddard	https://youtu.be/LtpDbAFQoc	Modeling the Future of the Greenland Ice Sheet	Scientists at the University of Alaska Fairbanks' Geophysical Institute used data from NASA's Operation IceBridge to develop a more accurate model of how the Greenland Ice Sheet might respond to climate change in the future, finding that it could generate more sea level rise than previously thought. Music credit: Tides by Jon Cotton [PRS], Ben Niblett [PRS] Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio Katie Jepson (USRA): Lead Producer Jessica Merzdorf (Telophase): Writer Cindy Starr (GST): Lead Visualizer Patrick Lynch (NASA/GSFC): Producer Andy Aschwanden (NASA/ARC): Scientist Jefferson Beck (USRA): Videographer Katie Jepson (USRA): Narrator Aaron E. Lepsch (ADNET): Technical Support LK Ward (USRA): Producer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13233 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter	Transcript Link

2019 06 19 NASA Goddard <https://youtu.be/Al3CdnNsVFI> Data and Music What 50 Years of Exploring Our Moon Sounds Like Sonification is the process of translating data into sound and music. In this musical data sonification of lunar knowledge and exploration, we can hear the progress made throughout the Apollo program to now as our understanding of the Moon expands. Listen to the percussion, which signals launches and the passage of time; the pitch of the string and brass instruments conveys the amount of scientific activity associated with the Moon over time. [Transcript](#) [Link](#)

Here's a breakdown of the individual instruments:

Pitch of the string and brass = scientific activity
 Percussion instruments = passage of time
 Clock ticking = months
 Snare drum = years
 Bass drum = decades
 Cymbals = launches

In the video, the blue line indicates the amount of scientific activity (the number of scientific publications, citations and patents) in each year that is related to NASA's Apollo program. The red and yellow lines indicate the amount of scientific activity associated with Apollo samples and Apollo images, respectively. The other colors indicate the amount of scientific activity associated with each of NASA's lunar robotic missions.

2019 06 18 NASA Goddard <https://youtu.be/ctA97quYlig> 10 Years at the Moon

Each year's data represents the number of articles, citations and patents dated in that year and returned by Google Scholar when

NASA's Lunar Reconnaissance Orbiter mission now celebrates its 10-year anniversary of being at the Moon. After launching on June 18, 2009, and entering lunar orbit on June 23rd, the spacecraft continues to collect vast amounts of data vital to our understanding of the lunar landscape and environment, our solar system, and to our future exploration goals for the Moon and Mars. This video highlights some notable facts and accomplishments of the LRO mission over the past decade, all of which are paving the way forward for reestablishing a human presence on the Moon with the newly announced Artemis program.

[Transcript](#) [Link](#)

For more information on the Lunar Reconnaissance Orbiter, visit: <https://lunar.gsfc.nasa.gov>

All of LRO's data is archived and can be viewed at: <http://pds-geosciences.wustl.edu/missions/lro/>

To see images from the Lunar Reconnaissance Orbiter Camera, visit: <http://lroc.sese.asu.edu>

Credit: NASA's Goddard Space Flight Center/David Ladd
 Video Produced & Edited by: David Ladd (USRA)
 Music Provided by Killer Tracks: "New Way Forward" - Mark Petrie

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/13229>

2019 06 13	NASA Goddard	https://youtu.be/k4yXvc6Ykqk	Introducing NASA Explorers Apollo, an Audio Series	Coming soon, NASA Explorers: Apollo is an audio series that tells stories of the Moon and the people who explore it. During the Apollo program, the Moon became a part of the human domain. Twelve astronauts walked on the lunar surface, conducted research there and collected Moon rocks to bring back to Earth for study. Fifty years after humanity's first steps on the Moon, today's lunar scientists are searching for answers to the big questions: How did the Moon form? How did our solar system evolve? Did the Moon help life on Earth get its start? Meet a Moon detective, scientists who study space rocks and people from all over the world whose lives were shaped by the epic adventures of the Apollo program. You can listen to NASA Explorers: Apollo on: Apple Podcasts, SoundCloud, Google Play and Facebook Watch. Listen: https://www.nasa.gov/nasa-explorers-apollo Credit: NASA's Goddard Space Flight Center Kaliah Hobbs (GSFC Interns): Lead Producer Haley Reed (ADNET): Lead Producer Katie Atkinson (GSFC Interns): Narrator Katie Atkinson (GSFC Interns): Producer Micheala Sosby (NASA/GSFC): Producer Aaron E. Lepsch (ADNET): Technical Support	Transcript Link
2019 06 13	NASA Goddard	https://youtu.be/VU4heMVHHq4	NASA Follows Changing Freshwater from Space	When we look into the vastness of space, our home planet stands out in many ways. One of the most crucial is the presence of abundant, accessible freshwater -- as a liquid, solid and gas. Water helps make our planet habitable. The first question NASA researchers studying freshwater on Earth ask is: Where is the water? As it constantly cycles between water vapor, rain and snow, and reservoirs above and below ground, water is tracked by a fleet of NASA satellites. Heat travels with that water, as energy from the Sun drives freshwater's transformations between vapor, liquid water, and ice. As our planet warms due to greenhouse gases, scientists have a second pressing question: How is climate change affecting the distribution of water? Music credit: Above It All by Tom Caffey [ASCAP] and Dark Fantasy by Brice Davoli [SACEM] Kathryn Mersmann (USRA): Lead Producer Ellen T. Gray (ADNET): Lead Writer Trent L. Schindler (USRA): Lead Visualizer Katie Jepson (USRA): Producer Matthew R. Radcliff (USRA): Sound Editor This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13227	Transcript Link

2019 06 11	NASA Goddard	https://youtu.be/iZakoFGPaBQ	NASA Goddard Hosts Young Men for 'STEM Boys Night In'	Late Friday night, almost 50 students from Maryland and Virginia arrived at NASA's Goddard Space Flight Center in Greenbelt, Maryland, for a STEM-themed sleepover, ready to learn about careers in science, technology, engineering and math. The educational event, which follows the success of our Girls Night In held in November, offered young men a chance to meet working scientists and engineers and to discover opportunities in STEM-related professions. In addition to meeting NASA scientists and engineers, students also met Chris Scolese (Director of Goddard Space Flight Center), Clayton Turner (Deputy Director, Langley Research Center), and former NASA Astronaut, Fred Gregory. Read more: https://www.nasa.gov/feature/goddard/2019/stem-boys-night-in-at-goddard Girls Night In: https://www.nasa.gov/feature/goddard/2018/nasa-goddard-hosts-young-women-for-stem-girls-night-in This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio: https://svs.gsfc.nasa.gov/13228 Credit: NASA's Goddard Space Flight Center/Swarupa Nune and Harrison Bach Videographers: Rob Andreoli (AIMM) John Caldwell (AIMM)	Transcript Link
2019 06 10	NASA Goddard	https://youtu.be/EprSQsQ4K98	Getting SET - The Mission to Protect Satellites from Radiation	Summer 2019, NASA's Space Environment Testbeds, or SET, will launch on its mission to study how to better protect satellites in space. SET studies the very nature of space itself -- which isn't completely empty, but brimming with radiation -- and how it affects spacecraft and electronics in orbit. Energetic particles from the Sun or deep space can spark memory damage or computer upsets on spacecraft, and over time, degrade hardware. SET seeks to better understand these effects in order to improve spacecraft design, engineering, and operations, and avoid future anomalies. Spacecraft protection is a key part of NASA's mission as the agency's Artemis program seeks to explore the Moon and beyond. SET is part of the Space Environment Effects (SEFx) experiment, one of three experiments on board the Demonstration and Science Experiments, or DSX, spacecraft being launched by the U.S. Air Force. DSX is launching as part of the Space Test Program-2 (STP-2) mission, managed by the U.S. Air Force Space and Missile Systems Center (SMC). SET is one of four NASA missions on this STP-2 launch -- all of which are dedicated to improving technology in space. DSX separates from the launch vehicle approximately 3.5 hours after launch. SET is the latest addition to NASA's fleet of heliophysics observatories. NASA heliophysics missions study a vast interconnected system from the Sun to the space surrounding Earth	Transcript Link

2019 06 06	NASA Goddard	https://youtu.be/X8Zz14hQzgg	Water Released from Moon Director's Cut	Scientists have discovered that water is being released from the Moon during meteor showers. When a speck of comet debris strikes the Moon it vaporizes on impact, creating a shock wave in the lunar soil. For a sufficiently large impactor, this shock wave can breach the soil's dry upper layer and release water molecules from a hydrated layer below. This Director's Cut version of the video features additional narration and an extended interview with scientist Mehdi Benna. Music provided by Killer Tracks: Collision Course; Ellipsis; Transcode (Instrumental). Learn more about this finding on nasa.gov: https://www.nasa.gov/press-release/goddard/2019/ladee-lunar-water This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13078 Credit: NASA's Goddard Space Flight Center/Dan Gallagher If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Follow NASA's Goddard Space Flight Center	Transcript Link
2019 06 05	NASA Goddard	https://youtu.be/6X0puPAMe74	NASA Has Eyes On The Atlantic Hurricane Season	NASA has a unique and important view of hurricanes around the planet. Satellites and aircraft watch as storms form, travel across the ocean and sometimes, make landfall. After the hurricanes have passed, the satellites and aircraft see the aftermath of hurricanes, from downed forests to mass power loss. Complete transcript available. Music: "Northern Breeze" by Denis Levailant [SACEM], "Stunning Horizon" by Maxime Lebidois [SACEM], Ronan Maillard [SACEM], "Magnetic Force" by JC Lemay [SACEM] from Universal Production Music Video credit: NASA's Goddard Space Flight Center Joy Ng (USRA): Lead Producer Ryan Fitzgibbons (USRA): Producer Scott Braun (NASA/GSFC): Scientist George Huffman (NASA/GSFC): Scientist Dalia B Kirschbaum (NASA/GSFC): Scientist LK Ward (USRA): Narrator Kathryn Mersmann (USRA): Support This video can be freely shared and downloaded at http://svs.gsfc.nasa.gov/13216. While the video in its entirety can be shared without permission, some individual imagery provided by pond5.com and is obtained through permission and may not be excised or remixed in other products. Specific details on stock footage may be found here — http://svs.gsfc.nasa.gov/13216. For	Transcript Link

2019 06 04	NASA Goddard	https://youtu.be/l5cV18oStkg	Over 400 Interns Arrive at NASA Goddard – Summer 2019	What's it like to have an internship at NASA? Meet some 2019 summer interns that just arrived at the Goddard Space Flight Center and learn about their upcoming projects. The NASA Goddard Internship Program provides unique opportunities for students to contribute to NASA's work in exploration and discovery. This summer, over 400 summer interns were selected from- high school through doctoral level - to work across four Goddard campuses from June through August. Want to learn more about NASA internships? Visit intern.nasa.gov for more information, and check out the web story written by Goddard's communications interns on their first day here. Music credit: "Unconditional Future" by Bustafunk [SACEM]; Published by Koka Media [SACEM], Universal Publishing Production Music (France) [SACEM] "Found a Way" by Scott G reene [BMI]; Published by Killer Tracks [BMI]. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13217 Credit: NASA's Goddard Space Flight Center/Swarupa Nune (InuTeq) Liz Wilk (USRA): Host Rob Andreoli (AIMM): Lead Videographer John Caldwell (AIMM): Videographer	Transcript Link
2019 05 30	NASA Goddard	https://youtu.be/hwoTB_TuaEIA	GLOBE Observer Land Cover Getting Started	Nearly every aspect of our lives is fundamentally tied to the land on which we live. The homes that shelter us are resting on the land. Cities offer locations that bring people together; farms feed us; forests help to keep us cool, provide us with oxygen, building materials, and the joys of recreation; rivers and lakes yield fresh water to drink; and different kinds of land cover provide habitats for a diversity of wildlife. When land covers change, our health and well-being, economies, and environments are all affected. Citizens using GLOBE Observer can observe land cover in much greater detail and more frequently than scientists can using satellite data alone. Furthermore, some types of land cover such as crops or some kinds of urban areas can be difficult to define based on satellite data alone, and citizen scientists' observations can help. GLOBE Observer data aren't just for scientists. Everyone can have access to this data to understand land cover change. Furthermore, since GLOBE Observer is a global community with ties in education, citizens who make observations help to strengthen education in Earth science around the world. Learn how to take land cover observations using the GLOBE Observer app. NASA's Goddard Space Flight Center · Liz Wilk (USRA): Producer · Paul R. Morris (USRA): Talent · Holli Riebeek Kohl (SSAI): Project Support · Heather Mortimer (SSAI): Project Support	Transcript Link

2019 05 28	NASA Goddard	https://youtu.be/64mbt-exHU	88-South Antarctic Traverse Year Two	For the second straight year, NASA researchers (Kelly Brunt and Adam Greeley) endured low temperatures, biting winds, and high altitude to conduct another 88-South Traverse. The 470-mile expedition in one of the most barren landscapes on Earth provides the best means of assessment of the accuracy of data collected from space by the Ice Cloud and land Elevation Satellite-2 (ICESat-2). The researchers drove tracked vehicles called PistenBullys, which were instrumented with GPS to collect highly precise elevation data along 88-degrees South, where ICESat-2's orbits converge. These data were then used to make direct comparisons with ICESat-2 elevation data. With a fast-firing laser instrument, ICESat-2 measures the elevation of ice sheets and tracks how much they change over time. Even small amounts of melt across areas as vast as Greenland or Antarctica can result in large amounts of meltwater contributing to sea level rise. To help document this, ICESat-2's height change measurements will have a precision of less than an inch - ground-truthed, in part, with efforts like this Antarctic campaign. The traverse was funded by NASA, but had substantial logistical support from the National Science Foundation Office of Polar Programs. Music: "Watching Evolution," "Formulas and Equations," Killer Tracks Music Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13206 Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons	Transcript Link
2019 05 21	NASA Goddard	https://youtu.be/bqSisCM-ao	Hubble Tool Time Episode 6 Servicing Mission 4	Retired NASA astronaut John Grunsfeld hosts this six-part mini-series about the tools used on the Hubble Space Telescope servicing missions. Hubble was uniquely designed to be serviced in space so that components could be repaired and upgraded. Astronauts using custom-designed tools performed challenging spacewalks on five servicing missions from 1993 to 2009 to keep Hubble operating so that it could change our fundamental understanding of the universe. Join John, EVA engineer Ed Rezac, and astronaut trainer Christy Hansen in this episode of Hubble Tool Time to learn about creating a Fastener Capture Plate to capture 111 screws in order to repair the Space Telescope Imaging Spectrograph on Servicing Mission 4 in 2009. In addition to enabling Hubble's scientific discoveries, the tools developed by teams at NASA's Goddard Space Flight Center and tested in collaboration with the Johnson Space Center furthered NASA's human exploration capabilities. These tools and the knowledge gleaned from the Hubble servicing missions are used today by astronauts on the International Space Station, and will be critical to NASA's future crewed missions to the Moon and Mars. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center/Katrina Jackson. Music credits: "Wine On It" by Kevin Blanc [SACEM]; KTSA Publishing SACEM; Gum Tapes; Killer Tracks Production Music.	Transcript Link

2019 05 14 NASA Goddard <https://youtu.be/5B1ZBwglul> Hubble Tool Time Episode 5 Servicing Mission 3B Retired NASA astronaut John Grunsfeld hosts this six-part mini-series about the tools used on the Hubble Space Telescope servicing missions. Hubble was uniquely designed to be serviced in space so that components could be repaired and upgraded. Astronauts using custom-designed tools performed challenging spacewalks on five servicing missions from 1993 to 2009 to keep Hubble operating so that it could change our fundamental understanding of the universe. [Transcript Link](#)

Join John and EVA engineer Ed Rezac in this episode of Hubble Tool Time to learn about developing a wrench-like connector tool to replace Hubble's Power Control Unit on Servicing Mission 3B in 2002.

In addition to enabling Hubble's scientific discoveries, the tools developed by teams at NASA's Goddard Space Flight Center and tested in collaboration with the Johnson Space Center furthered NASA's human exploration capabilities. These tools and the knowledge gleaned from the Hubble servicing missions are used today by astronauts on the International Space Station, and will be critical to NASA's future crewed missions to the Moon and Mars.

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center/Katrina Jackson.
Music credits: "Wine On It" by Kevin Blanc [SACEM]; KTSA Publishing SACEM; Gum Tapes; Killer Tracks Production Music.
"Breakthrough" by Donn Wilerson [BMI]; Killer Tracks BMI; Killer

2019 05 13 NASA Goddard <https://youtu.be/m847f65vX9A> Lee Lincoln Scarp at the Apollo 17 Landing Site This visualization of Lee Lincoln scarp is created from Lunar Reconnaissance Orbiter photographs and elevation mapping. The scarp is a low ridge or step about 80 meters high and running north-south through the western end of the Taurus-Littrow valley, the site of the Apollo 17 Moon landing. The scarp marks the location of a relatively young, low-angle thrust fault. The land west of the fault was forced up and over the eastern side as the lunar crust contracted. In a May 2019 paper published in Nature Geoscience, Thomas Watters and his coauthors provide evidence that this fault and others like it are still active and producing moonquakes today. [Transcript Link](#)

Music by Killer Tracks: Smoke and Mirrors - Gresby Race Nash

Ernie Wright (USRA): Lead Visualizer
David Ladd (USRA): Producer
Tom Watters (Smithsonian/Air and Space): Scientist

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Credit: NASA's Goddard Space Flight Center/David Ladd

If you liked this video, subscribe to the NASA Goddard YouTube channel: <http://www.youtube.com/NASAEplorer>

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2019 05 11	NASA Goddard	https://youtu.be/gKyluwzCuDY	Hubble's Servicing Mission 4 Celebrates its Ten-Year Anniversary	On May 11, 2009, the brave crew of Space Shuttle Atlantis lifted off to make NASA's Hubble Space Telescope more powerful than ever before. Hubble's Servicing Mission 4 (SM4) was the most ambitious and complicated to date. Changing out two major science instruments and repairing two others while in space helped to make this mission truly memorable. Thanks to the astronauts of SM4, the Hubble Space Telescope is at the apex of its power and capabilities. To celebrate SM4's 10 year anniversary, this video gives a quick and in-depth review on the accomplishments of this historic mission. The tools and the knowledge gleaned from SM4 are used today by astronauts on the International Space Station, and will be critical to NASA's future crewed missions to the Moon and Mars. Read more: https://www.nasa.gov/feature/goddard/2019/10-years-ago-hubble-s-final-servicing-mission-made-it-better-than-ever Credit: NASA's Goddard Space Flight Center/Paul Morris Music credits: "Aerial" by Oliver Worth [PRS]; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13186	Transcript Link
2019 05 10	NASA Goddard	https://youtu.be/NEOtODoeNYQ	Share Your Apollo Story with NASA	1. Browse our list of suggested questions and see what inspires you, or think of your own. 2. Record audio of yourself or interview a loved one who remembers the Apollo era (1960-1972). 3. Email your story to NASA! July 20, 2019 marks the 50th anniversary of Apollo 11, the first time humans walked on the Moon. Coming this summer, NASA Explorers: Apollo is a commemorative audio series that examines the Moon's cultural and scientific influence over the last half century, while also peering into the future of planetary exploration. Listeners will meet a Moon detective, tour a lab for space rocks and hear from scientists whose lives and work have been shaped by the Apollo program. As a part of this series, NASA invites you to contribute to an oral history project celebrating giant leaps and exploration of all kinds. You can help NASA tell the Apollo story by sharing your own perspective on lunar exploration, or by interviewing a loved one who lived during the Apollo era. NASA will select some submissions to feature in the audio series, on its website and/or social media. For more information, visit https://nasa.gov/apollostories. Credit: Kaliah Hobbs (GSFC Interns): Lead Producer Katie Atkinson (GSFC Interns): Narrator	Transcript Link

2019 05 07	NASA Goddard	https://youtu.be/ymofcvVkpQk	Hubble Tool Time Episode 4 Servicing Mission 3A	Retired NASA astronaut John Grunsfeld hosts this six-part mini-series about the tools used on the Hubble Space Telescope servicing missions. Hubble was uniquely designed to be serviced in space so that components could be repaired and upgraded. Astronauts using custom-designed tools performed challenging spacewalks on five servicing missions from 1993 to 2009 to keep Hubble operating so that it could change our fundamental understanding of the universe. Join John and EVA engineer Ed Rezac in this episode of Hubble Tool Time to learn about the difficult job of replacing Hubble's Rate Sensor Units on Servicing Mission 3A in 1999 and the resulting tool created to make the job easier. In addition to enabling Hubble's scientific discoveries, the tools developed by teams at NASA's Goddard Space Flight Center and tested in collaboration with the Johnson Space Center furthered NASA's human exploration capabilities. These tools and the knowledge gleaned from the Hubble servicing missions are used today by astronauts on the International Space Station, and will be critical to NASA's future crewed missions to the Moon and Mars. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center/Katrina Jackson. Music credits: "Wine On It" by Kevin Blanc [SACEM]; KTSA Publishing SACEM; Gum Tapes; Killer Tracks Production Music. "Breakthrough" by Donn Wilerson [BMI]; Killer Tracks BMI; Killer	Transcript Link
2019 05 03	NASA Goddard	https://youtu.be/sGZZ2QHprHw	The Story of Robert Goddard, Father of Modern Rocketry	Dr. Robert Hutchings Goddard (1882-1945) is considered the father of modern rocket propulsion. A physicist of great insight, Goddard also had a unique genius for invention. It is in memory of this brilliant scientist that NASA's Goddard Space Flight Center in Greenbelt, Maryland, was established on May 1, 1959. By 1926, Goddard had constructed and successfully tested the first rocket using liquid fuel. Indeed, the flight of Goddard's rocket on March 16, 1926, at Auburn, Massachusetts, was as significant to history as that of the Wright brothers flight at Kitty Hawk. Credit: NASA's Goddard Space Flight Center/Tim Childers Music Credits: "Suburban Waltz" by Philip Guyler and "Uncharted Territories" by Phil Stevens This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13201 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Twitter https://twitter.com/NASAGoddardPix · Flickr https://www.flickr.com/photos/gsfcr/	Transcript Link

2019 05 01	NASA Goddard	https://youtu.be/uQ0EYxo0mBQ	Human Influence on Global Droughts Goes Back 100 Years	Human-generated greenhouse gases and atmospheric particles were affecting global drought risk as far back as the early 20th century, according to a study from NASA's Goddard Institute for Space Studies (GISS) in New York City. The study, published in the journal Nature, compared predicted and real-world soil moisture data to look for human influences on global drought patterns in the 20th century. Climate models predict that a human "fingerprint" - a global pattern of regional drying and wetting characteristic of the climate response to greenhouse gases - should be visible early in the 1900's and increase over time as emissions increased. Using observational data such as precipitation and historical data reconstructed from tree rings, the researchers found that the real-world data began to align with the fingerprint within the first half of the 20th century. The team said the study is the first to provide historical evidence connecting human-generated emissions and drought at near-global scales, lending credibility to forward-looking models that predict such a connection. According to the new research, the fingerprint is likely to grow stronger over the next few decades, potentially leading to severe human consequences. Music: In Light of Things by Matthew Charles Gilbert Davidson Complete transcript available. Credits: NASA's Goddard Space Flight Center	Transcript Link
2019 04 30	NASA Goddard	https://youtu.be/Pz2vMr98CUI	Hubble Tool Time Episode 3 Servicing Mission 2	Retired NASA astronaut John Grunsfeld hosts this six-part mini-series about the tools used on the Hubble Space Telescope servicing missions. Hubble was uniquely designed to be serviced in space so that components could be repaired and upgraded. Astronauts using custom-designed tools performed challenging spacewalks on five servicing missions from 1993 to 2009 to keep Hubble operating so that it could change our fundamental understanding of the universe. Join John and EVA manager Russ Werneth in this episode of Hubble Tool Time to learn about the pistol grip tool developed for Hubble's second servicing mission in 1997, a tool that astronauts now use on almost every spacewalk. In addition to enabling Hubble's scientific discoveries, the tools developed by teams at NASA's Goddard Space Flight Center and tested in collaboration with the Johnson Space Center furthered NASA's human exploration capabilities. These tools and the knowledge gleaned from the Hubble servicing missions are used today by astronauts on the International Space Station, and will be critical to NASA's future crewed missions to the Moon and Mars. For more information, visit https://nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center/Katrina Jackson. Music credits: "Wine On It" by Kevin Blanc [SACEM]; KTSA Publishing SACEM; Gum Tapes; Killer Tracks Production Music. "Breakthrough" by Donn Wilerson [BMI]; Killer Tracks BMI; Killer	Transcript Link

2019 04 30 NASA Goddard <https://youtu.be/yzuqG23Yvww> Goddard at 60

On July 29, 1958, President Eisenhower signed the National Aeronautics and Space Act, establishing the National Aeronautics and Space Administration. When it began operations on Oct. 1, 1958, NASA consisted mainly of the four laboratories and some 80 employees of the government's 46-year-old research agency, the National Advisory Committee for Aeronautics (NACA). Goddard Space Flight Center in Greenbelt, Maryland, was established on May 1, 1959, as NASA's first spaceflight center.

[Transcript Link](#)

In celebration of its 60th year, we look back at the innovations and scientific impacts the women and men of Goddard have made throughout its history.

Music: "Downloading Landscapes," "Virtual Memory," "Momentum," "History in Motion," Killer Tracks Music

Credit: NASA's Goddard Space Flight Center/Swarupa Nune

Music: "Downloading Landscapes," "Virtual Memory," "Momentum," "History in Motion," Killer Tracks Music Complete transcript available.

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/13184>

Credit: NASA's Goddard Space Flight Center

2019 04 26 NASA Goddard <https://youtu.be/VwULBr5QpmM> Trees Around the GLOBE

We live, play and work with trees everywhere around the globe. The Trees Around the GLOBE Student Research Campaign commenced on September 15, 2018 in conjunction with NASA's ICESat-2 satellite launch on the same date at 6:02am PDT. The ICESat-2 satellite uses an on-board laser altimeter system to measure the height of Earth. Measurements of ice sheets, sea ice, trees, bodies of water, mountains are all part of what ICESat-2 measures. The Trees Around the GLOBE Student Research Campaign is a GLOBE Program campaign focusing on tree height - one of the measurements conducted by the ICESat-2 mission. As part of the GLOBE Program, students and teachers from 121 countries can participate in the campaign, share their data around the world, and collaborate with students and teachers to design research projects based on the data collected within GLOBE and from the NASA ICESat-2 Mission.

[Transcript Link](#)

Tree height is not just a measurement - it is a gateway to understanding many things about the environment. The structure of tree canopies, the 3D arrangement of individual trees, has a huge effect on how ecosystems function and cycle through carbon, water, and nutrients. Scientists from the ICESat-2 Mission will periodically review the tree height data collected by the GLOBE community throughout this campaign. The data will allow scientists to use it as satellite data validation and in potential professional research.

<https://www.globe.gov/web/trees-around-the-world>

2019 04 24 NASA Goddard <https://youtu.be/R5kqTCLg1pM> Hubble's 29th Year in Orbit

On April 24, 2019, the Hubble Space Telescope celebrated its 29th year in orbit by premiering a never-before-seen view of the Southern Crab Nebula. Even after all these years, Hubble continues to uncover the mysteries of the universe. These are a few science achievements from Hubble's latest year in orbit.

[Transcript](#)
[Link](#)

Credit: NASA's Goddard Space Flight Center/Tim Childers
Music Credits: "Fortress Europe" by Dan Bodan from the YouTube audio library.

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· Instagram <https://www.instagram.com/nasagoddard/>

2019 04 23 NASA Goddard <https://youtu.be/IlfFoAI7Pe8> Hubble Tool Time Episode 2 Servicing Mission 1

Retired NASA astronaut John Grunsfeld hosts this six-part mini-series about the tools used on the Hubble Space Telescope servicing missions. Hubble was uniquely designed to be serviced in space so that components could be repaired and upgraded. Astronauts using custom-designed tools performed challenging spacewalks on five servicing missions from 1993 to 2009 to keep Hubble operating so that it could change our fundamental understanding of the universe.

[Transcript](#)
[Link](#)

Join John and EVA manager Russ Werneth in this episode of Hubble Tool Time to learn about the power ratchet tool used on Hubble's first servicing mission in 1993.

In addition to enabling Hubble's scientific discoveries, the tools developed by teams at NASA's Goddard Space Flight Center and tested in collaboration with the Johnson Space Center furthered NASA's human exploration capabilities. These tools and the knowledge gleaned from the Hubble servicing missions are used today by astronauts on the International Space Station, and will be critical to NASA's future crewed missions to the Moon and Mars.

For more information, visit nasa.gov/hubble.

Credit: NASA's Goddard Space Flight Center/Katrina Jackson.
Music credits: "Wine On It" by Kevin Blanc [SACEM]; KTSA Publishing SACEM; Gum Tapes; Killer Tracks Production Music. "Breakthrough" by Donn Wilerson [BMI]; Killer Tracks BMI; Killer Tracks Production Music.

2019 04 16 NASA Goddard <https://youtu.be/gipdcWHjOFA> Hubble Tool Time Episode 1 Astronaut Training Retired NASA astronaut John Grunsfeld hosts this six-part mini-series about the tools used on the Hubble Space Telescope servicing missions. Hubble was uniquely designed to be serviced in space so that components could be repaired and upgraded. Astronauts using custom-designed tools performed challenging spacewalks on five servicing missions from 1993 to 2009 to keep Hubble operating so that it could change our fundamental understanding of the universe.

[Transcript](#)
[Link](#)

Join John and astronaut trainer Christy Hansen in this first episode to learn about how astronauts trained to use the tools on the Hubble servicing missions.

In addition to enabling Hubble's scientific discoveries, the tools developed by teams at NASA's Goddard Space Flight Center and tested in collaboration with the Johnson Space Center furthered NASA's human exploration capabilities. These tools and the knowledge gleaned from the Hubble servicing missions are used today by astronauts on the International Space Station, and will be critical to NASA's future crewed missions to the Moon and Mars.

For more information, visit <https://nasa.gov/hubble>.

Credit: NASA's Goddard Space Flight Center/Katrina Jackson.
Music credits: "Wine On It" by Kevin Blanc [SACEM]; KTSA Publishing SACEM; Gum Tapes; Killer Tracks Production Music. "Breakthrough" by Donn Wilerson [BMI]; Killer Tracks BMI; Killer Tracks Production Music.

2019 04 15 NASA Goddard <https://youtu.be/wZxUyH7vuRk> Water Released from Moon During Meteor Showers Scientists have discovered that water is being released from the Moon during meteor showers. When a speck of comet debris strikes the Moon it vaporizes on impact, creating a shock wave in the lunar soil. For a sufficiently large impactor, this shock wave can breach the soil's dry upper layer and release water molecules from a hydrated layer below. The LADEE spacecraft detects these water molecules as they enter the tenuous lunar atmosphere, with peaks in the water signal correlating to known meteor showers on Earth. The discovery of water just beneath the Moon's surface provides a potential resource for future exploration, and it improves our understanding of the moon's geologic past and its continued evolution.

[Transcript](#)
[Link](#)

Music provided by Killer Tracks: Virtual Memory

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Credit: NASA's Goddard Space Flight Center

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2019 04 15	NASA Goddard	https://youtu.be/RuDJOdGRz5o	New NASA Mini-Series Hubble Tool Time	Tuesdays starting on April 16, 2019, we will be releasing a new six-part mini-series about the tools used on Hubble's servicing missions, hosted by retired NASA astronaut John Grunsfeld. Hubble was uniquely designed to be serviced in space so that components could be repaired and upgraded. Astronauts performed challenging spacewalks on five servicing missions from 1993 to 2009 to keep Hubble operating so that it could change our fundamental understanding of the universe. In addition to enabling Hubble's scientific discoveries, the tools developed by teams at NASA's Goddard Space Flight Center and tested with the Johnson Space Center furthered NASA's human exploration capabilities. These tools and the knowledge gleaned from the Hubble servicing missions are used today by astronauts on the International Space Station, and will be critical to NASA's future crewed missions to the moon and Mars. For more information, visit nasa.gov/hubble. Credit: NASA's Goddard Space Flight Center/Paul Morris. Music credits: "Wine On It" by Kevin Blanc [SACEM]; KTSA Publishing SACEM; Gum Tapes; Killer Tracks Production Music. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13174	Transcript Link
2019 04 04	NASA Goddard	https://youtu.be/CNZGfeVaCHU	GLOBE Observer Clouds Getting Started	Clouds are a major component of the Earth's system that reflect, absorb, and scatter sunlight and infrared emissions from Earth. This affects how energy passes through the atmosphere. Different types of clouds have different effects, and the amount of cloud cover is also important. Clouds can change rapidly, so frequent observations are useful to track these changes. Such observations are able to see change over time and help with interpretation of satellite cloud data. The cloud observation tool in the GLOBE Observer app allows you to photograph clouds and record sky observations and compare them with NASA satellite images. Our goal is to provide a step-by-step process that helps you learn about clouds and their classification through simple observations and photography. You are an important part of the puzzle, providing a new perspective of the clouds that our NASA satellites do not have, looking up. We are excited for you to start collecting data through this updated cloud protocol featuring NASA satellite comparison! Learn the basics of how to observe clouds with the GLOBE Observer App. Observations can be made anywhere and anytime. Open the app, select Clouds and follow the directions! Help scientists as a citizen scientist with your observations. For more information, go to https://observer.globe.gov/ This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization	Transcript Link

2019 03 27 NASA Goddard <https://youtu.be/zJE0DnRWPz0> Going Interstellar with TESS and Kepler [Transcript Link](#)

For the longest time, space seemed like just a big, nearly empty place. However, as we learned more about the universe around us, we discovered other planets orbiting our Sun, and even planets that orbit other stars trillions of miles away. In this video, discover how NASA has explored the space beyond Earth and our solar system with spacecraft like Voyagers 1 and 2, and how we've discovered thousands of planets outside of our solar system -- also called exoplanets -- with space telescopes like Kepler and TESS.

Credit: NASA's Goddard Space Flight Center
Chris Smith (USRA): Lead Producer
Francis Reddy (University of Maryland College Park): Lead Science Writer
Rob Andreoli (AIMM): Videographer
John Caldwell (AIMM): Videographer

Music: "Virtual Memory" from Killer Tracks

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2019 03 27 NASA Goddard <https://youtu.be/Zve2F5vAfuc> 5 Things About Interstellar Space [Transcript Link](#)

Our Sun releases a constant flow of charged particles & magnetic fields that creates a bubble in space (but not the soapy kind). Beyond the edge of this bubble is interstellar space, now home to the two Voyager spacecraft. Here are five things to know about interstellar space!

For more about how humanity is exploring the space between the stars, tune in to NASA Science Live at 3 p.m. EDT / 12 p.m. PDT on March 27! Watch the show and leave your questions in the comments for a chance to see them answered live: <https://youtu.be/4UD21rCcPpU>

Credits: NASA's Goddard Space Flight Center
Haley Reed
Micheala Sosby
Kaliah Hobbs
Courtney A. Lee
C. Alex Young
Karen Fox

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2019 03 25	NASA Goddard	https://youtu.be/ZHcB5EFDylc	Greenland's Jakobshavn Glacier Reacts to Changing Ocean Temperatures	NASA's Oceans Melting Greenland (OMG) mission uses ships and planes to measure how ocean temperatures affect Greenland's vast icy expanses. Jakobshavn Glacier, known in Greenlandic as Sermeq Kujalle, on Greenland's central western side, has been one of the island's largest contributor's to sea level rise, losing mass at an accelerating rate. In a new study, the OMG team found that between 2016 and 2017, Jakobshavn Glacier grew slightly and the rate of mass loss slowed down. They traced the causes of this thickening to a temporary cooling of ocean temperatures in the region. Narrated by OMG Principal Investigator Josh Willis. Music: Rising Tides by Rainman [PRS] Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13092 Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard	Transcript Link
2019 03 20	NASA Goddard	https://youtu.be/AMuz21RLE8	2019 Arctic Sea Ice Maximum Continues Trend of Decline	Every year, sea ice fluctuates through the seasons, growing in the winter and shrinking in the summer. This year, Arctic sea ice reached its annual maximum on March 13, 2019. It wasn't a record low, but it continued a trend of declining sea ice maximums and minimums. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13157 Credit: NASA's Goddard Space Flight Center If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC · Flickr http://www.flickr.com/photos/gsfcc	Transcript Link

2019 03 19	NASA Goddard	https://youtu.be/5pGXgrovaFo	NASA's Fermi Satellite Clocks a 'Cannonball' Pulsar	Astronomers using NASA's Fermi Gamma-ray Space Telescope and the National Science Foundation's Karl G. Jansky Very Large Array (VLA) have found a pulsar hurtling through space at nearly 2.5 million miles an hour -- so fast it could travel the distance between Earth and the Moon in just 6 minutes. Pulsars are superdense, rapidly spinning neutron stars left behind when a massive star explodes. This one, dubbed PSR J0002+6216 (J0002 for short), sports a radio-emitting tail pointing directly toward the expanding debris from a recent supernova explosion. Thanks to its narrow dart-like tail and a fortuitous viewing angle, astronomers can trace this pulsar straight back to its birthplace. Further study of J0002 will help us better understand how these explosions are able to 'kick' neutron stars to such high speed. The pulsar is located about 6,500 light-years away in the constellation Cassiopeia. It was discovered in 2017 by a citizen-science project called Einstein@Home , which uses downtime on the computers of volunteers to process Fermi gamma-ray data and has identified 23 gamma-ray pulsars to date. J0002 spins 8.7 times a second, producing a pulse of gamma rays with each rotation, and has about 1.5 times the mass of the Sun. The pulsar lies about 53 light-years from the center of a supernova remnant called CTB 1. Its rapid motion through interstellar gas results in shock waves that produce the tail of magnetic energy and	Transcript Link
2019 02 28	NASA Goddard	https://youtu.be/HMJjAxtX4ZQ	How the 2015-2016 El Niño Triggered Outbreaks Across the Globe	The 2015-2016 El Niño event brought weather conditions that triggered regional disease outbreaks throughout the world, according to a new NASA study that is the first to comprehensively assess the public health impacts of the major climate event on a global scale. El Niño is an irregularly recurring climate pattern characterized by warmer than usual ocean temperatures in the equatorial Pacific, which creates a ripple effect of anticipated weather changes in far-spread regions of Earth. During the 2015-2016 event, changes in precipitation, land surface temperatures and vegetation created and facilitated conditions for transmission of diseases, resulting in an uptick in reported cases for plague and hantavirus in Colorado and New Mexico, cholera in Tanzania, and dengue fever in Brazil and Southeast Asia, among others. Music: Under Offer by Peter Keith Yelland-Brown This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13152 Credit: NASA's Goddard Space Flight Center/LK Ward If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link

2019 02 27	NASA Goddard	https://youtu.be/liZqW0MsrKM	Magnetic Bubbles on the Moon Reveal Evidence of Sunburn	Every object, planet or person traveling through space has to contend with the Sun's damaging radiation -- and the Moon has the scars to prove it. Research using data from NASA's ARTEMIS mission — short for Acceleration, Reconnection, Turbulence and Electrodynamics of the Moon's Interaction with the Sun — suggests how the solar wind and the Moon's crustal magnetic fields work together to give the Moon a distinctive pattern of darker and lighter swirls. Lunar swirls, like the Reiner Gamma lunar swirl imaged here by NASA's Lunar Reconnaissance Orbiter, could be the result of solar wind interactions with the Moon's isolated pockets of magnetic field. Music credit: Genetic Spices by Jean Christophe Lemay This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13150 Credit: NASA's Goddard Space Flight Center/Genna Duberstein If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard	Transcript Link
2019 02 26	NASA Goddard	https://youtu.be/sjlegQKK-n8	Five Years of GPM Storms	On February 27, 2019, we celebrate five years in orbit for the NASA/JAXA Global Precipitation Measurement mission, or GPM. Launched from Japan on February 27, 2014, GPM has changed the way we see precipitation. It has provided unprecedented three-dimensional views of precipitation light rain to intense thunderstorms. To mark its five years, we're looking back at five big moments in GPM's history of observing storms. Music provided by Killer Tracks: "Life Defrosts," "Revolutions Are Infinite," "Formulas and Equations" Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13151 Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC · Flickr http://www.flickr.com/photos/gsfcc	Transcript Link

2019 02 12 NASA Goddard <https://youtu.be/GNXsZEvhy9I> Five Things about Radiation Donuts Have more questions about Earth's radiation donuts? Ask our scientists in the comments below! Join Van Allen Probes scientists Feb. 12 from 1-3 p.m. EST / 10 a.m. - 12 p.m. PST to get your questions answered! [Transcript Link](#)

Earth is surrounded by giant, donut-shaped clouds of radiation. 🌐 These are the Van Allen Belts. The wild particles trapped here can affect our technology and astronauts that pass through this region — so we've sent twin spacecraft to study them. Here are five things to know!

nasa.gov/vanallenprobes

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Lead Producers: Haley Reed and Micheala Sosby

Producers: Courtney Lee and Ki Ki Hobbs

Scientist: C. Alex Young

Host: Karen Fox

Rob Andreoli: Videographer

John Caldwell: Videographer

Animations by: Los Alamos National Laboratory

Music: Funk the Floor by UltraCat [FMA], Something Elated by Broke For Free [FMA]

2019 02 11 NASA Goddard <https://youtu.be/2AFq2rti3-4> NASA Finds Second Massive Greenland Crater Just 114 miles from the newly-found Hiawatha impact crater under the ice of northwest Greenland, lies a possible second impact crater. The 22-mile wide feature would be the second crater found under an ice sheet, and if confirmed, would be the 22nd-largest crater on Earth. A NASA-led team discovered the feature using satellite data of the surface of the Greenland Ice Sheet as well as radar measurements from the airborne campaign Operation IceBridge. Although the two massive craters lie fairly close to each other, it's thought they weren't created at the same time. The second crater looks to be much older than Hiawatha, with features that are significantly more eroded, and it contains older ice than its neighbor. [Transcript Link](#)

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Credit: NASA's Goddard Space Flight Center/Jefferson Beck

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2019 02 08	NASA Goddard	https://youtu.be/Lo4igKDySFQ	NASA's Webb Is Sound After Completing Critical Milestones	NASA's James Webb Space Telescope has successfully passed another series of critical testing milestones on its march to the launch pad. In recent acoustic and sine vibration tests, technicians and engineers exposed Webb's spacecraft element to brutal dynamic mechanical environmental conditions to ensure it will endure the rigors of a rocket launch to space. Credits: Michael P. Menzel: Producer, Writer, videographer, video editor Thaddeus Cesari: writer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12552 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc	Transcript Link
2019 02 06	NASA Goddard	https://youtu.be/2S6JTLRmQdU	2018 Was the Fourth Hottest Year on Record	2018 was the fourth hottest year in the modern record, part of a decades-long trend of warming. The record dates back to 1880, when it became possible to collect consistent, reliable temperatures around the planet. NASA and NOAA work together to track the temperatures, part of ongoing research into our warming planet. Music: Sculpture by Axel Coon [GEMA], Ralf Goebel [GEMA] Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13142 Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC · Flickr http://www.flickr.com/photos/gsfcc	Transcript Link

2019 01 31 NASA Goddard <https://youtu.be/q4HFKeso5hs> Hubble Servicing Mission 1 From the Astronauts' Perspective In celebration of the 25th anniversary of the Hubble Space Telescope's first servicing mission, astronauts Kathryn Thornton and Jeffrey Hoffman told the story of that successful, groundbreaking mission during a livestream event from NASA's Goddard Space Flight Center on December 7, 2018. [Transcript](#) [Link](#)

Credit: NASA's Goddard Space Flight Center

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2019 01 31 NASA Goddard https://youtu.be/itN_Gknt2Ok The Challenges of Servicing in Space On December 7, 2018, a panel of astronauts from the Hubble Space Telescope's deployment and five servicing missions celebrated 25 years of servicing with a live discussion from NASA's Goddard Space Flight Center about the challenges of working on a telescope in space. [Transcript](#) [Link](#)

Credit: NASA's Goddard Space Flight Center

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- Flickr <http://www.flickr.com/photos/gsfcc>

2019 01 31	NASA Goddard	https://youtu.be/2AaK6Oegous	Servicing in Space 25 Years of Challenges and Achievements	On December 6, 2018, Hubble astronauts spoke to online audiences live from the Goddard Space Flight Center's innovative Robotic Operations Center (ROC) to discuss the history of Hubble servicing and how the future of satellite servicing is being developed today.	Transcript Link

Credit: NASA's Goddard Space Flight Center

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2019 01 30	NASA Goddard	https://youtu.be/T8kJwGDwONo	NICER Charts the Area Around a New Black Hole	Scientists have mapped the environment surrounding a black hole that is 10 times the mass of the Sun using NASA's Neutron star Interior Composition Explorer (NICER) payload aboard the International Space Station. NICER detected X-ray light from a recently discovered black hole, called MAXI J1820+070 (J1820 for short), as it consumed material from a companion star. Waves of X-rays formed "light echoes" that reflected off the swirling gas near the black hole and revealed changes in the environment's size and shape.	Transcript Link

A black hole can siphon gas from a nearby star and into a ring of material called an accretion disk that glows in X-rays. Above this disk is the corona, a region of subatomic particles that glows in higher-energy X-rays.

Astrophysicists want to better understand how the inner edge of the accretion disk and the corona change in size and shape as a black hole accretes material from its companion star. If they can understand how and why these changes occur in stellar-mass black holes over a period of weeks, they could shed light on how supermassive black holes evolve over millions of years and how they affect the galaxies in which they reside.

One method used to chart those changes is called X-ray reverberation mapping, which uses X-ray reflections in much the same way sonar uses sound waves to map undersea terrain.

2019 01 17	NASA Goddard	https://youtu.be/EtPFCwGDa8s	Moon Sheds Light on Earth's Impact History	By analyzing data on lunar craters provided by the Diviner instrument aboard the Lunar Reconnaissance Orbiter, scientists have made a fascinating discovery about the history of impacts on both the Earth and the Moon. Watch this video to learn more. Video Produced & Edited by David Ladd Visualizations by Ernie Wright Music Provided by Killer Tracks: "The Starting Squad" - David Corboy & Guido Castillo Credit: NASA's Goddard Space Flight Center If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC · Flickr http://www.flickr.com/photos/gsfcr	Transcript Link
2018 12 21	NASA Goddard	https://youtu.be/LHbFliE-uo	Earthrise in 4K	In December of 1968, the crew of Apollo 8 became the first people to leave our home planet and travel to another body in space. But as crew members Frank Borman, James Lovell, and William Anders all later recalled, the most important thing they discovered was Earth. Using photo mosaics and elevation data from Lunar Reconnaissance Orbiter (LRO), this video commemorates Apollo 8's historic flight by recreating the moment when the crew first saw and photographed the Earth rising from behind the Moon. Narrator Andrew Chaikin, author of "A Man on the Moon," sets the scene for a three-minute visualization of the view from both inside and outside the spacecraft accompanied by the onboard audio of the astronauts. Ernie Wright (USRA): Lead Visualizer and Producer Andrew Chaikin: Producer Dan Gallagher (USRA): Producer and Lead Video Editor David Ladd (USRA): Associate Producer Noah Petro (NASA/GSFC): Producer and Scientist John Keller (NASA/GSFC): Scientist Richard Vondrak (NASA/GSFC): Scientist Andrew Chaikin: Narrator Michael Randazzo (AIMM): Video Editor Laurence Schuler (ADNET Systems Inc.): Technical Support Ian Jones (ADNET Systems Inc.): Technical Support This video is public domain and along with other supporting	Transcript Link

2018 12 20	NASA Goddard	https://youtu.be/1LZ0gPZf7nk	Apollo 8 - 50th Anniversary Montage	This video is a montage of NASA archival footage from the Apollo 8 mission. Music: "People Can't Stop Chillin'" by Sports; used with permission. Credit: NASA Read more: https://www.nasa.gov/feature/goddard/2018/part-3-apollo-8-the-far-side If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAGoddard Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfsc	Transcript Link
2018 12 20	NASA Goddard	https://youtu.be/4GWB eLjj2C0	Moon Phases 2019 - Northern Hemisphere - 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2019, as viewed from the Northern Hemisphere. Each frame represents one hour. In addition, this visualization shows the moon's orbit position, sub-Earth and subsolar points, distance from the Earth at true scale, and labels of craters near the terminator. Music Credits: Killer Tracks: "The Pride and the Glory" and "Hidden History" – Paul Reeves This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/4442 Credits: Ernie Wright (USRA): Lead Visualizer John Keller (NASA/GSFC): Scientist Noah Petro (NASA/GSFC): Scientist David Ladd (USRA): Producer If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/... Follow NASA's Goddard Space Flight Center:	Transcript Link

2018 12 20	NASA Goddard	https://youtu.be/4co8OASbtMI	Moon Phases 2019 - Southern Hemisphere - 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2019, as viewed from the Southern Hemisphere. Each frame represents one hour. In addition, this visualization shows the moon's orbit position, sub-Earth and subsolar points, distance from the Earth at true scale, and labels of craters near the terminator. Music Provided by Killer Tracks: "Uncharted Territories" – Phil Stevens, "Beyond The Clouds" – Torsti Juhani Spoof Credits: Ernie Wright (USRA): Lead Visualizer John Keller (NASA/GSFC): Scientist Noah Petro (NASA/GSFC): Scientist David Ladd (USRA): Producer This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/4459 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/...	Transcript Link
2018 12 17	NASA Goddard	https://youtu.be/mN8o90UbpmE	Saturn's Rings Are Disappearing	Scientists from NASA Goddard have discovered that not only are Saturn's rings younger than previously thought, but also that the rings are actually disappearing at a rapid pace through a process called "ring rain." Learn more about this phenomena in this animated video. For more information on this study, please visit: https://www.nasa.gov/press-release/goddard/2018/ring-rain Video Produced & Edited by: David Ladd Saturn Ring Rain Animations by: Lisa Poje Additional Animations by: NASA's Conceptual Image Lab & NASA Jet Propulsion Laboratory Video narrated by: Jerome Hruska Music Provided by Killer Tracks: "The Butterfly Effect" - Gresby Race Nash This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12672 Credit: NASA's Goddard Space Flight Center If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center	Transcript Link

2018 12 17 NASA Goddard <https://youtu.be/gpzFn5bghI4> NASA's Laser Mission to Measure Trees

The Global Ecosystem Dynamics Investigation (GEDI) is a lidar instrument that sends laser pulses down to Earth, where they penetrate the globe's temperate and tropical forests. The laser beams ricochet off the first thing they hit, which can be a leaf atop a dense canopy, a protruding branch, or the ground from which the forest emerges. The energy returned to the GEDI telescope on the International Space Station will provide an intricate three-dimensional map of forest canopies.

[Transcript Link](#)

"We can send out a little pulse of light and it travels down, reflects off the surface, and comes back," Bryan Blair, GEDI instrument scientist and deputy principal investigator, said. "We can see and measure how tall the tree is and we can actually see how dense it is as we go down."

The GEDI instrument was built at NASA's Goddard Space Flight Center in Greenbelt, Maryland, and has the highest resolution and densest sampling of any lidar ever put in orbit. The mission is led by the University of Maryland and is designed to help researchers understand how ecosystems are storing carbon.

Music: Secret Science, by Lee Groves [PRS], Peter George Maret [PRS]; Team Effort, by Alexandre Prodhomme [SACEM], Eddy Pradelles [SACEM]

Credit: NASA's Goddard Space Flight Center
Matthew R. Radcliff (USRA): Lead Producer

2018 12 13 NASA Goddard <https://youtu.be/PitRWjQC9vo> Snow over Antarctica Buffered Sea Level Rise during Last Century

A new NASA-led study has determined that an increase in snowfall accumulation over Antarctica during the 20th century mitigated sea level rise by 0.4 inches. However, Antarctica's additional ice mass gained from snowfall only makes up for about a third of its current ice loss. These findings don't necessarily mean that Antarctica is growing; it's still losing mass, even with the extra snowfall. However, without these gains, the planet would have experienced even more sea level rise in the 20th century. The polar ice sheets grow via snow accumulation and shrink through melting and the production of icebergs. Presently, both ice sheets are imbalanced—losing more ice annually than they are gaining—and their ice loss is estimated to be currently causing about a half of the observed sea level rise.

[Transcript Link](#)

Read more: <https://cms.nasa.gov/feature/goddard/2018/snow-over-antarctica-buffered-sea-level-rise-during-last-century>

Credit: NASA

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2018 12 11 NASA Goddard <https://youtu.be/zpfhoXN06FM> Seas of Infinity OAO 2's 50th Anniversary

On Dec. 7, 1968, an Atlas-Centaur rocket carrying NASA's heaviest and most ambitious uncrewed satellite to date blasted into the sky from Launch Complex 36B at Cape Canaveral Air Force Station, Florida.

[Transcript](#)
[Link](#)

Formally known as Orbiting Astronomical Observatory (OAO) 2 and nicknamed Stargazer, it would become NASA's first successful cosmic explorer and the direct ancestor of Hubble, Chandra, Swift, Kepler, FUSE, GALEX and many other astronomy satellites.

Stargazer provided the first orbital stellar observations in ultraviolet light, shorter than wavelengths in the visible range spanning 3,800 (violet) to 7,500 (red) angstroms. Much of UV light is screened out by the atmosphere and unavailable to ground-based telescopes. OAO 2's experiments made nearly 23,000 measurements, showed that young, hot stars were hotter than theoretical models of the time indicated, confirmed that comets are surrounded by vast clouds of hydrogen and discovered a curious feature of the interstellar medium that would take decades to understand.

One of the key problems scientists had to solve was how to point a telescope onto any point on the celestial sphere and hold it there for a half hour or so in order for instruments to record the data from faint sources. This makes OAO 2 the ancestor of all space telescopes that can point to a given spot on the sky and track it for an extended period.

2018 12 11 NASA Goddard <https://youtu.be/VTVXrnuvGzU> New NASA Satellite Reveals Profiles of Ice, Forests and Oceans

Less than three months into its mission, NASA's Ice, Cloud and land Elevation Satellite-2, or ICESat-2, is already exceeding scientists' expectations. The satellite is measuring the height of sea ice to within an inch, tracing the terrain of previously unmapped Antarctic valleys, surveying remote ice sheets, and peering through forest canopies and shallow coastal waters.

[Transcript](#)
[Link](#)

With each pass of the ICESat-2 satellite, the mission is adding to datasets tracking Earth's rapidly changing ice. Researchers are ready to use the information to study sea level rise resulting from melting ice sheets and glaciers, and to improve sea ice and climate forecasts. Music: "Pizzicato Piece," Andrew Michael Britton [PRS], David Stephen Goldsmith [PRS]

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Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons

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2018 12 10	NASA Goddard	https://youtu.be/QeGFa_gwDY3s	3-D Views of Puerto Rico's Forests After Hurricane Maria	In September 2017, Hurricane Maria struck Puerto Rico head-on as a Category 4 storm with winds topping 155 miles per hour. The storm damaged homes, flooded towns, devastated the island's forests and caused the longest electricity black-out in U.S. history. Hurricane Maria's lashing rain and winds transformed Puerto Rico's lush tropical rainforest landscape. Research scientist Doug Morton of Goddard was part of the team of NASA researchers who had surveyed Puerto Rico's forests six months before the storm with Goddard's Lidar, Hyperspectral, and Thermal (G-LiHT) Airborne Imager, a system designed to study the structure and species composition of Puerto Rican forests. Shooting 600,000 laser pulses per second, G-LiHT produces a 3D view of the forest structure in high resolution. In April 2018, post-Maria, they went back and surveyed the same tracks as in 2017. Comparing the before and after data, the team found that 40 to 60 percent of the tall trees that formed the canopy of the forest either lost large branches, were snapped in half or were uprooted by strong winds. "Maria gave the island's forests a haircut," said Morton. "The island lost so many large trees that forests were shortened by one-third. We basically saw 60 years' worth of what we would consider natural treefall disturbances happen in one day." Read more: https://www.nasa.gov/feature/goddard/2018/nasa-	Transcript Link
2018 12 10	NASA Goddard	https://youtu.be/vZkwaSBe2zo	NASA's Black Marble Maps Puerto Rico's Energy Use After Hurricane Maria	At night, a satellite's view of Earth lights up in bright strings of roads dotted with pearl-like cities and towns as humans take center stage in artificial light. In Puerto Rico, during Hurricane Maria, the entire island's lights went out. In the days, weeks, and months that followed, research physical scientist Miguel Roman at NASA's Goddard Space Flight Center in Greenbelt, Maryland, and his colleagues combined NASA's Black Marble night lights data product from the NASA/NOAA Suomi National Polar-orbiting Partnership satellite with USGS-NASA Landsat data and Google's OpenStreetMap to develop a neighborhood-scale map of energy use in communities across Puerto Rico as the electricity grid was slowly restored. They then analyzed the relationship between restoration rates in terms of days without electricity and the remoteness of communities from major cities. Read more: https://www.nasa.gov/feature/goddard/2018/nasa-provides-new-look-at-puerto-rico-post-hurricane-maria This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12616 Credit: NASA's Goddard Space Flight Center/Matthew Radcliff If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2018 12 03 NASA Goddard https://youtu.be/00_nPW-9vsA Arriving at Asteroid Bennu

Asteroids are the leftover building blocks of the solar system, remnants from the dawn of planet formation that may have delivered organics and water to early Earth, and which could hold clues to the origins of life. Now, a NASA mission called OSIRIS-REx has arrived at near-Earth asteroid Bennu. It will map and study the tiny world in great detail, eventually returning a piece of Bennu to Earth in 2023.

[Transcript Link](#)

The discoveries of OSIRIS-REx will shed light on our solar system's ancient history, and help pave the way for future exploration of other small bodies. In this short documentary, members of the OSIRIS-REx team capture the excitement of arriving at Bennu and look forward to the discoveries ahead.

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/12166>

Credit: NASA's Scientific Visualization Studio

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2018 12 03 NASA Goddard https://youtu.be/NYGHbL_esgw NASA's OSIRIS-REx Mission to Bennu

OSIRIS-REx is the third mission in NASA's New Frontiers Program. Its goal is to explore near-Earth asteroid Bennu, a remnant from the dawn of the solar system, and to return a sample of Bennu to Earth in 2023. OSIRIS-REx launched in September 2016 and arrives at Bennu on December 3, 2018. This video illustrates each of the mission's carefully-designed orbit maneuvers and mapping campaigns on its journey to Bennu and back.

[Transcript Link](#)

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Full Credits

Dan Gallagher (USRA): Producer

Walt Feimer (KBRwyle): Lead Animator

Michael Lentz (USRA): Animator

2018 12 03 NASA Goddard <https://youtu.be/4S0uk5hm2c> Why Bennu

The goal of the OSIRIS-REx mission is to collect a sample from an asteroid and bring it back to Earth. But just how did the OSIRIS-REx team choose Bennu from the over 500,000 known asteroids in the solar system? Watch this cartoon to find out!

[Transcript](#)
[Link](#)

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Credit: NASA's Goddard Space Flight Center

Video Produced & Edited by: David Ladd

Animations by NASA's Conceptual Image Lab: Adriana Manrique Gutierrez & Bailee DesRocher

Art Director: Michael Lentz

Music provided by Killer Tracks: "Cheeky Chappy" - James Patrick Kaleth & Ross Andrew McLean

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2018 11 29 NASA Goddard <https://youtu.be/V-v0DwNa194> Tracing the History of Starlight with NASA's Fermi Mission

Scientists using data from NASA's Fermi Gamma-ray Space Telescope have measured all the starlight produced over 90 percent of the universe's history. The analysis, which examines the gamma-ray output of distant galaxies, estimates the formation rate of stars and provides a reference for future missions that will explore the still-murky early days of stellar evolution.

[Transcript](#)
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One of the main goals of the Fermi mission is to assess the extragalactic background light (EBL), a cosmic fog composed of all the ultraviolet, visible and infrared light stars have created over the universe's history. Because starlight continues to travel across the cosmos long after its sources have burned out, measuring the EBL allows astronomers to study stellar formation and evolution separately from the stars themselves.

The collision between a high-energy gamma ray and infrared light transforms the energy into a pair of particles, an electron and its antimatter counterpart, a positron. The same process occurs when medium-energy gamma rays interact with visible light, and low-energy gamma rays interact with ultraviolet light. Enough of these interactions occur over cosmic distances that the farther back scientists look, the more evident their effects become on gamma-ray sources, enabling a deep probe of the universe's stellar content.

The scientists examined gamma-ray signals from 739 blazars -- galaxies with monster black holes at their centers -- collected over nine years by Fermi's Large Area Telescope (LAT). The measurement

2018 11 21	NASA Goddard	https://youtu.be/rE9O9sBRNto	Robotic Refueling Paving the Way for Exploration	One small box of technology is getting NASA one step closer to future exploration missions. The Robotic Refueling Mission 3, or RRM3, will prove technologies to transfer and store common consumables, like spacecraft fuel, in space. NASA has its eyes on human exploration, including venturing forward to the Moon and Mars. First, the agency must develop and perfect the technologies and capabilities needed for these missions. Affixed to the International Space Station, RRM3 will use a suite of three tools and the station's robotic handyman, Dextre, to transfer and store cryogenic propellant (e.g., liquid methane). These capabilities have applications ranging from in-situ resource utilization to solar electric propulsion to maintaining long-term life support systems. RRM3 is set to launch to the Space Station onboard SpaceX's 16th commercial resupply services mission. Once installed to the exterior of the station, the transfer and storage technologies will be put to the test. RRM3 builds on the first two phases of International Space Station technology demonstrations that tested tools, technologies and techniques to refuel and repair satellites in orbit. It is developed and operated by the Satellite Servicing Projects Division at NASA's Goddard Space Flight Center in Greenbelt, Maryland, under direction of NASA's Space Technology Mission Directorate.	Transcript Link
2018 11 16	NASA Goddard	https://youtu.be/ca1BxhKcqd8	Sounds of a Launch	In the early morning, while standing in the wet grass at NASA's Wallops Flight Facility in Virginia, NASA astronaut Kay Hire describes what it's like to attend a rocket launch. This audio postcard was recorded in May 2018 at NASA Wallops during the launch of the Antares OA-9 Cygnus to the International Space Station. The next launch of an Antares Cygnus resupply mission is scheduled to launch no earlier than 4:01 a.m. EST on Nov. 17, 2018 from Virginia Space's Mid-Atlantic Regional Spaceport, located at NASA Wallops. Read more: https://www.nasa.gov/feature/goddard/2018/sounds-of-a-launch Credit: NASA's Goddard Space Flight Center Haley Reed (NASA/GSFC): Lead Producer Katie Atkinson (GSFC Interns): Lead Producer Kay Hire (NASA): Narrator Aaron E. Lepsch (ADNET Systems Inc.): Technical Support This video is public domain and along with other supporting materials can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13111 If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2018 11 14	NASA Goddard	https://youtu.be/vTr3VdGIfr8	Massive Crater Discovered Under Greenland Ice	In a remote area of northwest Greenland, an international team of scientists has made a stunning discovery, buried beneath a kilometer of ice. It's a meteor impact crater, 300 meters deep and bigger than Paris or the Beltway around Washington, DC. It is one of the 25 largest known impact craters on Earth, and the first found under any of our planet's ice sheets. The researchers first spotted the crater in July 2015, while they were inspecting a new map of the topography beneath Greenland's ice sheet that used ice-penetrating radar data primarily from Operation IceBridge, an ongoing NASA airborne mission to track changes in polar ice, and earlier NASA airborne missions in Greenland. Read more: https://go.nasa.gov/2RSkn1u This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12941 Credit: NASA's Goddard Space Flight Center/Jefferson Beck Footage and co-production courtesy of the National History Museum of Denmark/University of Copenhagen, the Underground Channel, and the Alfred Wegener Institute Music credit: "Timelapse Variations - Remixed" Natalie Draper, Composer Original recording: Symphony Number One, SNOtone Records	Transcript Link
2018 11 09	NASA Goddard	https://youtu.be/35lh2muP_w	500th Anniversary of Humanity's First Circumnavigation of Earth	Five hundred years ago the first "orbit" of planet Earth, achieved in the spirit of the first human voyages to the Moon fifty years ago, was undertaken by the Portuguese explorer Magellan, using mission design and exploration guiding principles that remain in force today as we pursue the exploration of space. The connections between what Magellan and his team achieved 500 years ago and the past 60 years of space exploration are strong, with catalytic impact as we move forward in our exploration of the universe in the next 50 years. The linkages between Renaissance era exploration by sea and today's space missions inspires us to look back in order to look forward, as we imagine our next voyages in space, back to the Moon and onto Mars with women and men from planet Earth making the leap from sea to space. Music Credit: Via Killer Tracks, GTP56_Stunt_Kite, ICON023_Anything_is_Possible, ATMOS402_Spiralling_Spheres Credit: NASA's Goddard Space Flight Center Video producer: Richard Melnick This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13070 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link

2018 11 08	NASA Goddard	https://youtu.be/i7OEyI04OKM	Goddard's 'Girls Night In' 2018 Sirra and Jane	NASA's Goddard Space Flight Center in Greenbelt, Maryland, held its third annual STEM "Girls Night In" event on Nov. 2-3, 2018. Two participants, Sirra and Jane, spoke about what they learned from the experience. Music: KillerTracks Credit: NASA's Goddard Space Flight Center Video producer: Courtney Lee Read more: https://www.nasa.gov/feature/goddard/2018/nasa-goddard-hosts-young-women-for-stem-girls-night-in This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13108 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcr · Instagram http://www.instagram.com/nasagoddard	Transcript Link
2018 11 08	NASA Goddard	https://youtu.be/TPt1ezrPiYo	NASA Goddard Hosts 'STEM Girls Night In'	The 2018 "STEM Girls Night In," held Nov. 2-3, 2018, at NASA's Goddard Space Flight Center in Greenbelt, Maryland, had about 40 young participants who designed and built Mars rover models, spoke with astronaut Jeanette Epps and supported each other's STEM dreams. The young women, aged 16 to 17, were from local high schools. Credit: NASA's Goddard Space Flight Center Video producer: Marlee Baldridge Videographers: Marlee Baldridge, Courtney Lee, Katy Cawdrey, Rob Andreoli Read more: https://www.nasa.gov/feature/goddard/2018/nasa-goddard-hosts-young-women-for-stem-girls-night-in This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13108 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcr · Instagram http://www.instagram.com/nasagoddard	Transcript Link

2018 11 08	NASA Goddard	https://youtu.be/xxMQFIIJ-tM	NASA's Fermi Mission Shows How Luck Favors the Prepared	In 2017, NASA's Fermi Gamma-ray Space Telescope played a pivotal role in two important breakthroughs occurring just five weeks apart. But what might seem like extraordinary good luck is really the product of research, analysis, preparation and development extending back more than a century. This video timeline explores the historical progress of research into three cosmic messengers -- gravitational waves, gamma rays and neutrinos -- that Fermi helped bring together. Music: "Family Tree," "The Archives" and "Beyond Truth" from Killer Tracks. Credit: NASA's Goddard Space Flight Center This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13042 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc · Instagram http://www.instagram.com/nasagoddard	Transcript Link
2018 11 08	NASA Goddard	https://youtu.be/I-thifNB9c	EPIC New Science from 1 Million Miles Away	NASA's Earth Polychromatic Imaging Camera (EPIC) sits onboard NOAA's Deep Space Climate Observatory (DSCOVR) satellite at the Lagrange point 1, a million miles away from Earth. EPIC has been imaging the sunlit side of Earth between 13 and 22 times a day since 2015. Now, scientists have developed ways to use these images to study specific elements of our home planet's atmosphere and plant life, like ozone in the stratosphere, the makeup of clouds and the health of vegetation on land. Music: Assumption of Power by Laurent Dury [SACEM] Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13056 Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link

2018 11 07 NASA Goddard <https://youtu.be/SSdDPFfUVIo> Mapping Carbon in 3-D

NASA's new laser instrument, the Global Ecosystem Dynamics Investigation, or GEDI, has advanced laser technology that will reveal the makeup of remote forest ecosystems around the globe. GEDI will soar above Earth at 17,150 miles per hour onboard the International Space Station. Its measurements of the height of leaves, branches, trees, and shrubs below its path will help scientists map the structure of forests and better understand how ecosystems are storing or releasing carbon.

[Transcript](#)
[Link](#)

GEDI's lidar instrument sends laser pulses down to Earth, where they penetrate the globe's temperate and tropical forests. The laser beams ricochet off the first thing they hit, which can be a leaf atop a dense canopy, a protruding branch, or the ground from which the forest emerges. The energy returned to the GEDI telescope on the International Space Station will provide an intricate three-dimensional map of forest canopies and carbon storage.

Led by the University of Maryland in collaboration with NASA's Goddard Space Flight Center, GEDI has the highest resolution and densest sampling of any lidar ever put in orbit.

Music: "Hard Thinking" by Leonard-Morgen; "Hidden Files" by Sam Dodson [PRS]

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2018 11 06 NASA Goddard <https://youtu.be/O0Hx1Qe07ig> Tour the Plane Giving NASA's ICON a Ride to Space

Early in the morning of Nov. 7, 2018, NASA launches the Ionospheric Connection Explorer, or ICON, a spacecraft that will explore the dynamic region where Earth meets space. ICON launches on a Northrop Grumman Pegasus XL rocket, which is carried aloft by the Stargazer L-1011 aircraft.

[Transcript](#)
[Link](#)

Join NASA on a behind-the-scenes tour of this plane, once a jet airliner and now uniquely retrofitted to boost spacecraft into low-Earth orbit. Learn about ICON's science and meet the people — including an engineer, technician, and pilot — who will help launch the spacecraft into orbit.

CREDITS:

Scott England (Space Sciences Laboratory, UC Berkeley): Talent
Edward Dunlap (Northrop Grumman): Talent
Jim Stowers (Northrop Grumman): Talent
Don Walter (Northrop Grumman): Talent
Karen Fox (ASI): Host
Glenn Benson (ASRC Federal Data Solutions): Videographer
Francis Michaux (ASRC Federal Data Solutions): Videographer
Joy Ng (USRA): Editor
Sarah Frazier (ADNET Systems Inc.): Producer
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Michael Justice (ASRC Federal Data Solutions): Support
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2018 11 02	NASA Goddard	https://youtu.be/fzN0LbZXX1s	2018 Ozone Hole Is a Reminder of What Almost Was	Every year, the ozone hole over Antarctica reaches an annual maximum extent during southern winter. The depletion of ozone by chlorofluorocarbons (CFCs) happens faster at colder temperatures and slows down as temperatures warm, so each October, the ozone layer begins to heal again for the year. Scientists from NASA and NOAA work together to track the ozone layer throughout the year and determine when the hole reaches its annual maximum extent. This year, the South Pole region of Antarctica was slightly colder than the previous few years, so the ozone hole grew larger. However, scientists from NASA have developed models to predict what the ozone layer would have looked like without the Montreal Protocol, which banned the release of CFCs. Although the 2018 hole was slightly larger than that of 2017 or 2016, it was still much smaller than it would have been without the Montreal Protocol. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at :https://svs.gsfc.nasa.gov/13103 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Instagram http://www.instagram.com/nasagoddard · Twitter http://twitter.com/NASAGoddard	Transcript Link
2018 11 02	NASA Goddard	https://youtu.be/2WQGyAUUvMs	Insights on Comet Tails Are Blowing in the Solar Wind	Oliver Price, a planetary science Ph.D. student at University College London's Mullard Space Science Laboratory in the United Kingdom, has developed a new image-processing technique to mine through the wealth of data about comet tails. Price's findings offer the first observations of striations forming in the tails, and an unexpected revelation about the Sun's effect on comet dust. Understanding how dust behaves in the tail -- how it fragments and clumps together -- can teach scientists a great deal about similar processes that formed dust into asteroids, moons and even planets all those billions of years ago. With this study, scientists gain new insights to long-held mysteries. The work sheds light on the nature of striated comet tails from the past and provides a crucial lens for studying other comets in the future. But it also opens a new line of questioning: What role did the Sun have in our solar system's formation and early history? Credit: NASA's Goddard Space Flight Center/Genna Duberstein Read more: https://www.nasa.gov/feature/goddard/2018/new-insights-on-comet-tails-are-blowing-in-the-solar-wind This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12900 If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2018 10 29 NASA Goddard <https://youtu.be/KiKHw6cyXWA> Hubble Tech Detects Science Writer's Breast Cancer

Ann Jenkins has been writing about the Hubble Space Telescope and its discoveries for most of her adult life. One of her earliest projects with the team was to write about a technology spinoff that used digital imaging technology developed for Hubble in breast biopsy systems to clearly and precisely image suspicious tissue and guide a needle to retrieve a sample. This saved patients from having to undergo a surgical incision, in turn reducing pain, scarring and recovery time. Years later, Jenkins benefited from the very same technology when a mammogram revealed something suspicious and she had to have a biopsy herself.

Credit: NASA's Goddard Space Flight Center/Katrina Jackson

Music Credits:

"The Great and the Good" by Laurent Dury [SACEM]; Koka Media SACEM, Universal Publishing Production Music (France) SACEM; Killer Tracks Production Music
"Waiting for Results" by Eric Chevalier [SACEM]; Koka Media SACEM, Universal Publishing Production Music (France) SACEM; Killer Tracks Production Music
"At the Edge of the End" by Laurent Dury [SACEM]; Koka Media SACEM, Universal Publishing Production Music (France) SACEM; Killer Tracks Production Music

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <https://svs.gsfc.nasa.gov/13093>

2018 10 26 NASA Goddard https://youtu.be/EIAMB_NhKQ NASA Catches Super Typhoon Yutu Making Landfall

Video Description: NASA's GPM Core Observatory satellite captured an image of Super Typhoon Yutu when it flew over the powerful storm just as the center was striking the central Northern Mariana Islands north of Guam. [Transcript Link](#)

Early Thursday, Oct. 25 local time, Super Typhoon Yutu crossed over the U.S. Commonwealth of the Northern Mariana Islands. It was the equivalent of a Category 5 hurricane. The National Weather Service in Guam said it was the strongest storm to hit any part of the U.S. this year.

The Global Precipitation Measurement mission or GPM core satellite, which is managed by both NASA and the Japan Aerospace Exploration Agency, JAXA analyzed Yutu on Oct. 24 at 11:07 a.m. EDT (1507 UTC)/ 1:07 a.m. Guam Time, Oct. 25. GPM estimated rain rates within Super Typhoon Yutu fusing data from two instruments aboard: the GPM Dual-frequency Precipitation Radar or DPR, which covered the inner part of the storm, and the GPM Microwave Imager or GMI that analyzed the outer swath, just as the center was passing over the Island of Tinian. Music: "CSI," Anthony Edward Phillips, Atmosphere Music, Ltd. Complete transcript available.

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/13101>

Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons

2018 10 23	NASA Goddard	https://youtu.be/ImBnF-fFPIc	Elegance Music & Math	At NASA's Goddard Space Flight Center in Greenbelt, Maryland, this past summer, sometimes before the start of the work day, interns Philip Lu and Gabriel Apaza played impromptu classical piano concerts on the Steinway in Goddard's Hinners Auditorium, tackling masters such as Liszt, Debussy, Bach, Schubert and Chopin. Lu is a physics doctoral student at UCLA. Apaza is a rising senior at Michigan State studying computer science and engineering with a math minor. Both agree that music and mathematics share a commonality of elegance and problem-solving. In this video, they explain how. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13023 Credit: NASA's Goddard Space Flight Center/Mike Randazzo If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/	Transcript Link
2018 10 22	NASA Goddard	https://youtu.be/XkfcBHvNRw	The Secrets behind Earth's Multi-colored Glow	What does our planet look like from space? Most are familiar with the beloved images of the blue marble or pale blue dot -- Earth from 18,000 and 3.7 billion miles away, respectively. But closer to home, within the nearest region of space, you might encounter an unfamiliar sight. If you peer down on Earth from just 300 miles above the surface, near the orbit of the International Space Station, you can see vibrant swaths of red and green or purple and yellow light emanating from the upper atmosphere. This is airglow. Airglow occurs when atoms and molecules in the upper atmosphere, excited by sunlight, emit light in order to shed their excess energy. Or, it can happen when atoms and molecules that have been ionized by sunlight collide with and capture a free electron. In both cases, they eject a particle of light -- called a photon -- in order to relax again. The phenomenon is similar to auroras, but where auroras are driven by high-energy particles originating from the solar wind, airglow is energized by day-to-day solar radiation. For more information: https://www.nasa.gov/feature/goddard/2018/why-nasa-watches-airglow-the-colors-of-the-upper-atmospheric-wind Music: "Nature Daydream" by Laurent Dury [SACEM], "Grape Picking" by Laurent Dury [SACEM] from Killer Tracks Complete transcript available.	Transcript Link

2018 10 19	NASA Goddard	https://youtu.be/JmAf11F2JRo	Unboxing a New NASA Spacecraft	Go behind the scenes as we unbox NASA's Ionospheric Connection Explorer, or ICON, after its arrival at Vandenberg Air Force Base in California. Northrop Grumman engineer Steve Turek and NASA EDGE's Chris Giersch walk us through the whole process of unboxing a spacecraft - from the instrument that records every tiny bump on its journey to the special crane used to lift the spacecraft to its new home. ICON launches on Oct. 26, 2018, from NASA's Kennedy Space Center in Florida to study Earth's interface to space. Read more about the ICON mission: nasa.gov/icon Music credits: 'Yellow Flicker' by Andrew John Skeet [PRS], Andrew Michael Britton [PRS], David Stephen Goldsmith [PRS]; 'Passing Images' by Andrew Michael Britton [PRS], David Stephen Goldsmith [PRS]; 'Push Away' by Andrew Michael Britton [PRS], David Stephen Goldsmith [PRS], Mikey Rowe [PRS] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12971 Credit: NASA's Goddard Space Flight Center/Joy Ng If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer	Transcript Link
2018 10 15	NASA Goddard	https://youtu.be/6CXDrNyt-iM	Moonlight (Clair de Lune) updated 4K version	This visualization attempts to capture the mood of Claude Debussy's best-known composition, Clair de Lune (moonlight in French). The piece was published in 1905 as the third of four movements in the composer's Suite Bergamasque, and unlike the other parts of this work, Clair is quiet, contemplative, and slightly melancholy, evoking the feeling of a solitary walk through a moonlit garden. The visuals were composed like a nature documentary, with clean cuts and a mostly stationary virtual camera. The viewer follows the Sun throughout a lunar day, seeing sunrises and then sunsets over prominent features on the Moon. The sprawling ray system surrounding Copernicus crater, for example, is revealed beneath receding shadows at sunrise and later slips back into darkness as night encroaches. The visualization was created to accompany a performance of Clair de Lune by the National Symphony Orchestra Pops, led by conductor Emil de Cou, at the Kennedy Center for the Performing Arts in Washington, DC, on June 1 and 2, 2018, as part of a celebration of NASA's 60th anniversary. The visualization uses a digital 3D model of the Moon built from Lunar Reconnaissance Orbiter global elevation maps and image mosaics. The lighting is derived from actual Sun angles during lunar days in 2018. This video is public domain and along with other supporting	Transcript Link

2018 10 11	NASA Goddard	https://youtu.be/eFFvJYpg4xk	Arctic Sea Ice Is the Thinnest and Youngest It's Been in 60 Years	Working from a combination of satellite records and declassified submarine sonar data, NASA scientists have constructed a 60-year record of Arctic sea ice thickness. Right now, Arctic sea ice is the youngest and thinnest its been since we started keeping records. More than 70 percent of Arctic sea ice is now seasonal, which means it grows in the winter and melts in the summer, but doesn't last from year to year. This seasonal ice melts faster and breaks up easier, making it much more susceptible to wind and atmospheric conditions. Music: Galore by Lee Groves [PRS], Peter George Marett [PRS] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13089 Credit: NASA's Goddard Space Flight Center/Katy Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link
2018 10 10	NASA Goddard	https://youtu.be/jwC6oWwbSE	New Simulation Creates Pulsar in a Box	Scientists studying what amounts to a computer-simulated "pulsar in a box" are gaining a more detailed understanding of the complex, high-energy environment around spinning neutron stars, also called pulsars. The model traces the paths of charged particles in magnetic and electric fields near the neutron star, revealing behaviors that may help explain how pulsars emit gamma-ray and radio pulses with ultraprecise timing. A pulsar is the crushed core of a massive star that exploded as a supernova. The core is so compressed that more mass than the Sun's squeezes into a ball no wider than Manhattan Island in New York City. This process also revvs up its rotation and strengthens its magnetic and electric fields. Various physical processes ensure that most of the particles around a pulsar are either electrons or their antimatter counterparts, positrons. To trace the behavior and energies of these particles, the researchers used a comparatively new type of pulsar model called a "particle in cell" (PIC) simulation. The PIC technique lets scientists explore the pulsar from first principles, starting with a spinning, magnetized neutron star. The computer code injects electrons and positrons at the pulsar's surface and tracks how they interact with the electric and magnetic fields. It's computationally intensive because the particle motions affect the fields and the fields affect the particles, and everything is moving near the speed of light.	Transcript Link

2018 10 05 NASA Goddard <https://youtu.be/UGD8U3V42Ds> Q&A Hubble Finds Evidence of Possible Exomoon Astronomers using NASA's Hubble and Kepler space telescopes have uncovered tantalizing evidence for what could be a moon orbiting a gas-giant planet that orbits the star Kepler 1625, located 8,000 light-years away in the constellation Cygnus. [Transcript Link](#)

This program aired live on Friday, October 5th at 1 p.m. ET with Hubble scientists answering questions about what this evidence could mean for the future of exploring new worlds outside our solar system.

Joining this Live Q&A:

- Senior Project Scientist: Jennifer Wiseman
- Deputy Operations Project Scientist: Knicole Colon
- Host: Erin Kisliuk

To learn more about this discovery: <https://www.nasa.gov/press-release/astronomers-find-first-evidence-of-possible-moon-outside-our-solar-system>

For more about Hubble: www.nasa.gov/hubble

2018 10 04 NASA Goddard <https://youtu.be/A7MIVsE2oMM> Inside Hurricane Maria in 360° Two days before Hurricane Maria devastated Puerto Rico, the NASA-Japan Global Precipitation Measurement Core Observatory satellite captured a 3-D view of the storm. At the time Maria was a Category 1 hurricane. The 3-D view reveals the processes inside the hurricane that would fuel the storm's intensification to a category 5 within 24 hours. [Transcript Link](#)

For the first time in 360-degrees, this data visualization takes you inside the hurricane. The precipitation satellite has an advanced radar that measures both liquid and frozen water. The brightly colored dots show areas of rainfall, where green and yellow show low rates and red and purple show high rates. At the top of the hurricane, where temperatures are colder, blue and purple dots show light and heavy frozen precipitation. The colored areas below the dots show how much rain is falling at the surface.

For more information:

<https://www.nasa.gov/feature/goddard/2018/dive-into-a-360-view-of-hurricane-maria>

Created by: NASA's Scientific Visualization Studio and NASA's Goddard Space Flight Center

Data Sources:

- NASA/GPM Dual Precipitation Radar (DPR) precipitation rate and drop size distribution data
- NASA/GPM GPM Microwave Imager (GMI) ground precipitation

2018 10 03	NASA Goddard	https://youtu.be/Q8QFyOaTdZk	Did the Hubble Telescope Confirm the First Exomoon	The Hubble and Kepler space telescopes found evidence for what could be a giant moon accompanying a gas-giant planet that orbits the star Kepler-1625, located 8,000 light-years away in the constellation Cygnus. The moon may be as big as Neptune and it orbits a planet several times more massive than Jupiter. Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music Credits: "Momentum" by Guillaume Bernard [SACEM]; KTSA Publishing SACEM; Gum Tapes; Killer Tracks Production Music "Continental Drift" by Estelle Treville [SACEM], Pascal Marius [SACEM]; KTSA Publishing SACEM; Gum Tapes; Killer Tracks Production Music Read the NASA press release at https://nasa.gov/press-release/astronomers-find-first-evidence-of-possible-moon-outside-our-solar-system Find the science paper at http://advances.sciencemag.org/content/4/10/eaav1784 Visuals are also available at http://hubblesite.org/news_release/news/2018-45 Watch the scientists explain their research - https://youtu.be/eGjgD27Dtpc, https://youtu.be/vlcc2MdYaik	Transcript Link
2018 10 02	NASA Goddard	https://youtu.be/i2u-7LMhwvE	Simulation Reveals Spiraling Supermassive Black Holes	A new model is bringing scientists a step closer to understanding the kinds of light signals produced when two supermassive black holes, which are millions to billions of times the mass of the Sun, spiral toward a collision. For the first time, a new computer simulation that fully incorporates the physical effects of Einstein's general theory of relativity shows that gas in such systems will glow predominantly in ultraviolet and X-ray light. Just about every galaxy the size of our own Milky Way or larger contains a monster black hole at its center. Observations show galaxy mergers occur frequently in the universe, but so far no one has seen a merger of these giant black holes. Scientists have detected merging stellar-mass black holes -- which range from around three to several dozen solar masses -- using the National Science Foundation's Laser Interferometer Gravitational-Wave Observatory (LIGO). Gravitational waves are space-time ripples traveling at the speed of light. They are created when massive orbiting objects like black holes and neutron stars spiral together and merge. Supermassive mergers will be much more difficult to find than their stellar-mass cousins. One reason ground-based observatories can't detect gravitational waves from these events is because Earth itself is too noisy, shaking from seismic vibrations and gravitational changes from atmospheric disturbances. The detectors must be in space, like the Laser Interferometer Space Antenna (LISA) led by	Transcript Link

2018 10 02	NASA Goddard	https://youtu.be/Em4OFLiMux0	360-degree Simulated View of the Sky Between Two Supermassive Black Holes	This 360-degree video places the viewer in the middle of two circling supermassive black holes. The simulation shows how the black holes distort the starry background and capture light, producing black hole silhouettes. A distinctive feature called a photon ring outlines the black holes. The video represents a 46 minute orbital period. This corresponds to a binary with a total mass 1 million times the Sun's mass. The black holes would be separated by about 18.6 million miles (30 million kilometers). The background is a mosaic of the images covering the entire sky as observed by ESA's Gaia mission. Read more: https://www.nasa.gov/feature/goddard/2018/new-simulation-sheds-light-on-spiraling-supermassive-black-holes Credit: NASA's Goddard Space Flight Center; background, ESA/Gaia/DPAC This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13043 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center - Facebook: http://www.facebook.com/NASA.GSFC - Twitter http://twitter.com/NASAGoddard	Transcript Link
2018 10 02	NASA Goddard	https://youtu.be/RserLXB0TXs	Virtual Tour of the Hubble Control Center Exhibit Hallway Part 2	Explore the second half of the exhibit hallway in the Hubble control center to view hardware that once flew in space aboard Hubble as well as tools that astronauts used to repair and upgrade the observatory. This is part 5 of 5 of a 360-degree, virtual tour of the Hubble Space Telescope's home for mission operations, the Space Telescope Operations Control Center at NASA's Goddard Space Flight Center in Greenbelt, Maryland. View the full tour playlist: https://www.youtube.com/playlist?list=PL_8hVmWnP_O0GvDYsfyr-4A3MWLfaHWnj Credit: NASA's Goddard Space Flight Center/Georgina Chiou Music credit: "Looking Forward" by Daniel Backes [GEMA] and Peter Moslener [GEMA]; Ed.Berlin Production Music/Universal Production Music GmbH GEMA; Berlin Production Music; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13060 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNIhOyGRzue8kN	Transcript Link

2018 10 02	NASA Goddard	https://youtu.be/-b5M7KJVADQ	Virtual Tour of the Hubble Control Center Mission Operations Room	Visit the Mission Operation Room, where the Hubble flight operators command and monitor Hubble. This is part 2 of 5 of a 360-degree, virtual tour of the Hubble Space Telescope's home for mission operations, the Space Telescope Operations Control Center at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Watch the full tour at this playlist: https://www.youtube.com/playlist?list=PL_8hVmWnP_O0GvDYsfyr-4A3MWLfaHWnj Credit: NASA's Goddard Space Flight Center/Georgina Chiou Music credit: "Looking Forward" by Daniel Backes [GEMA] and Peter Moslener [GEMA]; Ed.Berlin Production Music/Universal Production Music GmbH GEMA; Berlin Production Music; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13060 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNIhOhOyGRzue8kN	Transcript Link
2018 10 02	NASA Goddard	https://youtu.be/Ektu832Ho8	Virtual Tour of the Hubble Control Center Exhibit Hallway Part 1	Follow NASA's Hubble Space Telescope: Explore the second half of the exhibit hallway in the Hubble control center to view hardware that once flew in space aboard Hubble as well as tools that astronauts used to repair and upgrade the observatory. This is part 5 of 5 of a 360-degree, virtual tour of the Hubble Space Telescope's home for mission operations, the Space Telescope Operations Control Center at NASA's Goddard Space Flight Center in Greenbelt, Maryland. View the full tour playlist: https://www.youtube.com/playlist?list=PL_8hVmWnP_O0GvDYsfyr-4A3MWLfaHWnj Credit: NASA's Goddard Space Flight Center/Georgina Chiou Music credit: "Looking Forward" by Daniel Backes [GEMA] and Peter Moslener [GEMA]; Ed.Berlin Production Music/Universal Production Music GmbH GEMA; Berlin Production Music; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13060 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNIhOhOyGRzue8kN	Transcript Link

2018 10 02	NASA Goddard	https://youtu.be/O_jUCp9R5OM	Virtual Tour of the Hubble Control Center Operations Support Room	Step into the Operations Support Room, where the Hubble flight team investigates spacecraft anomalies and verifies new procedures. This is part 3 of 5 of a 360-degree, virtual tour of the Hubble Space Telescope's home for mission operations, the Space Telescope Operations Control Center at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Watch the full tour at this playlist: https://www.youtube.com/playlist?list=PL_8hVmWnP_O0GvDYsfyr-4A3MWLfaHWnj Credit: NASA's Goddard Space Flight Center/Georgina Chiou Music credit: "Looking Forward" by Daniel Backes [GEMA] and Peter Moslener [GEMA]; Ed.Berlin Production Music/Universal Production Music GmbH GEMA; Berlin Production Music; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13060 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN	Transcript Link
2018 10 02	NASA Goddard	https://youtu.be/rnw1RbfWm2E	Virtual Tour of the Hubble Control Center Entryway in Lobby	Follow NASA's Hubble Space Telescope: Begin a tour of the Hubble control center in the lobby, where you will learn about the orbiting spacecraft. This is part 1 of 5 of a 360-degree, virtual tour of the Hubble Space Telescope's home for mission operations, the Space Telescope Operations Control Center at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Watch the full tour at this playlist: https://www.youtube.com/playlist?list=PL_8hVmWnP_O0GvDYsfyr-4A3MWLfaHWnj Credit: NASA's Goddard Space Flight Center/Georgina Chiou Music credit: "Looking Forward" by Daniel Backes [GEMA] and Peter Moslener [GEMA]; Ed.Berlin Production Music/Universal Production Music GmbH GEMA; Berlin Production Music; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13060 See more Hubble videos on YouTube: https://www.youtube.com/playlist?list=PLiuUQ9asub3Ta8mqP5LNiOhOygRzue8kN Follow NASA's Hubble Space Telescope: · Facebook: https://www.facebook.com/NASAHubble	Transcript Link

2018 09 27	NASA Goddard	https://youtu.be/pyldwDbtcGs	2018 Arctic Sea Ice Ties for Sixth Lowest Minimum Extent on NASA Record	Arctic sea ice reached its annual minimum extent Sept. 19, and then again on Sept. 23, 2018. NASA works with the National Snow and Ice Data Center to track sea ice in the Arctic as it grows to a maximum extent through the winter and shrinks back to its minimum extent in September. This year's minimum sea ice extent reached 1.77 million square miles -- tied as the sixth lowest sea ice minimum since consistent satellite records began. Music: Haunting Memories by Emmanuel David Lipszyc [SACEM], Franck Lascombes [SACEM], Sebastien Lipszyc [SACEM] Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13075 Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Follow NASA's Goddard Space Flight Center • Facebook: http://www.facebook.com/NASA.GSFC • Twitter http://twitter.com/NASAGoddard • Flickr http://www.flickr.com/photos/gsfcc/ • Instagram http://www.instagram.com/nasagoddard/ • Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link
2018 09 25	NASA Goddard	https://youtu.be/tUPPs8-1Zbk	Our Home Planet	NASA explores. From the far reaches of the cosmos, to right here at home, NASA scientists are uncovering new insights that provide economic and societal benefits to the U.S. and the world. Since NASA was created nearly six decades ago, we have essentially "discovered" how Earth works as a system. It continues to be a fascinating exercise in fundamental science. And we are still discovering. But we aren't just exploring our home planet because it's an adventure. NASA is converting the spaced-based view of Earth into a pixel-level, planetary intelligence system for navigating and improving lives in the 21st century. We live on a planet with 7 billion people -- and counting -- who are more connected than ever. On October 4, 2017, NASA scientists and stakeholders came together at the Smithsonian National Air and Space Museum for a presentation on how NASA's Earth science research benefits people. Keynote speakers include: • Thomas Zurbuchen, Associate Administrator for the Science Mission Directorate, NASA • Marshall Shepherd, Georgia Athletic Association Distinguished Professor; Director of the Atmospheric Sciences Program, University of Georgia; Host of the Weather Channel's Weather Geeks • Christa Peters-Lidard, Deputy Director for Hydrosphere, Biosphere, and Geophysics, Earth Sciences Division, NASA's	Transcript Link

2018 09 20	NASA Goddard	https://youtu.be/NWb5SF8hFyE	Rare Electric Blue Clouds Observed by NASA Balloon	On the cusp of our atmosphere live a thin group of seasonal electric blue clouds. Forming fifty miles above the poles in summer, these clouds are known as noctilucent clouds or polar mesospheric clouds — PMCs. A recent NASA long-duration balloon mission observed these clouds over the course of five days at their home in the mesosphere. The resulting photos, which scientists have just begun to analyze, will help us better understand turbulence in the atmosphere, as well as in oceans, lakes, and other planetary atmospheres, and may even improve weather forecasting. For more information: https://www.nasa.gov/feature/goddard/2018/nasa-balloon-mission-captures-electric-blue-clouds Music credit: "In The End" By Andrew John Skeet [PRS], Andrew Michael Britton [PRS], David Stephen Goldsmith [PRS] from Killer Tracks Credits: David Fritts (GATS): Scientist Joy Ng (USRA): Producer Mara Johnson-Groh (Wyle Information Systems): Writer Tom Bridgman (GST): Data Visualizer William Putman (NASA/GSFC): Data Visualizer This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization	Transcript Link
2018 09 12	NASA Goddard	https://youtu.be/0sqKNd7MI6k	GLOBE Observer Adopt a Pixel	Land Cover Adopt a Pixel is the latest protocol for the GLOBE Observer app and is one more way for citizen scientists to help update land cover maps which are critical to many different processes on Earth and contributes to a community's vulnerability to disasters like fire, floods or landslides. Read more: https://www.nasa.gov/feature/goddard/2018/map-earth-with-nasa-and-globe-citizen-science Music credit: "Feet on the Ground," from Killer Tracks Video credit: NASA's Goddard Space Flight Center This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13053 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcc/ · Instagram https://www.instagram.com/nasagoddard/	Transcript Link

2018 09 12	NASA Goddard	https://youtu.be/xdDs-GUhJY	GPM Observes Tropical Storm Florence Temporarily Weakened by Wind Shear	NASA's Global Precipitation Measurement mission or GPM core observatory satellite flew over Tropical Storm Florence on September 7, 2018. At that time, the storm was experiencing strong wind shear. The storm later restrengthened into a hurricane. The GPM Core Observatory carries two instruments that show the location and intensity of rain and snow, which defines a crucial part of the storm structure – and how it will behave. The GPM Microwave Imager sees through the tops of clouds to observe how much and where precipitation occurs, and the Dual-frequency Precipitation Radar observes precise details of precipitation in 3-dimensions. GPM data is part of the toolbox of satellite data used by forecasters and scientists to understand how storms behave. GPM is a joint mission between NASA and the Japan Aerospace Exploration Agency. More stories related to GPM are available on the Precipitation Measurement Missions website: https://pmm.nasa.gov. Please give credit for this item to: NASA's Scientific Visualization Studio Data provided by the joint NASA/JAXA GPM mission.	Transcript Link
2018 09 12	NASA Goddard	https://youtu.be/ybt5Qy4XaNU	Countdown to ICESat-2 Launch	This video is public domain and along with other supporting NASA is about to launch the agency's most advanced laser instrument of its kind into space. The Ice, Cloud and land Elevation Satellite-2, or ICESat-2, will provide critical observations of how ice sheets, glaciers and sea ice are changing, leading to insights into how those changes impact people where they live. Launch is scheduled for Sept. 15, and as we count down the days, we're counting up 10 things you should know about ICESat-2. "Stars Align," Andrew Michael Britton, Atmosphere Music Ltd.; "A New Hope," Al Lethbridge, Atmosphere Music Ltd. Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13065 Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center • Facebook: http://www.facebook.com/NASA.GSFC • Twitter http://twitter.com/NASAGoddard • Flickr http://www.flickr.com/photos/gsfcr/ • Instagram http://www.instagram.com/nasagoddard/ • Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2018 09 10 NASA Goddard <https://youtu.be/7d5sYIkaDgA> ICESat-2 Por Los Números 1,387

ICESat-2 es un láser espacial de gran precisión que integra la tecnología más puntera de la NASA. Para poder medir la altura del hielo del planeta, los ingenieros deben llevar el instrumento ATLAS de ICESat-2 al extremo: a veces yendo a lo grande, otras a lo pequeño, pero siempre manteniéndolo preciso.

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ICESat-2 is an incredibly precise space laser that features the latest in NASA technology. To measure ice heights, engineers have to take ICESat-2's instrument ATLAS to the extreme - sometimes going big, sometimes going small, but always keeping it precise. To watch the English-language version:

https://www.youtube.com/watch?v=QlvRaLaeZpk&index=6&list=PL_8hVmWnP_O3OvhaFfaNbBhiJiDMM2jp4&t=0s

Música: "Discovery Thrill," Fred Dubois, Killer Tracks

Este video es de dominio público y se puede descargar en:

<https://svs.gsfc.nasa.gov/13062>

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O búscanos en Twitter: https://twitter.com/NASA_es

2018 09 10 NASA Goddard <https://youtu.be/uO507baQemI> ICESat-2 Por Los Números 0.2

ICESat-2 es un láser espacial de gran precisión que integra la tecnología más puntera de la NASA. Para poder medir la altura del hielo del planeta, los ingenieros deben llevar el instrumento ATLAS de ICESat-2 al extremo: a veces yendo a lo grande, otras a lo pequeño, pero siempre manteniéndolo preciso.

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ICESat-2 is an incredibly precise space laser that features the latest in NASA technology. To measure ice heights, engineers have to take ICESat-2's instrument ATLAS to the extreme - sometimes going big, sometimes going small, but always keeping it precise. To watch the English-language version:

https://www.youtube.com/watch?v=Vwnna6Rslow&index=5&list=PL_8hVmWnP_O3OvhaFfaNbBhiJiDMM2jp4&t=0s

Música: "Castles and Cathedrals," Fabrice Ravel-Chapuis, Killer Tracks

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O búscanos en Twitter: https://twitter.com/NASA_es

2018 09 10 NASA Goddard <https://youtu.be/nTviAHOKA4I> ICESat-2 Por Los Números 532

ICESat-2 es un láser espacial de gran precisión que integra la tecnología más puntera de la NASA. Para poder medir la altura del hielo del planeta, los ingenieros deben llevar el instrumento ATLAS de ICESat-2 al extremo: a veces yendo a lo grande, otras a lo pequeño, pero siempre manteniéndolo preciso.

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https://www.youtube.com/watch?v=agmmr5XvgMM&index=3&list=PL_8hVmWnP_O3OvhaFfaNbBhiJiDMM2jp4&t=0s

Música: "Outstanding Monuments," Laurent Dury, Killer Tracks

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2018 09 10 NASA Goddard https://youtu.be/mwZJfKN-v_s ICESat-2 Por Los Números 90

ICESat-2 es un láser espacial de gran precisión que integra la tecnología más puntera de la NASA. Para poder medir la altura del hielo del planeta, los ingenieros deben llevar el instrumento ATLAS de ICESat-2 al extremo: a veces yendo a lo grande, otras a lo pequeño, pero siempre manteniéndolo preciso.

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ICESat-2 is an incredibly precise space laser that features the latest in NASA technology. To measure ice heights, engineers have to take ICESat-2's instrument ATLAS to the extreme - sometimes going big, sometimes going small, but always keeping it precise. To watch the English-language version:

https://www.youtube.com/watch?v=jOFF6vmzEYQ&index=4&list=PL_8hVmWnP_O3OvhaFfaNbBhiJiDMM2jp4&t=0s

Música: "Landscape Wonders," Fred Dubois, Killer Tracks

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2018 09 10	NASA Goddard	https://youtu.be/DOEigUx7rIY	ICESat-2 Por Los Números 300 Trillones	ICESat-2 es un láser espacial de gran precisión que integra la tecnología más puntera de la NASA. Para poder medir la altura del hielo del planeta, los ingenieros deben llevar el instrumento ATLAS de ICESat-2 al extremo: a veces yendo a lo grande, otras a lo pequeño, pero siempre manteniéndolo preciso. ICESat-2 is an incredibly precise space laser that features the latest in NASA technology. To measure ice heights, engineers have to take ICESat-2's instrument ATLAS to the extreme - sometimes going big, sometimes going small, but always keeping it precise. To watch the English-language version: https://www.youtube.com/watch?v=03laQo8ou5M&t=0s&list=PL_8hVmWnP_O3OvhaFfaNbBhiJiDMM2jp4 Música: "Cristal Delight," Fred Dubois, Killer Tracks Este video es de dominio público y se puede descargar en: https://svs.gsfc.nasa.gov/13062 ¿Te gustan nuestros videos? Suscríbete a NASA's Goddard YouTube Channel: https://www.youtube.com/NASAEplorer O encuentra el Centro de Vuelo Espacial Goddard de la NASA en Facebook: https://www.facebook.com/NASA.GSFC O búscanos en Twitter: https://twitter.com/NASA_es	Transcript Link
2018 08 24	NASA Goddard	https://youtu.be/E4QC-irVs4E	NASA's OSIRIS-REx Approaches Asteroid Bennu	NASA's OSIRIS-REx asteroid sample return mission launched in 2016 and now (August, 2018) is entering its approach phase. OSIRIS-REx will arrive at asteroid Bennu in December, 2018. OSIRIS-REx will help unveil the mysteries of our solar system's formation. Read the approach phase web feature at https://www.nasa.gov/feature/goddard/2018/nasas-osiris-rex-begins-asteroid-operations-campaign For more information, go to nasa.gov/osirisrex or asteroidmission.org Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music credits: "Memorized" by Camille Ballon [SACEM]; KTSA Publishing SACEM; Gum Tapes; Killer Tracks Production Music "City Dreams" by Roberto Briot [SACEM]; KTSA Publishing SACEM; Gum Tapes; Killer Tracks Production Music "Sjungande Faglar" by Thomas Didler [SACEM]; KTSA Publishing SACEM; Gum Tapes; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13051 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link

2018 08 24	NASA Goddard	https://youtu.be/kcgdNg8vmho	OSIRIS-REx Approach Trailer	NASA's OSIRIS-REx asteroid sample return mission launched in 2016 and now (August, 2018) is entering its approach phase. OSIRIS-REx will arrive at asteroid Bennu in December, 2018. OSIRIS-REx will help unveil the mysteries of our solar system's formation. Read the approach phase web feature at https://www.nasa.gov/feature/goddard/2018/nasas-osiris-rex-begins-asteroid-operations-campaign For more information, go to nasa.gov/osirisrex or asteroidmission.org Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music credit: "Valiant" by Dimitris Mann [ASCAP] and Scott Goodman [ASCAP]; Open Note ASCAP; Icon Trailer Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13051 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcr/	Transcript Link
2018 08 22	NASA Goddard	https://youtu.be/rOXjuiQ3R_o	ICESat-2 Adds the Third Dimension to Earth	ICESat-2 will provide scientists with height measurements that create a global portrait of Earth's third dimension, gathering data that can precisely track changes of terrain including glaciers, sea ice, forests and more. The single instrument on ICESat-2 is ATLAS, the Advanced Topographic Laser Altimeter System, will measure melting ice sheets and investigate how this effects sea level rise, investigate changes in the mass of ice sheets and glaciers, estimate and study sea ice thickness, and measure the height of vegetation in forests and other ecosystems worldwide. "Eternal Circle," Laurent Dury, Koka Media SACEM Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12663 Credit: NASA's Goddard Space Flight Center/Scientific Visualization Studio If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcr/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2018 08 20 NASA Goddard https://youtu.be/UG_S7l2-Ct4 NASA Sees 30 Years of Yellowstone Recovery from 1988 Fires

A combination of lightning, drought and human activity caused fires to scorch more than one-third of Yellowstone National Park in the summer of 1988. Within a year, burn scars cast a sharp outline on the 793,880 acres affected by fire, distinguishing wide sections of recovering forest, meadows, grasslands and wetlands from unburned areas of the park. After more than two decades, satellite instruments can still detect these scars from space. In this time-lapse video, a series of false-color images collected by USGS-NASA Landsat satellites from 1987 to 2018 show the burning and gradual regeneration of Yellowstone's forests following the 1988 fire season. Landsat Project Scientist Jeff Masek talks about how Landsat satellites detect the burn scars from space and distinguish them from healthy, un-burned forest and from new growth. Watch as burn scars (dark red) quickly replace large expanses of healthy green vegetation (dark green) by 1989. Notice how the scars slowly fade over time as new vegetation begins to grow and heal the landscape.

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/11029>

Credit: NASA's Goddard Space Flight Center/Matthew Radcliff

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2018 08 17 NASA Goddard https://youtu.be/hbvJlc_e43mw Fermi's Gamma-Ray Burst Monitor

The Gamma-ray Burst Monitor (GBM) is one of the instruments aboard the Fermi Gamma-ray Space Telescope. The GBM studies gamma-ray bursts, the most powerful explosions in the universe, as well as other flashes of gamma rays. Gamma-ray bursts are created when massive stars collapse into black holes or when two superdense stars merge, also producing a black hole. The GBM sees these bursts across the entire sky, and scientists are using its observations to learn more about the universe.

Music: The Success by Keys of Moon |
<https://soundcloud.com/keysofmoon>
Music promoted by <https://www.free-stock-music.com>

Credit: NASA's Goddard Space Flight Center
Shoshana Schlauderaff: Lead Producer
Scott Wiessinger (USRA): Support
Aaron E. Lepsch (ADNET Systems Inc.): Technical Support
Jeanette Kazmierczak (University of Maryland College Park): Science Writer
Judith Racusin (NASA/GSFC): Narrator

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2018 08 17	NASA Goddard	https://youtu.be/ujwfgKvSVPk	New Arctic Lakes Could Soon Be a Major Source of Atmospheric Methane	For centuries, a massive store of carbon has been locked underground in the Arctic's permanently frozen soil known as permafrost. As Earth's climate continues to warm, that carbon has begun to leach into the atmosphere, the result of microbes waking up and digesting once-frozen organic materials. A new NASA-funded study focuses on a mechanism that could accelerate the release of this atmospheric carbon, the result of thermokarst lakes. These lakes form when thawing permafrost causes the ground to slump, creating a depression that collects rain and snowmelt and perpetuates a cycle of further permafrost thaw. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/13047 Credit: NASA's Goddard Space Flight Center/Katy Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link
2018 08 14	NASA Goddard	https://youtu.be/kk0ry3_R2pE	NASA'S NICER Does the Space Station Twist	This time-lapse video, obtained June 8, 2018, shows the precise choreography of NASA's Neutron star Interior Composition Explorer (NICER) as it studies pulsars and other X-ray sources from its perch aboard the International Space Station. NICER observes and tracks numerous sources each day, ranging from the star closest to the Sun, Proxima Centauri, to X-ray sources in other galaxies. Movement in the movie, which represents a little more than one 90-minute orbit, is sped up by 100 times. One factor in NICER's gyrations is the motion of the space station's solar arrays, each of which extends 112 feet (34 meters). Long before the panels can encroach on NICER's field of view, the instrument pirouettes to aim its 56 X-ray telescopes at a new celestial target. As the movie opens, the station's solar arrays are parked to prepare for the arrival and docking of the Soyuz MS-09 flight, which launched on June 6 carrying three members of the Expedition 56 crew. Then the panels reorient themselves and begin their normal tracking of the Sun. Neutron stars, also called pulsars, are the crushed cores left behind when massive stars explode. They hold more mass than the Sun in a ball no bigger than a city. NICER aims to discover more about pulsars by obtaining precise measures of their size, which will determine their internal make-up. An embedded technology demonstration, called Station Explorer for X-ray Timing and	Transcript Link

2018 08 08 NASA Goddard <https://youtu.be/dhDD2KafISU> It's Surprisingly Hard to Go to the Sun

The Sun contains 99.8 of the mass in our solar system. Its gravitational pull is what keeps everything here, from tiny Mercury to the gas giants to the Oort Cloud, 186 billion miles away. But even though the Sun has such a powerful pull, it's surprisingly hard to actually go to the Sun: It takes 55 times more energy to go to the Sun than it does to go to Mars.

[Transcript](#)
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Why is it so difficult? The answer lies in the same fact that keeps Earth from plunging into the Sun: Our planet is traveling very fast - about 67,000 miles per hour - almost entirely sideways relative to the Sun. The only way to get to the Sun is to cancel that sideways motion.

Since Parker Solar Probe will skim through the Sun's atmosphere, it only needs to drop 53,000 miles per hour of sideways motion to reach its destination, but that's no easy feat. In addition to using a powerful rocket, the Delta IV Heavy, Parker Solar Probe will perform seven Venus gravity assists over its seven-year mission to shed sideways speed into Venus' well of orbital energy. These gravity assists will draw Parker Solar Probe's orbit closer to the Sun for a record approach of just 3.83 million miles from the Sun's visible surface on the final orbits.

Though it's shedding sideways speed to get closer to the Sun, Parker Solar Probe will pick up overall speed, bolstered by Sun's extreme gravity - so it will also break the record for the fastest-ever human-made objects, clocking in at 430,000 miles per hour on its final

2018 08 08 NASA Goddard <https://youtu.be/E-gHeEOVEM> Two Research Vessels Leave for the Twilight Zone

A project jointly funded by NASA and the National Science Foundation is heading west from Seattle, straight for the twilight zone. Using two research vessels, the Export Processes in the Ocean from Remote Sensing (EXPORTS) oceanographic campaign will study the fates and carbon cycle impacts of microscopic underwater organisms.

[Transcript](#)
[Link](#)

The large multidisciplinary team, including members from more than 20 different research institutions, is accompanied by advanced underwater robotics and other instruments on a month-long campaign to study the secret lives of tiny organisms called phytoplankton, and the animals that eat them. These organisms can have a large impact on Earth's carbon cycle, storing carbon dioxide in a part of the ocean known as the twilight zone, between 650 and 3300 feet below the surface. Music: Brain Machine by George Arnas [PRS] and Anticipating Rain by Samuel Smith [PRS] Complete transcript available.

Read more:

<https://www.nasa.gov/feature/goddard/2018/expedition-probes-ocean-s-smallest-organisms-for-climate-answers>

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/13032>

Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann

2018 08 08	NASA Goddard	https://youtu.be/xAOXnN8txiQ	A Story of Science and Friendship	At NASA, friendship and discovery go hand-in-hand. For more than three decades, Earth scientists Compton Tucker and Piers Sellers were co-workers, roommates, neighbors and best friends. They studied the planet and traveled it together. Piers passed away in 2016 after battling pancreatic cancer. In this story, Compton remembers and honors his dear friend and partner in science. Complete transcript available. Read more: http://www.nasa.gov/feature/goddard/2018/a-nasa-story-of-science-and-friendship Music Credit: Healing by Lee Rosevere Video credit: NASA's Goddard Space Flight Center Katie Atkinson (GSFC Interns): Lead Producer Micheala Sosby (NASA/GSFC): Producer Compton Tucker (NASA/GSFC): Narrator Aaron E. Lepsch (ADNET Systems Inc.): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13033 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer	Transcript Link
2018 08 06	NASA Goddard	https://youtu.be/RnhKBdDanFw	NASA's TESS Catches a Comet	This video is compiled from a series of images taken on July 25 by the Transiting Exoplanet Survey Satellite. The angular extent of the widest field of view is six degrees. Visible in the images are the comet C/2018 N1, asteroids, variable stars, asteroids and reflected light from Mars. TESS is expected to find thousands of planets around other nearby stars. Read more: https://www.nasa.gov/feature/goddard/2018/nasa-s-planet-hunting-tess-catches-a-comet-before-starting-science This video is public domain and, along with supporting multimedia, may be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13030 Video credit: Massachusetts Institute of Technology/NASA's Goddard Space Flight Center Scott Wiessinger (USRA): Lead Producer Aaron E. Lepsch (ADNET Systems Inc.): Technical Support Claire Saravia (NASA/GSFC): Lead Public Affairs Officer Jeanette Kazmierczak (University of Maryland College Park): Lead Science Writer Padi Boyd (NASA/GSFC): Scientist If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center	Transcript Link

2018 08 01 NASA Goddard <https://youtu.be/NeZ0S3BcW0M> NASA Scientist Reveals Greenland's Geologic Past

We tend to think of Earth's landmasses as being fixed in place, but in reality they are attached to moving tectonic plates that constantly jostle for position. In some areas these tectonic plates slide over a hotspot - an upwelling of magma from deep in the mantle that can leave behind a geologic "scar" in the crust. Now, a NASA scientist and her colleagues have used anomalies in Greenland's crustal magnetic field to derive its geothermal heat flux, allowing them to effectively peer beneath Greenland's thick ice sheet and into the crust itself. What they found was a thermal track in Greenland's bedrock that records the motions of the North American tectonic plate over geologic time. This finding helps scientists to better understand the movement of Greenland, as it was slowly pushed over the hotspot that is now located under neighboring Iceland. It also serves as a reminder that nothing stands still over geologic time, and that even the largest landmasses are constantly being reshaped by our dynamic planet.

[Transcript Link](#)

Learn more about this finding at <https://go.nasa.gov/2n1olr6>

This video is public domain and can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/13025>

Supporting visualizations appearing in this video are available at: <http://svs.gsfc.nasa.gov/4670>

Credit: NASA's Goddard Space Flight Center/Dan Gallagher/Ernie Wright

2018 07 31 NASA Goddard <https://youtu.be/AW6w2DGpEd4> Sounds of NASA's Robotic Operations Center

Listen to the buzzing and whirring of robots that help shape the future of space exploration. NASA Robotics Technologist Brian Roberts takes you on a sound tour of the lab where robots are tested for spaceflight.

[Transcript Link](#)

Read more about how NASA gets robots ready for space: <https://go.nasa.gov/2v2T6QX>

Music credits: Flutterbee by Podington Bear

Video credit: NASA's Goddard Space Flight Center
Katie Atkinson (GSFC Interns): Lead Producer
Micheala Sosby (NASA/GSFC): Producer
Brian Roberts (Jackson & Tull, Inc.): Narrator
Aaron E. Lepsch (ADNET Systems Inc.): Technical Support

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2018 07 27	NASA Goddard	https://youtu.be/NYnUjtWCqAO	Discovering the Sun's Mysteriously Hot Atmosphere	Something mysterious is going on at the Sun. In defiance of all logic, its atmosphere gets much, much hotter the farther it stretches from the Sun's blazing surface. Temperatures in the corona — the Sun's outer atmosphere — spike to 3 million degrees Fahrenheit, while just 1,000 miles below, the underlying surface simmers at a balmy 10,000 F. How the Sun manages this feat is a mystery that dates back nearly 150 years, and remains one of the greatest unanswered questions in astrophysics. Scientists call it the coronal heating problem. Watch the video to learn how astronomers first discovered evidence for this mystery during an eclipse in the 1800s, and what scientists today think could explain it. Read more: https://www.nasa.gov/feature/goddard/2018/nasa-s-parker-solar-probe-and-the-curious-case-of-the-hot-corona Music credits: "Developing Over Time" by Ben Niblett [PRS], Jon Cotton [PRS], "Eternal Circle" by Laurent Dury [SACEM], "Starlight Andromeda" by Ben Niblett [PRS], Jon Cotton [PRS] Coronal spectrum image credit: Constantine Emmanouilidi Video credit: NASA's Goddard Space Flight Center Joy Ng (USRA): Producer Kathalina Tran (Wyle Information Systems): Writer Eric Christian Ph.D. (NASA/HQ): Scientist	Transcript Link
2018 07 26	NASA Goddard	https://youtu.be/ILII0IQ-7a0	NASA Celebrates 2018 National Intern Day	In honor of National Intern Day on Thursday, July 26, 2018 NASA held an agency-wide intern Town Hall at NASA Goddard with NASA Administrator Jim Bridenstine. Here's our celebration of NASA's 2018 summer interns! Would you like to be a NASA Intern? Join us! https://intern.nasa.gov/ NASA's Goddard Space Flight Center in Greenbelt, Maryland, is home to the nation's largest organization of scientists, engineers and technologists who build spacecraft, instruments and new technology to study Earth, the sun, our solar system and the universe. Learn more about NASA Goddard at https://www.nasa.gov/goddard. Credit: NASA's Goddard Space Flight Center/Rich Melnick Music: Killer Tracks - Track Title: Look at the Stars This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12996 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link

2018 07 25	NASA Goddard	https://youtu.be/6zNsc0e3Zns	NASA's Most Scientifically Complex Space Observatory Requires Precision	The James Webb Space Telescope is one the most ambitious, and technically complex missions NASA has ever set its focus on. Building an infrared observatory of this magnitude, power and complexity has never been attempted before. In order to ensure seamless operation in space, the cutting-edge technology incorporated into Webb must be rigorously tested prior to launch. Credit: NASA's Goddard Space Flight Center: Producer: Michael McClare Editor: Michael McClare Writer: Fred Brown, Natasha Pinol, Michael McClare Narrator: Michael Weiner Videographers: Michael McClare, Sophia Roberts, Michael Menzel This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/13013 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcc/ · Instagram https://www.instagram.com/nasagoddard/	Transcript Link
2018 07 25	NASA Goddard	https://youtu.be/fKkr7D807Y	Sounds of the Sun	Data from ESA (European Space Agency) and NASA's Solar and Heliospheric Observatory (SOHO) has captured the dynamic movement of the Sun's atmosphere for over 20 years. Today, we can hear the Sun's movement — all of its waves, loops and eruptions — with our own ears. This sound helps scientists study what can't be observed with the naked eye. "Waves are traveling and bouncing around inside the Sun, and if your eyes were sensitive enough they could actually see this," said Alex Young, associate director for science in the Heliophysics Science Division at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Data from SOHO, sonified by the Stanford Experimental Physics Lab, captures the Sun's natural vibrations and provides scientists with a concrete representation of its dynamic movements. "We don't have straightforward ways to look inside the Sun. We don't have a microscope to zoom inside the Sun," Young said. "So using a star or the Sun's vibrations allows us to see inside of it." These vibrations allow scientists to study a range of complex motions inside the Sun, from solar flares to coronal mass ejections. "We can see huge rivers of solar material flowing around. We are	Transcript Link

2018 07 20 NASA Goddard <https://youtu.be/dLwdS3zBGhg> Parker Solar Probe Trailer

Parker Solar Probe is NASA's mission to the Sun. The spacecraft will launch summer 2018.

[Transcript Link](#)

Learn more at www.nasa.gov/solarprobe.

Music credit: Luminous Skies [Underscore] by Andrew Prahlow

Credit: NASA's Goddard Space Flight Center
Genna Duberstein (USRA): Lead Producer
Steve Gribben (Johns Hopkins University/APL): Animator

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2018 07 20 NASA Goddard https://youtu.be/i_z19KPvV1w Parker Solar Probe--Mission Overview

Parker Solar Probe will swoop to within 4 million miles of the sun's surface, facing heat and radiation like no spacecraft before it. Launching in 2018, Parker Solar Probe will provide new data on solar activity and make critical contributions to our ability to forecast major space-weather events that impact life on Earth.

[Transcript Link](#)

In order to unlock the mysteries of the corona, but also to protect a society that is increasingly dependent on technology from the threats of space weather, NASA will send Parker Solar Probe to touch the Sun.

In 2017, the mission was renamed for Eugene Parker, the S. Chandrasekhar Distinguished Service Professor Emeritus, Department of Astronomy and Astrophysics at the University of Chicago. In the 1950s, Parker proposed a number of concepts about how stars--including our Sun--give off energy. He called this cascade of energy the solar wind, and he described an entire complex system of plasmas, magnetic fields, and energetic particles that make up this phenomenon. Parker also theorized an explanation for the superheated solar atmosphere, the corona, which is - contrary to what was expected by physics laws -- hotter than the surface of the sun itself.

This is the first NASA mission that has been named for a living individual.

Read more: <https://www.nasa.gov/feature/goddard/2018/nasa->

2018 07 20	NASA Goddard	https://youtu.be/zNpsy6IBPBw	Moonlight (Clair de Lune)	This visualization attempts to capture the mood of Claude Debussy's best-known composition, Clair de Lune (moonlight in French). The piece was published in 1905 as the third of four movements in the composer's Suite Bergamasque, and unlike the other parts of this work, Clair is quiet, contemplative, and slightly melancholy, evoking the feeling of a solitary walk through a moonlit garden. The visuals were composed like a nature documentary, with clean cuts and a mostly stationary virtual camera. The viewer follows the Sun throughout a lunar day, seeing sunrises and then sunsets over prominent features on the Moon. The sprawling ray system surrounding Copernicus crater, for example, is revealed beneath receding shadows at sunrise and later slips back into darkness as night encroaches. The visualization was created to accompany a performance of Clair de Lune by the National Symphony Orchestra Pops, led by conductor Emil de Cou, at the Kennedy Center for the Performing Arts in Washington, DC, on June 1 and 2, 2018, as part of a celebration of NASA's 60th anniversary. The visualization uses a digital 3D model of the Moon built from Lunar Reconnaissance Orbiter global elevation maps and image mosaics. The lighting is derived from actual Sun angles during lunar days in 2018.	Transcript Link
2018 07 19	NASA Goddard	https://youtu.be/TN6rZF5dSRg	Why Won't it Melt How NASA's Solar Probe will Survive the Sun	This video is public domain and along with other supporting NASA's Parker Solar Probe is heading to the Sun. Why won't the spacecraft melt? Thermal Protection System Engineer Betsy Congdon (Johns Hopkins APL) outlines why Parker can take the heat. Read more: https://www.nasa.gov/feature/goddard/2018/traveling-to-the-sun-why-won-t-parker-solar-probe-melt Music credit: Cheeky Chappy [Main Track] by Jimmy Kaleth, Ross Andrew McLean Credit: NASA's Goddard Space Flight Center Genna Duberstein (USRA): Lead Producer/Lead Editor Rob Andreoli (AIMM): Lead Videographer Betsy Congdon (Johns Hopkins University/APL): Lead Engineer Ryan Fitzgibbons (USRA): Narrator Genna Duberstein (USRA): Writer Steve Gribben (Johns Hopkins University/APL): Animator Brian Monroe (USRA): Animator Josh Masters (USRA): Animator Michael Lentz (USRA): Animator Genna Duberstein (USRA): Animator Mary P. Hrybyk-Keith (TRAX International Corporation): Illustrator This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization	Transcript Link

2018 07 19	NASA Goddard	https://youtu.be/BKinVmBoIrE	Blowtorch vs Heat Shield	Betsy Congdon of Johns Hopkins Applied Physics Lab is the Lead Thermal Engineer on the heat shield that NASA's Parker Solar Probe will use to protect itself against the Sun. The shield is so robust, Congdon can use a blowtorch on one side and the other side remains cool enough to touch. Read more: https://www.nasa.gov/feature/goddard/2018/traveling-to-the-sun-why-won-t-parker-solar-probe-melt Music Credit: Toy Factory In Progress by Laurent Dury Credit: NASA's Goddard Space Flight Center Genna Duberstein (USRA): Lead Producer/Editor Rob Andreoli (AIMM): Lead Videographer Betsy Congdon (Johns Hopkins University/APL): Lead Engineer Curtis Wilkerson (Johns Hopkins University/APL): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12866 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC	Transcript Link
2018 07 12	NASA Goddard	https://youtu.be/vwRSk524dpo	NASA's Fermi Links Cosmic Neutrino to Monster Black Hole	For the first time ever, scientists using NASA's Fermi Gamma-ray Space Telescope have found the source of a high-energy neutrino from outside our galaxy. This neutrino traveled 3.7 billion years at near-light speed before being detected on Earth -- farther than any other neutrino for which we know the origin. High-energy neutrinos are hard-to-catch particles that scientists think are created by the most powerful events in the cosmos, like galaxy mergers and material falling onto supermassive black holes. They travel a whisker shy of the speed of light and rarely interact with other matter, so they can travel unimpeded across billions of light-years. On Sept. 22, 2017, the IceCube Neutrino Observatory at the South Pole detected signs of a neutrino striking the Antarctic ice with an energy of about 300 trillion electron volts -- more than 45 times the energy achievable in the most powerful particle accelerator on Earth. This high energy strongly suggested that the neutrino had to be from beyond our solar system. Backtracking the path through IceCube indicated where in the sky the neutrino came from, and automated alerts notified astronomers around the globe to search this region for flares or outbursts that could be associated with the event. Data from Fermi's Large Area Telescope revealed enhanced gamma-ray emission from a well-known active galaxy at the time the neutrino arrived. This active galaxy is a type called a blazar, where a	Transcript Link

2018 07 11	NASA Goddard	https://youtu.be/HJAbGZsljJo	NASA Surveys Hurricane Damage to Puerto Rico's Forests	On September 20, 2017, Hurricane Maria barreled across Puerto Rico with winds of up to 155 miles per hour and battering rain that flooded towns, knocked out communications networks and destroyed the power grid. In the rugged central mountains and the lush northeast, Maria unleashed its fury as fierce winds completely defoliated the tropical forests and broke and uprooted trees, and heavy rainfall triggered thousands of landslides that mowed over swaths of steep mountainsides. NASA's Earth-observing satellites monitor the world's forests to detect seasonal changes in vegetation cover or abrupt forest losses from deforestation, but at a coarse resolution. To get a more detailed look, NASA flew an airborne instrument called Goddard's Lidar, Hyperspectral and Thermal Airborne Imager, or G-LiHT. From the belly of a small aircraft flying one thousand feet above the trees, G-LiHT collected multiple measurements of forests across Puerto Rico, including high-resolution photographs, surface temperatures and the heights and structure of the vegetation. The team flew many of the same tracks with G-LiHT as it had in the spring of 2017, months before Hurricane Maria made landfall, as part of a study of how tropical forests regrow on abandoned agricultural land. The before-and-after comparison shows forests across the island still reeling from the hurricane's impact. Credit: NASA's Goddard Space Flight Center/ Matthew Radcliffe	Transcript Link
2018 07 11	NASA Goddard	https://youtu.be/bhIV2QdUL5E	Testing Robotic Satellite Servicing Capabilities	This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization This six-legged, 10 by 16-foot robot mimics how satellites move in space. NASA uses the hexapod robot to conduct precise tests of robotic satellite servicing operations. Sitting on top of the six-legged hexapod is a partial model of a satellite. Mounted to a panel close by, representing the payload deck of a robotic servicing spacecraft, is an advanced robotic arm. Together, these robots practice a calculated dance. As the hexapod moves, the robotic arm reaches out to grasp the mock satellite. This complex maneuver has never been attempted in space with a satellite that wasn't designed to be approached. Lab demonstrations and testing will help NASA engineers perfect technologies for an autonomous (no humans involved) rendezvous in orbit. NASA is working to prove the combination of technologies necessary to robotically refuel a satellite in orbit that was not designed to be serviced. The same technologies developed for the Restore-L project will advance in-orbit repair, upgrade and assembly capabilities. The ground demonstrations take place in the Robotic Operations Center at NASA's Goddard Space Flight Center in Greenbelt, Maryland. The hexapod robot was custom built for NASA by a New Hampshire-based company called Mikrolar. This time-lapse of lights out testing shows how a robotic arm attached to a servicer satellite would approach and grasp a client satellite. Music Credit: Killertracks / Technological Disorder GTP053	Transcript Link

2018 07 03	NASA Goddard	https://youtu.be/NpduFVclE8	NASA at Fenway	On May 30th, 2018 NASA descended upon the historic Fenway Park, home of the Boston Red Sox Major League Baseball team, to participate in a STEM Day public engagement event. This collaborative effort was led by members of the Solar System Exploration Division at NASA's Goddard Space Flight Center with the following participants: • Lunar Reconnaissance Orbiter (LRO), GSFC • Astromaterials Research & Exploration Science (ARES), JSC • Orion, JSC • Chandra X-Ray Center, Smithsonian Astrophysical Observatory (SAO) • NASA Space Science Education Consortium/Heliophysics, SAO • CRaTER Instrument, University of New Hampshire • RIS4E, Stonybrook University Over 4000 students and teachers from across New England made the trip to see exhibits from the 7 different NASA missions and projects, demonstrations of space science concepts, and presentations from NASA scientists. Noah Petro, the Project Scientist from the Lunar Reconnaissance Orbiter Mission, led this endeavor, and astronaut Sunita Williams was the featured guest speaker. The list of speakers also included Elizabeth Rampe (JSC), Daniel Castro (Chandra X-ray Observatory), Kelly Korreck (SAO), David Draper (JSC), and Kimberly Kowal Arcand (Chandra X-ray Observatory). Molly Wasser (ADNET/GSFC) served as the Event Lead.	Transcript Link
2018 07 03	NASA Goddard	https://youtu.be/B4PwWDNc9qM	Superstar Eta Carinae Shoots Cosmic Rays	A new study using data from NASA's NuSTAR space telescope suggests that the most luminous and massive stellar system within 10,000 light-years, Eta Carinae, is accelerating particles to high energies -- some of which may reach Earth as cosmic rays. Cosmic rays with energies greater than 1 billion electron volts (eV) come to us from beyond our solar system. But because these particles -- electrons, protons and atomic nuclei -- all carry an electrical charge, they veer off course whenever they encounter magnetic fields. This scrambles their paths and masks their origins. Eta Carinae, located about 7,500 light-years away in the southern constellation of Carina, contains a pair of massive stars whose eccentric orbits bring them unusually close every 5.5 years. The stars contain 90 and 30 times the mass of our Sun. Both stars drive powerful outflows called stellar winds, which emit low-energy X-rays where they collide. NASA's Fermi Gamma-ray Space Telescope observes gamma rays -- light packing far more energy than X-rays -- from a source in the direction of Eta Carinae. But Fermi's vision isn't as sharp as X-ray telescopes, so astronomers couldn't confirm the connection. To bridge this gap, astronomers turned to NASA's NuSTAR observatory. Launched in 2012, NuSTAR can focus X-rays of much greater energy than any previous telescope. The team examined NuSTAR observations acquired between March 2014 and June 2016,	Transcript Link

2018 06 28 NASA Goddard <https://youtu.be/tFOTP19pedw> NASA Rainfall Data and Global Fire Weather

The Global Fire WEather Database (GFWED) integrates different weather factors influencing the likelihood of a vegetation fire starting and spreading. It is based on the Fire Weather Index (FWI) System, which tracks the dryness of three general fuel classes, and the potential behavior of a fire if it were to start. Each day, FWI values are calculated from global weather data, including satellite rainfall data from the Global Precipitation Measurement (GPM) mission. The FWI System is the most widely used fire danger rating system in the world, and has been adopted for different boreal, temperate and tropical fire environments. GFWED provides a globally consistent fire weather dataset for fire researchers and managers to apply locally. The Fire Weather Index component is suitable as a general index of fire danger. Globally, shifts in continental-scale fire activity follow seasonal changes in the FWI. Over South America and Africa, regions of high FWI and active agricultural burning shift with the tropical rain belts, seen in the GPM precipitation overlay. Over North America and Eurasia, the FWI will "activate" in the spring, and shows how week-to-week surges in fire activity can be driven by high FWI values.

[Transcript Link](#)

More information on GFWED and instructions on accessing the data are available from <https://data.giss.nasa.gov/impacts/gfwed/>
Additional footage courtesy of Greenpeace.

Music: "Vulnerable Moment," John Ashton Thomas, Atmosphere Music Ltd.; "Inducing Waves," Ben Niblett and Jon Cotton, Atmosphere Music Ltd. Complete transcript available.

2018 06 27 NASA Goddard <https://youtu.be/PYxhxUik5PY> Is 'Oumuamua an Interstellar Asteroid or Comet

Observatories including NASA's Hubble Space Telescope found that the interstellar object named 'Oumuamua gained an extra boost of speed, which likely comes from comet-like jets of gas.

[Transcript Link](#)

Read more: <https://www.nasa.gov/press-release/our-solar-system-s-first-known-interstellar-object-gets-unexpected-speed-boost>
Find more Hubble visuals here:
http://hubblesite.org/news_release/news/2018-25
Find the science paper in Nature here:
<https://www.nature.com/articles/s41586-018-0254-4>

Credit: NASA's Goddard Space Flight Center/Katrina Jackson

Music credit: "Midlands" by Marc Barrachina Sanchez [SGAE]; El Murmullo Sarao SGAE, Universal Sarao SGAE; SaraoMusic; Killer Tracks Production Music

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2018 06 27	NASA Goddard	https://youtu.be/kd71-d-01Fg	James Webb Space Telescope Worth the Wait	Building the James Webb Space Telescope is challenging. It is NASA's most ambitious and complex space science observatory. The mission required 10 new technologies to be invented, the dedication of hundreds of scientists, engineers and technicians testing and retesting each component. It is by no means easy, but the telescope is so incredibly powerful that major findings are expected in nearly every branch of astronomy. It is worth the wait. Credit: NASA's Goddard Space Flight Center Producer, Writer, Editor: Sophia Roberts Videography: Sophia Roberts, Michael McClare This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12987 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcc/ · Instagram https://www.instagram.com/nasagoddard/	Transcript Link
2018 06 26	NASA Goddard	https://youtu.be/5l63l9jpWgA	James Webb Space Telescope An Overview	The James Webb Space Telescope will be the largest telescope ever sent into space. It is the result of efforts from NASA, the European Space Agency and the Canadian Space Agency and will peer to the edges of the visible universe. This video highlights some of the Webb's most impressive facts. Credit: NASA's Goddard Space Flight Center/Sophia Roberts Music: Expanding Time and Space by Daniel Jay Nielsen This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12803 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/	Transcript Link

2018 06 15 NASA Goddard <https://youtu.be/Tqo2zEUARZM> PACE -- Skies, Oceans, Life

PACE's advanced technologies will provide unprecedented insight into Earth's ocean and atmosphere, which impact our everyday lives by regulating climate and making our planet habitable. Our oceans teem with life, supporting many of Earth's economies. New discoveries in Earth's living ocean will be revealed with PACE's global observations, such as the diversity of organisms fueling marine food webs and how ecosystems respond to environmental change. PACE will observe our atmosphere to study clouds along with the tiny airborne particles known as aerosols. Looking at the ocean, clouds, and aerosols together will improve our knowledge of the roles each plays in our changing planet.

[Transcript](#)
[Link](#)

Red tides can come from harmful algal blooms near shore for a variety of reasons. PACE will help scientists monitor red tides.

Credits

Michael Starobin (KBRwyle):

Lead Producer
Lead Videographer
Lead Writer
Lead Sound Editor
Lead Editor

Jennifer Brill (InuTeq):

Lead Artist

Jacob Starobin:

2018 06 15 NASA Goddard <https://youtu.be/OVjA2m2Bp7g> PACE -- Skies, Oceans, Life

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[Transcript](#)
[Link](#)

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Lead Videographer
Lead Writer
Lead Sound Editor
Lead Editor

Jennifer Brill (InuTeq):

Lead Artist

Jacob Starobin:

Narrator

Chris Meaney (KBRwyle):

Set Construction

2018 06 15 NASA Goddard <https://youtu.be/boO6WzpR2l8> PACE -- Skies, Oceans, Life

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Lead Videographer

Lead Writer

Lead Sound Editor

Lead Editor

Jennifer Brill (InuTeq):

Lead Artist

Jacob Starobin:

Narrator

Chris Meaney (KBRwyle):

Set Construction

2018 06 15 NASA Goddard <https://youtu.be/99UvVRnALEA> PACE -- Skies, Oceans, Life

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Lead Editor

Jennifer Brill (InuTeq):

Lead Artist

Jacob Starobin:

[Transcript](#)
[Link](#)

[Transcript](#)
[Link](#)

2018 06 12	NASA Goddard	https://youtu.be/ruAeaxlu6pU	Amazon Canopy Comes to Life through Laser Data	Flying over the Brazilian Amazon with an instrument firing 300,000 laser pulses per second, NASA scientists have made the first 3D measurements of forest canopies in the region. With this research they hope to shed light on the effects of prolonged drought on forest ecosystems and to provide a potential preview of stresses on rainforests in a warming world. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12982 Credit: NASA's Goddard Space Flight Center/Jefferson Beck If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfsc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link
2018 06 11	NASA Goddard	https://youtu.be/a0sk9F0FI0w	NASA's Fermi Satellite Celebrates 10 Years of Discoveries	On June 11, NASA's Fermi Gamma-ray Space Telescope celebrates a decade of using gamma rays, the highest-energy form of light in the cosmos, to study black holes, neutron stars, and other extreme cosmic objects and events. Fermi's main instrument, the Large Area Telescope (LAT), has observed more than 5,000 individual gamma-ray sources. In 1949, Enrico Fermi -- an Italian-American pioneer in high-energy physics and Nobel laureate for whom the mission was named -- suggested that cosmic rays, particles traveling at nearly the speed of light, could be propelled by supernova shock waves. In 2013, Fermi's LAT used gamma rays to prove these stellar remnants are at least one source of the speedy particles. Fermi's all-sky map, produced by the LAT, has revealed two massive structures extending above and below the plane of the Milky Way. These two "bubbles" span 50,000 light-years and were probably produced by the supermassive black hole at the center of the galaxy only a few million years ago. The Gamma-ray Burst Monitor (GBM), Fermi's secondary instrument, can see the entire sky at any instant, except the portion blocked by Earth. The satellite has observed over 2,300 gamma-ray bursts, the most luminous events in the universe. Gamma-ray bursts occur when massive stars collapse or neutron stars or black holes merge and drive jets of particles at nearly the speed of light.	Transcript Link

2018 06 07	NASA Goddard	https://youtu.be/G6baLED8qdA	Ancient Organics Discovered on Mars	Since arriving at Mars in 2012, NASA's Curiosity rover has drilled into rocks in search of organics - molecules containing carbon. Organics are the building blocks of all life on Earth, though they can also come from non-living sources. The surface of Mars readily destroys these molecules, making them difficult to detect. Now, Curiosity has discovered ancient organics that have been preserved in rocks for billions of years. This finding helps scientists better understand the habitability of early Mars, and it paves the way for future missions to the Red Planet. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12951 Graphics from the NASA-TV broadcast of this discovery are available at: http://svs.gsfc.nasa.gov/12967 Credit: NASA's Goddard Space Flight Center/Dan Gallagher Music provided by Killer Tracks: "Crystalline" by Enrico Cacace & Manuel Bandettini, "Based On True Events" by Eric Chevalier, "Mirrored Cubes" by Laurent Dury, "Lost In The Sky" by Matthews Samar If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link
2018 06 05	NASA Goddard	https://youtu.be/X16cfGPL2wA	NASA's Worldview - Two Decades of Earth Data at Your Fingertips	Two decades of planetary change are available to explore in NASA's Worldview https://worldview.earthdata.nasa.gov/. Detailed views of volcanoes fuming, hurricanes flooding, dams being built, and wildfires sweeping across landscapes are just some of the data accessible. Worldview users can even create data animations at the touch of a button and easily share imagery, giving NASA's worldwide audience the ability to interactively view their world their way and interactively explore almost 20 years of planetary change. Specific examples shown in the video are: Thomas Fire, California: https://go.nasa.gov/2GHGIsv Fires in India: https://go.nasa.gov/2Lk3j20 Lower Sesan Dam, water levels rising: https://go.nasa.gov/2LlgZtq Iceland volcano: https://go.nasa.gov/2LmRnwb Hurricane Katrina, storm spiral: https://go.nasa.gov/2x37kEJ Hurricane Katrina, flooding: https://go.nasa.gov/2x2G6OR Music: Natural Time Cycles by Laurent Dury This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12819 Credit: NASA's Goddard Space Flight Center/Lauren Ward If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2018 06 04 NASA Goddard <https://youtu.be/h28hR4NjN18> NASA Interns Arrive at Goddard - Summer 2018 What's it like to have an internship at NASA? Meet some 2018 summer interns that just arrived at the Goddard Space Flight Center and learn about their upcoming projects. [Transcript Link](#)

The NASA Goddard Internship Program provides unique opportunities for students to contribute to NASA's work in exploration and discovery. This summer, approximately 470 summer interns were selected from over 7,000 applicants – high school through doctoral level – to work across four Goddard campuses from June through August.

Want to learn more about NASA internships? Visit intern.nasa.gov for more information, and check out the web story written by Goddard's communications interns on their first day here – <https://www.nasa.gov/feature/goddard/2018/great-expectations-summer-2018-interns-arrive-at-goddard>.

Credit: NASA's Goddard Space Flight Center/Katrina Jackson

Music credit: "Star Glow" by Andrey Tatarinov [BMI] and Ty Frankel [BMI]; Killer Tracks BMI; Killer Tracks Production Music

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <https://svs.gsfc.nasa.gov/12972>

If you liked this video, subscribe to the NASA Goddard YouTube

2018 05 31 NASA Goddard <https://youtu.be/wiOHDGHZq3U> NASA Peers Inside Hurricane Edouard The swirling nature of hurricane clouds are a familiar sight in satellite imagery, but in order to better understand these storms, scientists need to look inside them. In 2014, NASA's remotely piloted Global Hawk aircraft flew over Hurricane Edouard in the Atlantic Ocean to help better understand what makes hurricanes intensify. During the 24-hour flight, a sounder instrument measured the relative humidity of the storm from above, where the cloud cover was thin. Where clouds were too thick, including around the eye of the hurricane, the Global Hawk released dropsondes - foot-long sensors that dropped from the aircraft down through the storm to the ocean's surface - sending back data on humidity, temperature and wind the whole way down. Warm, moist air helps to give hurricanes their strength, and near the eye, the red colors show high humidity powering the storm. Scientists use these and other data collected from these flights to better understand the environmental signals inside and outside of the hurricanes. They want to better understand the signals that lead to rapid intensification where wind speeds dramatically increase in a 24-hour period - vital information for anyone in the storm's path. [Transcript Link](#)

Music: Who Done It? by Robert Leslie Bennett [ASCAP]

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/12821>

Credit: NASA's Goddard Space Flight Center/Matthew Radcliff

2018 05 24 NASA Goddard <https://youtu.be/ZSAzWBz6rNY> Searching for Signs of Life on Mars

ESA's (The European Space Agency) ExoMars rover is headed to the red planet in 2020, on a mission to search for signs of past or present life. One of its primary tools in this endeavor is MOMA, the Mars Organic Molecule Analyzer. MOMA is a sophisticated suite of technologies that squeezes a lab full of chemistry equipment into a package the size of a toaster oven. Its mass spectrometer subsystem and main electronics were built at NASA's Goddard Space Flight Center in Greenbelt, Md, and mark the first use of a linear ion trap on another planet - a leap forward in the search for life beyond Earth.

[Transcript Link](#)

Learn more about MOMA and the ExoMars rover:
<https://www.nasa.gov/feature/goddard/2018/moma>

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/12962>

Additional animations of MOMA are in the public domain and can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/20231>

Credit: NASA's Goddard Space Flight Center/Dan Gallagher
William Brinckerhoff (NASA/GSFC): Lead Scientist
Veronica Pinnick (NASA/GSFC): Scientist
Dan Gallagher (USRA): Producer
Krystofer Kim (USRA): Animator

2018 05 22 NASA Goddard <https://youtu.be/Gf9iww8YhSY> Using Precipitation Data to Assess Risk of Cholera Outbreaks

A new modeling approach using satellite data will likely to enhance our ability to develop cholera risk maps in several regions of the globe. The model (GCRM) is based on monthly air temperature, precipitation, availability of WASH (water, sanitation and hygiene) infrastructure, population density and severity of natural disaster. The outputs of GCRM can be visualized on 0.10x0.10, with the hope of improving the spatial scale as new data products are incorporated into the model.

[Transcript Link](#)

Music: "A New Hope," Al Lethbridge, Atmosphere Music Ltd PRS;
"Spirals within a Sphere," Adam Salkeld, Atmosphere Music Ltd PRS
Complete transcript available.

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/12958>

Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons

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· Instagram <http://www.instagram.com/nasagoddard/>

2018 05 16	NASA Goddard	https://youtu.be/MaxBOvQ2a_o	For 15 Years, GRACE Tracked Freshwater Movements Around the World	Between 2002 and 2016, the Gravity Recovery and Climate Experiment (GRACE) tracked the movement of freshwater around the planet. NASA scientists used GRACE data to identify regional trends of freshwater movement, and combined that information with data from other satellites, climate models and precipitation measurements to determine the causes of major regional trends in freshwater storage. Music: Iron Throne by Anthony Giordano [SACEM] Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12876 Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link
2018 05 15	NASA Goddard	https://youtu.be/gjhQLOptd3Q	During a Year in Orbit, IceCube Created a New Map of Earth's Clouds	Although it was only designed to last three months, the tiny CubeSat known as IceCube has been orbiting Earth for a full year, collecting data on a hard-to-study type of cloud. In that time, IceCube has created a global map of these ice clouds around the planet, which could someday help improve models and forecasts. Music credit: Charming Noise by Adrien Sahuc [SACEM], Benjamin Sahuc [SACEM]	Transcript Link

2018 05 10	NASA Goddard	https://youtu.be/B_JcarjiuDQ	NICER Finds X-ray Pulsar in Record-fast Orbit	Scientists analyzing the first data from the Neutron Star Interior Composition Explorer (NICER) mission have found two stars that revolve around each other every 38 minutes. One of the stars in the system, called IGR J17062-6143 (J17062 for short), is a rapidly spinning, superdense star called a pulsar. The discovery bestows the stellar pair with the record for the shortest-known orbital period for a certain class of pulsar binary system. The data from NICER also show J17062's stars are only about 186,000 miles (300,000 kilometers) apart, less than the distance between Earth and the Moon. Based on the pair's breakneck orbital period and separation, scientists involved in a new study of the system think the second star is a hydrogen-poor white dwarf. The researchers were also able to determine that J17062's stars revolve around each other in a circular orbit, which is common for this type of system. The white dwarf donor star is a "lightweight," only around 1.5 percent of our Sun's mass. The pulsar is much heavier, around 1.4 solar masses. The stars orbit a point around 1,900 miles (3,000 km) from the pulsar, almost as if the donor star orbits a stationary neutron star, but NICER can is sensitive enough to detect a slight fluctuation in the neutron star's X-ray emission due to the tug from the donor star. Music: "Games Show Sphere 2" from Killer Tracks Credit: NASA's Goddard Space Flight Center	Transcript Link
2018 05 09	NASA Goddard	https://youtu.be/e6fe6yiUTRY	NASA Spacecraft Discovers New Magnetic Process in Turbulent Space	Though close to home, the space immediately around Earth is full of hidden secrets and invisible processes. In a new discovery reported in the journal Nature, scientists working with NASA's Magnetospheric Multiscale spacecraft — MMS — have uncovered a new type of magnetic event in our near-Earth environment by using an innovative technique to squeeze extra information out of the data. Magnetic reconnection is one of the most important processes in the space — filled with charged particles known as plasma — around Earth. This fundamental process dissipates magnetic energy and propels charged particles, both of which contribute to a dynamic space weather system that scientists want to better understand, and even someday predict, as we do terrestrial weather. Reconnection occurs when crossed magnetic field lines snap, explosively flinging away nearby particles at high speeds. The new discovery found reconnection where it has never been seen before — in turbulent plasma. Read more: http://www.nasa.gov/feature/goddard/2018/nasa-spacecraft-discovers-new-magnetic-process-in-turbulent-space Link to Nature paper: http://nature.com/articles/doi:10.1038/s41586-018-0091-5 Music credits: 'Think Tank' and 'Natural Time Cycles' by Laurent Dury from Killer Tracks	Transcript Link

2018 05 04	NASA Goddard	https://youtu.be/XjieZ9iZHWs	May the Forest Be with You GEDI Moves Toward Launch To Space Station	The Global Ecosystem Dynamics Investigation - or GEDI, pronounced like "Jedi," of Star Wars fame - instrument is undergoing final integration and testing this spring and summer at NASA's Goddard Space Flight Center, Greenbelt, Maryland. The instrument is expected to launch aboard SpaceX's 16th commercial resupply services mission, targeted for late 2018. GEDI is being led by the University of Maryland, College Park; the instrument is being built at NASA Goddard. From its perch on the exterior of the orbiting laboratory, GEDI will be the first space-borne laser instrument to measure the structure of Earth's tropical and temperate forests in high resolution and three dimensions. These measurements will help fill in critical gaps in scientists' understanding of how much carbon is stored in the world's forests, the potential for ecosystems to absorb rising concentrations of carbon dioxide in Earth's atmosphere, and the impact of forest changes on biodiversity. Read more: https://www.nasa.gov/feature/goddard/2018/may-the-forest-be-with-you-gedi-to-launch-to-iss Music: Navigating the Nebulae by Or Kribos and Udi Harpaz Complete transcript available. Credit: NASA's Goddard Space Flight Center LK Ward (USRA): Lead Producer Patrick Lynch (NASA/GSFC): Lead Writer	Transcript Link
2018 05 03	NASA Goddard	https://youtu.be/CmkHMe5GYZ8	Visit Hubble Operations for its 28th Anniversary in 360°	The Hubble Space Telescope has orbited Earth for more than 28 years, changing the way we look at the universe. Here at NASA's Goddard Space Flight Center in Greenbelt, Maryland, we'll take you inside the Space Telescope Operations Control Center, where Hubble's flight operations team communicates with the spacecraft and receives data and telemetry from the orbiting observatory. We'll talk to Hubble's senior scientist Dr. Jennifer Wiseman and Deputy Project Manager Jim Jeletic about the science and history of Hubble as well as the beautiful new image of the Lagoon Nebula released for Hubble's 28th anniversary. To fully immerse yourself in this 360° video, click and drag around the video. To watch 360° videos, you need the latest version of Chrome, Opera, Firefox, or MS Edge on your computer. On mobile devices, use the latest version of the YouTube app. Music credit: Silver and Gold by Wally Gagel and Xandy Barry on Killer Tracks Credits: NASA's Goddard Space Flight Center/Elizabeth Wilk, Christina Sauer, Michael Starobin If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization	Transcript Link

2018 05 02 NASA Goddard <https://youtu.be/G5Q4Y8X3f-U> Hubble's 28th Anniversary

On April 24, 2018, the Hubble Space Telescope celebrated its 28th year in orbit. Even after all these years, Hubble continues to expand humanity's knowledge of the universe. These are a few science achievements from Hubble's latest year in orbit.

[Transcript](#)
[Link](#)

Credit: NASA's Goddard Space Flight Center / Emmalee Mauldin
Music Credits: "Hurricanes Wrap my Heart" by Joshua Robert Moore from stockmusic.net

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2018 04 27 NASA Goddard <https://youtu.be/rR6gxF9waQE> North American Forest Dynamics Dataset

Forests are living, ever changing ecosystems, affected by aging, natural disasters and human interventions.

[Transcript](#)
[Link](#)

Annual maps of the lower-48 United States produced from satellite data illustrate how these dynamic systems changed from 1986-2010. Logging and hurricanes play a significant role in the Southeast, and fires and insect invasion damage forest canopy in the West.

Trees are one of the world's best absorbers of atmospheric carbon dioxide, a greenhouse gas. Understanding how trees and forests change through time is one of the first steps to understanding how active they are in pulling carbon dioxide out of the atmosphere, which is of profound interest to scientists monitoring climate change.

Developed for the North American Forest Dynamics study, scientists combined 25 years of satellite data from the joint U.S. Geological Survey/NASA Landsat satellite program with information from the U.S. Forest Service to highlight where forest canopy was disturbed.

To learn more about the project and get data, visit:
https://daac.ornl.gov/NACP/guides/NAFD-NEX_Forest_Disturbance.html

Music credit: Dusk On The Plains by B. Boston

2018 04 25	NASA Goddard	https://youtu.be/p2rXRtYRhN0	Hubble Technology Finds Earthly Applications	The decades-long career of NASA's Hubble Space Telescope has resulted in a wealth of new technologies, many of which have found earthly applications. Visit Hubble's new webpage on technology transfer at https://www.nasa.gov/content/goddard/hubble-technology-transfer Learn more about the specific technologies mentioned in this video: Breast biopsy technology - https://www.nasa.gov/feature/goddard/ccds-provide-clearer-and-less-painful-biopsies Dead Sea Scrolls - https://www.nasa.gov/feature/goddard/ccds-help-decipher-ancient-manuscripts Whale shark tracking - https://www.nasa.gov/feature/goddard/star-mapping-algorithms-track-endangered-animals Package scanning - https://www.nasa.gov/feature/goddard/laser-optics-tools-scan-packages-and-groceries Speed skate polishing - https://www.nasa.gov/feature/goddard/polishing-tool-helps-win-olympic-gold Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music credit: "Contact With You" by Olivier Visconti [SACEM] and Stéphane Lozac'h [SACEM]; KTSA Publishing SACEM; Gum Tapes; Killer Tracks Production Music	Transcript Link
2018 04 17	NASA Goddard	https://youtu.be/UQ8MibTqim0	NASA Celebrates Earth Day and the Amazing Tech that Makes Earth Exploration Possible	NASA pioneers and supports an amazing range of advanced technologies and tools to help scientists and environmental specialists better understand and protect our home planet - from space lasers to virtual reality, small satellites and smartphone apps. To celebrate Earth Day 2018, April 22, the agency is highlighting many of these innovative technologies and the amazing applications behind them. Music: The Upcycler by James Peter Wilson Complete transcript available. Credit: NASA's Goddard Space Flight Center LK Ward (USRA): Lead Producer Samson K. Reiny (Wyle Information Systems): Lead Project Manager Aaron E. Lepsch (ADNET Systems Inc.): Technical Support This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12929 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEexplorer Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard	Transcript Link

2018 04 17	NASA Goddard	https://youtu.be/LI3aVTNhCKU	How to View and Share Your Planet with Worldview	NASA's Worldview app lets you explore Earth as it looks right now or as it looked almost 20 years ago. Through an easy-to-use map interface, you can watch tropical storms developing over the Pacific Ocean; track the movement of icebergs after they calve from glaciers and ice shelves; see wildfires spread and grow as they burn vegetation in its path. Pan-and-zoom to your region of the world to see not only what it looks like today, but to investigate changes over time. Worldview's nighttime lights layers provides a truly unique perspective of our planet at night. What else can you do with Worldview? Add imagery layers by discipline, natural hazard, or key word to learn more about what's happening on this dynamic planet. View Earth's frozen regions with the Arctic and Antarctic views. Take a look at current natural events like tropical storms, volcanic eruptions, wildfires and icebergs at the touch of a button using the "Events" tab. See a view you like? Take a snapshot and share your map with a friend or colleague. Want to track the spread of a wildfire? You can even create an animated gif to see change over time. Explore your Earth your way with Worldview today! #NASA4Earth https://worldview.earthdata.nasa.gov/ This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12928	Transcript Link
2018 04 16	NASA Goddard	https://youtu.be/wQySNy3Trzk	How Winking Stars Point Us To Distant Worlds	How do we spot something as tiny and faint as a planet trillions of miles away? The trick is to look at the star! So far, most of the exoplanets – worlds beyond our solar system – we've found were detected by looking for tiny dips in the brightness of their host stars! These dips are caused by the planet passing between us and its star – an event called a "transit." Our newest planet hunter, the Transiting Exoplanet Survey Satellite (TESS), will seek out transits around 200,000 of the nearest and brightest stars in the sky. Music: "Drive to Succeed" From Killer Tracks Credit: NASA's Goddard Space Flight Center This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12884 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcc/ · Instagram https://www.instagram.com/nasagoddard/	Transcript Link

2018 04 10 NASA Goddard <https://youtu.be/evHFmnldj4> How NASA's Newest Planet Hunter Scans the Sky

TESS, the Transiting Exoplanet Survey Satellite, is NASA's newest exoplanet mission. Led by MIT, TESS will find thousands of new planets orbiting nearby stars. During its two year survey, TESS will watch a wide variety of stars, looking for signs of planets ranging from Earth-size to larger than Jupiter.

[Transcript Link](#)

Each of TESS's cameras has a 16.8-megapixel sensor covering a square 24 degrees wide — large enough to contain an entire constellation. TESS has four of these cameras arranged to view a long strip of the sky called an observation sector. TESS will watch each observation sector for about 27 days before rotating to the next. It will cover the southern sky in its first year, and then begin scanning the north.

TESS will study 85 percent of the sky — an area 350 times greater than what NASA's Kepler mission first observed — making TESS the first exoplanet mission to survey nearly the entire sky. Because TESS's observation sectors overlap, it will have an area near the pole under constant observation. This region is easily monitored by the James Webb Space Telescope, which allows the two missions to work together to first find, and then carefully study exoplanets.

Music: "Drive to Succeed" from Killer Tracks

Credit: NASA's Goddard Space Flight Center

2018 04 09 NASA Goddard <https://youtu.be/nr5Pj6GQL2o> Tour of the Moon in 4K

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/4619>

Take a virtual tour of the Moon in all-new 4K resolution, thanks to data provided by NASA's Lunar Reconnaissance Orbiter spacecraft. As the visualization moves around the near side, far side, north and south poles, we highlight interesting features, sites, and information gathered on the lunar terrain.

[Transcript Link](#)

Music Provided By Killer Tracks: "Never Looking Back" - Frederick Wiedmann. "Flying over Turmoil" - Benjamin Krause & Scott Goodman.

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/4619>

Credit: NASA's Goddard Space Flight Center/David Ladd & Ernie Wright

Ernie Wright (USRA): Lead Visualizer — Scientific Visualization Studio
David Ladd (USRA): Lead Producer, Editor, Narrator
Noah Petro (NASA/GSFC): Lead Scientist

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2018 04 04	NASA Goddard	https://youtu.be/-AlbD2WxyN8	The Unique Orbit of NASA's Newest Planet Hunter	NASA's Transiting Exoplanet Survey Satellite - TESS - will fly in an orbit that completes two circuits around Earth every time the Moon orbits once. This special orbit will allow TESS's cameras to monitor each patch of sky continuously for nearly a month at a time. To get into this orbit, TESS will make a series of loops culminating in a lunar gravity assist, which will give it the final push it needs. TESS will reach its orbit about 60 days after launch. This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12884 Music: "Drive to Succeed" from Killer Tracks Credit: NASA's Goddard Space Flight Center If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ https://plus.google.com/+NASAGoddard	Transcript Link
2018 03 30	NASA Goddard	https://youtu.be/gbV5LVt6Nb8	Traversing the South Pole 14 days, 4 people and 750 kilometers	NASA cryospheric scientist Kelly Brunt and ICESat-2 Deputy Project Scientist Tom Neumann recall some of the highlights and challenges from the recent 88-South Antarctic Traverse, which provided elevation data support for the upcoming ICESat-2 mission. Music: "Lights," Alexius Tschallener [SUISA], Dominik Johnson [PRS]; "Vulnerable Moment," John Ashton Thomas [PRS] Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12905 Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Twitter http://twitter.com/NASAGoddardPix · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2018 03 29	NASA Goddard	https://youtu.be/VxhQ3weqmiY	Scientists Create First-Ever 3-D Model of a Melting Snowflake	This visualization is based on the first three-dimensional numerical model of melting snowflakes in the atmosphere, developed by scientist Jussi Leinonen of NASA's Jet Propulsion Laboratory in Pasadena, California. A better understanding of how snow melts can help scientists recognize the signature in radar signals of heavier, wetter snow -- the kind that breaks power lines and tree limbs -- and could be a step toward improving predictions of this hazard. The model reproduces key features of melting snowflakes that have been observed in nature: first, meltwater gathers in any concave regions of the snowflake's surface. These liquid-water regions merge as they grow and eventually form a shell of liquid around an ice core, finally developing into a water drop. The visualization shows a typical snowflake less than half an inch (one centimeter) long. The snowflake is composed of individual ice crystals whose arms became entangled when they collided in the air. The extremities of the arms melt first because they are more exposed to heat from the surrounding air. Water first fills small cavities within the ice crystals, and then these overflow, allowing water to pool into droplets. "I got interested in modeling melting snow because of the way it affects our observations with remote sensing instruments," Leinonen said. A radar "profile" of the atmosphere from top to bottom shows a very bright, prominent layer at the altitude where falling snow and hail melt, much brighter than the layers above and below.	Transcript Link
2018 03 28	NASA Goddard	https://youtu.be/Q4KjvPlbgMI	NASA's New Planet Hunter TESS	NASA's Transiting Exoplanet Survey Satellite (TESS) will find undiscovered worlds around bright nearby stars, providing targets where future studies will assess their capacity to harbor life. TESS is a NASA Astrophysics Explorer mission, led and operated by MIT and managed by Goddard. With the help of a gravitational assist from the Moon, the spacecraft will settle into a 13.7-day orbit around Earth. Four wide-field cameras will give TESS a field-of-view that covers 85 percent of the entire sky. Within this vast visual perspective, the sky has been divided into 26 sectors that TESS will observe one by one. The first year of observations will map the 13 sectors encompassing the southern sky, and the second year will map the 13 sectors of the northern sky. The spacecraft will be looking for a phenomenon known as a transit, where a planet passes in front of its star, causing a periodic and regular dip in the star's brightness. NASA's Kepler spacecraft used the same method to spot more than 2,600 confirmed exoplanets, most of them orbiting faint stars 300 to 3,000 light-years away. TESS will concentrate on stars less than 300 light-years away and 30 to 100 times brighter than Kepler's targets. The brightness of these target stars will allow researchers to use spectroscopy, the study of the absorption and emission of light, to determine a planet's mass, density and atmospheric composition. Water and other key molecules in its atmosphere can give us hints about a planet's	Transcript Link

2018 03 28 NASA Goddard <https://youtu.be/2y79N4W6ln8> Hubble Views Galaxy Lacking Dark Matter

NASA's Hubble Space Telescope took an image of a bizarre, ghostly looking galaxy called NGC 1052-DF2 that astronomers calculate to have little to no dark matter. This is the first galaxy astronomers have discovered to be so lacking in dark matter, which is thought to comprise 85% of our universe's mass.

[Transcript](#)
[Link](#)

Read the full story:

<https://www.nasa.gov/feature/goddard/2018/dark-matter-goes-missing-in-oddball-galaxy>

Download the release images at

http://hubblesite.org/news_release/news/2018-16

Find the science paper at

<https://www.nature.com/articles/nature25767>

Credit: NASA's Goddard Space Flight Center/Katrina Jackson

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2018 03 28 NASA Goddard <https://youtu.be/QvrQCmnKsL0> Send Your Name to the Sun

Submit your name and it will be included in a memory card that will fly aboard Parker Solar Probe spacecraft.

[Transcript](#)
[Link](#)

Come with us as we plunge through the Sun's atmosphere, closer to the surface than any spacecraft before it, facing brutal heat and radiation conditions--and ultimately providing humanity with the first-ever close-up view of a star.

Submissions will be accepted through April 27, 2018.

Learn more and add your name to the mission here:

<http://go.nasa.gov/HotTicket>

Music credits: Dream Sequence by Danel Backes, Peter Moslener

Credit: NASA's Goddard Space Flight Center/Genna Duberstein

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2018 03 26	NASA Goddard	https://youtu.be/O4yeiZ0s_7g	Two New Satellites Set to Study One of Earth's Most Critically Changing Regions	In 2018, NASA will intensify its focus on one of the most critical but remote parts of our changing planet with the launch of two new satellite missions and an array of airborne campaigns. GRACE-FO and ICESat-2 will use radically different techniques to observe how the massive ice sheets of Greenland and Antarctica are changing over time and how much they are contributing to sea level rise. The space agency is launching these missions at a time when decades of observations from the ground, air, and space have revealed signs of change in Earth's ice sheets, sea ice, glaciers, snow cover, and permafrost. Collectively, scientists call these frozen regions of our planet the "cryosphere." Music: Pending News by Christian Telford Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12906 Credit: NASA's Goddard Space Flight Center/LK Ward If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/	Transcript Link
2018 03 23	NASA Goddard	https://youtu.be/4VvSQZ3FnXQ	Arctic Sea Ice Continues a Trend of Shrinking Maximum Extents	Arctic sea ice reached its annual maximum extent on March 17, according to analysis by NASA and the National Snow and Ice Data Center. The 2018 extent reached 5.59 million square miles, only about 23,000 square miles larger than the lowest maximum on record, in 2017. This continues a trend of shrinking sea ice, with the four lowest Arctic sea ice maximum extents on record in the last four years. Dr. Claire Parkinson explains how and why NASA studies Arctic sea ice. Read more: https://www.nasa.gov/feature/goddard/2018/arctic-wintertime-sea-ice-extent-is-among-lowest-on-record Music: Children's Carousel by Maxi Schulze [GEMA], Moritz Limmer [GEMA] Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12898 Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard	Transcript Link

2018 03 23	NASA Goddard	https://youtu.be/Kw9qlVCX488	Operation IceBridge What (and Who) it Takes to Keep a Mission Flying	This year marks the tenth Arctic spring campaign for Operation IceBridge, a cryosphere-focused mission tasked with mapping the fastest-changing areas of the Greenland Ice Sheet and measuring sea ice thickness across the western Arctic basin. In 2016, IceBridge was joined by Dr. Piers Sellers, a NASA Earth scientist, astronaut, and manager who came north to connect with the mission and its partners in the high Arctic. As we return in 2018, we remain grateful to the late Dr. Sellers, the NOAA aircraft crew who provided us a safe and successful field season, and the men and women of the US Air Force in Thule who maintain an invaluable base of operations for our science missions. While several of the Air Force personnel featured in this video have since rotated on to new assignments, we are thankful for their service during the 2016 field season. Music: Right on Track by Aaron Frederick Lazlo and Flag Ceremony by Lennert Busch Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12904 Credit: NASA's Goddard Space Flight Center/LK Ward If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link
2018 03 22	NASA Goddard	https://youtu.be/E6LaojSkZQQ	New NASA Model Finds Landslide Threats in Near Real-Time During Heavy Rains	For the first time, scientists can look at landslide threats anywhere around the world in near real-time, thanks to satellite data and a new model developed by NASA. The model, developed at NASA's Goddard Space Flight Center in Greenbelt, Maryland, estimates potential landslide activity triggered by rainfall. Rainfall is the most widespread trigger of landslides around the world. If conditions beneath Earth's surface are already unstable, heavy rains act as the last straw that causes mud, rocks, or debris—or all combined—to move rapidly down mountains and hillsides. The model is designed to increase our understanding of where and when landslide hazards are present and improve estimates of long-term patterns. A global analysis of landslides over the past 10 years using the new open source Landslide Hazard Assessment model for Situational Awareness model was published in a study released online on March 22nd in the journal Earth's Future. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12897 Credit: NASA's Goddard Space Flight Center/Joy Ng If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link

2018 03 16	NASA Goddard	https://youtu.be/W8ESXKyE2Dg	Hubble's Messier Marathon Madness	In mid-March, skywatchers in the northern hemisphere can try to observe all 110 objects from the Messier catalog in one night. To celebrate the Messier Marathon, NASA's Hubble Space Telescope is releasing 12 new images to add to its extensive collection of Messier objects observed by Hubble. View Hubble's full Messier catalog at https://www.nasa.gov/content/goddard/hubble-s-messier-catalog Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music credit: "Spartans" by Raul de Moral Redondo [SGAE]; El Murmullo Sarao SGAE, Universal SGAE; SaraoMusic; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12893 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcr/ · Instagram https://www.instagram.com/nasagoddard/	Transcript Link
2018 03 14	NASA Goddard	https://youtu.be/wRHwGD-is9U	The Aurora Named STEVE	For the first time, scientists have ground and satellite views of STEVE (short for Strong Thermal Emission Velocity Enhancement), a thin purple ribbon of light. Scientists have now learned, despite its ordinary name, that STEVE may be an extraordinary puzzle piece in painting a better picture of how Earth's magnetic fields function and interact with charged particles in space. The Aurorasaurus team, led by Liz MacDonald, a space scientist at NASA's Goddard Space Flight Center in Greenbelt, Maryland, conferred to determine the identity of this mysterious phenomenon. MacDonald and her colleague Eric Donovan at the University of Calgary in Canada talked with the amateur photographers from the Alberta Aurora Chasers, the people who first captured images of STEVE. Other collaborators on this work are: the University of Calgary, New Mexico Consortium, Boston University, Lancaster University, Athabasca University, Los Alamos National Laboratory, and the Alberta Aurora Chasers Facebook group. Watch this video on the NASA Goddard YouTube channel. Music credit: Bright Patterns by Gregg Lehrman, John Christopher Nye Complete transcript available. Read more: https://www.nasa.gov/feature/goddard/2018/mystery-of-purple-lights-in-sky-solved-with-help-from-citizen-scientists This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization	Transcript Link

2018 03 13	NASA Goddard	https://youtu.be/JDi4Idt vDVE	Jupiter's Great Red Spot Shrinks and Grows	This video takes viewers on a journey to Jupiter, where NASA scientists have made an interesting discovery about the Great Red Spot. Credit: NASA's Goddard Space Flight Center/David Ladd Music provided by Killer Tracks: "Moon Leaving" by Maksim Tyutmanov and Victoria Beits For more information: https://www.nasa.gov/feature/goddard/2018/jupiters-great-red-spot-getting-taller-as-it-shrinks This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12878 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/	Transcript Link
2018 03 08	NASA Goddard	https://youtu.be/NGWR1pZa7w4	Mission Possible Women of the Hubble Space Telescope	When they were growing up, six women couldn't have imagined that their lives would take them on a journey to NASA to work with the Hubble Space Telescope. From astronaut to social media lead, from scientists to engineers, these featured "Women of Hubble" overcame obstacles and persevered to achieve success and help make Hubble one of the greatest exploration machines in human history. Their inspirational stories teach us that anyone can succeed if you stay curious, never give up, and don't let anything keep you from reaching your goals. Credit: NASA's Goddard Space Flight Center/Christina Sauer and Liz Wilk See full music credits on https://svs.gsfc.nasa.gov/12889 This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12889 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcc/ · Instagram https://www.instagram.com/nasagoddard/ · Google+ https://plus.google.com/+NASAGoddard/posts	Transcript Link

2018 03 06	NASA Goddard	https://youtu.be/HfS21Nr6K0Y	Send Your Name to the Sun with Parker Solar Probe	NASA's historic Parker Solar Probe mission will launch in summer 2018 to travel through the Sun's atmosphere, closer to the solar surface than any spacecraft before it, facing brutal heat and radiation conditions - and you can send your name along for the ride. To commemorate humanity's first visit to the star we live with, NASA invites the public to submit their names to be included on a microchip headed to the Sun aboard NASA's Parker Solar Probe. Read more: https://www.nasa.gov/feature/goddard/2018/public-invited-to-come-aboard-nasa-s-first-mission-to-touch-the-sun Credit: NASA's Goddard Space Flight Center This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12882 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcc/ · Instagram https://www.instagram.com/nasagoddard/ · Google+ https://plus.google.com/+NASAGoddard/posts	Transcript Link
2018 02 28	NASA Goddard	https://youtu.be/ICvTMgeUwKw	NASA Studies an Unusual Arctic Warming Event	Winter temperatures are soaring in the Arctic for the fourth winter in a row. The heat, accompanied by moist air, is entering the Arctic not only through the sector of the North Atlantic Ocean that lies between Greenland and Europe, as it has done in previous years, but is also coming from the North Pacific through the Bering Strait. “We have seen winter warming events before, but they’re becoming more frequent and more intense,” said Alek Petty, a sea ice researcher at NASA’s Goddard Space Flight Center in Greenbelt, Maryland. Scientists are waiting to see how much this heat wave will impact the wintertime sea ice maximum extent, which has been shrinking in the past decades and has hit record lows each of the past three years. The sea ice levels are already at record lows or near-record lows in several areas of the Arctic. Another exceptional event this winter is the opening up of the sea ice cover north of Greenland, releasing heat from the ocean to the atmosphere and making the sea ice more vulnerable to further melting. “This is a region where we have the thickest multi-year sea ice and expect it to not be mobile, to be resilient,” Petty said. “But now this ice is moving pretty quickly, pushed by strong southerly winds and probably affected by the warm temperatures, too.” Credit: NASA's Goddard Space Flight Center	Transcript Link

2018 02 28	NASA Goddard	https://youtu.be/W_Kd9B0-oDQ	NASA Space Laser Heads on a Road Trip	The Ice, Cloud and land Elevation Satellite-2 is slated to launch in September to measure the height of Earth's surface, particularly the changing polar ice. To do that, it uses a laser instrument called the Advanced Topographic Laser Altimeter System, or ATLAS, that precisely times how long it takes light particles to bounce off Earth and return to the satellite. ATLAS was designed, built and tested at NASA's Goddard Space Flight Center in Greenbelt, Maryland. The spacecraft bus, with its solar panels, navigation components and more, was built at Orbital ATK's facility in Gilbert, Arizona. To deliver the instrument safely to the spacecraft for assembly and testing, the ATLAS team developed special procedures for packing, transporting and monitoring the sensitive hardware. Read more: https://www.nasa.gov/feature/goddard/2018/nasa-space-laser-takes-to-the-road This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12874 Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons Music: "We Learn," Andrew Michael Britton, Atmosphere Music Ltd. If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link
2018 02 22	NASA Goddard	https://youtu.be/d6xvKgsrclY	TDRS Profile Thomas Williams	Thomas Williams is a system engineer for NASA's Tracking and Data Relay Satellite, TDRS. The project built the follow-on replacement spacecraft necessary to maintain and expand NASA's Space Network. The final third generation satellite launched on Aug. 18, 2017, from Cape Canaveral Air Force Station in Florida aboard an Atlas V rocket. TDRS-13 joined the constellation of now 10 space-based communications satellites providing tracking, telemetry, command and high-bandwidth data return services. Learn more about TDRS: https://www.nasa.gov/tdrs This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12201 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard	Transcript Link

2018 02 15	NASA Goddard	https://youtu.be/iKHtx5y6C4M	Hubble Watches Neptune's Dark Storm Die	For the first time, NASA's Hubble Space Telescope has captured time-lapse images of a large, dark storm on Neptune shrinking out of existence. A recent Hubble program called Outer Planets Atmosphere Legacy, or OPAL, provides yearly global maps of our gas giant planets, allowing planetary scientists to view changes in formations such as Neptune's dark storms. Read the full story on https://www.nasa.gov/feature/goddard/2018/hubble-sees-neptunes-mysterious-shrinking-storm View the full image release - http://hubblesite.org/news_release/news/2018-08 Find the science paper - https://media.stsci.edu/preview/file/science_paper/file_attachment/306/wong_accepted_AJ_paper.pdf Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music credit: "Struggling in the City" by Emre Ramazanoglu [PRS], Jamie Michael Bradley Reddington [PRS], and Patrick Green [PRS]; Atmosphere Music Ltd [PRS]; BLOCK; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12862	Transcript Link
2018 02 13	NASA Goddard	https://youtu.be/J3LRlq1v8Oo	Big Year for NASA's IceBridge in 2017	From the South Pole to Greenland, from Alaska's glaciers to Svalbard, NASA's Operation IceBridge covered the icy regions of our planet in 2017 with a record seven separate field campaigns. The mission of IceBridge, NASA's longest-running airborne science program monitoring polar ice, is to collect data on changing ice sheets, glaciers, and sea ice, and maintain continuity of measurements between ICESat satellite missions. Read more: www.nasa.gov/feature/goddard/2018/big-year-for-icebridge Credit: NASA's Goddard Space Flight Center/Jefferson Beck If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2018 02 13	NASA Goddard	https://youtu.be/VYnReLNLAZO	Sea Level Rise Accelerates Over Time	Global sea level rise is accelerating incrementally over time rather than increasing at a steady rate, as previously thought, according to a new study based on 25 years of NASA and European satellite data. If the rate of ocean rise continues to change at this pace, sea level will rise 26 inches (65 centimeters) by 2100--enough to cause significant problems for coastal cities. Music: Contemporary Art Daily by Laurent Dury [SACEM] Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12849 Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfsc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link
2018 02 11	NASA Goddard	https://youtu.be/bmoYMzGBN5s	5 Years of Landsat 8	In its five years in space, Landsat 8 has racked up an impressive line of statistics. The satellite made 26,500 orbits around Earth. It captured 1.1 million "scenes" of our home planet. Its images now represent 16 percent of all the observations kept in the 45-year Landsat archive. Landsat 8's higher resolution and faster data acquisition rates are enabling significant research and opening up new ways in which scientists, businesses, and resource managers can use the data. Water quality mapping, near-real-time ice velocity detection, and improved tracking of crop health and how much water crops use are among the research and real-world applications that Landsat 8 is enabling. Landsat 8, which before launch was called the Landsat Data Continuity Mission, launched into orbit on Feb. 11, 2013. Once it was renamed Landsat 8 and became operational, the satellite continued a streak of engineering and science success unmatched in spaceflight: the succession of Landsat satellites has now made 45-plus years of continuous observations of Earth's surface, without any gaps. USGS and NASA are committed to keeping the entire Landsat data archive free and accessible to scientists and the public. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12851	Transcript Link

2018 02 11	NASA Goddard	https://youtu.be/m5fC3FIUngk	NASA's First Chief Astronomer, the Mother of Hubble	In a time when women were discouraged from studying math and science, Nancy Grace Roman became a research astronomer and the first Chief of Astronomy at NASA. Known today as the "Mother of Hubble," she was instrumental in taking the Hubble Space Telescope from an idea to reality and establishing NASA's program of space-based astronomical observatories. Celebrate International Day of Women and Girls in Science by listening to more of her story. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12845 Credit: NASA's Goddard Space Flight Center/Katrina Jackson If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcr/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/p...	Transcript Link
2018 02 09	NASA Goddard	https://youtu.be/pA_cAdJOXlw	A Candid Look at NASA's Living Planet	Creating a major scientific visualization takes considerable time and expertise. A team of scientists and data visualizers work together to building an artful depiction of hard data - whether it be an animation of sea surface temperature, the paths of hurricanes, or life on Planet Earth. Get a closer look at how the "Living Planet" visualization was made from the perspective of its principle scientists, Gene Feldman and Compton Tucker and SVS data visualizer, Alex Kekesi. Music: Marimba Rhythms by Andrew Hamilton Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12858 Credit: NASA's Goddard Space Flight Center/LK Ward If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcr/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2018 02 08 NASA Goddard <https://youtu.be/zDMOsOBs420> NASA Studies Snow At The Winter Olympics

NASA engineer Manuel Vega can see one of the Olympic ski jump towers from the rooftop of the South Korean weather office where he is stationed. Vega is not watching skiers take flight, preparing for the 2018 PyeongChang Winter Olympics and Paralympic games. Instead, he's inspecting the SUV-sized radar beside him. The instrument is one 11 NASA instruments specially transported to the Olympics to measure the quantity and type of snow falling on the slopes, tracks and halfpipes.

[Transcript Link](#)

NASA will make these observations as one of 20 agencies from eleven countries in the Republic of Korea as participants in a project called the International Collaborative Experiments for PyeongChang 2018 Olympic and Paralympic Winter Games, or ICE-POP. Led by the Korean Meteorological Administration, the international team will make snow measurements from the start of the Olympics on Feb. 9 through the end of the Paralympics on March 18.

Vega and the international team is studying how well researchers can measure snow from the ground and space and provide better data for snowstorm predictions. The NASA team, along with U.S. colleagues at Colorado State University, the National Center for Atmospheric Research, and National Oceanic and Atmospheric Administration, will use a cadre of ground instruments, satellite data, and weather models to deliver detailed reports of current snow conditions and will test experimental forecasts models. NASA's observations and snow forecasts will be made at sixteen different Olympic event venues and then relayed to Olympic

2018 02 08 NASA Goddard <https://youtu.be/h3rkTC7YHoQ> TESS Undergoes Integration and Testing

The Transiting Exoplanet Survey Satellite (TESS) is the next step in the search for planets outside of our solar system, including those that could support life. The mission will find exoplanets that periodically block part of the light from their host stars, events called transits.

[Transcript Link](#)

TESS will survey 200,000 of the brightest stars near the sun to search for transiting exoplanets. The mission is scheduled to launch in 2018.

Music: "Prototype" and "Trial" both from Killer Tracks.

Credit: NASA's Goddard Space Flight Center

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2018 02 06	NASA Goddard	https://youtu.be/4ds4Sc9q0LQ	Conversation with Kevin Hartnett	Kevin Hartnett is the Science Operations Manager for the Hubble Space Telescope at NASA's Goddard Space Flight Center in Greenbelt, Maryland. In this Conversations with Goddard video, Hartnett discusses how he became interested in astronomy as well as his love for astrophotography and poetry.	Transcript Link
To read the full profile, visit: https://www.nasa.gov/feature/goddard/2018/kevin-hartnett-connecting-astronomy-photography-and-poetry Credit: NASA's Goddard Space Flight Center/Chelsey Ballarte If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcr/ · Instagram https://www.instagram.com/nasagoddard/ · Google+ https://plus.google.com/+NASAGoddard/posts					
2018 02 05	NASA Goddard	https://youtu.be/kgHKXj_uuE40	Hubble Observes Atmospheres of TRAPPIST-1 Exoplanets in the Habitable Zone	Astronomers using the Hubble Space Telescope have conducted the first spectroscopic survey of Earth-sized planets in the TRAPPIST-1 system's habitable zone. Hubble reveals that at least the inner five planets do not seem to contain puffy, hydrogen-rich atmospheres similar to gaseous planets such as Neptune. This means the atmospheres may be more shallow and rich in heavier gases like carbon dioxide, methane, and oxygen.	Transcript Link
Find the full story and press release at http://hubblesite.org/news_release/news/2018-07 The Nature Astronomy science paper is available at https://doi.org/10.1038/s41550-017-0374-z Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music credit: "Deep Groove" by Danny McCarthy [ASCAP] and Thomas Dill [ASCAP]; Soundcast Music SESAC; Chronic Trax; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12844 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer					

2018 02 05 NASA Goddard <https://youtu.be/JlLuL9uueA> Webb Move from Houston to LA

After completing its cryogenic testing in NASA's Johnson Space Center's Chamber A, the optical and science segment of the James Webb Space Telescope is packed and transported to the Northrop Grumman facility in Los Angeles. There, it will be combined with its sunshield and spacecraft bus, tested and then packed for the journey to the European Space Agency's launch facility in French Guiana.

[Transcript](#)
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Read more:

Credits: NASA's Goddard Space Flight Center
Sophia Roberts
Mike Menzel
Chris Gunn
Mike McClare

Music credit: Killer Tracks: Time Shift Equalibrium Main Track by Cotton and Niblett

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2018 01 31 NASA Goddard <https://youtu.be/WXzcuJET4yw> How America's First Satellite Helped Create NASA

Or subscribe to NASA's Goddard Shorts HD Podcast:

On Jan. 31 at 10:48 p.m. EST, Explorer 1 launched into space, hurtling into Earth's orbit in seven and a half minutes. The next day's front-page news declared that the United States was now officially in the Space Age. Music: Look Forward by Laurent Dury, The Space Between by Max Concors, Picking Locks by James Alexander Dorman and Foraging At Dusk by Benjamin James Parsons. Complete transcript available.

[Transcript](#)
[Link](#)

Read more here: <https://go.nasa.gov/2nwi63>

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2018 01 31	NASA Goddard	https://youtu.be/ADAhHjkrI74	Dinosaur Age Meets the Space Age at NASA Goddard	In 2012, local dinosaur track expert Ray Stanford discovered a dinosaur track from the Cretaceous era on the campus of NASA's Goddard Space Flight Center, in Greenbelt, Maryland. After the slab on which Stanford found the track was excavated, Stanford, paleontologist Martin Lockley, of University of Colorado at Denver, and others documented more than 70 dinosaur and mammal tracks imprinted in the sandstone. Their paper documenting the discovery was published Jan. 31, 2018, in the journal Scientific Reports. The 8-foot by 3-foot slab contains at least 26 mammal tracks. Click for more about this unique DISCOVERY: https://go.nasa.gov/2DPc5ot Click for FLICKR gallery of images: https://flic.kr/s/aHsjBxwEkW Click HERE for original NASA feature story: https://go.nasa.gov/2E1Y9Xz In this video, Stanford and Lockley provide a tour of a cast of the slab, pointing out many of the fascinating tracks. Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12838	Transcript Link
2018 01 29	NASA Goddard	https://youtu.be/Lx09iNY-SG0	Explorer 1 Celebrating 60 Years in Space	Less than a lifetime ago, humankind just barely left the limits of Earth's atmosphere. Who could have imagined that only 60 years later we would be touching the surface of the Sun, arriving at the most distant object humans have ever explored, and soon to be launching the world's most powerful telescope to get a glimpse of the first galaxies born after the Big Bang? As NASA celebrates the 60th Anniversary of Explorer 1, the satellite that blazed the way for hundreds of missions to follow, some of the most ambitious explorations are yet to come. Music credi: Stardust Circles by July Turret This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12837 Credit: NASA's Goddard Space Flight Center/LK Ward If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2018 01 23	NASA Goddard	https://youtu.be/PCTJmr77nzY	Going for GOLD Exploring the Interface to Space	GOLD is a new NASA science mission that launches in January 2018 to explore Earth's interface to space! GOLD stands for Global-scale Observations of the Limb and Disk. It will inspect the dynamic region of near-Earth space where space and Earth's uppermost atmosphere meet. Historically difficult to observe, this is a little understood region that responds both to the lower atmosphere below and the tumult of space weather from above. GOLD is a hosted instrument roughly the size of a mini-fridge that will fly aboard a commercial communications satellite, SES-14 — and it's the first NASA science mission to do so. Joining us are NASA scientists Sarah Jones and Alex Young and SES director of hosted payloads, Todd Gossett. They will share details of GOLD's mission and why they're excited about this particular launch. Learn more: https://www.nasa.gov/gold	Transcript Link
2018 01 18	NASA Goddard	https://youtu.be/rgcE2lMa0Kw	2017 Takes Second Place for Hottest Year	Earth's surface temperatures in 2017 were the second warmest since since 1880, when global estimates first become feasible, NASA scientists found. Global temperatures 2017 were second only to 2016, which still holds the record for the hottest year; however, 2017 was the warmest year on record that did not start with an El Nino weather pattern, as the previous two years did. In a separate, independent analysis, NOAA scientists found that 2017 was the third-warmest year in their record. The minor difference is due to different methods to analyze global temperatures used by the two agencies, although over the long-term the records remain in strong agreement. Music: Sojourner Rover by Craig Warnock [PRS], Lee Ahmad Baker [PRS], Sean Hennessey [PRS] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12822 Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcr/	Transcript Link

2018 01 17 NASA Goddard <https://youtu.be/BXiaN85Ck4M> Why NASA Is Exploring The Edge Of Our Planet's Atmosphere

The Global-scale Observations of the Limb and Disk, or GOLD, instrument launches aboard a commercial communications satellite in January 2018 to inspect the dynamic intermingling of space and Earth's uppermost atmosphere. Together, GOLD and another NASA mission, Ionospheric Connection Explorer spacecraft, or ICON, will provide the most comprehensive of Earth's upper atmosphere we've ever had.

[Transcript](#)
[Link](#)

Above the ozone layer, the ionosphere is a part of Earth's atmosphere where particles have been cooked into a sea of electrically-charged electrons and ions by the Sun's radiation. The ionosphere is co-mingled with the very highest — and quite thin — layers of Earth's neutral upper atmosphere, making this region an area that is constantly in flux undergoing the push-and-pull between Earth's conditions and those in space. Increasingly, these layers of near-Earth space are part of the human domain, as it's home not only to astronauts, but to radio signals used to guide airplanes and ships, and satellites that provide our communications and GPS systems. Understanding the fundamental processes that govern our upper atmosphere and ionosphere is crucial to improve situational awareness that helps protect astronauts, spacecraft and humans on the ground.

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2018 01 11 NASA Goddard https://youtu.be/wBuuFY_b8eA Debris Disk Simulations Generate Spirals, Rings and Arcs

When exoplanet scientists first spotted patterns in disks of dust and gas around young stars, they thought newly formed planets might be the cause. But a recent NASA study cautions that there may be another explanation: one that doesn't involve planets at all. An alternative explanation suggests the dust and gas in the disk can form the patterns themselves when they interact with starlight. When high-energy UV starlight hits dust grains, it strips away electrons. Those electrons collide with and heat nearby gas. As the gas warms, its pressure increases and it traps more dust, which in turn heats more gas. The resulting cycle, called the photoelectric instability (PeI), can work in tandem with other forces to create some of the features astronomers have previously associated with planets in debris disks.

[Transcript](#)
[Link](#)

A 2013 study suggested PeI could explain the narrow rings seen in some disks. The model also predicted that some disks would have arcs, or incomplete rings, which weren't directly observed in a disk until 2016.

The new simulation includes an additional new factor: radiation pressure, a force caused by starlight striking dust grains.

Light exerts a minute physical force on everything it encounters. This radiation pressure propels solar sails and helps direct comet tails so they always point away from the Sun. The same force can push dust into highly eccentric orbits, and even blow some of the smaller grains out of the disk entirely.

2018 01 10	NASA Goddard	https://youtu.be/SLGDkhp28rl	Webb Telescope's Houston Highlights Time Lapse	With NASA's James Webb Space Telescope's approximately nine-month stay in Texas coming to an end, this time-lapse shows activity in the NASA Johnson Space Center's Chamber A cleanroom from the arrival of the Webb Telescope's optical and instrument segment through to its roll out from the chamber after completing its cryogenic testing. Read more: https://www.nasa.gov/feature/goddard/2018/webb-telescope-s-houston-highlights Credit: NASA's Goddard Space Flight Center/Mike McClare Music credit: "Time Lapse" Minimal Mix by Guy & Zab Skornik; Killer Tracks This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12818 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center Facebook: https://www.facebook.com/NASA.GSFC	Transcript Link
2018 01 10	NASA Goddard	https://youtu.be/oe-d9RxLLaM	Swift Mission Catches a Comet Slowdown	Observations by NASA's Swift spacecraft, now renamed the Neil Gehrels Swift Observatory after the mission's late principal investigator, have captured an unprecedented change in the rotation of a comet. Images taken in May 2017 reveal that comet 41P/Tuttle-Giacobini-Kresak -- 41P for short -- was spinning three times slower than it was in March, when it was observed by the Discovery Channel Telescope at Lowell Observatory in Arizona. The abrupt slowdown is the most dramatic change in a comet's rotation ever seen. Comet 41P orbits the Sun every 5.4 years. As a comet nears the Sun, increased heating causes its surface ice to change directly to a gas, producing jets that launch dust particles and icy grains into space. This material forms an extended atmosphere, called a coma. Ground-based observations established the 41P's initial rotational period at about 20 hours in early March 2017 and detected its slowdown later the same month. The comet passed 13.2 million miles (21.2 million km) from Earth on April 1, and eight days later made its closest approach to the Sun. Swift's Ultraviolet/Optical Telescope imaged the comet from May 7 to 9, revealing brightness variations associated with material recently ejected into the coma. These slow changes indicated 41P's rotation period had more than doubled, to between 46 and 60 hours. UVOT-based estimates of 41P's water production, coupled with the body's small size, suggest that more than half of its surface area	Transcript Link

2018 01 04	NASA Goddard	https://youtu.be/uVeTJSIbGm8	NASA Sees Definitive Evidence of the Montreal Protocol's Success	Using measurements from NASA's Aura satellite, scientists studied chlorine within the Antarctic ozone hole over the last several years, watching as the amount slowly decreased. This is the first definitive evidence of the success of the Montreal Protocol on Substances that Deplete the Ozone Layer, which was ratified in 1987. The international treaty banned the use of chlorofluorocarbons and related compounds, which break down in the stratosphere and release chlorine molecules. This chlorine depletes the ozone layer and is responsible for creating the hole in the ozone layer over Antarctica. The ozone hole fluctuates each year, reaching an annual maximum at the end of southern winter, usually in September. The hole has been trending smaller for the last few years, but as temperature has an effect on ozone-depletion, this was not definitive evidence of the Montreal Protocol's efficacy. Although scientists have been measuring levels of chlorine near the ground for decades, this study is the first time anyone accurately measured chlorine levels inside the ozone hole, confirming that the Montreal Protocol is doing its job. Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12816 Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link
2017 12 31	NASA Goddard	https://youtu.be/1-60Y6u1i4Y	NASA Goddard's 2017 Year in Review	NASA Goddard's 2017's trip around the sun brought us milestones, discoveries and excitement! And as always, we hope you join us as we chase the sun and push the boundaries of science and exploration in 2018! Credit: NASA's Goddard Space Flight Center/Clare Skelly and Rebecca Roth If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2017 12 22	NASA Goddard	https://youtu.be/Nu4DsKlKKMQ	WFIRST Will See the Big Picture of the Universe	Scheduled to launch in the mid-2020s, the Wide Field Infrared Survey Telescope (WFIRST) will function as Hubble's wide-eyed cousin. While just as sensitive as Hubble's cameras, WFIRST's 300-megapixel Wide Field Instrument will image a sky area 100 times larger. This means a single WFIRST image will hold the equivalent detail of 100 pictures from Hubble. The mission's wide field of view will allow it to generate a never-before-seen big picture of the universe, which will help astronomers explore some of the greatest mysteries of the cosmos, like why the expansion of the universe seems to be accelerating. Some scientists attribute the speed-up to dark energy, an unexplained pressure that makes up 68 percent of the total content of the cosmos. The Wide Field Instrument will also allow WFIRST to measure the matter in hundreds of millions of distant galaxies through a phenomenon dictated by Einstein's relativity theory. Massive objects like galaxies curve space-time in a way that bends light passing near them, creating a distorted, magnified view of far-off galaxies behind them. WFIRST will paint a broad picture of how matter is structured throughout the universe, allowing scientists to put the governing physics of its assembly to the ultimate test. WFIRST can use this same light-bending phenomenon to study planets beyond our solar system, known as exoplanets. In a process called microlensing, a foreground star in our galaxy acts as the lens. When its motion randomly aligns with a distant background star,	Transcript Link
2017 12 21	NASA Goddard	https://youtu.be/nf2oc6nMsn4	'Winking' Star May Be Devouring Wrecked Planets	Astronomers studying the star RZ Piscium have found evidence suggesting its strange, unpredictable dimming episodes may be caused by vast orbiting clouds of gas and dust, the remains of one or more destroyed planets. Young stars are often prodigious X-ray sources. Observations using the European Space Agency's XMM-Newton satellite, show that RZ Piscium is, too. Its total X-ray output is roughly 1,000 times greater than our Sun's. Ground-based observations show the star's surface temperature to be about 9,600 degrees Fahrenheit (5,330 degrees Celsius), only slightly cooler than the Sun's. They also show RZ Piscium is enriched in the tell-tale element lithium, which is slowly destroyed by nuclear reactions inside stars and serves as a clock indicating the elapsed time since a star's birth. Ground-based telescopes also reveal large amounts of dust and hydrogen-rich gas in the system, suggesting that large blobs of this material are orbiting the star and causing the brightness dips. The best explanation that accounts for all of the available data, say the researchers, is that the star is encircled by debris representing the aftermath of a disaster of planetary proportions. It's possible the star's tides may be stripping material from a close substellar companion or giant planet, producing intermittent streams of gas and dust, or that the companion is already completely dissolved. Another possibility is that one or more massive gas-rich planets in the system underwent a catastrophic collision in the astronomically	Transcript Link

2017 12 21	NASA Goddard	https://youtu.be/tRhEpcMiElw	NASA Goddard Year in Review - 2017	NASA's Goddard Space Flight Center in Greenbelt, Maryland, is home to the nation's largest organization of scientists, engineers and technologists who build spacecraft, instruments and new technology to study Earth, the Sun, our solar system and the universe. Just outside Washington D.C., Goddard is home to hundreds of scientific missions, including Hubble operations; Goddard manages communications between mission control and astronauts aboard the International Space Station; Goddard scientists stare into the Sun, grind up meteorites for signs of life's building blocks, look into the farthest reaches of space, and untangle the mysteries of our own changing world. Goddard engineers construct sensitive instruments, build telescopes that peer into the cosmos, and operate the test chambers that ensure those satellites' survival. Here is our 2017 trip around the Sun. Enjoy the highlights: https://www.nasa.gov/feature/goddard/2017/nasa-goddard-year-in-review-2017	Transcript Link
2017 12 18	NASA Goddard	https://youtu.be/4tJkhPmMAI4	A New Model for Understanding Jupiter's Climate	Climate patterns and storms on Jupiter can have striking similarities to those on Earth. One such pattern is a four-year temperature cycle in the Jovian upper atmosphere called the QJO. This cycle has a little sibling in Earth's stratosphere that can influence the transport of aerosols and the formation of hurricanes, making it an active area of climate research. Now, scientists at NASA's Goddard Space Flight Center have developed a new model for understanding Jupiter's QJO, and it could lead to a better climate model for Earth. Read more: https://www.nasa.gov/feature/goddard/2017/nasa-solves-how-a-jupiter-jet-stream-shifts-into-reverse Credit: NASA's Goddard Space Flight Center/Dan Gallagher (USRA) Music provided by Killer Tracks: "Lights," "Times Waits," "The Space Between" This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/4601 Visualization Credits: Richard Cosentino (USRA): Scientist Amy A. Simon (NASA): Science Advisor Dan Gallagher (USRA): Producer	Transcript Link

2017 12 18	NASA Goddard	https://youtu.be/FBWeSN66z9M	Moon Phases 2018 - Northern Hemisphere - 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2018, as viewed from the Northern Hemisphere. Each frame represents one hour. In addition, this visualization shows the moon's orbit position, sub-Earth and subsolar points, distance from the Earth at true scale, and labels of craters near the terminator. Credit: NASA's Goddard Space Flight Center/David Ladd (USRA) Ernie Wright (USRA): Lead Visualizer John Keller (NASA/GSFC): Scientist Noah Petro (NASA/GSFC): Scientist Music Credits: Killer Tracks: "Illuminating" - Kelly McCollough. "Touching Clouds" - Kelly McCollough. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/4604 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/... Follow NASA's Goddard Space Flight Center:	Transcript Link
2017 12 18	NASA Goddard	https://youtu.be/zv6zmKcmBf0	Moon Phases 2018 - Southern Hemisphere - 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2018, as viewed from the Southern Hemisphere. Each frame represents one hour. In addition, this visualization shows the moon's orbit position, sub-Earth and subsolar points, distance from the Earth at true scale, and labels of craters near the terminator. Credit: NASA's Goddard Space Flight Center/David Ladd (USRA) Ernie Wright (USRA): Lead Visualizer John Keller (NASA/GSFC): Scientist Noah Petro (NASA/GSFC): Scientist Music Provided by Killer Tracks: "Euphoric Glow" - Andrew Skeet, Andrew Britton, David Goldsmith. "Just Beyond" - Kelly McCollough. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/4605 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/... Follow NASA's Goddard Space Flight Center:	Transcript Link

2017 12 14 NASA Goddard <https://youtu.be/gJFwdYnyjvg> NASA Scientists Trek to the South Pole Follow along with the Antarctic Traverse at <https://earthobservatory.nasa.gov/blogs/fromthefield/category/icesat-2-antarctic-traverse/> [Transcript](#) [Link](#)

With extreme cold-weather gear, scientific instruments, and two tank-like snow machines called PistenBullys, they begin a traverse on Dec. 21 along section of the 88-degree south latitude line in an arc around the South Pole, documenting a new route across the Antarctic ice. The 470-mile expedition in one of the most barren landscapes on Earth will ultimately provide the best assessment of the accuracy of data collected from space by the Ice Cloud and land Elevation Satellite-2 (ICESat-2), set to launch in 2018. With a fast-firing laser instrument, ICESat-2 will measure the elevation of ice sheets and track how much they change over time. Even small amounts of melt across areas as vast as Greenland or Antarctica can result in large amounts of meltwater contributing to sea level rise. To help document this, ICESat-2's height change measurements will have a precision of less than an inch - ground-truthed, in part, with efforts like this Antarctic campaign. The team will collect precise GPS data of the elevation at 88 degrees south, where ICESat-2's orbits converge, providing thousands of points where the survey measurements can be compared to satellite data.

Music: "Pizzicato Piece," Andrew Michael Britton, David Stephen Goldsmith, Atmosphere Music Ltd.; "We Learn," Andrew Michael Britton, Atmosphere Music Ltd. Complete transcript available

2017 12 14 NASA Goddard <https://youtu.be/TlrClfJ13M> NASA Evaluates New Threats to Earth's Ozone Layer Scientists are closely monitoring positive signs of recovery of the Earth's stratospheric ozone layer, which is depleted by the use of chemicals called chlorofluorocarbons (CFCs) for a range of industrial and commercial purposes. Even after the landmark Montreal Protocol banned these substances in the late 1980s, threats to the ozone layer persist. Scientists at NASA's Goddard Space Flight Center including Susan Strahan and Qing Liang (both NASA/USRA) are weighing in to an ongoing debate about the relative impacts of continuing sources of ozone depletion, including short-lived chemicals not banned by the Protocol, the effects of climate change, and banned chemicals that are still being released into the atmosphere. All could potentially delay the recovery of the seasonal ozone hole over Antarctica. [Transcript](#) [Link](#)

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· Google+ <http://plus.google.com/+NASAGoddard/p...>

2017 12 11 NASA Goddard <https://youtu.be/slXyxvSEKFY> A New Time-lapse of an Island Forming in Tonga Hunga Tonga-Hunga Ha'apai is the first island of this type to erupt and persist in the modern satellite era, it gives scientists an unprecedented view from space of its early life and evolution. The new study offers insight into its longevity and the erosion that shapes new islands. Understanding these processes could also provide insights into similar features in other parts of the solar system, including Mars.

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Music: La Grange by Hans Engstrom. Complete transcript available.

Credit: NASA's Goddard Space Flight Center/LK Ward

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2017 12 11 NASA Goddard <https://youtu.be/Hds1OBxVg4s> The Birth of a New Island

In late December 2014 into early 2015, a submarine volcano in the South Pacific Kingdom of Tonga erupted, sending a violent stream of steam, ash and rock into the air. When the ash finally settled in January 2015, a newborn island with a 400-foot summit nestled between two older islands – visible to satellites in space.

[Transcript](#)
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The newly formed Tongan island, unofficially known as Hunga Tonga-Hunga Ha'apai after its neighbors, was initially projected to last a few months. Now it has a 6- to 30-year lease on life, according to a new NASA study.

This video is public domain.

Credit: NASA's Goddard Space Flight Center/LK Ward

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2017 12 11 NASA Goddard <https://youtu.be/BWhPKXf1jUQ> Exploring A Crater This video looks at a NASA Goddard Instrument Field Team deployment to the Kilbourne Hole maar crater in New Mexico. The scientists came here to test hand-held geological instruments that may one day be used by astronauts exploring the Moon, Mars or even an asteroid. As a part of this data collection, astronaut Barry E. "Butch" Wilmore, a former commander of the International Space Station, conducted simulated moonwalks in the area. Retired Apollo 17 astronaut Harrison "Jack" Schmitt was also on-site at Kilbourne Hole - revisiting some of the very spots where he once trained. This excursion to the Kilbourne Hole crater was a part of the RIS4E (Remote, In Situ and Synchrotron Studies for Science and Exploration) project led by Stony Brook University, and featured members from Johnson Space Center and the University of Texas El Paso.

[Transcript](#)
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Music provided by Killer Tracks: "We Are Invincible" - Billy Lincoln, Thomas Dean Pugh-Fields. "Indie Smiles" - Wally Gagel, Xandy Barry

Archival footage of Jack Schmitt provided by Stephen Slater

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/12788>

Credit: NASA's Goddard Space Flight Center/David Ladd

2017 12 08 NASA Goddard <https://youtu.be/1cAiLKp2F-U> Can Data from Space Save Dolphins

If you liked this video, subscribe to the NASA Goddard YouTube Channel. The age-old mystery of why otherwise healthy dolphins, whales and porpoises get stranded along coasts worldwide deepens: After a collaboration between NASA scientists and marine biologists, new research suggests space weather is not the primary cause of animal beachings — but the research continues. The collaboration is now seeking others to join their search for the factors that send ocean mammals off course, in the hopes of perhaps one day predicting strandings before they happen.

[Transcript](#)
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Scientists have long sought the answer to why such animals get beached, and one recent collaboration hoped to find a clear cut solution: Scientists from a cross-section of fields pooled massive data sets to see if disturbances to the magnetic field around Earth could be what confuses these sea creatures, known as cetaceans.

Cetaceans are thought to use Earth's magnetic field to navigate. Since intense solar storms can disturb the magnetic field, the scientists wanted to determine whether they could, by extension, actually interfere with animals' internal compasses and lead them astray.

During this first attempt, the scientists -- from NASA's Goddard Space Flight Center in Greenbelt, Maryland; the International Fund for Animal Welfare, or IFAW; and the Bureau of Ocean Energy Management, or BOEM -- were not able to hammer down a causal connection.

2017 12 06	NASA Goddard	https://youtu.be/rykLDfa1e7A	Seeing the Sun in 1,000 different colors with NASA's TSIS-1	The composition of that light that falls on Earth matters to understanding Earth's energy budget. In December 2017, NASA is launching a new instrument called the Total Solar and Spectral Irradiance Sensor (TSIS-1) designed to study this question. NASA's TSIS-1 will measure the Sun's energy in 1,000 different wavelengths, including the visible, ultraviolet, and infrared, known as solar spectral irradiance. Find out more in this short narrated video. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12752 Credit: NASA's Goddard Space Flight Center/Michael Starobin If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfsc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link
2017 12 06	NASA Goddard	https://youtu.be/viRjexUYJ4	Lasers Fired At NASA's Parker Solar Probe	NASA's Parker Solar Probe is in the midst of intense environmental testing at NASA's Goddard Space Flight Center in Greenbelt, Maryland, in preparation for its journey to the Sun. These tests simulate the noise and shaking the spacecraft will experience during its launch from Cape Canaveral, Florida, scheduled for 2018. Parker Solar Probe's integration and testing team must check over the spacecraft and systems to make sure everything is still in optimal working condition after experiencing these rigorous conditions – including a check of the solar arrays, which will provide electrical power to the spacecraft. Parker Solar Probe will explore the Sun's outer atmosphere and make critical observations that will answer decades-old questions about the physics of stars. The resulting data will also help improve how we forecast major eruptions on the Sun and subsequent space weather events that can impact life on Earth, as well as satellites and astronauts in space. The mission is named for Eugene N. Parker, whose profound insights into solar physics and processes have helped shape the field of heliophysics. Credits: NASA's Goddard Space Flight Center Joy Ng (USRA): Producer Sarah Frazier (ADNET SYSTEMS): Writer Lee Hobson (APL): Videographer Music credit: 'Push Away' by Andrew Michael Britton [PRS], David	Transcript Link

2017 11 29	NASA Goddard	https://youtu.be/82jE-yvB8xU	NASA Why does the Sun Matter for Earth's Energy Budget	Earth's energy budget is a metaphor for the delicate equilibrium between energy received from the Sun versus energy radiated back out in to space. Research into precise details of Earth's energy budget is vital for understanding how the planet's climate may be changing, as well as variabilities in solar energy output. Missions like NASA's TSIS will help scientists keep a close watch. NASA's Total and Spectral Solar Irradiance Sensor, or TSIS-1, is a mission to measure the sun's energy input to Earth. Various satellites have captured a continuous record of this solar energy input since 1978. TSIS-1 sensors advance previous measurements, enabling scientists to study the sun's natural influence on Earth's ozone layer, atmospheric circulation, clouds, and ecosystems. These observations are essential for a scientific understanding of the effects of solar variability on the Earth system. NASA Goddard Space Flight Center manages the project. The University of Colorado's Laboratory for Atmospheric and Space Physics (LASP) built both instruments and provides mission operations. The International Space Station carries TSIS-1. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/11937 Credit: NASA's Goddard Space Flight Center/Michael Starobin If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link
2017 11 28	NASA Goddard	https://youtu.be/GKLU8YHSnlc	NASA Measures All the Sun's Energy to Earth	In terms of climate change research, scientists need to understand the balance between energy coming in from the Sun and energy radiating out from Earth. In December 2017, NASA is launching a new instrument to measure half of that equation – the total amount of Sun's energy input to Earth, known as total solar irradiance. Scientists will use NASA's Total Solar and Spectral Irradiance Sensor (TSIS-1) to measure to quantify variations in the sun's total amount of energy and help improve models simulating Earth's climate. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12752 Credit: NASA's Goddard Space Flight Center/Michael Starobin If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center • Facebook: http://www.facebook.com/NASA.GSFC • Twitter http://twitter.com/NASAGoddard • Flickr http://www.flickr.com/photos/gsfcc/ • Instagram http://www.instagram.com/nasagoddard/ • Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2017 11 27	NASA Goddard	https://youtu.be/TeJSQ4ZWk78	Building Interplanetary Internet with 'Disruption Tolerant Networking'	NASA is boosting cyber to space using a technology called Disruption Tolerant Networking. The technology will help overcome several space communications challenges, benefiting missions in Earth orbit and those farther out in the solar system. Disruption Tolerant Networking also has future Earth-based applications. Learn more about Disruption Tolerant Networking: www.nasa.gov/content/dtn Music provided by Killer Tracks: "Strange Reality" This video is public domain. Credit: NASA's Goddard Space Flight Center/Clare Skelly If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center • Facebook: http://www.facebook.com/NASA.GSFC • Twitter http://twitter.com/NASAGoddard • Flickr http://www.flickr.com/photos/gsfcr/ • Instagram http://www.instagram.com/nasagoddard/ • Google+ http://plus.google.com/+NASAGoddard/p...	Transcript Link
2017 11 20	NASA Goddard	https://youtu.be/2zEVBQchOgk	Jack Schmitt From Apollo 17 to LRO	December 11, 2017 will mark the 45th anniversary of the day NASA's Apollo 17 mission landed on the Moon. This video connects that history to the current Lunar Reconnaissance Orbiter mission through the eyes of astronaut Harrison "Jack" Schmitt. As a geologist and Apollo 17 crewmember, Schmitt has a unique perspective about how data being collected by LRO enhances our current understanding of lunar science and lays the groundwork for future explorers. Music Provided by Killer Tracks: "From Small Beginnings" - Jay Price. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12705 Credit: NASA's Goddard Space Flight Center/Lacey Young If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center • Facebook: http://www.facebook.com/NASA.GSFC • Twitter http://twitter.com/NASAGoddard • Flickr http://www.flickr.com/photos/gsfcr/ • Instagram http://www.instagram.com/nasagoddard/ • Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2017 11 16	NASA Goddard	https://youtu.be/Ayn58bJck-Y	How Solar Flares Affect Earth	A team of scientists led by Laura Hayes –a solar physicist who splits her time between NASA's Goddard Space Flight Center and Trinity College in Dublin, Ireland – investigated a connection between solar flares and Earth's atmosphere. They discovered pulses in the electrified layer of the atmosphere – called the ionosphere – mirrored X-ray oscillations during a July 24, 2016 flare. Read more: https://www.nasa.gov/feature/goddard/2017/nasa-detects-solar-flare-pulses-at-sun-and-earth Credit: NASA's Goddard Space Flight Center Genna Duberstein (USRA): Lead Producer Kathalina Tran (Wyle Information Systems): Lead Science Writer Jack Ireland (ADNET Systems): Scientist Laura Hayes (Trinity College in Dublin, Ireland): Lead Scientist Music: "Good Chat" by Richard Anthony D Pike This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12640 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link
2017 11 15	NASA Goddard	https://youtu.be/mbjQB6Yqc-E	How to Find a Living Planet	The more we see other planets, the more the question comes into focus: Maybe we're the weird one? Decades of observing Earth from space has informed our search for signs of habitability and life on exoplanets and even planets in our own solar system. We're taking a closer look at what we've learned about Earth - our only example of a planet with life - to our search for life the universe. Complete transcript available. Music credit: Curious Events by Independent Film Score - Andrew Skeet; Teapot Waltz by Benjamin James Parsons; Patisserie Pressure by Benjamin James Parsons This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12776 Credit: NASA's Goddard Space Flight Center/LK Ward If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2017 11 15	NASA Goddard	https://youtu.be/3SFPwMIJFBA	HIRMES SOFIA's latest high-resolution Mid-infrared Spectrometer	A team from NASA's Goddard Space Flight Center in Greenbelt, Maryland, is developing a new, third-generation facility science instrument for the Stratospheric Observatory for Infrared Astronomy, SOFIA. The High Resolution Mid-Infrared Spectrometer (HIRMES), is a spectrometer optimized to detect neutral atomic oxygen, water, as well as normal and deuterated (or "heavy") hydrogen molecules at infrared wavelengths between 25 and 122 microns (a micron is one-millionth of a meter). These wavelengths are key to determining how water vapor, ice, and oxygen combine at different times during planet formation, and will enable new observations of how these elements combine with dust to form the mass that may one day become a planet. HIRMES will provide scientists with a unique opportunity to study this aspect of planetary formation, as SOFIA is currently the only NASA observatory capable of accessing these mid-infrared wavelengths. Infrared wavelengths between 28 and 112 microns do not reach ground-based telescopes because water vapor and carbon dioxide in the Earth's atmosphere block this energy. SOFIA is able to access this part of the electromagnetic spectrum by flying between 39,000 feet and 45,000 feet, above more than 99 percent of this water vapor. Read the web story – https://www.nasa.gov/feature/nasa-selects-next-generation-spectrometer-for-sofia-flying-observatory	Transcript Link
2017 11 13	NASA Goddard	https://youtu.be/3olcJBinyvw	Our Living Planet From Space	Life. It's the one thing that, so far, makes Earth unique among the thousands of other planets we've discovered. Since the fall of 1997, NASA satellites have continuously and globally observed all plant life at the surface of the land and ocean. Read more: https://www.nasa.gov/feature/goddard/2017/the-changing-colors-of-our-living-planet Credits: LK Ward (USRA): Lead Producer Patrick Lynch (NASA/GSFC): Editor Compton Tucker (NASA/GSFC): Scientist Ivona Cetinic (NASA/USRA): Scientist Aaron E. Lepsch (ADNET Systems, Inc.): Technical Support Music: Out of Hours by Sound Pocket Music; Watching Ladybirds by Benjamin James Parsons; Marimba Rhythms by Hamilton Winch Complete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12777 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEexplorer Or subscribe to NASA's Goddard Shorts HD Podcast:	Transcript Link

2017 11 13 NASA Goddard <https://youtu.be/h1eRp0EGOmE> 2017 Hurricanes and Aerosols Simulation

How can you see the atmosphere? By tracking what is carried on the wind. Tiny aerosol particles such as smoke, dust, and sea salt are transported across the globe, making visible weather patterns and other normally invisible physical processes.

[Transcript](#)
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This visualization uses data from NASA satellites, combined with mathematical models in a computer simulation allowing scientists to study the physical processes in our atmosphere. By following the sea salt that is evaporated from the ocean, you can see the storms of the 2017 hurricane season.

During the same time, large fires in the Pacific Northwest released smoke into the atmosphere. Large weather patterns can transport these particles long distances: in early September, you can see a line of smoke from Oregon and Washington, down the Great Plains, through the South, and across the Atlantic to England.

Dust from the Sahara is also caught in storm systems and moved from Africa to the Americas. Unlike the sea salt, however, the dust is removed from the center of the storm. The dust particles are absorbed by cloud droplets and then washed out as it rains.

Advances in computing speed allow scientists to include more details of these physical processes in their simulations of how the aerosols interact with the storm systems.

2017 11 12 NASA Goddard <https://youtu.be/DjLvy9DYY4Y> Living Planet

Supercomputing 2017 conference:

Life. It's the one thing that, so far, makes Earth different from the thousands of other planets we've discovered.

[Transcript](#)
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This fall marks 20 years since NASA began continuous, global measurements of Earth's life from space. NASA satellites measure all the plant life on land and at the surface of the ocean, every day. A new visualization, to be released Monday, captures the entirety of this record, compressing a decades-long view of life on Earth into a captivating few minutes.

Join us this week on social media for an in-depth look at how NASA studies our living planet, how it's changing, and how studying Earth from space is helping lead the way in the quest to find life elsewhere.

This video is public domain and along with other supporting visualizations will be able to be downloaded from the Scientific Visualization Studio shortly.

Credit: NASA's Goddard Space Flight Center

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2017 11 09 NASA Goddard <https://youtu.be/GhHXJSO8Ar4> Hubble Inspires Our Inner Explorer Humanity's drive to explore led to one of the most iconic exploration machines of all time, NASA's Hubble Space Telescope. This video was edited by summer interns at the Goddard Space Flight Center.

[Transcript](#)
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Credit: NASA's Goddard Space Flight Center/Lacey Young and Micheala Sosby

Music credit: "New Heights" by Stephen Daniel Lemaire [ASCAP]; El Murmullo Sarao SGAE, Universal Sarao SGAE; SaraoMusic; Killer Tracks Production Music

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<https://www.nasa.gov/hubble>

2017 11 09 NASA Goddard <https://youtu.be/tzSAoW6fS6c> Hubble Captures Supernova's Light Echo Over a period of two and a half years, NASA's Hubble Space Telescope observed the "light echo" of supernova SN 2014J in galaxy M82, located 11.4 million light-years away.

[Transcript](#)
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Read the web story – <https://www.nasa.gov/image-feature/goddard/2017/hubble-shows-light-echo-expanding-from-exploded-star>

Credit: NASA's Goddard Space Flight Center/Katrina Jackson
Music credit: "Little Effort" by Christopher Franke [BMI]; Killer Tracks [BMI]; Killer Tracks Production Music

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2017 11 09 NASA Goddard <https://youtu.be/m5gKB-o-uXSQ> CubeSat to Test Miniaturized Weather Satellite Behind every weather forecast—from your local, five-day prediction to a late-breaking hurricane track update—are the satellites that make them possible. Government agencies depend on observations from weather satellites to inform forecast models that help us prepare for approaching storms and identify areas that need evacuating or emergency first responders. [Transcript](#) [Link](#)

Credit: NASA's Goddard Space Flight Center
Elizabeth Willaman (Willaman Creative): Lead Producer
Andrea S. Martin (SGT): Producer
Kerri Cahoy (MIT): Scientist

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2017 11 07 NASA Goddard <https://youtu.be/kDCz5jBfJoc> Welcome to the Ionosphere Learn about the features of the ionosphere! This little-explored region exists between space and Earth. It is home to the aurora, the international space station, a variety of satellites, and radio communication waves. We know it is sensitive to weather from Earth and conditions in space, called space weather. Join us as we venture to this interface to space! Music credit: Foxy Trot by Luis Enriquez Bacalov [Transcript](#) [Link](#)

Credit: NASA's Goddard Space Flight Center
Krystofer Kim (USRA): Lead Animator
Genna Duberstein (USRA): Lead Producer
Ryan Fitzgibbons (USRA): Narrator
Robert C. Garner (USRA): Project Support
Sarah L. Jones (NASA/GSFC): Scientist
Tom Immel (SSL Berkeley): Scientist
Jeff Klenzing: Scientist

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Or subscribe to NASA's Goddard Shorts HD Podcast:
https://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html

2017 11 03 NASA Goddard <https://youtu.be/03laQo8ou5M> ICESat-2 By the Numbers 300 Trillion

ICESat-2 is an incredibly precise space laser that features the latest in NASA technology To measure ice heights, engineers have to take ICESat-2's instrument ATLAS to the extreme - sometimes going big, sometimes going small, but always keeping it precise.

[Transcript](#)
[Link](#)

Music: "Cristal Delight," Fred Dubois, Killer Tracks

Credit: NASA's Goddard Space Flight Center
Ryan Fitzgibbons (USRA): Lead Producer
Kate Ramsayer (Telophase Corp.): Lead Writer
Ryan Fitzgibbons (USRA): Writer
Ryan Fitzgibbons (USRA): Lead Animator
Adriana Manrique Gutierrez (USRA): Animator
Thorsten Markus (NASA/GSFC): Lead Scientist
Thomas A. Neumann Ph.D. (NASA/GSFC): Lead Scientist
Ryan Fitzgibbons (USRA): Lead Editor
Ryan Fitzgibbons (USRA): Lead Narrator
Jefferson Beck (USRA): Lead Videographer
Greg Shirah (NASA/GSFC): Lead Visualizer
John Caldwell (AIMM): Lead Videographer
Chris Meaney (KBRwyle): Lead Animator

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2017 11 03 NASA Goddard <https://youtu.be/agmmr5XvgMM> ICESat-2 By the Numbers 532

ICESat-2 is an incredibly precise space laser that features the latest in NASA technology To measure ice heights, engineers have to take ICESat-2's instrument ATLAS to the extreme - sometimes going big, sometimes going small, but always keeping it precise.

[Transcript](#)
[Link](#)

Music: "Outstanding Monuments," Laurent Dury, Killer Tracks

Credit: NASA's Goddard Space Flight Center
Ryan Fitzgibbons (USRA): Lead Producer
Kate Ramsayer (Telophase Corp.): Lead Writer
Ryan Fitzgibbons (USRA): Writer
Ryan Fitzgibbons (USRA): Lead Animator
Adriana Manrique Gutierrez (USRA): Animator
Thorsten Markus (NASA/GSFC): Lead Scientist
Thomas A. Neumann Ph.D. (NASA/GSFC): Lead Scientist
Ryan Fitzgibbons (USRA): Lead Editor
Ryan Fitzgibbons (USRA): Lead Narrator
Jefferson Beck (USRA): Lead Videographer
Greg Shirah (NASA/GSFC): Lead Visualizer
John Caldwell (AIMM): Lead Videographer
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2017 11 03 NASA Goddard <https://youtu.be/jOFF6vmzEYQ> ICESat-2 By the Numbers 90

ICESat-2 is an incredibly precise space laser that features the latest in NASA technology To measure ice heights, engineers have to take ICESat-2's instrument ATLAS to the extreme - sometimes going big, sometimes going small, but always keeping it precise.

[Transcript](#)
[Link](#)

Music: "Landscape Wonders," Fred Dubois, Killer Tracks

Credit: NASA's Goddard Space Flight Center
Ryan Fitzgibbons (USRA): Lead Producer
Kate Ramsayer (Telophase Corp.): Lead Writer
Ryan Fitzgibbons (USRA): Writer
Ryan Fitzgibbons (USRA): Lead Animator
Adriana Manrique Gutierrez (USRA): Animator
Thorsten Markus (NASA/GSFC): Lead Scientist
Thomas A. Neumann Ph.D. (NASA/GSFC): Lead Scientist
Ryan Fitzgibbons (USRA): Lead Editor
Ryan Fitzgibbons (USRA): Lead Narrator
Jefferson Beck (USRA): Lead Videographer
Greg Shirah (NASA/GSFC): Lead Visualizer
John Caldwell (AIMM): Lead Videographer
Chris Meaney (KBRwyle): Lead Animator

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2017 11 03 NASA Goddard <https://youtu.be/Vwnna6Rslow> ICESat-2 By the Numbers 0.2

ICESat-2 is an incredibly precise space laser that features the latest in NASA technology To measure ice heights, engineers have to take ICESat-2's instrument ATLAS to the extreme - sometimes going big, sometimes going small, but always keeping it precise.

[Transcript](#)
[Link](#)

Music: "Castles and Cathedrals," Fabrice Ravel-Chapuis, Killer Tracks

Credit: NASA's Goddard Space Flight Center
Ryan Fitzgibbons (USRA): Lead Producer
Kate Ramsayer (Telophase Corp.): Lead Writer
Ryan Fitzgibbons (USRA): Writer
Ryan Fitzgibbons (USRA): Lead Animator
Adriana Manrique Gutierrez (USRA): Animator
Thorsten Markus (NASA/GSFC): Lead Scientist
Thomas A. Neumann Ph.D. (NASA/GSFC): Lead Scientist
Ryan Fitzgibbons (USRA): Lead Editor
Ryan Fitzgibbons (USRA): Lead Narrator
Jefferson Beck (USRA): Lead Videographer
Greg Shirah (NASA/GSFC): Lead Visualizer
John Caldwell (AIMM): Lead Videographer
Chris Meaney (KBRwyle): Lead Animator

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2017 11 03 NASA Goddard <https://youtu.be/QlvRaLaeZpk> ICESat-2 By the Numbers 1,387

ICESat-2 is an incredibly precise space laser that features the latest in NASA technology To measure ice heights, engineers have to take ICESat-2's instrument ATLAS to the extreme - sometimes going big, sometimes going small, but always keeping it precise.

[Transcript](#)
[Link](#)

Music: "Discovery Thrill," Fred Dubois, Killer Tracks

Credit: NASA's Goddard Space Flight Center
Ryan Fitzgibbons (USRA): Lead Producer
Kate Ramsayer (Telophase Corp.): Lead Writer
Ryan Fitzgibbons (USRA): Writer
Ryan Fitzgibbons (USRA): Lead Animator
Adriana Manrique Gutierrez (USRA): Animator
Thorsten Markus (NASA/GSFC): Lead Scientist
Thomas A. Neumann Ph.D. (NASA/GSFC): Lead Scientist
Ryan Fitzgibbons (USRA): Lead Editor
Ryan Fitzgibbons (USRA): Lead Narrator
Jefferson Beck (USRA): Lead Videographer
Greg Shirah (NASA/GSFC): Lead Visualizer
John Caldwell (AIMM): Lead Videographer
Chris Meaney (KBRwyle): Lead Animator

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2017 11 02 NASA Goddard <https://youtu.be/nV2pBd0F7S4> Warm Winter Air Makes for a Small Ozone Hole

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NASA and NOAA scientists work together to study the ozone layer, monitoring the hole over Antarctica as it fluctuates with the seasons. This year, the ozone hole's annual maximum set a record -- the smallest it's been since 1988.

The hole in the ozone layer is caused each year as ozone molecules react with chlorofluorocarbons (CFCs) in the atmosphere. The reactions occur at cold temperatures, so the hole reaches a maximum size each year at the end of southern winter, and then heals during the warmer summer months.

Although CFCs have been banned since 1987 under the Montreal Protocol on Substances that Deplete the Ozone Layer, the compounds decay very slowly, and still remain in the atmosphere. This year, the small ozone hole was mostly caused by warmer temperatures, which slowed down the reactions between ozone and CFCs.

Music: Stars Align by Andrew Michael Britton [PRS]

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2017 10 30	NASA Goddard	https://youtu.be/Zl3FraMTARc	Explore the Universe with Hubble Messier Catalog	The Messier catalog includes some of the most fascinating astronomical objects that can be observed from Earth's Northern Hemisphere. Among them are deep-sky objects that can be viewed in stunning detail using larger telescopes but are also bright enough to be seen through a small telescope. This characteristic makes Messier objects extremely popular targets for amateur astronomers possessing all levels of experience and equipment. They are so popular, in fact, that they have inspired a special award from the Astronomical League (an organization for amateur astronomers) given to observers who are able to spot each of these objects. Those who succeed receive a certificate and are given the distinction of being in the Messier Club. (Hubble Messier Catalog Facebook Live Program Oct ober, 19, 2017.) Credit: NASA's Goddard Space Flight Center/Rich Melnick Erin Kisliuk (TRAX International): Host/Associate Producer Michelle Thaller (NASA/GSFC): Talent Kevin Hartnett (NASA/GSFC): Talent Aries Keck (ADNET Systems, Inc.): Executive Producer Rich Melnick (KBRwyle): Associate Producer Pat Kennedy (HTSI): Director Stuart A. Snodgrass (KBRwyle): Technical Director Rich Melnick (KBRwyle): Video Editor Michael Randazzo (AIMM): Graphics Rob Andreoli (AIMM): Audio Technician John Caldwell (AIMM): Videographer	Transcript Link
2017 10 26	NASA Goddard	https://youtu.be/tbVzOtcfh9U	James Webb Space Telescope Laser-Focused Sight	About 1 million miles away from the nearest eye surgeon, NASA's James Webb Space Telescope will be able to perfect its own vision while in orbit. Though the Webb telescope will focus on stars and galaxies approximately 13.5 billion light-years away, its sight goes through a similar process as you would if you underwent laser vision correction surgery to be able to focus on an object 10 feet across the room. In orbit at Earth's second Lagrange point (L2), far from the help of a terrestrial doctor, Webb will use its near-infrared camera (NIRCam) instrument to help align its primary mirror segments about 40 days after launch, once they have unfolded from their unaligned stowed position and cooled to their operating temperatures. Laser vision correction surgery reshapes the cornea of the eye to remove imperfections that cause vision problems like nearsightedness. The cornea is the surface of the eye; it helps focus rays of light on the retina at the back of the eye, and though it appears to be uniform and smooth, it can be misshapen and pockmarked with dents, dimples, and other imperfections that can affect a person's sight. The relative positioning of Webb's primary mirror segments after launch will be the equivalent of these corneal imperfections, and engineers on Earth will need to make corrections to the mirrors' positions to bring them into alignment, ensuring they will produce sharp, focused images.	Transcript Link

2017 10 18 NASA Goddard <https://youtu.be/b94PaWleG9Q> Meet ICON
NASA's Airglow Explorer

NASA's Ionospheric Connection Explorer, or ICON, launches in December 2017 [Ed. note: the launch date has subsequently been scheduled for Nov. 7, 2018] and orbits above the upper atmosphere, through the bottom edge of near-Earth space. From this vantage point, ICON observes both the upper atmosphere and a layer of charged particles called the ionosphere, which extends from about 50 to 360 miles above the surface of Earth. Processes in the ionosphere also create bright swaths of color in the sky, known as airglow. ICON will observe how interactions between Earth's weather and the ionosphere create such shimmering airglow as well as other changes in the space environment.

[Transcript Link](#)

Learn more: <https://www.nasa.gov/feature/goddard/2017/nasa-s-icon-explores-the-boundary-between-earth-and-space>

Find more views of the ionosphere from the International Space Station at <https://eol.jsc.nasa.gov/BeyondThePhotography/CrewEarthObservationsVideos/>
Music credit: Design Principle by Wayne Roberts

Credit: NASA's Goddard Space Flight Center
Genna Duberstein (USRA): Lead Producer
Karen Fox (ASI): Lead Writer
Scott Wiessinger (USRA): Narrator
Tom Immel (SSL Berkeley): Lead Scientist
Douglas E. Rowland (NASA/GSFC): Scientist

2017 10 18 NASA Goddard <https://youtu.be/R7q0vv0x7IA> Solar Wind at
Martian Moon
Could Impact
Future Missions

Mars has two moons, Phobos and Deimos. Both are small, airless bodies with irregular shapes. Because they lack protective atmospheres and magnetospheres, Phobos and Deimos are directly exposed to the solar wind for part of their orbits. Now, a study from NASA's Goddard Space Flight Center suggests that the solar wind creates a complex electrical environment around Phobos, giving its night side and shadowed craters a static electric charge. This could impact plans for future robotic and human explorers to study the moons of Mars.

[Transcript Link](#)

Learn more about this finding: <https://www.nasa.gov/press-release/goddard/2017/mars-electric-moons>

Music provided by Killer Tracks: "Innovations" by Pascal Lengagne

Credit: NASA's Goddard Space Flight Center/Conceptual Image Lab/Dan Gallagher

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2017 10 18	NASA Goddard	https://youtu.be/ljh7zS_QwWrg	100 Lunar Days - Part II	In Part II of this 100 Lunar Days video series, we look at the significance of the Lunar Reconnaissance Orbiter being at the Moon for this period of time, and highlight some of the scientific accomplishments of the mission. Music provided by Killer Tracks: "Time is Running" - Dirk Ehlert, Guillermo De La Barreda; "Wanna Feel Like This Forever" - Amir Aly, Henrik Lars Wikstrom. View 100 Lunar Days - Part I here: https://youtu.be/nlrF4J6EU_o This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12739 Credit: NASA's Goddard Space Flight Center/David Ladd If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfsc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link
2017 10 18	NASA Goddard	https://youtu.be/2eOcMRhLvW8	What Lurks Beneath NASA's Chamber A	Hidden below Chamber A at NASA's Johnson Space Center in Houston is an area engineers used to test critical contamination control technology that has helped keep NASA's James Webb Space Telescope clean during cryogenic testing. This voluminous area is called the plenum, and it supports the weight of the chamber above as well as houses some of the cabling and plumbing for it. Before Webb's cryogenic testing in the chamber commenced, engineers ventured to the plenum's depths to test NASA-developed technology designed to remove molecular contaminants from the air. Catching contaminants Nithin Abraham, a coatings engineer at NASA's Goddard Space Flight Center in Greenbelt, Maryland, is part of a contamination control team tasked with ensuring Webb remains as clean as possible during its testing in Chamber A. Abraham developed and tested a highly permeable and porous material called molecular adsorber coating (MAC), which can be sprayed onto surfaces to passively capture contaminants that could be harmful to Webb's optics and science instruments. Read more: https://www.nasa.gov/feature/goddard/2017/what-lurks-below-nasas-chamber-a/ For more information about NASA's Webb telescope, visit:	Transcript Link

2017 10 16	NASA Goddard	https://youtu.be/x_Akn8fUBeQ	Doomed Neutron Stars Create Blast of Light and Gravitational Waves	Doomed neutron stars whirl toward their demise in this animation. Gravitational waves (pale arcs) bleed away orbital energy, causing the stars to move closer together and merge. As the stars collide, some of the debris blasts away in particle jets moving at nearly the speed of light, producing a brief burst of gamma rays (magenta). In addition to the ultra-fast jets powering the gamma-rays, the merger also generates slower moving debris. An outflow driven by accretion onto the merger remnant emits rapidly fading ultraviolet light (violet). A dense cloud of hot debris stripped from the neutron stars just before the collision produces visible and infrared light (blue-white through red). The UV, optical and near-infrared glow is collectively referred to as a kilonova. Later, once the remnants of the jet directed toward us had expanded into our line of sight, X-rays (blue) were detected. This animation represents phenomena observed up to nine days after GW170817. Read more: https://www.nasa.gov/press-release/nasa-missions-catch-first-light-from-a-gravitational-wave-event Credit: NASA's Goddard Space Flight Center/CI Lab Music: "Exploding Skies" from Killer Tracks This video is public domain and may be downloaded from NASA Goddard's Scientific Visualization Studio: https://svs.gsfc.nasa.gov/12740	Transcript Link
2017 10 13	NASA Goddard	https://youtu.be/FDtSFRgL7x4	NASA Satellites See Wildfires from Space	As wildfires burn across California, NASA satellites help gather data about where the fires are and how smoke travels across the state. The smoke from the fires is even visible a million miles away from Earth, captured by NASA's Earth Polychromatic Imaging Camera (EPIC) onboard NOAA's Deep Space Climate Observatory (DSCOVR). The Terra spacecraft can see fires in both daylight and at night, helping aid firefighters in tracking and stopping the blazes. NASA's unique vantage point in space helps better understand our home planet. Terra Imagery from NASA Worldview: https://go.nasa.gov/2xbFjXt Music: Seven by Andrea Sacco [SACEM] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12742 Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center - Facebook: http://www.facebook.com/NASA.GSFC - Twitter http://twitter.com/NASAGoddard - Flickr http://www.flickr.com/photos/gsfcc/	Transcript Link

2017 10 10 NASA Goddard <https://youtu.be/rzqS8sRxo> Nate Makes Landfall as a Hurricane on the Northern Gulf Coast

Nate made landfall over the weekend along the northern Gulf Coast as a Category 1 hurricane with sustained winds reported at 85 mph (~140 kph) by the National Hurricane Center (NHC) first at 7:00pm CDT on Saturday October 7th in Louisiana near the mouth of the Mississippi River then again several hours later at 12:30 a.m. CDT on Sunday October 8th near Biloxi, Mississippi before moving quickly moving northward through northern Alabama and central Tennessee.

[Transcript](#)
[Link](#)

NASA's GPM satellite helped track Nate's progress through the Gulf of Mexico and also captured Nate's landfall on the north central Gulf Coast. The following animation shows instantaneous rain rate estimates from NASA's Integrated Multi-satellite Retrievals for GPM or IMERG product over North America and the surrounding waters beginning on Thursday October 5th when Nate first became a tropical storm near the northeast coast of Nicaragua in the western Caribbean until its eventual landfall on the northern Gulf Coast on Sunday October 8th.

IMERG estimates precipitation from a combination of space-borne passive microwave sensors, including the GMI microwave sensor on board the GPM core satellite, and geostationary IR (infrared) data. The animation shows Nate moving rapidly northward through the Gulf of Mexico on the 7th. Nate's rapid movement from 20 to as much as 26 mph to strengthen despite being over very warm waters and in a relatively low wind shear environment. Nate reached a peak intensity of 90 mph sustained winds, which it maintained while

2017 10 06 NASA Goddard <https://youtu.be/nlrF4J6EUo> 100 Lunar Days - Part I

In October 2017, The Lunar Reconnaissance Orbiter celebrates 100 lunar days of being at the Moon. Part 1 of this video series helps explain what a "lunar day" is, and what it means for the spacecraft's mission to have been at the Moon for this period of time.

[Transcript](#)
[Link](#)

Music provided by Killer Tracks: "Time is Running" - Dirk Ehlert, Guillermo De La Barreda; "Buckaroo Instrumental" - Alan Gold & Fiona Hamilton.

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/12739>

Credit: NASA's Goddard Space Flight Center/David Ladd

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2017 10 04	NASA Goddard	https://youtu.be/xZ0Q-1u40IA	Intense String of Hurricanes Seen From Space	In 2017, we have seen four Atlantic storms rapidly intensify with three of those storms - Hurricane Harvey, Irma and Maria - making landfall. When hurricanes intensify a large amount in a short period, scientists call this process rapid intensification. This is the hardest aspect of a storm to forecast and it can be most critical to people's lives. While any hurricane can threaten lives and cause damage with storm surges, floods, and extreme winds, a rapidly intensifying hurricane can greatly increase these risks while giving populations limited time to prepare and evacuate. Music credits: 'Micro Currents' by Jean-Patrick Voindrot [SACEM], 'Sink Deep' by Andrew Michael Britton [PRS], David Stephen Goldsmith [PRS], Mikey Rowe [PRS] from Killer Tracks. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12738 Credit: NASA's Goddard Space Flight Center/Joy Ng If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/	Transcript Link
2017 10 03	NASA Goddard	https://youtu.be/58mK-GqTHTk	TDRS Profile Robert Buchanan	Robert Buchanan is the deputy project manager for the Tracking and Data Relay Satellite, TDRS. The project is building the follow-on and replacement spacecraft necessary to maintain and expand NASA's Space Network. The third satellite of the third generation, TDRS-M, is set to launch in August 2017. TDRS-M will launch from Cape Canaveral Air Force Station in Florida aboard an Atlas V rocket. This satellite will join a constellation of space-based communications satellites providing tracking, telemetry, command and high-bandwidth data return services. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12201 Credit: NASA's Goddard Space Flight Center/Stu Snodgrass If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard	Transcript Link

2017 10 03 NASA Goddard <https://youtu.be/NHm1ClqiXfc> TDRS Profile Bruce Leroy

Bruce Leroy is a telecommunications systems engineer for the Tracking and Data Relay Satellite, TDRS. The project is building the follow-on and replacement spacecraft necessary to maintain and expand NASA's Space Network. The third satellite of the third generation, TDRS-M, is set to launch in August 2017. TDRS-M will launch from Cape Canaveral Air Force Station in Florida aboard an Atlas V rocket. This satellite will join a constellation of space-based communications satellites providing tracking, telemetry, command and high-bandwidth data return services.

[Transcript Link](#)

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2017 10 03 NASA Goddard <https://youtu.be/yPfm2X0Bqe4> TDRS Profile Jeff Gramling

Jeff Gramling was a previous project manager for the Tracking and Data Relay Satellite, TDRS. The project is building the follow-on and replacement spacecraft necessary to maintain and expand NASA's Space Network. The third satellite of the third generation, TDRS-M, is set to launch in August 2017. TDRS-M will launch from Cape Canaveral Air Force Station in Florida aboard an Atlas V rocket. This satellite will join a constellation of space-based communications satellites providing tracking, telemetry, command and high-bandwidth data return services.

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2017 10 03 NASA Goddard <https://youtu.be/spGpNp94t84> TDRS Profile Badri Younes

Badri Younes is the deputy associate administrator for Space Communication Navigation. The Tracking and Data Relay Satellite project, or TDRS, is building the follow-on and replacement spacecraft necessary to maintain and expand NASA's Space Network. The third satellite of the third generation, TDRS-M, is set to launch in August 2017. TDRS-M will launch from Cape Canaveral Air Force Station in Florida aboard an Atlas V rocket. This satellite will join a constellation of space-based communications satellites providing tracking, telemetry, command and high-bandwidth data return services.

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2017 10 03 NASA Goddard <https://youtu.be/r54xcsBlzv4> TDRS Profile David Littmann

David Littmann is the project manager for the Tracking and Data Relay Satellite, TDRS. The project is building the follow-on and replacement spacecraft necessary to maintain and expand NASA's Space Network. The third satellite of the third generation, TDRS-M, is set to launch in August 2017. TDRS-M will launch from Cape Canaveral Air Force Station in Florida aboard an Atlas V rocket. This satellite will join a constellation of space-based communications satellites providing tracking, telemetry, command and high-bandwidth data return services.

[Transcript Link](#)

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Credit: NASA's Goddard Space Flight Center/Stu Snodgrass

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2017 09 28	NASA Goddard	https://youtu.be/nhYzMFcniuc	Hubble Sees First-Time Icy Visitor Comet K2	NASA's Hubble Space Telescope observed the farthest-discovered active inbound comet, Comet K2. K2 came from the distant Oort Cloud and is visiting our inner solar system for the first (and only) time. Since we're seeing it so far away, past the orbit of Saturn, K2 is still in its early phase of activity, likely making it the most primitive comet anyone has ever seen. Read the web story https://www.nasa.gov/feature/goddard/2017/hubble-observes-the-farthest-active-inbound-comet-yet-seen/ This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12724 Read the science paper here: https://media.stsci.edu/preview/file/science_paper/file_attachment/262/Jewitt_Comet_K2_paper_9-26-17.pdf Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music credit: "Space Cake" by Donn Wilerson [BMI] and Lance Sumner [BMI]; Killer Tracks BMI; Killer Tracks Production Music. Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcc/	Transcript Link
2017 09 22	NASA Goddard	https://youtu.be/svq4-Kf4K2E	A Slingshot from Earth to Asteroid Bennu	OSIRIS-REx is NASA's mission to explore near-earth asteroid Bennu, collect a sample, and return it to Earth. To get to Bennu, however, OSIRIS-REx must first leave the plane of Earth's orbit and match the orbital tilt of its target. On September 22, 2017, OSIRIS-REx will approach Earth and fly over its southern hemisphere, passing within 11,000 miles of Antarctica. This gravitational slingshot will bend its trajectory by six degrees, sending the spacecraft on a path to intercept Bennu. Shortly after the flyby, OSIRIS-REx will look back at Earth and take images and spectra, ensuring that its instruments are ready for arrival at Bennu in 2018. Music provided by Killer Tracks: "Origin" This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/20251 Credit: NASA's Goddard Space Flight Center/Dan Gallagher If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/	Transcript Link

2017 09 21 NASA Goddard <https://youtu.be/S07FO4GH0zc> Baseball Hits an Eclipse

One of the best places to view the 2017 Total Solar Eclipse was at a ballpark in Keizer, Oregon. Here, NASA Goddard and the Lunar Reconnaissance Orbiter mission partnered with the Salem-Keizer Volcanoes Minor League Baseball team for an "EclipseFest" that featured the first ever "Eclipse Delay" in baseball history. This video shows what took place at the event.

[Transcript Link](#)

Credit: NASA's Goddard Space Flight Center/David Ladd

Music provided by KillerTracks: "Dayz On The Road" - Billy Lincoln, Thomas Dean Pugh-Fields; "Take Me Out to the Ball Game" - Harry Edwards; "The World Is Wide Enough" - Roger Rodes Sendros

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2017 09 20 NASA Goddard <https://youtu.be/A0TasGZcaMU> NASA Catches Hurricanes Jose and Maria

The Global Precipitation Measurement (GPM) mission shows the rainfall distribution for two major storms churning in the Atlantic and Caribbean basins. The visualization shows Hurricane Jose as it continues to slowly move northward off the US East Coast east of the Outer Banks of North Carolina. At one time, Jose was a powerful Category 4 border line Category 5 storm with maximum sustained winds reported at 155 mph by the National Hurricane Center back on the 9th of September as it was approaching the northern Leeward Islands. Jose passed northeast of the Leeward Islands as a Category 4 storm on a northwest track and then began to weaken due to the effects of northerly wind shear. Remaining over warm water allowed Jose to strengthen back into a hurricane on September 15th as wind shear across the storm diminished. At this time, Jose was still only midway between the central Bahamas and Bermuda, having just completed its loop, and moving to the northwest. On the 16th, Jose turned northward as it moved around the western edge of a ridge of high pressure near Bermuda and began to parallel the US East Coast well away from shore. An overpass by the GPM Core Observatory captured an image of Jose overnight at 3:36 UTC 18 September (11:36 pm EST 17 September) as the storm was moving due north at 9 mph well off shore from the coast of North Carolina. The GPM image estimated areas of very heavy rain on the order of 75 mm/hr (3 inches per hour).

[Transcript Link](#)

The GPM Core Observatory satellite also had an excellent view of Hurricane Maria when it passed almost directly above the hurricane on September 17, 2017 at 1001 PM AST (September 18, 2017 0201

2017 09 20	NASA Goddard	https://youtu.be/ZM3rnOmT9iU	Aligning the Primary Mirror Segments of the James Webb Space Telescope	Engineers at NASA's Johnson Space Center in Houston used light waves to align the James Webb Space Telescope's mirror segments to each other, so they act like a single, monolithic mirror in the cryogenic cold of the center's iconic Chamber A. Credit: NASA's Goddard Space Flight Center/Mike McClare This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12721 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center • Facebook: https://www.facebook.com/NASA.GSFC • Twitter https://twitter.com/NASAGoddard • Flickr https://www.flickr.com/photos/gsfcc/ • Instagram https://www.instagram.com/nasagoddard/ • Google+ https://plus.google.com/+NASAGoddard/posts	Transcript Link
2017 09 16	NASA Goddard	https://youtu.be/lne9qO-GMGU	NASA Watches 30 Years of Ozone Success	Thirty years ago, the nations of the world agreed to the landmark 'Montreal Protocol on Substances that Deplete the Ozone Layer.' The Protocol limited the release of ozone-depleting chlorofluorocarbons (CFCs) into the atmosphere. Since the 1960s, NASA scientists have worked with NOAA researchers to study the ozone layer, using a combination of satellite, aircraft and balloon measurements of the atmosphere. Things have been improving in the 30 years since the Montreal Protocol. Thanks to the agreement, the concentration of CFCs in the atmosphere has been decreasing, and the ozone hole maximum has been smaller since a record high in 2006. From the ground and space, NASA science offers a unique perspective of Earth, helping to identify challenges and find solutions to benefit the planet. Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann Music: Future Generation by Laurent Dury [SACEM] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12708 If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2017 09 14	NASA Goddard	https://youtu.be/taHYO9c-sR8	Goddard Team Reflects on 20 Years of Cassini	The people behind Cassini's Composite Infrared Spectrometer (CIRS) reflect on their years-long experience working with their team - relationships formed, children born, challenges conquered, and their feelings as the Cassini mission comes to an end. CIRS was built and is operated at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Cassini is making its final dive into Saturn on September 15, 2017. Read more: https://www.nasa.gov/feature/goddard/2017/excitement-and-tears-as-nasa-goddard-team-prepares-for-cassini-finale Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music provided by Killer Tracks Production Music: "Ion Bridge," "Tango Seduction," "Sparks," "Espix," "Moving South," "Waiting for the Morning," and "Aega." This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12714 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link
2017 09 13	NASA Goddard	https://youtu.be/c6g2ILL--Rw	Predicting Malaria Outbreaks With NASA Satellites	In the Amazon Rainforest, few animals are as dangerous to humans as mosquitos that transmit malaria. The tropical disease can bring on severe fever, headaches and chills and is particularly severe for children and the elderly and can cause complications for pregnant women. In rainforest-covered Peru the number of malaria cases has spiked such that, in the past five years, it has had on average the second highest rate in the South American continent. In 2014 and 2015 there were 65,000 reported cases in the country. Containing malaria outbreaks is challenging because it is difficult to figure out where people are contracting the disease. As a result, resources such as insecticide-treated bed nets and indoor sprays are often deployed to areas where few people are getting infected, allowing the outbreak to grow. To tackle this problem, university researchers have turned to data from NASA's fleet of Earth-observing satellites, which are able to track the types of human and environmental events that typically precede an outbreak. With funding from NASA's Applied Sciences Program, they are working in partnership with the Peruvian government to develop a system that uses satellite and other data to help forecast outbreaks at the household level months in advance and prevent outbreaks. Read more: https://www.nasa.gov/feature/goddard/2017/using-nasa-satellite-data-to-predict-malaria-outbreaks Additional imagery from:	Transcript Link

2017 09 12	NASA Goddard	https://youtu.be/7AbLq1nDuR8	Cassini's Infrared Saturn Director's Cut	The Cassini-Huygens mission arrived at Saturn in 2004, beginning an epic thirteen-year tour of the ringed planet and its many moons. Cassini and its companion probe, Huygens, were an international collaboration between NASA and the European Space Agency (ESA). Cassini carried an impressive array of scientific instruments, including the Composite Infrared Spectrometer (CIRS) built at Goddard Space Flight Center. By studying the Saturn system in heat radiation, CIRS observed hot spots in a giant Saturn storm, discovered a new hydrocarbon in Titan's smoggy atmosphere, found unexpected surface heating on Mimas and Tethys, and even detected evidence of a liquid water ocean under the icy shell of Enceladus. Join instrument team members Mike Flasar, Conor Nixon, and Carrie Anderson as they retell Cassini CIRS' greatest hits. This director's cut version features an extended introduction and conclusion. Read more: https://www.nasa.gov/feature/goddard/2017/excitement-and-tears-as-nasa-goddard-team-prepares-for-cassini-finale Credit: NASA's Goddard Space Flight Center/Dan Gallagher Music provided by Killer Tracks: "Journey in the Milky Way," "Odyssey," "Solaris," "Expansive," "Horizon Ahead," "Ion Bridge," "Outer Space" This video is public domain and along with other supporting	Transcript Link
2017 09 12	NASA Goddard	https://youtu.be/DIE-cSGVYul	Cassini's Infrared Saturn	The Cassini-Huygens mission arrived at Saturn in 2004, beginning an epic thirteen-year tour of the ringed planet and its many moons. Cassini and its companion probe, Huygens, were an international collaboration between NASA and the European Space Agency (ESA). Cassini carried an impressive array of scientific instruments, including the Composite Infrared Spectrometer (CIRS) built at Goddard Space Flight Center. By studying the Saturn system in heat radiation, CIRS observed hot spots in a giant Saturn storm, discovered a new hydrocarbon in Titan's smoggy atmosphere, found unexpected surface heating on Mimas and Tethys, and even detected evidence of a liquid water ocean under the icy shell of Enceladus. This video explores Cassini CIRS' Greatest Hits, as told by instrument team members Michael Flasar, Conor Nixon, and Carrie Anderson. Read more: https://www.nasa.gov/feature/goddard/2017/excitement-and-tears-as-nasa-goddard-team-prepares-for-cassini-finale View Directors Cut: https://youtu.be/7AbLq1nDuR8 Credit: NASA's Goddard Space Flight Center/Dan Gallagher Music provided by Killer Tracks: "Particle Waves," "Odyssey," "Solaris," "Expansive," "Horizon Ahead," "Ion Bridge," "Outer Space" This video is public domain and along with other supporting	Transcript Link

2017 09 11 NASA Goddard <https://youtu.be/g-ZQBIWdIAY> September 2017 Starts With Flare NASA's Solar Dynamics Observatory, which watches the sun constantly, captured images of the events. Solar flares are powerful bursts of radiation. Harmful radiation from a flare cannot pass through Earth's atmosphere to physically affect humans on the ground, however — when intense enough — they can disturb the atmosphere in the layer where GPS and communications signals travel. [Transcript](#)
[Link](#)

To see how this event may affect Earth, please visit NOAA's Space Weather Prediction Center at <http://spaceweather.gov>, the U.S. government's official source for space weather forecasts, alerts, watches and warnings.

X-class denotes the most intense flares, while the number provides more information about its strength. An X2 is twice as intense as an X1, an X3 is three times as intense, etc.

The X9.3 flare was the largest flare so far in the current solar cycle, the approximately 11-year-cycle during which the sun's activity waxes and wanes. The current solar cycle began in December 2008, and is now decreasing in intensity and heading toward solar minimum. This is a phase when such eruptions on the sun are increasingly rare, but history has shown that they can nonetheless be intense.

Credit: NASA's Goddard Space Flight Center/Scott Wiessenger

2017 09 08 NASA Goddard <https://youtu.be/drySftxNriY> Asteroid Sample Return Mission – One Year After Launch On September 8, 2016, NASA's OSIRIS-REx spacecraft began its journey to near-Earth asteroid Bennu. As the sun began to set over Cape Canaveral, OSIRIS-REx made a picture-perfect liftoff from pad 41 aboard an Atlas V rocket, cheered on by crowds of mission personnel and space enthusiasts. This video revisits the launch with interviews and highlights from Kennedy Space Center, as OSIRIS-REx continues its seven-year journey to Bennu and back. [Transcript](#)
[Link](#)

Learn more: <https://www.nasa.gov/osiris-rex>,
<http://www.asteroidmission.org/>

Credit: NASA's Goddard Space Flight Center/Dan Gallagher

Music credit: Killer Tracks: "Uncertain Tragedy," "Particles and Fields," "The Pressure Continues," "Fear Index," "Favor"

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2017 09 05	NASA Goddard	https://youtu.be/6Sd0nwb6dd4	Where is the Edge of the Solar System	Where does the solar system end? It all depends on the criteria you are using. Based on where the planets end, you could say it's Neptune and the Kuiper Belt. If you measure by edge of the sun's magnetic fields, the end is the heliosphere. If you judge by the stopping point of sun's gravitational influence, the solar system would end at the Oort Cloud. Credit: NASA's Goddard Space Flight Center/Genna Duberstein Music credit: Dream Girl 3 by Yuri Sazonoff This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12639 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcc/ · Instagram https://www.instagram.com/nasagoddard/ · Google+ https://plus.google.com/+NASAGoddard/posts	Transcript Link
2017 08 30	NASA Goddard	https://youtu.be/U4mEFmvqlA	NASA Captures Hurricane Harvey's Rainfall	The Global Precipitation Measurement (GPM) Core Observatory captured these images of Hurricane Harvey at 11:45 UTC and 21:25 UTC on the 27th of August nearly two days after the storm made landfall as it was meandering slowly southeast at just 2 mph (~4 kph) near Victoria, Texas west of Houston. The image shows rain rates derived from GPM's GMI microwave imager (outer swath) and dual-frequency precipitation radar or DPR (inner swath) overlaid on enhanced visible/infrared data from the GOES-East satellite. Harvey's cyclonic circulation is still quite evident in the visible/infrared clouds, but GPM shows that the rainfall pattern is highly asymmetric with the bulk of the rain located north and east of the center. A broad area of moderate rain can be seen stretching from near Galveston Bay to north of Houston and back well to the west. Within this are embedded areas of heavy rain (red areas); the peak estimated rain rate from GPM at the time of this overpass was 96 mm/hr (~3.77 inches per hour). With Harvey's circulation still reaching out over the Gulf, the storm is able to draw in a continuous supply of warm moist air to sustain the large amount of rain it is producing. More about GPM: https://www.nasa.gov/gpm Video credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons	Transcript Link

2017 08 30	NASA Goddard	https://youtu.be/7RmcziDIwE	What Spacecraft Saw During the 2017 Solar Eclipse	On Aug. 21, 2017, a solar eclipse passed over North America. People throughout the continent experienced a partial solar eclipse, and a total solar eclipse passed over a narrow swath of land stretching from Oregon to South Carolina, called the path of totality. NASA and its partners' satellites had a unique vantage point to watch the eclipse. Several Sun-watching satellites were in a position to see the Moon cross in front of the Sun, while many Earth-observing satellites - and NASA's Lunar Reconnaissance Orbiter, which typically images the Moon's landscape - captured images of the Moon's shadow on Earth's surface. See more and download content at https://go.nasa.gov/2x7b8kf Credit: NASA's Goddard Space Flight Center/Genna Duberstein Music Credits: Wonderful Nature by July Turret Imagery provided by: Solar Dynamics Observatory International Space Station SOHO inside image credit: Solar Dynamics Observatory, LMSAL and NASA's GSFC;	Transcript Link
2017 08 22	NASA Goddard	https://youtu.be/IKXkJJD-DoA	SDO's View of the Aug. 21, 2017, Solar Eclipse	While many in the U.S. experienced a total solar eclipse on Aug. 21, 2017, SDO's perspective, observing the Sun from Earth orbit, afforded it a view of a partial eclipse. This movie, created from images taken by NASA's Solar Dynamics Observatory, shows the Sun first in visible light, and then in 171-angstrom extreme ultraviolet light. The apparent slight movement of the Sun is because SDO has a hard time keeping the Sun centered in its images during eclipses, with so much light being blocked by the Moon. The fine guidance systems on SDO's instruments need to see the whole Sun in order keep the images centered from one exposure to the next. Once the transit was over, the fine guidance systems started back up, once again providing steady images of the Sun. Credit: NASA/SDO This video is public domain and along with additional graphics may be downloaded from NASA Goddard's Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12688 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center	Transcript Link

2017 08 22	NASA Goddard	https://youtu.be/pm7tflvHmXA	NASA's EPIC View of 2017 Eclipse Across America	From a million miles out in space, NASA's Earth Polychromatic Imaging Camera (EPIC) captured 12 natural color images of the moon's shadow crossing over North America on Aug. 21, 2017. EPIC is aboard NOAA's Deep Space Climate Observatory (DSCOVR), where it photographs the full sunlit side of Earth every day, giving it a unique view of total solar eclipses. More about how NASA studies eclipses: www.nasa.gov/eclipse More about DSCOVR: https://www.nesdis.noaa.gov/content/dscovr-deep-space-climate-observatory Image credit: NASA EPIC Team Video credit: NASA's Goddard Space Flight Center/Katy Mersmann This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12690 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2017 08 17	NASA Goddard	https://youtu.be/eLNICTgqiNg	TDRS-M Getting Ready for Launch	The Tracking and Data Relay Satellite, TDRS, project is building the follow-on and replacement spacecraft necessary to maintain and expand NASA's Space Network. The third satellite of the third generation, TDRS-M, is set to launch in August 2017. TDRS-M will launch from Cape Canaveral Air Force Station in Florida aboard an Atlas V rocket. This satellite will join a constellation of space-based communications satellites providing tracking, telemetry, command and high-bandwidth data return services. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12201 Credit: NASA's Goddard Space Flight Center/Stu Snodgrass If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center - Facebook: http://www.facebook.com/NASA.GSFC - Twitter http://twitter.com/NASAGoddard	Transcript Link

2017 08 17	NASA Goddard	https://youtu.be/9oHhO2xA6e4	A Total Solar Eclipse Revealed Solar Storms 100 Years Before Satellites	Eclipses set the stage for historic science. NASA is taking advantage of the Aug. 21, 2017 eclipse by funding 11 ground-based scientific studies. As our scientists prepare their experiments for next week, we're looking back to an historic 1860 total solar eclipse, which many think gave humanity our first glimpse of solar storms -- called coronal mass ejections -- 100 years before scientists first understood what they were. Scientists observed these eruptions in the 1970s during the beginning of the modern satellite era, when satellites in space were able to capture thousands of images of solar activity that had never been seen before. But in hindsight, scientists realized their satellite images might not be the first record of these solar storms. Hand-drawn records of an 1860 total solar eclipse bore surprising resemblance to these groundbreaking satellite images. Eclipse archive imagery from: http://mlso.hao.ucar.edu/hao-eclipse-archive.php Music credits: 'Electricity Wave' by Jean-Francois Berger [SACEM] and 'Solar Winds' by Ben Niblett [PRS], Jon Cotton [PRS] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12693 Credit: NASA's Goddard Space Flight Center/Joy Ng	Transcript Link
2017 08 17	NASA Goddard	https://youtu.be/5S0p8LsRwuc	TDRS Network 360	Take a 360-degree look at the network of satellites that helps more than 40 NASA missions transmit their data to Earth. The Tracking and Data Relay Satellites (TDRS) form a constellation around Earth and work together with ground stations in White Sands, New Mexico, and Guam to communicate data. The TDRS project is building the follow-on and replacement spacecraft necessary to maintain and expand NASA's Space Network. The third satellite of the third generation, TDRS-M, is set to launch in August 2017. TDRS-M will launch from Cape Canaveral Air Force Station in Florida aboard an Atlas V rocket. This satellite will join a constellation of space-based communications satellites providing tracking, telemetry, command and high-bandwidth data return services. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12201 Credit: NASA's Goddard Space Flight Center/Stu Snodgrass If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link

2017 08 17	NASA Goddard	https://youtu.be/Ss0CNxlafO8	TDRS Network 360 - for Virtual Reality Headsets	- for use with Virtual Reality 360 headsets - Take a 360-degree look at the network of satellites that helps more than 40 NASA missions transmit their data to Earth. The Tracking and Data Relay Satellites (TDRS) form a constellation around Earth and work together with ground stations in White Sands, New Mexico, and Guam to communicate data. The TDRS project is building the follow-on and replacement spacecraft necessary to maintain and expand NASA's Space Network. The third satellite of the third generation, TDRS-M, is set to launch in August 2017. TDRS-M will launch from Cape Canaveral Air Force Station in Florida aboard an Atlas V rocket. This satellite will join a constellation of space-based communications satellites providing tracking, telemetry, command and high-bandwidth data return services. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12201 Credit: NASA's Goddard Space Flight Center/Stu Snodgrass If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Or subscribe to NASA's Goddard Shorts HD Podcast:	Transcript Link
2017 08 17	NASA Goddard	https://youtu.be/WEk8E6FL4wc	TDRS Continuing the Fleet	The Tracking and Data Relay Satellite, TDRS, project is building the follow-on and replacement spacecraft necessary to maintain and expand NASA's Space Network. The third satellite of the third generation, TDRS-M, is set to launch in August 2017. TDRS-M will launch from Cape Canaveral Air Force Station in Florida aboard an Atlas V rocket. This satellite will join a constellation of space-based communications satellites providing tracking, telemetry, command and high-bandwidth data return services. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12201 Credit: NASA's Goddard Space Flight Center/Stu Snodgrass If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center - Facebook: http://www.facebook.com/NASA.GSFC - Twitter http://twitter.com/NASAGoddard	Transcript Link

2017 08 16	NASA Goddard	https://youtu.be/OQg5ov6zths	ICESat-2 Elevates Our View of Earth	ICESat-2 will provide scientists with height measurements that create a global portrait of Earth's third dimension, gathering data that can precisely track changes of terrain including glaciers, sea ice, forests and more. The single instrument on ICESat-2 is ATLAS, the Advanced Topographic Laser Altimeter System, will measure melting ice sheets and investigate how this effects sea level rise, investigate changes in the mass of ice sheets and glaciers, estimate and study sea ice thickness, and measure the height of vegetation in forests and other ecosystems worldwide. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12663 Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard	Transcript Link
2017 08 15	NASA Goddard	https://youtu.be/6N8WZvZCQ7E	NASA and ESA Spacecraft Track a Solar Storm Through Space	While we track CMEs with a number of instruments, the sheer size of the solar system means that our observations are limited, and usually taken from a distance. However, scientists have recently used data from ten NASA and ESA spacecraft in the direct path of a CME to piece together an unprecedented portrait of how these solar storms move through space - in particular, narrowing down the changes in speed that happen as CMEs travel through the solar system beyond Earth's orbit. On Oct. 14, 2014, a CME left the Sun, as measured by spacecraft that watch for CMEs from afar using an instrument called a coronagraph. From there, the CME washed over spacecraft throughout the inner solar system - including by Curiosity on Mars, near comet 67P/Churyumov-Gerasimenko, and out to Saturn. This wealth of data is a boon for scientists working on space science simulations. At NASA's Goddard Space Flight Center in Greenbelt, Maryland, scientists work to validate, host, and improve such simulations, and this new information provides the most comprehensive look to date at how the speed of a CME evolves over time. CMEs like this are common, especially when the Sun is in an active phase, as it was in 2014. This particular CME first caught scientists' interest because of its interference with another set of observations: the interaction between Comet Siding Spring and the Martian atmosphere.	Transcript Link

2017 08 14	NASA Goddard	https://youtu.be/R6H6a6eB5rY	Scientists Bury GPS in Antarctic Ice to Measure Effects of Tides	NASA scientists and ice sheet modelers, Ryan Walker and Christine Dow, traveled to a remote location on the coast of Antarctic to investigate how tides affect the movement and stability of the Nansen Ice Shelf, a 695-mile extension of ice protruding into Antarctica's Ross Sea. Relatively understudied, Nansen's manageable size lends itself to becoming a proxy for predicting how larger ice shelves will contribute to sea level rise in the decades and centuries to come. By studying the impact of tides, Walker and Dow are able to determine how the rise and fall of floating ice sheets may impact the likelihood of an eventual ice shelf collapse. [Note: After a successful post-doc at NASA Goddard in 2015, Dow is now at the University of Waterloo where she continues to study ice sheet dynamics.] This video is public domain and may be downloaded from the NASA Goddard Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12666 Credit: NASA's Goddard Space Flight Center/LK Ward If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Follow NASA's Goddard Space Flight Center	Transcript Link
2017 08 14	NASA Goddard	https://youtu.be/z9b7h47vBbg	2 Minutes, 6 Hands, 1 Chance	A team of three scientists have two minutes to complete an experiment during the 2017 total solar eclipse. Credit: NASA's Goddard Space Flight Center/Genna Duberstein Music credit: Patisserie Pressure by Benjamin James Parsons This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12636 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcc/ · Instagram https://www.instagram.com/nasagoddard/ · Google+ https://plus.google.com/+NASAGoddard/posts	Transcript Link

2017 08 11 NASA Goddard <https://youtu.be/W23QnzEc-bc> Sun Shreds Its Own Eruption

On September 30, 2014, multiple NASA observatories watched what appeared to be the beginnings of a solar eruption. A filament -- a serpentine structure consisting of dense solar material and often associated with solar eruptions -- rose from the surface, gaining energy and speed as it soared. But instead of erupting from the Sun, the filament collapsed, shredded to pieces by invisible magnetic forces.

[Transcript](#)
[Link](#)

Read more: <https://www.nasa.gov/feature/goddard/2017/nasa-watches-the-sun-put-a-stop-to-its-own-eruption/>

Credit: NASA's Goddard Space Flight Center/Genna Duberstein

Music credit: Game Show Sphere 01 by by Anselm Kreuzer

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2017 08 04 NASA Goddard <https://youtu.be/baqLxRbIM0s> NASA Looks at the North American Monsoon

North America experiences a yearly monsoon weather system in late summer as moisture comes up from the west coast of Mexico and enters the southwestern U.S. The seasonal weather pattern brings both much of the region's precipitation but can also pose a threat in the form of flash flooding. The Global Precipitation Measurement (GPM) mission gathers data from these storms in order to better understand the precipitation processes happening within, which can help better forecast the breaks and surges in the monsoon. Music: "Mesmerized Housewives," Donn Wilkerson
Complete transcript available.

[Transcript](#)
[Link](#)

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Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons

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2017 08 04	NASA Goddard	https://youtu.be/SungFXUsogw	Two Weeks in the Life of a Sunspot	On July 5, 2017, NASA's Solar Dynamics Observatory watched AR26665, an active region -- an area of intense and complex magnetic fields -- rotate into view on the sun. The satellite continued to track the region as it grew and eventually rotated across the sun and out of view on July 17. Read more: https://www.nasa.gov/feature/goddard/2017/two-weeks-in-the-life-of-a-sunspot Credit: NASA's Goddard Space Flight Center/Genna Duberstein Music credit: Foraging at Dusk by Benjamin James Parsons This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12105 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcc/	Transcript Link
2017 08 02	NASA Goddard	https://youtu.be/v2cOGbpJV4Q	NASA Set To Launch Shoebox-sized Satellite Studying Earth's Upper Atmosphere	NASA scientists and engineers named their new CubeSat after the mythological Norse god of the dawn. Now, just days from launch, they are confident the shoebox-sized satellite Dellingr will live up to its name and inaugurate a new era for scientists wanting to use small, highly reliable satellites to carry out important, and in some cases, never-before-tried science. Dellingr will study how the ionosphere, a region in Earth's upper atmosphere, interacts with the Sun. Before launch, Dellingr is required to visit to the Magnetic Test Facility at NASA Goddard to test the spacecraft's magnetometers - key instruments for measuring the direction and strength of the magnetic fields that surround Earth. The spacecraft is scheduled to launch this August aboard a SpaceX Falcon 9 rocket to the International Space Station where it will be deployed later into a low-Earth orbit. Music credit: 'Cycle of Life' by Philippe Lhommet [SACEM] from Killer Tracks This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12602 Credit: NASA's Goddard Space Flight Center/Joy Ng If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link

2017 08 01	NASA Goddard	https://youtu.be/T_uUH_CbZJmU	What determines when we have an eclipse	Why are eclipses rare? The moon's orbit tilts. Sometimes the moon's shadow is too high above the Earth. Sometimes it is too low. Other times, it is just right. To learn all about the 2017 Total Eclipse: https://eclipse2017.nasa.gov/ Music: Witch Waltz by Dorian Kelly Credit: NASA's Goddard Space Flight Center This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12534 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcc/ · Instagram https://www.instagram.com/nasagoddard/ · Google+ https://plus.google.com/+NASAGoddard/posts	Transcript Link
2017 08 01	NASA Goddard	https://youtu.be/ExonFXrnHKE	How to Safely Watch a Solar Eclipse	It is never safe to look directly at the sun's rays - even if the sun is partly obscured. When watching a partial eclipse you must wear eclipse glasses at all times if you want to face the sun, or use an alternate indirect method. This also applies during a total eclipse up until the time when the sun is completely and totally blocked. During the short time when the moon completely obscures the sun - known as the period of totality - it is safe to look directly at the star, but it's crucial that you know when to take off and put back on your glasses. First and foremost: Check for local information on timing of when the total eclipse will begin and end. NASA's page of eclipse times is a good place to start. Second: The sun also provides important clues for when totality is about to start and end. Learn more at https://eclipse2017.nasa.gov Credit: NASA's Goddard Space Flight Center Find more videos about the solar ecilpse at https://svs.gsfc.nasa.gov/Gallery/suneclipse2017.html This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12637	Transcript Link

2017 07 28	NASA Goddard	https://youtu.be/GiYIRzeL5z0	A Titan Discovery	NASA Goddard scientists have made an exciting discovery on Saturn's largest moon, Titan. The team has definitively detected the molecule acrylonitrile in Titan's atmosphere - a finding that has astrobiological relevance. Read more: https://www.nasa.gov/feature/goddard/2017/nasa-finds-moon-of-saturn-has-chemical-that-could-form-membranes Credit: NASA's Goddard Space Flight Center/David Ladd Music Credits: Killer Tracks: "A Look Ahead" - Matthew St Laurent This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12467 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: https://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: https://www.facebook.com/NASA.GSFC · Twitter https://twitter.com/NASAGoddard · Flickr https://www.flickr.com/photos/gsfcc/ · Instagram https://www.instagram.com/nasagoddard/	Transcript Link
2017 07 28	NASA Goddard	https://youtu.be/opYSUbjb_wU	NASA Views Laser Landscapes of Helheim Glacier	What if you could measure a glacier in such detail that you could visualize its surface in 3D? And what if you could compare that view with data from one, two, even 20 years ago? NASA airborne campaigns like Operation IceBridge have been measuring Greenland and Antarctica's glaciers and ice sheets with a range of instruments for years, including radar, lasers, and high resolution cameras, in order to understand just how our planet's ice is changing. This video shows in unprecedented detail how Greenland's massive Helheim Glacier has changed over 20 years, using data from instruments like the Airborne Topographic Mapper laser altimeter and the Digital Mapping System cameras, which fly every year on IceBridge missions, and satellite data from the Canadian Space Agency's Radarsat Satellite. IceBridge plans to return to Helheim again in 2018 to carry on its annual survey. Read more: https://www.nasa.gov/feature/goddard/2017/two-decades-of-changes-in-helheim-glacier Credit: NASA's Goddard Space Flight Center/ Jefferson Beck This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/ If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link

2017 07 25	NASA Goddard	https://youtu.be/TE6gktfz-A	Building a Hurricane Season in the Atlantic Ocean	For decades, NASA researchers have helped refine our understanding of hurricanes and tropical storms. To better understand the Atlantic hurricane season, they use the Goddard Earth Observing System (GEOS-5) model run by supercomputers at NASA's Goddard Space Flight Center, in Greenbelt Maryland. In the model, scientists at NASA's Global Modeling and Assimilation Office (GMAO) simulated the conditions in the ocean and atmosphere that give rise to tropical storms and hurricanes. From these simulations, he can better isolate and understand which factors play a role in driving a busy or a slow Atlantic hurricane season. The full study is available here: http://bit.ly/2v89P78 Music: Eternal Sunset by Alexandre Prodhomme [SACEM] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12628 Credit: NASA's Goddard Space Flight Center/Katy Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f...	Transcript Link
2017 07 25	NASA Goddard	https://youtu.be/n3Tz-BUa8UU	Flying Over Hurricanes For New NASA Mission	NASA scientists are investigating key questions about hurricanes in a new mission from the skies. This August, the East Pacific Origins and Characteristics of Hurricanes, or EPOCH, mission will fly over East Pacific storms to better understand how they form and intensify. EPOCH will conduct up to six 24-hour science flights using the Global Hawk unmanned aircraft. Three of the flights are being supported through a partnership with the NOAA UAS Program. Data will be collected using three instruments (EXRAD, HAMSr, and AVAPS) aboard the aircraft that will map out the 3-D patterns of temperature, pressure, humidity, precipitation, and wind speed - key factors that influence hurricane behavior. NASA scientists use a combination of ground, modeled, and satellite data to re-create multi-dimensional pictures of hurricanes and other major storms in order to study complex atmospheric interactions. Music credit: 'Cellular Signals' by Laurent Levesque [SACEM] from Killer Tracks This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12195 Credit: NASA's Goddard Space Flight Center/Joy Ng If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link

2017 07 25	NASA Goddard	https://youtu.be/GjnOQl8iStU	A New Multi-dimensional View of a Hurricane	NASA researchers now can use a combination of satellite observations to re-create multi-dimensional pictures of hurricanes and other major storms in order to study complex atmospheric interactions. In this video, they applied those techniques to Hurricane Matthew. When it occurred in the fall of 2016, Matthew was the first Category 5 Atlantic hurricane in almost ten years. Its torrential rains and winds caused significant damage and loss of life as it coursed through the Caribbean and up along the southern U.S. coast. Music: "Buoys," Donn Wilkerson, Killer Tracks; "Late Night Drive," Donn Wilkerson, Killer Tracks. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12635 Credit: NASA's Goddard Space Flight Center/Alex Kekesi If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Follow NASA's Goddard Space Flight Center	Transcript Link
2017 07 23	NASA Goddard	https://youtu.be/-OaHZV5qcq8	Landsat Celebrates 45 Years of Earth Observations	Since 1972, Landsat satellites have orbited our home planet, collecting data about the land surface we rely on. This video shows footage of the launch of the first Landsat satellite, on July 23, 1972, and a time lapse of the changing coastal wetlands in Atchafalaya Bay, Louisiana. Music credit: Step By Step, by Gresby Race Nash [PRS] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/11761 Credit: NASA's Goddard Space Flight Center/Matt Racliff If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/	Transcript Link

2017 07 21	NASA Goddard	https://youtu.be/jxanWTR8-yM	The Moon's Role in a Solar Eclipse	This video explains how our moon creates a solar eclipse, why it's such a rare event to see, and how data from NASA's Lunar Reconnaissance Orbiter has enhanced our ability to map an eclipse's path of totality. Music Provided by Universal Production Music: "Bring Me Up" – Anders Gunnar Kampe & Henrik Lars Wikstrom This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12648 Credit: NASA's Goddard Space Flight Center/David Ladd If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/	Transcript Link
2017 07 21	NASA Goddard	https://youtu.be/E83Pi0-yv0	GLOBE Observer Eclipse App	The public will have an opportunity to participate in a nation-wide science experiment by collecting cloud and temperature data from their phones. NASA's Global Learning and Observations to Benefit the Environment (GLOBE) Program Observer (NASA GO) is a citizen science project that allows users to record observations with a free app. On August 21, NASA GO will feature a special eclipse experiment. With the app and a thermometer, citizen scientists can help observe how the eclipse changes atmospheric conditions near them, and contribute to a database used by students and scientists worldwide in order to study the effects of the eclipse on the atmosphere. Observers in areas with a partial eclipse or outside the path of totality are encouraged to participate alongside those within totality. Credit: NASA's Goddard Space Flight Center/Rich Melnick Music Credits: Killer Tracks, Some Assembly [NM336], Puppies Run [KOK2435] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12653 If you liked this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/NASAEplorer	Transcript Link

2017 07 20 NASA Goddard https://youtu.be/J7Cumuf_5CY Phobos Photobombs Hubble's Picture of Mars

When the Hubble Space Telescope observed Mars near opposition in May, 2016, a sneaky companion photobombed the picture. Phobos, the Greek personification of fear, is one of two tiny moons orbiting Mars. In 13 exposures over 22 minutes, Hubble captured a timelapse of Phobos moving through its 7-hour 39-minute orbit.

[Transcript Link](#)

Read more information here:
<https://www.nasa.gov/feature/goddard/2017/hubble-sees-martian-moon-orbiting-the-red-planet>

Credit: NASA's Goddard Space Flight Center/Katrina Jackson

Music credit: "Neighborhood Conspiracy" by Brice Davoli [SACEM]; Koka Media [SACEM], Universal Publishing Production Music (France) [SACEM]; Killer Tracks Production Music

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2017 07 20 NASA Goddard <https://youtu.be/JBE16gbuFck> A New View of August's Total Solar Eclipse

During the August 21, 2017 total solar eclipse, scientists will use the Earth Polychromatic Imaging Camera (EPIC) on the Deep Space Climate Observatory satellite (DSCOVR), along with measurements taken from within the moon's shadow on the ground, to test a new model of Earth's energy budget.

[Transcript Link](#)

Music: Dawn Drone by Juan Jose Alba Gomez [SGAE] Complete transcript available.

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Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann

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2017 07 17 NASA Goddard <https://youtu.be/MTJXnmIBhlc> NICER in Space

Several cameras on the International Space Station (ISS) have eyes on NICER. Since arriving to the space station on June 5 – aboard SpaceX’s eleventh cargo resupply mission – NICER underwent robotic installation on ExPRESS Logistics Carrier 2, initial deployment, precise point tests and more. This video shows segments of NICER’s time in space. Scientists and engineers will continue to watch NICER, using these cameras, throughout the mission’s science operations.

[Transcript](#)
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Credit: NASA’s Goddard Space Flight Center/Clare Skelly

Music Credits: KillerTracks, Strange Reality

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2017 07 12 NASA Goddard <https://youtu.be/nNng0KrNUul> NASA’s SDO Watches a Sunspot Turn Toward Earth

An active region on the sun — an area of intense and complex magnetic fields — has rotated into view on the sun and seems to be growing rather quickly in this video captured by NASA’s Solar Dynamics Observatory between July 5-11, 2017. Such sunspots are a common occurrence on the sun, but are less frequent as we head toward solar minimum, which is the period of low solar activity during its regular approximately 11-year cycle. This sunspot is the first to appear after the sun was spotless for two days, and it is the only sunspot group at this moment. Like freckles on the face of the sun, they appear to be small features, but size is relative: The dark core of this sunspot is actually larger than Earth.

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Credit: NASA’s Goddard Space Flight Center/SDO/Joy Ng, producer

Music credit: ‘The Answer’ by Laurent Levesque [SACEM] from Killer Tracks

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <https://svs.gsfc.nasa.gov/12292#87449>

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.. . . .

2017 06 22 NASA Goddard <https://youtu.be/BQAtBNt3es> Scientists Uncover Origins of Dynamic Jets on Sun's Surface

At any given moment, as many as 10 million wild jets of solar material burst from the sun's surface. They erupt as fast as 60 miles per second, and can reach lengths of 6,000 miles before collapsing. These are spicules, and despite their grass-like abundance, scientists didn't understand how they form. Now, for the first time, a computer simulation -- so detailed it took a full year to run -- shows how spicules form, helping scientists understand how spicules can break free of the sun's surface and surge upward so quickly.

[Transcript](#)
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This work relied upon high-cadence observations from NASA's Interface Region Imaging Spectrograph, or IRIS, and the Swedish 1-meter Solar Telescope in La Palma. Together, the spacecraft and telescope peer into the lower layers of the sun's atmosphere, known as the interface region, where spicules form. The results of this NASA-funded study were published in Science on June 22, 2017 -- a special time of the year for the IRIS mission, which celebrates its fourth anniversary in space on June 26.

Read more:

<https://www.nasa.gov/feature/goddard/2017/scientists-uncover-origins-of-the-sun-s-swirling-spicules>

Music credit: 'Solar Dust' by Laurent Levesque [SACEM], 'Games Show Sphere 05' by Anselm Kreuzer [GEMA] from Killer Tracks

Research: On the generation of solar spicules and Alfvénic waves. Journal: Science, June 22, 2017.

2017 06 21 NASA Goddard <https://youtu.be/8jaxiha8-rY> Get Ready for the 2017 Solar Eclipse

On Monday, August 21, 2017, our nation will be treated to a total eclipse of the sun.

[Transcript](#)
[Link](#)

The eclipse will be visible -- weather permitting -- across all of North America.

The whole continent will experience a partial eclipse lasting two to three hours. Halfway through the event, anyone within a 60 to 70 mile-wide path from Oregon to South Carolina will experience a total eclipse. During those brief moments when the moon completely blocks the sun's bright face for 2 + minutes, day will turn into night, making visible the otherwise hidden solar corona, the sun's outer atmosphere. Bright stars and planets will become visible as well. This is truly one of nature's most awesome sights.

The eclipse provides a unique opportunity to study the sun, Earth, moon and their interaction because of the eclipse's long path over land coast to coast. Scientists will be able to take ground-based and airborne observations over a period of an hour and a half to complement the wealth of data provided by NASA assets.

To learn all about the 2017 Total Eclipse:

<https://eclipse2017.nasa.gov/>

Find more videos about the solar eclipse at

<https://svs.gsfc.nasa.gov/Gallery/suneclipse2017.html>

2017 06 21 NASA Goddard https://youtu.be/w_GdK8y0Pyl Watching the Friendly Skies - Eclipse Safety Tutorial

Get ready to view the solar eclipse with these helpful safety tips. No one should ever look directly at the sun, even during an eclipse. Many options for indirect viewing are outlined in this video. [Transcript Link](#)

A solar eclipse occurs when the moon blocks any part of the sun. On Monday, August 21, 2017, a solar eclipse will be visible (weather permitting) across all of North America. The whole continent will experience a partial eclipse lasting 2 to 3 hours. Halfway through the event, anyone within a roughly 70-mile-wide path from Oregon to South Carolina will experience a brief total eclipse. There the moon completely blocks the sun's bright face for up to 2 minutes 40 seconds, turning day into night and making visible the otherwise hidden solar corona -- the sun's outer atmosphere -- one of nature's most awesome sights. Bright stars and planets will become visible as well.

To learn all about the 2017 Total Eclipse:
<https://eclipse2017.nasa.gov/>

Music Credit: Chic to Chic by Piero Piccioni

Credit:

This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: <https://svs.gsfc.nasa.gov/12517>

2017 06 21 NASA Goddard <https://youtu.be/vWMf5rYDgpc> How to Make a Pinhole Projector to View the Solar Eclipse

You don't necessarily need fancy equipment to watch one of the sky's most awesome shows: a solar eclipse. With just a few simple supplies, you can make a pinhole camera that allows you to view the event safely and easily. [Transcript Link](#)

Before you get started, remember: You should never look at the sun directly without equipment that's specifically designed for solar viewing. Do not use standard binoculars or telescopes to watch the eclipse, as the light could severely damage your eyes. Sunglasses also do NOT count as protection when attempting to look directly at the sun.

Stay safe and still enjoy the sun's stellar shows by creating your very own pinhole camera. It's easy!

See another pinhole camera tutorial at
<https://www.jpl.nasa.gov/edu/learn/project/how-to-make-a-pinhole-camera/>

A pinhole camera is just one of many viewing options. Learn more at <https://eclipse2017.nasa.gov/safety>

Find more videos about the solar eclipse at
<https://svs.gsfc.nasa.gov/Gallery/suneclipse2017.html>

Music credit: Apple of My Eye by Frederik Wiedmann

2017 06 12	NASA Goddard	https://youtu.be/iiKYEgdwIKA	Ocean Circulation Plays an Important Role in Absorbing Carbon from the Atmosphere	The oceans play a significant role in absorbing greenhouse gases, like carbon dioxide, and heat from the atmosphere. This absorption can help mitigate the early effects of human-emissions of carbon dioxide. The Atlantic Meridional Overturning Circulation acts as a conveyor belt of ocean water from Florida to Greenland. Along the journey north, water near the surface absorbs greenhouse gases, which sink down as the water cools near Greenland. In this way, the ocean effectively buries the gases deep below the surface. Credit: NASA's Goddard Space Flight Center/ Kathryn Mersmann Music: Anywhere by François Pavan [SACEM], Mi-Yung Pavan [SACEM]. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12629 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center	Transcript Link
2017 06 06	NASA Goddard	https://youtu.be/pRIfApDAGak	NASA Interns Arrive at Goddard - Summer 2017	Hundreds of students began their summer internships at NASA's Goddard Space Flight Center on June 5, 2017. Learn more about becoming a NASA intern at intern.nasa.gov. Keep an eye on nasa.gov/goddard throughout the summer for more stories on our interns. Read the web story here: https://www.nasa.gov/feature/goddard/2017/goddard-welcomes-nearly-450-summer-interns Credit: NASA's Goddard Space Flight Center/Katrina Jackson and Raleigh McElvery Music Credits: "HEEEYYYYA" by Jordan Baum [BMI], Michael McNamara [BMI], and Travis Margis [BMI]; Killer Tracks [BMI] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12632 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center	Transcript Link

2017 06 05 NASA Goddard <https://youtu.be/ymfKgr8sHb4> Training the Next Generation of Planetary Scientists

Each year in early March, a new class of postdocs at NASA's Goddard Space Flight Center gathers for the Planetary Science Winter School. This intensive training program takes the young scientists and plunges them into the Instrument Design Lab, to see first-hand what it takes to pitch an instrument that could one day fly in space. Veteran engineers mentor the students throughout the weeklong course, helping to school them in the real-world challenges of planetary science.

[Transcript Link](#)

Music provided by Killer Tracks:
"Nature Exploration" - Laurent Dury
"On the Plate" - Daniel Pemberton

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Credit: NASA's Goddard Space Flight Center/Dan Gallagher

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http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html

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2017 06 01 NASA Goddard <https://youtu.be/9clzBgYQBws> NICER Mission Overview

The Neutron Star Interior Composition Explorer (NICER) payload, destined for the exterior of the space station, will study the physics of neutron stars, providing new insight into their nature and behavior. These stars are called "pulsars" because of the unique way they emit light – in a beam similar to a lighthouse beacon. As the star spins, the light sweeps past us, making it appear as if the star is pulsing. Neutron stars emit X-ray radiation, enabling the NICER technology to observe and record information about their structure, dynamics and energetics. The payload also includes a technology demonstration called the Station Explorer for X-ray Timing and Navigation Technology (SEXTANT) which will help researchers to develop a pulsar-based space navigation system. Pulsar navigation could work similarly to GPS on Earth, providing precise position and time for spacecraft throughout the solar system.

[Transcript Link](#)

The 2-in-1 mission is scheduled to launch on June 1, 2017, at 5:55 p.m. EDT aboard SpaceX's eleventh contracted cargo resupply mission with NASA to the International Space Station. If successfully launched on June 1, the payload will arrive at the space station in the Dragon spacecraft, along with other cargo, on June 4, 2017.

For more information about NICER: <https://www.nasa.gov/nicer>
For technical information about NICER:
<https://heasarc.gsfc.nasa.gov/docs/nicer/>
For more information about SEXTANT: <http://go.nasa.gov/2kieLxa>

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2017 05 31 NASA Goddard <https://youtu.be/XBudjihQKsw> Parker Solar Probe NASA's Parker Solar Probe will be the first-ever mission to "touch" the sun. The spacecraft, about the size of a small car, will travel directly into the sun's atmosphere about 4 million miles from our star's surface. Launch is slated for summer 2018. [Transcript](#) [Link](#)

Credit: The Johns Hopkins University Applied Physics Laboratory

This video is public domain.

Learn more about the Parker Solar Probe: www.nasa.gov/solarprobe

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- Google+ <http://plus.google.com/+NASAGoddard/p...>

2017 05 31 NASA Goddard <https://youtu.be/t6eGygs0gLU> Webb Moves to Johnson Space Center May 2017 marked the end of an era for NASA's Goddard Space Flight Center because the James Webb Space Telescope has moved to NASA's Johnson Space Center in Houston, TX. [Transcript](#) [Link](#)

Webb has been at Goddard in some form for 21 years. And with the completion of the acoustic, vibration and center of curvature tests, the telescope part of the Webb spacecraft was finally ready for the next big test - the cryogenic vacuum test in the Apollo-made-famous Chamber A.

Transporting Webb is a carefully choreographed dance. For the move to Johnson, the telescope was placed into a climate-controlled container called STTARS (Space Telescope Transporter for Air Road and Sea). A truck then slowly moved the large container during the night to Joint Base Andrews where it was loaded into a C-5 cargo airplane. The container is so tall that some power lines and traffic lights were moved.

After a flight to Ellington Field in Houston, Texas, Webb was driven to Johnson.

Webb was unpacked in Houston's Chamber A clean room and preparation for testing commenced.

Credit: NASA's Goddard Space Flight Center/Sophia Roberts

This video is public domain and along with other supporting

2017 05 31 NASA Goddard <https://youtu.be/BsSe5qpKslk> The Moon May Have Frost

Scientists using data from NASA's Lunar Reconnaissance Orbiter, or LRO, have identified bright areas in craters near the moon's south pole that are cold enough to have frost present on the surface.

[Transcript Link](#)

Read more: <https://www.nasa.gov/feature/goddard/2017/nasa-orbiter-finds-new-evidence-of-frost-on-moons-surface>

Music by Killer Tracks: "Full Charge" - Zubin Thakkar

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Credit: NASA's Goddard Space Flight Center/David Ladd

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2017 05 26 NASA Goddard <https://youtu.be/TFy44bV06fl> A 3D Look at the 2015 El Niño

El Niño is a recurring climate pattern characterized by warmer than usual ocean temperatures in the equatorial Pacific. Two back-to-back 3-D visualizations track the changes in ocean temperatures and currents, respectively, throughout the life cycle of the 2015-2016 El Niño event, chronicling its inception in early 2015 to its dissipation by April 2016. Blue regions represent colder and red regions warmer temperatures when compared with normal conditions.

[Transcript Link](#)

Under normal conditions, equatorial trade winds in the Pacific Ocean blow from east to west, causing warm water to pile up in the Western Pacific, while also causing an upwelling—the rise of deep, cool water to the surface—in the Eastern Pacific. During an El Niño, trade winds weaken or, as with this latest event, sometimes reverse course and blow from west to east. As a result, the warm surface water sloshes east along the equator from the Western Pacific and temporarily predominates in the Central and Eastern Pacific Ocean. At that same time, cooler water slowly migrates westward just off the equator in the Western Pacific.

The first visualization shows the 2015-2016 El Niño through changes in sea surface temperature as warmer water moves east across the Pacific Ocean. The Eastern Pacific Ocean undergoes the most warming from July 2015 to January 2016. In the west, just to the north of the equator, cooler waters hit the western boundary and reflect along the equator and then head east starting in February 2016. Just as the warming waves traveled east earlier in the video, these cool waters make their way to the central Pacific, terminating

2017 05 25	NASA Goddard	https://youtu.be/bL1sQjNsuws	Star Gives Birth to Possible Black Hole in Hubble and Spitzer Images	A team of astronomers at The Ohio State University watched a star disappear and possibly become a black hole. Instead of becoming a black hole through the expected process of a supernova, the black hole candidate formed through a "failed supernova." The team used NASA's Hubble and Spitzer Space Telescopes and the Large Binocular Telescope to observe and monitor the star throughout the past decade. If confirmed, this would be the first time anyone has witnessed the birth of a black hole and the first discovery of a failed supernova. Read more: https://www.nasa.gov/feature/collapsing-star-gives-birth-to-a-black-hole Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music Credits: "High Heelz" by Donn Wilerson [BMI] and Lance Sumner [BMI]; Killer Tracks BMI; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12621 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link
2017 05 25	NASA Goddard	https://youtu.be/FPvp8MgbLIA	NICER Launching Soon to the Space Station	This video introduces the Neutron star Interior Composition Explorer (NICER). NICER is an Astrophysics Mission of Opportunity within NASA's Explorer program, which provides frequent flight opportunities for world-class scientific investigations from space utilizing innovative, streamlined and efficient management approaches within the heliophysics and astrophysics science areas. NASA's Space Technology Mission Directorate supports the SEXTANT component of the mission, demonstrating pulsar-based spacecraft navigation. NICER is an upcoming International Space Station payload scheduled to launch in June 2017. Learn more about the mission at nasa.gov/nicer. Credit: NASA's Goddard Space Flight Center/Clare Skelly Music: Killer Tracks, Stuva (PKT017); Sound Design Whoosh 4 (KT260); Drone Ambient (KT202) This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12606 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link

2017 05 23 NASA Goddard <https://youtu.be/ZUu-F3KuCvM> Science Comes Alive at NASA Goddard

NASA's Goddard Space Flight Center in Greenbelt, Maryland, is home to the nation's largest organization of scientists, engineers and technologists who build spacecraft, instruments and new technology to study Earth, the sun, our solar system and the universe.

[Transcript Link](#)

Just outside Washington, D.C., Goddard is home to Hubble operations and the upcoming James Webb Space Telescope. Goddard manages communications between mission control and orbiting astronauts aboard the International Space Station. Goddard scientists stare into the sun, grind up meteorites for signs of life's building blocks, look into the farthest reaches of space, and untangle the mysteries of our own changing world. Goddard engineers construct sensitive instruments, build telescopes that peer into the cosmos, and operate the test chambers that ensure those satellites' survival.

Named for American rocketry pioneer Dr. Robert H. Goddard, the center was established May 1, 1959, as NASA's first space flight complex. Goddard and its several installations are critical in carrying out NASA's missions of space exploration and scientific discovery.

Learn more about NASA Goddard at <https://www.nasa.gov/goddard>.

Credit: NASA's Goddard Space Flight Center/Rich Melnick

2017 05 23 NASA Goddard https://youtu.be/XW6_n2N4Fag Science Comes Alive at NASA Goddard - (short cut)

NASA's Goddard Space Flight Center in Greenbelt, Maryland, is home to the nation's largest organization of scientists, engineers and technologists who build spacecraft, instruments and new technology to study Earth, the sun, our solar system and the universe.

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Learn more about NASA Goddard at <https://www.nasa.gov/goddard>.

Credit: NASA's Goddard Space Flight Center/Rich Melnick

Music: Music Credit: Killer Tracks; Old River [CM099]; Mainframe

2017 05 18	NASA Goddard	https://youtu.be/63-v6-O4Vmw	Landsat Tracks Mount St. Helens Recovery	The May 18, 1980, eruption of Mount St. Helens came after two months of small earthquakes. During the eruption, an avalanche of debris and mud spread for miles from the former summit, and a blast of steam and hot ash covered an area of about 600 km² (230 mi²). In the decades since scientists have studied the recovery of the ecosystem around the mountain using the Landsat series of satellites. By observing different wavelengths of light reflected off the surface, Landsat data can identify different types of land cover. This visualization uses red, near-infrared, and green to distinguish healthy vegetation (green) from bare ground (magenta). NASA and the U.S. Department of the Interior through the U.S. Geological Survey (USGS) jointly manage Landsat, and the USGS preserves a 40-plus-year archive of Landsat images that is freely available over the Internet. Since the launch of Landsat 1 in 1972, Landsat satellites have become an integral part of many operational land management activities. Landsat satellites provide decision makers with key information about the world's food, forests, water and how these and other land resources are being used. Music credit: "Running" by Dirk Ehlert [BMI], Guillermo De La Barreda [BMI] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization	Transcript Link
2017 05 18	NASA Goddard	https://youtu.be/hCwDNXXKIN8Q	What is a Neutron Star	Here's just some of what we already know about neutron stars. An upcoming NASA mission will further investigate these unusual objects from the International Space Station. The Neutron star Interior Composition Explorer mission, or NICER, will study the extraordinary environments — strong gravity, ultra-dense matter, and the most powerful magnetic fields in the universe — embodied by neutron stars. NICER is a two-in-one mission. The embedded Station Explorer for X-ray Timing and Navigation Technology, or SEXTANT, demonstration will use NICER data to validate, for the first time in space, pulsar-based navigation. NICER is planned for launch aboard the SpaceX CRS-11, currently scheduled for June 1, 2017. Learn more about the mission at nasa.gov/nicer. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12605 Credit: NASA's Goddard Space Flight Center/Clare Skelly Music: Killer Tracks, Choose (NM318); Calamitous Computations (ICON011); Dreaming Solitude (PKT017) If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link

2017 05 17	NASA Goddard	https://youtu.be/RApklONebvw	IceBridge Zigzags out of Svalbard	Operation IceBridge just completed 40 research flights over ten weeks, including three based out of the remote and beautiful islands of Svalbard, Norway. Here is the story of one of its most distinctive missions, called Zig Zag East. This flight started in the rugged fjords of Svalbard, passed over hundreds of miles of sea ice en route to the North Pole, flew through the narrow Nares Strait, and finally returned the team back to Thule Air Base in Greenland. The video was narrated in flight on Apr. 7, 2017 by IceBridge Mission Scientist John Sonntag. IceBridge, an airborne mission that monitors changes at the Earth's poles, concluded its 2017 spring Arctic campaign on May 12. This field campaign has been the most ambitious in IceBridge's nine years of operations in the Arctic, greatly expanding the survey's reach across the Arctic Basin. For more about IceBridge's last campaign: https://www.nasa.gov/feature/goddard/2017/nasa-annual-arctic-ice-survey-expanded-range-this-year This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12608 Credit: NASA's Goddard Space Flight Center/Jefferson Beck If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link
2017 05 17	NASA Goddard	https://youtu.be/cFYoYUBGw4s	NASA's Van Allen Probes Find Human-Made Bubble Shrouding Earth	Humans have long been shaping Earth's landscape, but now scientists know we can shape our near-space environment as well. A certain type of communications -- very low frequency, or VLF, radio communications -- have been found to interact with particles in space, affecting how and where they move. At times, these interactions can create a barrier around Earth against natural high energy particle radiation in space. These results, part of a comprehensive paper on human-induced space weather, were recently published in Space Science Reviews. Read more: https://www.nasa.gov/feature/goddard/2017/nasa-van-allen-probes-spot-man-made-barrier-shrouding-earth Credit: NASA's Goddard Space Flight Center/Genna Duberstein, Krystofer Kim and Mary Pat Hrybyk-Keith Music: Alternate and Parallel by Richard BirkinComplete transcript available. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12591 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast:	Transcript Link

2017 05 17 NASA Goddard <https://youtu.be/N-00HHGQbp0> Human Activity Impacted Space Weather

Our Cold War history is now offering scientists a chance to better understand the complex space system that surrounds us. Space weather -- which can include changes in Earth's magnetic environment -- are usually triggered by the sun's activity, but recently declassified data on high-altitude nuclear explosion tests have provided a new look at the mechanisms that set off perturbations in that magnetic system. Such information can help support NASA's efforts to protect satellites and astronauts from the natural radiation inherent in space.

[Transcript Link](#)

Read more: <https://www.nasa.gov/feature/goddard/2017/space-weather-events-linked-to-human-activity>

Credit: NASA's Goddard Space Flight Center/Genna Duberstein

Music: Hybrid Technology by Le Fat Club

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2017 05 16 NASA Goddard <https://youtu.be/wwqpZLhzizl> NASA Releases a Tiny Satellite to Study Ice Clouds

IceCube is a CubeSat, a very small satellite designed to test a new technology for eventual use on larger satellites. In this case, scientists are experimenting with using radiometer to study ice clouds from space.

[Transcript Link](#)

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Credit: NASA's Goddard Space Flight Center/Katy Mersmann

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2017 05 15	NASA Goddard	https://youtu.be/YN4aS Hc0n0w	EPIC Observations of Ice in Earth's Atmosphere	Parked in space a million miles from Earth, the Earth Polychromatic Imaging Camera (EPIC) onboard the Deep Space Climate Observatory (DSCOVR) captures glimmers of reflected sunlight, evidence of ice crystals in the atmosphere. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12600 Credit: NASA's Goddard Space Flight Center/Katy Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/	Transcript Link
2017 05 04	NASA Goddard	https://youtu.be/Hz5U2a7dU8I	Hubble's Galaxy- Observing Superpowers	The Hubble Space Telescope is keeping watch over many, many galaxies using the combined superpowers of its incredible optics and a quirk of nature called gravitational lensing. Read more: https://www.nasa.gov/feature/goddard/2017/a-lot-of-galaxies-need-guarding-in-this-hubble-view Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music credits: "Midtown Moonshine" by Brent Woods [ASCAP] and Enrico Cacace [BMI]; Atmosphere Music Ltd PRS; Volta Music; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12599 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/	Transcript Link

2017 05 02	NASA Goddard	https://youtu.be/Yu1yF1z7Ins	X-ray 'Tsunami' Found in Perseus Galaxy Cluster	Combining data from NASA's Chandra X-ray Observatory with radio observations and computer simulations, scientists have found a vast wave of hot gas in the nearby Perseus galaxy cluster. Spanning some 200,000 light-years, the wave is about twice the size of our own Milky Way galaxy. The researchers say the wave formed billions of years ago, after a small galaxy cluster grazed Perseus and caused its vast supply of gas to slosh around an enormous volume of space. Galaxy clusters are the largest structures bound by gravity in the universe today. Some 11 million light-years across and located about 240 million light-years away, the Perseus galaxy cluster is named for its host constellation. Like all galaxy clusters, most of its observable matter takes the form of a pervasive gas averaging tens of millions of degrees, so hot it only glows in X-rays. Chandra observations have revealed a variety of structures in this gas, from vast bubbles blown by the supermassive black hole in the cluster's central galaxy, NGC 1275, to an enigmatic concave feature known as the "bay." To investigate the bay, researchers combined a total of 10.4 days of high-resolution Chandra data with 5.8 days of wide-field observations at energies between 700 and 7,000 electron volts. For comparison, visible light has energies between about two and three electron volts. The scientists then filtered the Chandra data to highlight the edges of structures and reveal subtle details. Next,	Transcript Link
2017 04 27	NASA Goddard	https://youtu.be/NPJHkCmXv78	Tsunami Study Challenges Long-held Formation Theory	A new NASA study is challenging a long-held theory on how tsunamis form and offering a new method for forecasting the powerful waves. Most tsunamis result from a massive shifting of the seafloor -- usually from the subduction, or sliding, of one tectonic plate under another during an earthquake. Using a large wave tank, researchers simulated horizontal land displacements and found that it can contribute significantly to the strength of some tsunamis. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12560 Credit: NASA's Goddard Space Flight Center/Katy Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link

2017 04 27 NASA Goddard <https://youtu.be/jUvcaYFEWac> Kepler Stares at Neptune

During its K2 campaign, NASA's Kepler spacecraft observed the eighth planet in our solar system, Neptune. Kepler detected small changes in Neptune's brightness caused by the planet's daily rotation, the movement of clouds, and even seismic waves from the sun itself. Originally designed to search for exoplanets (planets around other stars), Kepler's observations of Neptune pave the way for future studies of weather and climate beyond our solar system.

[Transcript](#)
[Link](#)

Credit: NASA's Goddard Space Flight Center /Dan Gallagher

Music Credits: "Lost Contact" and "Processing Thoughts" from Killer Tracks

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2017 04 26 NASA Goddard <https://youtu.be/-tdRTn2lwng> A Solar Eruption in 5 Steps

Scientists from Durham University in the United Kingdom and NASA now propose that a universal mechanism can explain the whole spectrum of solar eruptions. They used 3-D computer simulations to demonstrate that a variety of eruptions can theoretically be thought of as the same kind of event, only in different sizes and manifested in different ways. Their work is summarized in a paper published in Nature on April 26, 2017.

[Transcript](#)
[Link](#)

Read more:
<https://www.nasa.gov/feature/goddard/2017/scientists-propose-mechanism-to-describe-solar-eruptions-of-all-sizes>

Credit: NASA's Goddard Space Flight Center/Genna Duberstein

Music credit: Prism Mystery by Donn Wilkerson

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2017 04 26 NASA Goddard <https://youtu.be/8PxHrJOCRt0> Planetary Fieldwork A HI-SEAS Adventure

On the Mauna Loa volcano in Hawai'i, scientists from NASA Goddard partnered with the crew of the HI-SEAS habitat to conduct field tests with a backpack-sized instrument called the Miniaturized Laser Heterodyne Radiometer (mini-LHR). The instrument is collecting atmospheric data and, at the same, is being used to help train the HI-SEAS crew to perform the kinds of duties that would be required of explorers. This type of fieldwork is an important step in developing instruments that could be used by humans for exploration and research on another planet. Footage provided by NASA and HI-SEAS.

[Transcript](#)
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Music Provided by Killer Tracks: "Mornin Beautiful" - Jim Brickman & Luke McMaster.

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Credit: NASA's Goddard Space Flight Center/David Ladd

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2017 04 24 NASA Goddard <https://youtu.be/f3lx0yzZXNQ> NASA's Fermi Catches Gamma-ray Flashes from Tropical Storms

About a thousand times a day, thunderstorms fire off fleeting bursts of some of the highest-energy light naturally found on Earth. These events, called terrestrial gamma-ray flashes (TGFs), last less than a millisecond and produce gamma rays with tens of millions of times the energy of visible light. Since its launch in 2008, NASA's Fermi Gamma-ray Space Telescope has recorded more than 4,000 TGFs, which scientists are studying to better understand how the phenomenon relates to lightning activity, storm strength and the life cycle of storms.

[Transcript](#)
[Link](#)

Credit: NASA's Goddard Space Flight Center

Music Credits: Glacial Fields and The Piper from Killer Tracks

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2017 04 19	NASA Goddard	https://youtu.be/iWKZ01f6hw	NASA's Vantage Point Over Earth	No planet is better studied than the one we actually live on. NASA's fleet of Earth observing spacecraft, supported by aircraft, ships and ground observations, measure aspects of the environment that touch the lives of every person around the world. They study everything from the air we breathe, to rain and snow that provide water for agriculture and communities, to natural disasters such as droughts and floods, to the oceans, which cover 70 percent of Earth's surface and provide food for many people around the world. Satellites and instruments on the International Space Station circle the whole globe, seeing both where people live and those remote parts of deserts, mountains and the vast oceans that are difficult if not impossible to visit. With instruments in space, scientists can get data for the whole globe in detail that they can't get anywhere else. This visualization shows the NASA fleet in 2017, from low Earth orbit all the way out to the DSCOVR satellite taking in the million-mile view. Music credit: The Glide, by Zubin Thakkar [SOCAN] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12586 Credit: NASA's Goddard Space Flight Center/Matthew R. Radcliff If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link
2017 04 17	NASA Goddard	https://youtu.be/c5-mQ62yxt0	NASA Team Explores Using LISA Pathfinder as a 'Comet Crumb' Detector	LISA Pathfinder, a mission led by the European Space Agency (ESA) with contributions from NASA, has successfully demonstrated critical technologies needed to build a space-based observatory for detecting ripples in space-time called gravitational waves. Now a team of NASA scientists hopes to take advantage of the spacecraft's record-breaking sensitivity to map out the distribution of tiny dust particles shed by asteroids and comets far from Earth. Most of these particles have masses measured in micrograms, similar to a small grain of sand. But with speeds greater than 22,000 mph (36,000 km/h), even micrometeoroids pack a punch. The new measurements could help refine dust models used by researchers in a variety of studies, from understanding the physics of planet formation to estimating impact risks for current and future spacecraft. The mission's primary goal was to test how well the spacecraft could fly in formation with an identical pair of 1.8-inch (46 millimeter) gold-platinum cubes floating inside it. The cubes are test masses intended to be in free fall and responding only to gravity. The spacecraft serves as a shield to protect the test masses from external forces. When LISA Pathfinder responds to pressure from sunlight and microscopic dust impacts, the spacecraft automatically compensates by firing tiny bursts from its micronewton thrusters to prevent the test masses from being disturbed.	Transcript Link

2017 04 13 NASA Goddard <https://youtu.be/ASTxUnSMK4> Europa Water Vapor Plumes - More Hubble Evidence

The Hubble Space Telescope has captured even more evidence of water vapor plumes on Jupiter's icy moon Europa. The probable plumes appear to be repeating in the same location and correspond with a relatively warm region on Europa's surface observed by the Galileo spacecraft.

[Transcript Link](#)

Read more: <https://www.nasa.gov/press-release/nasa-missions-provide-new-insights-into-ocean-worlds-in-our-solar-system>

Credit: NASA's Goddard Space Flight Center/Katrina Jackson

Music Credits: "Street Dancer" by Donn Wilkerson [BMI] and Lance Sumner [BMI]; Killer Tracks BMI; Killer Tracks Production Music

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2017 04 12 NASA Goddard <https://youtu.be/8dc58ZrOuck> Lights of Human Activity Shine in NASA's Image of Earth at Night

NASA scientists have just released the first new global map of Earth at night since 2012. This nighttime look at our home planet, dubbed the Black Marble, provides researchers with a unique perspective of human activities around the globe. By studying Earth at night, researchers can investigate how cities expand, monitor light intensity to estimate energy use and economic activity, and aid in disaster response.

[Transcript Link](#)

Read more: <https://www.nasa.gov/feature/goddard/2017/new-night-lights-maps-open-up-possible-real-time-applications/>

Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann

Music Credits: Everything is Possible by Magnum Opus [ASCAP]

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2017 04 10	NASA Goddard	https://youtu.be/HiZ3T2ZvREc	NASA Catches April 1 Nor'easter over New England	At the time of the Global Precipitation Measurement (GPM) Core Observatory overpass (April 1, 2017, 0550 UTC), the storm's center of low pressure was south of Long Island. At the mid-levels of the atmosphere, the circulation was centered over northeast Pennsylvania. This led to a classic overrunning, warm conveyor setup, which happened when the counterclockwise low level flow drew in cold air out of the north/northeast (hence "Nor'easter") from Canada. Higher up, warm and moist air from further south was lifted over this cold air and resulted in precipitation in the form of snow at the surface. The heavy band of snow that is visible in the GPM data resulted in 8-14 inch totals over southern Maine and New Hampshire, while totals further south in Massachusetts were limited by some mixing with rain. Music credit: "Flowing with Time," Philippe Lhommet, LOKA Media This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12576 Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link
2017 04 07	NASA Goddard	https://youtu.be/b0avDc48hPM	April 2017 Solar Flares	The sun emitted a trio of mid-level solar flares on April 2-3, 2017. NASA's Solar Dynamics Observatory, which watches the sun constantly, captured images of the three events. Music credit: A Waltz into Darkness by Joseph Bennie This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12563 Credit: NASA's Goddard Space Flight Center/Genna Duberstein If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/	Transcript Link

2017 04 06 NASA Goddard <https://youtu.be/AnKZvAhecPQ> Hubble Views Jupiter at Opposition

The Hubble Space Telescope observed Jupiter on April 3rd, 2017 - just days before Jupiter is in opposition on April 7th. This new image of Jupiter is part of Hubble's Outer Planets Atmospheres Legacy program, which is one of many ways Hubble provides science on the Jupiter system. [Transcript Link](#)

Credit: NASA's Goddard Space Flight Center/Katrina Jackson

Music credit: "Triangulate" by Gianluigi Gallo [PRS]; El Murmullo Sarao SGAE, Universal Sarao SGAE; SaraoMusic; Killer Tracks Production Music

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2017 03 31 NASA Goddard <https://youtu.be/uefcUQs9IDw> TESS - Fly Your Exoplanet

The Transiting Exoplanet Survey Satellite (TESS) is taking your art to space! Draw a picture of an exoplanet, or planet orbiting another star, that you think TESS could find. It could fly on the TESS spacecraft, launching in 2018! Download the form at https://tess.gsfc.nasa.gov/fly_your_exoplanet.html and send us your drawing today! Deadline for submissions is Nov. 20, 2017. [Transcript Link](#)

Learn more about TESS: https://tess.gsfc.nasa.gov/fly_your_exoplanet.html

Credit: NASA's Goddard Space Flight Center/Claire Saravia

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2017 03 31	NASA Goddard	https://youtu.be/DYITIONUEQ8	Observations Reshape Basic Plasma Wave Physics	New light has been shed on the invisible forces shaping our near-Earth environment, unveiling a fundamental physical phenomenon. Using a specialized suite of instruments aboard NASA's Magnetospheric Multiscale - or MMS - spacecraft, scientists found the first observational proof of a fifty-year-old theory and uncovered new, unexpected complexities in the small-scale dynamics of a type of plasma wave, known as a kinetic Alfvén wave. The results may lead to improved nuclear fusion techniques for generating energy more efficiently. Read more: https://www.nasa.gov/feature/goddard/2017/nasa-observations-reshape-basic-plasma-wave-physics Credit: NASA's Goddard Space Flight Center/Genna Duberstein Music credit: Coolheaded by Jeff Cardoni This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12512 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer	Transcript Link
2017 03 30	NASA Goddard	https://youtu.be/kxIJ4dj31gg	Vibration Testing of NASA's James Webb Space Telescope	Inside NASA's Goddard Space Flight Center in Greenbelt, Maryland, the James Webb Space Telescope team completed the environmental portion of vibration testing on the telescope. A shaker table subjects satellites like Webb to the vibration that comes from rocket to ensure the spacecraft will survive the ride into space. The new vibration test system simulates the forces the telescope will feel during the launch by vibrating it from five to 100 times per second. For more information about NASA's James Webb Space Telescope, visit: www.jwst.nasa.gov or www.nasa.gov/webb. Credit: NASA's Goddard Space Flight Center/Michael P. Menzel This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12546 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center - Facebook: http://www.facebook.com/NASA.GSFC - Twitter http://twitter.com/NASAGoddard - Flickr http://www.flickr.com/photos/gsfcc/	Transcript Link

2017 03 30	NASA Goddard	https://youtu.be/eol3HABW_98	Rossby Waves on the Sun Could Aid in Space Weather Prediction	To predict weather on a planet, we look at Rossby waves, large movement patterns in the atmosphere, like the jet stream. Just as on Earth, the conditions on the sun are constantly changing. This is why scientists were excited to discover Rossby waves on the sun. On the sun, the waves are driven by magnetic currents below the surface. Monitoring these waves and the disturbances they generate could help us make better long-term space weather predictions. Credit: NASA's Goddard Space Flight Center/Genna Duberstein Music: Grand Design by Michael Conn This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12550 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard	Transcript Link
2017 03 30	NASA Goddard	https://youtu.be/rWehzhdYnnM	The Little Satellite That Could	The satellite was tiny, the size of a small refrigerator, only supposed to last one year and constructed and operated on a shoestring budget — yet it persisted for a total of 17 years on orbit. On March 30, 2017, the satellite was powered off due to a lack of fuel, and will slowly spiral down to Earth. It is expected to burn up in the atmosphere in 2056. “The Earth Observing-1 satellite is like ‘The Little Engine That Could’,” said Betsy Middleton, project scientist for the satellite at NASA's Goddard Space Flight Center in Greenbelt, Maryland. With more than 1,500 research papers generated and 180,000 images captured, the Earth Observing-1 (EO-1) satellite has exceeded expectations in both its technology and research goals, as well as longevity. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12559 Credit: NASA's Goddard Space Flight Center/Matthew Radcliff If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link

2017 03 29	NASA Goddard	https://youtu.be/p8PsXPnnYuw	Crop Irrigation Is Closely Tied to Groundwater Depletion Around the World	The irrigation that grows crops, especially in dry countries, can also be responsible for taxing aquifers beyond their capacities. Groundwater depletion is embedded in the international food trade, with countries exporting crops grown from overexploited aquifers and setting up potential future food crises if the aquifers run dry. Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann Music Credits: Time Is Passing by Theo Golding. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12429 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcr/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link
2017 03 27	NASA Goddard	https://youtu.be/sKc-eLfarD0	Timing Is Everything	Deputy Systems Engineer Phil Luers explains how ICESat-2's ATLAS instrument transmitter and receiver subsystems come together to calculate the timing of photons, which, in turn, measure the elevation of ice. To view the previous parts in this series, go to Part 1: Transmitter https://youtu.be/yvZas1WBiWg and Part 2: Receiver https://youtu.be/bNsOBCd7cFs Credits: Ryan Fitzgibbons; "Electric Works" by Philippe Lhommet, Koka Media; "From Source to Sea" by Christophe Lebled, Pierre Jacquot, Koka Media This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/11726 Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center	Transcript Link

2017 03 27 NASA Goddard <https://youtu.be/TEMZd6Ovbcg> Lugares de la Luna Reiner Gamma

Datos captados por el Lunar Reconnaissance Orbiter fueron utilizados en la creación de esta visualización de Reiner Gamma — un remolino lunar. Científicos han usado datos de LRO y otras misiones lunares para desarrollar la teoría más aceptada de la formación de los remolinos lunares, que los campos magnéticos en los remolinos se paran y dirigen el viento solar a formar los patrones remolinos. Este vídeo fue narrado por Nayi Castro Líder Técnica Diputada de el Lunar Reconnaissance Orbiter.

[Transcript Link](#)

Music Provided by Killer Tracks: “Facing the Truth – TV Mix” - Eric Chevalier

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Credit: NASA's Goddard Space Flight Center/David Ladd

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2017 03 27 NASA Goddard <https://youtu.be/-g6UW2MqBzE> Moon Features – Reiner Gamma

Data from the Lunar Reconnaissance Orbiter was used to create this visualization of Reiner Gamma – a lunar swirl. Scientists have used data from LRO and other lunar missions to develop the most accepted theory of swirl formation, that magnetic fields at swirls standoff and direct the solar wind to form the swirl patterns. This video was narrated by LRO Deputy Project Scientist Noah Petro.

[Transcript Link](#)

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2017 03 24	NASA Goddard	https://youtu.be/O23JsWzVwQM	How a NASA Science Flight is No Ordinary Journey	A group of scientists and pilots conducted a series of science flights over Western Colorado for a new five-year NASA-led airborne mission called SnowEx. SnowEx is exploring better ways to measuring how much water is stored in snow-covered regions with the goal of eventually creating a future snow satellite mission. More accurate snow measurements will help scientists and decisions-makers better understand our world's water supply and better predict floods and droughts. Data acquired from the SnowEx campaign will be stored at the National Snow and Ice Data Center in Boulder, Colorado, and will be available to anyone to order at no cost, as is the case with all NASA data. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12549 Credit: NASA's Goddard Space Flight Center/Joy Ng Music credits: "Time Shift Equilibrium" by Ben Niblett [PRS] and Jon Cotton [PRS] from Killer Tracks Music If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link
2017 03 23	NASA Goddard	https://youtu.be/K09zNxtJ11s	Hubble Detects a Rogue Supermassive Black Hole	The Hubble Space Telescope captured an image of a quasar named 3C 186 that is offset from the center of its galaxy. Astronomers hypothesize that this supermassive black hole was jettisoned from the center of its galaxy by the recoil from gravitational waves produced by the merging of two supermassive black holes. Read more: https://www.nasa.gov/feature/goddard/2017/gravitational-wave-kicks-monster-black-hole-out-of-galactic-core Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music credit: "Stealth Car" by Tom Sue [GEMA] and Zac Singer [GEMA]; Ed. Berlin Production Music/Universal Publishing Production Music GmbH GEMA; Berlin Production Music; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12539 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link

2017 03 22	NASA Goddard	https://youtu.be/adQ2tarZyUY	Arctic Sea Ice Reaches Another Record Low	On March 7, 2017, Arctic sea ice reached its annual wintertime maximum extent, according to scientists at the NASA-supported National Snow and Ice Data Center (NSIDC) and NASA. The Arctic sea ice extent set a record low after a warm winter. Combining the Arctic and Antarctic numbers shows that the planet's global sea ice levels on Feb. 13 were at their lowest point since satellites began to continuously measure sea ice in 1979. Music is Crystal Light by Michael Holborn [PRS] and William Henries [PRS] Credits: Kathryn Mersmann (producer), Maria-Jose Vinas Garcia (writer) and Lori Perkins (visualizer) This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12537 Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center	Transcript Link
2017 03 21	NASA Goddard	https://youtu.be/SsOuiit2FKw	ATom Postcard - Alaska and the Arctic	On its second worldwide tour, the Atmospheric Tomography (ATom) team starts by surveying the north's polar regions during winter, which is marked by a build-up of pollution from the United States, Canada, northern China, and Russia. In the spring, sunlight spurs chemical reactions that remove those pollutants and greenhouse gases from the atmosphere. Music credit: Ice Lands by Rik Carter This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12508 Credit: NASA's Goddard Space Flight Center/Katy Mersmann If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard	Transcript Link

2017 03 04 NASA Goddard <https://youtu.be/aYRqkdYJRr0> Photon Jump

Pho, a plucky bright green photon of light, must travel from a NASA spacecraft down to Earth and back again to help complete a crucial science mission in this educational short film. The animation was created and produced by media art students from the Savannah College of Art in Design (SCAD) in Georgia, in collaboration with NASA's Ice, Cloud and Land Elevation Satellite-2 (ICESat-2) mission. Their goal was to communicate the science and engineering of the mission, slated for launch in 2018. ICESat-2, managed by NASA Goddard in Greenbelt, Maryland, will measure the height of a changing Earth, one laser pulse at a time, 10,000 laser pulses a second. ICESat-2 will carry a photon-counting laser altimeter that will allow scientists to measure the elevation of ice sheets, glaciers, sea ice and more - all in unprecedented detail. The workings of this laser helped inspire students to create the character of Pho and plot his adventure. Our planets frozen and icy areas, called the cryosphere, are a key focus of NASAs Earth science research. ICESat-2 will help scientists investigate why, and how much, our cryosphere is changing in a warming climate. The satellite will also measure heights across Earths temperate and tropical regions, and take stock of the vegetation in forests worldwide. For more about the mission, visit <http://icesat-2.gsfc.nasa.gov>.

[Transcript](#)
[Link](#)

A fully animated film starring Pho the photon. Complete transcript "Photon Jump" was created and produced through the ICESat-2/Savannah College of Art and Design (SCAD) Collaborative Student Project.

2017 03 02 NASA Goddard <https://youtu.be/nlfijgrOg0> A New Forecast Model Gives Scientists a Longer View of Arctic Sea Ice

Arctic sea ice extent ebbs and flows with the seasons. During the summer months, the ice melts and the edge recedes northward, usually reaching its annual minimum sometime in September. The ice extent is shaped by a variety of factors, including warmer temperatures, storms, and changes in the ocean, which makes it difficult to predict. Sea ice plays an important role in maintaining Earths temperature, so predicting how the ice extent might change helps us understand the warming climate. Scientists have developed a new model to predict the sea ice minimum extent, using historical measurements and real-time satellite data. The model can begin predictions up to six months before the predicted minimum and continue to improve each day.

[Transcript](#)
[Link](#)

Music credit: Fast Motion by Stephen Daniel Lemaire

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Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann

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2017 02 23	NASA Goddard	https://youtu.be/tNMytN7Zafo	NASA-funded Balloon Recovered From Antarctica	For 12 days in January 2016, a football-field-sized balloon with a telescope hanging beneath it floated 24 miles above the Antarctic continent, riding the spiraling polar vortex. On Jan. 31, 2016, scientists sent the pre-planned command to cut the balloon – and the telescope parachuted to the ground in the Queen Maud region of Antarctica. The telescope sat on the ice for an entire year. The scientists did quickly recover the data vaults from the NASA-funded mission, called GRIPS, which is short for Gamma-Ray Imager/Polarimeter for Solar flares. But due to incoming winter weather – summer only runs October through February in Antarctica – they had to leave the remaining instruments on the ice and schedule a recovery effort for the following year. Finally, in January 2017, it was warm and safe enough to recover the instruments. For more information: https://www.nasa.gov/feature/goddard/2017/nasa-funded-balloon-recovered-a-year-after-flight-over-antarctica Credit: NASA Goddard Space Flight Center/Joy Ng Music credit: "Inducing Waves" by Ben Niblett [PRS] and Jon Cotton [PRS] from Killer Tracks Music	Transcript Link
2017 02 21	NASA Goddard	https://youtu.be/Ndr7nQhuQ4Y	Fermi Detects Gamma-ray Puzzle from M31	NASA's Fermi Gamma-ray Space Telescope has found a signal at the center of the neighboring Andromeda galaxy that could indicate the presence of the mysterious stuff known as dark matter. The gamma-ray signal is similar to one seen by Fermi at the center of our own Milky Way galaxy. Gamma rays are the highest-energy form of light, produced by the universe's most energetic phenomena. They're common in galaxies like the Milky Way because cosmic rays, particles moving near the speed of light, produce gamma rays when they interact with interstellar gas clouds and starlight. Surprisingly, the latest Fermi data shows the gamma rays in Andromeda, also known as M31, are confined to the galaxy's center instead of spread throughout. To explain this unusual distribution, scientists are proposing that the emission may come from several undetermined sources. One of them could be dark matter, an unknown substance that makes up most of the universe. NASA's Fermi telescope has detected a gamma-ray excess at the center of the Andromeda galaxy that's similar to a signature Fermi previously detected at the center of our own Milky Way. Watch to learn more. Credit: NASA's Goddard Space Flight Center/Scott Wiessinger Music: "Lost Time" from Killer Tracks For more information: https://www.nasa.gov/feature/goddard/2017/nasas-fermi-finds-	Transcript Link

2017 02 17	NASA Goddard	https://youtu.be/f77bVHtpX0E	ATom Postcard - Kona, Hawaii	Atmospheric scientist Jack Dibb of the University of New Hampshire sent a video postcard from the Hawaii leg of the Atmospheric Tomography or ATom mission. On its second worldwide tour, the ATom team flew into Kona, Hawaii, to study small particles like sulfate and nitrate in the atmosphere. Volcanoes like Kilauea, in Hawaii, constantly release sulfate particles, which can oxidize to make sulfuric acid, a component of acid rain. The ATom mission aboard NASA's DC-8 aircraft and flying laboratory is sampling world-wide in one of the most extensive surveys of the atmosphere to date, measuring over 200 gases as well as airborne particles. The science team is particularly interested in methane, tropospheric ozone and black carbon particles, which have strong effects on climate and which all have both human and natural origins. Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12518 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Thanks to a half-century of snow observations, NASA scientists have learned a number of amazing facts about snow, which are crucial to understanding what's necessary to advance snow measurements. Scientists are in the field right now, testing advanced technologies to measure snow like never before. In a five-year study called SnowEx, researchers are improving techniques to determine how much water is stored in snow-covered regions around the world. More accurate snow measurements will help scientists and decision-makers better understand our world's water supply and better predict floods and droughts. For more information: https://snow.nasa.gov Credit: NASA's Goddard Space Flight Center/Jenny Hottle Music Credits: "Avalanches" by Chris Constantinou [PRS] and Paul Frazer [PRS] from Killer Tracks Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12497 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Follow NASA's Goddard Space Flight Center	Transcript Link
2017 02 17	NASA Goddard	https://youtu.be/VugXDld2iDg	6 Things You Don't Know About Snow		Transcript Link

2017 02 17	NASA Goddard	https://youtu.be/jbgpVE6sTpE	Getting Flake-y Why All Snowflakes Have Six Sides	NASA scientists can measure the size and shape distribution of snow particles, layer by layer, in a storm. The Global Precipitation Measurement mission is an international satellite project that provides next-generation observations of rain and snow worldwide every three hours. Credit: NASA's Goddard Space Flight Center/Ryan Fitzgibbons Music: "Piano Cells," Anthony Phillips, Killer Tracks. For more information: https://snow.nasa.gov This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12507 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/	Transcript Link
2017 02 16	NASA Goddard	https://youtu.be/jT5q6tBdP_0	NASA Investigates Water Supply in Snow	This February, a NASA-led research campaign called SnowEx kicked off in Colorado. The five-year study will advance global measurements of how much snow is on the ground at any given time and how much liquid water is contained in that snow. The amount of water in snow plays a huge role in water availability for drinking water, agriculture, and hydropower. Teams of 50 researchers are stationed at Grand Mesa and Senator Beck Basin over a three-week period to measure snow using a variety of snow-sensing instruments and techniques. Ground measurements will allow the team to validate the remotely-sensed measurements acquired by multiple sensors on the various aircraft. Data acquired from the SnowEx campaign will be stored at the National Snow and Ice Data Center in Boulder, Colorado, and will be available to anyone to order at no cost, as is the case with all NASA data. For more information: https://www.nasa.gov/earthexpeditions/ Credit: NASA's Goddard Space Flight Center/Joy Ng Music Credits: "Detective Analysis" by Laurent Dury [SACEM] from Killer Tracks Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization	Transcript Link

2017 02 15 NASA Goddard https://youtu.be/Dl3_hgUw6l8 Join the Search for New Nearby Worlds

A new website funded by NASA lets the public search for new worlds in the outer reaches of our solar system and in neighboring interstellar space. The website, called Backyard Worlds: Planet 9, allows everyone to participate in the search through brief movies made from images captured by NASA's Wide-field Infrared Survey Explorer (WISE) mission. The movies highlight sources that have gradually moved across the sky. The new website uses WISE all-sky data to search for unknown objects in and beyond our own solar system. In 2016, astronomers at the California Institute of Technology showed that several distant solar system objects possessed orbital features indicating they were affected by the gravity of an as-yet-undetected planet, which the researchers nicknamed "Planet Nine." If Planet Nine exists and is as bright as some predictions, it could show up in WISE data. The search also may discover more distant objects like brown dwarfs, sometimes called failed stars, in nearby interstellar space. These strange objects form like stars but evolve like planets, the coldest ones being much like Jupiter. On the website, people around the world can work their way through millions of "flipbooks," which are brief animations showing how small patches of the sky changed over several years. Moving objects flagged by users will be prioritized by the science team for later follow-up observations by professional astronomers. Participants will share credit for their discoveries in any scientific publications that result from the project. Join the search for new worlds in the outer reaches of our solar system and in nearby interstellar space at Backyard Worlds: Planet 9.

[Transcript](#)
[Link](#)

2017 02 15 NASA Goddard <https://youtu.be/wawwDzVSeV8> Water in Helheim Glacier Makes Its Way to the Ocean

New NASA research found that large crevasses provide aquifer water upstream of Greenland's Helheim Glacier with a clear escape to the ocean. This discovery helps confirm that the water, which is held in a layer of crunchy, granular snow called firn, contributes to sea level rise.

[Transcript](#)
[Link](#)

Music credit: Dark Clouds by Anders Paul Niska and Klas Johan Wahl

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Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann

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2017 02 14	NASA Goddard	https://youtu.be/ikoCyPl2dBs	Goddard + Hubble, Valentines Since 1984 (Longer Cut)	Hubble's Space Telescope Operations Control Center (STOCC) had its ribbon-cutting ceremony at NASA's Goddard Space Flight Center in Greenbelt, Maryland, on Valentine's Day, 1984, beginning a long-lasting relationship that thrives to this day. Read more about Hubble mission operations at the STOCC here - https://www.nasa.gov/content/hubble-mission-operations Credit: NASA's Goddard Space Flight Center/Katrina Jackson, producer Music credit: "Love Will Set You Free" by Anders Gunnar Kampe [STIM], Niklas Rolf Edberger [STIM]; Primetime Productions Ltd PRS; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12513 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2017 02 14	NASA Goddard	https://youtu.be/uK0yseOnxc	Goddard + Hubble, Valentines Since 1984	Hubble's Space Telescope Operations Control Center (STOCC) had its ribbon-cutting ceremony at NASA's Goddard Space Flight Center in Greenbelt, Maryland, on Valentine's Day, 1984, beginning a long-lasting relationship that thrives to this day. Read more about Hubble mission operations at the STOCC here - https://www.nasa.gov/content/hubble-mission-operations Credit: NASA's Goddard Space Flight Center/Katrina Jackson, producer Music credit: "Love Will Set You Free" by Anders Gunnar Kampe [STIM], Niklas Rolf Edberger [STIM]; Primetime Productions Ltd PRS; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12513 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link

2017 02 13	NASA Goddard	https://youtu.be/KF7d7K29ZrU	Raven is Heading to the International Space Station	A technology module known as Raven will launch aboard SpaceX 10 to the International Space Station, bringing NASA one step closer to an autopilot capability. Raven will test foundational technologies that will enable autonomous rendezvous in space, meaning they will not necessitate any human involvement. This technology, when matured, will provide autonomous rendezvous capability for future missions. The future of autonomous navigation capability is getting closer to being a reality. Credit: NASA's Goddard Space Flight Center/Stuart Snodgrass Music Credits: Killer Tracks Library: Unveiling Courage Main Track This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12501 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/	Transcript Link
2017 02 13	NASA Goddard	https://youtu.be/H32w3xU2c9A	Coming Soon The Latest Tracking and Data Relay Satellite, TDRS-M	TDRS-M will enable groundbreaking science and expand the current fleet of satellites. TDRS puts the "space" in Space Network. In geosynchronous orbit around Earth, the TDRS constellation ensures reliable, global communications coverage to more than 35 NASA spacecraft. TDRS-M will be the 12th satellite the TDRS team has launched since 1983. Credit: NASA's Goddard Space Flight Center/Stuart Snodgrass Learn more at http://www.nasa.gov/tdrs This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12502 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2017 02 11	NASA Goddard	https://youtu.be/1PuEVMLdnJ8	The Search for Life	Are we alone in the universe? This is a fundamental question that intrigues us all. On September 21, 2016, NASA scientists and stakeholders came together at the Smithsonian National Air and Space Museum for a presentation on the agency's search for life beyond Earth. "The Search for Life" featured presentations from some of NASA's leading scientists, including the late former astronaut, Dr. Piers Sellers. Through compelling visualizations, "The Search for Life" takes you on a journey through the solar system and beyond, exploring the possibility of life existing on Mars, the solar system's outer moons, and exoplanets. Keynote speakers include: · John P. Holdren, assistant to the president for science and technology, director of the Office of Science and Technology Policy, and co-chair of the President's Council of Advisors on Science and Technology; · Gavin A. Schmidt, director of NASA's Goddard Institute for Space Studies and principal investigator for the GISS ModelE Earth System Model; · Jen Eigenbrode, research astrobiologist in the Goddard Planetary Environments Laboratory; · Aki Roberge, research astrophysicist in the Goddard Exoplanets and Stellar Astrophysics Laboratory; and · Piers Sellers, deputy director of the Goddard Sciences and	Transcript Link
2017 02 11	NASA Goddard	https://youtu.be/kJPz-oRnRDE	NASA's Solar Dynamics Observatory Year 7 Ultra HD (4k)	The Solar Dynamics Observatory (SDO) has now captured nearly seven years worth of ultra-high resolution solar footage. This time lapse shows that full run from two of SDO's instruments. The large orange sun is visible light captured by HMI. The smaller golden sun is extreme ultraviolet light from AIA and reveals some of the sun's atmosphere, the corona. Both appear at one frame every 12 hours. SDO's nearly unbroken run is now long enough to watch the rise and fall of the current solar cycle. The graph of solar activity shows the sunspot number, a measurement based on the number of individual spots and the number of sunspot groups. In this case, the line represents a smoothed 26-day average to more clearly show the overall trend. Credit: NASA's Goddard Space Flight Center/Scott Wiessinger Music: "Web of Intrigue" from Killer Tracks This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12500 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link

2017 02 09 NASA Goddard <https://youtu.be/tdle74pISZk> Searching for Earth's Trojan Asteroids

Trojan asteroids are common at the L4 and L5 Lagrange points of other planets, leading or following the planet in its orbit. But detecting our own Trojan asteroids from Earth is difficult since they appear close to the sun from our perspective. In mid-February 2017, NASA's OSIRIS-REx mission will search for these elusive objects when the spacecraft passes by Earth's L4 Lagrange point, en route to asteroid Bennu in 2018. Jim Green, the Director of Planetary Science at NASA, discusses OSIRIS-REx and its search for Earth's Trojan asteroids.

[Transcript](#)
[Link](#)

Read more: <https://www.nasa.gov/feature/goddard/2017/osiris-rex-begins-earth-trojan-asteroid-search>

Visit OSIRIS-REx at <https://www.nasa.gov/osiris-rex> and <http://www.asteroidmission.org/>

Music: "Meadows" by Daniel Pemberton, Atmosphere Music Ltd/Killer Tracks Music

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Credit: NASA's Goddard Space Flight Center/Dan Gallagher

If you liked this video, subscribe to the NASA Goddard YouTube channel: <http://www.youtube.com/NASAEplorer>

2017 02 01 NASA Goddard <https://youtu.be/CznJU1FD1Cg> NASA Referees Test of Footballs vs. Webb Telescope

While two football teams will be put to the test at Super Bowl LI in Houston, engineers at NASA's Goddard Space Flight Center in Greenbelt, Maryland, are testing the most powerful space telescope ever built, the James Webb Space Telescope. To demonstrate all the shaking, quaking and super-chill temperatures the Webb telescope is going through, Goddard engineers did similar tests - with a football.

[Transcript](#)
[Link](#)

Being launched on a rocket creates high levels of noise and vibration, and once in orbit the Webb telescope will have to function under extreme temperatures. So NASA engineers are doing vibration, acoustics and other tests to ensure that the Webb telescope will function properly.

Once in orbit about 930,000 miles (1.5 million km) from Earth, the Webb telescope will provide images of the first galaxies ever formed and explore planets around distant stars. It is a joint project of NASA, ESA (the European Space Agency) and the Canadian Space Agency.

Credit: NASA's Goddard Space Flight Center/Michael McClare

Music: tba

For more information: <http://www.jwst.nasa.gov>

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2017 01 30 NASA Goddard <https://youtu.be/mU3AV7BN1nM> NASA's Fermi Finds the Farthest Blazars NASA's Fermi Gamma-ray Space Telescope has identified the farthest gamma-ray blazars, a type of galaxy whose intense emissions are powered by supersized black holes. Light from the most distant object began its journey to us when the universe was 1.4 billion years old, or nearly 10 percent of its present age. [Transcript Link](#)

Despite their youth, these far-flung blazars host some of the most massive black holes known. That they developed so early in cosmic history challenges current ideas of how supermassive black holes form and grow. Blazars constitute roughly half of the gamma-ray sources detected by Fermis Large Area Telescope (LAT). Astronomers think their high-energy emissions are powered by matter heated and torn apart as it falls from a storage, or accretion, disk toward a supermassive black hole with a million or more times the sun's mass. A small part of this infalling material becomes redirected into a pair of particle jets, which blast outward in opposite directions at nearly the speed of light.

Blazars appear bright in all forms of light, including gamma rays, the highest-energy light, when one of the jets happens to point almost directly toward us. Previously, the most distant blazars detected by Fermi emitted their light when the universe was about 2.1 billion years old. Earlier observations showed that the most distant blazars produce most of their light at energies right in between the range detected by the LAT and current X-ray satellites, which made finding them extremely difficult.

2017 01 30 NASA Goddard <https://youtu.be/BdTTSyIIHYQ> Fermi Sees Gamma Rays from Far Side Solar Flares An international science team says NASA's Fermi Gamma-ray Space Telescope has observed high-energy light from solar eruptions located on the far side of the sun, which should block direct light from these events. This apparent paradox is providing solar scientists with a unique tool for exploring how charged particles are accelerated to nearly the speed of light and move across the sun during solar flares. [Transcript Link](#)

Fermi has seen gamma rays from the Earth-facing side of the sun, but the emission is produced by streams of particles blasted out of solar flares on the far side. These particles must travel some 300,000 miles within about five minutes of the eruption to produce this light. Fermi has doubled the number of these rare events, called behind-the-limb flares, since it began scanning the sky in 2008. Its Large Area Telescope (LAT) has captured gamma rays with energies reaching 3 billion electron volts, some 30 times greater than the most energetic light previously associated with these "hidden" flares.

Thanks to NASAs Solar Terrestrial Relations Observatory (STEREO) spacecraft, which were monitoring the solar far side when the eruptions occurred, the Fermi events mark the first time scientists have direct imaging of beyond-the-limb solar flares associated with high-energy gamma rays. The hidden flares occurred Oct. 11, 2013, and Jan. 6 and Sept. 1, 2014. All three events were associated with fast coronal mass ejections (CMEs), where billion-ton clouds of solar plasma were launched into space. The CME from the most recent

2017 01 25	NASA Goddard	https://youtu.be/1pSDgAbRGVQ	NASA Uses CATS to Study Air Pollution	NASA is measuring air pollution with a laser called CATS, the Cloud Aerosol Transport System. Mounted on the International Space Station about 249 miles above Earth, CATS makes observations about the transport of aerosols by looking through vertical slices of the atmosphere. CATS data helps scientists improve climate models and monitor near-real-time events on Earth, including pollution, volcanoes, wildfires and more. Credit: NASA's Goddard Space Flight Center/Michael Starobin This video is public domain. If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link
2017 01 24	NASA Goddard	https://youtu.be/rXvmF5hgyPE	NASA Partners with Jane Goodall Institute to Protect Chimpanzees	Data from Landsat satellites, a joint mission of NASA and the U.S. Geological Survey, have been critical to helping the Jane Goodall Institute in their work to protect chimpanzees and their habitat. In this video, Goodall and JGI scientist Lilian Pintea discuss the transformational role of seeing changing habitats from above. Read more: https://www.nasa.gov/feature/goddard/2017/satellite-data-changed-chimpanzee-conservation-efforts Credit: NASA's Goddard Space Flight Center/Jefferson Beck, producer This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12487 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/	Transcript Link

2017 01 18 NASA Goddard <https://youtu.be/3Uv26dlgaKs> How NASA Scientists Measure Global Temperatures

Earth's 2016 surface temperatures were the warmest since modern record keeping began in 1880, according to independent analyses by NASA and the National Oceanic and Atmospheric Administration (NOAA). NASA scientists analyze data from 6300 weather stations, sea surface temperature measurements and Antarctic research stations — all to determine how the average surface temperature is changing.

[Transcript Link](#)

Credit: NASA's Goddard Space Flight Center/Jenny Hottle and Clare Skelly

Music, Face Time via Killer Tracks.

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2017 01 18 NASA Goddard <https://youtu.be/s3RWTtPg8E> NASA's Analysis of 2016 Global Temperature

2016 was the hottest year on record, continuing a decades-long warming trend. Scientists at NASA's Goddard Institute for Space Studies (GISS) analyzed measurements from 6,300 locations and found that Earth's average surface temperature has risen about 2.0 degrees Fahrenheit (1.1 degrees Celsius) since the late-19th century, largely a result of human emissions into the atmosphere.

[Transcript Link](#)

Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann

Music credit: In Dreams We Trust by Chris White [PRS] and Guy Hatfield [PRS]

For more information: <http://go.nasa.gov/2016climate>

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2017 01 12	NASA Goddard	https://youtu.be/ZYpCVX6M_c	NASA to Explore Volcanoes, Coral Reefs, and Snowpacks	2016 was a big year for NASA's field campaigns studying our changing planet, and 2017 will be just as exciting. New Earth science missions include HyspIRI, which will collect data on coral reef health and volcanic gas emissions; PACE, which will monitor the diversity of oceanic phytoplankton and their impact on the marine carbon cycle; and SnowEx, which will help determine how much water is stored in Earth's terrestrial snow-covered regions. Credit: NASA's Goddard Space Flight Center/Jefferson Beck This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12482 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link
2016 12 30	NASA Goddard	https://youtu.be/QJh2GiSd0NY	Hubble Humanity's Quest for Knowledge	Launched on April 24, 1990, the Hubble Space Telescope has provided more than a million observations, advancing studies of the solar system, nebulae, exoplanets, stars, black holes, galaxies, dark matter, and dark energy. The culmination of decades of human ingenuity, the Hubble Space Telescope remains at peak performance and continues humanity's quest for knowledge. Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music Credits: "Interstellar Travel" by JC Lemay [SACEM] and Laurent Dury [SACEM]; Koka Media SACEM, Universal Publishing Production Music (France) SACEM; Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12472 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/	Transcript Link

2016 12 29	NASA Goddard	https://youtu.be/0gTPvLeDmU8	NASA Goddard's 2016 Mixtape	NASA's Goddard Space Flight Center in Greenbelt, Maryland, is home to the nation's largest organization of scientists, engineers and technologists who build spacecraft, instruments and new technology to study Earth, the sun, our solar system and the universe. NASA Goddard's rewind is just a small sampling of the center's highlights and memorable moments. We hope you enjoy looking back over a memorable year of observations, discoveries and milestones! We look forward to bringing you lots of new science in 2017! Credit: NASA's Goddard Space Flight Center/Clare Skelly, Jenny Hottle and Rebecca Roth Music, Illuminating via Killertracks. This video is public domain and can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12473 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link
2016 12 29	NASA Goddard	https://youtu.be/tlBFmVmEE8	Goddard NASA's Top-Ranked Center Workplace for 2016	In December 2016, NASA was named the "Best Place to Work" among large agencies in the federal government for the fifth year in a row. The agency's Goddard Space Flight Center ranked No. 1 within NASA (No. 10 among 305 overall agency subcomponents across the federal government). The Partnership for Public Service ranks nearly 400 federal organizations each year (via the Employee Viewpoint Survey) by overall employee satisfaction and commitment. It also evaluates key workplace focus areas such as innovation, training and development, leadership and diversity. Credit: NASA's Goddard Space Flight Center/Clare Skelly and Jenny Hottle, producers This video is public domain and can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12474 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link

2016 12 22	NASA Goddard	https://youtu.be/WTowA5h7n5s	Moon Phases 2017 – Southern Hemisphere - 4K	This 4K visualization shows the moon's phase and libration at hourly intervals throughout 2017, as viewed from the Southern Hemisphere. Each frame represents one hour. In addition, this visualization shows the moon's orbit position, sub-Earth and subsolar points, distance from the Earth at true scale, and labels of craters near the terminator. Production music provided by Killer Tracks. To learn more about this visualization, or to see what the moon will look like at any hour in 2017, visit our "Dial A-Moon" website: http://svs.gsfc.nasa.gov/4538 Production music provided by Killer Tracks. Credit: NASA's Goddard Space Flight Center/David Ladd If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2016 12 22	NASA Goddard	https://youtu.be/gv65Orsh6LM	Moon Phases 2017 – Northern Hemisphere – 4K	This 4K visualization shows the moon's phase and libration at hourly intervals throughout 2017, as viewed from the Northern Hemisphere. Each frame represents one hour. In addition, this visualization shows the moon's orbit position, sub-Earth and subsolar points, distance from the Earth at true scale, and labels of craters near the terminator. Production music provided by Killer Tracks. To learn more about this visualization, or to see what the moon will look like at any hour in 2017, visit our "Dial A-Moon" website: http://svs.gsfc.nasa.gov/4537 Credit: NASA's Goddard Space Flight Center/David Ladd If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center - Facebook: http://www.facebook.com/NASA.GSFC - Twitter http://twitter.com/NASAGoddard	Transcript Link

2016 12 15 NASA Goddard <https://youtu.be/qzIR3kBCLYM> Cold Neptunes An Exoplanet Sweet Spot

A new statistical study of planets found by a technique called gravitational microlensing suggests that Neptune-mass worlds are likely the most common type of planet to form in the icy outer realms of planetary systems. The study provides the first indication of the types of planets waiting to be found far from a host star, where scientists suspect planets form most efficiently. Contrary to some theoretical predictions, the most numerous cold exoplanets have masses similar to Neptune, and there doesn't seem to be the expected increase in number at lower masses.

[Transcript](#)
[Link](#)

Lead scientist Daisuke Suzuki, a post-doctoral researcher at NASA's Goddard Space Flight Center in Greenbelt, Maryland, infer this from current detections. The team concludes that Neptune-mass planets in outer orbits are about 10 times more common than Jupiter-mass planets in Jupiter-like orbits. Gravitational microlensing takes advantage of the light-bending effects of massive objects predicted by Einstein's general theory of relativity. It occurs when a foreground star, the lens, randomly aligns with a distant background star, the source, as seen from Earth.

As the lensing star drifts along in its orbit around the galaxy, the alignment shifts over days to weeks, changing the apparent brightness of the source. The precise pattern of these changes provides astronomers with clues about the nature of the lensing star, including any planets it may host. Typically, the technique provides the mass ratio of the planet to the host star and their separation. Microlensing holds great potential. It can detect planets

2016 12 15 NASA Goddard <https://youtu.be/RgS8bQn7LZY> NASA Named Best Place to Work; Goddard No. 1 within Agency

NASA has been named the "Best Place to Work" among large agencies in the federal government for the fifth year in a row, and the agency's Goddard Space Flight Center ranked No. 1 within NASA (No. 10 among 305 overall agency subcomponents across the federal government).

[Transcript](#)
[Link](#)

The rankings are a result of the Employee Viewpoint Survey (EVS) and are published by the Partnership for Public Service. It ranks nearly 400 federal organizations by overall employee satisfaction and commitment and also evaluates key workplace focus areas such as innovation, training and development, leadership and diversity.

Credit: NASA's Goddard Space Flight Center/Clare Skelly and Jenny Hottle

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2016 12 14	NASA Goddard	https://youtu.be/MJgXa-gW3md8	Tracing the 2017 Solar Eclipse	When depicting an eclipse path, data visualizers have usually chosen to represent the moon's shadow as an oval. By bringing in a variety of NASA data sets, visualizer Ernie Wright has created a new and more accurate representation of the eclipse. For the first time, we are able to see that the moon's shadow is better represented as a polygon. This more complicated shape is based NASA's Lunar Reconnaissance Orbiter's view of the mountains and valleys that form the moon's jagged edge. By combining moon's terrain, heights of land forms on Earth, and the angle of the sun, Wright is able to show the eclipse path with the greatest accuracy to date. Credit: NASA's Goddard Space Flight Center/Genna Duberstein Music: Life Choices by Eric Chevalier For more information: http://eclipse2017.nasa.gov/ This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12412 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Or subscribe to NASA's Goddard Shorts HD Podcast:	Transcript Link
2016 12 13	NASA Goddard	https://youtu.be/syU1rR-Cp7E8	Following Carbon Dioxide Through the Atmosphere	Carbon dioxide plays a significant role in trapping heat in Earth's atmosphere. The gas is released from human activities like burning fossil fuels, and the concentration of carbon dioxide moves and changes through the seasons. Using observations from NASA's Orbiting Carbon Observatory (OCO-2) satellite, scientists developed a model of the behavior of carbon in the atmosphere from Sept. 1, 2014, to Aug. 31, 2015. Scientists can use models like this one to better understand and predict where concentrations of carbon dioxide could be especially high or low, based on activity on the ground. Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann & Matthew Radcliff Music: "Life Cycles" by Theo Golding [PRS] For more information: https://www.nasa.gov/feature/goddard/2016/eye-popping-view-of-co2-critical-step-for-carbon-cycle-science This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12445 If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2016 12 12 NASA Goddard <https://youtu.be/SgGPDtAmRZE> Tracking Ocean Heat With Magnetic Fields

As Earth warms, much of the extra heat is stored in the planet's ocean – but monitoring the magnitude of that heat content is a difficult task.

[Transcript Link](#)

A surprising feature of the tides could help, however. Scientists at NASA's Goddard Space Flight Center in Greenbelt, Maryland, are developing a new way to use satellite observations of magnetic fields to measure heat stored in the ocean.

The method depends on several geophysical features of the ocean. Seawater is a good electrical conductor, so as the saltwater sloshes around the ocean basins it causes slight fluctuations in Earth's magnetic field lines. The ocean flow attempts to drag the field lines along. The resulting magnetic fluctuations are relatively small, but have been detected from an increasing number of events including swell, eddies, tsunamis, and tides. The magnetic fluctuations of the tides depend on the electrical conductivity of the water – and the electrical conductivity of the water depends on its temperature.

This new method could be the first to provide global ocean heat measurements, integrated over all depths, using satellite observations.

Read more: <https://www.nasa.gov/feature/goddard/2016/earth-s-magnetic-fields-could-track-ocean-heat-nasa-study-proposes>

Credit: NASA's Goddard Space flight Center/Matthew Radcliff

2016 12 12 NASA Goddard <https://youtu.be/JaBnNdyH4k4> Ocean Tides and Magnetic Fields

Seawater is an electrical conductor, and therefore interacts with Earth's magnetic field. As the tides cycle around the ocean basins, the ocean water essentially tries to pull the geomagnetic field lines along.

[Transcript Link](#)

Because the salty water is a good, but not great, conductor, the interaction is relatively weak.

The strength of the interaction depends on the temperature of the ocean water, and scientists at NASA's Goddard Space Flight Center are developing improved methods to isolate the signal from ocean tides and use that information to determine the heat content of the ocean.

Read more: <https://www.nasa.gov/feature/goddard/2016/earth-s-magnetic-fields-could-track-ocean-heat-nasa-study-proposes>

Credit: NASA's Goddard Space Flight Center/Matthew Radcliff

Music Credits: "Memory Of A Lifetime" by J Ehrlich [SESAC], Jean-Christophe Beck [BMI]

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2016 12 12	NASA Goddard	https://youtu.be/EahIP3Qa7QY	Landsat's Global View of Ice Velocity	Ice from glaciers constantly flows into the ocean, but the speed the ice moves at changes. Landsat 8 provides near-real-time mapping of ice speed in nearly all the world's frozen regions. Information like ice speed helps scientists study our home planet and its vulnerability to rising seas. Credit: NASA's Goddard Space Flight Center/Katy Mersmann Music: Tiny Worlds by Christian Telford [ASCAP], David Travis Edwards [ASCAP], Matthew St Laurent [ASCAP], Robert Anthony Navarro [ASCAP] For more information: https://www.nasa.gov/feature/goddard/2016/nasa-usgs-landsat-8-satellite-provides-global-view-of-speed-of-ice This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12444 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEexplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center	Transcript Link
2016 12 07	NASA Goddard	https://youtu.be/QtlgmSa8F20	OSIRIS-REx Tech – Taking Pictures of an Asteroid	NASA is sending the OSIRIS-REx spacecraft to explore near-Earth asteroid Bennu, a carbon-rich body that may contain clues to the origins of life. When OSIRIS-REx arrives at Bennu in 2018, it will spend over a year orbiting the asteroid and studying it with a set of remote sensing instruments. The OSIRIS-REx Camera Suite, or OCAMS, will provide high-resolution images of Bennu, allowing OSIRIS-REx to map the asteroid, determine its mineralogy, and even take close-up pictures of the surface at less than a centimeter per pixel. After OCAMS and its fellow instruments have thoroughly surveyed Bennu, OSIRIS-REx will carry out its most important task: collecting a sample of the asteroid for return to Earth in 2023. Read more: https://www.nasa.gov/feature/goddard/2016/nasa-scientists-see-asteroid-through-the-eyes-of-a-robot/ Credit: NASA's Goddard Space Flight Center/Dan Gallagher Music Credits: "Ultimate Question" and "Victory Or Failure" by Guy & Zab Skornik [SACEM] This video and its supporting visualizations are public domain, and can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12443 This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12443 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEexplorer	Transcript Link

2016 11 18	NASA Goddard	https://youtu.be/v3yMHHzLTCc	IceBridge Flies 300 Hours of Antarctic Science Flights	Flying low over the Earth's southernmost continent, Operation IceBridge is wrapping up its eighth consecutive field season of mapping the ice sheet and glaciers of Antarctica, as well as the surrounding sea ice. With more than 300 hours logged in the air over 24 science flights, the mission is considering 2016 one of the most successful seasons yet. Read more: http://go.nasa.gov/2g44QfR Credit: NASA's Goddard Space Flight Center/Jefferson Beck If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/	Transcript Link
2016 11 16	NASA Goddard	https://youtu.be/8GiFXDmPWfQ	Climate Resilience	Researchers and city officials from two of the world's major metropolises, New York City and Rio de Janeiro, are coming together to share their insights and solutions against specific climate risks afflicting both their cities— sea level rise, increased temperatures and changes in water quality. Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann Music credit: Eternal Circle by Laurent Dury [SACEM] This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12426 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2016 11 14	NASA Goddard	https://youtu.be/MhF9nLdZ7ZY	Warm Winter Cyclone Damaged Arctic Sea Ice Pack	A large cyclone that crossed the Arctic in December 2015 brought so much heat and humidity to this otherwise frigid environment that it thinned and shrunk the sea ice cover during a time when the ice should have been growing. Read more: http://www.nasa.gov/feature/goddard/2016/extremely-warm-2015-16-winter-cyclone-weakened-arctic-sea-ice-pack Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann, producer This video is public domain and may be downloaded at: http://svs.gsfc.nasa.gov/12421 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/	Transcript Link
2016 11 09	NASA Goddard	https://youtu.be/tTEQMEmI3Pc	Showstopper Nov. 14 Supermoon Is the Closest Moon to Earth Since 1948	The moon is a familiar sight, but the days leading up to Monday, Nov. 14, promise a spectacular supermoon show. When a full moon makes its closest pass to Earth in its orbit it appears up to 14 percent bigger and 30 percent brighter, making it a supermoon. This month's is especially 'super' for two reasons: it is the only supermoon this year to be completely full, and it is the closest moon to Earth since 1948. The moon won't be this super again until 2034! Credit: NASA Goddard/Clare Skelly This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12404 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard	Transcript Link

2016 11 07	NASA Goddard	https://youtu.be/Z2nZSrSnbE	Small Sats are the Next Big Thing	NASA is about to launch six new next-generation Earth-observing small satellites — some as small as a loaf of bread. These tiny spacecraft are helping to foster creative and cost-effective approaches to studying our planet. For more on NASA's small satellite program: http://www.nasa.gov/press-release/nasa-to-hold-media-call-on-new-small-satellite-missions-to-study-earth Credit: NASA's Goddard Space Flight Center/Jefferson Beck This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12411 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/	Transcript Link
2016 11 04	NASA Goddard	https://youtu.be/JNE3YAirrG0	MMS Breaks World Record	MMS now holds the Guinness World Record for highest altitude GPS fix — 43,500 miles above Earth's surface. Credit: NASA's Goddard Space Flight Center/Genna Duberstein, producer This video is public domain and along with other supporting visualizations can be downloaded from NASA Goddard's Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12405 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2016 11 02	NASA Goddard	https://youtu.be/r1ybe4yr2no	Webb Telescope Milestone Completion of Telescope Element	Thousands of people, for almost two decades, accomplished the construction of the telescope element of the largest space telescope ever created. The optical and science segment of the James Webb Space Telescope stands complete in one of the largest cleanrooms in the world, located at NASA's Goddard Space Flight Center.	Transcript Link
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2016 10 28	NASA Goddard	https://youtu.be/Vj1G9gghkYA	Older Arctic Sea Ice Disappearing	Arctic sea ice has not only been shrinking in surface area in recent years, it's becoming younger and thinner as well. In this animation, where the ice cover almost looks gelatinous as it pulses through the seasons, cryospheric scientist Dr. Walt Meier of NASA Goddard Space Flight Center describes how the sea ice has undergone fundamental changes during the era of satellite measurements.	Transcript Link
Editor's note: This visualization incorrectly identifies the oldest ice as being 5+ years old, when it would be more accurate to say 4+ years old. An updated version of this visualization can be downloaded in HD here: http://svs.gsfc.nasa.gov/4510 Credit: NASA's Goddard Space Flight Center/Jefferson Beck Read more: https://www.nasa.gov/feature/goddard/2016/arctic-sea-ice-is-losing-its-bulwark-against-warming-summers This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/4510 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html					

2016 10 27	NASA Goddard	https://youtu.be/kimszroryKs	NASA's Kepler, Swift Missions Harvest 'Pumpkin' Stars	Astronomers using observations from NASA's Kepler and Swift missions have discovered a group of rapidly spinning stars that produce X-rays at more than 100 times the peak levels ever seen from the sun. The stars, which spin so fast they've been squashed into pumpkin-like shapes, are thought to be the result of close binary systems where two sun-like stars merge.	Transcript Link

The 18 stars rotate in just a few days, on average, compared to the sun's nearly one month rotation. Their rapid rotation greatly amplifies the same kind of activity we see on the sun, such as sunspots and solar flares, resulting in enhanced X-ray output.

The most extreme member of the group, a K-type orange giant dubbed KSw 71, is more than 10 times larger than the sun, rotates in just 5.5 days, and produces X-ray emission 4,000 times greater than the sun does at solar maximum.

These rare stars were found as part of an X-ray survey of the original Kepler field of view. From 2009 to 2013, Kepler measured the brightness of more than 150,000 stars in a single patch of the sky to detect the regular dimming from planets passing in front of their host stars. The mission was immensely successful and continues on as the K2 mission, studying other parts of the sky.

Because the original field has been studied so well by Kepler and other missions, it is now one of the best-known parts of the sky. Astronomers decided to observe portions of the field using the X-

2016 10 25	NASA Goddard	https://youtu.be/eHOjzuQFAjk	2016 Antarctic Ozone Hole Meets Scientist Expectations	The hole in Earth's ozone layer that forms over Antarctica each September grew to about 8.9 million square miles in 2016 before starting to recover, according to scientists from NASA and the National Oceanic and Atmospheric Administration (NOAA) who monitor the annual phenomenon.	Transcript Link

Credit: NASA's Goddard Space flight Center/Katy Mersmann

Music credit: Hope and Future by Brice Devoli [SACEM]

Read more: <http://www.nasa.gov/feature/Goddard/2016/antarctic-ozone-hole-attains-moderate-size>

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2016 10 25 NASA Goddard <https://youtu.be/qR6JLMZOOYA> 3D 4k for STEREO's 10th Anniversary

This 3-D video can be seen with red and cyan 3-D paper glasses.

[Transcript](#)
[Link](#)

Launched ten years ago, on Oct. 25, 2006, the twin spacecraft of NASA's STEREO mission – short for Solar and Terrestrial Relations Observatory – have given us unprecedented views of the sun.

In 2007, STEREO provided the first multi-viewpoint images of the sun. For the first time, scientists were able to see structures in the sun's atmosphere in three dimensions. Then, in 2011, they gave us the first-ever simultaneous view of the entire star at once. This kind of comprehensive data is key to understanding how the sun erupts with things like coronal mass ejections and energetic particles, as well as how those events move through space, sometimes impacting Earth and other worlds. Ten years ago, the twin STEREO spacecraft joined a fleet of NASA spacecraft keeping an eye on the sun and its influence on Earth and space – but they provided a new and unique perspective.

The two STEREO observatories, called STEREO-A and STEREO-B – for Ahead and Behind, respectively – were sent out from Earth in opposite directions. Using gravitational assists from both the moon and Earth, the STEREO spacecraft were accelerated to Earth-escape velocities. STEREO-A was inserted into an orbit slightly smaller, and therefore faster, than Earth's. For STEREO-B, the reverse happened: It was nudged into an orbit slightly larger than Earth's so that it traveled around the sun more slowly, falling increasingly behind the Earth. As the spacecraft slowly fanned out away from the centerline

2016 10 25 NASA Goddard <https://youtu.be/6CQ5w54fmFU> STEREO Mission Turns 10

Launched ten years ago, on Oct. 25, 2006, the twin spacecraft of NASA's STEREO mission – short for Solar and Terrestrial Relations Observatory – have given us unprecedented views of the sun, including the first-ever simultaneous view of the entire star at once. This kind of comprehensive data is key to understanding how the sun erupts with things like coronal mass ejections and energetic particles, as well as how those events move through space, sometimes impacting Earth and other worlds. Ten years ago, the twin STEREO spacecraft joined a fleet of NASA spacecraft monitoring the sun and its influence on Earth and space – and they provided a new and unique perspective.

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For STEREO's 10th anniversary, Deputy Project Scientist Terry Kucera gives an overview of the mission's top 5 success stories.

2016 10 20 NASA Goddard <https://youtu.be/ttOHhnBwukU> What is GOES-R

The GOES-R series, NOAA's next-generation geostationary weather satellites, is a game changer. These satellites will provide continuous imagery and atmospheric measurements of Earth's Western Hemisphere, total lightning data, and space weather monitoring to provide critical atmospheric, hydrologic, oceanic, climatic, solar and space data.

[Transcript Link](#)

These measurements will lead to significant improvements in the detection and observations of meteorological phenomena that directly affect public safety, protection of property and our GOES fleet in the GOES-R era nation's economic health and prosperity.

Credit: NASA's Goddard Space Flight Center/Michael Starobin

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2016 10 09 NASA Goddard <https://youtu.be/0dvCF3dS4Zl> Titan Tours

NASA Goddard interns take you on a fanciful futuristic tour of Saturn's moon - Titan.

[Transcript Link](#)

Credit: NASA's Goddard Space Flight Center/Connor Nixon

For more information: <http://www.nasa.gov/subject/3163/titan/>

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2016 10 08	NASA Goddard	https://youtu.be/0mIDkTPCbQM	NASA Satellite Captures 3-D View of Hurricane Matthew	NASA's Precipitation Measurement Missions' GPM core satellite captured Hurricane Matthew in 3-D as it made landfall on Haiti and as it traveled up to the Florida coast. The Global Precipitation Measurement Mission or GPM flew directly over the storm several times between October 2 - October 6, 2016. The view on October 6 reveals massive amounts of rainfall being produced by the storm as it approaches Florida. The GPM core satellite carries two instruments that show the location and intensity of rain and snow, which defines a crucial part of the storm structure – and how it will behave. The GPM Microwave Imager sees through the tops of clouds to observe how much and where precipitation occurs, and the Dual-frequency Precipitation Radar observes precise details of precipitation in 3-dimensions. Credit: NASA's Goddard Space Flight Center/Joy Ng Music: Diamond Skies by Andrew Skeet [PRS], Anthony Phillips [PRS] from the KillerTracks catalog For more information: http://www.nasa.gov/matthew This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12389	Transcript Link
2016 10 07	NASA Goddard	https://youtu.be/UyJiwy7YMkM	NASA's 3D View Shows Hurricane Matthew's Intensity	Scientists use satellite data to peer into the massive storm – learning how and why it changed throughout its course. http://www.nasa.gov/matthew Credit: NASA's Goddard Space Flight Center/Clare Skelly This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12387 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/	Transcript Link

2016 10 04	NASA Goddard	https://youtu.be/PPB1ZHb9FKA	Javier Colon & Matt Cusson The Moon and More (NASA Collaboration)	"The Moon and More" is a music video starring musicians Javier Colon (Season 1 winner of NBC's "The Voice"), and Matt Cusson in collaboration with NASA's Goddard Space Flight Center and the Lunar Reconnaissance Orbiter (LRO) mission. Credit: NASA's Goddard Space Flight Center/David Ladd Music: "The Moon and More" - Written, produced, and performed by Javier Colon and Matt Cusson, Bass by Uriah Duffy. Audio Mix & Mastering by Jack Deboe. Javier Colon appears courtesy of Concord Records For more information: http://www.nasa.gov/feature/goddard/2016/lro-presents-the-moon-and-more This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12366 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center	Transcript Link
2016 09 29	NASA Goddard	https://youtu.be/38aw4HMjlag	NASA's Fermi Finds Record-breaking Binary Star	Using data from NASA's Fermi Gamma-ray Space Telescope and other facilities, scientists have found the first gamma-ray binary in another galaxy and the most luminous one ever seen. The dual-star system, dubbed LMC P3, contains a massive star and a crushed stellar core that interact to produce a cyclic flood of gamma rays, the highest-energy form of light. Gamma-ray binaries are rare -- only six are known in our own galaxy, and one remains undetected by Fermi. The systems are prized because their gamma-ray output changes significantly during each orbit and sometimes over longer time scales. This variation lets astronomers study many of the emission processes common to other gamma-ray sources in unique detail. The systems contain either a neutron star or a black hole and radiate most of their energy in the form of gamma rays. Remarkably, LMC P3 is the most luminous such system known in gamma rays, X-rays, radio waves and visible light, and it's only the second one discovered with Fermi. LMC P3 lies within a supernova remnant located in the Large Magellanic Cloud (LMC), a small nearby galaxy about 163,000 light-years away. In 2012, scientists using NASA's Chandra X-ray Observatory found a strong X-ray source within the remnant and showed that it was orbiting a hot, young star many times the sun's mass. The researchers concluded the compact object was either a neutron star or a black hole and classified the system as a high-mass	Transcript Link

2016 09 28	NASA Goddard	https://youtu.be/OY_1kbqUvqM	NASA Explores High-Energy Rainfall in the Atmosphere	Our planet is nestled in the center of two doughnut-shaped regions of powerful, dynamic radiation: the Van Allen belts, where high-energy particles are trapped by Earth's magnetic field. Depending on incoming radiation from the sun, they can gain energetic particles. On the other hand, the belts can lose energized particles too. On Jan. 17, 2013, NASA's Van Allen Probes were in just the right position to watch the belts dramatically lose energized particles and resolve a long-standing question as to how the lower region of the belts close to Earth loses these particles. A team led by Yuri Shprits of University of California in Los Angeles published a paper summarizing these findings. Research: Wave-induced loss of ultra-relativistic electrons in the Van Allen radiation belts Journal: Nature Communications, September 28, 2016 Link to paper: http://www.nature.com/articles/ncomms12883 If you like this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/goddardtv Credit: NASA/Joy Ng/Martin Rother/GFZ-Potsdam Music Credits: Translucent Nature by Anthony Phillips [PRS], Samuel Karl Bohn [PRS] from the KillerTracks catalog	Transcript Link
2016 09 26	NASA Goddard	https://youtu.be/4QJS9LcB66g	Hubble Directly Images Possible Plumes on Europa	NASA's Hubble Space Telescope took direct ultraviolet images of the icy moon Europa transiting across the disk of Jupiter. Out of ten observations, Hubble saw what may be water vapor plumes on three of the images. This adds another piece of supporting evidence to the existence of water vapor plumes on Europa - Hubble also detected spectroscopic signatures of water vapor in 2012. The existence of water vapor plumes could provide a future Europa flyby mission the opportunity to study the conditions and habitability of Europa's subsurface ocean. Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music: "Next Generation" by Enrico Cacace [BMI]; Atmosphere Music Ltd PRS; Volta Music; Killer Tracks Production Music For more information: http://www.nasa.gov/press-release/nasa-s-hubble-spots-possible-water-plumes-erupting-on-jupiters-moon-europa Read the science paper at http://hubblesite.org/pubinfo/pdf/2016/33/pdf.pdf This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization	Transcript Link

2016 09 26 NASA Goddard <https://youtu.be/sUdSqHyzgQ0> Javier Colon Matt Cusson - NASA Project Promo On October 3, 2016 - NASA launches a music video with Javier Colon (season 1 winner of "The Voice"), musician Matt Cusson and NASA's Lunar Reconnaissance Mission. 'The Moon and More,' coming soon! [Transcript](#) [Link](#)

2016 09 23 NASA Goddard <https://youtu.be/alzgtD2Pbcl> Sounding Rocket Solves One Cosmic Mystery, Reveals Another Read more: <http://go.nasa.gov/2cz0Kty> [Transcript](#) [Link](#)

In the last century, humans realized that space is filled with types of light we can't see – from infrared signals released by hot stars and galaxies, to the cosmic microwave background that comes from every corner of the universe. Some of this invisible light that fills space takes the form of X-rays, the source of which has been hotly contended over the past few decades.

It wasn't until the flight of the DXL sounding rocket, short for Diffuse X-ray emission from the Local galaxy, that scientists had concrete answers about the X-rays' sources. In a new study, published Sept. 23, 2016, in the Astrophysical Journal, DXL's data confirms some of our ideas about where these X-rays come from, in turn strengthening our understanding of our solar neighborhood's early history. But it also reveals a new mystery – an entire group of X-rays that don't come from any known source.

Image caption: NASA-funded researchers sent a sounding rocket through the sun's dense helium wake, called the helium-focusing cone, to understand the origin of certain X-rays in space. (Conceptual graphic not to scale.)

The two known sources of X-ray emission are the solar wind, the sea of solar material that fills the solar system, and the Local Hot Bubble, a theorized area of hot interstellar material that surrounds our solar system. Read more: <http://go.nasa.gov/2cz0Kty>

2016 09 20	NASA Goddard	https://youtu.be/l1vFDwgnXxE	WFIRST Uncovering the Mysteries of the Universe—Update d 4k version	WFIRST, the Wide Field InfraRed Survey Telescope, is a NASA observatory designed to settle essential questions in the areas of dark energy, exoplanets, and infrared astrophysics. The telescope has a primary mirror that is 2.4 meters in diameter (7.9 feet), and is the same size as the Hubble Space Telescope's primary mirror. WFIRST will have two instruments, the Wide Field Instrument, and the Coronagraph Instrument. The Wide Field Instrument will have a field of view that is 100 times greater than the Hubble infrared instrument, capturing more of the sky with less observing time. As the primary instrument, the Wide Field Instrument will measure light from a billion galaxies over the course of the mission lifetime. It will perform a microlensing survey of the inner Milky Way to find ~2,600 exoplanets. The Coronagraph Instrument will perform high contrast imaging and spectroscopy of dozens of individual nearby exoplanets. WFIRST is designed for a 6 year mission, and will launch on a EELV out of Cape Canaveral. More info: http://wfirst.gsfc.nasa.gov/ Credit: NASA's Goddard Space Flight Center/Scott Wiessinger This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/11553	Transcript Link
2016 09 19	NASA Goddard	https://youtu.be/arzLaVg6yU0	Javier Colon - NASA Project (Teaser)	The season 1 winner of NBC's "The Voice," Javier Colon, and fellow musician Matt Cusson team up with NASA. More details coming soon!	Transcript Link
2016 09 19	NASA Goddard	https://youtu.be/1raUKv0MYZY	Matt Cusson - NASA Project (Teaser)	The season 1 winner of NBC's "The Voice," Javier Colon, and fellow musician Matt Cusson team up with NASA. More details coming soon!	Transcript Link

2016 09 09 NASA Goddard <https://youtu.be/WAErQ19B1zs> ATom Postcard -
Punta Arenas to Atmospheric scientist Róisín Commane and Principal Investigator
Ascension Island Steven Wofsy both of Harvard University sent back a video postcard
from the Atlantic legs of the Atmospheric Tomography, or ATom,
mission. The science team left Christchurch, New Zealand, and
traveled past Antarctica to Punta Arenas, Chile, at the bottom of the
world. Then they went up the Atlantic Ocean to Ascension Island,
just south of the equator. This is the third of four video postcards.

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The ATom mission aboard NASA's DC-8 aircraft and flying laboratory is sampling world-wide in one of the most extensive surveys of the atmosphere to date, measuring over 200 gases as well as airborne particles. The science team is particularly interested in methane, tropospheric ozone and black carbon particles, which have strong effects on climate and which all have both human and natural origins.

Credit: NASA's Goddard Space flight Center/Matthew Radcliff

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2016 09 09 NASA Goddard <https://youtu.be/xhjEhQHS2FU> Rocket-Lovers
Watch OSIRIS-REx OSIRIS-REx
Launch Launch

OSIRIS-REx launched Thursday, September 8 at 7:05PM on an Atlas V rocket on a journey to study asteroid Bennu and return a sample to Earth. Thousands of visitors watched the launch, some of whom were part of a NASA Social event.

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Music credit: "In the Bag" by Rob Bagshaw [PRS]; Sound Pocket Music; Killer Tracks Production Music

Credit: NASA's Goddard Space Flight Center/Katrina Jackson

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2016 09 09	NASA Goddard	https://youtu.be/iU9Fvo32p7E	ATom Postcard - Azore Islands to Kangerlussuaq	Atmospheric scientists Bernadett Weinzierl of the University of Vienna, Paul Newman of Goddard Space Flight Center, and Róisín Commane of Harvard University sent back a video postcard from the last three legs of the Atmospheric Tomography, or ATom mission. Departing Ascension Island in the tropics, the science team traveled up the Atlantic to Terceira Island in the Azores off the coast of Portugal, and then back to the Arctic by way of Kangerlussuaq, Greenland. Finally the team crossed North America to return home to Palmdale, California. This is the fourth of four video postcards. The ATom mission aboard NASA's DC-8 aircraft and flying laboratory is sampling world-wide in one of the most extensive surveys of the atmosphere to date, measuring over 200 gases as well as airborne particles. The science team is particularly interested in methane, tropospheric ozone and black carbon particles, which have strong effects on climate and which all have both human and natural origins. Credit: NASA's Goddard Space Flight Center/Matt Radcliff This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12355 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEexplorer Or subscribe to NASA's Goddard Shorts HD Podcast:	Transcript Link
2016 09 09	NASA Goddard	https://youtu.be/cF80LFeb8eI	2016 Planetary Science Winter School	Brook Lakew, the Associate Director of Planning and R&D at NASA's Goddard Space Flight Center, has lead a variety of successful missions for NASA. But proposals are often rejected for failing to meet science, technical and cost requirements, a lesson Lakew has experienced. Lakew created the Planetary Science Winter School to transform young scientists into mission and instrument designers. The Winter School is a program for postdoctoral planetary scientists to participate in a proposed mission or instrument, in order to gain experience in the world of engineering and instrument design. The program takes place in the Integrated Design Center. Credit: NASA's Goddard Space flight Center/Sophia Roberts Music Credits: "Mesmeric Thoughts" by Andrew Michael Hewitt - Killer Tracks Production Music; "Mario Bava Sleeps In a Little Later Than He Expected To" by Chris Zabriskie - Free Music Archive; "Playtime in Paradise" by Sam Hooper - Killer Tracks Production Music This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12362 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEexplorer	Transcript Link

2016 09 07 NASA Goddard https://youtu.be/EokpCRgD_Ys Journey to Bennu Trailer [Transcript Link](#)

NASAs OSIRIS-REx spacecraft is on a mission to explore asteroid Bennu and return a sample to Earth. The OSIRIS-REx launch window opens on September 8, 2016, when the spacecraft begins its two-year journey to Bennu aboard an Atlas V rocket at Cape Canaveral, Florida. After arriving at Bennu in 2018, OSIRIS-REx will spend over a year exploring the asteroid before approaching its surface to grab a sample. This pristine material, formed at the dawn of the solar system, will be returned to Earth in 2023, providing clues to Bennus origins and our own. NASAs Goddard Space Flight Center in Greenbelt, Maryland, provides overall mission management, systems engineering and safety and mission assurance for OSIRIS-REx. Dante Lauretta is the missions principal investigator at the University of Arizona. Lockheed Martin Space Systems in Denver built the spacecraft. OSIRIS-REx is the third mission in NASAs New Frontiers Program. NASAs Marshall Space Flight Center in Huntsville, Alabama, manages New Frontiers for the agency's Science Mission Directorate in Washington. Official trailer for NASAs OSIRIS-REx mission to asteroid Bennu.

Credit: NASA's Goddard Space Flight Center/David Ladd

More information:

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2016 09 06 NASA Goddard <https://youtu.be/7IQDxm9oQWY> To Bennu and Back [Transcript Link](#)

NASA's latest New Frontiers mission, OSIRIS-REx, will venture to a near-Earth asteroid to discover clues about the unique resources asteroids hold, processes that affect asteroids' orbital paths and their potential for impacting Earth, and the origins of life in the solar system. In addition, OSIRIS-REx will collect a sample from the surface of the asteroid and return it to Earth for generations of scientists to study and analyze, making this the first American asteroid sample return mission and the largest sample returned from an extraterrestrial body since Apollo.

OSIRIS-REx's launch window opens September 8, 2016.

This is the journey #ToBennuAndBack.

Credit: NASA's Goddard Space Flight Center/Katrina Jackson

Music credits:

"Defenders of the Earth" and "Finding Gaia" by Daniel Jay Nielson [ASCAP]; Atmosphere Music Ltd PRS; Volta Music; Killer Tracks Production Music

More information: <https://www.nasa.gov/osiris-rex/>

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2016 09 02	NASA Goddard	https://youtu.be/yqQ3bvVQuD8	SDO Witnesses A Double Eclipse	Early in the morning of September, 1, 2016, NASA's Solar Dynamics Observatory, or SDO, caught both Earth and the moon passing in front of the sun. Credit: NASA's Goddard Space Flight Center/SDO/Joy Ng Read more: http://www.nasa.gov/feature/goddard/2016/nasa-s-sdo-witnesses-a-double-eclipse This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12292#42786 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ https://plus.google.com/+NASAGoddard	Transcript Link
2016 09 01	NASA Goddard	https://youtu.be/-6nxKqPIUkE	Young Cryovolcano on Ceres	Analysis of images from NASA's Dawn mission reveals that dwarf planet Ceres hosts an unexpectedly young cryovolcano that formed with the past billion years. Read the full NASA.gov story here: http://www.nasa.gov/feature/goddard/2016/ceres-cryo-volcano Read the full paper in Science here: [link] For more Ceres images and animations, visit the JPL Photojournal: http://photojournal.jpl.nasa.gov/keywords/dp?subselect=Target%3ACeres%3A Music credits: "Farewell to the King" by Richard Friedman [ASCAP]; Jefandyo Music SESAC; Killer Tracks Production Music "Out of Control" by Amanda Leigh Wilson [PRS] and Stephen William Cornish [PRS]; Atmosphere Music Ltd PRS; Killer Tracks Production Music "Seven Sitar" by Chris Constantinou [PRS] and Paul Frazer [PRS]; Killer Tracks BMI; Killer Tracks Production Music Credit: NASA's Goddard Space Flight Center/Katrina Jackson This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12346	Transcript Link

2016 09 01 NASA Goddard <https://youtu.be/caUVvGss5e4> ATom Mission interview clips — Jack Dibbs

Flying into "clean" air during #EarthExpedition ATom mission, Jack Dibbs of the University of New Hampshire explains what he expects to find on his aerosol filters as they travel to the remotest parts of the atmosphere. The ATom mission aboard NASA's DC-8 flying laboratory is sampling worldwide in one of the most extensive surveys of the atmosphere to date, measuring over 200 gases as well as airborne particles. The science team is particularly interested in methane, tropospheric ozone and black carbon particles, which have strong effects on climate and which all have both human and natural origins. Follow along with all eight of our #EarthExpeditions here: <http://www.nasa.gov/earthexpeditions>

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Credit: NASA's Goddard Space Flight Center/Matthew R. Radcliff

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2016 09 01 NASA Goddard <https://youtu.be/eljKxj0JicM> ATom Mission interview clips — Tom Ryerson

A flat line of data may not look interesting, but Tom Ryerson of NOAA with the #EarthExpedition ATom mission explains how it could reveal how tropospheric ozone is removed from the atmosphere. The ATom mission aboard NASA's DC-8 flying laboratory is sampling worldwide in one of the most extensive surveys of the atmosphere to date, measuring over 200 gases as well as airborne particles. The science team is particularly interested in methane, tropospheric ozone and black carbon particles, which have strong effects on climate and which all have both human and natural origins. Follow along with all eight of our #EarthExpeditions here: <http://www.nasa.gov/earthexpeditions>

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2016 09 01 NASA Goddard <https://youtu.be/82dJkyvpQ4Y> ATom Mission interview clips — Róisín Commane

To measure the background atmosphere you need a sensitive instrument. Róisín Commane of Harvard University with the #EarthExpedition ATom mission explains how her instrument uses lasers to detect greenhouse gases. The ATom mission aboard NASA's DC-8 flying laboratory is sampling worldwide in one of the most extensive surveys of the atmosphere to date, measuring over 200 gases as well as airborne particles. The science team is particularly interested in methane, tropospheric ozone and black carbon particles, which have strong effects on climate and which all have both human and natural origins. Follow along with all eight of our #EarthExpeditions here: <http://www.nasa.gov/earthexpeditions>

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2016 09 01 NASA Goddard <https://youtu.be/E-rAH3EcqD8> ATom Mission interview clips — Donald Blake

Snakes on a NASA plane! No, not that kind of snake. Donald Blake from the University of California Irvine with the #EarthExpedition ATom mission explains why "snakes" are part of the Whole Air Sampler from behind the scenes on the DC-8 aircraft. The ATom mission aboard NASA's DC-8 flying laboratory is sampling worldwide in one of the most extensive surveys of the atmosphere to date, measuring over 200 gases as well as airborne particles. The science team is particularly interested in methane, tropospheric ozone and black carbon particles, which have strong effects on climate and which all have both human and natural origins. Follow along with all eight of our #EarthExpeditions here: <http://www.nasa.gov/earthexpeditions>

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Credit: NASA's Goddard Space Flight Center/Matthew R. Radcliff

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2016 09 01 NASA Goddard https://youtu.be/QYM2_ytkjQo Snapshots from the Edge of the Sun

For the first time, using NASA's Solar Terrestrial Relations Observatory, or STEREO, scientists have imaged the edge of the sun and described that transition – from which the solar wind blows. Defining the details of this boundary helps us learn more about our solar neighborhood, which is bathed throughout by solar material – a space environment that we must understand to safely explore beyond our planet. A paper on the findings was published in The Astrophysical Journal on Sept. 1, 2016.

[Transcript](#)
[Link](#)

Credit: NASA's Goddard Space flight Center/Genna Duberstein
Music: Shopping with Momma by Rik Pfenninger

Read more: <http://www.nasa.gov/feature/goddard/2016/images-from-sun-s-edge-reveal-origins-of-solar-wind>

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Follow NASA's Goddard Space Flight Center
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2016 08 30 NASA Goddard <https://youtu.be/DQ58q-5yUGw> Introducing GLOBE Observer

GLOBE Observer invites you to make environmental observations that complement NASA satellite observations to help scientists studying Earth and the global environment. Version 1.1 includes GLOBE Clouds, which allows you to photograph clouds and record sky observations and compare them with NASA satellite images. GLOBE is now the major source of human observations of clouds, which provide more information than automated systems.

[Transcript](#)
[Link](#)

Future versions of GLOBE Observer will add additional tools for you to use as a citizen environmental scientist.

By using the GLOBE Observer app, you are joining the GLOBE community and contributing important scientific data to NASA and GLOBE, your local community, and students and scientists worldwide.

New and interested users are encouraged to go to observer.globe.gov to learn more about the GLOBE program, or learn more about the GLOBE Clouds protocol.

Credit: NASA's Goddard Space Flight Center

Music: Killer Tracks
KOK_2402_61_The_Hopscotch_Riddle_Benoliel_Pelouse_885084

More information: <http://observer.globe.gov>

2016 08 26	NASA Goddard	https://youtu.be/5CV2bz_g3u8	Alaska's Bubbling Lakes	Bubbles, bubbles, and more bubbles, in a steady stream. Many lakes in the boreal regions of Alaska are emitting methane, the product of decomposing organic matter left over from the Ice Age. Thawing permafrost has caused areas of land to slump and fill up with water, creating these bodies of water called 'thermokarst lakes.' The water then exacerbates the thawing, expanding the size of the lake and producing even more methane. In the early cold season, ice covers the lakes and traps methane in large pockets just beneath the surface. University of Alaska Fairbanks scientists working as part of NASA's Arctic Boreal Vulnerability Experiment (ABOVE) find and measure the methane gas in these pockets seep-by-seep and lake-by-lake. ABOVE combines precise methane measurements from individual lakes with satellite data that can monitor lakes like these across the Arctic, to accurately model how much methane sub-lake seeps are adding to the atmosphere. Credit: NASA's Goddard Space Flight Center/Jefferson Beck For more information: https://blogs.nasa.gov/earthexpeditions/2016/08/23/mapping-methane-in-a-bubbling-arctic-lake/ This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization	Transcript Link
2016 08 26	NASA Goddard	https://youtu.be/BqALYUkDKWk	Women of Goddard - Awareness to Action	The Equal Opportunity Program Office and the Women of Goddard Advisory Committee, or WAC, are launching a year-long campaign for fiscal year 2017. The initiative has several goals including providing awareness and visibility to Goddard's equity, diversity and inclusion goals, celebrating Goddard's achievements in workplace equality, and to call on all Goddard employees to be change agents and make a personal commitment to diversity and inclusion. Sciences and Exploration Director and WAC Senior Champion Dr. Colleen Hartman discusses the importance of an equitable and diverse workforce. Credit: NASA's Goddard Space Flight Center/Sophia Roberts This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12343 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center	Transcript Link

2016 08 19	NASA Goddard	https://youtu.be/HpLZga4te_4	NASA Measuring Sea Ice at the Peak of Melt	The Arctic sea ice pack is nearing its annual minimum extent, which is projected to be one of the lowest since satellite observations began. Using satellite data and airborne observations, NASA researchers are monitoring the ever-changing ice, and gaining new insights into sea ice thickness and trends. In July, 2016, NASA's Operation IceBridge flew its first ever science flights low over sea ice near the peak of melt season, studying how the beautiful blue melt ponds on the surface of the ice might affect increased melt rates. For more on recent observations: http://www.nasa.gov/feature/goddard/2016/nasa-monitors-the-new-normal-of-sea-ice	Transcript Link
2016 08 17	NASA Goddard	https://youtu.be/Frav04h3p30	ATom Postcard - Samoa to New Zealand	Principal Investigator Steven Wofsy of Harvard University and atmospheric scientist Paul Newman of NASA's Goddard Space Flight Center sent back a video postcard of the second two legs of the Atmospheric Tomography, or ATom mission. They and the science team traversed the tropical Pacific from Kona, Hawaii, to Pago Pago, American Samoa, and then to Christchurch, New Zealand. The ATom mission aboard NASA's DC-8 aircraft and flying laboratory is sampling world-wide in one of the most extensive surveys of the atmosphere to date, measuring over 200 gases as well as airborne particles. The science team is particularly interested in methane, tropospheric ozone and black carbon particles, which have strong effects on climate and which all have both human and natural origins. Credit: NASA's Goddard Space flight Center/XXXXXX Read more: http://earthobservatory.nasa.gov/blogs/fromthefield/2016/08/16/traversing-the-tropics-kona-to-pago-pago-and-on-to-christchurch/ This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12342 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link

2016 08 15	NASA Goddard	https://youtu.be/CKlho5eXuLQ	Supercharging the Radiation Belts	On March 17, 2015, an interplanetary shock – a shockwave created by the driving force of a coronal mass ejection, or CME, from the sun – struck the outermost radiation belt, triggering the greatest geomagnetic storm of the preceding decade. NASA's Van Allen Probes were there to watch it. One of the most common forms of space weather, a geomagnetic storm describes any event in which Earth's magnetic environment – called the magnetosphere – is suddenly, temporarily disturbed. Such an event can also lead to change in the radiation belts surrounding Earth, but researchers have seldom been able to observe what happens within the first few minutes immediately following a shock. On the day of the March 2015 geomagnetic storm, one of the Van Allen Probes was located at just the right spot within the radiation belts, providing unprecedentedly high-resolution data from a rarely witnessed phenomenon. A paper on these observations was published in the Journal of Geophysical Research on Aug. 15, 2016. Credit: NASA's Goddard Space flight Center/Genna Duberstein Music: Light Hearted Angst by Dewey Dellay Read more: http://www.nasa.gov/feature/goddard/2016/nasas-van-allen-probes-catch-rare-glimpse-of-supercharged-radiation-belt	Transcript Link
2016 08 12	NASA Goddard	https://youtu.be/0Df4cblUws	NASA Goddard Intern Profile - Maddy Lambert	Every year, NASA's Goddard Space Flight Center in Greenbelt, Maryland, recruits hundreds of interns to spend the summer working on revolutionary missions featuring state-of-the-art technology. Maddy Lambert is a student majoring in physics at the University of Wisconsin-La Crosse. Credit: NASA's Goddard Space Flight Center/Sophia Roberts Music: n/a For more information on how to become a NASA intern: https://intern.nasa.gov This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12338 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/	Transcript Link

2016 08 11	NASA Goddard	https://youtu.be/CADM5VRIJ0k	OSIRIS-REx Tech Mapping an Asteroid with Lasers	The OSIRIS-REx Laser Altimeter (OLA) will provide a three-dimensional map of asteroid Bennu's shape, which will allow scientists to understand the context of the asteroid's geography and the sample location. OLA is provided by the Canadian Space Agency in exchange for Canadian ownership of a portion of the returned asteroid sample. Credit: NASA's Goddard Space flight Center/Katrina Jackson Music credits: "Drowned in Flames" by Boris Nonte; Ed.Berlin Production Music/Universal Publishing Production Music GmbH GEMA; Killer Tracks Production Music "Nighthawk" by Beatrix Löw-Beer, Mathew Kay, and Michael Kunzi; Ed.Berling Production Music/Universal Publishing Production Music GmbH GEMA; Killer Tracks Production Music Read more: http://www.nasa.gov/feature/goddard/2016/nasa-to-map-asteroid-bennu-from-the-ground-up This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12334 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer	Transcript Link
2016 08 11	NASA Goddard	https://youtu.be/HiDFciRs-aE	ATom Postcard - Palmdale to Kona	Principal Investigator Steven Wofsy of Harvard University and atmospheric scientist Paul Newman of NASA's Goddard Space Flight Center sent back a video postcard of the first two legs of the Atmospheric Tomography, or ATom mission. The science team first traveled from Palmdale, California, to Anchorage, Alaska, by way of the North Pole, and on their second leg flew south to Kona, Hawaii. The ATom mission aboard NASA's DC-8 aircraft and flying laboratory is sampling world-wide in one of the most extensive surveys of the atmosphere to date, measuring more than 200 gases as well as airborne particles. The science team is particularly interested in methane, tropospheric ozone and black carbon particles, which have strong effects on climate and which all have both human and natural origins. Principal Investigator Steven Wofsy of Harvard University and atmospheric scientist Paul Newman of Goddard sent back a video postcard of the first two legs of the ATom mission. Credit: NASA's Goddard Space flight Center/Michael Randazzo Read more: https://blogs.nasa.gov/earthexpeditions/2016/08/09/nomadic-scientists-from-desert-to-arctic-and-beyond/ This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12337 If you liked this video, subscribe to the NASA Goddard YouTube	Transcript Link

2016 08 05	NASA Goddard	https://youtu.be/nSmhslNfkEw	New NASA Mission Will Set the PACE for Advanced Studies of Earth's Changing Climate	Explanation: Over the past century, humans have accelerated the use of natural resources such as fossil fuels, old growth forests and groundwater. This has warmed the ocean and atmosphere, changed their chemistry and caused extra runoff from land. From analysis of data collected by satellites and sensors monitoring Earth for the past few decades, we know that these multiple stressors impact microscopic life in the ocean as well as airborne particles and clouds, but we do not know to what extent or whether changes will reach a tipping point. The future Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) mission will measure and help resolve the complex role of these interrelated Earth systems and their impact on fisheries, ocean chemistry and nutrients, climate feedbacks and human health. Credit: NASA's Goddard Space Flight Center/Michael Starobin Read more: http://www.nasa.gov/feature/goddard/2016/pace-will-uncover-new-information-about-ocean-health This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio. If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Or subscribe to NASA's Goddard Shorts HD Podcast:	Transcript Link
2016 08 05	NASA Goddard	https://youtu.be/iXiH6KCBhFE	Where can you %23SpotHubble	Since its launch in 1990, the Hubble Space Telescope has sent back mind-blowing images that not only changed our understanding of our universe, but also changed where we see glimpses of our universe in everyday life. Hubble is more than a science spacecraft; it's a cultural phenomenon! Take a moment to think about where you've seen the Hubble Space Telescope or Hubble images in your daily life. Maybe you own a textbook with a picture of the telescope on the cover, or you walk by a mural inspired by Hubble images every day on your way to work. Perhaps you've even created art based on Hubble images. We want to see the Hubble impact in your life! Share your photos with us on Instagram, Twitter, Flickr and Facebook. Credit: NASA's Goddard Space Flight Center/Joy Ng Music credits: Nature Exploration by Laurent Dury, Solar Dust by Laurent Dury from the KillerTracks catalog. How to #SpotHubble! There are four social media platforms that you can use to submit your work. Flickr: Submit your photos to the Spot Hubble Flickr Group Instagram: Use the Instagram app to upload your photo, and in the description include #SpotHubble and #NASAGoddard	Transcript Link

2016 08 01	NASA Goddard	https://youtu.be/8GKYJXH5nmQ	Lugares de la Luna — Rima Prinz y Vera	Datos captados por el Lunar Reconnaissance Orbiter fueron usados para crear esta visualización del canal Rima Prinz y la depresión volcánica Vera en la Luna. Este vídeo fue narrado por Patricia Flores, becaria en NASA Goddard. Para más información, visita http://svs.gsfc.nasa.gov/4444 Credit: NASA's Goddard Space Flight Center More information: This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/444 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard 0 Twitter en Espanol: https://twitter.com/NASA_es	Transcript Link
2016 08 01	NASA Goddard	https://youtu.be/zKhXc9wKe_Y	Moon Features - Rima Prinz and Vera	Data from the Lunar Reconnaissance Orbiter was used to create this visualization of the Rima Prinz channel and Vera volcanic depression on the Moon. This video was narrated by NASA Goddard planetary geologist Debra Hurwitz Needham. Credit: NASA's Goddard Space Flight Center/David Ladd This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/4444 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/	Transcript Link

2016 07 29	NASA Goddard	https://youtu.be/TF76lTo3R1U	NASA Sees Intense Fires around the World	This year's wildfire season is off to a blazing start. The United States had an early start to the season, with more than 29,000 wildfires burning more than 2.6 million acres of land. The driest season in 14 years has left the southern Amazon primed for heavy wildfire activity as well. The expected wildfire surge in the Amazon this summer is the result of El Niño, a warming of waters in the Pacific Ocean that had major impacts on weather across the United States the first half of 2016. While El Niño has officially ended, we're still feeling effects through increased wildfire activity. In some parts of the U.S., the fire season is now on average 78 days longer than it was in 1970, according to the U.S. Department of Agriculture. NASA scientists are able to monitor these wildfires better than ever before, providing valuable information that fire managers can use to prepare the public. Using data collected by satellites, planes and on the ground, NASA is tracking wildfires around the world and keeping an eye on the hot, dry conditions that contribute to larger fires Credit: NASA's Goddard Space Flight Center/Kathryn Mersmann Music: Perimeter Fence by Lennert Busch This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12330	Transcript Link
2016 07 26	NASA Goddard	https://youtu.be/4dpVIZbGxRw	SDO Sees Trio of Mid-Level Flares	The sun emitted three mid-level solar flares on July 22 and 23, 2016, the strongest peaking at 1:16 am EDT on July 23. The sun is currently in a period of low activity, moving toward what's called solar minimum when there are few to no solar eruptions – so these flares were the first significant events observed since April. They are categorized as mid-strength flares, substantially less intense than the most powerful solar flares. Credit: NASA's Goddard Space Flight Center/Genna Duberstein Music: Rubicon by Sam Hamilton This video is public domain, and high resolution downloads and a complete transcript are available: http://svs.gsfc.nasa.gov/12326 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center • Facebook: http://www.facebook.com/NASA.GSFC • Twitter http://twitter.com/NASAGoddard • Flickr http://www.flickr.com/photos/gsfrc/ • Instagram http://www.instagram.com/nasagoddard/ • Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2016 07 25	NASA Goddard	https://youtu.be/aYmgc9XL_Vs	OSIRIS-REx Tech – Surveying an Asteroid with Light	NASA's OSIRIS-REx spacecraft is on a mission explore to near-Earth asteroid Bennu, a carbon-rich body that may contain clues to the origins of life. OSIRIS-REx is equipped with a suite of technologies designed to map and study Bennu in unprecedented detail. The OSIRIS-REx Visible and Infrared Spectrometer, or OVIRS, will look at the asteroid's spectral signature to detect organics and other minerals. After OSIRIS-REx has thoroughly surveyed Bennu from orbit, will descend to the surface and collect a sample of the asteroid for return to Earth in 2023. In this video, OVIRS instrument scientists Dennis Reuter and Amy Simon discuss the challenges and rewards of sending a spectrometer into deep space. Credit: NASA's Goddard Space Flight Center/Dan Gallagher Learn more about the OVIRS instrument: http://www.nasa.gov/feature/goddard/2016/nasa-to-map-the-surface-of-an-asteroid For more information about OSIRIS-REx: http://www.nasa.gov/mission_pages/osiris-rex/index.html This video is public domain. Download at: http://svs.gsfc.nasa.gov/12309 Other OSIRIS-REx videos and animations are available at: http://svs.gsfc.nasa.gov/Gallery/OSIRIS-REx.html	Transcript Link
2016 07 21	NASA Goddard	https://youtu.be/T3aaDB33nJw	Can You %23SpotHubble	Hubble is more than a science spacecraft; it's a cultural phenomenon! Visit nasa.gov/hubble for more information on how you can share your images of Hubble in everyday life on social media with the hashtag #SpotHubble. Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music credit: "Lions and Lambs" by Jordan Baum, Michael McNamara, Nicholas Furlong, and Travis Margis - Killer Tracks BMI and Soundcast Music SESAC For more information: https://www.nasa.gov/content/goddard/2016/spothubble This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12323 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard	Transcript Link

2016 07 21	NASA Goddard	https://youtu.be/GQK580aE_yk	Hubble Explores the Final Frontier	In celebration of Star Trek's new movie and 50th anniversary, the Hubble Space Telescope is sharing its newest Frontier Field image, which uses a clever trick from nature to boldly observe what no telescope has observed before. Credit: NASA's Goddard Space Flight Center/Katrina Jackson Music caption: "To the Top I Climb" by Alvin West, David Travis Edwards, Joshua McDonnell, and Michael Wagner - Killer Tracks BMI and Soundcast Music SESAC For more information: http://www.nasa.gov/feature/goddard/2016/nasa-s-hubble-looks-to-the-final-frontier This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12324 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2016 07 20	NASA Goddard	https://youtu.be/9XV0UE5Gb_Y	Hubble Makes First Measurements of Earth-Sized Exoplanet Atmospheres	On May 4th, 2016, the Hubble Space Telescope made the first spectroscopic measurements of two of the three known Earth-sized exoplanets in the TRAPPIST-1 system just 40 light-years away. Music credit: "Feels Good" by Louise Dowd and Stephen William Cornish, Atmosphere Music Ltd, Killer Tracks Production Music If you like this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/goddardtv Credit: NASA's Goddard Space Flight Center/Katrina Jackson Press release: http://www.nasa.gov/press-release/nasa-s-hubble-telescope-makes-first-atmospheric-study-of-earth-sized-exoplanets Science paper: http://arxiv.org/abs/1606.01103 This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12319 Follow NASA's Goddard Space Flight Center on: Facebook: https://www.facebook.com/NASA.GSFC Twitter: https://twitter.com/NASAGoddard https://twitter.com/NASAGoddardPix	Transcript Link

2016 07 20 NASA Goddard <https://youtu.be/CFrP6QfbC2g> One Year on Earth – Seen From 1 Million Miles On July 20, 2015, NASA released to the world the first image of the sunlit side of Earth captured by the space agency's EPIC camera on NOAA's DSCOVR satellite. The camera has now recorded a full year of life on Earth from its orbit at Lagrange point 1, approximately 1 million miles from Earth, where it is balanced between the gravity of our home planet and the sun. [Transcript Link](#)

EPIC takes a new picture every two hours, revealing how the planet would look to human eyes, capturing the ever-changing motion of clouds and weather systems and the fixed features of Earth such as deserts, forests and the distinct blues of different seas. EPIC will allow scientists to monitor ozone and aerosol levels in Earth's atmosphere, cloud height, vegetation properties and the ultraviolet reflectivity of Earth.

The primary objective of DSCOVR, a partnership between NASA, the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Air Force, is to maintain the nation's real-time solar wind monitoring capabilities, which are critical to the accuracy and lead time of space weather alerts and forecasts from NOAA.

For more information about DSCOVR, visit:
<http://www.nesdis.noaa.gov/DSCOVR/>

Credit: NASA's Goddard Space Flight Center/Kayvon Sharghi

Music Credit: Beside You, Dominic Marsh and Giovanni Tria on

2016 07 20 NASA Goddard <https://youtu.be/9ihBI1S3CMo> PACE Mission to Study Ocean Health Rising global temperatures are affecting our oceans in ways we have not yet fully explored. NASA's PACE mission will use an ocean color imager to track phytoplankton communities over time, as well as monitor the health of our oceans and their relationship with the atmosphere. The data collected from the PACE mission will allow us to fully examine the consequences of climate change on our planet. [Transcript Link](#)

Credit: NASA/Goddard/Michael Starobin

Read more: <http://www.nasa.gov/feature/goddard/2016/pace-will-uncover-new-information-about-ocean-health>

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- Google+ <http://plus.google.com/+NASAGoddard/posts>

2016 07 19	NASA Goddard	https://youtu.be/JK7NV2YheGk	NASA Sees Temperatures Rise and Sea Ice Shrink - Climate Trends 2016	Two key climate change indicators have broken numerous records through the first half of 2016, according to NASA analyses of ground-based observations and satellite data. Each of the first six months of 2016 set a record as the warmest respective month globally in the modern temperature record, which dates to 1880. Meanwhile, five of the first six months set records for the smallest monthly Arctic sea ice extent since consistent satellite records began in 1979. NASA researchers are in the field this summer, collecting data to better understand our changing climate. Read more: http://www.nasa.gov/feature/goddard/2016/climate-trends-continue-to-break-records Download this video at: http://svs.gsfc.nasa.gov/12306 Music: Hidden Files by Sam Dodson If you like this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/goddardtv Credit: NASA's Goddard Space Flight Center/Matthew Radcliff This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12306 Follow NASA's Goddard Space Flight Center on: Facebook: https://www.facebook.com/NASA.GSFC	Transcript Link
2016 07 11	NASA Goddard	https://youtu.be/xh8t8FpekH4	OSIRIS-REx Tech - Surveying an Asteroid with X-rays	NASA's OSIRIS-REx mission launches in September 2016 and plans to return a sample of asteroid Bennu to Earth in 2023. This video profiles a student-built instrument aboard the OSIRIS-REx spacecraft called REXIS - the Regolith X-Ray Imaging Spectrometer. The purpose of REXIS is to collect and image fluorescent X-rays emitted by the asteroid, which will give scientists information regarding atomic elements that comprise it. If you like this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/goddardtv Credit: NASA's Goddard Space Flight Center/David Ladd This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12282 Follow NASA's Goddard Space Flight Center on: Facebook: https://www.facebook.com/NASA.GSFC Twitter: https://twitter.com/NASAGoddard https://twitter.com/NASAGoddardPix Flickr: https://www.flickr.com/photos/gsfcr/ Instagram: https://www.instagram.com/nasagoddard/ Google+: https://plus.google.com/+NASAGoddard/posts	Transcript Link

2016 07 08	NASA Goddard	https://youtu.be/aUZCwD2oCXs	Permanent Shadows on Ceres	Permanently shadowed regions capable of accumulating surface ice were identified in the northern hemisphere of Ceres using images taken by NASA's Dawn mission combined with sophisticated computer modeling of illumination. CREDIT: NASA/JPL-Caltech/Goddard Music: Ice Flow by Paul Shaw/Killer Tracks Read more: http://www.nasa.gov/feature/goddard/2016/dawn-maps-ceres-craters-where-ice-can-accumulate This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/4475 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/	Transcript Link
2016 07 06	NASA Goddard	https://youtu.be/e4GVPUsrB1I	Hitomi Measures Perseus Galaxy Cluster's X-ray Winds	Measurements of unprecedented detail returned by Japan's Hitomi satellite have allowed scientists to track the motion of X-ray-emitting gas at the heart of the Perseus cluster of galaxies for the first time. The results showcase the long-awaited premiere of a next-generation X-ray instrument whose key components were developed at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Led by the Japan Aerospace Exploration Agency (JAXA), Hitomi was launched on Feb. 17. Following the successful activation of the observatory and instruments, Hitomi suffered a mission-ending spacecraft anomaly on March 26. Before its demise, though, Hitomi was able to peer into the Perseus cluster of galaxies, an assemblage of thousands of galaxies bound together by gravity. Located about 240 million light-years away and named for its host constellation, the Perseus galaxy cluster contains a vast amount of extremely hot gas. At temperatures averaging 90 million degrees Fahrenheit (50 million degrees Celsius), the gas glows brightly in X-rays. Prior to Hitomi's launch, astronomers lacked the capability to measure the detailed dynamics of this gas, particularly its relationship to bubbles of gas expelled by an active supermassive black hole in the cluster's core galaxy, NGC 1275. For the first time, thanks to Hitomi's revolutionary Soft X-ray Spectrometer (SXS), an instrument developed and built by Goddard scientists working closely with colleagues from several institutions	Transcript Link

2016 06 29	NASA Goddard	https://youtu.be/ITPizr7Pgqg	Exploring Jupiter's Magnetic Field	NASA is sending the Juno spacecraft to Jupiter, to peer beneath its cloudy surface and explore the giant planet's structure and magnetic field. Juno's twin magnetometers, built at Goddard Space Flight Center, will give scientists their first look within Jupiter at the powerful dynamo that drives its magnetic field. In this interview, Deputy Principal Investigator Jack Connerney discusses the Juno mission and its magnetometers. This video is public domain and can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12296 Credit: NASA's Goddard Space Flight Center/Dan Gallagher Music from the Killer Tracks catalog: "Beep" – Niklas Ahman "Jupiter's Eye" – Christian Telford, David Travis Edwards, Matthew St Laurent, and Robert Anthony Navarro "Original Conquest" –Laurent Dury "Through the Mist" – Andrew Britton and David Goldsmith "Lost Roads" – Gregg Lehrman For more information: http://www.nasa.gov/feature/goddard/2016/nasas-juno-peers-inside-a-giant If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link
2016 06 29	NASA Goddard	https://youtu.be/uNgMEGyq4vU	Distinguished Service Medal Piers Sellers	Colleen Hartman, director of science and exploration at NASA's Goddard Space Flight Center in Greenbelt, Maryland, nominated Goddard scientist, former astronaut and climate champion Piers Sellers for NASA's highest honor, the Distinguished Service Medal. Download this video in high resolution at http://svs.gsfc.nasa.gov/12275 Credit: NASA Goddard/Rich Melnick	Transcript Link

2016 06 22	NASA Goddard	https://youtu.be/zWkGfZ-t4WM	Extreme Rainfall Facebook Live Teaser	Ever wonder where in the world we get the most extreme rainfall (and how we know)? Or if climate change is going to cause more frequent and intense hurricanes? This Thursday, join NASA scientists for a live discussion of how we study extreme weather from space and to get a behind-the-scenes tour of the Global Precipitation Measurement Mission Operations Center. Bring your questions! Thursday, June 23 1:00pm EDT / 10:00am PDT / 5:00pm UTC www.facebook.com/NASA.Rain Want to ask a question in advance? Post them in the Comments box below and we look forward to seeing you! Credit: NASA Goddard Space Flight Center/Ryan Fitzgibbons/Joy Ng Music credit: Marking Time by Chris White from the KillerTracks Catalog This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12287	Transcript Link
2016 06 22	NASA Goddard	https://youtu.be/XtpIDlc-pA	X-ray Echoes Map a Black Hole's Disk	Some 3.9 billion years ago in the heart of a distant galaxy, the tidal pull of a monster black hole shredded a star that wandered too close. X-rays produced in this event first reached Earth on March 28, 2011, when they were detected by NASA's Swift satellite. Within days, scientists concluded that the outburst, now known as Swift J1644+57, represented both the tidal disruption of a star and the sudden flare-up of a previously inactive black hole. Now astronomers using archival observations from Swift, the European Space Agency's XMM-Newton observatory and the Japan-led Suzaku satellite have identified the reflections of X-ray flares erupting during the event. Led by Erin Kara, a postdoctoral researcher at NASA's Goddard Space Flight Center in Greenbelt, Maryland, and the University of Maryland, College Park, the team has used these light echoes, or reverberations, to map the flow of gas near a newly awakened black hole for the first time. Swift J1644+57 is one of only three tidal disruptions that have produced high-energy X-rays, and to date it remains the only event caught at the peak of this emission. While astronomers don't yet understand what causes flares near the black hole, when one occurs they can detect its echo a couple of minutes later as its light washes over structures in the developing accretion disk. The technique, called X-ray reverberation mapping, has been used before to explore stable disks around black holes, but this is time it has been applied to a newly formed disk produced by a tidal disruption.	Transcript Link

2016 06 20	NASA Goddard	https://youtu.be/6i4yspmILLY	Electric Wind of Venus	Venus has an "electric wind" strong enough to remove the components of water from its upper atmosphere. This action may have played a significant role in stripping Earth's twin planet of its oceans, according to new research results from the European Space Agency's Venus Express mission authored by NASA-funded researchers. Lead author of the research paper, Glyn Collinson, explains that "electric wind" can strip Earth-like planets of oceans and atmospheres. Credit: NASA/Goddard/Genna Duberstein Read more: http://www.nasa.gov/feature/goddard/2016/electric-wind-can-strip-earth-like-planets-of-oceans-atmospheres This video is public domain and can be downloaded, along with related graphics, from https://svs.gsfc.nasa.gov/12208 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/	Transcript Link
2016 06 10	NASA Goddard	https://youtu.be/gpuZeU6KhT0	Solar Storms May Have Been Key to Life on Earth (short)	Our sun's adolescence was cooler than today, but stormy—and new evidence shows that these tempests may have been just the key to seeding life as we know it on Earth. Credit: NASA's Goddard Space Flight Center/Joy Ng based on source material by Genna Duberstein Music credit: Ocean Travel by Laurent Dury from the KillerTracks Catalog. Read more: http://www.nasa.gov/feature/goddard/2016/nasa-solar-storms-may-have-been-key-to-life-on-earth If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2016 06 08	NASA Goddard	https://youtu.be/UMO6fZaho8E	NASA Goddard Summer Interns First Day 2016	Hundreds of students from across the country started their summer internships at NASA's Goddard Space Flight Center in Greenbelt, Md in June 2016. The interns will experience a wide range of projects across Earth science, heliophysics, astrophysics, planetary science, engineering, and technology. This video includes interviews with interns Robert Kunkel (University of Oklahoma), Marjorie Rodriguez (University of Puerto Rico - Mayaguez), Chaddor Lau (Capitol Technology University), Hector Delgado (University of Puerto Rico - Cayey), Mengyu "Allen" Wang (Iowa State University), Priscilla Baltezar (Humboldt State University), Cassie Jones (Arizona State University and Auburn University), Kiyun Kim (Barnard College), Steven West (University of Michigan), and Ekaterina Vydra (Florida Gulf Coast University). To find out more about becoming a NASA intern, visit http://intern.nasa.gov This video is public domain and may be downloaded at: http://svs.gsfc.nasa.gov/12274 Credit: NASA's Goddard Space Flight Center/Katrina Jackson, Clare Skelly More information: http://www.nasa.gov/feature/goddard/2016/welcome-summer-interns/	Transcript Link
2016 06 07	NASA Goddard	https://youtu.be/TsgfnkSJdqs	LISA Pathfinder's Stunning Success	LISA Pathfinder, a mission led by the European Space Agency (ESA) with contributions from NASA, has successfully tested a key technology needed to build a space-based observatory for detecting gravitational waves. These tiny ripples in the fabric of space, predicted by Albert Einstein a century ago, were first seen last year by the ground-based Laser Interferometer Gravitational-Wave Observatory (LIGO). Seismic, thermal, and other noise sources limit LIGO to higher-frequency gravitational waves around 100 cycles per second (hertz). But finding signals from more exotic events, such as mergers of supermassive black holes in colliding galaxies, requires the ability to see frequencies at 1 hertz or less, a sensitivity level only possible from space. A space-based observatory would work by tracking test masses that move only under the influence of gravity. Each spacecraft would gently fly around its test masses without disturbing them, a process called drag-free flight. The primary goal of ESA's LISA Pathfinder mission is to test current technology by flying around an identical pair of 1.8-inch (46 millimeter) cubes made of a gold-platinum alloy, a material chosen for its high density and insensitivity to magnetic fields. Scientists say the results are nothing short of astonishing. Non-gravitational forces on the cubes were reduced to levels far below the project's original requirements and approach the level of	Transcript Link

2016 06 06	NASA Goddard	https://youtu.be/CYgLB6wyQgE	Webb Telescope ISIM Instrument Installation Timelapse	Time lapse video of two dozen engineers and technicians successfully installing the package of science instruments of the James Webb Space Telescope into the telescope structure. These science instruments are known as the Integrated Science Instrument Module, or ISIM, and it's the collection of cameras, spectrographs and fine guidance systems that help record the light collected by Webb's giant golden mirror. Inside the world's largest clean room at NASA's Goddard Space Flight Center in Greenbelt, Maryland, the team crane-lifted the heavy science instrument package, lowered it into an enclosure on the back of the telescope, and secured it to the telescope. This entire installation process took approximately 17 hours to complete. ISIM is one of three major elements that comprise the James Webb Space Telescope Observatory flight system. The others are the optical telescope and the spacecraft elements. Webb is an international project led by NASA with its partners, ESA (European Space Agency) and the Canadian Space Agency. For more information, visit: http://www.jwst.nasa.gov or http://www.nasa.gov/webb This video is public domain and may be downloaded at: http://svs.gsfc.nasa.gov/12273	Transcript Link
2016 06 06	NASA Goddard	https://youtu.be/Z0qVzF4KwBg	NOAA Team Helps NASA's Operation IceBridge Tackle Arctic Spring	NASA's Operation IceBridge has returned from its spring campaign measuring changes in the Greenland ice sheet and in sea ice in the Arctic Ocean. Flying for the first time on board a borrowed NOAA P-3 aircraft, the airborne mission accomplished many of its key goals for the season, including getting measurements over some of the fastest-changing glaciers in Greenland. Credit: NASA/Goddard/Jefferson Beck If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2016 06 02 NASA Goddard <https://youtu.be/Yi8SFOJffFA> NASA Studies Details of a Greening Arctic

NASA scientists used almost 30 years of data from the NASA/U.S. Geological Survey Landsat satellites to track changes in vegetation in Alaska and Canada. Of the more than 4 million square miles, 30 percent had increases in vegetation (greening) while only 3 percent had decreases (browning).

[Transcript](#)
[Link](#)

This is the first study to produce a continent-scale map while still providing detailed information at the human scale. "It shows the climate impact on vegetation in the high latitudes," said Jeffrey Masek, a researcher who worked on the study and the Landsat 9 project scientist at NASA's Goddard Space Flight Center in Greenbelt, Maryland. The study, led by NASA scientist Junchang Ju, is online at:

<http://www.sciencedirect.com/science/article/pii/S0034425716300013>.

Temperatures are warming faster in the Arctic than elsewhere, which has led to longer seasons for plants to grow in and changes to the soils. Scientists have observed grassy tundras changing to shrublands, and shrubs growing bigger and denser – changes that could have impacts on regional water, energy, and carbon cycles. With the large, continental-scale map complete, researchers will focus on the more human scale – looking at local conditions to see what might control the greening patterns, whether it's local topography, nearby water sources, or particular types of habitat. They also plan to investigate forested areas, particularly in the greening Quebec.

2016 06 01 NASA Goddard https://youtu.be/PhO6Ufw9h_s 2016 Mercury Transit in 4K

Around 13 times per century, Mercury passes between Earth and the sun in a rare astronomical event known as a planetary transit. Mercury orbits in a plane that is tilted from Earth's orbit, moving above or below our line of sight to the sun.

[Transcript](#)
[Link](#)

The 2016 Mercury transit occurred on May 9th, between about 7:12 a.m. and 2:42 p.m. EDT. The images in this video are from NASA's Solar Dynamics Observatory, or SDO. Transits provide a great opportunity to study the way planets and stars move in space—information that has been used throughout the ages to better understand the solar system, and which still helps scientists today calibrate their instruments.

Credit: NASA/Goddard/Genna Duberstein

This video is public domain, and can be downloaded from the Scientific Visualization Studio at: <http://svs.gsfc.nasa.gov/12268>

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2016 05 27	NASA Goddard	https://youtu.be/KEvxPnXvEKE	Ten-Year Gap in Major Hurricanes Continues	Could the first tropical storm of the Atlantic hurricane season break the 10-year “hurricane drought” record? It has been a decade since the last major hurricane, Category 3 or higher, made landfall in the United States. This is the longest period of time for the United States to avoid a major hurricane since reliable records began in 1850. According to a NASA study, a 10-year gap comes along only every 270 years. It should be noted that hurricanes making landfall as less than Category 3 can still cause extreme damage, with heavy rains and coastal storm surges. Such was the case with Hurricane Sandy in 2012. The National Hurricane Center calls any Category 3 or more intense hurricane a “major” storm. Timothy Hall, a research scientist who studies hurricanes at NASA’s Goddard Institute for Space Studies, New York and colleague Kelly Hereid, who works for ACE Tempest Re, a reinsurance firm based in Connecticut, ran a statistical hurricane model based on a record of Atlantic tropical cyclones from 1950 to 2012 and sea surface temperature data. The researchers ran 1,000 computer simulations of the period from 1950-2012 – in effect simulating 63,000 separate Atlantic hurricane seasons. They also found that there is approximately a 40 percent chance that a major hurricane will make landfall in the United States every year.	Transcript Link
2016 05 25	NASA Goddard	https://youtu.be/uf-BouoxPCA	Hurricane Forecasts Rely on Modeling the Past	Improving hurricane forecasts means testing historical storms with today's sophisticated models and supercomputers. NASA and NOAA work together in gathering ground and satellite observations, as well as experimenting with research forecast models. As a result of this collaboration, model resolution has increased, and scientists are discovering more about the processes that occur within these powerful storms. The Global Precipitation Measurement (GPM) Mission is a joint NASA and Japan Aerospace Exploration Agency (JAXA) mission that measures all forms of precipitation around the globe. GPMs Microwave Imager, or GMI, has proven useful in seeing beneath the swirling clouds and into the structure of tropical cyclones. The information gathered by GPM and other missions will be used to improve forecast models. http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=12206 Music: Chris White, "Afterglow" Credit: NASA Goddard/Ryan Fitzgibbons	Transcript Link

2016 05 25	NASA Goddard	https://youtu.be/GLWUgAqz-3I	Interconnected The Science of NAAMES	Most people wouldn't expect microscopic life forms in the ocean to have much to do with Earth's atmosphere. It turns out that their influence is profound, which is why an extraordinary team of scientists has taken to the sea and the air for a novel research mission. In this video, we take a look at the scientific goals behind the NAAMES field campaign, with spotlights on the primary components of the mission. Credit: NASA/Goddard/Michael Starobin If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer Or subscribe to NASA's Goddard Shorts HD Podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC · Twitter http://twitter.com/NASAGoddard · Flickr http://www.flickr.com/photos/gsfcc/ · Instagram http://www.instagram.com/nasagoddard/ · Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link
2016 05 23	NASA Goddard	https://youtu.be/3qohnUCJaQ	The Faint Young Star Paradox Solar Storms May Have Been Key to Life on Earth	Our sun's adolescence was stormy—and new evidence shows that these tempests may have been just the key to seeding life as we know it on Earth. Credit: NASA/Goddard/Genna Duberstein Read more: http://www.nasa.gov/feature/goddard/2016/nasa-solar-storms-may-have-been-key-to-life-on-earth If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/11853 Follow NASA's Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Twitter http://twitter.com/NASAGoddard Flickr http://www.flickr.com/photos/gsfcc/ Instagram http://www.instagram.com/nasagoddard/ Google+ http://plus.google.com/+NASAGoddard/posts	Transcript Link

2016 05 20	NASA Goddard	https://youtu.be/c2-iguZziPU	NASA's Global Tour of Precipitation in Ultra HD (4K)	Precipitation (falling rain and snow) is our fresh water reservoir in the sky and is fundamental to life on Earth. This video shows the most detailed and worldwide view of rain and snowfall ever created and uses satellite measurements from the Global Precipitation Measurement Core Observatory, or GPM, a joint mission between NASA and the Japanese Aerospace Exploration Agency (JAXA). Tracking precipitation from space with satellites provides information of where, when, and how much it rains and snows anywhere in the world and gives insight into the behavior of our weather, climate, and ecological systems. To download near real-time global precipitation data visit: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=4285 For more information on GPM visit: http://pmm.nasa.gov/GPM This video is an abridged 2-D version of a Science On a Sphere production, a film that is projected onto a spherical screen developed by NOAA. On this platform, audiences can view the film from any side of the sphere and can see any part of Earth. The film concludes with near real-time global precipitation data from GPM, which is provided to Science On a Sphere roughly six hours after the observation. To download this movie formatted for a spherical screen, visit NOAA's official Science On a Sphere website below:	Transcript Link
2016 05 19	NASA Goddard	https://youtu.be/zxAqVs-pVqpY	Hubble's New View of Mars and Planets	The Hubble Space Telescope is more well known for its picturesque views of nebulae and galaxies, but it's also useful for studying our own planets, including Mars. Hubble imaged Mars on May 12, 2016 - ten days before Mars would be on the exact opposite side of the Earth from the Sun. View the full image release here: https://www.nasa.gov/feature/goddard/2016/hubble-takes-mars-portrait-near-close-approach Music: "Season of Swag" by David Travis Edwards and Kenneth Barbee, Killer Tracks [BMI] and Soundcast Music [SESAC] Credit: NASA/Goddard/Katrina Jackson If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12260 Follow NASA's Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Twitter http://twitter.com/NASAGoddard Flickr http://www.flickr.com/photos/gsfcc/	Transcript Link

2016 05 18	NASA Goddard	https://youtu.be/SIR3Q5HSSEQ	Mighty Hercules Bears the Marks of Many Campaigns	A NASA airborne science campaign is all about what you can learn about our planet from the air — and that requires a durable and versatile airplane and a great crew to fly it. Meet one of NASA's C-130 Hercules aircraft, currently flying above the Atlantic Ocean measuring aerosols, clouds, ocean color, and atmospheric chemistry as part of the 2016 North Atlantic Aerosols and Marine Ecosystems Study, or NAAMES for short. If you like this video, subscribe to the NASA Goddard YouTube channel: https://www.youtube.com/goddardtv Credit: NASA's Goddard Space Flight Center/Michael Starobin Follow NASA's Goddard Space Flight Center on: Facebook: https://www.facebook.com/NASA.GSFC Twitter: https://twitter.com/NASAGoddard Flickr: https://www.flickr.com/photos/gsfcr/ Instagram: https://www.instagram.com/nasagoddard/ Google+: https://plus.google.com/+NASAGoddard/posts	Transcript Link
2016 05 18	NASA Goddard	https://youtu.be/iKGaDCA9yyc	NASA Launches Super-Pressure Balloon	NASA successfully launched a super pressure balloon (SPB) from Wanaka Airport, New Zealand, at 11:35 a.m. Tuesday, May 17, (7:35 p.m. EDT Monday, May 16) on a potentially record-breaking, around-the-world test flight. The balloon flies at an altitude of about 110,000 feet, in a layer of Earth's atmosphere known as the stratosphere. The purpose of the flight is to test and validate the SPB technology with the goal of long-duration flight (100+ days) at mid-latitudes. In addition, the gondola is carrying the Compton Spectrometer and Imager (COSI) gamma-ray telescope as a mission of opportunity. Another mission of opportunity is the Carolina Infrasound instrument, a small, 3-kilogram payload with infrasound microphones designed to record acoustic wave field activity in the stratosphere. Developed by the University of North Carolina at Chapel Hill, previous balloon flights of the instrument have recorded low-frequency sounds in the stratosphere, some of which are believed to be new to science. As the balloon travels around the Earth, it may be visible from the ground, particularly at sunrise and sunset, to those who live in the southern hemisphere's mid-latitudes, such as Argentina and South Africa. Credit: NASA/Bill Rodman, Joy Ng	Transcript Link

2016 05 13	NASA Goddard	https://youtu.be/jWxl1Z34les	Satellites Are Helping To Feed Tired And Hungry Birds	This spring, migrating shorebirds came across roughly 7000 acres of temporary wetland habitat to feed on during their stopover in California's Central Valley. The BirdReturns program, created by The Nature Conservancy of California, is an effort to provide "pop-up habitats" for some of the millions of shorebirds, such as sandpipers and plovers that migrate along the Pacific Flyway, a route that spans from Alaska to South America. Birds flying on this journey seek out the increasingly rare wetlands teeming with tasty insects to fuel their long-distance flights. Over the last century, California's Central Valley has lost 95% of the wetlands habitat to development, agriculture, and other land use changes. As a solution, scientists use big data, binoculars, and rice paddies. The Nature Conservancy works closely with two other organizations, who are using NASA data to enable the program. Point Blue Conservation Science is using data from the NASA/USGS Landsat satellite to map surface water in the Central Valley and determine the likelihood a given spot will have water any given month. The Cornell Lab of Ornithology is using data from Landsat and NASA's MODIS instrument to expand their network of citizen science observations. With the NASA data, the Cornell Lab is able to take individual bird observations and predict how abundant a given bird species will be at any location.	Transcript Link
2016 05 13	NASA Goddard	https://youtu.be/1U3tuabxgKk	Life of the Monsoon	The monsoon is a seasonal rain and wind pattern that occurs over South Asia (among other places). Through NASA satellites and models we can see the monsoon patterns like never before. Monsoon rains provide important reservoirs of water that sustain human activities like agriculture and supports the natural environment through replenishment of aquifers. However, too much rainfall routinely causes disasters in the region, including flooding of the major rivers and landslides in areas of steep topography. This is a web video version of the full visualization (featured below). Music: Ruminations by Miriam Cutler, 24 Dimensions by Christian Telford, David Travis Edwards, Matthew St. Laurent, and Robert Anthony Navarro Additional footage provided by pond5.com. Credit: NASA/Goddard/Ryan Fitzgibbons View the full, narrated version at: https://youtu.be/CR7KL6KS1x4 If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer This video can be shared and downloaded at http://svs.gsfc.nasa.gov/12254. While the video in its entirety can be shared without permission, some individual imagery may have	Transcript Link

2016 05 13	NASA Goddard	https://youtu.be/CR7KL6KSlx4	Monsoons Wet, Dry, Repeat...	The monsoon is a seasonal rain and wind pattern that occurs over South Asia (among other places). Through NASA satellites and models we can see the monsoon patterns like never before. Monsoon rains provide important reservoirs of water that sustain human activities like agriculture and supports the natural environment through replenishment of aquifers. However, too much rainfall routinely causes disasters in the region, including flooding of the major rivers and landslides in areas of steep topography. This visualization uses a combination of NASA satellite data and models to show how and why the monsoon develops over this region. In the summer the land gets hotter, heating the atmosphere and pulling in cooler, moisture-laden air from the oceans. This causes pulses in heavy rainfall throughout the region. In the winter the land cools off and winds move towards the warmer ocean and suppressing rainfall on land. Music: Letting Go by Mario Lauer, 24 Dimensions by Christian Telford, David Travis Edwards, Matthew St. Laurent, and Robert Anthony Navarro Additional footage provided by pond5.com. Credit: NASA/Goddard/Ryan Fitzgibbons If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEplorer	Transcript Link
2016 05 12	NASA Goddard	https://youtu.be/zAXvSo03F8A	NASA Tracks Volcanic Ash With Satellites	Volcano eruptions can wreak havoc on airplanes that fly through the clouds of ash and sulfur dioxide. The ash, in particular, can destroy a jet engine and even cause it to fail mid-flight. However, it can be difficult to detect the ash clouds, because they often look like ordinary rain clouds on radar and to the pilot's eye. To be cautious, volcanic eruptions are given a wide berth, leading to costly delays and cancellations. NASA scientist Nickolay Krotkov is developing a new way to map the full three-dimensional structure of the volcanic cloud. The NASA/NOAA/DoD Suomi NPP satellite maps the concentration of sulfur dioxide and volcanic aerosols using the Ozone Mapping Profiler Suite (OMPS). After it passes the volcanic plume, the OMPS Limb Profiler looks backwards and measures the vertical profile of the cloud in three separate slices. The location and height of the particles, as well as the amount of sulfur dioxide, is being integrated into models of weather patterns to forecast the spread of the volcanic cloud. High resolution of the vertical profiles allows a more accurate forecast in the days, weeks, and months after an eruption, which could reduce airline cancellations and re-routing costs. This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=12221	Transcript Link

2016 05 12	NASA Goddard	https://youtu.be/0vY4nDPrEKg	NASA's MMS Captures Magnetic Reconnection in Action	Like sending sensors up into a hurricane, NASA has flown four spacecraft through an invisible maelstrom in space, called magnetic reconnection. Magnetic reconnection is one of the prime drivers of space radiation and so it is a key factor in the quest to learn more about our space environment and protect our spacecraft and astronauts as we explore farther and farther from Earth. MMS is made of four identical spacecraft that launched in March 2015. They fly in a pyramid formation to create a full 3-dimensional map of any phenomena it observes. On October 16, 2015, the spacecraft traveled straight through a magnetic reconnection event at the boundary where Earth's magnetic field bumps up against the sun's magnetic field. This short video outlines the MMS mission and its first results. Since it launched, MMS has made more than 4,000 trips through the magnetic boundaries around Earth, each time gathering information about the way the magnetic fields and particles move. A surprising result was that at the moment of interconnection between the sun's magnetic field lines and those of Earth the crescents turned abruptly so that the electrons flowed along the field lines. By watching these electron tracers, MMS made the first observation of the predicted breaking and interconnection of magnetic fields in space. Credit: NASA/GSFC/Genna Duberstein If you like this video, subscribe to the NASA Goddard YouTube	Transcript Link
2016 05 10	NASA Goddard	https://youtu.be/AhWMOkrzKzs	NASA's SDO Captures Mercury Transit Time-lapse	Around 13 times per century, Mercury passes between Earth and the sun in a rare astronomical event known as a planetary transit. The 2016 Mercury transit occurred on May 9, between roughly 7:12 a.m. and 2:42 p.m. EDT. The images in this video are from NASA's Solar Dynamics Observatory, or SDO. Video credit: NASA's Goddard Space Flight Center/Genna Duberstein Music: Encompass by Mark Petrie For more info on the Mercury transit go to: http://www.nasa.gov/transit This video is public domain and may be downloaded at: http://svs.gsfc.nasa.gov/12235 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2016 05 09	NASA Goddard	https://youtu.be/gMEGWoCPPdk	Alex Young Mercury Transit Live Shot from NASA Goddard	From an Earth-based perspective, Mercury passes between our planet and the sun only about 13 times a century. May 9, 2016, will be the last opportunity to see the event, known as a transit, until 2019. In this video Dr. Alex Young, of NASA's Goddard Space Flight Center in Greenbelt, Maryland, talks about the transit. Credit: NASA's Goddard Space Flight Center For more info on the Mercury transit go to: http://www.nasa.gov/transit This video is public domain and may be downloaded at: http://svs.gsfc.nasa.gov/12232 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2016 05 06	NASA Goddard	https://youtu.be/ASbkxmack-4	Webb Telescope Mirror Rollover Timelapse	In this rare timelapse video, see inside the world's largest clean room at NASA's Goddard Space Flight Center in Greenbelt, Maryland as the James Webb Space Telescope team lifts and turns the telescope for the first time. With glimmering gold surfaces, the large primary and rounded secondary mirror on this telescope are specially designed to reflect infrared light from some of the first stars ever born. The team will now begin to prepare to install the telescope's science instruments to the back of the mirrors. Webb is an international project led by NASA with its partners, ESA (European Space Agency) and the Canadian Space Agency. For more information, visit: http://www.jwst.nasa.gov or http://www.nasa.gov/webb This video is public domain and may be downloaded at: http://svs.gsfc.nasa.gov/12241 Credit: NASA's Goddard Space Flight Center/Michael McClare, Nasreen Alkhateeb Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter:	Transcript Link

2016 05 04	NASA Goddard	https://youtu.be/3LdZNftlh8	Time-Lapse Tilting of Webb Telescope's Primary Mirror	The 18-segment primary mirror of NASA's James Webb Space Telescope was raised into vertical alignment in the largest clean room at the agency's Goddard Space Flight Center in Greenbelt, Maryland, on May 4, 2016. The James Webb Space Telescope is the scientific successor to NASA's Hubble Space Telescope. It will be the most powerful space telescope ever built. Webb will study many phases in the history of our universe, including the formation of solar systems capable of supporting life on planets similar to Earth, as well as the evolution of our own solar system. It's targeted to launch from French Guiana aboard an Ariane 5 rocket in 2018. Webb is an international project led by NASA with its partners, ESA (European Space Agency) and the Canadian Space Agency. Learn more at: http://jwst.gsfc.nasa.gov/ http://www.nasa.gov/webb Credit: NASA's Goddard Space Flight Center/Francis Reddy, Syneren Technologies Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2016 05 02	NASA Goddard	https://youtu.be/Zbm52JPjYbM	Dr. Piers Sellers visits Thule	Former astronaut and climate scientist Dr. Piers Sellers visits Thule, Greenland, one of the home bases for Operation IceBridge's spring Arctic campaign. IceBridge is a 10-year airborne science mission measuring polar ice with a range of instruments including laser altimeters and radar. In recent days, Thule has seen an unusual amount of snow as well as cloud conditions more similar to early summertime months. For more information: www.nasa.gov/icebridge	Transcript Link
2016 04 29	NASA Goddard	https://youtu.be/T0FxDxs7lyw	NASA's OSIRIS-REx Asteroid Sample Return Mission	The OSIRIS-REx mission, launching in September 2016, plans to return a sample of asteroid Bennu to Earth in 2023 so that scientists can study pristine material left over from the early solar system. Dante Lauretta, Principal Investigator for OSIRIS-REx, provides an overview of this asteroid sample return mission. Learn more at http://www.nasa.gov/osiris-rex and http://www.asteroidmission.org. This video is public domain and can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12227 Download more videos and animations of OSIRIS-REx at: http://svs.gsfc.nasa.gov/Gallery/OSIRIS-REx.html	Transcript Link

2016 04 28	NASA Goddard	https://youtu.be/Fq-5RI9C69I	NASA's Fermi Links Ghost Particle to Galaxy	Nearly 10 billion years ago, the black hole at the center of a distant galaxy produced a powerful outburst, and light from this blast began arriving at Earth in 2012. Astronomers using data from NASA's Fermi Gamma-ray Space Telescope and other space- and ground-based observatories have shown that a record-breaking neutrino seen around the same time likely was born in the same event. Neutrinos are the fastest, lightest, most unsociable and least understood fundamental particles. The study provides the first plausible association between a single extragalactic object and a high-energy cosmic neutrino. Although neutrinos far outnumber all the atoms in the universe, they rarely interact with matter. While this property makes them hard to detect, it lets neutrinos make a fast exit from places where light cannot easily escape -- such as the core of a collapsing star -- and zip across the universe almost completely unimpeded. Neutrinos can provide information about processes and environments that simply aren't available through a study of light alone. The IceCube Neutrino Observatory, built into a cubic kilometer of clear glacial ice at the South Pole, detects neutrinos when they interact with atoms in the ice. On Dec. 4, 2012, IceCube detected an event known as Big Bird, a neutrino with an energy exceeding 2 quadrillion electron volts (PeV), the highest-energy neutrino ever	Transcript Link
2016 04 26	NASA Goddard	https://youtu.be/er1sBpyih0s	NASA's Hubble Discovers Moon Orbiting Dwarf Planet Makemake	Astronomers using the Hubble Space Telescope discovered a moon orbiting dwarf planet Makemake -- the third largest known object past the orbit of Neptune, about two thirds the size of Pluto. Further observations of this moon may allow astronomers to calculate Makemake's mass, which will give them a better idea of its density and thus its bulk composition. The Hubble Space Telescope has been instrumental in studying our outer solar system; it also discovered four of the five moons orbiting Pluto. This video is public domain and can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12223 Read more: http://www.nasa.gov/feature/goddard/2016/hubble-discovers-moon-orbiting-the-dwarf-planet-makemake Music - "Digital Conquest" by JC Lemay and Laurent Dury, Koka Media and Universal Publishing Production Music	Transcript Link

2016 04 26	NASA Goddard	https://youtu.be/zOwHT8yS1XI	Rising CO2 Levels Greening Earth	From a quarter to half of Earth's vegetated lands has shown significant greening over the last 35 years largely due to rising levels of atmospheric carbon dioxide, according to a new study published in the journal Nature Climate Change on April 25. The greening represents an increase in leaves on plants and trees equivalent in area to two times the continental United States. Credit: NASA's Goddard Space Flight Center/Kayvon Sharghi This video is public domain and may be downloaded at: http://svs.gsfc.nasa.gov/12222 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2016 04 26	NASA Goddard	https://youtu.be/Ski2JS-A-Xh0	NASA's 4K View of April 17 Solar Flare	On April 17, 2016, an active region on the sun's right side released a mid-level solar flare, captured here by NASA's Solar Dynamics Observatory. This solar flare caused moderate radio blackouts, according to NOAA's Space Weather Prediction Center. Scientists study active regions – which are areas of intense magnetism – to better understand why they sometimes erupt with such flares. This video was captured in several wavelengths of extreme ultraviolet light, a type of light that is typically invisible to our eyes, but is color-coded in SDO images for easy viewing. Credit: NASA's Goddard Space Flight Center/SDO/Genna Duberstein The music is Collide by Greg Lehrman in the KillerTracks catalog. This video is public domain and may be downloaded at: http://svs.gsfc.nasa.gov/12224 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2016 04 21	NASA Goddard	https://youtu.be/eDH2Y_VRvo	Korea U.S. (KORUS) Air Quality Campaign Teaser	We're about to get a close-up view of air quality over South Korea using airplanes, ships, and stations on the ground. Credit: NASA's Goddard Space Flight Center/J. Beck	Transcript Link
2016 04 14	NASA Goddard	https://youtu.be/xEids4CQ0vE	NASA's Hubble Memorable Moments Comet Impact	In July 1994, the Hubble Space Telescope was poised to use its newly fixed optics to observe one of the most impressive astronomical events of the century - the 21 fragments of Comet Shoemaker-Levy 9 impacting Jupiter. But these observations almost didn't happen. Read more at www.nasa.gov/feature/goddard/2016/hubble-memorable-moments-comet-impact This video is public domain and can be downloaded from the Scientific Visualization Studio at https://svs.gsfc.nasa.gov/11822	Transcript Link
2016 04 13	NASA Goddard	https://youtu.be/5V49yL4pe2E	Martian Atmosphere Loss Explained by NASA	Scientists have long suspected the solar wind of stripping the Martian atmosphere into space, a process that may have turned Mars from a blue world early in its history into the red planet that we see today. In 2014, NASA's MAVEN orbiter arrived at Mars and began studying its upper atmosphere. Now, MAVEN has returned significant measurements of solar wind erosion at Mars, observing ions in the upper atmosphere as they pick up energy from the electric field of the solar wind and escape to space. Learn more at: http://www.nasa.gov/press-release/nasa-mission-reveals-speed-of-solar-wind-stripping-martian-atmosphere Follow NASA's Mars Exploration Program on social media #JourneyToMars This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?4370 Animations of the Mars fleet are available for download at: http://svs.gsfc.nasa.gov/goto?4414 NASA's Scientific Visualization Studio created this video from the following data: MAVEN oxygen ion results: http://ppi.pds.nasa.gov/search/?t=Mars&sc=MAVEN&facet=SPACECRAFT_NAME&depth=1	Transcript Link

2016 04 04 NASA Goddard <https://youtu.be/sh2KhliHD9A> How El Niño Impacts Marine Plant Life

El Niño years can have a big impact on the littlest plants in the ocean, and NASA scientists are studying the relationship between the two. Ocean color maps, based on a month's worth of satellite data, show El Niño's impact on phytoplankton.

[Transcript](#)
[Link](#)

In El Niño years, huge masses of warm water – equivalent to about half of the volume of the Mediterranean Sea – slosh east across the Pacific Ocean towards South America. That mass of warm water puts a lid on the normal currents of cold, deep water that typically rise to the surface along the equator and off the coast of Chile and Peru.

"An El Niño basically stops the normal upwelling," Uz said. "There's a lot of starvation that happens to the marine food web." These small plants, called phytoplankton, are fish food – without them, fish populations drop, and the fishing industries that many coastal regions depend on can collapse. In this video, NASA oceanographer Stephanie Uz talks about the impact of El Niño's warm waters on tiny marine plants called phytoplankton.

Read more: <http://www.nasa.gov/feature/goddard/2016/nasa-examines-el-nino-impact-on-ocean-food-source>

This video and related visualizations are public domain and can be downloaded from the Scientific Visualization Studio at:
<https://svs.gsfc.nasa.gov/12176>

2016 03 31 NASA Goddard <https://youtu.be/HsleJV32zDo> Why Do Raindrop Sizes Matter In Storms

For more information:
<http://www.nasa.gov/feature/goddard/2016/size-matters-nasa-measures-raindrop-sizes-from-space-to-understand-storms>

[Transcript](#)
[Link](#)

Not all raindrops are created equal. The size of falling raindrops depends on several factors, including where the cloud producing the drops is located on the globe and where the drops originate in the cloud. For the first time, scientists have three-dimensional snapshots of raindrops and snowflakes around the world from space, thanks to the joint NASA and Japan Aerospace Exploration Agency Global Precipitation Measurement (GPM) mission. With the new global data on raindrop and snowflake sizes this mission provides, scientists can improve rainfall estimates from satellite data and in numerical weather forecast models, helping us better understand and prepare for extreme weather events.

Credit: NASA's Goddard Space Flight Center/J. Ng

This video is public domain and can be downloaded at:
<http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=12182>

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http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html

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<http://www.facebook.com/NASA.GSFC>

2016 03 29	NASA Goddard	https://youtu.be/nfhhkWZrXcQ	Webb's Heart Endures its Last Cryogenic Test Before Installation Into the Telescope	Engineers lift the James Webb Space Telescopes cameras and spectrographs out of the Space Environment Simulator at NASAs Goddard Space Flight Center in Greenbelt, Maryland. These vital parts of the Webb Space Telescope endured their last super-cold test at NASA Goddard before installation into the telescope. This produced video shows engineers at NASA Goddard Space Flight Center lifting the Webb Telescopes instruments and their support structure out of the Space Environment Simulator after completing its last cryogenic test before installation into the telescope. This video is public domain and can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12186 Read more: http://www.nasa.gov/feature/goddard/2016/james-webb-space-telescopes-instruments-removed-from-super-cold-chamber	Transcript Link
2016 03 28	NASA Goddard	https://youtu.be/ferqrZi4WF4	Record Low Arctic Sea Ice Maximum - 2016	Arctic sea ice appears to have reached a record low wintertime maximum extent for the second year in a row, according to scientists at the National Snow and Ice Data Center and NASA. This short animation shows the Arctic sea ice freeze cycle from the last summertime minimum extent to March 24, when it reached its wintertime maximum extent: at 5.607 million square miles, it is the lowest maximum extent in the satellite record. Credit: NASA Goddard's Scientific Visualization Studio/C. Starr This video is public domain and may be downloaded at: https://svs.gsfc.nasa.gov/4440	Transcript Link
2016 03 23	NASA Goddard	https://youtu.be/XDpG98pCZOA	NASA Earth Expeditions An Animated Tour	NASA takes you on a world tour with this animation as we kick off major new field campaigns to study regions of critical change from land, sea and air. Credit: NASA's Goddard Space Flight Center/Jefferson Beck	Transcript Link

2016 03 21	NASA Goddard	https://youtu.be/iDTDNIh4Qhw	Mars Gravity Map	A new map of Mars' gravity made with three NASA spacecraft is the most detailed to date, providing a revealing glimpse into the hidden interior of the Red Planet. Satellites always orbit a planet's center of mass, but can be pulled slightly off course by the gravity of massive features like Olympus Mons, the solar system's tallest mountain. Now, scientists at Goddard Space Flight Center have used these slight orbital fluctuations to map the gravity field of Mars, providing fresh insights into its crustal thickness, deep interior, and seasonal variations of dry ice at the poles. The new gravity map will also help to put future spacecraft into orbit more precisely, ensuring that the Mars fleet continues to return a massive trove of data. Learn more at: http://www.nasa.gov/feature/goddard/2016/mars-gravity-map Follow NASA's Mars Exploration Program on social media #JourneyToMars This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?4436 An animation of the Mars fleet is available for download at: http://svs.gsfc.nasa.gov/goto?4414	Transcript Link
2016 03 18	NASA Goddard	https://youtu.be/3Gf6XcpomOU	GLOBE Science Fair 2016	Students from West Virginia to New Hampshire showed off their scientific research as part of the GLOBE program in a science fair held Friday, March 11, 2016 at NASA's Goddard Space Flight Center in Greenbelt, Maryland. GLOBE - the Global Learning and Observations to Benefit the Environment (GLOBE) program is a hands-on science and education program that connects students, teachers and scientists from more than a hundred countries. To date students have contributed nearly 100-million measurements to the GLOBE database. More than 1.5 million students worldwide have participated in the GLOBE program since it launched in 1995. This video is public domain and can be downloaded from the Scientific Visualization Studio at https://svs.gsfc.nasa.gov/12175 Read more: http://www.nasa.gov/feature/goddard/2016/next-generation-scientists-participate-in-nasa-globe-science-fair For a gallery of photos from the event, visit http://www.flickr.com/photos/nasa_goddard/albums/72157665208328790. To learn more about the GLOBE program visit http://www.globe.gov/.	Transcript Link

2016 03 14	NASA Goddard	https://youtu.be/Q7jiko nvOlc	Student Scientists Building REXIS	College students in Boston are getting the chance to help NASA explore an asteroid. These student scientists have built an instrument called REXIS, which will fly on the OSIRIS-REx spacecraft that is scheduled to launch later in 2016. This video puts a spotlight on a group of these students and their experience on the REXIS project. This video is public domain and can be downloaded from the Scientific Visualization Studio at: https://svs.gsfc.nasa.gov/12167 Credit: NASA's Goddard Space Flight Center/David Ladd For more on OSIRIS-REx, visit. http://www.nasa.gov/osirisrex	Transcript Link
2016 03 09	NASA Goddard	https://youtu.be/KEuNX FwU02w	Tracking California Rains During El Niño	This winter, areas across the globe experienced a shift in rain patterns due to the natural weather phenomenon known as El Niño. New NASA visualizations of rainfall data show the various changes to California. According to the National Oceanic and Atmospheric Administration, El Niño was expected to produce wetter-than-average conditions from December 2015 to February 2016. Scientists refer to historical weather patterns and to look at trends of where precipitation normally occurs during El Niño events. Also, several factors—not just El Niño—can contribute to unusual weather pattern. Related story: http://www.nasa.gov/feature/goddard/2016/nasa-maps-el-ninos-shift-on-us-precipitation This video is public record and can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/12169	Transcript Link
2016 03 03	NASA Goddard	https://youtu.be/iQjt14 KdKiA	NASA 2016 Eclipse Science Opportunities	Solar scientists Natchimuthuk Gopalswamy, Nelson Reginal, Eric Christian, and Sarah Jaeggli discuss the 2016 eclipse and how it is great preparation for the 2017 eclipse. As the moon slowly covers the face of the sun on the morning of March 9, 2016, in Indonesia, a team of NASA scientists will be anxiously awaiting the start of totality – because at that moment, their countdown clock begins. They plan to take 59 several-second exposures of the sun in just over three minutes, capturing data on the innermost parts of the sun’s volatile, superhot atmosphere – a region we can only observe during total solar eclipses when the sun’s overwhelmingly bright face is completely blocked by the moon. In partnership with Exploratorium, NASA TV will be showing a live stream of the eclipse on March 8, 2016, from 8-9 pm ET. This video is in the public domain and you may download full-resolution or other versions from the Scientific Visualization Studio: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=12147 Read more: http://www.nasa.gov/feature/goddard/2016/a-moment-in-the-suns-atmosphere	Transcript Link

2016 03 03	NASA Goddard	https://youtu.be/ykkrf87WsLI	NASA 2016 Science - Seeing the Inner Corona	Scientists Nelson Reginald and Natchimuthuk Gopalswamy describe the experiment they will do during the 2016 eclipse in Indonesia. As the moon slowly covers the face of the sun on the morning of March 9, 2016, in Indonesia, team of NASA scientists will be anxiously awaiting the start of totality – because at that moment, their countdown clock begins. They plan to take 59 several-second exposures of the sun in just over three minutes, capturing data on the innermost parts of the sun’s volatile, superhot atmosphere – a region we can only observe during total solar eclipses when the sun’s overwhelmingly bright face is completely blocked by the moon. In partnership with Exploratorium, NASA TV will be showing a live stream of the eclipse on March 8, 2016, from 8-9 pm ET. This video is in the public domain and you may download full-resolution or other versions from the Scientific Visualization Studio: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=12147 Read more: http://www.nasa.gov/feature/goddard/2016/a-moment-in-the-suns-atmosphere	Transcript Link
2016 02 29	NASA Goddard	https://youtu.be/7-7cXXMAtwM	NASA GPM Analyzes Powerful Tropical Cyclone Winston over Fiji	The Global Precipitation Measurement or GPM mission core satellite passed directly over Tropical Cyclone Winston on Feb. 20 just after it made landfall on the north coast of Viti Levu Island, which is the largest and most populated island in the nation of Fiji. At the time, Winston was one of the most intense tropical cyclones observed in the South Pacific Ocean, and took an unusual track on the way to Fiji, completing a large counter-clockwise loop during the preceding week. The GPM satellite, co-managed by NASA and the Japan Aerospace Exploration Agency, is designed to measure rainfall using both passive microwave (GMI) and radar (DPR) instruments. GMI measurements are sensitive to the column-integrated rain and ice water, and cover a wide swath, whereas the DPR can observe 3D structures of radar signals reflected by rain and snow in a narrower swath. In this animation, the GMI rainfall estimates are shown at the earth's surface below the 3D storm structure revealed by DPR. For more information about GPM, visit: www.nasa.gov/gpm For NASA's Hurricane Web page for Winston, visit: http://www.nasa.gov/feature/goddard/2016/winston-southwestern-pacific-ocean This video is public domain and can be downloaded at:	Transcript Link

2016 02 25	NASA Goddard	https://youtu.be/n1hxl53rq5Q	NASA, Partner Space Agencies Measure Forests In Gabon	NASA researchers have their boots on the ground and wings in the skies in Gabon, on Africa's west coast, for a comprehensive survey of the carbon storage of tropical forests. Partnering together with the European Space Agency, the German space agency (DLR), and Gabon's space agency (AGEOS), NASA is studying rain forests and mangrove forests using both the Land, Vegetation, and Ice Sensor (LVIS) laser altimeter instrument and the Uninhabited Aerial Vehicle Synthetic Aperture Radar (UAVSAR). During the AfriSAR campaign, UAVSAR will fly at 40,000 feet high mounted beneath a C-20A aircraft from NASA's Armstrong Flight Research Center, Edwards, California, while LVIS will fly at 28,000 feet onboard a B-200 airplane from NASA's Langley Research Center in Hampton, Virginia.	Transcript Link

For a high-resolution download of this video, visit the Scientific Visualization Studio: <http://svs.gsfc.nasa.gov/goto?12159>

2016 02 24	NASA Goddard	https://youtu.be/zj-dETgdcdM	NASA Scientists Link Faraway Fires To High Ozone Levels In Pacific	NASA-funded scientists have traced the origins of mysterious pockets of high ozone concentrations and low water vapor in the air above the western Pacific Ocean near Guam to fires burning in Southeast Asia and in Africa, half a world away.	Transcript Link

These pockets of ozone—a powerful greenhouse gas—are three times more concentrated than surrounding air and are found at around 30,000 feet in the lower part of Earth's atmosphere known as the troposphere, within the cruising altitude of most commercial airliners. As a greenhouse gas, ozone in the troposphere is an important contributor to global warming, but because it varies widely in where it occurs and how long it stays aloft, its true impact on climate change is hard to determine.

Researchers studying the air over Guam during the winter of 2014 during a pair of airborne field campaigns captured a comprehensive picture of the chemicals traveling with the ozone—chemicals such as hydrogen cyanide and acetonitrile, which originate in fires. Using a data-driven computer model, they then traced the ozone-laden air pockets back 10 to 15 days in most cases—right back to fires in either Southeast Asia, about 2,000 miles away, or tropical Africa, over 8,000 miles away.

Read more: <http://www.nasa.gov/feature/goddard/2016/tropical-fires-fuel-elevated-ozone-levels-over-western-pacific-ocean>

Download the high-resolution version here:

2016 02 18	NASA Goddard	https://youtu.be/LbJpVHMV1m4	WFIRST The Best of Both Worlds	NASA officially is beginning work on an astrophysics mission designed to help unlock the secrets of the universe -- the Wide Field Infrared Survey Telescope (WFIRST). With a view 100 times bigger than that of NASA's Hubble Space Telescope, WFIRST will aid researchers in their efforts to unravel the secrets of dark energy and dark matter, and explore the evolution of the cosmos. It also will discover new worlds outside our solar system and advance the search for worlds that could be suitable for life. WFIRST is the agency's next major astrophysics observatory, following the launch of the James Webb Space Telescope in 2018. The observatory will survey large regions of the sky in near-infrared light to answer fundamental questions about the structure and evolution of the universe, and expand our knowledge of planets beyond our solar system, known as exoplanets. It will carry a Wide Field Instrument for surveys, and a Coronagraph Instrument designed to block the glare of individual stars and reveal the faint light of planets orbiting around them. By blocking the light of the host star, the Coronagraph Instrument will enable detailed measurements of the chemical makeup of planetary atmospheres. Comparing these data across many worlds will allow scientists to better understand the origin and physics of these atmospheres, and search for chemical signs of environments suitable for life.	Transcript Link
2016 02 12	NASA Goddard	https://youtu.be/8MlmmQvqCSg	SDO Year 6 Ultra-HD	The sun is always changing and NASA's Solar Dynamics Observatory is always watching. Launched on Feb. 11, 2010, SDO keeps a 24-hour eye on the entire disk of the sun, with a prime view of the graceful dance of solar material coursing through the sun's atmosphere, the corona. SDO's sixth year in orbit was no exception. This video shows that entire sixth year -- from Jan. 1, 2015, to Jan. 28, 2016, as one time-lapse sequence. At full quality on YouTube, this video is ultra-high definition 3840x2160 and 29.97 frames per second. Each frame represents 2 hours. A downloadable version has a frame rate of 59.94 with each frame representing 1 hour. See below for the link. SDO's Atmospheric Imaging Assembly (AIA) captures a shot of the sun every 12 seconds in 10 different wavelengths. The images shown here are based on a wavelength of 171 angstroms, which is in the extreme ultraviolet range and shows solar material at around 600,000 kelvins (about 1,079,540 degrees F). In this wavelength it is easy to see the sun's 25-day rotation. During the course of the video, the sun subtly increases and decreases in apparent size. This is because the distance between the SDO spacecraft and the sun varies over time. The image is, however, remarkably consistent and stable despite the fact that SDO orbits Earth at 6,876 mph, and Earth orbits the sun at 67,062 mph. Scientists study these images to better understand the complex	Transcript Link

2016 01 29	NASA Goddard	https://youtu.be/14xr5OK4Px8	NASA OLYMPEX Successfully Grabs the Rains	NASA finishes campaign to study extreme rain, snow and winds of the Olympic National Forest. Scientists Walt Petersen of NASA Marshall and Robert Houze of the University of Washington narrate this inside look at the Olympic Mountain Experiment (OLYMPEX) field campaign. During the campaign, NASA and its partners gathered precipitation data through both ground and airborne instruments around the Olympic Peninsula in Washington State. They measured the abundance and variety of precipitation including light rain, heavy thunderstorms, and snowfall in the coastal forest. The data collected will provide crucial information to improve the Global Precipitation Measurement satellite mission's measurements of light rain and snow, as well as help researchers understand how precipitation changes across land and ocean. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12131 Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2016 01 29	NASA Goddard	https://youtu.be/2g1epPpplOM	Understanding the Magnetic Sun	NASA GSFC solar scientist Holly Gilbert explains a computer model of the sun's magnetic field. Grasping what drives that magnetic system is crucial for understanding the nature of space throughout the solar system: The sun's invisible magnetic field is responsible for everything from the solar explosions that cause space weather on Earth – such as auroras – to the interplanetary magnetic field and radiation through which our spacecraft journeying around the solar system must travel. We can observe the shape of the magnetic fields above the sun's surface because they guide the motion of that plasma – the loops and towers of material in the corona glow brightly in EUV images. Additionally, the footpoints on the sun's surface, or photosphere, of these magnetic loops can be more precisely measured using an instrument called a magnetograph, which measures the strength and direction of magnetic fields. Scientists also turn to models. They combine their observations – measurements of the magnetic field strength and direction on the solar surface – with an understanding of how solar material moves and magnetism to fill in the gaps. Simulations such as the Potential Field Source Surface, or PFSS, model – shown in the accompanying video – can help illustrate exactly how magnetic fields undulate around the sun. Models like PFSS can give us a good idea of what the solar magnetic field looks like in the sun's corona and even on	Transcript Link

2016 01 27	NASA Goddard	https://youtu.be/aqVh8otlFN8	NASA Making Science Fun For Kids Through Comics	For more information: http://www.nasa.gov/feature/goddard/2016/making-science-fun-for-kids-through-comics To get young students reading about science, NASA is trying something different. Instead of a press release or a scientific paper, the Global Precipitation Measurement (GPM) mission has launched a Japanese manga-style comic book. GPM, a satellite collaboration between NASA and the Japan Aerospace Exploration Agency, provides global estimates of rain and snow every three hours using advanced instruments. In spring 2013, a GPM Anime Challenge was held for artists from around the world aged 13 years and up to develop an anime-themed character for teaching students about the GPM mission. The lead characters in the anime project were selected from more than 40 submissions by a panel of NASA scientists and outreach specialists. The grand prize winners were "GPM" by Yuki Kiriga of Tokyo, Japan and "Mizu-chan" by Sabrynne Buchholz of Hudson, Colorado. With the lead characters selected, the GPM team crafted a story that wove together the science and engineering of the mission in bringing GPM from development to launch and ultimately to its orbit around Earth, and hired an artist to bring the story to life with artwork. Supplemental materials to support the text include an overview of the GPM mission, a description of the satellite and its	Transcript Link
2016 01 22	NASA Goddard	https://youtu.be/DV8n8fceAZo	NASA Supercomputer Model Shows the Flow of %23Blizzard2016	A NASA Center for Climate Simulation supercomputer model that shows the flow of #Blizzard2016 thru Sunday, January 24, 2016. Learn more here: http://go.nasa.gov/1WBm547 * Note: Fixed a typo in the caption - changing the date from 2015 to 2016.	Transcript Link

2016 01 07	NASA Goddard	https://youtu.be/mplp1oFokNA	NASA Best-Ever View of the High-Energy Gamma-ray Sky - 4K	This image, constructed from more than six years of observations by NASA's Fermi Gamma-ray Space Telescope, is the first to show how the entire sky appears at energies between 50 billion (GeV) and 2 trillion electron volts (TeV). A diffuse glow fills the sky and is brightest in the middle of the map, along the central plane of our galaxy. The famous Fermi Bubbles, first detected in 2010, appear as red extensions north and south of the galactic center and are much more pronounced at these energies. Discrete gamma-ray sources include pulsar wind nebulae and supernova remnants within our galaxy, as well as distant galaxies called blazars powered by supermassive black holes. Labels show the highest-energy sources, all located within our galaxy and emitting gamma rays exceeding 1 TeV. Major improvements to methods used to process observations from NASA's Fermi Gamma-ray Space Telescope have yielded an expanded, higher-quality set of data that allows astronomers to produce the most detailed census of the sky yet made at extreme energies. This new sky map reveals hundreds of these sources, including 12 that produce gamma rays with energies exceeding a trillion times the energy of visible light. The survey also discovered four dozen new sources that remain undetected at any other wavelength. The improved data, known as Pass 8, effectively sharpens the Large Area Telescope's (LAT) view while also significantly widening its useful energy range.	Transcript Link
2016 01 07	NASA Goddard	https://youtu.be/G0dOoYgelczY	NASA Fermi Sharpens its High-Energy View - 4K	Major improvements to methods used to process observations from NASA's Fermi Gamma-ray Space Telescope have yielded an expanded, higher-quality set of data that allows astronomers to produce the most detailed census of the sky yet made at extreme energies. By carefully reexamining every gamma-ray and particle detection by the Large Area Telescope (LAT) since Fermi's 2008 launch, scientists improved their knowledge of the detector's response to each event and to the background environment in which it was measured. This enabled the Fermi team to find many gamma rays that previously had been missed while simultaneously improving the LAT's ability to determine the directions of incoming gamma rays. The improved data, known as Pass 8, effectively sharpens the LAT's view while also significantly widening its useful energy range. For the first time, Fermi data now extend to energies previously seen only by ground-based detectors. Because ground-based telescopes have much smaller fields of view than the LAT, which scans the whole sky every three hours, they have detected only about a quarter of the objects in the new catalog. Read more: http://www.nasa.gov/feature/goddard/2016/nasas-fermi-space-telescope-sharpens-its-high-energy-vision This video is public domain and can be downloaded at: https://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=12019	Transcript Link

2016 01 04	NASA Goddard	https://youtu.be/oiGzKmfOvkg	NASA GPM One Year of Storms	A look back at the snowstorms, tropical storms, typhoons, hurricanes and floods captured and analyzed by the Global Precipitation Measurement (GPM) mission from around the globe during 2015. The complete list of storms by date and location are as follows: 1. New England Nor'easter – January 26 – New England, USA 2. Snowstorm – February 17 – Kentucky, Virginia and North Carolina, USA 3. Tornadoic Thunderstorms in Midwest – March 25 – Oklahoma and Arkansas, USA 4. Typhoon Maysak – March 30 – Yap Islands, Southwest Pacific Ocean 5. Rain Accumulation from Cyclone Quang – April 28 through May 3 - Australia 6. Flooding in Central Texas and Oklahoma – May 19 through May 26 - USA 7. Hurricane Blanca – June 1 – Eastern Pacific Ocean, Baja Peninsula, Mexico 8. Tropical Storm Ashobaa – June 8 – Arabian Sea 9. Tropical Storm Carlos – June 12 – Southwestern Coast, Mexico 10. Tropical Storm Bill – June 16 – Texas, USA 11. USA Rain Accumulation – June through July - USA 12. Tropical Storm Raquel – July 1 – Solomon Islands, South Pacific Ocean 13. Tropical Storm Claudette – July 13 – North Atlantic Ocean	Transcript Link
2015 12 25	NASA Goddard	https://youtu.be/E8y-J2Z-pU0	NASA LRO Observes the 2015 Christmastime Full Moon	If you have clear skies tonight, look up at the rare Christmastime full moon. Right now NASA's Lunar Reconnaissance Orbiter is orbiting our moon, and has been since its launch in 2009. It sends back high-resolution images of the moon's surface, maps of the moon's gravity, and so much more. To learn more about LRO go here: www.nasa.gov/LRO. And by the way, the next time we'll have a Christmastime full moon will be the year 2034.	Transcript Link
2015 12 23	NASA Goddard	https://youtu.be/_ikEDWINWjY	NASA Observing the 2015 Christmastime Full Moon	This year is a rare Christmastime full moon. When you look up at the moon, remember that NASA's Lunar Reconnaissance Orbiter has been orbiting our moon since its launch in 2009. It's sending back high-resolution images of the moon's surface, maps of the moon's gravity, and so much more. To learn more about LRO go here: www.nasa.gov/LRO. And by the way, the next time we'll have a Christmastime full moon will be the year 2034.	Transcript Link

2015 12 15 NASA Goddard <https://youtu.be/AJh7fq7tYfg> NASA Blazar Bonanza

A long time ago in a galaxy half the universe away, a flood of high-energy gamma rays began its journey to Earth. When they arrived in April, NASA's Fermi Gamma-ray Space Telescope caught the outburst, which helped two ground-based gamma-ray observatories detect some of the highest-energy light ever seen from a galaxy so distant.

[Transcript](#)
[Link](#)

Astronomers had assumed that light at different energies came from regions at different distances from the black hole. Gamma rays, the highest-energy form of light, were thought to be produced closest in. But observations across the spectrum suggest that light at all wavelengths came from a single region located far away roughly five light-years from the black hole, which is greater than the distance between our sun and the nearest star.

The gamma rays came from a galaxy known as PKS 1441+25, a type of active galaxy called a blazar. Located toward the constellation Boötes, the galaxy is so far away its light takes 7.6 billion years to reach us. At its heart lies a monster black hole with a mass estimated at 70 million times the sun's and a surrounding disk of hot gas and dust. If placed at the center of our solar system, the black hole's event horizon -- the point beyond which nothing can escape -- would extend almost to the orbit of Mars.

As material in the disk falls toward the black hole, some of it forms dual particle jets that blast out of the disk in opposite directions at nearly the speed of light. Blazars are so bright in gamma rays

2015 12 14 NASA Goddard <https://youtu.be/N-ViWN2dviQ> NASA Observing the 2015 El Niño

People the world over are feeling, or soon will feel, the effects of the strongest El Niño event since 1997-98, currently unfolding in the eastern equatorial Pacific Ocean. New satellite observations are beginning to show scientists its impact on the distribution of rain, tropospheric ozone and wildfires around the globe.

[Transcript](#)
[Link](#)

An El Niño, which is a reoccurring natural phenomenon, happens when sea surface temperatures in the equatorial Pacific Ocean warm up. The increased ocean surface temperatures influence air and moisture movement around the globe. Approximately 15 years of observations by NASA's fleet of Earth-observing satellites show how El Niños affect multiple interconnected Earth systems.

This video is public domain and can be downloaded at:
<http://svs.gsfc.nasa.gov/goto?12098>

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Or find us on Twitter:
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2015 12 14	NASA Goddard	https://youtu.be/aMnDoXuTGS4	NASA Human Fingerprint on Global Air Quality	http://www.nasa.gov/press-release/new-nasa-satellite-maps-show-human-fingerprint-on-global-air-quality Transcript Link Using new, high-resolution global satellite maps of air quality indicators, NASA scientists tracked air pollution trends over the last decade in various regions and 195 cities around the globe. The United States, Europe and Japan have improved air quality thanks to emission control regulations, while China, India and the Middle East, with their fast-growing economies and expanding industry, have seen more air pollution. Scientist Bryan Duncan and his team examined observations made from 2005 to 2014 by the Ozone Monitoring Instrument aboard NASA's Aura satellite. One of the atmospheric gases the instrument detects is nitrogen dioxide, a yellow-brown gas that is a common emission from cars, power plants and industrial activity. Nitrogen dioxide can quickly transform into ground-level ozone, a major respiratory pollutant in urban smog. Nitrogen dioxide hotspots, used as an indicator of general air quality, occur over most major cities in developed and developing nations. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12096 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html
2015 12 14	NASA Goddard	https://youtu.be/XGJRZglvKo	NASA EPIC Observations Pouring In	http://www.nasa.gov/press-release/nasa-studies-high-clouds-saharan-dust-from-epic-view Transcript Link It's a fresh view of Earth. Less than a year after its launch on the Deep Space Climate Observatory (DSCOVR), NASA's onboard camera is taking images of the entire sunlit side of Earth every two hours. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12097 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard

2015 12 11	NASA Goddard	https://youtu.be/Y3xokCzDwLI	NASA Moon Phases 2016, Southern Hemisphere - 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2016, as viewed from the southern hemisphere. Each frame represents one hour. In addition, this visualization shows the Moon's orbit position, sub-Earth and subsolar points, distance from the Earth at true scale, and labels of craters near the terminator. To learn more about this visualization, or to see what the Moon will look like at any hour in 2016, visit our "Dial A-Moon" website: http://svs.gsfc.nasa.gov/vis/a000000/a004400/a004404/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 12 11	NASA Goddard	https://youtu.be/Cm7FGBS09UY	NASA Moon Phases 2016, Northern Hemisphere - 4K	This 4K visualization shows the Moon's phase and libration at hourly intervals throughout 2016, as viewed from the northern hemisphere. Each frame represents one hour. In addition, this visualization shows the Moon's orbit position, sub-Earth and subsolar points, distance from the Earth at true scale, and labels of craters near the terminator. To learn more about this visualization, or to see what the Moon will look like at any hour in 2016, visit our "Dial A-Moon" website: http://svs.gsfc.nasa.gov/vis/a000000/a004400/a004404/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 12 11	NASA Goddard	https://youtu.be/c8hdFuSVgdA	NASA OLYMPEX Scientists in the Field Joe Zagrodnik	Joe Zagrodnik is a student at the University of Washington who is working with NASA scientists to measure the properties of rain and snow in the Olympic National Park. From November 10 through December 21, NASA and university scientists are taking to the field to study wet winter weather near Seattle, Washington. With weather radars, weather balloons, specialized ground instruments, and NASA's DC-8 flying laboratory, the science team will be verifying rain and snowfall observations made by the Global Precipitation Measurement (GPM) satellite mission on a NASA-led field campaign, The Olympic Mountain Experiment, or OLYMPEX. “The challenge really is just to keep everything running as this weather just continues to come one storm after another. It’s hard to get a break but it keeps it exciting,” said student Joe Zagrodnik at University of Washington, Seattle. Photo credits: Mark Harris, Joe Zagrodnik, and Bill Baccus This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=12091 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook:	Transcript Link
2015 12 10	NASA Goddard	https://youtu.be/bNsOB Cd7cFs	NASA Laser Focus The Receiver	To see how the Transmitter works, go here https://youtu.be/yvZas1WBiWg For more info: http://www.nasa.gov/feature/goddard/nasa-tests-icesat-2-s-laser-aim/ Opto-Mechanical Engineer Tyler Evans explains how the photons that bounce back from Earth are received and filtered by the ATLAS telescope. ATLAS is the primary instrument on board the ICESat-2 spacecraft, which will measure the height of Earth's features. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11726 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 12 09	NASA Goddard	https://youtu.be/OKjKjxD3so	NASA OLYMPEX Scientists in the Field Rachael Kroodsm	Rachael Kroodsm is the instrument scientist for the CoSMIR on board NASA's DC-8 airborne laboratory as part of the OLYMPEX field campaign. From November 10 through December 21, NASA and university scientists are taking to the field to study wet winter weather near Seattle, Washington. With weather radars, weather balloons, specialized ground instruments, and NASA's DC-8 flying laboratory, the science team will be verifying rain and snowfall observations made by the Global Precipitation Measurement (GPM) satellite mission on a NASA-led field campaign, The Olympic Mountain Experiment, or OLYMPEX. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12091 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 12 03	NASA Goddard	https://youtu.be/V7KGzr4E84	NASA Webb Space Telescope Receives First Mirror Installation	NASA has successfully installed the first of 18 flight mirrors onto the James Webb Space Telescope, beginning a critical piece of the observatory's construction. The full installation of all 18 mirror segments in Webb's primary mirror is expected to be complete early next year. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12092 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 12 01	NASA Goddard	https://youtu.be/LJAcro rHx8l	NASA Highlights from SOHO's 20 Years in Space	Dr. Joe Gurman of NASA's Goddard Space Flight Center provides commentary on selected shots from SOHO's 20 years in space. After 20 years in space, ESA and NASA's Solar and Heliospheric Observatory, or SOHO, is still going strong. Originally launched in 1995 to study the sun and its influence out to the very edges of the solar system, SOHO revolutionized this field of science, known as heliophysics, providing the basis for nearly 5,000 scientific papers. SOHO also found an unexpected role as the greatest comet hunter of all time—reaching 3,000 comet discoveries in September 2015. When SOHO was launched on Dec. 2, 1995, the field of heliophysics looked very different than it does today. Questions about the interior of the sun, the origin of the constant outflow of material from the sun known as the solar wind, and the mysterious heating of the solar atmosphere were still unanswered. Twenty years later, not only do we have a much better idea about what powers the sun, but our entire understanding of how the sun behaves has changed. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12052 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2015 11 20	NASA Goddard	https://youtu.be/EPIKH GMY9C4	NASA Carbon in the Ocean	Jeremy Werdell is studying how microscopic plankton in the oceans are responding to our changing climate. As a scientist at NASA's Goddard Space Flight Center, he knows that Earth's oceans and land cover have been doing us a favor. As people burn fossil fuels and clear forests, only half of the carbon dioxide released stays in the atmosphere, warming and altering Earth's climate. The other half is removed from the air by the planet's vegetation ecosystems and oceans. But Jeremy and other scientists are still trying to answer important questions about how carbon dioxide emissions get absorbed by the land and the ocean — and how this could change in the future. #EarthRightNow http://www.nasa.gov/carbonclimate This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12066 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 11 19	NASA Goddard	https://youtu.be/Qu5uQgiLnUQ	NASA Carbon All Around Us	Rising carbon dioxide levels in the atmosphere are driving changes in Earth's climate. But scientists are still trying to answer important questions about how carbon dioxide emissions get absorbed by the land and the ocean — and how this could change in the future. We know that one-quarter of the carbon released from fossil fuel consumption is soaked up by vegetation and even the soil. Will rising temperatures and changing precipitation levels affect how much carbon is being absorbed? George Hurtt, professor at University of Maryland, is leading the NASA Carbon Monitoring System to develop new technologies and techniques to better monitor and model carbon uptake. A more precise knowledge of the carbon cycle will reduce uncertainties and enable better decision making for the future. http://www.nasa.gov/carbonclimate This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12064 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter:	Transcript Link
2015 11 18	NASA Goddard	https://youtu.be/Tpidc0unfly	NASA Lesley Ott Carbon & Climate	Rising carbon dioxide levels in the atmosphere are driving changes in Earth's climate. But scientists are still trying to answer important questions about how carbon dioxide emissions get absorbed by the land and the ocean — and how this could change in the future. NASA Goddard Space Flight Center's Lesley Ott talks about NASA's high-powered computer models are giving us a better understanding of carbon's role in Earth's changing climate. #EarthRightNow http://www.nasa.gov/carbonclimate This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12065 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 11 17	NASA Goddard	https://youtu.be/iSZUh3ygg-0	NASA Our Violent Universe	Our universe is more than a serene landscape of stars--it is teeming with activity from some extremely violent events. In a presentation at the IMAX theatre at the Smithsonian National Air and Space Museum in Washington, D.C. on September 30, scientists take us inside our violent universe with stunning visuals from NASA satellites.	Transcript Link
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2015 11 13	NASA Goddard	https://youtu.be/oPYelhvp1kg	NASA Muppet Lola and NASA Engineers Promote Science Education in Latin America	Lola, a Muppet from Plaza Sésamo, partnered with NASA engineers Sandra Cauffman (Goddard Space Flight Center) and Diana Trujillo (Jet Propulsion Laboratory) at an event with the Inter-American Development Bank to discuss early mathematics and science education in Latin America and the Caribbean.	Transcript Link
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2015 11 12	NASA Goddard	https://youtu.be/9yKJBBvgf7U	NASA Fermi Detects First Gamma-ray Pulsar in Another Galaxy	Researchers using NASA's Fermi Gamma-ray Space Telescope have discovered the first gamma-ray pulsar in a galaxy other than our own. The object sets a new record for the most luminous gamma-ray pulsar known. The pulsar lies in the outskirts of the Tarantula Nebula in the Large Magellanic Cloud, a small galaxy that orbits our Milky Way and is located 163,000 light-years away. The Tarantula Nebula is the largest, most active and most complex star-formation region in our galactic neighborhood. It was identified as a bright source of gamma rays, the highest-energy form of light, early in the Fermi mission. Astronomers initially attributed this glow to collisions of subatomic particles accelerated in the shock waves produced by supernova . However, the discovery of gamma-ray pulses from a previously known pulsar named PSR J0540-6919 shows that it is responsible for roughly half of the gamma-ray brightness previously thought to come from the nebula. Gamma-ray pulses from J0540-6919 have 20 times the intensity of the previous record-holder, the pulsar in the famous Crab Nebula. Yet they have roughly similar levels of radio, optical and X-ray emission. Accounting for these differences will guide astronomers to a better understanding of the extreme physics at work in young pulsars. Read more at http://www.nasa.gov/feature/goddard/nasas-fermi-	Transcript Link
2015 11 10	NASA Goddard	https://youtu.be/gh0vEyzWxE	NASA Researchers Gear Up for OLYMPEX	The Olympic Mountain Experiment, or OLYMPEX, is a NASA-led field campaign, which will take place on the Olympic Peninsula of Washington State from November 2015 through February 2016. The goal of the campaign is to collect detailed atmospheric measurements that will be used to evaluate how well rain-observing satellites measure rainfall and snowfall from space. In particular, OLYMPEX will be assessing satellite measurements made by the Global Precipitation Measurement (GPM) mission Core Observatory, a joint mission by NASA and the Japan Aerospace Exploration Agency (JAXA), which launched in 2014. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12050 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 11 05	NASA Goddard	https://youtu.be/gX5JCYBZpcg	NASA Solar Wind Strips Martian Atmosphere	Mars is a cold and barren desert today, but scientists think that in the ancient past it was warm and wet. The loss of the early Martian atmosphere may have led to this dramatic change, and one of the prime suspects is the solar wind. Unlike Earth, Mars lacks a global magnetic field to deflect the stream of charged particles continuously blowing off the Sun. Instead, the solar wind crashes into the Mars upper atmosphere and can accelerate ions into space. Now, NASA's MAVEN spacecraft has observed this process in action – by measuring the speed and direction of ions escaping from Mars. This data visualization compares simulations of the solar wind and Mars atmospheric escape with new measurements taken by MAVEN. To learn more, visit http://www.nasa.gov/mission_pages/maven/main/index.html Read the full NASA press release at http://www.nasa.gov/press-release/nasa-mission-reveals-speed-of-solar-wind-stripping-martian-atmosphere Watch an excerpt of the MAVEN Mission Briefing https://youtu.be/jjltLod-prE This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?4370	Transcript Link
2015 11 01	NASA Goddard	https://youtu.be/wQF61JOYd54	NASA Synthesis NASA Data Visualizations In Ultra-HD (4K)	Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: Our senses tell us about the natural world, but our senses cannot tell us everything. That's why we use tools, and NASA develops some of the most sophisticated, most exciting tools of all. Designed to reveal aspects of the Earth, the Sun, The Moon, these tools gather essential data about the world around us, while other instruments peer way out to much more distant places. When these data are turned into visualizations, we discover a complexity and elegance to the natural world that would otherwise elude our physical senses. Even more important, we uncover vital clues to understand how things work, how they're changing, and what the implications for those changes may mean. With the advent of Ultra-High-Definition video, more commonly known as "4K Video", those images take on an enhanced majesty and power. In this video, we present images about our home planet, as well as the life-giving star it orbits, and the mysterious moon that travels with us through space. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/12034 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter:	Transcript Link

2015 11 01 NASA Goddard https://youtu.be/6tmbeLTHC_0 NASA
Thermonuclear
Art – The Sun In
Ultra-HD (4K)

It's always shining, always ablaze with light and energy that drive weather, biology and more. In addition to keeping life alive on Earth, the sun also sends out a constant flow of particles called the solar wind, and it occasionally erupts with giant clouds of solar material, called coronal mass ejections, or explosions of X-rays called solar flares. These events can rattle our space environment out to the very edges of our solar system. In space, NASA's Solar Dynamics Observatory, or SDO, keeps an eye on our nearest star 24/7. SDO captures images of the sun in 10 different wavelengths, each of which helps highlight a different temperature of solar material. In this video, we experience SDO images of the sun in unprecedented detail. Presented in ultra-high definition, the video presents the dance of the ultra-hot material on our life-giving star in extraordinary detail, offering an intimate view of the grand forces of the solar system.

[Transcript](#)
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Credit: NASA's Goddard Space Flight Center

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http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html

Or find NASA Goddard Space Flight Center on Facebook:
<http://www.facebook.com/NASA.GSFC>

2015 10 30 NASA Goddard <https://youtu.be/hBU1yFbGHB8> NASA Looking
for the Shadows
of New Worlds

Astronomers have used many different methods to discover planets beyond the solar system, but the most successful by far is transit photometry, which measures changes in a star's brightness caused by a mini-eclipse. When a planet crosses in front of its star along our line of sight, it blocks some of the star's light. If the dimming lasts for a set amount of time and occurs at regular intervals, it likely means an exoplanet is passing in front of, or transiting, the star once every orbital period.

[Transcript](#)
[Link](#)

NASA's Kepler Space Telescope has used this technique to become the most successful planet-hunting spacecraft to date, with more than a thousand established discoveries and many more awaiting confirmation. Missions carrying improved technology are now planned, but how much more can they tell us about alien planetary systems similar to our own?

A great deal, according to recently published studies by Michael Hippke at the Institute for Data Analysis in Neukirchen-Vluyn, Germany, and Daniel Angerhausen, a postdoctoral researcher at NASA's Goddard Space Flight Center in Greenbelt, Maryland. They show that in the best-case scenarios upcoming missions could uncover planetary moons, ringed worlds similar to Saturn, and even large collections of asteroids.

This video is public domain and can be downloaded at:
<http://svs.gsfc.nasa.gov/goto?12018>

2015 10 28	NASA Goddard	https://youtu.be/joILdG6aB0w	NASA Webb Space Telescope Integrated Science Instrument Module Begins Final Cryogenic Test	Engineers place the heart of the James Webb Space Telescope into the Space Environment Simulator, a giant thermal vacuum and cryogenic testing chamber, at NASA's Goddard Space Flight Center in Greenbelt, Maryland. This video is public domain and can be downloaded at: https://svs.gsfc.nasa.gov/cgi-bin/search.cgi?sortby=relevance&value=12029 You can find out more information at: Nasa.gov/jwst Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 10 28	NASA Goddard	https://youtu.be/p0IGY5ESslw	NASA Brazil's Extreme Drought Seen From Space	For more information: http://www.nasa.gov/feature/goddard/nasas-grace-satellites-evaluate-drought-in-southeast-brazil Empty water reservoirs, severe water rationing, and electrical blackouts are the new status quo in major cities across southeastern Brazil where the worst drought in 35 years has desiccated the region. A new NASA study estimates that the region has lost an average of 15 trillion gallons of water per year from 2012 to 2015. Eastern Brazil as a whole has lost on average 28 trillion gallons of water per year over the same time period. Augusto Getirana, a hydrologist at NASA's Goddard Space Flight Center, in Greenbelt, Maryland, analyzed the amount of water stored in aquifers and rivers across Brazil from 2002 to 2015, interested in understanding the depth of the current drought. A new data visualization of 13 years of GRACE data shows the distribution of water across Brazil. Blues indicate increases in water, mostly occurring in the western regions of Brazil in the rainforest. Meanwhile red shows where water stores have declined, occurring mainly in the north and southeast. At the beginning of the data collection, in 2002, Brazil was just coming out of a drought that began in 2000. A wet period followed until 2012 when dry conditions set in again due to a lack of precipitation and higher than usual temperatures, according to supplemental data.	Transcript Link

2015 10 22	NASA Goddard	https://youtu.be/Bb42yJ4QBeU	NASA Widely Used Coolants Contribute to Ozone Depletion	According to a new NASA study, a class of widely used chemical coolants known as hydrofluorocarbons (HFC), found in refrigerators and in home and automobile air conditioners, contributes to ozone depletion by a small but measurable amount, countering a decades-old assumption. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=12030 You can read more at: http://www.nasa.gov/press-release/goddard/nasa-study-shows-that-common-coolants-contribute-to-ozone-depletion Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 10 21	NASA Goddard	https://youtu.be/hu6hIhW00Fk	NASA Massive Black Hole Shreds Passing Star	This artist's rendering illustrates new findings about a star shredded by a black hole. When a star wanders too close to a black hole, intense tidal forces rip the star apart. In these events, called "tidal disruptions," some of the stellar debris is flung outward at high speed while the rest falls toward the black hole. This causes a distinct X-ray flare that can last for a few years. NASA's Chandra X-ray Observatory, Swift Gamma-ray Burst Explorer, and ESA/NASA's XMM-Newton collected different pieces of this astronomical puzzle in a tidal disruption event called ASASSN-14li, which was found in an optical search by the All-Sky Automated Survey for Supernovae (ASAS-SN) in November 2014. The event occurred near a supermassive black hole estimated to weigh a few million times the mass of the sun in the center of PGC 043234, a galaxy that lies about 290 million light-years away. Astronomers hope to find more events like ASASSN-14li to test theoretical models about how black holes affect their environments. During the tidal disruption event, filaments containing much of the star's mass fall toward the black hole. Eventually these gaseous filaments merge into a smooth, hot disk glowing brightly in X-rays. As the disk forms, its central region heats up tremendously, which drives a flow of material, called a wind, away from the disk. Music credit: Encompass by Mark Petrie from Killer Tracks. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12005	Transcript Link

2015 10 14	NASA Goddard	https://youtu.be/CRO6bCLN1Dg	NASA Tracking Agricultural Water Use From Space	Water managers in 15 states across the U.S. use Metric technology to monitor and track agricultural water consumption. Nebraska has 23 natural resource districts and more than 10 major river basins, making this satellite-based technology a critical part of managing water resources. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12026 You can read more about this at: http://www.nasa.gov/feature/goddard/tracking-agricultural-water-use-on-a-smartphone Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 10 13	NASA Goddard	https://youtu.be/3afEX8a2iPg	NASA Jupiter in 4k Ultra HD	New imagery from NASA's Hubble Space Telescope is revealing details never before seen on Jupiter. High-resolution maps and spinning globes (rendered in the 4k Ultra HD format) are the first products to come from a program to study the solar system's outer planets each year using Hubble. The observations are designed to capture a broad range of features, including winds, clouds, storms and atmospheric chemistry. These annual studies will help current and future scientists see how such giant worlds change over time. This video is in the public domain. It can be downloaded along with the new Jupiter globes and maps at: http://svs.gsfc.nasa.gov/goto?12021 Learn more at: http://www.nasa.gov/press-release/goddard/hubble-s-planetary-portrait-captures-new-changes-in-jupiter-s-great-red-spot Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 10 05	NASA Goddard	https://youtu.be/Bi1cbmTRyvE	NASA Seeing Inside A Hurricane	NASA scientist Dalia Kirschbaum explains how the Global Precipitation Measurement Mission's Core observatory has an instrument that can see layer by layer through a storm. In this visualization of data by NASAs Goddard's Space Flight Center, we see Hurricane Joaquin when it was a tropical storm. Red and green colors show rain and the ice and snow at the top of the storm is visualized here in blue. Understanding hurricane structure helps weather forecasters around the world determine a storm's structure and where it may be going.	Transcript Link
2015 09 28	NASA Goddard	https://youtu.be/OUbXpusL9uQ	NASA IceBridge Flies High over Both Poles	Learn more: www.nasa.gov/gpm For the first time NASA's Operation IceBridge is flying simultaneous missions over both the Arctic and Antarctic, on smaller, faster aircraft. These campaigns and aircraft represent both a unique opportunity for measuring polar ice, and something of a scientific tradeoff from IceBridge's traditional campaigns. For more on Operation IceBridge, go to www.nasa.gov/icebridge You can learn more about this at: http://www.nasa.gov/feature/goddard/nasa-to-fly-parallel-science-campaigns-at-both-poles This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12015 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 09 27	NASA Goddard	https://youtu.be/mcRmQp7F7I	NASA Explore at Goddard Day	Over 20,000 visitors came to the Goddard Space Flight Center on Saturday, September 26 for the open house event Explore@NASAGoddard. The public had a chance to explore Goddard's main areas of Earth science, heliophysics, planetary science, astrophysics, and engineering and technology. In celebration of the Hubble Space Telescope's 25th anniversary, this year's event highlighted the theme "Celebrating Hubble and the Spirit of Exploration." Read the web story at http://www.nasa.gov/feature/goddard/explorenasagoddard-2015-concludes This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=12010 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 09 24	NASA Goddard	https://youtu.be/PHGRdovNGmM	NASA Landsat Helps Feed the Birds	Over the last century, California's Central Valley has lost 95% of the wetlands habitat, which is needed for the shorebirds while on their migration. The solution involves big data, binoculars and rice paddies. The Nature Conservancy of California has innovated a program called Bird Returns that works with rice farmers to create temporary wetlands just during the weeks that they are needed. The Nature Conservancy works closely with two other organizations, who are using NASA data to enable the program. Point Blue Conservation Science is using data from the NASA/USGS Landsat satellite to map surface water in the Central Valley and determine the likelihood a given spot will have water any given month. And the Cornell Lab of Ornithology is using data from Landsat and NASA's MODIS instrument to expand their network of citizen science observations. With the NASA data, the Cornell Lab is able to take individual bird observations and predict how abundant a given bird species will be at another location. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12013 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link

2015 09 23	NASA Goddard	https://youtu.be/ZkoGnniQlcM	NASA Hubble Memorable Moments Tinkertoy Solution	The Hubble Space Telescope got off to a rocky start when shortly after its April, 1990 deployment, operators found that its high-gain antenna was mysteriously stuck. Hubble team members recall that intense week and how they ultimately solved the antenna problem in this third installment of Hubble Memorable Moments: Tinkertoy Solution. Follow the web story at: www.nasa.gov/feature/goddard/hubble-memorable-moments-tinkertoy-solution This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11822 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 09 23	NASA Goddard	https://youtu.be/eM5IX9RQzZ4	NASA Earth's Oceans Show Decline In Microscopic Plant Life	http://www.nasa.gov/feature/goddard/nasa-study-shows-oceanic-phytoplankton-declines-in-northern-hemisphere The world's oceans have seen significant declines in certain types of microscopic plant-life at the base of the marine food chain, according to a new NASA study. The research is the first to look at global, long-term phytoplankton community trends based on a model driven by NASA satellite data. Diatoms, the largest type of phytoplankton algae, have declined more than 1 percent per year from 1998 to 2012 globally, with significant losses occurring in the North Pacific, North Indian and Equatorial Indian oceans. The reduction in population may have an impact on the amount of carbon dioxide drawn out of the atmosphere and transferred to the deep ocean for long-term storage. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12009 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter:	Transcript Link

2015 09 22	NASA Goddard	https://youtu.be/rA_VClzvbyM	NASA Getting the Big Picture	A brief animated look at the different types of remote sensing techniques that NASA uses to study the Earth. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11877 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 09 18	NASA Goddard	https://youtu.be/k3H7zfabJk8	NASA Arctic Sea Ice Reaches 2015 Minimum Extent	On September 11, Arctic sea ice reached its annual minimum extent for 2015. At 1.70 million square miles (4.41 million square kilometers), it's the fourth lowest extent on record. https://www.nasa.gov/press-release/arctic-sea-ice-summertime-minimum-is-fourth-lowest-on-record This video is public domain and can be downloaded at: https://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=12001 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 09 17	NASA Goddard	https://youtu.be/8elwMXnU8IA	NASA GPM Gets a Ton of Kilo	Links to data sets: GPM/GMI and IMERG precipitation: http://pmm.nasa.gov/data-access/downloads/gpm Tracks: http://weather.unisys.com/hurricane Clouds: http://www.class.ncdc.noaa.gov The Global Precipitation Measurement (GPM) mission core satellite provided many views of Tropical Cyclone over its very long life. GPM is a satellite co-managed by NASA and the Japan Aerospace Exploration Agency that has the ability to analyze rainfall and cloud heights. GPM was able to provide data on Kilo over its 21 day life-span. http://www.nasa.gov/feature/goddard/kilo-central-pacific For the extended visualizations go to http://svs.gsfc.nasa.gov/goto?4358 and http://svs.gsfc.nasa.gov/goto?4359 This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?12007 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link

2015 09 16	NASA Goddard	https://youtu.be/hX_2Du1NG4U	NASA Ask a Climate Scientist Thinning Ice Sheets	How can Greenland's ice sheets still be more than 10,000 feet thick, if carbon dioxide is warming the planet? This was the question posed to polar scientist Kelly Brunt as part of NASA's Ask A Climate Scientist series. According to Dr. Brunt, the concept of thickness is very important to polar scientists. It is easy to see that the ice sheets and sea ice are changing horizontally (http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=4301), covering less and less of the polar regions. But the ice is also thinning, getting smaller vertically. Greenland's ice is very thick and only the outer layer is experiencing warming temperatures. But that layer is melting more often (http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=4325) and a little bit of melting over such a large area produces a lot of extra water contributing to sea level rise. See more of NASA's answers to your questions on climate science (http://bit.ly/1b7rSdL). This video is public domain and can be downloaded at: https://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=11991 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook:	Transcript Link
2015 09 16	NASA Goddard	https://youtu.be/JkRXI8PzmBM	NASA James Webb Space Telescope Stands Tall	The flight structure of NASA's James Webb Space Telescope was standing tall in the cleanroom at NASA's Goddard Space Flight Center in Greenbelt, Maryland. This video is public domain and can be downloaded at: https://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=11996 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 09 15	NASA Goddard	https://youtu.be/7l16fVKKURs	NASA 3,000 Comets for SOHO	In this video, Karl Battams of the Naval Research Lab talks us through a visualization of the comets that SOHO has witnessed. Since its launch nearly 20 years ago, NASA and the European Space Agency's Solar and Heliospheric Observatory has spotted 3000 comets. The mission's The Large Angle and Spectrometric Coronagraph (LASCO) instrument blocks out the bright solar disk, making it easier to see the corona of plasma and dust around the Sun, normally only visible during solar eclipses. This instrument also provides a very large field of view of the region around the Sun. This visualization utilizes SOHO data from 1998 - 2010 and shows over 2000 comets. Comets that were first observed by SOHO carry no labels, and comets witnessed by not discovered by the spacecraft are represented with their labels. Trails on the comets are color coded based on family: yellow - unaffiliated comets, red - Kreutz group, green - Meyer group, blue - Marsden, cyan - Kracht, and magenta - Kracht 2. To find the visualizations without narration or music, please visit http://svs.gsfc.nasa.gov/goto?4344 This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11975 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link
2015 09 15	NASA Goddard	https://youtu.be/74SYGSKf5CM	NASA Rising Seas Science on the Greenland Ice Sheet	Enjoy a deep dive into sea level rise research as NASA scientists and their colleagues discuss their research on and around the Greenland Ice Sheet. To learn more about NASA research and the study of sea level rise, go to http://www.nasa.gov/goddard/risingseas	Transcript Link

2015 09 15	NASA Goddard	https://youtu.be/7_2aOHwA5I8	NASA Rising Seas Teaser Science on the Greenland Ice Sheet	A quick preview of the sights and sounds captured this summer as researchers ventured out on the Greenland Ice Sheet. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11994 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11776 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 09 14	NASA Goddard	https://youtu.be/IIVNDTPtyC8	NASA Earth and Moon Photobomb SDO	On Sept. 13, 2015, as NASA's Solar Dynamics Observatory, or SDO, kept up its constant watch on the sun, its view was photobombed not once, but twice. Just as the moon came into SDO's field of view on a path to cross the sun, Earth entered the picture, blocking SDO's view completely. When SDO's orbit finally emerged from behind Earth, the moon was just completing its journey across the sun's face. Though SDO sees dozens of Earth eclipses and several lunar transits each year, this is the first time ever that the two have coincided. SDO's orbit usually gives us unobstructed views of the sun, but Earth's revolution around the sun means that SDO's orbit passes behind Earth twice each year, for two to three weeks at a time. During these phases, Earth blocks SDO's view of the sun for anywhere from a few minutes to over an hour once each day. Earth's outline looks fuzzy, while the moon's is crystal-clear. This is because—while the planet itself completely blocks the sun's light—Earth's atmosphere is an incomplete barrier, blocking different amounts of light at different altitudes. However, the moon has no atmosphere, so during the transit we can see the crisp edges of the moon's horizon. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11993 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast:	Transcript Link

2015 09 02	NASA Goddard	https://youtu.be/KHDXeXXoP3c	NASA Mapping Mars' Upper Atmosphere	High above the thin Martian skies, NASA's MAVEN spacecraft is carrying out a mission: determine how Mars lost its early atmosphere, and with it, its water. While previous Mars orbiters have peered down at the planet's surface, MAVEN is spending part of its time gazing at the stars, looking for subtle changes in their color as they dip through the limb of Mars and set below the horizon. Such stellar occultations reveal what Mars' atmosphere is made of, and how its composition varies with altitude. MAVEN's observations are providing scientists with the most detailed picture of the Mars upper atmosphere to date, helping them understand how a once-hospitable world changed into the forbidding desert that we see today. Learn more at http://www.nasa.gov/mission_pages/maven/main/index.html Follow NASA's Mars Exploration Program on social media #JourneyToMars This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11992 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2015 08 31	NASA Goddard	https://youtu.be/vKAwwrlr5s	NASA Supermoon Lunar Eclipse	On September 27th, 2015 there will be a very rare event in the night sky – a supermoon lunar eclipse. Watch this animated feature to learn more. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11981 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 08 28 NASA Goddard <https://youtu.be/mVfSKg5lknk> NASA Aumento del nivel del mar entrevista con Carlos Del Castillo El aumento del nivel del mar es uno de los signos más claros del calentamiento del planeta. Durante las últimas dos décadas, la información recopilada por los satélites de la NASA, además de campañas aéreas e investigaciones de campo, muestra un aumento constante en el nivel de los océanos del planeta a medida que las capas polares se derriten. El aumento del nivel del mar es uno de los mayores retos ambientales del siglo XXI, y las investigaciones de la NASA están ayudando a entender cuánto y cómo de rápido subirán nuestros océanos subirán. El doctor Carlos del Castillo, jefe del laboratorio de ecología oceánica del Centro de vuelo espacial Goddard de la NASA, habla sobre las últimas investigaciones sobre el aumento del nivel del mar y el derretimiento de las capas de hielo polares.

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2015 08 28 NASA Goddard <https://youtu.be/SJtTjOMpb2Q> NASA Sea Level Rising Interview with Tom Wagner Earth's rising seas are some of most visible signs of our warming planet. Over the last 20 years, NASA satellites, airborne missions and field campaigns show a steady rise in global sea levels as the world's polar ice sheets melt. As the Earth continues to warm, new research suggests sea levels could rise by as much as several feet in the next 100 years. Sea level rise is one of the biggest environmental challenges of the 21st Century, and NASA research is helping us understand how much our oceans will rise, and how fast that will happen. Hear from NASA scientists about the latest research on rising sea levels and melting polar ice. See surprising new views of ice loss in Greenland and Antarctica, and talk about the consequences of our rising oceans.

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2015 08 26	NASA Goddard	https://youtu.be/PvXtQUmNeuw	NASA Webb Telescope Backplane Arrives at GSFC	Webb Telescope's Backplane arrived at Joint Base Andrews on Monday, August 24, 2015 aboard a U.S. Air Force C-5 cargo plane. The Backplane, inside the Space Telescope Transporter for Air Road and Sea (STTARS) container, is off-loaded from the C-5 and carefully transported to NASA Goddard Space Flight Center. There the container is moved into the cleanroom and opened in preparation for the removal of the Backplane. The Webb Telescope's Backplane is a large composite structure that holds and supports Webb's hexagonal mirrors. The backplane supports the weight of the 21-foot (6.5 m) diameter mirror, and 5,300 lbs (2400 kg) of telescope optics and instruments. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11986 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 08 18	NASA Goddard	https://youtu.be/UUoTDL99Mb4	NASA Lakes On A Glacier	How deep is that icy blue water on Greenland's ice sheet? Dr. Allen Pope, of the National Snow and Ice Data Center, is using data from the NASA/USGS Landsat 8 satellite to find out. In this video, Dr. Pope shares what he sees when he looks at a Landsat image of the Greenland ice sheet just south of the Jakobshavn Glacier. Because the lakes are darker than the ice around them, they absorb more energy from the sun. A little bit of melt concentrates in one place, and then melts more, establishing a feedback mechanism accelerating the growth of the lake. When the lakes get big enough they can force open fractures that then drill all the way down to the bed of the glacier, transporting this water to the base where it can temporarily speed up the flow of the ice. NASA and the U.S. Department of the Interior through the U.S. Geological Survey (USGS) jointly manage the Landsat program, and the USGS preserves a 40-plus-year archive of Landsat images that is freely available over the Internet. http://www.nasa.gov/landsat http://landsat.usgs.gov This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11973 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link

2015 08 06 NASA Goddard <https://youtu.be/MB6mVGHVzYE> NASA Preparing for GOES-R at NOAA's Hazardous Weather Testbed The future brings the unknown, and weather forecasts are all about seeing the future. NOAA's Hazardous Weather Testbed brings top weather forecasters and research scientists together to learn about the latest tools and techniques. In this video, we meet some of the participants in this year's campaign, and look ahead to a major advance in weather forecasting, the GOES-R weather satellite.

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2015 07 29 NASA Goddard <https://youtu.be/hDmlB2BCN8> NASA How Sunlight Pushes Asteroids

Rotating asteroids have a tough time sticking to their orbits. Their surfaces heat up during the day and cool down at night, giving off radiation that can act as a sort of mini-thruster. This force, called the Yarkovsky effect, can cause rotating asteroids to drift widely over time, making it hard for scientists to predict their long-term risk to Earth. To learn more about the Yarkovsky effect, NASA is sending a spacecraft called OSIRIS-REx to the near-Earth asteroid Bennu. OSIRIS-REx will observe how Bennu's shape, brightness, and surface features influence the strength of the Yarkovsky effect, helping scientists to better predict Bennu's orbit over time and pin down its long-term risk.

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Learn more about NASA's OSIRIS-REx mission to asteroid Bennu:
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Visit the University of Arizona's OSIRIS-REx website:
<http://www.asteroidmission.org/>

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2015 07 27	NASA Goddard	https://youtu.be/z8OIKhaxzR4	NASA Driving A Lunar Spacecraft	Want to fly a spacecraft around the Moon? Take this video for a spin to see how NASA operates the Lunar Reconnaissance Orbiter. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=11949 To learn more about the Lunar Reconnaissance Orbiter, visit: http://lunar.gsfc.nasa.gov Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 07 23	NASA Goddard	https://youtu.be/oHuCsnUEHk	NASA Hubble Memorable Moments Brute Force	In this second video of NASA's Hubble Memorable Moments series celebrating Hubble's 25 years, the team scrambles to work out an unusual solution to a problem encountered during an instrument repair. The Space Telescope Imaging Spectrograph, or STIS, was installed on Hubble during Servicing Mission 2 in 1997. The versatile instrument was heavily used until a power supply failure in 2004. The Hubble team spent years preparing for a complex repair task in 2009 on the final servicing mission. But no matter how prepared you are, there is always the possibility of an unexpected obstacle. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11822 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 07 21	NASA Goddard	https://youtu.be/4ns13IhmDm8	NASA Scientists Link Earlier Melting Of Snow To Dark Aerosols	Tiny particles suspended in the air, known as aerosols, can darken snow and ice causing it to absorb more of the sun's energy. But until recently, scientists rarely considered the effect of all three major types of light-absorbing aerosols together in climate models. In a new study, NASA scientists used a climate model to examine the impact of this snow-darkening phenomenon on Northern Hemisphere snowpacks, including how it affects snow amount and heating on the ground in spring. The study looked at three types of light-absorbing aerosols – dust, black carbon and organic carbon. Black carbon and organic carbon are produced from the burning of fossil fuels, like coal and oil, as well as biofuels and biomass, such as forests. With their snow darkening effect added to NASA's GEOS-5 climate model, scientists analyzed results from 2002 to 2011, and compared them to model runs done without the aerosols on snow. They found that the aerosols indeed played a role in absorbing more of the sun's energy. Over broad places in the Northern Hemisphere, the darkened snow caused some surface temperatures to be up to 10 degrees Fahrenheit warmer than it would be if the snow were pristine. As a result, warmer, snow-darkened areas had less snow in spring than they would have had under pristine snow conditions. According to the study, dust's snow darkening effect significantly contributed to surface warming in Central Asia and the western	Transcript Link
2015 07 13	NASA Goddard	https://youtu.be/wlJ1gLCEGu4	NASA Four Questions About New Horizons	NASA's New Horizons spacecraft is speeding towards Pluto for the first-ever flyby on July 14, 2015. Scientists are eager to collect data on the dwarf planet's chemical and atmospheric makeup, and the Ralph spectrometer will do just that. Instrument scientist Dennis Reuter discusses Ralph, Pluto, and exploration of our solar system's last frontier, the Kuiper Belt. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11950 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 07 10 NASA Goddard <https://youtu.be/9RI4l6tuHGg> NASA Gamma-Ray Raindrops From Flaring Blazar

This visualization shows gamma rays detected during 3C 279's big flare by the LAT instrument on NASA's Fermi satellite. The flare is an abrupt shower of "rain" that trails off toward the end of the movie. Gamma rays are represented as expanding circles reminiscent of raindrops on water. Both the maximum size of the circle and its color represent the energy of the gamma ray, with white lowest and magenta highest. The highest-energy gamma ray the LAT detected during this flare, 52 billion electron volts, arrives near the end. In a second version of the visualization, a background map shows how the LAT detects 3C 279 and other sources by accumulating high-energy photons over time (brighter squares reflect higher numbers of gamma rays). The movie starts on June 14 and ends June 17. The area shown is a region of the sky five degrees on a side and centered on the position of 3C 279.

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Five billion years ago, a great disturbance rocked a region near the monster black hole at the center of galaxy 3C 279. On June 14, the pulse of high-energy light produced by this event finally arrived at Earth, setting off detectors aboard NASA's Fermi Gamma-ray Space Telescope and other satellites. Astronomers around the world turned instruments toward the galaxy to observe this brief but record-setting flare in greater detail.

3C 279 is a famous blazar, a galaxy whose high-energy activity is powered by a central supermassive black hole weighing up to a billion times the sun's mass and roughly the size of our planetary system. As matter falls toward the black hole, some particles race

2015 07 10 NASA Goddard https://youtu.be/zZh7RSuAhH_Q NASA Tracking Space Weather for New Horizons

A few months before New Horizons was due to reach Pluto, a community of scientists came together to determine just what kind of an environment the mission would experience during its historic flyby. While the simulations aren't 100% conclusive, this first ever attempt to characterize space weather conditions so far from our own home opens the door to better protecting our spacecraft – and eventually humans -- as we continue to explore the solar system and beyond.

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To attempt to map what surges of particles are passing by Pluto, the Community Coordinated Modeling Center, or CCMC, at NASA's Goddard Space Flight Center in Greenbelt, Maryland, sought input from space weather scientists around the nation. The CCMC houses numerous software models to help scientists with their research and also to enable improved space weather forecasting.

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2015 07 02 NASA Goddard <https://youtu.be/rxBR2gR5cys> NASA Coming Soon Closest Approach

Astronomers are gearing up for high-energy fireworks coming in early 2018, when a stellar remnant the size of a city meets one of the brightest stars in our galaxy. The cosmic light show will occur when a pulsar discovered by NASA's Fermi Gamma-ray Space Telescope swings by its companion star. Scientists plan a global campaign to watch the event from radio wavelengths to the highest-energy gamma rays detectable.

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The pulsar, known as J2032+4127 (J2032 for short), is the crushed core of a massive star that exploded as a supernova. It is a magnetized ball about 12 miles across, or about the size of Washington, weighing almost twice the sun's mass and spinning seven times a second. J2032's rapid spin and strong magnetic field together produce a lighthouse-like beam detectable when it sweeps our way.

The pulsar orbits a massive companion named MT91 213. Classified as a Be star, the companion is 15 times the mass of the sun and shines 10,000 times brighter. Be stars drive strong outflows, called stellar winds, and are embedded in large disks of gas and dust.

Following an elongated orbit lasting about 25 years, the pulsar passes closest to its partner once each circuit. Whipping around its companion in early 2018, the pulsar will plunge through the surrounding disk and trigger astrophysical fireworks. It will serve as a probe to help astronomers measure the massive star's gravity, magnetic field, stellar wind and disk properties.

2015 06 30 NASA Goddard <https://youtu.be/icitZubDmFI> NASA Arching Eruption

NASA's Solar Dynamics Observatory caught this image of an eruption on the side of the sun on June 18, 2015. The eruption ultimately escaped the sun, growing into a substantial coronal mass ejection, or CME — a giant cloud of solar material traveling through space. This imagery is shown in the 304 Angstrom wavelength of extreme ultraviolet light, a wavelength that highlights material in the low parts of the sun's atmosphere and that is typically colorized in red. The video clip covers about four hours of the event.

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2015 06 30 NASA Goddard <https://youtu.be/jGy0AYMzYxI> NASA Studying an Asteroid on Earth

Astrobiologists like Jason Dworkin are keenly interested in the origins of life on Earth, but the evidence that they seek was erased long ago by Earth's geology and chemistry. Fortunately, asteroids like Bennu preserve the solar system's earliest ingredients, including the carbon-based building blocks of life. That's why NASA is sending a spacecraft called OSIRIS-REx to explore asteroid Bennu and bring a sample back to Earth. The material collected by OSIRIS-REx will provide a wealth of data for future generations of astrobiologists, shedding light on one of Earth's biggest mysteries.

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2015 06 26 NASA Goddard <https://youtu.be/gmU6XSlgbnA> NASA IRIS A Slice of Light

On June 27, 2013, NASA launched IRIS, the Interface Region Imaging Spectrograph. IRIS gives us our first detailed image of a layer of the sun's atmosphere called the chromosphere. Boasting the highest temporal and spatial resolution to date, IRIS provides imagery and a special kind of data called spectra. In this video, we will look at IRIS data from a solar flare on March 11, 2015.

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An imaging spectrograph not only takes an image of the region of interest, but also has a small slit in the imager (seen as a dark line about half-way across the image) which passes a thin ribbon of light to a spectroscope. The spectroscope spreads the light out in its component frequencies or spectrum. Monitoring of specific spectral lines provides additional information on the velocity (and therefore temperature) of plasma in the observed region.

In the visualization presented here, the IRIS slit-jaw imager (SJI) takes images with two different filters, one at 1330 Angstroms (gold color table), the other at 1400 Angstroms (bronze color table), and these images are displayed overlaying corresponding imagery from the Solar Dynamics Observatory (SDO) 304 Angstrom filter (grayscale). The spectra, in this case a closeup view on the 1403 Angstrom line from 3-times ionized silicon (designated Si IV), is presented on a semi-transparent plane perpendicular to the images, at the position of the slit in the imager. This allows us to see correlations between features in the images and spectra. For example, some of the bright spots in the image correlate to wider regions along the line suggesting higher temperatures and/or

2015 06 25	NASA Goddard	https://youtu.be/SSioxuHa2dg	NASA Supercomputer Shows How an Exoplanet Makes Waves	A new NASA supercomputer simulation of the planet and debris disk around the nearby star Beta Pictoris reveals that the planet's motion drives spiral waves throughout the disk, a phenomenon that greatly increases collisions among the orbiting debris. Patterns in the collisions and the resulting dust appear to account for many observed features that previous research has been unable to fully explain. Astronomers Erika Nesvold (UMBC) and Marc Kuchner (NASA Goddard) essentially created a virtual Beta Pictoris in the computer and watched it evolve over millions of years. It is the first full 3-D model of a debris disk where scientists can watch the development of asymmetric features formed by planets, like warps and eccentric rings, and also track collisions among the particles at the same time. Music: "Deep Layer" by Lars Leonhard, courtesy of the artist. https://larsleonhard.bandcamp.com/ Read more at http://www.nasa.gov/feature/goddard/new-nasa-supercomputer-model-shows-planet-making-waves-in-nearby-debris-disk www.DiskDetective.org This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11896	Transcript Link
2015 06 23	NASA Goddard	https://youtu.be/n_HlPxZUklo	NASA Turning Black Holes into Dark Matter Labs	A new computer simulation tracking dark matter particles in the extreme gravity of a black hole shows that strong, potentially observable gamma-ray light can be produced. Detecting this emission would provide astronomers with a new tool for understanding both black holes and the nature of dark matter, an elusive substance accounting for most of the mass of the universe that neither reflects, absorbs nor emits light. Jeremy Schnittman, an astrophysicist at NASA's Goddard Space Flight Center, developed a computer simulation to follow the orbits of hundreds of millions of dark matter particles, as well as the gamma rays produced when they collide, in the vicinity of a black hole. He found that some gamma rays escaped with energies far exceeding what had been previously regarded as theoretical limits. In the simulation, dark matter takes the form of Weakly Interacting Massive Particles, or WIMPs, now widely regarded as the leading candidate class. In this model, WIMPs that crash into other WIMPs mutually annihilate and convert into gamma rays, the most energetic form of light. But these collisions are extremely rare under normal circumstances. Over the past few years, theorists have turned to black holes as dark matter concentrators, where WIMPs can be forced together in a way that increases both the rate and energies of collisions. The concept is a variant of the Penrose process, first identified in 1969 by British astrophysicist Sir Roger Penrose as a mechanism for	Transcript Link

2015 06 16 NASA Goddard <https://youtu.be/yvZas1WBiWg> NASA Laser Focus <http://www.nasa.gov/feature/goddard/lasers-path-through-icesat-2> [Transcript Link](#)

[ICESat-2's instrument, ATLAS, is designed to measure heights on Earth. ATLAS has three main tasks: transmitting a pattern of six laser beams, collecting the laser photons that return to the satellite after reflecting off Earth, and recording the travel time of those photons. First up – transmitting the laser. In this video, optical engineer Tyler Evans illustrates how the laser is transmitted from the ATLAS instrument to the ground.](#)

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2015 06 03 NASA Goddard <https://youtu.be/PV5CY7StUXE> NASA The Helheim Experience

Operation IceBridge has wrapped up its 2015 Arctic field campaign after covering a vast expanse of science targets during 33 different flights over land ice, sea ice, and glaciers. For more on the mission and the science it produces, visit nasa.gov/icebridge. And then take a few minutes to sit back, put on your headphones, go full screen, and enjoy a birds-eye view of a vast expanse of Greenland's mountainous region near Helheim Glacier in eastern Greenland aboard a NASA C-130. Music courtesy Moby.

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2015 06 02	NASA Goddard	https://youtu.be/DYWat0frV5o	NASA Summer 2015 Interns' First Day	On the first day of the 2015 summer internship season, host Katrina Jackson meets a wide variety of incoming Goddard interns who are working on projects such as web design, engineering, environmental education, finance, CubeSats, sea level rise, rockets, and more! http://www.nasa.gov/feature/goddard/welcomes-2015-class-of-interns This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11884 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 05 28	NASA Goddard	https://youtu.be/Osw-Kglukc0	NASA NIRSpec MSA Replacement Surgery	In this NASA video, engineers from Airbus Defense and Space (DS), Ottobrunn, Germany, dressed in white protective suits and special white gloves, recently completed a delicate surgical procedure to exchange two key components (micro shutter array and focal plane assembly) from the "heart" of an instrument on the James Webb Space Telescope at NASA's Goddard Space Flight Center in Greenbelt, Maryland. CREDIT: NASA, ESA & Airbus Defense and Space This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11879 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 05 13	NASA Goddard	https://youtu.be/jt0n_7TZamE	NASA What Are The Chances Of Another Katrina	For more information: http://www.nasa.gov/feature/goddard/no-major-us-hurricane-landfalls-in-nine-years-luck The U.S. hasn't experienced the landfall of a Category 3 hurricane or larger since 2005, when Dennis, Katrina, Rita and Wilma all hit the U.S. coast. According to a new NASA study, a string of nine years without a major hurricane landfall in the U.S. is likely to come along only once every 177 years. The current nine-year "drought" is the longest period of time that has passed without a major hurricane making landfall in the U.S. since reliable records began in 1850, said Timothy Hall, a research scientist who studies hurricanes at NASA's Goddard Institute for Space Studies, New York. The National Hurricane Center calls any Category 3 or more intense hurricane a "major" storm. Hall and colleague Kelly Hereid, who works for ACE Tempest Re, a reinsurance firm based in Connecticut, ran a statistical hurricane model based on a record of Atlantic tropical cyclones from 1950 to 2012 and sea surface temperature data. The researchers ran 1,000 computer simulations of the period from 1950-2012 – in effect simulating 63,000 separate Atlantic hurricane seasons. They found that a nine-year period without a major landfall is likely to occur once every 177 years on average.	Transcript Link
2015 05 07	NASA Goddard	https://youtu.be/7bWQQWvJymc	NASA Big Ozone Holes Headed For Extinction By 2040	The next three decades will see an end of the era of big ozone holes. In a new study, scientists from NASA Goddard Space Flight Center say that the ozone hole will be consistently smaller than 8 million square miles by the year 2040. Ozone-depleting chemicals in the atmosphere cause an ozone hole to form over Antarctica during the winter months in the Southern Hemisphere. Since the Montreal Protocol agreement in 1987, emissions have been regulated and chemical levels have been declining. However, the ozone hole has still remained bigger than 8 million square miles since the early 1990s, with exact sizes varying from year to year. The size of the ozone hole varies due to both temperature and levels of ozone-depleting chemicals in the atmosphere. In order to get a more accurate picture of the future size of the ozone hole, scientists used NASA's AURA satellite to determine how much the levels of these chemicals in the atmosphere varied each year. With this new knowledge, scientists can confidently say that the ozone hole will be consistently smaller than 8 million square miles by the year 2040. Scientists will continue to use satellites to monitor the recovery of the ozone hole and they hope to see its full recovery before the end of the century. Research: Inorganic chlorine variability in the Antarctic vortex and implications for ozone recovery. Journal: Geophysical Research: Atmospheres, December 18, 2014.	Transcript Link

2015 05 06	NASA Goddard	https://youtu.be/2ADlxe_t9460	NASA SDO Observes a Cinco de Mayo Solar Flare	The sun emitted a significant solar flare, peaking at 6:11 pm EDT on May 5, 2015. NASA's Solar Dynamics Observatory, which watches the sun constantly, captured an image of the event. Solar flares are powerful bursts of radiation. Harmful radiation from a flare cannot pass through Earth's atmosphere to physically affect humans on the ground, however -- when intense enough -- they can disturb the atmosphere in the layer where GPS and communications signals travel. This flare is classified as an X2.7-class flare. X-class denotes the most intense flares, while the number provides more information about its strength. An X2 is twice as intense as an X1, an X3 is three times as intense, etc. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11868 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 05 01	NASA Goddard	https://youtu.be/WEdOkRjhi1Y	NASA Phoenix Prominence Eruption	Over a six-hour period on April 21, 2015, NASA's Solar Dynamics Observatory (SDO) observed a wing-like prominence eruption. SDO views the sun in various wavelengths of the extreme ultraviolet, including 171 (shown in gold) and 304 (shown in orange) angstroms. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11864 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 04 24	NASA Goddard	https://youtu.be/3L7IOBvCpKQ	NASA IceBridge Heads for the Coast	Take a break from your day to soak in the sights and sounds of an Operation IceBridge flight over Greenland's southwest coast. This video features both the rugged scenery of Greenland and the somewhat rugged interior of a NASA C-130, the aircraft serving as the aerial platform for this spring's science campaign. IceBridge flies over the Arctic and Antarctic every year measuring changes in the ice with instruments like radar and lasers. This particular flight was designed to survey nearly the entirety of Greenland's southwest coast at several different surface elevations roughly parallel to the coastline. For more on IceBridge: www.nasa.gov/icebridge This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11862 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 04 23	NASA Goddard	https://youtu.be/2yCvxEN9NI4	NASA Hubble Memorable Moments Powering Down	In this first video of NASA's Hubble Memorable Moments series celebrating Hubble's 25 years, the telescope must be completely powered off to replace Hubble's heart. In 1999, engineers at NASA's Goddard Space Flight Center discovered that there was a problem with Hubble's Power Control Unit. Hubble team members came up with a plan to replace the unit on Servicing Mission 3B. On March 6, 2002, the day came to put that plan into action. What could go wrong? Stay tuned throughout 2015 for more Hubble Memorable Moments. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11822 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 04 23	NASA Goddard	https://youtu.be/dl99tgW1d8Q	NASA IceBridge Prepares for Wheels Up	Here's a small dose of how it feels to be part of NASA's Operation IceBridge team during a typical Kangerlussuaq morning, from that frigid ride to the airfield to wheels up over gorgeous Greenlandic scenery. IceBridge is deep into its Arctic 2015 campaign, flying low over Greenland's ice sheets, outlet glaciers, and Arctic sea ice. The airborne campaign flies over the Arctic and Antarctic every year measuring changes in the ice with instruments like radar and lasers. *This video replaces an earlier video that was posted incorrectly. That video was created for Instagram and can be found here: https://instagram.com/p/1vY0ZNt_Ps/ This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11862 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 04 17	NASA Goddard	https://youtu.be/2uL8LX4LmbA	NASA Earth from Orbit 2014	Every day of every year, NASA satellites provide useful data about our home planet, and along the way, some beautiful images as well. This video includes satellite images of Earth in 2014 from NASA and its partners as well as photos and a time lapse video from the International Space Station. We've also included a range of data visualizations, model runs, and a conceptual animation that were produced in 2014 (but in some cases might have been utilizing data from earlier years.) Below is a full list of the images included. To download an HD version of this video: http://svs.gsfc.nasa.gov/goto?11858 San Quintín Glacier, Chile. ISERV Pathfinder instrument on the ISS. http://earthobservatory.nasa.gov/IOTD/view.php?id=83901 Bazman Volcano, Iran. Astronaut photograph ISS038-E-25895. http://earthobservatory.nasa.gov/IOTD/view.php?id=82882 Kavir Desert, Iran. Astronaut photograph ISS038-E-47388. http://earthobservatory.nasa.gov/IOTD/view.php?id=83438 Colorado River, Canyonlands National Park. Landsat 8. http://earthobservatory.nasa.gov/IOTD/view.php?id=83875 Arrecife Alacranes, Mexico. Landsat 8. http://earthobservatory.nasa.gov/IOTD/view.php?id=85177	Transcript Link

2015 04 16	NASA Goddard	https://youtu.be/ksTSTd9wG94	NASA Global Landslide Catalog Aids View From Space	Landslides are among the most common and dramatic natural hazards, reshaping landscapes -- and anything in their path. Tracking when and where landslides occur worldwide has historically been difficult, because of the lack of a centralized database across all nations. But NASA researchers have updated the first publicly available Global Landslide Catalog, based on media reports and online databases that bring together many sources of information on landslides that have occurred since 2007. The catalog, originally released in 2010, is still the only one of its kind. Around 6000 landslides are noted in the catalog. This wealth of data gives scientists a starting point to analyze where, how and why landslides are likely to occur. In particular, NASA researchers have begun to compare landslide occurrence with global rainfall data from the Tropical Rainfall Measuring Mission. The catalog is currently available at http://ojo-streamer.herokuapp.com/. Research: Spatial and temporal analysis of a global landslide catalog. Journal: Geomorphology, March 21, 2015. Link to paper: http://www.sciencedirect.com/science/article/pii/S0169555X15001579. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=11854	Transcript Link
2015 04 09	NASA Goddard	https://youtu.be/-2vdSmlpa8Q	NASA TRMM Mission Ends	In 1997 when the Tropical Rainfall Measuring Mission, or TRMM, was launched, its mission was scheduled to last just a few years. Now, 17 years later, the TRMM mission has come to an end. NASA and the Japan Aerospace Exploration Agency (JAXA) stopped TRMM's science operations and data collection on April 8 after the spacecraft depleted its fuel reserves. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11852 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 04 06	NASA Goddard	https://youtu.be/bwUbIZ7h3Y	NASA A Story of Ozone The Earth's Natural Sunscreen	In this talk, Dr. Paul Newman tells the story of how scientists and policy-makers safeguarded the Earth's ozone layer and the world we avoided by regulating chlorofluorocarbons (CFCs). Back in the 60s, we used chlorofluorocarbons, a chlorine-containing chemical, in everything from hairsprays and deodorants to foam products and air conditioners. But in 1974, chemists Sherwood Rowland and Mario Molina published a paper claiming CFCs were destroying the ozone layer. The Molina-Rowland paper launched a debate in the scientific community that ultimately led to the halls of the United Nations. Today, more than 191 countries have signed the Montreal Protocol— a treaty that regulates the use of chlorofluorocarbons—and the ozone layer is on the mend. But the story has taken a new and unpredictable turn as the class of compounds that replaced CFCs act as greenhouse gases. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11813 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 04 01	NASA Goddard	https://youtu.be/zUQge3n01VI	NASA A Week in the Life of Rain	For more information, visit http://www.nasa.gov/content/goddard/the-rain-parade-join-nasa-on-a-worldwide-tour-of-global-precipitation/ For GPM Data Access go here http://pmm.nasa.gov/data-access/downloads Rain, snow, hail, ice, and every slushy mix in between make up the precipitation that touches everyone on our planet. But not all places rain equally. Precipitation falls differently in different parts of the world, as you see in NASA's new video that captures every shower, every snow storm and every hurricane from August 4 to August 14, 2014. The GPM Core Observatory, co-led by NASA and the Japan Aerospace Exploration Agency (JAXA), was launched on Feb 27, 2014, and provides advanced instruments that can see rain and falling snow all the way through the atmosphere. This Core Observatory serves as the reference standard to unite precipitation observations from a dozen satellites, which together produce the most detailed world-wide view of everything from light rain to heavy rain and, for the first time, falling snow. Scientists merged data from 12 precipitation satellites into a single seamless map called the Integrated Multi-satellite Retrievals for Global Precipitation Measurement (GPM), or IMERG. Every 30 minutes, IMERG generates a new global map with a resolution of 10 kilometers by 10 km (6.2 miles by 6.2 mi), about the size of a small suburb. These comprehensive maps allow scientists to observe changes in precipitation patterns across 87 percent of the globe and	Transcript Link

2015 03 31	NASA Goddard	https://youtu.be/1QRGk8Ri8vU	Air Quality A Tale of Three Cities	Dr. Bryan N. Duncan is a deputy project scientist for the Aura Mission at NASA's Goddard Space Flight Center in Greenbelt, Maryland. He recently presented the story of air quality in three cities: Beijing, Los Angeles and Atlanta. Instruments on NASA satellites monitor pollution around the world. One of these, The Ozone Monitoring Instrument (OMI) on the Aura satellite, has observed large amounts of sulfur dioxide, which is released when coal is burned, over Beijing. Similarly, in the 1950s Los Angeles experienced high levels of another air pollutant—ozone. When in the higher atmosphere, ozone protects Earth from the sun's ultraviolet radiation. But closer to the ground ozone functions as a pollutant. Half a century ago in Los Angeles, levels were sometimes recorded at more than 500 ppbv. (The current National Ambient Air Quality Standard is 75 ppbv.) With the advent of catalytic converters in vehicles and other environmental policy efforts, these levels declined. But what worked to reduce ozone in Los Angeles didn't work to reduce high ozone levels in another city: Atlanta. In this video, Duncan talks about the dynamic nature of air quality, what causes ozone, sulfur dioxide, and nitrogen dioxide, and why reducing volatile organic carbon pollution worked to reduce ozone in Los Angeles, but not in Atlanta.	Transcript Link
2015 03 26	NASA Goddard	https://youtu.be/1FiXXMSfTxg	NASA Rendezvous with an Ice-Bound Vessel	Having just arrived in Greenland, the first challenge for the Operation IceBridge Arctic 2015 campaign was to survey a broad swath of Arctic sea ice ... and along the way, locate and precisely overfly a Norwegian research vessel frozen in the quickly moving ice pack. In this quick mission update, Flight Team Lead John Sonntag gives us the story from the field. For more on the Lance overflight and Operation IceBridge: www.nasa.gov/icebridge This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11827 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 03 20 NASA Goddard <https://youtu.be/TJLUzcUrqXw> NASA IceBridge Kicks Off Campaign with "New" Aircraft NASA's Operation IceBridge is back in the field, but this time, there's a twist. Instead of using the P-3 or DC-8 aircraft from previous campaigns, they've outfitted a C-130 cargo plane for the trip. Science flights begin this week as the mission studies Arctic sea ice, ice caps, glaciers, and the Greenland Ice Sheet with a range of different instruments.

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2015 03 20 NASA Goddard <https://youtu.be/ZsPStvGgNuk> NASA The Search for New Worlds is Here The Transiting Exoplanet Survey Satellite (TESS) is an astrophysics Explorer-class mission between NASA and MIT. After launching in 2017, TESS will use four cameras to scan the entire sky, searching for planets outside our Solar System, known as exoplanets. The mission will monitor over 500,000 of the brightest stars in the sky, searching for dips in their brightness that would indicate a planet transiting across. TESS is predicted to find over 3,000 exoplanet candidates, ranging from gas giants to small rocky planets. About 500 of these planets are expected to be similar to Earth's size. The stars TESS monitors will be 30-100 times brighter than those observed by Kepler, making follow-up observations much easier. Using TESS data, missions like the James Webb Space Telescope can determine specific characteristics of these planets, including whether they could support life.

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2015 03 19	NASA Goddard	https://youtu.be/8iNet2WkHkU	NASA Arctic Sea Ice Sets New Record Winter Low	Arctic sea ice has reached its peak winter extent for the year, and it's the lowest winter maximum on record. For more information: http://www.nasa.gov/content/goddard/2015-arctic-sea-ice-maximum-annual-extent-is-lowest-on-record/ This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11816 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 03 17	NASA Goddard	https://youtu.be/RzoX5Uh6-zc	NASA New Craters on the Moon	Planetary scientists believe that small impacts regularly bombard the Moon, but until recently, they've had no way to distinguish new craters from the already pockmarked lunar surface. In 2009, NASA's Lunar Reconnaissance Orbiter (LRO) arrived at the Moon and began taking high-resolution photographs. By comparing pictures taken early in the mission with more recent images, the LRO camera team at Arizona State University has discovered more than two-dozen new impact craters – including an 18-meter-wide crater caused by a bright flash on March 17, 2013. LRO is managed by NASA's Goddard Space Flight Center in Greenbelt, Maryland. Written feature on nasa.gov: http://www.nasa.gov/content/goddard/nasas-lro-spacecraft-finds-march-17-2013-impact-crater-and-more/ Learn more about LROC and the detection of the March 17, 2013 lunar impact crater: http://lroc.sese.asu.edu/posts/770 Learn more about NASA's Lunar Reconnaissance Orbiter: http://www.nasa.gov/mission_pages/LRO/main This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11806 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link

2015 03 13	NASA Goddard	https://youtu.be/XNcfKUJwnjM	NASA Shadow of the Moon	On March 20th, 2015, the Moon's shadow will create a total solar eclipse. This video presents several visualizations of what this shadow would look like from space, and highlights the areas of the world in the path of the umbra and penumbra. The visualizations were created by calculating the position of the Earth, Moon, and Sun on this date, and by using Lunar Reconnaissance Orbiter global photo mosaics and elevation maps. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?4275 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 03 12	NASA Goddard	https://youtu.be/KnNk6Qu69aw	NASA Dr. Holly Gilbert MMS Pre-launch Live Shot	NASA Scientist Dr. Holly Gilbert discusses the upcoming launch and overview of the MMS Mission. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=11798 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 03 11	NASA Goddard	https://youtu.be/yhtm0-Wr0iE	NASA Goddard's Speedy MMS Instruments Will Measure Mysterious Physics	Host Katrina Jackson talks with Craig Pollock and Ulrik Gliese about Goddard's contribution to the Magnetospheric Multiscale mission - the Fast Plasma Investigation suite of instruments. These instruments will study a little-understood physics phenomenon known as magnetic reconnection, which is common throughout the universe and affects space weather in Earth's magnetosphere. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11801 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 03 06 NASA Goddard <https://youtu.be/xNq6txEEQQI> NASA Reach, Strive, Achieve Sandra Cauffman's TEDx Talk

On October 23, 2014 Sandra Cauffman was invited to talk at the TEDx PuraVidaJoven at the National Auditorium in San Jose, Costa Rica, where she was born. Her story is how a Costa Rican girl from a poor family nurtured an improbable dream about space travel, and despite the obstacles, made that dream come true. Sandra's determination and perseverance fueled her ability to achieve what many people thought she should not even consider. Sandra Cauffman is currently the GOES-R Deputy System Program Director at NASA Goddard Space Flight Center. Her previous role as Deputy Project Manager for the Mars Atmosphere and Volatile Evolution (MAVEN) Mission, was a NASA mission which launched to the red planet on November of 2013. A four-time recipient of the NASA Acquisition Improvement Award, Sandra has been awarded the NASA Exceptional Achievement Medal and the NASA Exceptional Leadership Medal. She is a Senior Fellow on the Council for Excellence in Government. Sandra received a B.S. in Physics, a B.S. in Electrical Engineering and a M.S. in Electrical Engineering, all from George Mason University.

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2015 03 05 NASA Goddard <https://youtu.be/-SsAMuusg> NASA Mars' Ancient Ocean

<http://www.nasa.gov/press/2015/march/nasa-research-suggests-mars-once-had-more-water-than-earth-s-arctic-ocean/>

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[Mars bears ample evidence of a wet past, but scientists debate just how much water the planet has lost over time. Now, isotopic measurements by researchers at NASA's Goddard Space Flight Center reveal that an ocean covered approximately twenty percent of early Mars.](#)

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2015 03 05	NASA Goddard	https://youtu.be/GDqZfXbYgZg	NASA El Océano Antiguo de Marte	http://www.nasa.gov/press/2015/march/nasa-research-suggests-mars-once-had-more-water-than-earth-s-arctic-ocean/ Científicos siempre han presumido que Marte tuvo un pasado mucho más cálido y con mayor cantidad de agua. Ahora, investigadores en el centro NASA Goddard Space Flight Center han obtenido la medición más precisa de cuanta agua perdió Marte desde su formación hace 4500 millones de años. Este vídeo es de dominio público y puede descargarse en: http://svs.gsfc.nasa.gov/goto?11796 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 03 05	NASA Goddard	https://youtu.be/WH8kHnclZwM	NASA Measuring Mars' Ancient Ocean	http://www.nasa.gov/press/2015/march/nasa-research-suggests-mars-once-had-more-water-than-earth-s-arctic-ocean/ For decades, planetary scientists have suspected that ancient Mars was a much warmer, wetter environment than it is today, but estimates of just how much water Mars has lost since its formation vary widely. Now, new isotopic measurements by researchers at NASA's Goddard Space Flight Center reveal that an ocean once covered approximately twenty percent of the Martian surface. This new picture of early Mars is considerably wetter than many previous estimates, raising the odds for the ancient habitability of the Red Planet. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11796 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 02 26	NASA Goddard	https://youtu.be/DFzRQftFU2M	NASA GPM in a Minute	What does building a satellite look like? In this timelapse of clean room footage from 2011 to 2014, watch the Global Precipitation Measurement mission's Core Observatory come together at NASA's Goddard Space Flight Center then fly across the Pacific where mission partner, the Japan Aerospace Exploration Agency, prepared and launched it into orbit, on Feb. 27, 2014. The Global Precipitation Measurement mission observes rain and snowfall worldwide every three hours, which contributes to the monitoring and forecasting of weather events such as droughts, floods and hurricanes, as well scientific research on precipitation and climate change. To see global data from the first six months of observations, visit: http://svs.gsfc.nasa.gov/goto?11764 For more information about building the GPM Core Observatory, visit: http://www.nasa.gov/content/goddard/ready-set-space-nasas-gpm-satellite-begins-journey/ This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11764 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook:	Transcript Link
2015 02 26	NASA Goddard	https://youtu.be/ILNC7IdyWVU	NASA First Global Rainfall and Snowfall Map from New Mission	NASA's Global Precipitation Measurement mission has produced its first global map of rainfall and snowfall. The GPM Core Observatory launched one year ago on Feb. 27, 2014 as a collaboration between NASA and the Japan Aerospace Exploration Agency and acts as the standard to unify precipitation measurements from a network of 12 satellites. The result is NASA's Integrated Multi-satellitE Retrievals for GPM data product, called IMERG, which combines all of these data from 12 satellites into a single, seamless map. The map covers more of the globe than any previous precipitation data set and is updated every half hour, allowing scientists to see how rain and snow storms move around nearly the entire planet. As scientists work to understand all the elements of Earth's climate and weather systems, and how they could change in the future, GPM provides a major step forward in providing the scientific community comprehensive and consistent measurements of precipitation. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11784 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC	Transcript Link

2015 02 26 NASA Goddard <https://youtu.be/yXfOOIYWGF8> NASA CATS Up and Running on the ISS

On January 22, 2015, the Cloud-Aerosol Transport System (CATS) was installed on the International Space Station. The team monitored the progress of the installation from NASA's Goddard Space Flight Center, where CATS was designed and built. Once installed, the team powered up the system and initiated configuration procedures. Once set up, the telescope door was opened and they prepared to collect data. CATS is a lidar remote sensing instrument that will provide range-resolved profile measurements of atmospheric aerosols and clouds. Data from the instrument will be used to determine the height and thickness of the cloud or aerosol layer, as well as discriminate between different particle types. The instrument is intended to operate on-orbit for at least six months, and up to three years. For more information, <http://cats.gsfc.nasa.gov/>

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[Link](#)

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http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html

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Or find us on Twitter:
<http://twitter.com/NASAGoddard>

2015 02 24 NASA Goddard <https://youtu.be/2rb-u9cnQel> NASA Goddard All in a Day's Work

This short promotional video highlights some of the best that the Goddard Space Flight Center has to offer - showcasing the science and technology born from the efforts of the dedicated Goddard family.

[Transcript](#)
[Link](#)

To see it in 3D, go to our link on YouTube:
<http://youtu.be/08rMlpvUP3w?hd=1>

This video is public domain and both the 2D and 3D versions can be downloaded at: <http://svs.gsfc.nasa.gov/goto?10744>

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2015 02 24	NASA Goddard	https://youtu.be/ygulQJole2Y	NASA Satellite Tracks Saharan Dust to Amazon in 3-D	For more information: http://www.nasa.gov/content/goddard/nasa-satellite-reveals-how-much-saharan-dust-feeds-amazon-s-plants Transcript Link For the first time, a NASA satellite has quantified in three dimensions how much dust makes the trans-Atlantic journey from the Sahara Desert to the Amazon rainforest. Among this dust is phosphorus, an essential nutrient that acts like a fertilizer, which the Amazon depends on in order to flourish. The new dust transport estimates were derived from data collected by a lidar instrument on NASA's Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation, or CALIPSO, satellite from 2007 through 2013. An average of 27.7 million tons of dust per year – enough to fill 104,980 semi trucks – fall to the surface over the Amazon basin. The phosphorus portion, an estimated 22,000 tons per year, is about the same amount as that lost from rain and flooding. The finding is part of a bigger research effort to understand the role of dust and aerosols in the environment and on local and global climate. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=11775 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f...
2015 02 23	NASA Goddard	https://youtu.be/zO-DBsW7q_I	NASA Webb's Backplane Pathfinder Arrives at NASA JSC for Cryotesting	Transcript Link Webb Telescope's Backplane Pathfinder arrives at Ellington Field Joint Reserve Base in Houston. Engineers will test Pathfinder inside NASA's largest cryogenic vacuum chamber called Chamber A. NASA engineers off-load pathfinder and its shipping container from a US Airforce C-5 cargo plane and transport it to the Johnson Space Center and into Chamber A's cleanroom. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11783 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard

2015 02 19	NASA Goddard	https://youtu.be/biltTLrz0cQ	NASA MMS Mission Overview	Senior Project Scientist Tom Moore outlines the three instrument suites onboard the four MMS spacecraft. On March 12, 2015, NASA plans to launch the Magnetospheric Multiscale, or MMS, mission. MMS consists of four identical spacecraft that will orbit around Earth through the dynamic magnetic system surrounding our planet to study a little-understood phenomenon called magnetic reconnection. Watch NASA's new movie to learn more about MMS and the phenomenon of magnetic reconnection, which occurs near Earth, on the sun, in other stars and in the vicinity of black holes and neutron stars. The Magnetospheric Multiscale, or MMS, mission will provide unprecedented detail on a phenomenon called magnetic reconnection, which happens throughout the universe and can accelerate particles up to nearly the speed of light. Learn more about MMS at http://www.nasa.gov/MMS This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10204 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html	Transcript Link
2015 02 12	NASA Goddard	https://youtu.be/ToY4eWsdLc	NASA Megadroughts Projected for American West	NASA scientists used tree rings to understand past droughts and climate models incorporating soil moisture data to estimate future drought risk in the 21st century. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11776 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 02 11	NASA Goddard	https://youtu.be/GSVv40M2aks	NASA SDO Year 5	February 11, 2015 marks five years in space for NASA's Solar Dynamics Observatory, which provides incredibly detailed images of the whole sun 24 hours a day. Capturing an image more than once per second, SDO has provided an unprecedentedly clear picture of how massive explosions on the sun grow and erupt ever since its launch on Feb. 11, 2010. The imagery is also captivating, allowing one to watch the constant ballet of solar material through the sun's atmosphere, the corona. In honor of SDO's fifth anniversary, NASA has released a video showcasing highlights from the last five years of sun watching. Watch the movie to see giant clouds of solar material hurled out into space, the dance of giant loops hovering in the corona, and huge sunspots growing and shrinking on the sun's surface. The imagery is an example of the kind of data that SDO provides to scientists. By watching the sun in different wavelengths – and therefore different temperatures – scientists can watch how material courses through the corona, which holds clues to what causes eruptions on the sun, what heats the sun's atmosphere up to 1,000 times hotter than its surface, and why the sun's magnetic fields are constantly on the move. Five years into its mission, SDO continues to send back tantalizing imagery to incite scientists' curiosity. For example, in late 2014, SDO captured imagery of the largest sun spots seen since 1995 as well as a torrent of intense solar flares. Solar flares are bursts of light,	Transcript Link
2015 02 11	NASA Goddard	https://youtu.be/w-41gAPmUG0	NASA 5 Year Time-lapse of the Sun	The Solar Dynamics Observatory (SDO) celebrates its 5th anniversary since it launched on February 11, 2010. This time-lapse video captures one frame every 8 hours starting when data became available in June 2010 and finishing February 8, 2015. The different colors represent the various wavelengths (sometimes blended, sometimes alone) in which SDO observes the sun. For more about SDO, please visit http://sdo.gsfc.nasa.gov/ This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11762 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 02 04	NASA Goddard	https://youtu.be/jdkMHkF7BaA	NASA A View From The Other Side	A number of people who've seen NASA's annual lunar phase and libration videos have asked what the other side of the Moon looks like, the side that can't be seen from the Earth. This video answers that question. The imagery was created using Lunar Reconnaissance Orbiter data. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?4253 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard Related video: https://www.youtube.com/watch?v=tmmyu88wMHw	Transcript Link
2015 01 27	NASA Goddard	https://youtu.be/AuO0pH-1JYg	NASA SMAP Radiometer versus Radio Frequency Interference	The microwave radiometer on NASA's Soil Moisture Active Passive (SMAP) satellite was designed and built at NASA's Goddard Space Flight Center. Along with the microwave radar, data from the radiometer will be used to calculate the water content of Earth's soil. Instrument Scientist Jeff Piepmeier explains the technology that Goddard incorporated in the radiometer. All types of soil emit microwave radiation, but the amount of water changes how much of this energy is emitted. The drier the soil, the more microwave energy; the wetter the soil, the less energy. But radio frequency interference is a problem, even though the instrument is passively listening in a region of the microwave spectrum where transmission is prohibited. Some of the signals from the surrounding regions leak into the protected "listen-only" band. Goddard engineers developed new hardware and software to search for and cut out the erroneous measurements. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=11743 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link

2015 01 23	NASA Goddard	https://youtu.be/u0VbPE0TOtQ	NASA Greenland's Ice Layers Mapped in 3D	http://www.nasa.gov/content/goddard/nasa-data-peers-into-greenlands-ice-sheet/ Peering into the thousands of frozen layers inside Greenland's ice sheet is like looking back in time. Each layer provides a record of not only snowfall and melting events, but what the Earth's climate was like at the dawn of civilization, or during the last ice age, or during an ancient period of warmth similar to the one we are experiencing today. Using radar data from NASA's Operation IceBridge, scientists have built the first-ever comprehensive map of the layers deep inside the ice sheet. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?4249 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2015 01 16	NASA Goddard	https://youtu.be/WtPkFBbJLMg	NASA 2014 Continues Long-Term Global Warming	The year 2014 now ranks as the warmest on record since 1880, according to an analysis by NASA scientists. This video shows a time series of five-year global temperature averages, mapped from 1880 to 2014, as estimated by scientists at NASA's Goddard Institute for Space Studies (GISS) in New York. While scientists expect temperatures to fluctuate from year to year, the average temperature of the planet as a whole has warmed by about 1.4 degrees Fahrenheit (0.8 degrees Celsius) since 1880. This trend is largely driven by increasing human emissions of carbon dioxide and other greenhouse gases into the atmosphere. The GISS analysis incorporates temperature measurements from 6,300 weather stations around the world, ship- and buoy-based ocean temperature readings and data from Antarctic research stations. These measurements are plugged into an algorithm that then estimates average global temperature. The computer code for this process is freely available for download from the GISS web site. http://www.nasa.gov/press/2015/january/nasa-determines-2014-warmest-year-in-modern-record This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=4252 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast:	Transcript Link

2015 01 16	NASA Goddard	https://youtu.be/-ilg75uJZZU	NASA 2014 Warmest Year On Record	The year 2014 now ranks as the warmest on record since 1880, according to an analysis by NASA scientists. Nine of the 10 warmest years since modern records began have now occurred since 2000, according to a global temperature analysis by scientists at NASA's Goddard Institute for Space Studies in New York. 2014's record-breaking warmth continues a long-term trend of a warming climate. The global average temperature has increased about 1.4 degrees Fahrenheit (0.8 degrees Celsius) since 1880, with most of that warming occurring during the last three to four decades. The warming trend is largely driven by the increasing concentrations of carbon dioxide and other heat-trapping greenhouse gases in the atmosphere, caused by human emissions. http://www.nasa.gov/press/2015/january/nasa-determines-2014-warmest-year-in-modern-record This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=11727 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f...	Transcript Link
2015 01 07	NASA Goddard	https://youtu.be/iNXLSKEV-4A	NASA Building the Nation's Newest Weather Satellite	Say you need a new weather satellite. Is it as simple as selecting options and clicking to order? Not quite. Building a vital national asset like the GOES-R spacecraft takes teams of meteorologists and engineers working together to figure out new ways for getting the best weather forecast possible. After all, reliable weather forecasts affect all aspects of life, from recreation to commerce to defense. In order to generate those forecasts experts need superb data, and in order to get it they took the best technologies available and improved on them. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=11724 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2015 01 07	NASA Goddard	https://youtu.be/0rJQi6oaZf0	NASA Missions Take an Unparalleled Look into Superstar Eta Carinae	Eta Carinae is a binary system containing the most luminous and massive star within 10,000 light-years. A long-term study led by astronomers at NASA's Goddard Space Flight Center in Greenbelt, Maryland, combined data from NASA satellites, ground-based observing campaigns and theoretical modeling to produce the most comprehensive picture of Eta Carinae to date. New findings include Hubble Space Telescope images that show decade-old shells of ionized gas racing away from the largest star at a million miles an hour, and new 3-D models that reveal never-before-seen features of the stars' interactions. Located about 7,500 light-years away in the southern constellation of Carina, Eta Carinae comprises two massive stars whose eccentric orbits bring them unusually close every 5.5 years. Both produce powerful gaseous outflows called stellar winds, which enshroud the stars and stymie efforts to directly measure their properties. Astronomers have established that the brighter, cooler primary star has about 90 times the mass of the sun and outshines it by 5 million times. While the properties of its smaller, hotter companion are more contested, Goddard's Ted Gull and his colleagues think the star has about 30 solar masses and emits a million times the sun's light. At closest approach, or periastron, the stars are 140 million miles (225 million kilometers) apart, or about the average distance between Mars and the sun. Astronomers observe dramatic changes in the system during the months before and after periastron. These	Transcript Link
2015 01 06	NASA Goddard	https://youtu.be/GjOqO-lL4C4	NASA 'Disk Detectives' Top 1 Million Classifications in Search for Planetary Habitats	Citizen scientists using the NASA-sponsored website DiskDetective.org have logged 1 million classifications of potential debris disks and disks surrounding young stellar objects (YSO). This data will help provide a crucial set of targets for future planet-hunting missions. By combing through objects identified in an infrared survey made with NASA's Wide-field Infrared Survey Explorer (WISE) mission, Disk Detective aims to find two types of developing planetary environments: YSO disks, which are less than 5 million years old and contains large quantities of gas, and debris disks, which tend to be older than 5 million years, and contain belts of rocky or icy debris. Computer searches already have identified some objects seen by the WISE survey as potential dust-rich disks. But software can't distinguish them from other infrared-bright sources, such as galaxies, interstellar dust clouds and asteroids. There may be thousands of potential planetary systems in the WISE data, but the only way to know for sure is to inspect each source by eye. At DiskDetective.org, volunteers watch a 10-second "flip book" of a disk candidate shown at several different wavelengths as observed from three different telescopes, including WISE. They then click one or more buttons that best describe the object's appearance. Each classification helps astronomers decide which images may be contaminated by background galaxies, interstellar matter or image artifacts, and which may be real disks that should be studied in	Transcript Link

2014 12 24	NASA Goddard	https://youtu.be/BAoM6hAbjnA	NASA NASA Ve las Luces de Festividades desde el Espacio	Ya es oficial - nuestras luces de Navidad son tan brillantes que podemos verlas desde el espacio. Gracias al instrumento VIIRS en el satélite Suomi NPP, en una misión conjunta entre NASA y NOAA, los científicos están presentando una nueva forma de estudiar los datos de satélite que pueden ilustrar los patrones de las luces navideñas, tanto durante la Navidad y el mes sagrado del Ramadán. Estas nuevas herramientas pueden proporcionar nuevos conocimientos sobre cómo los comportamientos de consumo de energía varían en los diferentes contextos culturales. An English-language version of this video can be found here: http://youtu.be/uU0u0LRTNSk This video is public domain and available for download at the SVS website: http://svs.gsfc.nasa.gov/goto?10352 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 12 22	NASA Goddard	https://youtu.be/BvyA6JwddPQ	NASA Holiday Lights On the Sun	The sun emitted a significant solar flare, peaking at 7:24 p.m. EST on Dec. 19, 2014. NASA's Solar Dynamics Observatory, which watches the sun constantly, captured an image of the event. Solar flares are powerful bursts of radiation. Harmful radiation from a flare cannot pass through Earth's atmosphere to physically affect humans on the ground, however -- when intense enough -- they can disturb the atmosphere in the layer where GPS and communications signals travel. To see how this event may affect Earth, please visit NOAA's Space Weather Prediction Center at http://spaceweather.gov, the U.S. government's official source for space weather forecasts, alerts, watches and warnings. This flare is classified as an X1.8-class flare. X-class denotes the most intense flares, while the number provides more information about its strength. An X2 is twice as intense as an X1, an X3 is three times as intense, etc. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11721 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link

2014 12 17	NASA Goddard	https://youtu.be/K-BC59MQug0	NASA From the River to the Sea	A pulse of water released down the lower reaches of the Colorado River last spring resulted in more than a 40 percent increase in green vegetation where the water flowed, as seen by the Landsat 8 satellite. The March 2014 release of water – an experimental flow implemented under a U.S.-Mexico agreement called "Minute 319" – reversed a 12-year decline in the greenness along the delta. Landsat 8 is a joint project of NASA and the U.S. Geological Survey (USGS). Footage of the Colorado River courtesy of Andrew Quinn and Owen Bissell. www.nasa.gov/landsat landsat.usgs.gov This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10280 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 12 16	NASA Goddard	https://youtu.be/uU0u0LRTNSk	NASA NASA Sees Holiday Lights from Space	It's official — our holiday lights are so bright we can see them from space. Thanks to the VIIRS instrument on the Suomi NPP satellite, a joint mission between NASA and NOAA, scientists are presenting a new way of studying satellite data that can illustrate patterns in holiday lights, both during Christmas and the Holy Month of Ramadan. These new tools can provide new insights into how energy consumption behaviors vary across different cultural settings. A note about the data: Because snow reflects so much light, the researchers could only analyze snow-free cities. They focused on the U.S. West Coast from San Francisco and Los Angeles, and cities south of a rough imaginary line from St. Louis to Washington, D.C. Additional Christmas lights footage courtesy http://www.fairfaxchristmaslights.com This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/Gallery/HolidayLights.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter:	Transcript Link

2014 12 16	NASA Goddard	https://youtu.be/UN0Zj4Slz1A	NASA Need To Know Sample Analysis at Mars Findings	There's big news coming out of the Sample Analysis at Mars instrument suite (SAM) on NASA's Curiosity rover. For the first time, organic matter has definitively been detected on Mars. In addition to finding organic compounds in rocks, SAM has also detected sharp increases and decreases in methane levels in the atmosphere. MSL participating scientist, Danny Glavin, explains these findings and what they tell us about our search for life on the Red Planet. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=10274 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 12 15	NASA Goddard	https://youtu.be/JgK4DsSi6Q	NASA Fermi Helps Scientists Study Gamma-ray Thunderstorms	Merging data on high-energy bursts seen on Earth by NASA's Fermi Gamma-ray Space Telescope with data from ground-based radar and lightning detectors, scientists have completed the most detailed analysis to date of the types of thunderstorms producing terrestrial gamma-ray flashes, or TGFs. TGFs occur unpredictably and fleetingly, with durations less than a thousandth of a second, and remain poorly understood. Yet the gamma rays they produce rank among the highest-energy light naturally produced on Earth. Earlier Fermi studies helped uncover lightning-like radio signals emitted by TGFs. This made it possible to use ground-based lightning location networks to pin down storms producing the flashes, opening the door to a deeper understanding of the meteorology powering these extreme events. Scientists gathered a sample of nearly 900 Fermi TGFs accurately located by ground networks, which can pinpoint the location of lightning discharges -- and the corresponding signals from TGFs -- to within 6 miles (10 km) anywhere on the globe. From this group, they identified 24 TGFs that occurred within areas covered by Next Generation Weather Radar (NEXRAD) sites. The researchers found that even weak and marginally electrified storms are capable of producing TGFs. The new study also confirms previous findings indicating that TGFs tend to occur near the highest parts of a thunderstorm, between about 7 and 9 miles (11 to 14 kilometers) high. However, TGFs associated with lightning at lower altitudes would be so weakened by traveling a longer path through the atmosphere that Fermi	Transcript Link

2014 12 10	NASA Goddard	https://youtu.be/Wd2d3pNS7nM	NASA MMS Science Overview The Many Mysteries of MMS	Scientists Michael Hesse and John Dorelli explain the science objectives of the MMS mission. The Magnetospheric Multiscale (MMS) mission is comprised of four identically instrumented spacecraft that will use Earth's magnetosphere as a laboratory to study the microphysics of three fundamental plasma processes: magnetic reconnection, energetic particle acceleration, and turbulence. These processes occur in all astrophysical plasma systems but can be studied in situ only in our solar system and most efficiently only in Earth's magnetosphere, where they control the dynamics of the geospace environment and play an important role in the processes known as "space weather." Learn more about MMS at www.nasa.gov/mms This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11251 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 12 09	NASA Goddard	https://youtu.be/5-i9LrJmqpc	NASA Moon Phases 2015, Southern Hemisphere (Moon Only)	This visualization shows the Moon's phase and libration at hourly intervals throughout 2015, as viewed from the southern hemisphere. Each frame represents one hour. To learn more about this visualization, or to see what the Moon will look like at any hour in 2015, visit http://svs.gsfc.nasa.gov/goto?4237	Transcript Link
2014 12 09	NASA Goddard	https://youtu.be/LC5rEhxGqT4	NASA Moon Phases 2015, Northern Hemisphere (Moon Only)	This visualization shows the Moon's phase and libration at hourly intervals throughout 2015, as viewed from the northern hemisphere. Each frame represents one hour. To learn more about this visualization, or to see what the Moon will look like at any hour in 2015, visit http://svs.gsfc.nasa.gov/goto?4236	Transcript Link

2014 12 09 NASA Goddard <https://youtu.be/WbqhlYeaUv0> NASA Moon Phases 2015, Southern Hemisphere

This visualization shows the Moon's phase and libration at hourly intervals throughout 2015, as viewed from the southern hemisphere. Each frame represents one hour. In addition, this visualization shows the Moon's orbit position, sub-Earth and subsolar points, distance from the Earth at true scale, and labels of craters near the terminator. To learn more about this visualization, or to see what the Moon will look like at any hour in 2015, visit <http://svs.gsfc.nasa.gov/goto?4237>

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2014 12 09 NASA Goddard <https://youtu.be/tmmyu88wMHw> NASA Moon Phases 2015, Northern Hemisphere

This visualization shows the Moon's phase and libration at hourly intervals throughout 2015, as viewed from the northern hemisphere. Each frame represents one hour. In addition, this visualization shows the Moon's orbit position, sub-Earth and subsolar points, distance from the Earth at true scale, and labels of craters near the terminator. To learn more about this visualization, or to see what the Moon will look like at any hour in 2015, visit <http://svs.gsfc.nasa.gov/goto?4236>

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2014 12 02	NASA Goddard	https://youtu.be/1iAPaD-CqpA	NASA Debora Fairbrother Women@NASA 2014	Debora Fairbrother - Chief of the NASA Balloon Program Office at Wallops Island The Women@NASA project is the perfect opportunity to celebrate women from across the agency who contribute to NASA's mission in many ways. Giving you a glimpse of the talent is here at NASA today. These stories of dedicated women, who play a vital role at the agency, will inspire you. You'll hear stories of women overcoming almost every obstacle imaginable to pursue their dreams and make a difference in the world. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10272 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 12 02	NASA Goddard	https://youtu.be/htcmgkuxHnU	NASA Judith Bruner Women@NASA 2014	Judith Bruner - Director of Safety and Mission Assurance at Goddard Space Flight Center The Women@NASA project is the perfect opportunity to celebrate women from across the agency who contribute to NASA's mission in many ways. Giving you a glimpse of the talent is here at NASA today. These stories of dedicated women, who play a vital role at the agency, will inspire you. You'll hear stories of women overcoming almost every obstacle imaginable to pursue their dreams and make a difference in the world. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10272 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 12 02	NASA Goddard	https://youtu.be/KRmaK4h3iY0	NASA Cynthia Simmons Women@NASA 2014	Cynthia Simmons - Instrument Project Manager in the Flight Projects Directorate at Goddard Space Flight Center The Women@NASA project is the perfect opportunity to celebrate women from across the agency who contribute to NASA's mission in many ways. Giving you a glimpse of the talent is here at NASA today. These stories of dedicated women, who play a vital role at the agency, will inspire you. You'll hear stories of women overcoming almost every obstacle imaginable to pursue their dreams and make a difference in the world. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10272 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 11 21	NASA Goddard	https://youtu.be/RXrSOjbvj1s	NASA How Will the 4 MMS Spacecraft Launch and Deploy	In March of 2015, an unprecedented NASA mission will launch to study a process so mysterious that no one has ever directly measured it in action. To create the first-ever 3-dimensional maps of this process, a process called magnetic reconnection, which occurs all over the universe, the Magnetospheric Multiscale, or MMS, mission uses four separate spacecraft equipped with ultra high speed instruments. Watch the video to get a sneak preview of how MMS will make this journey: The four spacecraft are housed in a single rocket on their trip into space. One by one, each ejects out, before moving into a giant pyramid-shaped configuration. Next each spacecraft deploys its six booms. Once in orbit, MMS will fly through regions near Earth where this little-understood process of magnetic reconnection occurs. Magnetic reconnection happens in thin layers just miles thick, but can tap into enough power at times to create gigantic explosions many times the size of Earth. For more information about MMS, visit: www.nasa.gov/mms This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11702 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast:	Transcript Link

2014 11 20	NASA Goddard	https://youtu.be/wYgISGcNRN8	NASA Alex Young Discusses Sunspots	NASA Scientist Alex Young discusses recent sunspot activity during Live Shot. This is a Canned Interview. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=11720 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 11 20	NASA Goddard	https://youtu.be/y3LIYeXaH74	NASA Holly Gilbert Discusses Sunspots	NASA Scientist Holly Gilbert discusses recent sunspot activity during Live Shot. This is a Canned Interview. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=11720 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 11 20	NASA Goddard	https://youtu.be/EIY9SgMAF8E	NASA Highlights of Swift's Decade of Discovery	NASA's Swift satellite rode to orbit aboard a Delta II rocket on November 20, 2004, and it's still going strong. Swift's unique instrumentation allows it to quickly locate an interesting high-energy outburst, automatically determine its position, and rapidly investigate it with ultraviolet, optical, and X-ray telescopes. Swift's versatility has led to amazing observations across a wide swath of astronomy. As Swift begins its second decade of operation, its speed, flexibility and versatility make it an important platform for studying the most energetic and rapidly changing phenomena in the cosmos. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10170 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 11 20	NASA Goddard	https://youtu.be/G84tQGQeCvk	NASA Swift A Decade of Game-changing Astrophysics	Over the past decade, NASA's Swift Gamma-ray Burst Explorer has proven itself to be one of the most versatile astrophysics missions ever flown. It remains the only satellite capable of precisely locating gamma-ray bursts -- the universe's most powerful explosions -- and monitoring them across a broad range of wavelengths using multiple instruments before they fade from view. "Swift" isn't just a name -- it's a core capability, a part of the spacecraft's DNA. Gamma-ray bursts (GRBs) typically last less than a minute and Swift detects one event about twice a week. Once Swift observes a GRB, it automatically determines the blast's location, broadcasts the position to the astronomical community, and then turns toward the site to investigate with its own sensitive telescopes. In addition to its studies of GRBs, Swift conducts a wide array of observations of other astrophysical phenomena. A flexible planning system enables astronomers to request Swift "target-of-opportunity" (TOO) observations, which can be commanded from the ground in as little as 10 minutes, or set up monitoring programs to observe specific sources at time intervals ranging from minutes to months. The system can schedule up to 75 independent targets a day. Earlier this year, Swift ranked highly in NASA's 2014 Senior Review of Operating Missions and will continue its enormously productive scientific work through at least 2016.	Transcript Link
2014 11 18	NASA Goddard	https://youtu.be/gtUgarROs08	NASA Asteroid Bennu's Journey	Bennu's Journey is a 6-minute animated movie about NASA's OSIRIS-REx mission, Asteroid Bennu, and the formation of our solar system. Born from the rubble of a violent collision, hurled through space for millions of years, Asteroid Bennu has had a tough life in a rough neighborhood - the early solar system. Bennu's Journey shows what is known and what remains mysterious about the evolution of Bennu and the planets. By retrieving a sample of Bennu, OSIRIS-REx will teach us more about the raw ingredients of the solar system and our own origins. Learn more about NASA's OSIRIS-REx mission and the making of Bennu's Journey: http://www.nasa.gov/content/goddard/bennus-journey/ Follow on Twitter @OSIRISREx More information on the OSIRIS-REx mission is available at: http://www.nasa.gov/mission_pages/osiris-rex/index.html http://www.asteroidmission.org http://www.asteroidmission.org/movie/ This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?20220 For Bennu's Journey movie posters, desktop wallpapers, and more, visit: http://svs.gsfc.nasa.gov/goto?20218	Transcript Link

2014 11 17	NASA Goddard	https://youtu.be/x1SgmFa0r04	NASA A Year in the Life of Earth's CO2	An ultra-high-resolution NASA computer model has given scientists a stunning new look at how carbon dioxide in the atmosphere travels around the globe. Plumes of carbon dioxide in the simulation swirl and shift as winds disperse the greenhouse gas away from its sources. The simulation also illustrates differences in carbon dioxide levels in the northern and southern hemispheres and distinct swings in global carbon dioxide concentrations as the growth cycle of plants and trees changes with the seasons. The carbon dioxide visualization was produced by a computer model called GEOS-5, created by scientists at NASA Goddard Space Flight Center's Global Modeling and Assimilation Office. The visualization is a product of a simulation called a "Nature Run." The Nature Run ingests real data on atmospheric conditions and the emission of greenhouse gases and both natural and man-made particulates. The model is then left to run on its own and simulate the natural behavior of the Earth's atmosphere. This Nature Run simulates January 2006 through December 2006. While Goddard scientists worked with a "beta" version of the Nature Run internally for several years, they released this updated, improved version to the scientific community for the first time in the fall of 2014.	Transcript Link
2014 11 14	NASA Goddard	https://youtu.be/HlYYr0tw4do	NASA CATS in Space Keep Eyes on Atmosphere	NASA Goddard is preparing to demonstrate for the first time in space, a 3-wavelength, laser remote sensing instrument. The Cloud-Aerosol Transport System or CATS will measure clouds and aerosols in the Earth's atmosphere. This cost-effective, technology demonstration will be deployed on the International Space Station as early as December 2014. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11637 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 11 13	NASA Goddard	https://youtu.be/KCM1EXMKjz0	NASA How Do Active Volcanoes Change Clouds	NASA Goddard Space Flight Center scientist Andrew Sayer talks about how emissions from volcanoes can affect clouds. This video provides an overview of research published in the Journal of Atmospheric Chemistry and Physics. Research: Systematic satellite observations of the impact of aerosols from passive volcanic degassing on local cloud properties Journal of Atmospheric Chemistry and Physics, October 9, 2014 Link to paper: http://www.atmos-chem-phys.net/14/10601/2014/acp-14-10601-2014.html This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=10183 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 11 07	NASA Goddard	https://youtu.be/lBu3vltczRw	NASA Why is the Ozone Hole Getting Smaller	For more information: http://www.nasa.gov/content/goddard/2014-antarctic-ozone-hole-holds-steady/#.VFvnQMdi-RI The Antarctic ozone hole reached its annual peak size on Sept. 11, according to scientists from NASA and the National Oceanic and Atmospheric Administration (NOAA). The size of this year's hole was 24.1 million square kilometers (9.3 million square miles) — an area roughly the size of North America. With the increased atmospheric chlorine levels present since the 1980s, the Antarctic ozone hole forms and expands during the Southern Hemisphere spring (August and September). The ozone layer helps shield life on Earth from potentially harmful ultraviolet radiation that can cause skin cancer and damage plants. The Montreal Protocol agreement beginning in 1987 regulated ozone depleting substances, such as chlorine-containing chlorofluorocarbons and bromine-containing halons. The 2014 level of these substances over Antarctica has declined about 9 percent below the record maximum in 2000. "Year-to-year weather variability significantly impacts Antarctica ozone because warmer stratospheric temperatures can reduce ozone depletion," said Paul A. Newman, chief scientist for atmospheres at NASA's Goddard Space Flight Center in Greenbelt, Maryland.	Transcript Link

2014 11 06	NASA Goddard	https://youtu.be/ZcRpbBTTu6k	NASA Voices of MAVEN	On September 21, 2014, NASA's Mars Atmosphere and Volatile Evolution mission, or MAVEN, went into orbit around the Red Planet. Its goal: to understand how a changing atmosphere transformed Mars from a warm, wet environment in its youth to the desert world that we see today. Building such a mission and sending it to Mars is a hugely complex task, requiring the close coordination of hundreds of individuals around the country. In this video, several of the team members who made the mission possible share their experiences of working on MAVEN. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10157 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 11 04	NASA Goddard	https://youtu.be/WnrSq84ZiZM	NASA Five X-class Flares	This movie shows 8 days – from Oct. 19-27, 2014 — in the life of the largest active region seen on the sun since 1990, including five X-class flares that erupted during that time. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=11718 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 11 03	NASA Goddard	https://youtu.be/xHiPPbU6M10	NASA OIB Flights South 2014 Birds and Planes	Research flights over Antarctica generally travel over some of the most remote, lifeless places on Earth. But penguins call the Antarctic coastline home. That's why flight planers with NASA's Operation IceBridge pay close attention to penguin habitats, and carefully navigate their DC-8 to avoid disturbing the birds. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10081 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 10 31	NASA Goddard	https://youtu.be/Q_3aLiQvxxQ	NASA OIB Flights South 2014 Science and Diplomacy	Diplomacy requires knowledge of issues that matter to the people with whom you're speaking. Climate change is an issue that concerns everyone on Earth. As the official US representative to Chile, Ambassador Michael Hammer spent some time with the IceBridge team on research flight over Antarctica, and his fact-finding trip offers opportunities for science in the global interest to play a useful, even important role in international relations. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10081 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 10 29	NASA Goddard	https://youtu.be/9Xx0r59Chnw	NASA OIB Flights South 2014 A Sea Ice Mystery	Where's it coming from? With global average temperatures rising, it would be natural to assume that total quantities of sea ice would be falling. But it's not. Scientists have begun to observe sea ice increases around Antarctica, and the phenomenon once again underscores how much we still need to learn about the complex systems governing global climate. In this short video, we take a look at the reasons experts offer for why ice is spreading ... on a warmer planet. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10081 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 10 28 NASA Goddard <https://youtu.be/Xt4BKLdQs1Y> NASA OIB Flights South 2014 Mission Overview Consistency counts when collecting scientific data. With global ice inventories in a profound state of change, it's essential to maintain regular measurements of ice at the poles. NASA's ICESat satellite amassed a substantial body of data, but after that mission ended, researchers needed to insure data continuity until ICESat-2 launches in a few years. To bridge the data gap, they set specialized teams aloft in research aircraft. That mission is called IceBridge.

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2014 10 27 NASA Goddard <https://youtu.be/6D1zQfteKo0> OIB McMurdo Accomplished, West Antarctica Calling Last year Operation IceBridge flew for the first time out of McMurdo Station in Antarctica, reaching a new slate of exciting science targets. But that means it's now been two years since the mission has flown over critical areas in West Antarctica, and so the airborne campaign is returning to fly out of Punta Arenas, Chile to monitor quickly-changing ice closer to the Antarctic Peninsula.

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2014 10 23	NASA Goddard	https://youtu.be/mrnBdcdM4UM	NASA Vital Signs Taking the Pulse of Our Planet	Our planet is a beautiful and awesome place. In a new video, join NASA scientists on a 40-minute visual tour of Earth from space, presented at the IMAX Theater at National Air and Space Museum in Washington, D.C. on September 10. “Vital Signs: Taking the Pulse of Our Planet” was the theme for NASA’s Goddard Space Flight Center's fifteenth installment of its annual lecture and reception sponsored by the Maryland Space Business Roundtable. Earth is a complex, dynamic system we do not yet fully understand. Like the human body, the Earth system comprises diverse components that interact in complex ways. On this global tour, scientists lead the viewer through Earth’s water cycle, forests and frozen regions as seen through the eyes of NASA’s Earth observing satellite fleet. They share a story of how we can make life better today and into the future. NASA's Earth science program aims to develop a greater understanding of Earth's system and its response to natural or human-induced changes, and to improve predictions of climate, weather and natural disasters. The lecture is given by: Lennard Fisk, Ph.D	Transcript Link
2014 10 17	NASA Goddard	https://youtu.be/08dhTL1DgFU	NASA Siding Spring live shot with Jared Espley	Jared Espley talks about the close encounter between Mars and Comet Siding Spring at the Oct 17, 2014 liveshot. This is a canned interview. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?value=siding+spring&aid=11706 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 10 17 NASA Goddard <https://youtu.be/9V3EBgroqYY> NASA Siding Spring live shot with Michelle Thaller

Michelle Thaller talks about the close encounter between Mars and Comet Siding Spring at the Oct 17, 2014 liveshot. This is a canned interview.

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<http://svs.gsfc.nasa.gov/cgi-bin/details.cgi?value=siding+spring&aid=11706>

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2014 10 17 NASA Goddard <https://youtu.be/FG4KsatjFel> NASA Observing Comet Siding Spring at Mars

Follow Comet Siding Spring at #MarsComet

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On October 19, Comet Siding Spring will pass within 88,000 miles of Mars – just one third of the distance from the Earth to the Moon! Traveling at 33 miles per second and weighing as much as a small mountain, the comet hails from the outer fringes of our solar system, originating in a region of icy debris known as the Oort cloud.

Comets from the Oort cloud are both ancient and rare. Since this is Comet Siding Spring's first trip through the inner solar system, scientists are excited to learn more about its composition and the effects of its gas and dust on the Mars upper atmosphere. NASA will be watching closely before, during, and after the flyby with its entire fleet of Mars orbiters and rovers, along with the Hubble Space Telescope and dozens of instruments on Earth. The encounter is certain to teach us more about Oort cloud comets, the Martian atmosphere, and the solar system's earliest ingredients.

For more information, visit:
<http://mars.jpl.nasa.gov/comets/sidingspring/>

Follow NASA's Journey to Mars on Twitter:
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<http://svs.gsfc.nasa.gov/goto?11714>

2014 10 08	NASA Goddard	https://youtu.be/s9Bmvcl4ops	NASA OIB Four-wheeling Antarctica	Not everyone was sure Kyle Krabill's four-wheeler would function in the Antarctic cold. But with some help from the talented techs at the National Science Foundation, the little ATV played a critical role in supporting Operation IceBridge's 2013 campaign out of remote McMurdo Station. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11707 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 10 07	NASA Goddard	https://youtu.be/JWWXGGWZBE	NASA The Arctic and the Antarctic Respond in Opposite Ways	For more information, visit http://www.nasa.gov/content/goddard/antarctic-sea-ice-reaches-new-record-maximum http://www.nasa.gov/content/goddard/qa-what-is-happening-with-antarctic-sea-ice The Arctic and the Antarctic are regions that have a lot of ice and acts as air conditioners for the Earth system. This year, Antarctic sea ice reached a record maximum extent while the Arctic reached a minimum extent in the top ten lowest since satellite records began. One reason we are seeing differences between the Arctic and the Antarctic is due to their different geographies. As for what's causing the sea increase in the Antarctic, scientists are also studying ocean temperatures, possible changes in wind direction and, overall, how the region is responding to changes in the climate. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11703 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter:	Transcript Link

2014 10 06	NASA Goddard	https://youtu.be/-8kTpH8l680	NASA Flying Around the Radar	The HIWRAP is the High-Altitude Imaging Wind and Rain Airborne Profiler, a "conically scanning" Doppler radar, meaning it scans in a cone-shaped manner. Wind measurements are crucial for understanding and forecasting tropical storms since they are closely tied to the overall dynamics of the storm. The HIWRAP instrument is able to measure line-of-sight (along the radar beam) and because it scans in a cone beneath the aircraft, it gets two looks at most parts of the storm, allowing calculations of the 3-dimensional wind and rain fields. In the absence of rain, it can also measure ocean surface winds. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11669 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 10 03	NASA Goddard	https://youtu.be/C1Kact6QHGO	NASA Twisting Solar Eruption and Flare	For more information, visit http://www.nasa.gov/content/goddard/nasa-releases-images-of-mid-level-solar-flare/ The sun emitted a mid-level solar flare, peaking at 3:01 p.m. EDT on Oct. 2, 2014. NASA's Solar Dynamics Observatory, which watches the sun 24-hours a day, captured images of the flare. Solar flares are powerful bursts of radiation. Harmful radiation from a flare cannot pass through Earth's atmosphere to physically affect humans on the ground, however -- when intense enough -- they can disturb the atmosphere in the layer where GPS and communications signals travel. This flare is classified as an M7.3 flare. M-class flares are one-tenth as powerful as the most powerful flares, which are designated X-class flares. Music: "No Comment Before Sunset" by Lars Leonhard, courtesy of the artist and BineMusic. Lars Leonhard: http://www.lars-leonhard.de/ This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11670 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link

2014 09 30	NASA Goddard	https://youtu.be/hL9OHXw-A8	NASA Swift Catches Mega Flares from a Mini Star	On April 23, NASA's Swift satellite detected the strongest, hottest, and longest-lasting sequence of stellar flares ever seen from a nearby red dwarf star. The initial blast from this record-setting series of explosions was as much as 10,000 times more powerful than the largest solar flare ever recorded. At its peak, the flare reached temperatures of 360 million degrees Fahrenheit (200 million Celsius), more than 12 times hotter than the center of the sun. The "superflare" came from one of the stars in a close binary system known as DG Canum Venaticorum, or DG CVn for short, located about 60 light-years away. Both stars are dim red dwarfs with masses and sizes about one-third of our sun's. They orbit each other at about three times Earth's average distance from the sun, which is too close for Swift to determine which star erupted. At 5:07 p.m. EDT on April 23, the rising tide of X-rays from DG CVn's superflare triggered Swift's Burst Alert Telescope (BAT). Swift turned to observe the source in greater detail with other instruments and, at the same time, notified astronomers around the globe that a powerful outburst was in progress. For about three minutes after the BAT trigger, the superflare's X-ray brightness was greater than the combined luminosity of both stars at all wavelengths under normal conditions.	Transcript Link
2014 09 25	NASA Goddard	https://youtu.be/cLLq6pIMjU0	NASA Comparing CMEs	This video features two model runs. One looks at a moderate coronal mass ejection (CME) from 2006. The second run examines the consequences of a large coronal mass ejection, such as The Carrington-Class CME of 1859. These model runs allow us to estimate consequences of a large event hitting Earth, so we can better protect power grids and satellites. In an effort to understand and predict the impact of space weather events on Earth, the Community-Coordinated Modeling Center (CCMC) at NASA Goddard Space Flight Center, routinely runs computer models of the many historical events. These model runs are then compared to actual data to determine ways to improve the model, and therefore forecasts of future space weather events. Sometimes we need an actual event to have data for comparison. Extreme space weather events are one example where researchers must test models with a rather limited set of data. The vertical lines on the left represent magnetic field lines from the sun. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11660 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast:	Transcript Link

2014 09 24 NASA Goddard <https://youtu.be/sg3NA dOYp8Q> NASA Many Views of a Massive CME

On July 23, 2012, a massive cloud of solar material erupted off the sun's right side, zooming out into space. It soon passed one of NASA's Solar Terrestrial Relations Observatory, or STEREO, spacecraft, which clocked the CME as traveling between 1,800 and 2,200 miles per second as it left the sun. This was the fastest CME ever observed by STEREO.

Two other observatories – NASA's Solar Dynamics Observatory and the joint European Space Agency/NASA Solar and Heliospheric Observatory -- witnessed the eruption as well. The July 2012 CME didn't move toward Earth, but watching an unusually strong CME like this gives scientists an opportunity to observe how these events originate and travel through space.

STEREO's unique viewpoint from the sides of the sun combined with the other two observatories watching from closer to Earth helped scientists create models of the entire July 2012 event. They learned that an earlier, smaller CME helped clear the path for the larger event, thus contributing to its unusual speed.

Such data helps advance our understanding of what causes CMEs and improves modeling of similar CMEs that could be Earth-directed.

[Transcript](#)
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2014 09 23 NASA Goddard <https://youtu.be/5hpCA D9FS4Q> NASA Bennu's Journey Teaser

<http://www.asteroidmission.org/movie>

[Transcript](#)
[Link](#)

The solar system today is an orderly place, much quieter than it was in its turbulent youth. How did our Sun, the Earth and the planets evolve from a whirlpool of gas, dust, and fiery droplets of molten rock? To answer this question, scientists are planning to visit asteroid Bennu (1999 RQ-36), which is composed of the same raw ingredients that created the planets. Bennu is a survivor of our solar system's early chaos, and following its journey will teach us a great deal about our own origins. This video is the official teaser for Bennu's Journey, a signature animation of NASA's OSIRIS-REx mission; the full-length video will be released in November 2014.

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2014 09 22	NASA Goddard	https://youtu.be/jjwpOWeRZus	NASA Arctic Sea Ice Reaches 2014 Minimum Extent	Sea ice acts as an air conditioner for the planet, reflecting energy from the sun. On September 17, the Arctic sea ice reached its minimum extent for 2014. At 1.94 million square miles (5.02 million square kilometers), it's the sixth lowest extent of the satellite record. With warmer temperatures and thinner, less resilient ice, the Arctic sea ice is on a downward trend. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011600/a011654/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard http://www.nasa.gov/press/2014/september/2014-arctic-sea-ice-minimum-sixth-lowest-on-record/#.VCB3sC9RFxg	Transcript Link
2014 09 22	NASA Goddard	https://youtu.be/TWjtYSRIOUI	NASA The Difference Between CMEs and Solar Flares	Coronal mass ejections (CMEs) and flares are both solar events, but they are not the same. This video shows the differences between the two by highlighting specific features of each. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11667 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 09 20	NASA Goddard	https://youtu.be/b4rKePh6A4E	NASA MAVEN MOI live shot with Sandra Cauffman	Sandra Cauffman gives a canned interview in Spanish for the 09/19/2014 MAVEN Mars Orbit Insertion liveshots.	Transcript Link

2014 09 20 NASA Goddard <https://youtu.be/zfQR1nOHXeg> NASA MAVEN Jim Green gives a canned interview for the 09/19/2014 MAVEN MOI live shot with Mars Orbit Insertion liveshots. [Transcript Link](#)
Jim Green

2014 09 20 NASA Goddard <https://youtu.be/w5Xg-hD9B0> NASA MAVEN Kelly Fast gives a canned interview for the 09/19/2014 MAVEN Mars MOI live shot with Orbit Insertion liveshots. [Transcript Link](#)
Kelly Fast

2014 09 20 NASA Goddard <https://youtu.be/b0NuXmnfUfg> NASA MAVEN Jim Garvin gives a canned interview for the 09/19/2014 MAVEN MOI Live Shot Mars Orbit Insertion liveshots. [Transcript Link](#)
with Jim Garvin

2014 09 17	NASA Goddard	https://youtu.be/dNakyt-D47U	NASA Investigating the Martian Atmosphere	The Martian surface bears ample evidence of flowing water in its youth, from crater lakes and riverbeds to minerals that only form in water. But today Mars is cold and dry, and scientists think that the loss of Mars' water may have been caused by the loss of its early atmosphere. NASA's Mars Atmosphere and Volatile Evolution mission, or MAVEN, will be the first spacecraft devoted to studying the Red Planet's upper atmosphere, in an effort to understand how the Martian climate has changed over time. To watch the MAVEN Mars Orbit Insertion live on Sunday, 9/21, starting at 9:30 pm EDT, visit: http://www.nasa.gov/mission_pages/maven/main/index.html Follow on Twitter: #journeytomars #maven @maven2mars @nasasocial This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11603 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2014 09 16	NASA Goddard	https://youtu.be/j1RmTI68AUM	NASA Making Saharan Air Apparent	For more info visit http://www.nasa.gov/content/goddard/nasa-hs3-instrument-views-2-dimensions-of-clouds/ NASA's Cloud Physics Lidar (CPL) instrument, flying aboard an unmanned Global Hawk aircraft in this summer's Hurricane and Severe Storm Sentinel or HS3 mission, is studying the changing profile of the atmosphere in detail to learn more about how hurricanes form and strengthen. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11657 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 09 11	NASA Goddard	https://youtu.be/6Bicgl6Ebfs	NASA September 10, 2014 X1.6 flare	The sun emitted a significant solar flare, peaking at 1:48 p.m. EDT on Sept. 10, 2014. NASA's Solar Dynamics Observatory captured images of the event. Solar flares are powerful bursts of radiation. Harmful radiation from a flare cannot pass through Earth's atmosphere to physically affect humans on the ground. However -- when intense enough -- they can disturb the atmosphere in the layer where GPS and communications signals travel. This flare is classified as an X1.6 class flare. "X-class" denotes the most intense flares, while the number provides more information about its strength. An X2 is twice as intense as an X1, an X3 is three times as intense, etc. his video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11651 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 09 11	NASA Goddard	https://youtu.be/9MVRMzmwubM	NASA The Mysterious Holes in the Atmosphere on Venus	The European Space Agency's Venus Express mission saw something it could not explain. It appeared that there were holes on the nightside of Venus' ionosphere. Researchers at NASA's Goddard Space Flight Center investigated these mysterious holes, and found evidence that the sun's magnetic field lines may be penetrating through the planet. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11440 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 09 11 NASA Goddard <https://youtu.be/Ao8Q6NZqe3g> NASA
Phytoplankton
Levels Dropping

New research led by NASA researchers has found populations of the microscopic marine plants, phytoplankton, have decreased in the Northern Hemisphere. An analysis using a NASA model in combination with ocean satellite data between 1998 and 2012, showed a 1% decrease of phytoplankton per year. [Transcript Link](#)

Research: Decadal Trends in Global Pelagic Ocean Chlorophyll: A New Assessment Combining Multiple Satellites, In Situ Data and Models, Journal of Geophysical Research: Oceans

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2014 09 09 NASA Goddard <https://youtu.be/ApQehZ5l3hg> NASA Mapping
Alaska's Forests

NASA and the U.S. Forest Service are surveying the forests of Interior Alaska. The airborne study using an advanced instrument will create a 3D map of the forest composition. This will enable scientists to see patterns of fire recovery and provide a benchmark for assessing future changes to the region. [Transcript Link](#)

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2014 09 08	NASA Goddard	https://youtu.be/1Hm8b-L62y4	NASA Targeting Mars	For more information visit http://www.nasa.gov/content/goddard/nasas-maven-spacecraft-makes-final-preparations-for-mars NASA's MAVEN spacecraft is quickly approaching Mars on a mission to study its upper atmosphere. When it arrives on September 21, 2014, MAVEN's winding journey from Earth will culminate with a dramatic engine burn, pulling the spacecraft into an elliptical orbit. For more information, visit nasa.gov/maven Follow on Twitter: #journeytomars #maven @maven2mars @nasasocial This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11636 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 09 08	NASA Goddard	https://youtu.be/K4TPlbFyhIE	NASA A Selective History of Arctic Sea Ice Observations, Part 2	*Updated: 09/08/14* The study of Arctic sea ice changed forever with the dawn of the Space Age and the first Earth-observing satellites. Part 2 of our animated timeline picks up where Part 1 left off — with the launch of the TIROS weather satellite. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11634 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 09 04 NASA Goddard https://youtu.be/SSKv4A_Cj5s NASA Scanning a Snow Storm For more information, visit <http://www.nasa.gov/press/2014/september/international-global-precipitation-measurement-mission-data-goes-public/> [Transcript Link](#)

On March 17, 2014 the Global Precipitation Measurement (GPM) mission's Core Observatory flew over the East coast's last snow storm of the 2013-2014 winter season. This was also one of the first major snow storms observed by GPM shortly after it was launched on February 27, 2014.

The GPM Core Observatory carries two instruments that show the location and intensity of rain and snow, which defines a crucial part of the storm structure - and how it will behave. The GPM Microwave Imager sees through the tops of clouds to observe how much and where precipitation occurs, and the Dual-frequency Precipitation Radar observes precise details of precipitation in 3-dimensions.

For forecasters, GPM's microwave and radar data are part of the toolbox of satellite data, including other low Earth orbit and geostationary satellites, that they use to monitor tropical cyclones and hurricanes.

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2014 09 04 NASA Goddard <https://youtu.be/PPs3O2UwbhU> NASA The Data Downpour Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: [Transcript Link](#)
A video describing how the GPM constellation turns observed radiances and reflectivities of global precipitation into data products.

For more information visit
<http://www.nasa.gov/content/goddard/gpm-missions-how-to-guide-for-making-global-rain-maps/>

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2014 09 03	NASA Goddard	https://youtu.be/szRwBQ5BtCo	NASA A Selective History of Sea Ice Observations, Part 1	Arctic sea ice has been the last frontier of the North for thousands of years, turning back seafarers, testing the mettle of explorers, and providing a way of life for people circling the top of the world. This animated timeline provides a quick (and highly selective) ride from the days of early Greek exploration to the dawn of the Space Age.	Transcript Link
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2014 09 01	NASA Goddard	https://youtu.be/A1dyCvGT7KQ	NASA Intern Profile – Sarah Roth	Sarah Roth, a chemical engineering graduate student from the University of Akron who has always loved space but took an unusual route to get here, discusses her summer internship studying propellant slosh dynamics.	Transcript Link
For more information about NASA internships, visit http://intern.nasa.gov This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11560 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard					

2014 08 28	NASA Goddard	https://youtu.be/OvEKT8X3Bko	NASA Late Summer M5 Solar Flare	On Aug. 24, 2014, the sun emitted a mid-level solar flare, peaking at 8:16 a.m. EDT. NASA's Solar Dynamics Observatory and STEREO captured images of the flare, which erupted on the left side of the sun. Solar flares are powerful bursts of radiation. Harmful radiation from a flare cannot pass through Earth's atmosphere to physically affect humans on the ground, however -- when intense enough -- they can disturb the atmosphere in the layer where GPS and communications signals travel. To see how this event may affect Earth, please visit NOAA's Space Weather Prediction Center at http://spaceweather.gov, the U.S. government's official source for space weather forecasts, alerts, watches and warnings. This flare is classified as an M5 flare. M-class flares are ten times less powerful than the most intense flares, called X-class flares. Learn more at: http://www.nasa.gov/content/goddard/nasa-captures-images-of-a-late-summer-flare/ This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11629 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook:	Transcript Link
2014 08 27	NASA Goddard	https://youtu.be/RD4dFgmZEhw	NASA Intern Profile – Qi'Anne Knox	Musically-inclined intern Qi'Anne Knox is working on her PhD in Computer Science Education at Howard University, and this summer helped Goddard's IT department with web application development and its transition to a new phone system. For more information about NASA internships, visit http://intern.nasa.gov This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11560 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 08 22	NASA Goddard	https://youtu.be/yCz6Jkx9ykw	NASA Arctic Sea Ice Live Shot 2014	Dr. Tom Wagner talks about Arctic sea ice and the ARISE mission in this canned liveshot interview. For more information, visit http://www.nasa.gov/earthrightnow	Transcript Link
This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11627 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard					
2014 08 21	NASA Goddard	https://youtu.be/ZzERhycRqX8	NASA Intern Profile – Jorel Torres	Summer intern Jorel Torres, a graduate student from the South Dakota School of Mines and Technology, talks about snow research and the value of hard work, persistence, and passion.	Transcript Link
For more information about NASA internships, visit http://intern.nasa.gov This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011500/a011560/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard					

2014 08 20	NASA Goddard	https://youtu.be/Aw8c-OCBZQ	NASA Ozone-Depleting Compound Persists	Earth's atmosphere contains an unexpectedly large amount of an ozone-depleting compound from an unknown source decades after the compound was banned worldwide. The compound, carbon tetrachloride, was used in applications such as dry cleaning and as a fire-extinguishing agent, until its regulation in 1987 under the Montreal Protocol along with other chlorofluorocarbons that destroy ozone and contribute to the ozone hole over Antarctica. Parties to the Montreal Protocol reported zero new emissions between 2007-2012. However, new research led by Qing Liang at NASA's Goddard Space Flight Center in Greenbelt, Maryland, shows that worldwide emissions of carbon tetrachloride average 39 kilotons per year – approximately 30 percent of peak emissions prior to the international treaty going into effect. Now that scientists have quantified the emissions they can begin investigating where they are coming from. Are there industrial leakages, large emissions from contaminated sites, or some other unknown source? This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11626 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook:	Transcript Link
2014 08 18	NASA Goddard	https://youtu.be/TSWZI2oUgnI	NASA RXTE Satellite Catches the Beat of a Midsize Black Hole	Astronomers from the University of Maryland, College Park (UMCP) and NASA's Goddard Space Flight Center have uncovered rhythmic pulsations from a rare breed of black hole in archival data from NASA's Rossi X-ray Timing Explorer (RXTE) satellite. The signals provide compelling evidence that the object, known as M82 X-1, is one of only a few midsize black holes known. Dying stars form modest black holes measuring up to around 25 times the mass of our sun. At the opposite extreme, most large galaxies contain a supermassive black hole with a mass tens of thousands of times greater. Just as drivers traveling a highway packed with compact cars and monster trucks might start looking for sedans, astronomers are searching for a middle range of the black hole population and wondering why they see so few. M82 X-1 is the brightest X-ray source in Messier 82, a galaxy located about 12 million light-years away in the constellation Ursa Major. While astronomers have suspected the object of being a midsize, or intermediate-mass, black hole for at least a decade, estimates have varied from 20 to 1,000 solar masses, preventing a definitive classification. Working with Mushotzky and Strohmayer, UMCP graduate student Dheeraj Pasham sifted through about 800 RXTE observations of M82 in a search for specific types of brightness changes that would help pin down the mass of the X-ray source.	Transcript Link

2014 08 15	NASA Goddard	https://youtu.be/4HSFKwho7MQ	NASA Show Me the Water	Freshwater seems abundant, but when accounting for all the water on Earth, it's in limited supply. Just three percent of the water on our planet is freshwater. A majority of this water, about two percent of the world total, is contained in glaciers and ice sheets or stored below ground. The remaining one percent is found in lakes, rivers and wetland areas or transported through the atmosphere in the form of water vapor, clouds and precipitation. Rain and snowfall replenish freshwater sources, making it vital to know when, where and how much water is falling at any given time. Using NASA's Global Precipitation Measurement satellite, researchers can track precipitation worldwide and monitor levels from space. For more information, visit http://water.usgs.gov/edu/earthwherewater.html This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11619 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 08 14	NASA Goddard	https://youtu.be/GNwkQsmTXfg	NASA ARISE Arctic Mission Takes Shape	Crews at NASA Goddard's Wallops Flight Facility are hard at work integrating a suite of instruments into a C-130 aircraft in preparation for the start of the ARISE campaign later this month. ARISE, which stands for Arctic Radiation IceBridge Sea and Ice Experiment, will make simultaneous measurements of ice, clouds and levels of incoming and outgoing radiation, the balance of which determines the degree of climate warming. To learn more about NASA's Earth science activities in 2014, visit: http://www.nasa.gov/earthrightnow This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011600/a011624/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 08 10 NASA Goddard https://youtu.be/iFuWp_g4YLDc Supermoon

The full moon on Sunday Aug 10, will appear larger and brighter than any other full moon this year. This #Supermoon will be visible everywhere in the world. August's full moon rises when the natural satellite is at perigee - the closest point to Earth in its orbit.

[Transcript](#)
[Link](#)

2014 08 06 NASA Goddard <https://youtu.be/71kuWKoVhDA> NASA Intern Profile – Dhanesh “DK” Krishnarao

Intern Dhanesh "DK" Krishnarao works in Code 674 on space weather forecasting under mentor Dr. Yihua Zheng.

[Transcript](#)
[Link](#)

Read more about Dhanesh here:
<http://www.nasa.gov/content/goddard/monitoring-solar-activity-with-sdo/>

For more information about NASA internships, visit
<http://intern.nasa.gov>

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<http://svs.gsfc.nasa.gov/vis/a010000/a011500/a011560/>

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http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html

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<http://twitter.com/NASAGoddard>

2014 08 01	NASA Goddard	https://youtu.be/Hg5tla7s-ys	NASA EUNIS Sees Evidence for Nanoflare Coronal Heating	Scientists have recently gathered some of the strongest evidence to date to explain what makes the sun's outer atmosphere so much hotter than its surface. The new observations show temperatures in the atmosphere so hot that only one current theory explains them: something called nanoflares - a constant peppering of impulsive bursts of heating, none of which can be individually detected -- provide the mysterious extra heat. These new observations come from just six minutes worth of data from one of NASA's least expensive type of missions, a sounding rocket. The EUNIS mission, short for Extreme Ultraviolet Normal Incidence Spectrograph, launched on April 23, 2013, gathering a new snapshot of data every 1.3 seconds to track the properties of material over a wide range of temperatures in the complex solar atmosphere The unique capabilities of EUNIS enabled researchers to obtain these results. The spectrograph was able to clearly and unambiguously distinguish the observations representing the extremely hot material - emission lines showing light with a wavelength of 592.6 Angstrom, where an Angstrom is the size of an atom -- from a very nearby light wavelength of 592.2 Angstroms. Learn more at: http://www.nasa.gov/content/goddard/best-evidence-yet-for-coronal-heating-theory/	Transcript Link
2014 07 31	NASA Goddard	https://youtu.be/VENwb1UfodI	OIB Across the Ross	During their last Antarctic campaign, NASA's Operation IceBridge completed the first-ever basin-wide airborne survey of ice in the Ross Sea. This survey, known as the Ross Sea Fluxgate mission, aimed to help researchers track the movement of sea ice in this critical region. After an early morning weather briefing and takeoff from the sea ice runway at the National Science Foundation's McMurdo Station, the NASA P-3 flew a survey that took researchers across the Ross Sea basin and back. The purpose of this mission was to set up a pair of parallel lines known as a flux gate that scientists can use to study how ice moves out through the Ross Sea. In addition, IceBridge's instruments collected data on sea ice freeboard – the height of ice above the ocean surface – which can be used to calculate sea ice thickness and volume. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11621 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 07 22	NASA Goddard	https://youtu.be/GPv6y7MSebA	NASA Landsat's Global Perspective	On July 23rd, 1972, the first Landsat spacecraft launched into orbit. At the time, it was called "Earth Resources Technology Satellite," or ERTS, and was the first satellite to use a scanning spectrophotometer. Previous satellites relied on film cameras (ejecting the exposed film to be caught by planes) or transmitted the signal from television cameras. The scanning sensor and its successor sensors on subsequent Landsat satellites revolutionized how we study our home planet. Celebrating this anniversary, this video is a "greatest hits" montage of Landsat data. Throughout the decades, Landsat satellites have given us a detailed view of the changes to Earth's land surface. By collecting data in multiple wavelength regions, including thermal infrared wavelengths, the Landsat fleet has allowed us to study natural disasters, urban change, water quality and water usage, agriculture development, glaciers and ice sheets, and forest health. NASA and the U.S. Department of the Interior through the U.S. Geological Survey (USGS) jointly manage Landsat, and the USGS preserves a more than 40-year archive of Landsat data that is freely available over the Internet. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11615 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link
2014 07 22	NASA Goddard	https://youtu.be/Hn5RJ2PN718	NASA Fermi Catches a 'Transformer' Pulsar	In late June 2013, an exceptional binary system containing a rapidly spinning neutron star underwent a dramatic change in behavior never before observed. The pulsar's radio beacon vanished, while at the same time the system brightened fivefold in gamma rays, the most powerful form of light, according to measurements by NASA's Fermi Gamma-ray Space Telescope. The system, known as AY Sextantis, is located about 4,400 light-years away in the constellation Sextans. It pairs a 1.7-millisecond pulsar named PSR J1023+0038 -- J1023 for short -- with a star containing about one-fifth the mass of the sun. The stars complete an orbit in only 4.8 hours, which places them so close together that the pulsar will gradually evaporate its companion. To better understand J1023's spin and orbital evolution, the system was routinely monitored in radio. These observations revealed that the pulsar's radio signal had turned off and prompted the search for an associated change in its gamma-ray properties. What's happening, astronomers say, are the last sputtering throes of the pulsar spin-up process. Researchers regard the system as a unique laboratory for understanding how millisecond pulsars form and for studying details of how accretion takes place on neutron stars. In J1023, the stars are close enough that a stream of gas flows from the sun-like star toward the pulsar. The pulsar's rapid rotation and	Transcript Link

2014 07 21 NASA Goddard <https://youtu.be/bhIOI-ze1nM> NASA A Tour of NASA Goddard Photography on Social Media Image Coordinator Rebecca Roth discusses the process in which she chooses images to be displayed in NASA Goddard's Social Media presence. [Transcript Link](#)

2014 07 18 NASA Goddard <https://youtu.be/xUcYQ7slmRw> A New Look at the Apollo 11 Landing Site Apollo 11 landed on the Moon on July 20th, 1969, a little after 4:00 in the afternoon Eastern Daylight Time. The Lunar Module, nicknamed Eagle and flown by Neil Armstrong and Edwin "Buzz" Aldrin, touched down near the southern rim of the Sea of Tranquility, one of the large, dark basins that contribute to the Man in the Moon visible from Earth. Armstrong and Aldrin spent about two hours outside the LM setting up experiments and collecting samples. At one point, Armstrong ventured east of the LM to examine a small crater, dubbed Little West, that he'd flown over just before landing. [Transcript Link](#)

The trails of disturbed regolith created by the astronauts' boots are still clearly visible in photographs of the landing site taken by the Lunar Reconnaissance Orbiter (LRO) narrow-angle camera (LROC) more than four decades later.

LROC imagery makes it possible to visit the landing site in a whole new way by flying around a three-dimensional model of the site. LROC scientists created the digital elevation model using a stereo pair of images. Each image in the pair shows the site from a slightly different angle, allowing sophisticated software to infer the shape of the terrain, similar to the way that left and right eye views are combined in the brain to produce the perception of depth.

The animator draped an LROC photograph over the terrain model. He also added a 3D model of the LM descent stage—the real LM in the photograph looks oddly flat when viewed at an oblique angle.

2014 07 17	NASA Goddard	https://youtu.be/iQLWIuaNg68	NASA Peeking Into Lunar Pits	Since 2009, NASA's Lunar Reconnaissance Orbiter (LRO) has spotted hundreds of conspicuous holes on the Moon. These steep-walled "pits" might lead to underground environments sheltered from radiation, meteorite impacts, and extreme temperatures, making them valuable sites for future exploration. Learn more at: http://www.nasa.gov/content/goddard/lunar-pits-could-shelter-astronauts-reveal-details-of-how-man-in-the-moon-formed/ This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11612 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 07 15	NASA Goddard	https://youtu.be/krY5DjhjKGY	NASA 10 Years of Aura Legacy	The Aura atmospheric chemistry satellite celebrates its 10th anniversary on July 15th, 2014. Since its launch in 2004, Aura has monitored the Earth's atmosphere and provided data on the ozone layer, air quality, and greenhouse gases associated with climate change. In this video, NASA Goddard scientists Paul Newman and Bryan Duncan describe the remarkable changes that the Aura satellite has witnessed in its first ten years of Earth observation. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11607 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 07 14	NASA Goddard	https://youtu.be/ZDvizNvaOzY	NASA Goddard In The Galaxy	This video highlights the many ways NASA Goddard Space Flight Center explores the universe. So crank up your speakers and let the music be your guide! "My Songs Know What You Did In The Dark (Light Em Up)" Performed by Fall Out Boy Courtesy of Island Def Jam Music Group under license from Universal Music Enterprises http://svs.gsfc.nasa.gov/vis/a010000/a011300/a011378/	Transcript Link

2014 07 11	NASA Goddard	https://youtu.be/F7QKD1c8BE	NASA Landsat Looks to the Moon	Every full moon, Landsat 8 turns its back on Earth. As the satellite's orbit takes it to the nighttime side of the planet, Landsat 8 pivots to point at the moon. It scans the distant lunar surface multiple times, then flips back around to continue its task of collecting land-cover information of the sunny side of Earth below. These monthly lunar scans are key to ensuring the land-imaging instrument aboard Landsat 8 is detecting light consistently. For a well-known and stable source of light, nothing on our planet beats the moon, which lacks an atmosphere and has an unchanging surface, barring the odd meteorite. The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey. The first Landsat satellite launched in 1972 and Landsat 8 launched on February 11, 2013. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11606 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 07 09	NASA Goddard	https://youtu.be/pkZE6lMVOH8	NASA Firework Flare	This movie from NASA's SDO shows a solar flare — the bright light on the left side of the sun — on July 8, 2014. An eruption of solar material can also be seen arcing up and away. After it left the sun, this became a coronal mass ejection, a giant cloud of solar material, headed toward Mars. SDO images the sun in select wavelengths of extreme ultraviolet light. Each wavelength corresponds to a different temperature material — and different region — of the sun. The wavelengths are measured in Angstroms (Å) and each wavelength is color coded. Gold is showing 171 Angstroms, red is 304 Angstroms, and teal is 131 Angstroms. What is a solar flare? What is a CME? Learn more at our FAQ: http://www.nasa.gov/mission_pages/sunearth/spaceweather/index.html#.U72BG8fTYRg This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11605 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter:	Transcript Link

2014 07 08	NASA Goddard	https://youtu.be/FN-6mUzLhc	NASA Scientists Create First Full 3D Model of Eta Carinae Nebula	An international team of astronomers has developed a 3D model of a giant cloud ejected by the massive binary system Eta Carinae during its 19th century outburst. Eta Carinae lies about 7,500 light-years away in the southern constellation of Carina and is one of the most massive binary systems astronomers can study in detail. The smaller star is about 30 times the mass of the sun and may be as much as a million times more luminous. The primary star contains about 90 solar masses and emits 5 million times the sun's energy output. Both stars are fated to end their lives in spectacular supernova explosions. Between 1838 and 1845, Eta Carinae underwent a period of unusual variability during which it briefly outshone Canopus, normally the second-brightest star. As a part of this event, which astronomers call the Great Eruption, a gaseous shell containing at least 10 and perhaps as much as 40 times the sun's mass was shot into space. This material forms a twin-lobed dust-filled cloud known as the Homunculus Nebula, which is now about a light-year long and continues to expand at more than 1.3 million mph (2.1 million km/h). Using the European Southern Observatory's Very Large Telescope and its X-Shooter spectrograph, the team imaged near-infrared, visible and ultraviolet wavelengths along 92 separate swaths across the nebula, making the most complete spectral map to date. The researchers have used the spatial and velocity information provided by this data to create the first high-resolution 3D model of the	Transcript Link
2014 07 08	NASA Goddard	https://youtu.be/YHGMJNqgXnQ	NASA Zoom into Eta Carinae Nebula and New 3D Model	An international team of astronomers has developed a 3D model of a giant cloud ejected by the massive binary system Eta Carinae during its 19th century outburst. Eta Carinae lies about 7,500 light-years away in the southern constellation of Carina and is one of the most massive binary systems astronomers can study in detail. The smaller star is about 30 times the mass of the sun and may be as much as a million times more luminous. The primary star contains about 90 solar masses and emits 5 million times the sun's energy output. Both stars are fated to end their lives in spectacular supernova explosions. Between 1838 and 1845, Eta Carinae underwent a period of unusual variability during which it briefly outshone Canopus, normally the second-brightest star. As a part of this event, which astronomers call the Great Eruption, a gaseous shell containing at least 10 and perhaps as much as 40 times the sun's mass was shot into space. This material forms a twin-lobed dust-filled cloud known as the Homunculus Nebula, which is now about a light-year long and continues to expand at more than 1.3 million mph (2.1 million km/h). Using the European Southern Observatory's Very Large Telescope and its X-Shooter spectrograph, the team imaged near-infrared, visible and ultraviolet wavelengths along 92 separate swaths across the nebula, making the most complete spectral map to date. The researchers have used the spatial and velocity information provided by this data to create the first high-resolution 3D model of the	Transcript Link

2014 07 07	NASA Goddard	https://youtu.be/p8V-W-sua7o	NASA Aquarius Returns Global Maps of Soil Moisture	NASA's Aquarius instrument has released its first released worldwide maps of soil moisture. Soil moisture, the water contained within soil particles, is an important player in Earth's water cycle. This animated version of Aquarius' measurements reveals a dynamic pattern of worldwide shifts between dry and moist soils. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11604 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 07 03	NASA Goddard	https://youtu.be/A61m9SAzV5o	NASA STEREO Solar Conjunction	Since February 2011, the two spacecraft of NASA's the Solar Terrestrial Relations Observatory or STEREO mission have been providing scientists with unprecedented views of the far side of the sun. The spacecraft travel at different speeds. This means that over time, the satellites become increasingly out of sync, appearing from Earth's perspective to drift farther apart, able to observe first the sides and eventually the far side of the sun. Now they are nearing each other once again, this time on the other side of the sun. During this period when the sun blocks Earth's view -- a geometrical position known in astronomy as a superior conjunction -- radio receivers on Earth will not be able to distinguish STEREO's signal from the sun's radiation. Communication with the spacecraft will cease and the satellites will both go into safe mode without collecting data for a time. This will happen for STEREO-Ahead from March 24 to July 7, 2015. STEREO-Behind will be in superior conjunction from Jan. 22 to March 23, 2015. At least one spacecraft, therefore, will always be collecting data. Before this occurs, the heating from the sun will also begin to affect - though not shut down -- data collection. From wherever they are in space, the STEREO spacecraft aim their antenna toward Earth to send down data. This position puts the antenna fairly close to pointing at the sun, exposing the instruments to more heat than it can safely bear. The antenna can be adjusted to point in different directions, but the signal coming to Earth will be much fainter and won't allow for as much data to be downloaded. This antenna	Transcript Link

2014 06 25	NASA Goddard	https://youtu.be/RYHJi0gYiaA	NASA Goddard Goes to Mars	The Martian climate remains one of the solar system's biggest mysteries: although cold and dry today, myriad surface features on Mars carved by flowing water attest to a much warmer, wetter past. What caused this dramatic transition? Scientists think that climate change on Mars may be due to solar wind erosion of the early atmosphere, and NASA's MAVEN mission will test this hypothesis. Project Manager David F. Mitchell discusses MAVEN and the Goddard Space Flight Center's role in sending it to the Red Planet. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11581 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 06 23	NASA Goddard	https://youtu.be/ElbUoHsydvU	NASA JWST Microshutters Snapshot	A new Microshutter Array for the Webb Telescope's Near Infrared Spectrometer (NIRSpec) is packed and transported by hand one building away at NASA Goddard Space Flight Center to undergo thermal cycling testing and checkouts at it operational temperature of 35 kelvin or -397 Fahrenheit. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11571 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 06 18	NASA Goddard	https://youtu.be/vGn2TuMF5rY	NASA The Moon As Art Contest	To celebrate its 5th Anniversary, the Lunar Reconnaissance Orbiter mission decided to hold a contest to pick a cover image for "The Moon As Art" collection. This collection features a variety of beautiful visuals that were created using data gathered by LRO over the first 4.5 years of operations. 5 images were selected by the LRO team to put up for a public vote. Did your favorite image win? Watch this video to find out! This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011500/a011569/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 06 17	NASA Goddard	https://youtu.be/JsZEpgu9Xo	NASA Webb's Fully Integrated Heart Lowered	http://www.nasa.gov/content/goddard/webbs-fully-integrated-heart-lowered-into-the-chamber Engineers move the heart of the Webb Telescope holding all four science instruments out of the clean room at NASA's Goddard Space Flight Center and into the huge Space Environment Simulator for several months of testing at temperatures reaching 20 Kelvin or - 425 Fahrenheit. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11570 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 06 11	NASA Goddard	https://youtu.be/ny-mP9tdbDM	NASA Beautiful Earth Program at the Goddard Visitor Center	About 140 students, parents, and teachers came to the Goddard Space Flight Center Visitor Center in June, 2014 for the Beautiful Earth educational program. The Beautiful Earth program immersed students in a multimedia performance with musical accompaniment, discussions with a NASA scientist from the Aura mission, and hands-on activities. For more information about Beautiful Earth, visit http://beautifulearth.gsfc.nasa.gov. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11566 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 06 10	NASA Goddard	https://youtu.be/rRpxs39zn20	NASA SDO Sees Two Solar Flares	The sun emitted a significant solar flare, peaking at 7:42 a.m. EDT on June 10, 2014. NASA's Solar Dynamics Observatory - which typically observes the entire sun 24 hours a day -- captured images of the flare. This flare is classified as an X2.2 flare. X-class denotes the most intense flares, while the number provides more information about its strength. An X2 is twice as intense as an X1, an X3 is three times as intense, etc. About one hour later, the sun released a second X-class flare, peaking at 8:52 a.m. EDT on June 10, 2014. This is classified as an X1.5 flare. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11564 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 06 09	NASA Goddard	https://youtu.be/pRSCu5AjZNo	NASA Laser Mapping The Earth	NASA scientist Bryan Blair introduces a laser mapping sensor known as LVIS (the Land, Vegetation, and Ice Sensor), which is flown by aircraft over target areas to collect data on surface topography and vegetation cover. Bryan also discusses the benefits to mounting LVIS onto high-altitude, long-duration aircraft such as the Global Hawk. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11555 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 06 03	NASA Goddard	https://youtu.be/T0IXR8Zp67U	NASA Summer 2014 Interns' First Day	Katrina Jackson and Angel Mills get to know the incoming Goddard interns as they check in for their first day of the 2014 summer internship season. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11560 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 05 30	NASA Goddard	https://youtu.be/-HXYg_BWGpk	NASA WFIRST Uncovering the Mysteries of the Universe	The Wide-Field Infrared Survey Telescope (WFIRST) is an upcoming space telescope designed to perform wide-field imaging and spectroscopy of the infrared sky. One of WFIRST's objectives will be looking for clues about dark energy--the mysterious force that is accelerating the expansion of the universe. Another objective of the mission will be finding and studying exoplanets. WFIRST uses the same 2.4 meter telescope size as Hubble, but with 18 cutting-edge fourth-generation image sensors compared to Hubble's single first-generation sensor. As a result, each WFIRST image will cover over 200 times as much as a Hubble Wide Field Camera 3/IR image and be 300 megapixels in size. Hubble images reveal thousands of galaxies; a single WFIRST image will uncover millions. To help uncover the mystery of dark energy, WFIRST will make incredibly precise measurements of the universe. These measurements, like the distance and position of galaxies, can be compared to other measurements—such as the cosmic microwave background from the WMAP mission—to determine how dark energy has changed over time. WFIRST can also measure the slight distortions in light from distant galaxies as it passes more nearby mass concentrations. These data will build a three dimensional picture of how mass is distributed throughout the universe, and provide independent confirmation of its structure.	Transcript Link
2014 05 30	NASA Goddard	https://youtu.be/JZwliOzUBYU	NASA Heliophysics Work-Study Students	Because WFIRST has such a large and sensitive field of view, it can The Heliophysics Work-Study and Academic Year Internship Program provides STEM opportunities for traditionally underrepresented groups, and compares the effectiveness of Don Bosco Cristo Rey High School's work-study program and Eleanor Roosevelt High School's STEM Academic Year Research Experience Program. Students Min Kang and Christian Dansby and mentor Dr. Georgia DeNolfo discuss the benefits they gain from this program. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11549 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 05 30	NASA Goddard	https://youtu.be/SuAjao9e51U	NASA A First for IRIS Observing a Gigantic Solar Eruption	A coronal mass ejection burst off the side of the sun on May 9, 2014. The giant sheet of solar material erupting was the first CME seen by NASA's Interface Region Imaging Spectrograph, or IRIS. The field of view seen here is about five Earth's wide and about seven and a half Earth's tall. IRIS must commit to pointing at certain areas of the sun at least a day in advance, so catching a CME in the act involves some educated guesses and a little bit of luck. The IRIS Observatory was designed by and the mission is managed by Lockheed Martin Solar & Astrophysics Laboratory. NASA's Ames Research Center in Mountain View, California, provides mission operations and ground data systems. NASA's Goddard Space Flight Center in Greenbelt, Maryland, manages the Explorers Program for NASA's Science Mission Directorate in Washington, D.C. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11556 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: https://twitter.com/NASAGSFC	Transcript Link
2014 05 29	NASA Goddard	https://youtu.be/ee1BOAGYUiw	NASA Global Hawks Soar into Storms	http://www.nasa.gov/content/goddard/nasa-widens-2014-hurricane-research-mission/ During this year's Atlantic hurricane season, NASA is redoubling its efforts to probe the inner workings of hurricanes and tropical storms with two unmanned Global Hawk aircraft flying over storms and two new space-based missions. NASA's airborne Hurricane and Severe Storm Sentinel or HS3 mission will revisit the Atlantic Ocean for the third year in a row. HS3 is a collaborative effort that brings together several NASA centers with federal and university partners to investigate the processes that underlie hurricane formation and intensity change in the Atlantic Ocean basin. The flights from Wallops Flight Facility in Virginia take place between Aug. 26 and Sept. 29 during the peak of the Atlantic hurricane season which runs from June 1 to Nov. 30. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11559 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: https://twitter.com/NASAGSFC	Transcript Link

2014 05 29	NASA Goddard	https://youtu.be/q5626z7VFE	NASA GOES-R Living with Space Weather	In addition to monitoring weather on Earth, the GOES-R satellites will monitor weather in space caused by electromagnetic radiation and charged particles released from solar storms on the Sun. Many people rely on space weather data, including pilots, farmers, satellite operators, electric power workers, and astronauts. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a010900/a010936/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 05 28	NASA Goddard	https://youtu.be/QhSuumscHPE	How remote sensing can help address food security around the world	When floods, droughts, and other natural disasters hit isolated and poor regions of the world, it can have devastating impacts on the local price of food. NASA Goddard research scientist Molly Brown is using satellite data to investigate and model the relationship between weather shocks and food prices in order to improve food security around the world. In this live studio talk she discusses her research and vision. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11554 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 05 23	NASA Goddard	https://youtu.be/PBWcvzzJOv8	NASA Moon as Art Campaign	To celebrate its 5th Anniversary, the Lunar Reconnaissance Orbiter mission presents Moon As Art! The images in the collection were created using data gathered by LRO over the first 4.5 years of operations. These top 5 images are presented to you, the public, to decide which will be the cover of the Moon As Art collection. Voting is open from May 23 -- June 6th. The winner will be announced with the release of the full collection on June 18, 2014, the 5th anniversary of LRO launch. http://lro.gsfc.nasa.gov/MoonArt/	Transcript Link

2014 05 15 NASA Goddard <https://youtu.be/ndBJpu-2KZ8> NASA MMS Mission Trailer

In March 2015, NASA will launch four identical spacecraft to study how magnetic fields around Earth connect and disconnect, explosively releasing energy -- a process known as magnetic reconnection.

[Transcript](#)
[Link](#)

The Magnetospheric Multiscale, or MMS, mission will provide the first three-dimensional views of this fundamental process that can accelerate particles to nearly the speed of light. MMS uses Earth's protective magnetic space environment, the magnetosphere, as a natural laboratory to directly measure reconnection. Reconnection is a common processes in our universe; occurring in space near Earth, in the atmosphere of the sun and other stars, in the vicinity of black holes and neutron stars, and at virtually any boundary between space plasmas, including the boundary between our solar system's heliosphere and interstellar space.

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2014 05 14 NASA Goddard <https://youtu.be/7DyjMzp2lrg> NASA The MMS Mission's Unique Orbit

Scientist John Dorelli explains the MMS mission's orbit and why the four spacecraft fly in a tetrahedron formation. This complex arrangement enables scientists to gather data about magnetic reconnection in 3D.

[Transcript](#)
[Link](#)

On its journey, MMS will observe a little-understood, but universal phenomenon called magnetic reconnection, responsible for dramatic re-shaping of the magnetic environment near Earth, often sending intense amounts of energy and fast-moving particles off in a new direction. Not only is this a fundamental physical process that occurs throughout the universe, it is also one of the drivers of space weather events at Earth. Truly understanding the process requires four identical spacecraft to track how such reconnection events move across and through any given space.

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2014 05 13 NASA Goddard <https://youtu.be/vw2sLcyV7Vc> NASA Neutron Stars Rip Each Other Apart to Form Black Hole

This supercomputer simulation shows one of the most violent events in the universe: a pair of neutron stars colliding, merging and forming a black hole. A neutron star is the compressed core left behind when a star born with between eight and 30 times the sun's mass explodes as a supernova. Neutron stars pack about 1.5 times the mass of the sun — equivalent to about half a million Earths — into a ball just 12 miles (20 km) across.

[Transcript](#)
[Link](#)

As the simulation begins, we view an unequally matched pair of neutron stars weighing 1.4 and 1.7 solar masses. They are separated by only about 11 miles, slightly less distance than their own diameters. Redder colors show regions of progressively lower density.

As the stars spiral toward each other, intense tides begin to deform them, possibly cracking their crusts. Neutron stars possess incredible density, but their surfaces are comparatively thin, with densities about a million times greater than gold. Their interiors crush matter to a much greater degree densities rise by 100 million times in their centers. To begin to imagine such mind-boggling densities, consider that a cubic centimeter of neutron star matter outweighs Mount Everest.

By 7 milliseconds, tidal forces overwhelm and shatter the lesser star. Its superdense contents erupt into the system and curl a spiral arm of incredibly hot material. At 13 milliseconds, the more massive star has accumulated too much mass to support it against gravity

2014 05 07 NASA Goddard <https://youtu.be/p6puosuDpql> NASA The Best Observed X-class Flare

On March 29, 2014 the sun released an X-class flare. It was observed by NASA's Interface Region Imaging Spectrograph, or IRIS; NASA's Solar Dynamics Observatory, or SDO; NASA's Reuven Ramaty High Energy Solar Spectroscopic Imager, or RHESSI; the Japanese Aerospace Exploration Agency's Hinode; and the National Solar Observatory's Dunn Solar Telescope located at Sacramento Peak in New Mexico.

[Transcript](#)
[Link](#)

To have a record of such an intense flare from so many observatories is unprecedented. Such research can help scientists better understand what catalyst sets off these large explosions on the sun. Perhaps we may even some day be able to predict their onset and forewarn of the radio blackouts solar flares can cause near Earth - blackouts that can interfere with airplane, ship and military communications.

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2014 04 21	NASA Goddard	https://youtu.be/OVsqqBnYu9Q	NASA Earth from Orbit 2013	A fleet of orbiting satellites monitors Earth constantly. The satellites from NASA and other space agencies give us a fresh, wide perspective on things that we can see from the ground -- and things that we can't. A look back at Earth in 2013 from the viewpoint of orbit reveals the kind of data gathering and technical achievement that are the reason NASA puts Earth-observing satellites in space. A visualization of satellite and computer model data shows how a cloud of dust from the Chelyabinsk meteor moved around the world. NASA satellites measured the intensity of wildfires, the salinity of the oceans and rainfall around the globe -- whether it was too little or too much. To learn more about NASA's Earth science in 2014, please visit: www.nasa.gov/earthrightnow Imagery used in this video, in order: Views of a Distant Earth http://earthobservatory.nasa.gov/IOTD/view.php?id=81702 Earth and Moon http://svs.gsfc.nasa.gov/vis/a000000/a004000/a004068/index.html Current Earth Observing Fleet http://svs.gsfc.nasa.gov/vis/a030000/a030400/a030496/index.html Term3_ISS From Night to Day to Night Again	Transcript Link
2014 04 18	NASA Goddard	https://youtu.be/QiqgDjcHXt4	NASA 3 Days in 1 Minute Stacking the MMS Spacecraft	The Magnetospheric Multiscale, or MMS, mission stacked all four of its spacecraft in preparation for vibration testing. This time lapse shows one image every thirty seconds over three days of work. First, the spacecraft are assembled into mini-stacks, or placed on top of each other in sets of two. To create a full stack, engineers lift one mini-stack on top of another. Vibration testing simulates the conditions that the MMS spacecraft will experience during launch. MMS will study how the sun and the Earth's magnetic fields connect and disconnect, an explosive process that can accelerate particles through space to nearly the speed of light. This process is called magnetic reconnection and can occur throughout all space. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11524 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 04 14	NASA Goddard	https://youtu.be/beplFx8FvI8	The April 15, 2014 Total Lunar Eclipse by Astronomer Michelle Thaller	The public will have the opportunity to view and learn more about the April 15, 2014 total lunar eclipse on NASA Television, the agency's website and social media. The eclipse begins about 2 a.m. EDT and will last about three hours. The eclipse's peak, when the moon will enter Earth's full shadow, or umbra, will occur at 3:45 a.m. EDT - Learn more here: www.nasa.gov/LRO	Transcript Link

2014 04 09	NASA Goddard	https://youtu.be/in6LWmMsTHM	NASA Ozone-rich air descends from on high	Ozone in the stratosphere usually stays up there and protects us from UV rays but sometimes the gas enters the lower part of earth's atmosphere, affecting ground-level ozone and human health.	Transcript Link

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2014 04 08	NASA Goddard	https://youtu.be/KW7imWxwdNo	NASA NIRSpec Instrument Gets Integrated into Webb's ISIM	Engineers install the Near Infrared Spectrometer (NIRSpec) onto the Webb Telescope's Integrated Science Instrument Module (ISIM) in NASA Goddard Space Flight Center cleanroom. This delicate procedure took place during March 24 and March 25, 2014 in preparation for the cryogenic test of a fully integrated ISIM structure to occur this summer.	Transcript Link

The Near-Infrared Spectrograph (NIRSpec) is a near infrared multi-object dispersive spectrograph capable of simultaneously observing more than 100 sources over a field-of-view (FOV) larger than 3' x 3'. The NIRSpec will be the first spectrograph in space that has this capability. Targets in the Field of View are normally selected by opening groups of shutters in a micro-shutter array (MSA) to form multiple apertures. The microshutters are arranged in a waffle-like grid that contains more than 62000 shutters with each cell measuring 100 µm x 200 µm. Sweeping a magnet across the surface of the MSA opens all operable shutters. Individual shutters may then be addressed and closed electronically. NIRSpec is also capable of Fixed-slit and Integral-field spectroscopy and provides medium-resolution spectroscopy over a wavelength range of 1 - 5 µm and lower-resolution spectroscopy from 0.6 - 5 µm. NIRSpec will address all of the four main JWST science themes, and much more. It will enable large spectroscopic surveys of faint galaxies at high redshift, obtain sensitive spectra of transiting exoplanets and image line emission from protoplanetary disks and protostars. NIRSpec is being built for the European Space Agency (ESA) by the Airbus Group with Dr. Pierre Ferruit guiding its

2014 04 08	NASA Goddard	https://youtu.be/bSQtaR6oc7M	NASA NIRCam Gets Integrated into Webb's ISIM	Engineers install the Near Infrared Camera (NIRCam) into the Webb Telescope's Integrated Science Instrument Module (ISIM) in NASA Goddard Space Flight Center cleanroom. The delicate procedure took place on March 20, 2014 in preparation for the cryogenic test of a fully integrated ISIM structure that will occur this summer. The Near Infrared Camera (NIRCam) is Webb's primary imager that will cover the infrared wavelength range 0.6 to 5 microns. NIRCam will detect light from: the earliest stars and galaxies in the process of formation; the population of stars in nearby galaxies; as well as young stars in the Milky Way and Kuiper Belt objects. NIRCam is equipped with coronagraphs, instruments that allow astronomers to take pictures of very faint objects around a central bright object, like stellar systems. NIRCam's coronagraphs work by blocking a brighter object's light, making it possible to view the dimmer object nearby - just like shielding the sun from your eyes with an upraised hand can allow you to focus on the view in front of you. With the coronagraphs, astronomers hope to determine the characteristics of planets orbiting nearby stars. The NIRCam instrument was built and designed by the University of Arizona and Lockheed Martin. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11169 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: It's not often that we get a chance to see our planet's shadow, but a lunar eclipse gives us a fleeting glimpse. During these rare events, the full Moon rapidly darkens and then glows red as it enters the Earth's shadow. Though a lunar eclipse can be seen only at night, it's worth staying up to catch the show. The next lunar eclipse visible from the western hemisphere will take place in the early morning hours of April 15, 2014, from about 2:00 am - 5:30 am Eastern Daylight Time (EDT). This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11516 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 04 08	NASA Goddard	https://youtu.be/INi5UFpales	NASA Understanding Lunar Eclipses	Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: It's not often that we get a chance to see our planet's shadow, but a lunar eclipse gives us a fleeting glimpse. During these rare events, the full Moon rapidly darkens and then glows red as it enters the Earth's shadow. Though a lunar eclipse can be seen only at night, it's worth staying up to catch the show. The next lunar eclipse visible from the western hemisphere will take place in the early morning hours of April 15, 2014, from about 2:00 am - 5:30 am Eastern Daylight Time (EDT). This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11516 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 04 08	NASA Goddard	https://youtu.be/7f5MUyF_Q78	NASA Need To Know Lunar Eclipse and LRO	On April 15th, 2014 there will be a total lunar eclipse visible from North America. Noah Petro, LRO Deputy Project Scientist, discusses this unique event and what effect it will have on the Lunar Reconnaissance Orbiter (LRO). This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011500/a011514/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 04 04	NASA Goddard	https://youtu.be/_8yPQEE2Dnk	NASA Graceful Eruption	A mid-level flare, an M6.5, erupted from the sun on April 2, 2014, peaking at 10:05 a.m. EDT. This video from NASA's Solar Dynamics Observatory shows the flare in a blend of two wavelengths of extreme ultraviolet light: 171 Angstroms and 304 Angstroms, colorized in yellow and red, respectively. The music is "9th Sense Reloaded," from www.stockmusic.net. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11517 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 04 01	NASA Goddard	https://youtu.be/WokPomQwfS0	NASA Satellite Shows High Productivity From U.S. Corn Belt	http://www.nasa.gov/press/goddard/2014/march/satellite-shows-high-productivity-from-us-corn-belt/#.UzrriF7c2eD Data from satellite sensors show that during the Northern Hemisphere's growing season, the Midwest region of the United States boasts more photosynthetic activity than any other spot on Earth, according to NASA and university scientists. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11512 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 03 31 NASA Goddard <https://youtu.be/7lQBn-Sg-gc> NASA Arctic Melt Season Lengthening, Ocean Rapidly Warming The length of the melt season for Arctic sea ice is growing by several days each decade, and an earlier start to the melt season is allowing the Arctic Ocean to absorb enough additional solar radiation in some places to melt as much as four feet of the Arctic ice cap's thickness, according to a new study by National Snow and Ice Data Center (NSIDC) and NASA researchers.

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2014 03 25 NASA Goddard <https://youtu.be/0S4T2Q8sBW8> NASA Measuring Elevation Changes on the Greenland Ice Sheet Since the late 1970's, NASA has been monitoring changes in the Greenland Ice Sheet. Recent analysis of data from both the ICESat satellite and an ongoing airborne mission called Operation IceBridge show us how the surface elevation of the ice sheet has changed. This animation portrays the changes occurring in the surface elevation of the ice sheet since 2003 in three drainage regions: the southeast, the northeast and the Jakobshavn regions. In each region, the time advances to show the accumulated change in elevation from 2003 through 2012. For more information, visit nasa.gov/icebridge.

****If the ocean looks brown instead of blue, we recommend you check and make sure you are viewing the page with the most recent version of your Internet browser and any relevant plug-ins or extensions.**

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2014 03 25	NASA Goddard	https://youtu.be/APkt5-mGutU	NASA GPM's Stormy New View	http://www.nasa.gov/press/2014/march/first-images-available-from-nasa-jaxa-global-rain-and-snowfall-satellite For more information, visit http://nasa.gov/gpm On March 10, the Core Observatory passed over an extra-tropical cyclone On March 10, the Core Observatory passed over an extra-tropical cyclone about 1055 miles (1700 kilometers) due east of Japan's Honshu Island. Satellite data shows the full range of precipitation in the storm. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11508 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 03 24	NASA Goddard	https://youtu.be/mrnAmUZU6J0	NASA Jim Garvin's Top Pics - LROC Images	In this video series, NASA Scientist Jim Garvin highlights his favorite pictures taken throughout the solar system. This episode focuses on images taken by LROC - the Lunar Reconnaissance Orbiter Camera. Jim explains which pictures made his "top 5" list. http://svs.gsfc.nasa.gov/vis/a010000/a011400/a011494/	Transcript Link

2014 03 20	NASA Goddard	https://youtu.be/zRfIAKNuLbk	NASA Landsat Tracks Urban Change and Flood Risk	Landsat data, which can identify areas of urbanization, are used by the Federal Emergency Management Agency as a key indicator of sites where the agency should further investigate the potential for flooding. With its archive of images capturing sprawling cities and new developments, Landsat can help FEMA track how building and construction is impacting an area's landscape Earth-observing Landsat satellites have been capturing images of the planet's surface since 1972. Landsat 8 is the newest satellite in the program, a joint effort between NASA and the U.S. Geological Survey. It launched Feb. 11, 2013, and collects more than 400 images per day. New and archived Landsat data are available free to the public over the internet - and researchers have put the data to a multitude of uses. One is called the National Urban Change Indicator, or NUCI, created by MacDonald, Dettwiler, and Associates, LTD. It's the results from a process that mines Landsat images over a 27-year period to identify areas of "permanent change," where soil has been paved over for parking lots or other concrete structures. NUCI results act as a red flag for FEMA, helping the agency focus its mapping efforts and budget. If FEMA's maps identify a high risk of floods for a certain community, residents can take action, including elevating houses, building flood barricades, and more. To learn more about Landsat: http://www.nasa.gov/landsat http://landsat.usgs.gov	Transcript Link
2014 03 06	NASA Goddard	https://youtu.be/XiPv2S8GgY	NASA Colliding Comets Hint at Unseen Exoplanet	Music: "Halos" by Lars Leonhard, courtesy of the artist and Ultima Records. Lars Leonhard: http://www.lars-leonhard.de/ Ultima Records: http://www.ultima.com/en/composers/larsleonhard/discography.html An international team of astronomers exploring the disk of gas and dust the bright star Beta Pictoris have uncovered a compact cloud of poisonous gas formed by ongoing rapid-fire collisions among a swarm of icy, comet-like bodies. The researchers suggest the comet swarm may be frozen debris trapped and concentrated by the gravity of an as-yet-unseen planet. Using the Atacama Large Millimeter/submillimeter Array (ALMA) in Chile, astronomers mapped millimeter-wavelength light from dust and carbon monoxide (CO) molecules in a disk surrounding the star. Located about 63 light-years away and only 20 million years old, Beta Pictoris hosts one of the closest, brightest and youngest debris disks known, making it an ideal laboratory for studying the early development of planetary systems. The ALMA images reveal a vast belt of carbon monoxide located at the fringes of the system. Much of the gas is concentrated in a single clump located about 8 billion miles (13 billion kilometers) from the star, or nearly three times the distance between the planet Neptune and the sun. The total amount of CO observed, the scientists say, exceeds 200 million billion tons, equivalent to about	Transcript Link

2014 03 05	NASA Goddard	https://youtu.be/CSErB9H5-qY	NASA Teaming Up to Test the Future of Satellite Refueling	For more info visit http://www.nasa.gov/content/goddard/nasa-tests-new-robotic-refueling-technologies NASA's Goddard Space Flight Center in Maryland and Kennedy Space Center in Florida joined teams and efforts to test new robotic refueling technologies that could help satellites live longer in space. During the test, a robotic arm with a highly specialized tool transferred satellite oxidizer -- an extremely corrosive fluid that helps propel satellites in orbit -- through the valve of a simulated spacecraft. Adding to the complexity, the test was operated remotely from Goddard while performed at Kennedy's Payload Hazardous Servicing Facility. The test simulated the refueling of a spacecraft in orbit, an extremely challenging task that the team has been tackling since they launched the successful Robotic Refueling Mission demonstration to the International Space Station in 2011. In this video, Deputy Project Manager Benjamin Reed, Test Director Marion Riley, Lead Oxidizer Nozzle Tool Engineer Matthew Sammons, Robotic Operator Alex Janas, and Lead Fluids Engineer Brian Nufer describe the Remote Robotic Oxidizer Transfer Test (RROxiTT) that took place in February, 2014 and the applications of satellite servicing technology. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11480	Transcript Link
2014 03 05	NASA Goddard	https://youtu.be/k4WaxVVGzrg	NASA Studying the Solar Wind on Mars	Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: Robert Lin, the late director of the Space Sciences Laboratory, discusses how NASA's MAVEN spacecraft will study the interaction of the Martian atmosphere with the solar wind. MAVEN's findings will reveal how Mars lost its early atmosphere, turning it from a warm, wet planet into the cold, dry one that we see today. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11498 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 02 27	NASA Goddard	https://youtu.be/6vJCerH3AfE	NASA GPM Rocket Launch	A Japanese H-IIA rocket with the NASA-Japan Aerospace Exploration Agency (JAXA), Global Precipitation Measurement (GPM) Core Observatory onboard, is seen launching from the Tanegashima Space Center, Friday, Feb. 28, 2014, Tanegashima Space Center. The GPM spacecraft will collect information that unifies data from an international network of existing and future satellites to map global rainfall and snowfall every three hours. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11496 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 02 26	NASA Goddard	https://youtu.be/0XVnQEJ6w_Y	NASA Landsat 8 Celebrates First Year in Orbit	On Feb. 11, 2013, Landsat 8 launched into Earth orbit, riding on an Atlas V rocket. Weighing 6,133 pounds, Landsat 8 is the eighth satellite in the long-running Landsat program, jointly managed by NASA and the U.S. Geological Survey. At 16 feet tall, with a 32 foot long solar array, Landsat 8 orbits Earth at an altitude of 438 miles, moving at a speed of 16,760 miles per hour. It takes 99 minutes to complete one orbit, with about 14.5 orbits each day. There have been 5,319 orbits in the first year of Landsat 8's mission. It takes 16 days to build a complete scan of the globe, and on the 17th day the orbit cycle begins again. Between the two instruments on board, Landsat 8 records data in 11 separate wavelength regions spanning visible, infrared, and thermal radiation. The data is transmitted several times a day to the USGS Earth Resources and Observation Science Center in Sioux Falls, SD, where it is added to the archive of Landsat data stretching back to 1972. In its first year, users have downloaded 1,322,969 scenes of Landsat 8 data from the USGS. Landsat 8 continues the decades-long Landsat record of Earth's land surface at a scale where the impacts of humans and nature can be detected and monitored over time. Every continent, every season, every year, at a resolution that can distinguish an area the size of a baseball field. With help from Landsat we can monitor the cultivation of our food crops, quantify our precious water resources as they ebb and flow, and track deforestation globally. Landsat data constitute a key ingredient in decision making for agriculture,	Transcript Link

2014 02 25	NASA Goddard	https://youtu.be/jukJsH5L-Ss	NASA SDO Observes Strong X-class Solar Flare	The sun emitted a significant solar flare, peaking at 7:49 p.m. EST on Feb. 24, 2014. NASA's Solar Dynamics Observatory, which keeps a constant watch on the sun, captured images of the event. This flare is classified as an X4.9-class flare. X-class denotes the most intense flares, while the number provides more information about its strength. An X2 is twice as intense as an X1, an X3 is three times as intense, etc. Solar flares are powerful bursts of radiation, appearing as giant flashes of light in the SDO images. Harmful radiation from a flare cannot pass through Earth's atmosphere to physically affect humans on the ground, however -- when intense enough -- they can disturb the atmosphere in the layer where GPS and communications signals travel. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011400/a011493/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 02 25	NASA Goddard	https://youtu.be/MZ8NLRnA1sM	NASA MMS Engineering Challenges	It's hard enough to build one spacecraft, but the Magnetospheric Multiscale Mission (MMS) is building four. Together, the spacecraft will unlock the mysteries of magnetic reconnection, when magnetic fields explosively connect and disconnect, transferring energy. MMS will measure reconnection between the sun's and Earth's magnetic fields. We want to learn more about magnetic reconnection because it can affect systems like GPS, radio communication, and electrical power grids. Follow the team's progress at www.nasa.gov/MMS This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11308 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2014 02 25 NASA Goddard https://youtu.be/YP0et8I_bvY NASA Peeling Back Landsat's Layers of Data

Landsat satellites circle the globe every 99 minutes, collecting data about the land surfaces passing underneath. After 16 days, the Landsat satellite has passed over every spot on the globe, and recorded data in 11 different wavelength regions. The individual wavelength bands can be combined into color images, with different combinations of the 11 bands revealing different information about the condition of the land cover.

[Transcript](#)
[Link](#)

The Landsat program is jointly managed by NASA and the USGS:

<http://www.nasa.gov/Landsat>

<http://landsat.usgs.gov>

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<http://svs.gsfc.nasa.gov/vis/a010000/a011400/a011491/>

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2014 02 21 NASA Goddard <https://youtu.be/sorBqmpaTgU> NASA IRIS Spots Its Largest Solar Flare

On Jan. 28, 2014, NASA's Interface Region Imaging Spectrograph, or IRIS, witnessed its strongest solar flare since it launched in the summer of 2013. Solar flares are bursts of x-rays and light that stream out into space, but scientists don't yet know the fine details of what sets them off.

[Transcript](#)
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IRIS peers into a layer of the sun's lower atmosphere just above the surface, called the chromosphere, with unprecedented resolution. However, IRIS can't look at the entire sun at the same time, so the team must always make decisions about what region might provide useful observations. On Jan. 28, scientists spotted a magnetically active region on the sun and focused IRIS on it to see how the solar material behaved under intense magnetic forces. At 2:40 p.m. EST, a moderate flare, labeled an M-class flare -- which is the second strongest class flare after X-class -- erupted from the area, sending light and x-rays into space.

IRIS studies the layer of the sun's atmosphere called the chromosphere that is key to regulating the flow of energy and material as they travel from the sun's surface out into space. Along the way, the energy heats up the upper atmosphere, the corona, and sometimes powers solar events such as this flare.

IRIS is equipped with an instrument called a spectrograph that can separate out the light it sees into its individual wavelengths, which in turn correlates to material at different temperatures, velocities and densities. The spectrograph on IRIS was pointed right into the

2014 02 21	NASA Goddard	https://youtu.be/RlFFpzfXwYc	NASA GPM Launch Coverage Promo	Join NASA as we count down the launch of the Global Precipitation Measurement (GPM) mission starting at 12:00 PM EST, Thursday, February 27, 2014. GPM is a joint mission between NASA and the Japan Aerospace Exploration Agency (JAXA) and it will set a new standard in measuring rain and snow around the world. As we build up to the launch from Tanegashima Space Center in Japan, our NASA scientists will discuss the satellite's major innovations and the big questions GPM will set out to answer. Follow along on NASA Television (www.nasa.gov/ntv) and ask your big questions to the experts using #gpm on Twitter. GPM is scheduled to launch from Tanegashima Space Center at 1:07 PM EST on February 27, 2014. For more information, visit www.nasa.gov/GPM. Also, join in on the conversation on Monday, February 24, at 7:00 PM EST in our prelaunch TweetChat. Find us @NASA_Rain and use #gpm to ask your big questions to our project scientists and managers. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11488 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2014 02 20	NASA Goddard	https://youtu.be/kgI3w4SOAik	NASA A Black Widow Pulsar Consumes its Mate	Black widow spiders and their Australian cousins, known as redbacks, are notorious for an unsettling tendency to kill and devour their male partners. Astronomers have noted similar behavior among two rare breeds of binary system that contain rapidly spinning neutron stars, also known as pulsars. The essential features of black widow and redback binaries are that they place a normal but very low-mass star in close proximity to a millisecond pulsar, which has disastrous consequences for the star. Black widow systems contain stars that are both physically smaller and of much lower mass than those found in redbacks. So far, astronomers have found at least 18 black widows and nine redbacks within the Milky Way, and additional members of each class have been discovered within the dense globular star clusters that orbit our galaxy. One black widow system, named PSR J1311-3430 and discovered in 2012, sets the record for the tightest orbit of its class and contains one of the heaviest neutron stars known. The pulsar's featherweight companion, which is only a dozen or so times the mass of Jupiter and just 60 percent of its size, completes an orbit every 93 minutes -- less time than it takes to watch most movies. The side of the star facing the pulsar is heated to more than 21,000 degrees Fahrenheit (nearly 12,000 C), or more than twice as hot as the sun's surface. Recent studies allow a range of values extending down to 2 solar masses for the pulsar, making it one of the most massive neutron stars known.	Transcript Link

2014 02 19	NASA Goddard	https://youtu.be/bj0U8VXuUwU	NASA Goddard's Detector Technology	Behind those stunning NASA images are specialized detectors developed, fabricated, and packaged here at the Goddard Space Flight Center. Tour the Detector Development Lab (DDL) and see how these first-of-a-kind detectors are created. With their unique tool sets and capabilities, the DDL has helped NASA stay on the cutting edge of instrument development and scientific discovery. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011400/a011484/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 02 12	NASA Goddard	https://youtu.be/gJ-axdJB-UM	NASA RROxiTT Another Step Toward Servicing Satellites in Space	NASA's Goddard Space Flight Center in Maryland and Kennedy Space Center in Florida are joining teams and efforts to test new robotic refueling technologies that could help satellites live longer in space. During the test, a robotic arm with a highly specialized tool transfers satellite oxidizer -- an extremely corrosive fluid that helps propel satellites in orbit -- through the valve of a simulated spacecraft. Adding to the complexity, the test is being operated remotely from Goddard while performed at Kennedy's Payload Hazardous Servicing Facility. The test simulates the refueling of a spacecraft in orbit, an extremely challenging task that the team has been tackling since they launched the successful Robotic Refueling Mission demonstration to the International Space Station in 2011. In this video, robotic arm operator Alex Janas introduces RROxiTT (Remote Robotic Oxidizer Transfer Test) while standing next to the robotic arm. He also teases an upcoming, longer video that will go into further detail and show footage from the actual test. For more information, visit the Satellite Servicing Capabilities Office website - http://ssco.gsfc.nasa.gov/ This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11480 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link

2014 02 11	NASA Goddard	https://youtu.be/NAg4qXsk99c	NASA SDO Year 4	Music: Stella Maris courtesy of Moby Gratis. Information about the individual clips used in this video is available at: http://svs.gsfc.nasa.gov/vis/a010000/a011400/a011460/SDO_Year_4_Visuals_List.html The sun is always changing and NASA's Solar Dynamics Observatory is always watching. Launched on Feb. 11, 2010, SDO keeps a 24-hour eye on the entire disk of the sun, with a prime view of the graceful dance of solar material coursing through the sun's atmosphere, the corona. SDO's fourth year in orbit was no exception: NASA is releasing a movie of some of SDO's best sightings of the year, including massive solar explosions and giant sunspot shows. SDO captures images of the sun in 10 different wavelengths, each of which helps highlight a different temperature of solar material. Different temperatures can, in turn, show specific structures on the sun such as solar flares, which are giant explosions of light and x-rays, or coronal loops, which are streams of solar material traveling up and down looping magnetic field lines. The movie shows examples of both, as well as what's called prominence eruptions, when masses of solar material leap off the sun. The movie also shows a sunspot group on the solar surface. This sunspot, a magnetically strong and complex region appearing in mid-January 2014, was one of the largest in nine years.	Transcript Link
2014 02 11	NASA Goddard	https://youtu.be/P-lbujsVa2M	NASA Landsat's Orbit	How long does it take for Landsat 8 to orbit the Earth? Or view the full surface of the globe? Jim Irons, the Project Scientist at NASA's Goddard Space Flight Center tells you what you want to know. As a Landsat satellite flies over the surface of the Earth the instruments aboard the satellite are able to view a swath 185 kilometers wide and collect images along that swath as the satellite proceeds through its orbit. The spacecraft travels at approximately 4.7 miles per second. The satellite travels from north to south while it's over the sunlit portion of the Earth, and travels south to north over the dark side of the Earth. One orbit takes about 99 minutes, so that's about approximately 15 orbits in a 24 hour period. The orbit's maintained such that after 16 days, the entire surface of the Earth has come within view of the Landsat instruments, while sunlit, and then on day 17 the first ground path is repeated. So we get to view the entire surface once every 16 days. Landsat is a joint program of NASA and USGS: http://landsat.usgs.gov http://www.nasa.gov/landsat This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11481 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link

2014 02 10	NASA Goddard	https://youtu.be/gjLk_72V9Bw	NASA What is a Pulsar	A pulsar is a neutron star that emits beams of radiation that sweep through Earth's line of sight. Like a black hole, it is an endpoint to stellar evolution. The "pulses" of high-energy radiation we see from a pulsar are due to a misalignment of the neutron star's rotation axis and its magnetic axis. Pulsars seem to pulse from our perspective because the rotation of the neutron star causes the beam of radiation generated within the magnetic field to sweep in and out of our line of sight with a regular period, somewhat like the beam of light from a lighthouse. The stream of light is, in reality, continuous, but to a distant observer, it seems to wink on and off at regular intervals. Pulsars are the original gamma-ray astronomy point sources. A few years after the discovery of pulsars by radio astronomers, the Crab and Vela pulsars were detected at gamma-ray energies. Pulsars accelerate particles to tremendous energies in their magnetospheres. These particles are ultimately responsible for the gamma-ray emission seen from pulsars. In this video, gamma rays are shown in magenta. Data from NASA's Fermi Gamma-ray Space Telescope indicate that most of the gamma rays emitted by a pulsar arise from far above the pulsar's surface. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a010800/a010861/index.html	Transcript Link
2014 02 06	NASA Goddard	https://youtu.be/6hD52H7rQak	NASA Dynamic Earth Excerpt Viz Challenge Winner	Watch Earth's magnetic shield protect the planet from a pelting by the solar wind. See how the sun's energy drives a remarkable planetary engine, the climate. This video, originally created by NASA's Scientific Visualization Studio as part of a full-length planetarium film called "Dynamic Earth," was awarded first place in the video category in the 2013 International Science and Engineering Visualization Challenge, sponsored by the journal Science and the National Science Foundation. While the full movie highlights many aspects of the Earth's complexity, the contribution from the SVS depicts the vast scale of the sun's influence on the Earth, from the flowing particles of the solar wind and the fury of coronal mass ejections to the winds and currents driven by the solar heating of the atmosphere and ocean. The data visualization in this excerpt represents a high point in the Scientific Visualization Studio's work in recent years to show "flows" -- ocean currents, winds, the movement of glaciers. Using data from sophisticated NASA models, the studio's visualizers have figured out how to illustrate the velocities of these natural phenomena. Narrated by Liam Neeson, Dynamic Earth, produced and written by Thomas Lucas, has been shown around the world to an estimated viewership of 500,000. This video is public domain and can be downloaded at:	Transcript Link

2014 02 04 NASA Goddard https://youtu.be/5a3JLlv_a-qc NASA Playing Tag With an Asteroid

What's the best way get a sample of an asteroid? Play tag with it! That's the plan for OSIRIS-REx, a NASA spacecraft that will approach the asteroid Bennu in 2018. The collection will be done with an instrument on board called the Touch-And-Go Sample Acquisition Mechanism, or, TAGSAM. Learn how it works in this video.

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2014 02 03 NASA Goddard <https://youtu.be/F20TnLhoNRw> NASA GOES-R Trailer

The new generation GOES-R satellites will carry significant improvements and technology innovation on board. GOES-R will be able to deliver a full globe scan in only 5 minutes, compared to the 25 minutes needed for the same task with the current GOES satellites. GOES-R's lightning mapper instrument is expected to improve warning lead time for severe storms and tornadoes by 50%. This without a doubt will help predict severe weather in advance and save more lives.

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<http://twitter.com/NASAGoddard>

2014 01 30	NASA Goddard	https://youtu.be/a8_w3POh0FA	NASA SDO Lunar Transit, Prominence Eruption, and M-Class Flare	On Jan 30, 2014, beginning at 8:31 a.m EST, the moon moved between NASA's Solar Dynamics Observatory, or SDO, and the sun, giving the observatory a view of a partial solar eclipse from space. Such a lunar transit happens two to three times each year. This one lasted two and one half hours, which is the longest ever recorded. When the next one will occur is as of yet unknown due to planned adjustments in SDO's orbit. Note in the pictures how crisp the horizon is on the moon, a reflection of the fact that the moon has no atmosphere around it to distort the light from the sun. The sun emitted a mid-level solar flare, peaking at 11:11 a.m. EST on Jan. 30, 2014. Images of the flare were captured by NASA's Solar Dynamics Observatory, or SDO, shortly after the observatory witnessed a lunar transit. The black disk of the moon can be seen in the lower right of the images. The movie shows the sun moving quite a bit because SDO has a hard time keeping the sun centered in the image during a transit, because the moon blocks so much light. The fine guidance systems on the SDO instruments need to see the whole sun in order keep the images centered from exposure to exposure. Once the transit was over, the fine guidance systems started back up, once again providing steady images of the sun.	Transcript Link
2014 01 30	NASA Goddard	https://youtu.be/i6vjPmH9j2M	NASA Disk Detective Search for Planetary Habitats	This video is public domain and can be downloaded at: A new NASA-sponsored website, DiskDetective.org, lets the public discover embryonic planetary systems hidden among data from NASA's Wide-field Infrared Survey Explorer (WISE) mission. The site is led and funded by NASA and developed by the Zooniverse, a collaboration of scientists, software developers and educators who collectively develop and manage the Internet's largest, most popular and most successful citizen science projects. WISE, located in Earth orbit and designed to survey the entire sky in infrared light, completed two scans between 2010 and 2011. It took detailed measurements of more than 745 million objects, representing the most comprehensive survey of the sky at mid-infrared wavelengths currently available. Astronomers have used computers to search this haystack of data for planet-forming environments and narrowed the field to about a half-million sources that shine brightly in the infrared, indicating they may be "needles": dust-rich circumstellar disks that are absorbing their star's light and reradiating it as heat. Planets form and grow within these disks. But galaxies, interstellar dust clouds, and asteroids also glow in the infrared, which stymies automated efforts to identify planetary habitats. Disk Detective incorporates images from WISE and other sky surveys in the form of brief animations the website calls flip books. Volunteers view a flip book and then classify the object based on simple criteria, such as whether the image is round or includes multiple objects. By collecting this information, astronomers will be able to assess which sources should be explored in greater detail. The project aims to find two types of developing planetary	Transcript Link

2014 01 21	NASA Goddard	https://youtu.be/XSf31neMTvA	NASA TDRS The Network That Enables Exploration	NASA is preparing to launch the second in a series of three, third generation advanced Tracking and Data Relay Satellites, known as TDRS. This latest addition to the fleet of eight, TDRS-L will augment a space communications network that provides the critical path for high data-rate communication to the International Space Station, Hubble Space Telescope, human occupied spacecraft and a host other spacecraft. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011200/a011214/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 01 21	NASA Goddard	https://youtu.be/gaJtSWDmI	NASA Six Decades of a Warming Earth	This visualization shows how global temperatures have risen from 1950 through the end of 2013. NASA scientists say 2013 tied for the seventh warmest of any year since 1880, continuing a long-term trend of rising global temperatures. With the exception of 1998, the 10 warmest years in the 133-year record all have occurred since 2000, with 2010 and 2005 ranking as the hottest years on record. NASA's Goddard Institute for Space Studies (GISS) in New York, which analyzes global surface temperatures on an ongoing basis, released an updated report Tuesday, Jan. 21, on temperatures around the globe in 2013. The comparison shows how Earth continues to experience warmer temperatures than several decades ago. The visualization shows a running five-year average global temperature, as compared to a baseline average global temperature from 1951-1980. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?4135 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook:	Transcript Link

2014 01 16	NASA Goddard	https://youtu.be/uJvqIBxzDFI	NASA GPM's Journey to Japan	http://www.nasa.gov/gpm For more information, http://www.nasa.gov/content/signed-sealed-and-delivered-new-nasa-video-shows-gpms-journey-to-japan Built at NASA's Goddard Space Flight Center in Greenbelt, Md., the GPM spacecraft travelled roughly 7,300 miles (11,750 kilometers) to its launch site at Tanegashima Space Center on Tanegashima Island, Japan, where it is scheduled for liftoff on Feb 27, 2014 1:07 pm (EST). GPM's Core Observatory is a joint mission between NASA and the Japan Aerospace Exploration Agency to study rainfall and snowfall around the globe, including weather and storms that the Core Observatory previewed on its trans-Pacific journey. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10786 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2014 01 02	NASA Goddard	https://youtu.be/u9LZCZn2rk4	NASA GPM Engineering Next Generation Observations of Rain and Snow	http://www.nasa.gov/gpm For more information: http://www.nasa.gov/content/goddard/ready-set-space-nasas-gpm-satellite-begins-journey For the past three years, the Global Precipitation Measurement (GPM) Core Observatory has gone from components and assembly drawings to a fully functioning satellite at NASA's Goddard Space Flight Center in Greenbelt, Md. The satellite has now arrived in Japan, where it will lift off in early 2014. The journey to the launch pad has been a long and painstaking process. It began with the most basic assembly of the satellite's frame and electrical system, continued through the integration of its two science instruments, and has now culminated in the completion of a dizzying array of environmental tests to check and recheck that GPM Core Observatory will survive its new home in orbit. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11439 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook:	Transcript Link

2013 12 20	NASA Goddard	https://youtu.be/dE-vOscpiNc	NASA Earthrise The 45th Anniversary	In December of 1968, the crew of Apollo 8 became the first people to leave our home planet and travel to another body in space. But as crew members Frank Borman, James Lovell, and William Anders all later recalled, the most important thing they discovered was Earth. Using photo mosaics and elevation data from Lunar Reconnaissance Orbiter (LRO), this video commemorates the 45th anniversary of Apollo 8's historic flight by recreating the moment when the crew first saw and photographed the Earth rising from behind the Moon. Narrator Andrew Chaikin, author of A Man on the Moon, sets the scene for a three-minute visualization of the view from both inside and outside the spacecraft accompanied by the onboard audio of the astronauts. The visualization draws on numerous historical sources, including the actual cloud pattern on Earth from the ESSA-7 satellite and dozens of photographs taken by Apollo 8, and it reveals new, historically significant information about the Earthrise photographs. It has not been widely known, for example, that the spacecraft was rolling when the photos were taken, and that it was this roll that brought the Earth into view. The visualization establishes the precise timing of the roll and, for the first time ever, identifies which window each photograph was taken from. The key to the new work is a set of vertical stereo photographs taken by a camera mounted in the Command Module's rendezvous	Transcript Link
2013 12 17	NASA Goddard	https://youtu.be/kS57VH3QN1g	NASA Jewel Box Sun	This video of the sun based on data from NASA's Solar Dynamics Observatory, or SDO, shows the wide range of wavelengths -- invisible to the naked eye -- that the telescope can view. SDO converts the wavelengths into an image humans can see, and the light is colorized into a rainbow of colors. As the colors sweep around the sun in the movie, viewers should note how different the same area of the sun appears. This happens because each wavelength of light represents solar material at specific temperatures. Different wavelengths convey information about different components of the sun's surface and atmosphere, so scientists use them to paint a full picture of our constantly changing and varying star. Yellow light of 5800 Angstroms, for example, generally emanates from material of about 10,000 degrees F (5700 degrees C), which represents the surface of the sun. Extreme ultraviolet light of 94 Angstroms, which is typically colorized in green in SDO images, comes from atoms that are about 11 million degrees F (6,300,000 degrees C) and is a good wavelength for looking at solar flares, which can reach such high temperatures. By examining pictures of the sun in a variety of wavelengths -- as is done not only by SDO, but also by NASA's Interface Region Imaging Spectrograph, NASA's Solar Terrestrial Relations Observatory and the European Space Agency/NASA Solar and Heliospheric Observatory -- scientists can track how particles and heat move through the sun's atmosphere.	Transcript Link

2013 12 09	NASA Goddard	https://youtu.be/Hp6wMUVb23c	NASA The Coldest Place in the World	What is the coldest place in the world? It is a high ridge in Antarctica on the East Antarctic Plateau where temperatures in several hollows can dip below minus 133.6 degrees Fahrenheit (minus 92 degrees Celsius) on a clear winter night -- colder than the previous recorded low temperature. Scientists at the National Snow and Ice Data Center made the discovery while analyzing the most detailed global surface temperature maps to date, developed with data from remote sensing satellites including the MODIS sensor on NASA's Aqua satellite, and the TIRS sensor on Landsat 8, a joint project of NASA and the U.S. Geological Survey (USGS). The researchers analyzed 32 years of data from several satellite instruments that have mapped Antarctica's surface temperature. Near a high ridge that runs from Dome Arugs to Dome Fuji, the scientists found clusters of pockets that have plummeted to record low temperatures dozens of times. The lowest temperature the satellites detected -- minus 136 F (minus 93.2 C), on Aug. 10, 2010. The new record is several degrees colder than the previous low of minus 128.6 F (minus 89.2 C), set in 1983 at the Russian Vostok Research Station in East Antarctica. The coldest permanently inhabited place on Earth is northeastern Siberia, where temperatures dropped to a bone-chilling 90 degrees below zero F (minus 67.8 C) in the towns of Verkhoyansk (in 1892) and Oimekon (in 1933).	Transcript Link
2013 12 09	NASA Goddard	https://youtu.be/jlucyyHVXes	NASA How to Get Colder Than Anywhere Else	At the coldest spots on Earth, every breath is painful. But how cold can it get on Earth's surface? What sort of weather brings on the record-breaking cold? On the high plateau of East Antarctica, there is a ridge along the ice sheet nearly 14,000 feet above sea level. The dry atmosphere and the long, sunless winter months combine to make this the coldest place on earth. Under the clear Antarctic night skies the snow surface radiates warmth into space, cooling the air just above the surface. As the air cools, it gets denser and starts to slide down the slope off of the ridge. It collects in small hollows just a little downhill and continues to be cooled as the snow in the hollow radiates away its small amount of warmth. The MODIS sensor on NASA's Aqua satellite allowed researchers from the National Snow and Ice Data Center to find the coldest place on Earth. By turning to the TIRS sensor on the NASA/USGS Landsat 8 satellite, with its higher spatial resolution, the scientists were able to confirm how the topography facilitates these record low temperatures. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11432 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link

2013 12 06	NASA Goddard	https://youtu.be/8e7E7BnwRgE	NASA Alex Young Interview About Our Sun's Magnetic Flip	Alex Young is interviewed about the current solar cycle and what a magnetic flip means for the earth and NASA's study of magnetic fields. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011400/a011429/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 12 06	NASA Goddard	https://youtu.be/FT3DHqZROS8	NASA Moon Phase and Libration South Up 2014	Lunar Reconnaissance Orbiter (LRO) has been in orbit around the Moon since the summer of 2009. Its laser altimeter (LOLA) and camera (LROC) are recording the rugged, airless lunar terrain in exceptional detail, making it possible to visualize the Moon with unprecedented fidelity. This is especially evident in the long shadows cast near the terminator, or day-night line. The pummeled, craggy landscape thrown into high relief at the terminator would be impossible to recreate in the computer without global terrain maps like those from LRO. The Moon always keeps the same face to us, but not exactly the same face. Because of the tilt and shape of its orbit, we see the Moon from slightly different angles over the course of a month. When a month is compressed into 24 seconds, as it is in this animation, our changing view of the Moon makes it look like it's wobbling. This wobble is called libration. The word comes from the Latin for "balance scale" (as does the name of the zodiac constellation Libra) and refers to the way such a scale tips up and down on alternating sides. The sub-Earth point gives the amount of libration in longitude and latitude. The sub-Earth point is also the apparent center of the Moon's disk and the location on the Moon where the Earth is directly overhead. The Moon is subject to other motions as well. It appears to roll back and forth around the sub-Earth point. The roll angle is given by the position angle of the axis, which is the angle of the Moon's north	Transcript Link

2013 12 06 NASA Goddard <https://youtu.be/PKRtZ89AMts> NASA Moon Phase and Libration North Up 2014

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2013 12 05 NASA Goddard <https://youtu.be/B4UtVo7-yJA> NASA The Sun Reverses its Magnetic Poles

This visualization shows the position of the sun's magnetic fields from January 1997 to December 2013. The field lines swarm with activity: The magenta lines show where the sun's overall field is negative and the green lines show where it is positive. A region with more electrons is negative, the region with less is labeled positive. Additional gray lines represent areas of local magnetic variation.

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[Link](#)

The entire sun's magnetic polarity, flips approximately every 11 years -- though sometimes it takes quite a bit longer -- and defines what's known as the solar cycle. The visualization shows how in 1997, the sun shows the positive polarity on the top, and the negative polarity on the bottom. Over the next 12 years, each set of lines is seen to creep toward the opposite pole eventually showing a complete flip. By the end of the movie, each set of lines are working their way back to show a positive polarity on the top to complete the full 22 year magnetic solar cycle.

At the height of each magnetic flip, the sun goes through periods of more solar activity, during which there are more sunspots, and more eruptive events such as solar flares and coronal mass ejections, or CMEs. The point in time with the most sunspots is called solar maximum.

Credit: NASA/GSFC/PFSS

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<http://svs.gsfc.nasa.gov/goto?11429>

2013 12 03 NASA Goddard <https://youtu.be/46otS0Wiz-E> NASA Anatomy of a Raindrop

<http://www.nasa.gov/gpm>

[Transcript](#)
[Link](#)

[For more information, go to](#)
<http://www.nasa.gov/content/goddard/new-gpm-video-dissects-the-anatomy-of-a-raindrop/>

<http://pmm.nasa.gov/education>

[This short video explains how a raindrop falls through the atmosphere and why a more accurate look at raindrops can improve estimates of global precipitation.](#)

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2013 12 03 NASA Goddard <https://youtu.be/CcUhVCMAhAI> NASA Alien Atmospheres

Since the early 1990's, astronomers have known that extrasolar planets, or "exoplanets," orbit stars light-years beyond our own solar system. Although most exoplanets are too distant to be directly imaged, detailed studies have been made of their size, composition, and even atmospheric makeup - but how? By observing periodic variations in the parent star's brightness and color, astronomers can indirectly determine an exoplanet's distance from its star, its size, and its mass. But to truly understand an exoplanet astronomers must study its atmosphere, and they do so by splitting apart the parent star's light during a planetary transit.

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2013 12 03	NASA Goddard	https://youtu.be/feVlznZeew	NASA Ask a Climate Scientist Climate Change and Humans	How does climate change affect humans? That's the question we asked Tom Wagner, Program Scientist for Cryospheric Research at NASA. In four different ways, he says, from rainfall patterns and sea levels rising to food production and ocean acidification. First, "as the planet warms up, we're going to redistribute rainfall, which is going to affect our water resources and parts of North America may get a lot drier." Second, "as the polar ice melts, sea levels are going to rise." The world's major cities, and a lot of people, are right on the coasts and rising sea levels are going to impact them. Third, thinking about food, the "distributions where we can grow food are going to change as the planet warms up." So the range over which you can grow corn and other crops will change. Fourth, says Tom Wagner, "the oceans are going to get more acidic as more CO2 dissolves in them." There are untold ramifications from that, including the possibility of radically altering the food web in the ocean, "which can affect everything from the composition of the atmosphere to the ability of the oceans to provide food for us." See more of NASA's answers to your questions on climate science here: http://bit.ly/1b7rSdL	Transcript Link
2013 12 02	NASA Goddard	https://youtu.be/kcROVgmF9SY	NASA Comet ISON's Full Perihelion Pass	This video is public domain and can be downloaded at: After several days of continued observations, scientists continue to work to determine and to understand the fate of Comet ISON: There's no doubt that the comet shrank in size considerably as it rounded the sun and there's no doubt that something made it out on the other side to shoot back into space. The question remains as to whether the bright spot seen moving away from the sun was simply debris, or whether a small nucleus of the original ball of ice was still there. Regardless, it is likely that it is now only dust. Comet ISON, which began its journey from the Oort Cloud some 3 million years ago, made its closest approach to the sun on Nov. 28, 2013. The comet was visible in instruments on NASA's Solar Terrestrial Relations Observatory, or STEREO, and the joint European Space Agency/NASA Solar and Heliospheric Observatory, or SOHO, via images called coronagraphs. Coronagraphs block out the sun and a considerable distance around it, in order to better observe the dim structures in the sun's atmosphere, the corona. As such, there was a period of several hours when the comet was obscured in these images, blocked from view along with the sun. During this period of time, NASA's Solar Dynamics Observatory could not see the comet, leading many scientists to surmise that the comet had disintegrated completely. However, something did reappear in SOHO and STEREO coronagraphs some time later -- though it was significantly less bright. Whether that spot of light was merely a cloud of dust that once was a comet, or if it still had a nucleus -- a small ball of its original, icy material -- intact, is still unclear. It seems likely that as of Dec. 1, there was no nucleus left. By monitoring its changes in brightness	Transcript Link

2013 11 28	NASA Goddard	https://youtu.be/6j6nkl_nHyG0	NASA Comet ISON Fizzles	These images from NASA's Solar Terrestrial Relations Observatory and the ESA/NASA Solar and Heliospheric Observatory show Comet ISON growing dim as it made the journey around the sun. The comet was not visible at all in NASA's Solar Dynamics Observatory. The comet is believed to have broken up and evaporated. While this means that Comet ISON will not be visible in the night sky in December, the wealth of observations gathered of the comet over the last year will provide great research opportunities for some time. One important question will simply be to figure out why it is no longer visible. Credit: NASA/SDO/ESA/SOHO/GSFC This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11422 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 11 26	NASA Goddard	https://youtu.be/WqYA_G4hO75w	NASA Alex Young Comet ISON Interview	This video is public domain and can be downloaded at: https://svs.gsfc.nasa.gov/vis/a010000/a011400/a011421/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 11 25	NASA Goddard	https://youtu.be/oehz4KXdYBU	NASA First Landing IceBridge P-3 on the Sea Ice Runway	With the successful landing of the NASA P-3 aircraft on McMurdo Station's seasonal sea ice runway, Operation IceBridge is opening the door to a whole new suite of remote science targets in Antarctica. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11425 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 11 21 NASA Goddard <https://youtu.be/0IxM9AVaXc> NASA How to Cook a Comet

A comet's journey through the solar system is perilous and violent. Before it reaches Mars - at some 230 million miles away from the sun - the radiation of the sun begins to cook off the frozen water ice directly into gas. This is called sublimation. It is the first step toward breaking the comet apart. If it survives this, the intense radiation and pressure closer to the sun could destroy it altogether.

[Transcript](#)
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Animators at NASA's Goddard Space Flight Center in Greenbelt, Md. created this short movie showing how the sun can cook a comet.

Such a journey is currently being made by Comet ISON. It began its trip from the Oort cloud region of our solar system and is now traveling toward the sun. The comet will reach its closest approach to the sun on Thanksgiving Day -- Nov. 28, 2013 -- skimming just 730,000 miles above the sun's surface. If it comes around the sun without breaking up, the comet will be visible in the Northern Hemisphere with the naked eye, and from what we see now, ISON is predicted to be a particularly bright and beautiful comet.

Even if the comet does not survive, tracking its journey will help scientists understand what the comet is made of, how it reacts to its environment, and what this explains about the origins of the solar system. Closer to the sun, watching how the comet and its tail interact with the vast solar atmosphere can teach scientists more about the sun itself.

This video is public domain and can be downloaded at:

2013 11 15 NASA Goddard <https://youtu.be/ZHVA36ggMM> NASA Firefly Mission to Study Lightning

Somewhere on Earth, there's always a lightning flash. The globe experiences lightning some 50 times a second, yet the details of what initiates this common occurrence and what effects it has on the atmosphere - lightning may be linked to incredibly powerful and energetic bursts called terrestrial gamma ray flashes, or TGFs -- remains a mystery. In mid-November, a football-sized mission called Firefly, which is funded by the National Science Foundation, will launch into space to study lightning and these gamma ray flashes from above.

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The NSF CubeSat program represents a low cost access to space approach to performing high-quality, highly targeted science on a smaller budget than is typical of more comprehensive satellite projects, which have price tags starting at \$100 million. The CubeSat Firefly, by focusing its science goals, will carry out its mission in a much smaller package and at a considerably lower cost.

The Firefly mission also emphasizes student involvement as part of the ongoing effort to train the next generation of scientists and engineers. Students at Siena College, in Loudonville, N.Y., and the University of Maryland Eastern Shore, in Princess Anne, Md., were involved in all phases of the Firefly mission.

The window for Firefly launch opens on Nov. 19, 2013, and it is scheduled to launch with 27 other cubesat missions, as well as a NASA experiment called the Total solar irradiance Calibration Transfer Experiment, or TCTE, which will continue measurements

2013 11 14	NASA Goddard	https://youtu.be/5XFS_oCETaw	NASA When Trees Fall, Landsat Maps Them	Twelve years of global deforestation, wildfires, windstorms, insect infestations and more are captured in a new set of forest disturbance maps created from billions of pixels acquired by the imager on the NASA-USGS Landsat 7 satellite. The maps are the first to measure forest loss and gain using a consistent method around the globe at high spatial resolution, allowing scientists to compare forest changes in different countries and to monitor annual deforestation. Since each pixel in a Landsat image represents a piece of land about the size of a baseball diamond, researchers can see enough detail to tell local, regional and global stories. Key to the project was collaboration with team members from Google Earth Engine, who reproduced in the Google Cloud the models developed at the University of Maryland for processing and characterizing the Landsat data. The computing required to generate these maps would have taken 15 years on a single desktop computer, but with cloud computing was performed in a few days. Since 1972, the Landsat program has played a critical role in monitoring, understanding and managing the resources needed to sustain human life such as food, water and forests. Landsat 8 launched Feb. 11, 2013, and is jointly managed by NASA and USGS to continue the 40-plus years of Earth observations. To view the forest cover maps in Google Earth Engine, visit: http://earthenginepartners.appspot.com/google.com/science-2013-global-forest	Transcript Link
2013 11 13	NASA Goddard	https://youtu.be/Qz4gBcGePkU	NASA MAVEN Mission to Mars	This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011400/a011408/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 11 13	NASA Goddard	https://youtu.be/sKPrwY0Ycno	NASA Mars Evolution	Billions of years ago when the Red Planet was young, it appears to have had a thick atmosphere that was warm enough to support oceans of liquid water - a critical ingredient for life. The animation shows how the surface of Mars might have appeared during this ancient clement period, beginning with a flyover of a Martian lake. The artist's concept is based on evidence that Mars was once very different. Rapidly moving clouds suggest the passage of time, and the shift from a warm and wet to a cold and dry climate is shown as the animation progresses. The lakes dry up, while the atmosphere gradually transitions from Earthlike blue skies to the dusty pink and tan hues seen on Mars today. his video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?20201 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 11 08	NASA Goddard	https://youtu.be/SY6XSsF4CCo	NASA Ask A Climate Scientist - Extreme Weather and Global Warming	Is the frequency of extreme weather events a sign that global warming is gaining pace and exceeding predictions? Bill Patzert, a scientist at NASA's Jet Propulsion Laboratory, says the evidence that extreme weather events have been more frequent in recent years is definitely to the contrary. "The United States has always had extreme weather. We look back on our weather history. It's been punishing: floods, droughts tornadoes, hurricanes, great forest fires. Is global warming happening? No doubt about it. We're living in a warmer world, we're living in a melting world, sea levels are rising. (http://climate.nasa.gov/key_indicators) "Now, direct evidence of the footprint or the fingerprint of global warming: we're seeing more frequent, more intense, and longer lasting heat waves. As far as hurricanes, tornadoes, forest fires, floods, and drought, the evidence is definitely not in. The consensus among almost all scientists is that it's a small fingerprint, not a large footprint. "But what is true is that in this country, in the United States, we live in many areas with great risk to drought, to tornadoes, to hurricanes, and so part of the dialogue is not only extreme weather and global warming, but is the amount of risk we can tolerate. Now looking to the future, global change, global warming - it definitely is accelerating and it will have an impact on extreme weather, but at this point, not much."	Transcript Link

2013 11 08	NASA Goddard	https://youtu.be/iZwChY9wrZs	NASA MAVEN NASA's Next Mission to Mars	Ancient riverbeds, crater lakes and flood channels all attest to Mars's warm, watery past. So how did the Red Planet evolve from a once hospitable world into the cold, dry desert that we see today? One possibility is that Mars lost its early atmosphere, allowing its water to escape into space, and NASA's Mars Atmosphere and Volatile Evolution (MAVEN) spacecraft will investigate just that. On September 25, 2013, MAVEN Principal Investigator Bruce Jakosky delivered a presentation at the Smithsonian National Air and Space Museum, discussing NASA's next mission to Mars. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11403 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 11 07	NASA Goddard	https://youtu.be/EoUy4lsgRo8	NASA Mars Atmosphere Loss Sputtering	How did Mars, a once wet planet, lose its early atmosphere? One possibility is through a process called "sputtering," in which atoms are knocked away from the atmosphere due to impacts with energetic particles. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11037 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 11 07	NASA Goddard	https://youtu.be/ubiQ8nopgWY	NASA LCRD From Vision to Reality	Since its inception in 1958, NASA has relied exclusively on radio frequency (RF)-based communications as the only viable medium for exchanging data between a mission and a spacecraft. Today, with missions demanding communication with higher data rates than ever before, NASA is taking steps to embark on a new era of communication technology. The Laser Communication Relay Demonstration (LCRD) project will help pave the way, pioneering technologies that will enable the exchange of data through beams of light. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011300/a011357/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 11 06	NASA Goddard	https://youtu.be/YzDTsh0TQtA	NASA Webb Telescope NIRSpec Instrument Arrives at NASA Goddard	JWST Telescope NIRSpec instrument arrives at NASA Goddard Space Flight Center. NIRSpec is provided by the European Space Agency and built by EADS/Astrium. The Near-Infrared Spectrograph (NIRSpec) will be the first multi-object spectrograph to fly in space. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11381 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 11 06	NASA Goddard	https://youtu.be/ogcaSmofPo4	NASA Mars Atmosphere Loss Plasma Processes	Mars's thick early atmosphere was likely lost to space, and the Sun is a potential culprit. When high-energy solar photons strike the upper Martian atmosphere they can ionize gas molecules, causing the atmosphere to erode over time. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11037 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 11 05	NASA Goddard	https://youtu.be/0_iz5Nt0Qc8	NASA Mars Atmosphere Loss Neutral Processes	When you take a look at Mars, you probably wouldn't think that it looks like a nice place to live. It's dry, it's dusty, and there's practically no atmosphere. But some scientists think that Mars may have once looked like a much nicer place to live, with a thicker atmosphere, cloudy skies, and possibly even liquid water flowing over the surface. So how did Mars transform from a warm, wet world to a cold, barren desert? NASA's MAVEN spacecraft will give us a clearer idea of how Mars lost its atmosphere (and thus its water), and scientists think that several processes have had an impact. Scientists think that the collision of neutral hydrogen molecules may have helped to drive the Martian atmosphere into space over billions of years. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11037 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 10 31	NASA Goddard	https://youtu.be/cIMBvzFeNQA	NASA A Laser Scientist Answers 5 Questions About LVIS	http://www.nasa.gov/content/nasa-begins-airborne-campaign-to-map-greenland-ice-sheet-summer-melt/ With winter closing in, a new NASA airborne campaign launched October 31, 2013 in Greenland. For the first time, the Laser Vegetation Imaging Sensor, or LVIS, is flying about NASA's new C-130 aircraft to measure the island's ice following a summer's melt. This data will complement measurements the LVIS instrument has taken in previous springtime campaigns as a part of Operation IceBridge, a six-year multi-instrument survey over both Arctic and Antarctic ice. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11389 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 10 31	NASA Goddard	https://youtu.be/IOwU2VNej1U	NASA ABI The Future of Weather Monitoring	The Advanced Baseline Imager (ABI) is the primary sensor on the new generation GOES satellites, GOES-R. ABI will have 16 spectral bands, which will contribute to a greater number of products and better data quality. ABI will track and monitor cloud formation, atmospheric motion, convection monitoring, land surface temperature, ocean dynamics, flow of water, fire, smoke, volcanic ash plume, aerosols and air quality, as well as vegetation health. With 5 times faster coverage rate and 4 times better spatial resolution ABI is poised to become a true success story, benefitting the public by providing critical data. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10936 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 10 30	NASA Goddard	https://youtu.be/Y2QAUvy3z1Y	NASA Five Years of Great Discoveries for NASA's IBEX	Launched on Oct. 19, 2008, the Interstellar Boundary Explorer, or IBEX, spacecraft, is unique to NASA's heliophysics fleet: it images the outer boundary of the heliosphere, a boundary at the furthest edges of the solar system, far past the planets, some 8 million miles away. There, the constant stream of solar particles flowing off the sun, the solar wind, pushes up against the interstellar material flowing in from the local galactic neighborhood. IBEX is also different because it creates images from particles instead of light. IBEX, scientists create maps from the observed neutral atoms. Some are of non-solar origin, others were created by collisions of solar wind particles with other neutral atoms far from the sun. Observing where these energetic neutral atoms, or ENAs, come from describes what's going on in these distant regions. Over the course of six months and many orbits around Earth, IBEX can paint a picture of the entire sky in ENAs. During its first five years, IBEX has made some astounding discoveries. IBEX is a NASA Heliophysics Small Explorer mission. The Southwest Research Institute in San Antonio, Texas, leads IBEX with teams of national and international partners. NASA's Goddard Space Flight Center in Greenbelt, Md., manages the Explorers Program for the agency's Science Mission Directorate in Washington. Read more at: http://www.nasa.gov/content/goddard/five-years-of-great-discoveries-for-nasas-ibex/	Transcript Link

2013 10 29	NASA Goddard	https://youtu.be/K8XwfYNm5XQ	NASA Five Days of Flares and CMEs	This movie shows 23 of the 26 M- and X-class flares on the sun between 1800 UT Oct. 23 and 1500 UT Oct. 28, 2013, as captured by NASA's Solar Dynamics Observatory. It also shows the coronal mass ejections -- great clouds of solar material bursting off the sun into space -- during that time as captured by the ESA/NASA Solar and Heliospheric Observatory. Music: "Stella Nova" by Lars Leonhard, courtesy of the artist and Ultima records. http://www.lars-leonhard.de / www.ultimae.com This video is public domain and can be downloaded at: https://svs.gsfc.nasa.gov/vis/a010000/a011300/a011387/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 10 28	NASA Goddard	https://youtu.be/wJMPd2Fjp5g	NASA LLCD Proving Laser Communication Possible	On October 18th, 2013 the Lunar Laser Communication Demonstration (LLCD) made history, transmitting data from lunar orbit to Earth at a rate of 622 Mbps. LLCD, flying aboard NASA's Lunar Atmosphere and Dust Environment Explorer (LADEE), is the first NASA mission dedicated to proving high-rate, two-way laser communications is possible. LLCD not only demonstrated a record-breaking download rate but also an error-free data upload rate of 20 Mbps. The laser beam was transmitted the 239,000 miles from the primary ground station at NASA's White Sands Complex in Las Cruces N.M., to the LADEE spacecraft in lunar orbit.	Transcript Link

2013 10 24	NASA Goddard	https://youtu.be/QurhBZ-O2E	NASA Canyon of Fire on the Sun	A magnetic filament of solar material erupted on the sun in late September, breaking the quiet conditions in a spectacular fashion. The 200,000 mile long filament ripped through the sun's atmosphere, the corona, leaving behind what looks like a canyon of fire. The glowing canyon traces the channel where magnetic fields held the filament aloft before the explosion. Visualizers at NASA's Goddard Space Flight Center in Greenbelt, Md. combined two days of satellite data to create a short movie of this gigantic event on the sun. In reality, the sun is not made of fire, but of something called plasma: particles so hot that their electrons have boiled off, creating a charged gas that is interwoven with magnetic fields. These images were captured on Sept. 29-30, 2013, by NASA's Solar Dynamics Observatory, or SDO, which constantly observes the sun in a variety of wavelengths. Different wavelengths help capture different aspect of events in the corona. The red images shown in the movie help highlight plasma at temperatures of 90,000° F and are good for observing filaments as they form and erupt. The yellow images, showing temperatures at 1,000,000° F, are useful for observing material coursing along the sun's magnetic field lines, seen in the movie as an arcade of loops across the area of the eruption. The browner images at the beginning of the movie show material at temperatures of 1,800,000° F, and it is here where the canyon of fire imagery is most	Transcript Link
2013 10 21	NASA Goddard	https://youtu.be/MmoYStB-Rzw	NASA Ask a Climate Scientist Global Warming Pause	Is there a pause in global warming? This question was posed to Jet Propulsion Laboratory scientist Josh Willis as part of NASA's Ask A Climate Scientist campaign. Josh gets asked a lot if there has been a pause in global warming, because temperatures aren't increasing as fast as they were a decade ago. No, he says, global warming is definitely still increasing (http://climate.nasa.gov/key_indicators#globalTemp). We see more heat being trapped in the oceans, and sea levels are rising. Look at the sea level record for the last decade (http://climate.nasa.gov/key_indicators#seaLevel). It's going up like gangbusters, hasn't slowed down. There's not really a pause in global warming. Sometimes there's natural fluctuations and we warm up a little faster in one decade and a little slower in another decade, but global warming, human-caused climate change? Josh says, "that's definitely going right on up in there. We haven't slowed down at all." See more of NASA's answers to your questions on climate science (http://bit.ly/1b7rSdL).	Transcript Link

2013 09 30	NASA Goddard	https://youtu.be/IN0SbMeOGIA	NASA Propylene on Titan	With a thick atmosphere, clouds, a rain cycle and giant lakes, Saturn's large moon Titan is a surprisingly Earthlike place. But unlike on Earth, Titan's surface is far too cold for liquid water - instead, Titan's clouds, rain, and lakes consist of liquid hydrocarbons like methane and ethane (which exist as gases here on Earth). When these hydrocarbons evaporate and encounter ultraviolet radiation in Titan's upper atmosphere, some of the molecules are broken apart and reassembled into longer hydrocarbons like ethylene and propane. NASA's Voyager 1 spacecraft first revealed the presence of several species of atmospheric hydrocarbons when it flew by Titan in 1980, but one molecule was curiously missing - propylene, the main ingredient in plastic number 5. Now, thanks to NASA's Cassini spacecraft, scientists have detected propylene on Titan for the first time, solving a long-standing mystery about the solar system's most Earthlike moon. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11339 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2013 09 27	NASA Goddard	https://youtu.be/VdBKPi90Fi0	NASA California Polytechnic Institute Students bring JWST Model to NASA GSFC	Engineering students from California Polytechnic Institute brought their Webb Telescope deployment model to NASA Goddard Space Flight Center. The students demonstrated this detailed, robotic version of Webb for the NASA team building the real thing. It's a one - sixth scale model, and it performs the deployments the Webb Telescope will carry out before it begins science gathering. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11363 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 09 27	NASA Goddard	https://youtu.be/d-nl8MByIL8	NASA IPCC Projections of Temperature and Precipitation in the 21st Century	New data visualizations from the NASA Center for Climate Simulation and NASA's Scientific Visualization Studio show how climate models -- those used in the new report from the United Nations' Intergovernmental Panel on Climate Change (IPCC) -- estimate how temperature and precipitation patterns could change throughout the 21st century. For the IPCC's Physical Science Basis and Summary for Policymakers reports, scientists referenced an international climate modeling effort to study how the Earth might respond to four different scenarios of how much carbon dioxide and other greenhouse gases would be emitted into the atmosphere throughout the 21st century. The Summary for Policymakers, the first official piece of the group's Fifth Assessment Report, was released Fri., Sept. 27. That modeling effort, called the Coupled Model Intercomparison Project Phase 5 (CMIP5), includes dozens of climate models from institutions around the world, including from NASA's Goddard Institute for Space Studies. To produce visualizations that show temperature and precipitation changes similar to those included in the IPCC report, the NASA Center for Climate Simulation calculated mean model results for each of the four emissions scenarios. The final products are visual representations how much temperature and precipitation patterns would change through 2100 compared to the historical average from the end of the 20th century. The changes shown compare the Simulation courtesy of J. Raeder/UNH.	Transcript Link
2013 09 26	NASA Goddard	https://youtu.be/AKAsedkrb84	NASA Tracking Energy through Space	This short video features commentary by David Sibeck, project scientist for the THEMIS mission, discussing a visualization of reconnection fronts. Taking advantage of an unprecedented alignment of eight satellites through the vast magnetic environment that surrounds Earth in space, including NASA's ARTEMIS and THEMIS, scientists now have comprehensive details of the energy's journey through a process that forms the aurora, called a substorm. Their results showed that small events unfolding over the course of a millisecond can result in energy flows that last up to half an hour and cover an area 10 times larger than Earth. Trying to understand how gigantic explosions on the sun can create space weather effects involves tracking energy from the original event all the way to Earth. It's not unlike keeping tabs on a character in a play with many costume changes, because the energy changes form frequently along its journey: magnetic energy causes eruptions that lead to kinetic energy as particles hurtle away, or thermal energy as the particles heat up. Near Earth, the energy can change through all these various forms once again. Most of the large and small features of substorms take place largely in the portion of Earth's magnetic environment called the magnetotail. Earth sits inside a large magnetic bubble called the	Transcript Link

2013 09 25	NASA Goddard	https://youtu.be/1_46ABdlaeQ	NASA ISIM Goes into Huge Space Environment Simulator	The Integrated Science Instrument Module (ISIM), which is the heart of the Webb Telescope, is placed into the Space Environment Simulator (SES) at NASA's Goddard Space Flight Center for cryogenic testing. During this test, the ISIM is supporting the Mid-InfraRed Instrument (MIRI) and the Fine Guidance Sensor / Near InfraRed Imager and Slitless Spectrograph (FGS/NIRISS). This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11360 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 09 24	NASA Goddard	https://youtu.be/7OgQBjJimS8	NASA Ask a Climate Scientist CO2 and Temperature	Is there any merit to the studies that show that historical CO2 levels lag behind temperature, and not lead them? Yes, there's merit to those studies, says Peter Hildebrand, Director of the Earth Science Division at NASA's Goddard Space Flight Center, responding to a question from Twitter (https://twitter.com/Seth_b_clark/status/376119482298548224). In the pre-industrial age, the CO2 response to temperature was that the temperature would go up and CO2 would go up. Or if the temperature went down, CO2 would go down. Because when the temperature rose, the whole biosphere revved up and emitted CO2. So we understand that process. In the post-industrial age, the opposite is true. Increasing CO2 in the atmosphere is leading to increased temperature. So two different things happened, one pre-industrial, where temperature was driving the CO2, and post-industrial, where CO2 was driving temperature. Which means a completely different physical-biological process is going on. For more about Ask A Climate Scientist, go here: http://www.youtube.com/watch?v=49Lu1dTao_k This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11362	Transcript Link

2013 09 24 NASA Goddard <https://youtu.be/m3Ko8knZ7N0> NASA Chasing Comet ISON

Comet ISON (C/2012 S1) may become a dazzling sight as it traverses the inner solar system in late 2013. During the weeks before its Nov. 28 close approach to the sun, the comet will be observable with small telescopes, and binoculars. Observatories around the world and in space will track the comet during its scorching trek around the sun. If ISON survives its searing solar passage, which seems likely but is not certain, the comet may be visible to the unaided eye in the pre-dawn sky during December.

This animation shows two views of comet ISON's path through the inner solar system. The first is a view following the comet along its orbit. The second is a view perpendicular to ISON's orbit.

Like all comets, ISON is a clump of frozen gases mixed with dust. Often described as "dirty snowballs," comets emit gas and dust whenever they venture near enough to the sun that the icy material transforms from a solid to gas, a process called sublimation. Jets powered by sublimating ice also release dust, which reflects sunlight and brightens the comet.

On Oct. 1, ISON passes within about 6.5 million miles (10.5 million km) of Mars. As it goes by, it may be visible to some of NASA's Mars rovers and satellites, including the Mars Reconnaissance Orbiter and Curiosity.

Then, on Nov. 28, ISON will make a sweltering passage around the sun. The comet will approach within about 730,000 miles (1.2 million km) of its visible surface, which classifies ISON as a sungrazing comet. In late November, its icy material will furiously

2013 09 18 NASA Goddard <https://youtu.be/6At6Zz1DmMQ> NASA Ask a Climate Scientist Food Production

Will climate change drastically reduce our food production, or will it change what we produce? [Transcript](#) [Link](#)

This question from Twitter was posed to Goddard Space Flight Center's Molly Brown as part of NASA's Ask A Climate Scientist campaign, #askclimate (https://twitter.com/D_Varatha/status/375698223014232064)

For more about the connection between climate variability and food production, go here:
<http://www.nasa.gov/content/goddard/climate-forecasts-shown-to-warn-of-crop-failures/>

For more about Ask A Climate Scientist, go here:
http://www.youtube.com/watch?v=49Lu1dTao_k

This video is public domain and can be downloaded at:
<http://svs.gsfc.nasa.gov/goto?11356>

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Or find us on Twitter:
<http://twitter.com/NASAGoddard>

2013 09 16	NASA Goddard	https://youtu.be/Fjv5juzSZtQ	NASA Planetary Scientist Profile Emily Wilson	NASA scientist Emily Wilson discusses her work developing miniaturized instruments that measure greenhouse gases in the atmosphere. Her latest instrument, the mini-LHR, works in tandem with AERONET, and will contribute to the global effort to better understand climate change. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011300/a011359/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 09 12	NASA Goddard	https://youtu.be/gzVM-aR-e60	NASA Warm Ocean Melting Pine Island Glacier	For five years an international team of experts, led by NASA emeritus glaciologist Robert Bindshadler and funded by the National Science Foundation and NASA, planned and orchestrated a mission to drill through the floating ice shelf of the Pine Island Glacier. Finally they persevered over harsh weather conditions, a short Antarctic field season, and the remote location of the glacier, and installed a variety of instruments to measure the properties of the ocean water below the ice shelf. For more information, go to http://www.nasa.gov/content/goddard/warm-ocean-rapidly-melting-antarctic-ice-shelf-from-below/ This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11361 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11335 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast:	Transcript Link

2013 09 04	NASA Goddard	https://youtu.be/49Lu1dTa0_k	NASA Ask a Climate Scientist	Have a question that's always confounded you about Earth's climate? Wonder why it matters that the climate is changing now if it has changed before? Or how scientists know changes seen in recent decades are the result of human activities, not natural causes? Go ahead. Ask a climate scientist. NASA scientists will be recording video responses to some of the questions we receive. The responses will be posted to the NASAExplorer YouTube channel. To submit a question, record a short, 10-15 second video with your question and upload it to YouTube -- and be sure to tag the video "#askclimate" so that we can find it. You can also simply post a question on Twitter with the same hashtag, "#askclimate." This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11355 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter:	Transcript Link
2013 08 29	NASA Goddard	https://youtu.be/ENg9Hci9y3M	NASA Greenland's Mega Canyon	Hidden for all of human history, a 460 mile long canyon has been discovered below Greenland's ice sheet. Using radar data from NASA's Operation IceBridge and other airborne campaigns, scientists led by a team from the University of Bristol found the canyon runs from near the center of the island northward to the fjord of the Petermann Glacier. A large portion of the data was collected by IceBridge from 2009 through 2012. One of the mission's scientific instruments, the Multichannel Coherent Radar Depth Sounder, operated by the Center for the Remote Sensing of Ice Sheets at the University of Kansas, can see through vast layers of ice to measure its thickness and the shape of bedrock below. For more information: http://www.nasa.gov/content/goddard/nasa-data-reveals-mega-canyon-under-greenland-ice For an HD download of this video: http://svs.gsfc.nasa.gov/goto?11354 To download more Operation IceBridge videos: http://svs.gsfc.nasa.gov/Gallery/OIB.html IceBridge, a six-year NASA mission, is the largest airborne survey of Earth's polar ice ever flown. It will yield an unprecedented three-dimensional view of Arctic and Antarctic ice sheets, ice shelves and sea ice. These flights will provide a yearly, multi-instrument look at	Transcript Link

2013 08 28	NASA Goddard	https://youtu.be/ptfLfrWI648	NASA LLCD Downloads the Future	LLCD will be NASA's first-step in creating a high performance space-based laser communications system. The LLCD mission consists of space-based and ground-based components. The Lunar Laser Space Terminal (LLST) is an optical communications test payload to fly aboard the LADEE Spacecraft and it will demonstrate laser communications from lunar orbit. The ground segment consists of three ground terminals that will perform high-rate communication with the LLST aboard LADEE. The primary ground terminal, the Lunar Laser Ground Terminal (LLGT) is located in White Sands, NM and was developed by MIT/Lincoln Laboratory and NASA. The ground segment also includes two secondary terminals located at NASA/JPL's Table Mountain Facility in California and the European Space Agency's El Teide Observatory in Tenerife, Spain. The main goal of LLCD is proving fundamental concepts of laser communications and transferring data at a rate of 622 megabits per second (Mbps), which is about five times the current state-of-the-art from lunar distances. Engineers expect future space missions to benefit greatly from the use of laser communications technology. To learn more about laser communications and the LLCD mission please visit: http://llcd.gsfc.nasa.gov Stay connected with LLCD on twitter: @NASALasercomm This video is public domain and can be downloaded at: https://svs.gsfc.nasa.gov/vis/a010000/a011300/a011345/	Transcript Link
2013 08 23	NASA Goddard	https://youtu.be/baWRM6BYzUI	NASA Estado del hielo marino ártico, Agosto 2013	Una conversación con el Dr. Carlos del Castillo sobre que está pasando en el Ártico este verano	Transcript Link
2013 08 23	NASA Goddard	https://youtu.be/04bmGa9dRMc	NASA Arctic Sea Ice Update, Aug. 2013	An interview with NASA cryospheric scientist Dr. Tom Wagner, on the state of this summer's Arctic sea ice. http://www.nasa.gov/content/goddard/arctic-sea-ice-update-unlikely-to-break-records-but-continuing-downward-trend/#.Uhexl7wd6RI http://svs.gsfc.nasa.gov/Gallery/ArcticSeaIceResources.html	Transcript Link

2013 08 23	NASA Goddard	https://youtu.be/cX8aryIKebU	NASA From the Cockpit Arctic Sea Ice with Commentary	You've seen the great cockpit footage from Best of IceBridge Arctic '13, now go behind the scenes for 9 minutes of scientific commentary with Operation IceBridge Project Scientist Michael Studinger and NASA sea ice researcher Nathan Kurtz, as they discuss the science behind the mission's study of Arctic sea ice. IceBridge, a six-year NASA mission, is the largest airborne survey of Earth's polar ice ever flown. It will yield an unprecedented three-dimensional view of Arctic and Antarctic ice sheets, ice shelves and sea ice. These flights will provide a yearly, multi-instrument look at the behavior of the rapidly changing features of the Greenland and Antarctic ice. Data collected during IceBridge will help scientists bridge the gap in polar observations between NASA's Ice, Cloud and Land Elevation Satellite (ICESat) -- in orbit since 2003 -- and ICESat-2, planned for late 2015. ICESat stopped collecting science data in 2009, making IceBridge critical for ensuring a continuous series of observations. IceBridge will use airborne instruments to map Arctic and Antarctic areas once a year. The first IceBridge flights were conducted in March/May 2009 over Greenland and in October/November 2009 over Antarctica. Other smaller airborne surveys around the world are also part of the IceBridge campaign. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11341 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link
2013 08 21	NASA Goddard	https://youtu.be/FOELBnoVCsM	NASA Fermi at Five Years	For more information, visit http://www.nasa.gov/content/goddard/nasas-fermi-celebrates-five-years-in-space-enters-extended-mission/ This compilation summarizes the wide range of science from the first five years of NASA's Fermi Gamma-ray Space Telescope. Fermi is a NASA observatory designed to reveal the high-energy universe in never-before-seen detail. Launched in 2008, Fermi continues to give astronomers a unique tool for exploring high-energy processes associated with solar flares, spinning neutron stars, outbursts from black holes, exploding stars, supernova remnants and energetic particles to gain insight into how the universe works. Fermi detects gamma rays, the most powerful form of light, with energies thousands to billions of times greater than the visible spectrum. The mission has discovered pulsars, proved that supernova remnants can accelerate particles to near the speed of light, monitored eruptions of black holes in distant galaxies, and found giant bubbles linked to the central black hole in our own galaxy. From blazars to thunderstorms, from dark matter to supernova remnants, catch the highlights of NASA Fermi's first five years in space. View the complete videos plus all the other Fermi related media from the last 5 years in the Fermi Five Year gallery: http://svs.gsfc.nasa.gov//Gallery/Fermi5.html	Transcript Link

2013 08 16	NASA Goddard	https://youtu.be/fPkLrSMbJoU	NASA From the Cockpit The Best of IceBridge Arctic '13	The views from the cockpit of NASA's P-3B aircraft on an Operation IceBridge campaign are truly stunning. The mission doesn't travel to both ends of the Earth for the scenery of course -- the airborne mission is there to collect radar, laser altimetry, and other data on the changing ice sheets, glaciers, and sea ice of the Arctic and Antarctic. But for those of us who aren't polar pilots, here's a selection of some of the best footage from the forward and nadir cameras mounted to the aircraft taken during IceBridge's spring deployment over Greenland and the Arctic Ocean. IceBridge, a six-year NASA mission, is the largest airborne survey of Earth's polar ice ever flown. It will yield an unprecedented three-dimensional view of Arctic and Antarctic ice sheets, ice shelves and sea ice. These flights will provide a yearly, multi-instrument look at the behavior of the rapidly changing features of the Greenland and Antarctic ice. Data collected during IceBridge will help scientists bridge the gap in polar observations between NASA's Ice, Cloud and Land Elevation Satellite (ICESat) -- in orbit since 2003 -- and ICESat-2, planned for late 2015. ICESat stopped collecting science data in 2009, making IceBridge critical for ensuring a continuous series of observations. IceBridge will use airborne instruments to map Arctic and Antarctic areas once a year. The first IceBridge flights were conducted in March/May 2009 over Greenland and in October/November 2009 over Antarctica. Other smaller airborne surveys around the world are also part of the IceBridge campaign. This video is public domain and can be downloaded at:	Transcript Link
2013 08 15	NASA Goddard	https://youtu.be/YolhN4h3EJA	NASA GLOBE 2013 Science for the Next Generation	Over 250 people gathered at this year's GLOBE meeting to learn protocols, share science research, and meet other GLOBE participants from around the world. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011300/a011340/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 08 14	NASA Goddard	https://youtu.be/Q9KwK0izt5c	NASA NPP Sees Aftermath of the Chelyabinsk Meteor	A meteor weighing 10,000 metric tons exploded only 23km above the city of Chelyabinsk in Russia on February 15, 2013. Unlike previous such events, this time scientists had the highly sensitive OMPS instrument on NPP to deliver unprecedented data and help them track and study the meteor plume for months. This video shows how accurately the model prediction coincided with the satellite observations. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11336 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 08 12	NASA Goddard	https://youtu.be/4c5udFEH1bM	NASA Interns Grab on to the Future	Interns working in the innovative lab at NASA's Goddard Space Flight Center were given a robotic arm kit and given free reign. What did the interns do? With the college interns as project leads, the team, which also consisted of high school interns, created a robotic arm capable of picking up an egg using a computer and an Xbox Kinect sensor, with the help of 3D printers along the way.	Transcript Link
2013 08 12	NASA Goddard	https://youtu.be/3uC-4M_PjzQ	NASA WATER FALLS Trailer	http://gpm.nasa.gov/waterfalls Song: "Pour on Me" Bryan Elijah Smith Used by Permission http://www.bryanelijahsmith.com The Global Precipitation Measurement mission (GPM) is a massive, multinational mission utilizing a fleet of spacecraft, sophisticated ground based data processing systems, and years of planning. To capture the essence of this immense undertaking and introduce it to broad audiences, NASA's GPM project office decided to do something out of the box. WATER FALLS is the result. Designed specifically for spherical screens, WATER FALLS abstracts the complex mechanics of the GPM mission, and explores the diversity of phenomena inherent to the water cycle. Presented in sensual, evocative, even surprising ways, WATER FALLS offers vital information about GPM's profound importance to everyone who lives on Earth. http://svs.gsfc.nasa.gov/vis/a010000/a011300/a011332/	Transcript Link

2013 08 09	NASA Goddard	https://youtu.be/umEZ4k-J7fU	NASA 2013 Wildfires	NASA scientist Dr. Doug Morton talks about the 2013 wildfire season as well as future trends for wildfires and how NASA resources are used to help detect and monitor wildfires around the world. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11335 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 08 09	NASA Goddard	https://youtu.be/dRyMTJAr06s	NASA HS3 Mission S-HIS Instrument	Interview with Henry "Hank" Revercomb, principal investigator for the NASA HS3 Mission's Scanning High-Resolution Interferometer Sounder Instrument. He is responsible for the infrared remote sensing of temperature, water vapor, and cloud fields from the Global Hawk aircraft monitoring the environment of hurricanes to help understand mechanisms for intensity changes. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11334 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 08 08	NASA Goddard	https://youtu.be/_ISO02pkQZU	NASA The Future of Fires	With climate change, certain areas of the United States, like the great Plains and Upper Midwest, will be at a greater risk of burning by the end of the 21st-century. Areas like the Mountain West that are prone to burning now will see even more fires than they do today. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11330 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 08 07 NASA Goddard <https://youtu.be/FuMlbvV7TGA> NASA Zebra Crossing

For more information, visit
<http://www.nasa.gov/content/goddard/of-stars-and-stripes-nasa-satellites-used-to-predict-zebra-migrations>

[Transcript](#)
[Link](#)

Botswana's Okavango Delta and the Makgadikgadi Salt Pans are two ends of a 360-mile round trip zebra migration, the second longest on Earth. In this animation, shades of red show dry areas, green represents vegetation, and the dots show GPS tracked zebras. The zebras begin at the Okavango Delta in late September. After the dry Southern hemisphere winter, November rains signal it is time to begin their two-week journey to the Salt Pans. The zebras feast on nutrient-rich grasses all summer, and return to the Delta as the rain peters out in April.

Fences blocked this zebra migration from 1968 to 2004. After they came down, researchers began tracking zebras with GPS and discovered this migration. They compared the zebras' location to NASA satellite data of rainfall and vegetation, and they found that migrating zebras have quickly learned when to leave the Delta and the Salt Pans using environmental cues. Researchers then use these cues to predict when the zebras will be on the move, a powerful tool for conservation.

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2013 08 05 NASA Goddard <https://youtu.be/uxVVgBAosgq> NASA Happy Birthday, Curiosity!

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NASA's Curiosity rover celebrates its Martian birthday on August 5 (PDT), the day that it landed on Mars. In honor of this special occasion, engineers at Goddard Space Flight Center are using the Sample Analysis at Mars (SAM) instrument to "sing" Happy Birthday to Curiosity.

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2013 08 02	NASA Goddard	https://youtu.be/K_ECx0X0K-E	NASA Webb's NIRCam optical module arrives at NASA	The optical module of Webb Telescope's primary imager, the Near Infrared Camera (NIRCam) arrives at the NASA Goddard Space Flight Center on Saturday, July 27, 2013. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11328 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 07 25	NASA Goddard	https://youtu.be/TQuFCcxLkc	NASA Interns Build CubeSat	A group of interns build a CubeSat. Interns: Anthony Yee, Christopher Erb, Jeffrey Sherwood, Tanzim Imam, Clayton Jacobs, Tiara Johnson, Liz Sauerbrunn, Alex Petrov, Marvin Cosare, Matthew Davis, Megan Robbett Co-mentors: Pat Kilroy, Joe Howard, Gary Crum, David Kim, Anisa Jamil, Eric Young, Pete Rossoni, Peter Ancosta, Victor Sank, Mark Steiner, Frank Kirchman, Jeff Didion, Franklin L. Robinson, Kenneth E. Li, Porfy Beltran, Dan Solomon, Leigh Janes, Gerardo Cruz-Ortiz	Transcript Link
2013 07 24	NASA Goddard	https://youtu.be/1XilneV3cJI	NASA Seeing Photosynthesis from Space	NASA scientists have discovered a new way to use satellites to measure what's occurring inside Earth's land plants at a cellular level. During photosynthesis, plants emit what is called fluorescence -- a form of light invisible to the naked eye but detectable by satellites orbiting hundreds of miles above Earth. NASA scientists established a method to turn this satellite data into global maps of the subtle phenomenon in more detail than ever before. The new maps -- produced by Joanna Joiner of NASA's Goddard Space Flight Center in Greenbelt, Md., and colleagues -- provide a 16-fold increase in spatial resolution and a 3-fold increase in temporal resolution over the first proof-of-concept maps released in 2011. Improved global measurements could have implications for farmers interested in early indications of crop stress, and ecologists looking to better understand global vegetation and carbon cycle processes. "For the first time, we are able to globally map changes in fluorescence over the course of a single month," Joiner said. "This lets us use fluorescence to observe, for example, variation in the length of the growing season." This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11317	Transcript Link

2013 07 23	NASA Goddard	https://youtu.be/39cBqY1sszY	NASA Projected U.S. Temperature Changes by 2100	The average temperature across the continental U.S. could be 8 degrees Fahrenheit warmer by the end of the 21st century under a climate scenario in which concentrations of the greenhouse gas carbon dioxide rise to 800 parts per million. Current concentrations stand at 400 parts per million, and are rising faster than at any time in Earth's history. These visualizations -- which highlight computer model projections from the draft National Climate Assessment -- show how average temperatures could change across the U.S. in the coming decades under two different carbon dioxide emissions scenarios. Both scenarios project significant warming. A scenario with lower emissions, in which carbon dioxide reaches 550 parts per million by 2100, still projects average warming across the continental U.S. of 4.5 degrees Fahrenheit. The visualizations, which combine the results from 15 global climate models, present projections of temperature changes from 2000 to 2100 compared to the historical average from 1970 -1999. They were produced by the Scientific Visualization Studio at NASA's Goddard Space Flight Center, Greenbelt, Md., in collaboration with NOAA's National Climatic Data Center and the Cooperative Institute for Climate and Satellites, both in Asheville, N.C. The visualizations show the temperature changes as a 30-year running average. The date seen in the bottom-right corner is the	Transcript Link
2013 07 23	NASA Goddard	https://youtu.be/ipOcTpNI5rs	NASA Projected U.S. Precipitation Changes by 2100	The climate of the southwestern U.S. could be a lot drier by 2100. The climate of the northeastern U.S. could be a lot wetter. New visualizations of computer model projections show how precipitation patterns could change across the U.S. in the coming decades under two different carbon dioxide emissions scenarios. The two climate scenarios, based on "low" and "high" levels of carbon dioxide emissions, highlight results from the draft National Climate Assessment. Both scenarios project that dry regions get drier and regions that see more rain and snow would see that trend increase. The scenario with lower emissions, in which carbon dioxide reaches 550 parts per million by 2100, projects more subtle changes. The scenario with higher carbon dioxide emissions projects changes in average annual precipitation of 10 percent or more in some regions. The visualizations, which combine the results from 15 global climate models, present projections of precipitation changes from 2000 to 2100 compared to the historical average from 1970 -1999. They were produced by the Scientific Visualization Studio at NASA's Goddard Space Flight Center, Greenbelt, Md., in collaboration with NOAA's National Climatic Data Center and the Cooperative Institute for Climate and Satellites, both in Asheville, N.C. The visualizations show the precipitation changes as a 30-year running average. The date seen in the bottom-right corner is the	Transcript Link

2013 07 19 NASA Goddard <https://youtu.be/2Z6M7BDGmuE> NASA Goddard Hosts a Blast to the Past Rocketeers of all ages gathered at Goddard's Visitor Center to launch and land rockets in honor of the 44th anniversary of the first moon landing by Apollo 11. [Transcript Link](#)

2013 07 18 NASA Goddard <https://youtu.be/Zkb1ey9gHho> NASA Searching for Mars' Missing Atmosphere MAVEN will use its Neutral Gas and Ion Mass Spectrometer to study the interaction of neutral gases and ions in the Martian atmosphere with the solar wind, helping scientists to understand how Mars has lost its atmosphere over time. [Transcript Link](#)

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2013 07 16 NASA Goddard <https://youtu.be/A1yHDuC88M> NASA What is a Sungrazing Comet Sungrazing comets are a special class of comets that come very close to the sun at their nearest approach, a point called perihelion. To be considered a sungrazer, a comet needs to get within about 850,000 miles from the sun at perihelion. Many come even closer, even to within a few thousand miles. [Transcript Link](#)

Being so close to the sun is very hard on comets for many reasons. They are subjected to a lot of solar radiation which boils off their water or other volatiles. The physical push of the radiation and the solar wind also helps form the tails. And as they get closer to the sun, the comets experience extremely strong tidal forces, or gravitational stress. In this hostile environment, many sungrazers do not survive their trip around the sun. Although they don't actually crash into the solar surface, the sun is able to destroy them anyway.

Many sungrazing comets follow a similar orbit, called the Kreutz Path, and collectively belong to a population called the Kreutz Group. In fact, close to 85% of the sungrazers seen by the SOHO satellite are on this orbital highway. Scientists think one extremely large sungrazing comet broke up hundreds, or even thousands, of years ago, and the current comets on the Kreutz Path are the leftover fragments of it. As clumps of remnants make their way back around the sun, we experience a sharp increase in sungrazing comets, which appears to be going on now. Comet Lovejoy, which reached perihelion on December 15, 2011 is the best known recent Kreutz-group sungrazer. And so far, it is the only one that NASA's solar-observing fleet has seen survive its trip around the sun.

2013 07 15 NASA Goddard <https://youtu.be/MNsSQjSzLv0> NASA X Marks the Spot SDO Sees Reconnection Two NASA spacecraft have provided the most comprehensive movie ever of a mysterious process at the heart of all explosions on the sun: magnetic reconnection. [Transcript Link](#)

Magnetic reconnection happens when magnetic field lines come together, break apart, and then exchange partners, snapping into new positions and releasing a jolt of magnetic energy. This process lies at the heart of giant explosions on the sun such as solar flares and coronal mass ejections, which can fling radiation and particles across the solar system.

Magnetic field lines, themselves, are invisible, but the sun's charged plasma particles course along their length. Space telescopes can see that material appearing as bright lines looping and arcing through the sun's atmosphere, and so map out the presence of magnetic field lines.

Looking at a series of images from the Solar Dynamics Observatory (SDO), scientists saw two bundles of field lines move toward each other, meet briefly to form what appeared to be an "X" and then shoot apart with one set of lines and its attendant particles leaping into space and one set falling back down onto the sun.

To confirm what they were seeing, the scientists turned to a second NASA spacecraft, the Reuven Ramaty High Energy Solar Spectroscopic Imager (RHESSI). RHESSI collects spectrograms, a kind of data that can show where exceptionally hot material is present in

2013 07 12 NASA Goddard <https://youtu.be/gEr4bRl6weQ> NASA It Doesn't Take a Planet to Make Some Rings Watch the changing dust density and the growth of structure in this simulated debris disk. Dust quickly collects into clumps and then forms arcs and rings, structures similar to what astronomers observe in actual debris disks. As the dust heats the gas, the gas pressure increases and changes the drag force experienced by the dust. This essentially herds the dust into clumps that grow into larger patterns. The panel at left shows the disk from an angle of 24 degrees; at right, the disk is face-on. Lighter colors indicate higher dust density. For clarity, the animation does not show light from the central star. The disk extends about 100 times the average distance between Earth and the sun (100 AU, or 9.3 billion miles), which is comparable to the outer edge of our solar system's Kuiper Belt. [Transcript Link](#)

Watch the changing dust density and the growth of structure in this simulated debris disk. Dust quickly collects into clumps and then forms arcs and rings, structures similar to what astronomers observe in actual debris disks. As the dust heats the gas, the gas pressure increases and changes the drag force experienced by the dust. This essentially herds the dust into clumps that grow into larger patterns. The panel at left shows the disk from an angle of 24 degrees; at right, the disk is face-on. Lighter colors indicate higher dust density. For clarity, the animation does not show light from the central star. The disk extends about 100 times the average distance between Earth and the sun (100 AU, or 9.3 billion miles), which is comparable to the outer edge of our solar system's Kuiper Belt.

A study by NASA scientists sounds a cautionary note in interpreting rings and spiral arms as signposts for new planets. Thanks to interactions between gas and dust, a debris disk may, under the right conditions, produce narrow rings on its own, no planets needed.

Many young stars known to host planets also possess disks containing dust and icy grains, particles produced by collisions among asteroids and comets also orbiting the star. These debris disks often show sharply defined rings or spiral patterns, features that could signal the presence of orbiting planets. Astronomers study the structures as a way to better understand the physical properties of known planets and possibly uncover new ones.

When the mass of gas is roughly equal to the mass of dust, the two

2013 07 10 NASA Goddard <https://youtu.be/BhAzMdoOe5E> NASA IBEX Provides First View of the Solar System's Tail NASA's Interstellar Boundary Explorer, or IBEX, recently mapped the boundaries of the solar system's tail, called the heliotail. By combining observations from the first three years of IBEX imagery, scientists have mapped out a tail that shows a combination of fast and slow moving particles. The entire structure twisted, because it experiences the pushing and pulling of magnetic fields outside the solar system.

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2013 07 08 NASA Goddard <https://youtu.be/ieXCZdCuVgM> NASA GROVER in Greenland From May 6 to June 8, 2013, GROVER was in Greenland. GROVER, the Goddard Remotely Operated Vehicle for Exploration and Research, also known as the Greenland Rover, was based at Summit Camp on the ice sheet of Greenland. NASA's Dr. Lora Koenig was working with two students from Boise State University, Gabriel Trisca and Mark Robertson, to evaluate the robot for polar research. For those five weeks, Mark and Gabe worked to test GROVER's endurance in the subzero temperatures and biting winds. By the end of the trip, GROVER was working reliably enough for Dr. Hans-Peter Marshall of Boise State University to control the robot via satellite link from Idaho.

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2013 07 08	NASA Goddard	https://youtu.be/FykVDQY7kk4	NASA Planetary Scientist Profile Brent Garry	NASA Geologist Brent Garry discusses his work studying volcanoes and lava flows on the Earth, the Moon, and Mars. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011300/a011304/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 06 21	NASA Goddard	https://youtu.be/ZOoBG1r-7y4	NASA Supermoon 2013	Dr. Michelle Thaller answers questions about what a Supermoon is and talks about how NASA is studying the moon with the Lunar Reconnaissance Orbiter Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 06 19	NASA Goddard	https://youtu.be/FvZ8EQktSWQ	NASA IRIS The Science of NASA's Newest Solar Explorer	At the end of June 2013, NASA will launch its newest mission to watch the sun: the Interface Region Imaging Spectrograph, or IRIS. IRIS will show the lowest levels of the sun's atmosphere, the interface region, in more detail than has even been observed before. This will help scientists understand how the energy dancing through this area helps power the sun's million-degree upper atmosphere, the corona, as well as how this energy powers the solar wind constantly streaming off the sun to fill the entire solar system. Data visualizations courtesy of Mats Carlsson and Viggo Hansteen, University of Oslo, Norway This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11256 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 06 18 NASA Goddard <https://youtu.be/KI03NI5V23g> NASA LRO Fourth Anniversary

Four years ago, NASA made a long promised return visit to a place so legendary in the history of space exploration that it felt like a reunion with a long lost relative. With the liftoff of the Lunar Reconnaissance Orbiter (LRO), NASA made a bold statement about its commitment to exploring Earth's closest neighbor, as well as other parts of the solar system. In the years since it rose on its rocket, LRO has amassed a stunning array of data on a wide range of subjects. From vital research about the formation of the early solar system, to fundamental research about the structure and natural history of the Moon itself, LRO continues to deliver state-of-the-art information about a place that almost every human being has pondered as it drifts through our skies and our collective imaginations.

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2013 06 14 NASA Goddard <https://youtu.be/-OtUVDRLwM> NASA Peer into a Simulated Stellar-mass Black Hole

Music: "Lost in Space" by Lars Leonhard, courtesy of artist.
<http://www.lars-leonhard.de/>

[Transcript](#)
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This animation of supercomputer data takes you to the inner zone of the accretion disk of a stellar-mass black hole. Gas heated to 20 million degrees F as it spirals toward the black hole glows in low-energy, or soft, X-rays. Just before the gas plunges to the center, its orbital motion is approaching the speed of light. X-rays up to hundreds of times more powerful ("harder") than those in the disk arise from the corona, a region of tenuous and much hotter gas around the disk. Coronal temperatures reach billions of degrees. The event horizon is the boundary where all trajectories, including those of light, must go inward. Nothing, not even light, can pass outward across the event horizon and escape the black hole.

A new study by astronomers at NASA, Johns Hopkins University and the Rochester Institute of Technology confirms long-held suspicions about how stellar-mass black holes produce their highest-energy light.

By analyzing a supercomputer simulation of gas flowing into a black hole, the team finds they can reproduce a range of important X-ray features long observed in active black holes. Jeremy Schnittman, an astrophysicist at NASA's Goddard Space Flight Center in Greenbelt, Md., led the research.

Black holes are the densest objects known. Stellar black holes form

2013 06 13	NASA Goddard	https://youtu.be/OeFaHNVujB4	NASA MAVEN Imaging Ultraviolet Spectrograph	The philosophy of NASA's Mars Program has been "Follow the water," but "Where did the atmosphere go?" is still a lingering question. Although fluvial features such as dry riverbeds are visible on Mars, the atmosphere today is too thin to support liquid water, implying that Mars once had a thicker atmosphere that was lost to space. NASA's Mars Atmosphere and Volatile Evolution Mission, or MAVEN, will test this hypothesis. As part of its remote sensing instrument package, MAVEN's Imaging Ultraviolet Spectrograph (IUVS) will look at isotopic hydrogen ratios in the upper atmosphere of Mars, helping scientists to determine just how much water once flowed across the Red Planet. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11295 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 06 11	NASA Goddard	https://youtu.be/FMuswxghvZc	NASA Goddard Space Flight Center Welcomes Summer Interns	Description: NASA's Goddard Space Flight Center's 2013 college interns kicked off the summer at their orientation on Monday, June 3. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 06 10	NASA Goddard	https://youtu.be/6cU5Rt0rcGA	NASA Too Much, Too Little	http://www.nasa.gov/gpm Researchers need accurate and timely rainfall information to better understand and model where and when severe floods, frequent landslides and devastating droughts may occur. GPM's global rainfall data will help to better prepare and respond to a wide range of natural disasters. For more information, visit http://pmm.nasa.gov/iffloods and http://www.nasa.gov/GPM This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11091 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 06 06	NASA Goddard	https://youtu.be/xalHna152j4	NASA Tracking a Superstorm	Hurricane Sandy's near-surface winds are visible in this NASA GEOS-5 global atmosphere model computer simulation that runs from Oct. 26 to Oct. 31, 2012. The model works by dividing Earth's atmosphere into a virtual grid of stacked boxes. A supercomputer then solves mathematical equations inside each box to create a weather forecast predicting Sandy's structure, path and other traits. The NASA model not only produced an accurate track of Sandy, but also captured fine-scale details of the storm's changing intensity and winds. For more information, please visit: http://svs.gsfc.nasa.gov/vis/a010000/a011200/a011269/ http://gmao.gsfc.nasa.gov/research/atmosphericassim/tracking_hurricanes/ This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a030000/a030000/a030019/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 06 05	NASA Goddard	https://youtu.be/wkOISMeSkmQ	NASA South Up Moon Phase & Libration 2013 Moon Only	This visualization shows the Moon's phase and libration at hourly intervals throughout 2013, as viewed from the southern hemisphere. Each frame represents one hour. To learn more about this visualization, or to see what the Moon will look like at any hour in 2013, visit http://svs.gsfc.nasa.gov/goto?4067	Transcript Link

2013 06 05	NASA Goddard	https://youtu.be/l1g2gCAc3BQ	NASA South Up Moon Phase & Libration 2013 Moon with Additional Graphics	This visualization shows the Moon's phase and libration at hourly intervals throughout 2013, as viewed from the southern hemisphere. Each frame represents one hour. In addition, this visualization shows the Moon's orbit position, sub-Earth and subsolar points, and distance from the Earth at true scale. To learn more about this visualization, or to see what the Moon will look like at any hour in 2013, visit http://svs.gsfc.nasa.gov/goto?4067	Transcript Link

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2013 06 04	NASA Goddard	https://youtu.be/usDzh7l5HZw	NASA The Bedrock Beneath	Our understanding of what lies beneath the world's biggest ice sheet has taken another leap forward. In this video we strip away Antarctic ice to reveal a new, and much more detailed map of the bedrock below. This map, called Bedmap2, was compiled by the British Antarctic Survey and incorporates millions of new measurements, including substantial data sets from NASA's ICESat satellite and an airborne mission called Operation IceBridge.	Transcript Link

<http://www.nasa.gov/topics/earth/features/antarctic-map.html>

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2013 06 04	NASA Goddard	https://youtu.be/ynym4siVaFk	NASA A Tribute to Tim Samaras	This 2012 NASA video was done in connection with the GOES-R program. It features renowned researcher and storm chaser Tim Samaras. Samaras, his son Paul, and his chase partner Carl Young passed away in Oklahoma on Friday, May 31, 2013 after they were overtaken by a multiple-vortex tornado. This video serves as a tribute to Samaras and his work.	Transcript Link
2013 06 03	NASA Goddard	https://youtu.be/53yoklKAnDs	NASA A Swift Tour of the Nearest Galaxies in UV Light	Astronomers at NASA's Goddard Space Flight Center in Greenbelt, Md., and the Pennsylvania State University in University Park, Pa., have used NASA's Swift satellite to create the most detailed surveys of the Large and Small Magellanic Clouds, the two closest major galaxies, in ultraviolet light. Thousands of images were assembled into seamless portraits of the main body of each galaxy to produce the highest-resolution surveys of the Magellanic Clouds at ultraviolet wavelengths. The project was proposed by Stefan Immler, an astronomer at Goddard. The Large and Small Magellanic Clouds, or LMC and SMC for short, lie about 163,000 and 200,000 light-years away, respectively, and orbit each other as well as our own Milky Way galaxy. Compared to the Milky Way, the LMC has about one-tenth its physical size and only 1 percent of its mass. The SMC is only half the size of the LMC and contains about two-thirds of its mass. The new images reveal about a million ultraviolet sources within the LMC and about 250,000 in the SMC. Viewing in the ultraviolet allows astronomers to suppress the light of normal stars like the sun, which are not very bright at these higher energies, and provide a clearer picture of the hottest stars and star-formation regions. Only Swift's Ultraviolet/Optical Telescope, or UVOT, is capable of producing such high-resolution wide-field multi-color surveys in the	Transcript Link

2013 06 03	NASA Goddard	https://youtu.be/qYW4rTrAA5I	NASA Water on the Moon	Since the 1960's, scientists have suspected that frozen water could survive in cold, dark craters at the Moon's poles. While previous lunar missions have detected hints of water on the Moon, new data from the Lunar Reconnaissance Orbiter (LRO) pinpoints areas near the south pole where water is likely to exist. The key to this discovery is hydrogen, the main ingredient in water: LRO uses its Lunar Exploration Neutron Detector, or LEND, to measure how much hydrogen is trapped within the lunar soil. By combining years of LEND data, scientists see mounting evidence of hydrogen-rich areas near the Moon's south pole, strongly suggesting the presence of frozen water. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11292 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 05 20	NASA Goddard	https://youtu.be/OJgtt9BHvt0	NASA Mission Trailer IRIS Readies For a New Challenge	NASA is getting ready to launch a new mission, a mission to observe a largely unexplored region of the solar atmosphere that powers its dynamic million-degree outer atmosphere and drives the solar wind. In late June 2013, the Interface Region Imaging Spectrograph, or IRIS, will launch from Vandenberg Air Force Base, Calif. IRIS will advance our understanding of the interface region, a region in the lower atmosphere of the sun where most of the sun's ultraviolet emissions are generated. Such emissions impact the near-Earth space environment and Earth's climate. The interface region lies between the sun's 11,000-degree Fahrenheit, white-hot, visible surface, the photosphere, and the much hotter multi-million-degree upper corona. Interactions between the violently moving plasma and the sun's magnetic field in this area may be the source of the energy that heats the corona to some hundreds and occasionally thousands of times hotter than the sun's surface. IRIS will orbit Earth and use its ultraviolet telescope to obtain high-resolution solar images and spectra. IRIS observations along with advanced computer models will deepen our understanding of how heat and energy move through the lower atmosphere of the sun and other sun-like stars. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11256	Transcript Link

2013 05 16	NASA Goddard	https://youtu.be/iiDAoVnDSbw	NASA Come Fly With Landsat	Highlights of the Landsat Data Continuity Mission observations collected on April 19, 2013. The six selections in this video all come from the same continuous data collection as the satellite passed over Europe, the Middle East, and Africa. The selections in this video feature the Volga River in Russia, the Tigris and Euphrates Rivers in Iraq, the cities of Medina and Jeddah in Saudi Arabia, Mt. Elgon and Lake Victoria in Uganda and Kenya, and the Great Dyke of Zimbabwe. LDCM orbits at 16,800 mph (27,000 kph), taking slightly more than 20 minutes to cover the full span of Russia to Africa . The animation moves faster, covering 5,665 miles (9,117 kilometers) in nearly 16 minutes. A joint U.S. Geological Survey and NASA mission, LDCM launched on Feb. 11, 2013, and is still in its onboard calibration and checkout phase. The images shown here are considered test data. Once LDCM completes its check-out phase in late May, the satellite will be handed over to the USGS and renamed Landsat 8. After this point, the satellite will be considered operational and data will be available from USGS at no cost over the Internet. Story: http://www.nasa.gov/mission_pages/landsat/news/russia-south-africa.html For more information on Landsat: http://www.nasa.gov/landsat	Transcript Link
2013 05 16	NASA Goddard	https://youtu.be/GMJ4Vpg5jM4	NASA Come Fly With Landsat director's cut	The Landsat Data Continuity Mission offers a vicarious flight with a crisper view than our eyes alone would be capable of if we were in space. This animation, made from data collected on April 19, allows viewers to fly with the satellite in its final operating orbit. It comprises 56 Landsat scenes that have been stitched together into a seamless view from Russia to South Africa. Orbiting at 16,800 mph (27,000 kph), LDCM made this flight in slightly more than 20 minutes. The animation moves faster, covering 5,665 miles (9,117 kilometers) in nearly 16 minutes. You would have to be moving about 21,930 mph (35,290 kph) to get a similar view — only slightly slower than the Apollo astronauts who entered Earth's orbit from the moon at 25,000 mph (40,200 kph). A joint U.S. Geological Survey and NASA mission, LDCM launched on Feb. 11, 2013, and is still in its onboard calibration and checkout phase. The images shown here are considered test data. Once LDCM completes its check-out phase in late May, the satellite will be handed over to the USGS and renamed Landsat 8. After this point, the satellite will be considered operational and data will be available from USGS at no cost over the Internet. Story: http://www.nasa.gov/mission_pages/landsat/news/russia-south-africa.html For more information on Landsat: http://www.nasa.gov/landsat	Transcript Link

2013 05 16 NASA Goddard <https://youtu.be/U-VR6pNi70k> NASA OSIRIS-REx Investigates Asteroid Bennu [Transcript Link](#)

OSIRIS-REx will visit a Near Earth asteroid called Bennu and return with samples that may hold clues to the origins of the solar system and perhaps life itself. It will also investigate the asteroid's chance of impacting Earth in 2182. For the mission, NASA has selected the team led by Principal Investigator Dr. Dante Lauretta from the University of Arizona. NASA GSFC will manage the mission and Lockheed Martin Space Systems will build the spacecraft. Arizona State University will supply the OTES instrument; NASA GSFC will supply the OVIRS instrument; the Canadian Space Agency will supply the OLA instrument; the University of Arizona will supply the OCAMS camera suite; Harvard/MIT will supply the REXIS instrument; and Flight Dynamics will supply the KinetX instrument.

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2013 05 13 NASA Goddard <https://youtu.be/ywfewbzmvrw> NASA First X-Class Solar Flares of 2013 [Transcript Link](#)

On May 12-13 the sun erupted with an X1.7-class and an X2.8-class flare as well as two coronal mass ejections, or CMEs, off the upper left side of the sun. Solar material also danced and blew off the sun in what's called a prominence eruption, both in that spot and on the lower right side of the sun. This movie compiles imagery of this activity from NASA's Solar Dynamics Observatory and from the ESA/NASA Solar Heliospheric Observatory.

Music: "Long Range Cruise" by Lars Leonhard, courtesy of the artist and BineMusic. www.lars-leonhard.de

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2013 05 10	NASA Goddard	https://youtu.be/QaCG0wAJSY	NASA SDO Three Years in Three Minutes-- With Expert Commentary	This version of SDO:Three Years in Three Minutes is extended and narrated by NASA's Goddard Space Flight Center heliophysicist Alex Young. He highlights many interesting aspects of the video and points out several of the single-frame events that appear in it. Music: "A Lady's Errand of Love" - composed and performed by Martin Lass In the three years since it first provided images of the sun in the spring of 2010, NASA's Solar Dynamics Observatory (SDO) has had virtually unbroken coverage of the sun's rise toward solar maximum, the peak of solar activity in its regular 11-year cycle. This video shows those three years of the sun at a pace of two images per day. SDO's Atmospheric Imaging Assembly (AIA) captures a shot of the sun every 12 seconds in 10 different wavelengths. The images shown here are based on a wavelength of 171 Angstroms, which is in the extreme ultraviolet range and shows solar material at around 600,000 Kelvin. In this wavelength it is easy to see the sun's 25-day rotation as well as how solar activity has increased over three years. This data set is only a portion of the roughly 11-year solar cycle, which is ramping up to a maximum expected in 2013. During the course of the video, the sun subtly increases and decreases in apparent size. This is because the distance between the SDO spacecraft and the sun varies over time. The image is, however, remarkably consistent and stable despite the fact that SDO orbits the Earth at 6,876 miles per hour and the Earth orbits the sun at 67,062 miles per hour.	Transcript Link
2013 05 07	NASA Goddard	https://youtu.be/p_xYcMQe5KA	NASA NASA's Heliophysics Fleet Captures May 1, 2013 Prominence Eruption and CME	On May 1, 2013, NASA's Solar Dynamics Observatory (SDO) watched as an active region just around the East limb (left edge) of the sun erupted with a huge cloud of solar material -- a heated, charged gas called plasma. This eruption, called a coronal mass ejection, or CME, sent the plasma streaming out through the solar system. Viewing the sun in the extreme ultraviolet wavelength of 304 angstroms, SDO provided a beautiful view of the initial arc as it left the solar surface. Such eruptions soon leave SDO's field of view, but other satellites in NASA's Heliophysics fleet can pick them up, tracking such space weather to determine if they are headed toward Earth or spacecraft near other planets. With advance warning, many space assets can be put into safe mode and protect themselves from the effects of such particle radiation. In addition to the images captured by SDO, the May 1, 2013 CME was also observed by the ESA/NASA Solar and Heliospheric Observatory (SOHO). SOHO houses two overlapping coronagraphs -- telescopes where the bright sun is blocked by a disk so it doesn't overpower the fainter solar atmosphere -- and they both saw the CME continue outward. The LASCO C2 coronagraph shows the region out to about 2.5 million miles. The LASCO C3 coronagraph expands even farther out to around 13.5 million miles. Both of these instruments show the CME as it expands and becomes fainter on its trip away from the sun.	Transcript Link

2013 05 01	NASA Goddard	https://youtu.be/1QlpTNTufv4	NASA GROVER Heads to Greenland	For more information http://www.nasa.gov/topics/earth/features/grover.html NASA is ready to test a new student-designed rover at the Summit Camp in Greenland, a research station sitting on a two-mile thick sheet of ice. The Goddard Remotely Operated Vehicle for Exploration and Research, or GROVER, carries ground-penetrating radar capable of measuring snow accumulation over time. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11259 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 04 30	NASA Goddard	https://youtu.be/npVgL7Zd3M	NASA Fermi's Close Call with a Soviet Satellite	NASA scientists don't often learn that their spacecraft is at risk of crashing into another satellite. But when Julie McEnery, the project scientist for NASA's Fermi Gamma-ray Space Telescope, checked her email on March 29, 2012, she found herself facing this precise situation. While Fermi is in fine shape today, continuing its mission to map the highest-energy light in the universe, the story of how it sidestepped a potential disaster offers a glimpse at an underappreciated aspect of managing a space mission: orbital traffic control. As McEnery worked through her inbox, an automatically generated report arrived from NASA's Robotic Conjunction Assessment Risk Analysis (CARA) team based at NASA's Goddard Space Flight Center in Greenbelt, Md. On scanning the document, she discovered that Fermi was just one week away from an unusually close encounter with Cosmos 1805, a dead Cold-War era spy satellite. The two objects, speeding around Earth at thousands of miles an hour in nearly perpendicular orbits, were expected to miss each other by a mere 700 feet. Although the forecast indicated a close call, satellite operators have learned the hard way that they can't be too careful. The uncertainties in predicting spacecraft positions a week into the future can be much larger than the distances forecast for their closest approach. With a speed relative to Fermi of 27,000 mph, a direct hit by the 3,100-pound Cosmos 1805 would release as much energy as two and a half tons of high explosives, destroying both spacecraft. The update on Friday, March 30, indicated that the satellites would	Transcript Link

2013 04 22 NASA Goddard <https://youtu.be/piuKlpjmifg> NASA SDO Three Years of Sun in Three Minutes

Music: "A Lady's Errand of Love" - composed and performed by Martin Lass

[Transcript Link](#)

In the three years since it first provided images of the sun in the spring of 2010, NASA's Solar Dynamics Observatory (SDO) has had virtually unbroken coverage of the sun's rise toward solar maximum, the peak of solar activity in its regular 11-year cycle. This video shows those three years of the sun at a pace of two images per day.

SDO's Atmospheric Imaging Assembly (AIA) captures a shot of the sun every 12 seconds in 10 different wavelengths. The images shown here are based on a wavelength of 171 Angstroms, which is in the extreme ultraviolet range and shows solar material at around 600,000 Kelvin. In this wavelength it is easy to see the sun's 25-day rotation as well as how solar activity has increased over three years.

During the course of the video, the sun subtly increases and decreases in apparent size. This is because the distance between the SDO spacecraft and the sun varies over time. The image is, however, remarkably consistent and stable despite the fact that SDO orbits the Earth at 6,876 miles per hour and the Earth orbits the sun at 67,062 miles per hour.

Such stability is crucial for scientists, who use SDO to learn more about our closest star. These images have regularly caught solar flares and coronal mass ejections in the act, types of space weather that can send radiation and solar material toward Earth and

2013 04 16 NASA Goddard <https://youtu.be/x2db0Yy11dk> NASA Goddard Interns 2013

Every year, NASA's Goddard Space Flight Center in Greenbelt, Md. recruits hundreds of interns to spend the summer working on revolutionary missions featuring state-of-the-art technology. This orientation video introduces interns to NASA Goddard's Greenbelt campus.

[Transcript Link](#)

For information on applying to NASA internships for any of its 10 centers visit: <https://intern.nasa.gov/>

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2013 04 16 NASA Goddard <https://youtu.be/MVQI8RC67Yw> NASA Swift's Christmas Burst From Blue Supergiant Star Explosion

Gamma-ray bursts, or GRBs, are the most luminous and mysterious explosions in the universe. The blasts emit surges of gamma rays -- the most powerful form of light -- as well as X-rays, and they produce afterglows that can be observed at optical and radio energies. Swift, Fermi and other spacecraft detect an average of about one GRB each day.

[Transcript](#)
[Link](#)

Traditionally, astronomers have recognized two GRB types, short and long, based on the duration of the gamma-ray signal. Short bursts last two seconds or less and are thought to represent a merger of compact objects in a binary system, with the most likely suspects being neutron stars and black holes. Long GRBs may last anywhere from several seconds to several minutes, with typical durations falling between 20 and 50 seconds. These events are thought to be associated with the collapse of a star many times the sun's mass and the resulting birth of a new black hole.

Both scenarios give rise to powerful jets that propel matter at nearly the speed of light in opposite directions. As they interact with matter in and around the star, the jets produce a spike of high-energy light.

One event, GRB 101225A, exploded on Christmas Day in 2010 and produced high-energy emission for at least two hours. Subsequently nicknamed the "Christmas burst," the event's distance was unknown, which led two teams to arrive at radically different physical interpretations. One group concluded the blast was caused

2013 04 12 NASA Goddard <https://youtu.be/Ne8yJcXuU2U> NASA Our Wet Wide World

<http://www.nasa.gov/gpm>

[Transcript](#)
[Link](#)

[The Global Precipitation Measurement \(GPM\) is an international satellite mission to provide next-generation observations of rain and snow worldwide every three hours. NASA and the Japan Aerospace Exploration Agency \(JAXA\) will launch a "Core" satellite carrying advanced instruments that will set a new standard for precipitation measurements from space. The data they provide will be used to unify precipitation measurements made by an international network of partner satellites to quantify when, where, and how much it rains or snows around the world.](#)

[The GPM mission will help advance our understanding of Earth's water and energy cycles, improve the forecasting of extreme events that cause natural disasters, and extend current capabilities of using satellite precipitation information to directly benefit society.](#)

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2013 04 12 NASA Goddard <https://youtu.be/PPlrtgilgK8> NASA What Are Gamma Rays [Transcript Link](#)

What we call "light" is actually just a tiny fraction of the broad range of radiation on the electromagnetic radiation spectrum. The entire span stretches from very-low-energy radio waves through microwaves, infrared light, visible light, ultraviolet light, X rays, and finally to very-high-energy gamma rays. The processes producing photons (single particles of electromagnetic radiation) of each type of radiation differ, as do their energy, but all of the different forms of radiation are still just part of the electromagnetic spectrum's family. The only real difference between a gamma-ray photon and a visible-light photon is the energy. Gamma rays can have over a billion times the energy of the type of light visible to our eyes. They are produced by the hottest and most energetic objects in the universe, such as neutron stars and pulsars, supernova explosions, and regions around black holes. On Earth, gamma rays are generated by nuclear explosions, lightning, and the less dramatic activity of radioactive decay.

In fact, gamma rays are so energetic that they are harmful to life on Earth. Luckily, Earth's atmosphere absorbs gamma rays, preventing them from affecting life on the ground. But this poses a problem if you want to observe the Universe in gamma-ray light. The very atmosphere that protects us from gamma rays prevents us from directly observing them from the ground. Astronomical observations of gamma-ray sources are therefore done with high-altitude balloons or satellites, above the protective blanket of Earth's atmosphere.

2013 04 11 NASA Goddard <https://youtu.be/XjFi9KDM0AA> NASA Flying Low over Southeast Greenland [Transcript Link](#)

Few of us ever get to see Greenland's glaciers from 500 meters above the ice. But in this video — recorded on April 9, 2013 in southeast Greenland using a cockpit camera installed and operated by the National Suborbital Education and Research Center, or NSERC — we see what Operation IceBridge's pilots see as they fly NASA's P-3B airborne laboratory low over the Arctic. Following a glacier's sometimes winding flow line gives IceBridge researchers a perspective on the ice not possible from satellites which pass in straight lines overhead. By gathering such data, IceBridge is helping to build a continuous record of change in the polar regions.

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2013 04 11	NASA Goddard	https://youtu.be/6orv6v4ZLjQ	NASA For Good Measure	For more information: http://www.nasa.gov/mission_pages/GPM/news/gpm-for-good-measure-video.html The need for measuring the when and where and how much of precipitation goes beyond our weekend plans. We also need to know precipitation on a global scale. Rain gauges and radars are useful but are inconsistent and do not cover enough of the globe to provide accurate precipitation rates. The GPM constellation will cover the globe and give us a more comprehensive look at precipitation. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11219 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 04 05	NASA Goddard	https://youtu.be/yzMybcwHnBE	NASA Keeping a Close Eye on Jakobshavn	Jakobshavn Glacier, one of the fastest moving glaciers in Greenland, has been the focus of IceBridge survey flights for five consecutive years. Here, images from an IceBridge mission on Apr. 4, 2013 and video footage from the 2012 Arctic campaign show this rapidly changing ice stream and how IceBridge is using its suite of airborne instruments to collect crucial data on ice movement and how much glaciers like Jakobshavn might contribute to future sea level rise. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011200/a011245/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 04 05	NASA Goddard	https://youtu.be/7ixwZQPyaWE	NASA SEXTANT Navigating by Cosmic Beacon	SEXTANT: Navigating by Cosmic Beacon Imagine a technology that would allow space travelers to transmit gigabytes of data per second over interplanetary distances or to navigate to Mars and beyond using powerful beams of light emanating from rotating neutron stars. The concept isn't farfetched. In fact, Goddard astrophysicists Keith Gendreau and Zaven Arzoumanian plan to fly a multi-purpose instrument on the International Space Station to demonstrate the viability of two groundbreaking navigation and communication technologies and, from the same platform, gather scientific data revealing the physics of dense matter in neutron stars. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a010800/a010857/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 04 05	NASA Goddard	https://youtu.be/lin75TmQHA	NASA What is Fermi	The Fermi Gamma-ray Space Telescope is a NASA observatory designed to reveal the high-energy universe in never-before-seen detail. With Fermi, astronomers have a unique tool to explore high-energy processes associated with solar flares, spinning neutron stars, outbursts from black holes, exploding stars, supernova remnants and energetic particles to gain insight into how the universe works. Fermi detects gamma rays, the most powerful form of light. How powerful? The energy of visible light falls between 2 and 3 electron volts, but the gamma rays detected by Fermi have energies several thousand to billions of times greater. Fermi carries two instruments. Its Large Area Telescope (LAT) is vastly more capable than instruments flown previously, with higher angular resolution, wider field of view, greater energy resolution and range, and more precise time resolution for each gamma ray detected. The LAT tracks gamma rays with energies from 20 million electron volts (MeV) to more than 300 billion electron volts (GeV). Fermi makes one orbit around Earth every 96 minutes and points the LAT upward at all times so our home planet never blocks its view of the cosmos. Scientists deliberately nod the LAT in a repeating pattern from one orbit to the next. It first looks north on one orbit, south on the next, and then north again, which allows the LAT to cover the entire sky in just two orbits. (For a LAT's-eye view of these motions, see this	Transcript Link

2013 04 03	NASA Goddard	https://youtu.be/G4BP0EmugtM	NASA Sea Ice Max 2013 An Interesting Year for Arctic Sea Ice	After a record melt season, an Arctic cyclone, and a fascinating fracturing event, Arctic sea ice has reached its maximum extent for the year. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11244 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 04 02	NASA Goddard	https://youtu.be/sckOSMf-LpY	NASA Earth from Orbit 2012	A look back at the best views of our planet from space in the last year, including true color satellite images, Earth science data visualizations, time lapses from the International Space Station, and computer models. http://www.nasa.gov/externalflash/earthmonth2013/index.html NPP "Blue Marble" http://www.nasa.gov/multimedia/imagegallery/image_feature_2159.html Time-lapse from International Space Station http://eol.jsc.nasa.gov/videos/crewearthobservationsvideos/ NPP daytime view followed by night views http://svs.gsfc.nasa.gov/goto?4019 Arctic Peninsula http://earthobservatory.nasa.gov/IOTD/view.php?id=77791 Linear Dunes http://earthobservatory.nasa.gov/IOTD/view.php?id=78151 Grande Terre http://earthobservatory.nasa.gov/IOTD/view.php?id=79389 River Outflow to the Kara Sea http://earthobservatory.nasa.gov/IOTD/view.php?id=79389	Transcript Link

2013 03 29	NASA Goddard	https://youtu.be/40wICUY5VmU	NASA Comet ISON's Path Through the Solar System	Comet C/2012 S1 (ISON) may become one of the most dazzling in decades when it rounds the sun later this year. Like all comets, ISON is a clump of frozen gases mixed with dust. Often described as "dirty snowballs," comets emit gas and dust whenever they venture near enough to the sun that the icy material transforms from a solid to gas, a process called sublimation. Jets powered by sublimating ice also release dust, which reflects sunlight and brightens the comet. Based on ISON's orbit, astronomers think the comet is making its first-ever trip through the inner solar system. Before beginning its long fall toward the sun, the comet resided in the Oort comet cloud, a vast shell of perhaps a trillion icy bodies that extends from the outer reaches of the planetary system to about a third of the distance to the star nearest the sun. Formally designated C/2012 S1 (ISON), the comet was discovered on Sept. 21, 2012, by Russian astronomers Vitali Nevski and Artyom Novichonok using a telescope of the International Scientific Optical Network located near Kislovodsk. The first of several intriguing observing opportunities occurs on Oct. 1, when the inbound comet passes about 6.7 million miles (10.8 million km) from Mars. During this time, the comet may be observable to NASA and ESA spacecraft now working at Mars, including the Curiosity rover. Fifty-eight days later, on Nov. 28, ISON will make a sweltering	Transcript Link
2013 03 26	NASA Goddard	https://youtu.be/kRDaAfiYZQk	NASA MAVEN Magnetometer	When you navigate with a compass you can orient yourself thanks to Earth's global magnetic field. But on Mars, if you were to walk around with a compass it would haphazardly point from one anomaly to another, because the Red Planet does not possess a global magnetosphere. Scientists think that this lack of a protective magnetic field may have allowed the solar wind to strip away the Martian atmosphere over billions of years, and now NASA's MAVEN spacecraft will study this process in detail with its pair of ring core fluxgate magnetometers. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11224 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 03 21	NASA Goddard	https://youtu.be/oru_uz_fk2Y	NASA Operation IceBridge Wheels Down in Thule	NASA's Operation IceBridge begins another season of science over the Arctic with survey flights out of Greenland. For the next several weeks, IceBridge will carry out a research campaign — the result of months of planning and discussion — to study Arctic sea ice, glaciers, and ice sheets. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11227 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 03 18	NASA Goddard	https://youtu.be/10QMjgScmoA	NASA STEREO Watches the Sun Blast Comet PanSTARRS	This movie from the Solar Terrestrial Relations Observatory (STEREO) shows comet PanSTARRS as it moved around the sun from March 10-15,2013 (repeated three times). The images were captured by the Heliospheric Imager (HI), an instrument that looks to the side of the sun to watch coronal mass ejections (CMEs) as they travel toward Earth, which is the unmoving bright orb on the right. The bright light on the left comes from the sun and the bursts from the left represent the solar material erupting off the sun in a CME. While it appears from STEREO's point of view that the CME passes right by the comet, the two are not lying in the same plane, which scientists know since the comet's tail didn't move or change in response to the CME's passage. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11226 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 03 18	NASA Goddard	https://youtu.be/b4WC8pVEnBw	NASA Aquarius Tour de la Salinidad Superficial Del Mar	Recorrido narrado de la información sobre la salinidad superficial de los océanos recogida por el instrumento Aquarius de la NASA durante su primer año de funcionamiento. Algunas de las características especiales destacadas en el vídeo son: el Atlántico Norte, el Pacífico Oriental, la desembocadura del río Amazonas, la corriente de Labrador, y el Océano Índico. Para más información sobre Aquarius, visita: http://www.nasa.gov/mission_pages/aquarius/news/data-first-year-es.html SVS link: http://svs.gsfc.nasa.gov/vis/a000000/a004000/a004045/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 03 14	NASA Goddard	https://youtu.be/B5V-srBj1Vk	NASA Jupiter's Hot Spots	Jupiter's bright Equatorial Zone swirls with dark patches, dubbed "hot spots" for their infrared glow. These holes in the ammonia clouds at the top of the atmosphere allow a glimpse into Jupiter's darker, hotter layers below. In 1995 NASA's Galileo spacecraft dropped a probe directly into a hot spot, taking the first and only in situ measurements of Jupiter's atmosphere. Now, movies recorded by NASA's Cassini spacecraft reveal that hot spots are not just local weather phenomena, but are in fact linked to much larger-scale atmospheric structures called Rossby waves. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11204 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 03 06	NASA Goddard	https://youtu.be/E4ml-AffSI8	NASA The Moon's Permanently Shadowed Regions	As you watch the Moon over the course of a month, you'll notice that different features are illuminated by the Sun at different times. However, there are some parts of the Moon that never see sunlight. These areas are called permanently shadowed regions, and they appear dark because unlike on the Earth, the axis of the Moon is nearly perpendicular to the direction of the sun's light. The result is that the bottoms of certain craters are never pointed toward the Sun, with some remaining dark for over two billion years. However, thanks to new data from NASA's Lunar Reconnaissance Orbiter, we can now see into these dark craters in incredible detail. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11218 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 03 04	NASA Goddard	https://youtu.be/wceahqjAa7w	NASA Cosmic Ice	NASA scientists at the Goddard Cosmic Ice Lab are studying a kind of chemistry almost never found on Earth. The extreme cold, hard vacuum, and high radiation environment of space allows the formation of an unstructured form of solid water called amorphous ice. Often particles and organic compounds are trapped in this ice that could provide clues to life in the universe. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011200/a011217/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 02 28	NASA Goddard	https://youtu.be/XKCMaJBXmzY	NASA Van Allen Probes Reveal Previously Undetected Radiation Belt Around Earth	These two nearly identical spacecraft launched in August 2012 and with only six months in operation, they may well be rewriting science textbooks. The probes study the Van Allen belts, gigantic radiation belts surrounding Earth, which can swell dramatically in response to incoming energy from the sun, engulfing satellites and spacecraft and creating potential threats to manned space flight. James Van Allen discovered the radiation belts during the 1958 launch of the first successful U.S. satellite. Subsequent missions have observed parts of the belts, but what causes the dynamic variation in the region has remained something of a mystery. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11212 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 02 27	NASA Goddard	https://youtu.be/5xQP_B18vMw	NASA Aquarius One Year Observing the Salty Seas	This video provides a global tour of sea surface salinity using measurements taken by NASA's Aquarius instrument aboard the Aquarius/SAC-D spacecraft, from December 2011 through December 2012. Red represents areas of high salinity, while blue represents areas of low salinity. Aquarius is a focused effort to measure sea surface salinity and will provide the global view of salinity variability needed for climate studies. The mission is a collaboration between NASA and the Space Agency of Argentina (Comisión Nacional de Actividades Espaciales). View the press release: http://www.nasa.gov/mission_pages/aquarius/news/data-first-year.html This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a000000/a004000/a004045/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 02 27	NASA Goddard	https://youtu.be/RJVnZnZUUYc	NASA Aquarius Observations of Sea Surface Salinity	This visualization shows changes in global sea surface salinity, as measured by NASA's Aquarius instrument aboard the Aquarius/SAC-D spacecraft, from December 2011 through December 2012. Red represents areas of high salinity, while blue represents areas of low salinity. Aquarius is a focused effort to measure sea surface salinity and will provide the global view of salinity variability needed for climate studies. The mission is a collaboration between NASA and the Space Agency of Argentina (Comisión Nacional de Actividades Espaciales). View the press release: http://www.nasa.gov/mission_pages/aquarius/news/data-first-year.html This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a000000/a004000/a004046/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2013 02 27	NASA Goddard	https://youtu.be/QpMeEdmZPM	NASA Fermi Traces a Celestial Spirograph	NASA's Fermi Gamma-ray Space Telescope orbits our planet every 95 minutes, building up increasingly deeper views of the universe with every circuit. Its wide-eyed Large Area Telescope (LAT) sweeps across the entire sky every three hours, capturing the highest-energy form of light -- gamma rays -- from sources across the universe. These range from supermassive black holes billions of light-years away to intriguing objects in our own galaxy, such as X-ray binaries, supernova remnants and pulsars. Now a Fermi scientist has transformed LAT data of a famous pulsar into a mesmerizing movie that visually encapsulates the spacecraft's complex motion. Pulsars are neutron stars, the crushed cores of massive suns that destroyed themselves when they ran out of fuel, collapsed and exploded. The blast simultaneously shattered the star and compressed its core into a body as small as a city yet more massive than the sun. One pulsar, called Vela, shines especially bright for Fermi. It spins 11 times a second and is the brightest persistent source of gamma rays the LAT sees. The movie renders Vela's position in a fisheye perspective, where the middle of the pattern corresponds to the central and most sensitive portion of the LAT's field of view. The edge of the pattern is 90 degrees away from the center and well beyond what scientists regard as the effective limit of the LAT's vision. The movie tracks both Vela's position relative to the center of the LAT's field of view	Transcript Link

2013 02 26 NASA Goddard <https://youtu.be/4ZovlQifSGI> NASA Space Weather Vocabulary

We are all familiar with weather on Earth, but how much do you know about weather in space? Suitable for all ages, this introduction to space weather covers vocabulary like coronal mass ejection (CME), solar wind, and solar flare. It also outlines potential effects of solar storms on our planet.

[Transcript](#)
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2013 02 26 NASA Goddard <https://youtu.be/Rue2fk9pDU8> NASA El Clima Espacial Vocabulario

This video is available in English and Spanish, both with English subtitles.

[Transcript](#)
[Link](#)

El vídeo está disponible en español e inglés, ambas versiones con subtítulos en inglés.

Todo el mundo está familiarizado con el clima de la Tierra pero, ¿cuánto sabes sobre meteorología espacial? Este video introductorio al clima espacial, apropiado para todas las edades y niveles, explica términos científicos como eyección de masa coronal, viento solar o erupción solar. También provee una descripción general sobre los efectos potenciales que tienen las tormentas solares en nuestro planeta.

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2013 02 20	NASA Goddard	https://youtu.be/HFT7ATLQOx8	NASA Fiery Looping Rain on the Sun	Eruptive events on the sun can be wildly different. Some come just with a solar flare, some with an additional ejection of solar material called a coronal mass ejection (CME), and some with complex moving structures in association with changes in magnetic field lines that loop up into the sun's atmosphere, the corona. On July 19, 2012, an eruption occurred on the sun that produced all three. A moderately powerful solar flare exploded on the sun's lower right hand limb, sending out light and radiation. Next came a CME, which shot off to the right out into space. And then, the sun treated viewers to one of its dazzling magnetic displays -- a phenomenon known as coronal rain. Over the course of the next day, hot plasma in the corona cooled and condensed along strong magnetic fields in the region. Magnetic fields, themselves, are invisible, but the charged plasma is forced to move along the lines, showing up brightly in the extreme ultraviolet wavelength of 304 Angstroms, which highlights material at a temperature of about 50,000 Kelvin. This plasma acts as a tracer, helping scientists watch the dance of magnetic fields on the sun, outlining the fields as it slowly falls back to the solar surface. The footage in this video was collected by the Solar Dynamics Observatory's AIA instrument. SDO collected one frame every 12 seconds, and the movie plays at 30 frames per second, so each second in this video corresponds to 6 minutes of real time. The video covers 12:30 a.m. EDT to 10:00 p.m. EDT on July 19, 2012.	Transcript Link
2013 02 14	NASA Goddard	https://youtu.be/C3ue7cEocvI	NASA Fermi Proves Supernova Remnants Produce Cosmic Rays	A new study using observations from NASA's Fermi Gamma-ray Space Telescope reveals the first clear-cut evidence that the expanding debris of exploded stars produces some of the fastest-moving matter in the universe. This discovery is a major step toward meeting one of Fermi's primary mission goals. Cosmic rays are subatomic particles that move through space at nearly the speed of light. About 90 percent of them are protons, with the remainder consisting of electrons and atomic nuclei. In their journey across the galaxy, the electrically charged particles become deflected by magnetic fields. This scrambles their paths and makes it impossible to trace their origins directly. Through a variety of mechanisms, these speedy particles can lead to the emission of gamma rays, the most powerful form of light and a signal that travels to us directly from its sources. Two supernova remnants, known as IC 443 and W44, are expanding into cold, dense clouds of interstellar gas. This material emits gamma rays when struck by high-speed particles escaping the remnants. Scientists have been unable to ascertain which particle is responsible for this emission because cosmic-ray protons and electrons give rise to gamma rays with similar energies. Now, after analyzing four years of data, Fermi scientists see a gamma-ray feature from both remnants that, like a fingerprint, proves the	Transcript Link

2013 02 12 NASA Goddard <https://youtu.be/ueBI9XFNB8> NASA Freshwater Losses In The Middle East

The visualization shows variations in total water storage from normal, in millimeters, in the Tigris and Euphrates river basins, as measured by NASA's Gravity Recovery and Climate Experiment (GRACE) satellites, from January 2003 through December 2009. Reds represent drier conditions, while blues represent wetter conditions. The effects of the seasons are evident, as is the major drought that hit the region in 2007. The majority of the water lost was due to reductions in groundwater caused by human activities. By periodically measuring gravity regionally, GRACE tells scientists how much water storage changes over time.

[Transcript Link](#)

View the press release:

http://www.nasa.gov/mission_pages/Grace/news/grace20130212.html

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2013 02 11 NASA Goddard <https://youtu.be/dVCe5eYvu0> NASA SDO Year Three

On Feb. 11, 2010, NASA launched an unprecedented solar observatory into space. The Solar Dynamics Observatory (SDO) flew up on an Atlas V rocket, carrying instruments that scientists hoped would revolutionize observations of the sun. If all went according to plan, SDO would provide incredibly high-resolution data of the entire solar disk almost as quickly as once a second.

[Transcript Link](#)

When the science team released its first images in April of 2010, SDO's data exceeded everyone's hopes and expectations, providing stunningly detailed views of the sun. In the three years since then, SDO's images have continued to show breathtaking pictures and movies of eruptive events on the sun. Such imagery is more than just pretty, they are the very data that scientists study. By highlighting different wavelengths of light, scientists can track how material on the sun moves. Such movement, in turn, holds clues as to what causes these giant explosions, which, when Earth-directed, can disrupt technology in space.

SDO is the first mission in a NASA's Living With a Star program, the goal of which is to develop the scientific understanding necessary to address those aspects of the sun-Earth system that directly affect our lives and society. NASA's Goddard Space Flight Center in Greenbelt, Md. built, operates, and manages the SDO spacecraft for NASA's Science Mission Directorate in Washington, D.C.

Music: Mistake (Davide Rossi Re-Work - Instrumental) courtesy of Moby Gratis.

2013 02 08 NASA Goddard <https://youtu.be/hmDZPL4Yo6I> NASA RRM Mission to the Future Delivers the Goods

Fill'er up!

[Transcript](#)
[Link](#)

That's the promise of robotic refueling on orbit: aging satellites can get a new lease on life from a robotic machine making a service call. Or, at least, the dream of such a system got dramatically closer after NASA's robotic mission success. NASA had an idea, and in a series of extraordinary tests, decided to demonstrate that technologies for servicing satellites in space had evolved to levels of material value. Extending the lifespans of satellites already at work hundreds, even thousands of miles above the Earth, could soon be a reality. In a six-day test at the International Space Station called the Robotic Refueling Mission, they tried out tools and techniques for repairing and refueling satellites without a single astronaut in sight. It's a story with historical roots dating back to the 1980's, and with RRM's twenty-first century on-orbit success, it shines a light on bold imaginings for a space-faring future that suddenly doesn't seem so far ahead. In this documentary we look at the lifecycle of this extraordinary initiative.

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2013 02 08 NASA Goddard <https://youtu.be/NpSUJwKBP4I> NASA Preview LDCM's Liftoff!

LDCM is the Landsat Data Continuity Mission, continuing the Landsat program's 40-year data record of monitoring Earth's landscapes from space. LDCM will expand and improve on that record with observations that advance a wide range of Earth sciences and contribute to the management of agriculture, water and forest resources. LDCM will launch from Vandenberg Air Force Base aboard an Atlas V-401 rocket on February 11, 2013.

[Transcript](#)
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2013 02 07 NASA Goddard <https://youtu.be/vizv4HlEmnQ> NASA OSIRIS-REx Targets NEO [Transcript](#) [Link](#)

Near-Earth Objects, or NEO's, cross our planet's orbit on a regular basis, but only a handful are large enough to pose a threat. One of these objects is asteroid 1999 RQ36, a "leftover" from the formation of our solar system four-and-a-half billion years ago. In an effort to better understand NEO's and our planet's own origins, NASA is sending the OSIRIS-REx spacecraft to asteroid 1999 RQ36 to study the evolution of its orbit and to retrieve a sample for return to Earth.

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2013 02 01 NASA Goddard <https://youtu.be/M2MrIMPrM> NASA The Changing Chesapeake

The Chesapeake Bay receives water from the 64,000 square miles of land surrounding the bay and Landsat satellites are a critical and invaluable tool for characterizing the landscape and mapping it over time. Landsat data provides a baseline of observations for science about how human activities on the land affect water quality, affect wildlife habitat, affect air quality. Without it we wouldn't be able to really understand how sources of nutrients and sediment have changed and where they are in the Chesapeake Bay. [Transcript](#) [Link](#)

The Landsat Program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey.

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2013 01 31 NASA Goddard https://youtu.be/D9DaPbrF_A NASA Ring-shaped Prominence Erupts from Sun An Earth-directed coronal mass ejection (CME) on Jan. 31, 2013 was accompanied by a large prominence eruption best visible in light with a wavelength of 304 angstroms. NASA's Solar Dynamics Observatory captured this footage from 10 p.m. EST on Jan. 30, 2013, to 4 a.m. the next morning. In this video, the imaging cadence is one frame every 36 seconds. [Transcript Link](#)

Experimental NASA research models, based on observations from the Solar Terrestrial Relations Observatory (STEREO) and ESA/NASA's Solar and Heliospheric Observatory, show that the CME left the sun at speeds of around 575 miles per second, which is a fairly typical speed for CMEs. Historically, CMEs at this speed are mild.

Not to be confused with a solar flare, a CME is a solar phenomenon that can send solar particles into space and reach Earth one to three days later.

Earth-directed CMEs can cause a space weather phenomenon called a geomagnetic storm, which occurs when they connect with the outside of the Earth's magnetic envelope, the magnetosphere, for an extended period of time. In the past, CME's such as this have caused auroras near the poles but didn't disrupt electrical systems on Earth or interfere with GPS or satellite-based communications systems.

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2013 01 31 NASA Goddard https://youtu.be/E9ht_Y7qzdU NASA Operation IceBridge Getz Mission in 3 Minutes Can you stuff all the sights and science of a 12-hour mission into just three minutes? Maybe not, but here's our first try, chronicling NASA's recent flight to Antarctica's remote Getz Ice Shelf, where Operation IceBridge measured everything from the ice surface to the bedrock below, flew low over giant icebergs, and even scanned a lengthy new crack in the ice. [Transcript Link](#)

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2013 01 31	NASA Goddard	https://youtu.be/oxkFk7EDVg	NASA First Sightings of How a CME Forms	On July 18, 2012, a fairly small explosion of light burst off the lower right limb of the sun. Such flares often come with an associated eruption of solar material, known as a coronal mass ejection or CME -- but this one did not. Something interesting did happen, however. Magnetic field lines in this area of the sun's atmosphere, the corona, began to twist and kink, generating the hottest solar material -- a charged gas called plasma -- to trace out the newly-formed slinky shape. The plasma glowed brightly in extreme ultraviolet images from the Atmospheric Imaging Assembly (AIA) aboard NASA's Solar Dynamics Observatory (SDO) and scientists were able to watch for the first time the very formation of something they had long theorized was at the heart of many eruptive events on the sun: a flux rope. Eight hours later, on July 19, the same region flared again. This time the flux rope's connection to the sun was severed, and the magnetic fields escaped into space, dragging billions of tons of solar material along for the ride -- a classic CME. More than just gorgeous to see, such direct observation offers one case study on how this crucial kernel at the heart of a CME forms. Such flux ropes have been seen in images of CMEs as they fly away from the sun, but it's never been known -- indeed, has been strongly debated -- whether the flux rope formed before or in conjunction with a CME's launch. This case shows a clear-cut example of the flux rope forming ahead of time.	Transcript Link
2013 01 29	NASA Goddard	https://youtu.be/qUmv3aAdcA	NASA Continuing Landsat's 40-Year Legacy	The Landsat Data Continuity Mission (LDCM) is a collaboration between NASA and the U.S. Geological Survey that will continue the Landsat Program's 40-year data record of monitoring Earth's landscapes from space. LDCM will expand and improve on that record with observations that advance a wide range of Earth sciences and contribute to the management of agriculture, water and forest resources. For more information, visit http://www.nasa.gov/landsat and http://landsat.usgs.gov This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11166 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2013 01 29 NASA Goddard <https://youtu.be/ABVgzgloDwA> NASA TDRS Continuing The Fleet

NASA is preparing to launch the first in a series of three third generation advanced Tracking and Data Relay Satellites, known as TDRS-K. This latest addition to the fleet of seven will augment a space communications network that provides the critical path for high data-rate communication to the International Space Station, Hubble Space Telescope, past shuttle missions and a host of other spacecraft.

[Transcript](#)
[Link](#)

It has been 10 years since NASA last launched a TDRS. This launch is the beginning of a welcome replenishment to the space network, which has served numerous national and international space missions since 1983.

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2013 01 25 NASA Goddard <https://youtu.be/G4Fh1fkVEYI> NASA NASA Upgrades Chamber A to enable testing of Webb Telescope

When the next-generation space telescope was being designed, engineers had to ensure there was a place large enough to test it, considering it's as big as a tennis court. That honor fell upon the famous "Chamber A" in the thermal-vacuum test facility at NASA's Johnson Space Center in Houston, Texas.

[Transcript](#)
[Link](#)

NASA's "Chamber A" thermal vacuum testing chamber famous for being used during Apollo missions has now been upgraded and remodeled to accommodate testing the James Webb Space Telescope.

Chamber A is now the largest high-vacuum, cryogenic-optical test chamber in the world, and made famous for testing the space capsules for NASA's Apollo mission, with and without the mission crew.

For three years, NASA Johnson engineers have been building and remodeling the chamber interior for the temperature needed to test the Webb. Testing will confirm the telescope and science instrument systems will perform properly together in the cold temperatures of space. Additional test support equipment includes mass spectrometers, infrared cameras and television cameras so engineers can keep an eye on the Webb while it's being tested.

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2013 01 23 NASA Goddard <https://youtu.be/DLXDRUSG5fE> NASA RRM The Main Event In orbit at 18,000 miles an hour, day and night change places every 90 minutes. Darkness and light, sleep and wake: it's tough to focus on precise tasks floating outside the International Space Station. But not if you're a robot. NASA's Robotic Refueling Mission puts that proposition to the test, with a first-of-its-kind demonstration of a simulated fuel transfer in space, no human in sight. But first, there's a pile of prep before the operation can commence. [Transcript Link](#)

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2013 01 17 NASA Goddard <https://youtu.be/FXeENwPr1lc> NASA Mona Lisa on the Moon As part of the first demonstration of laser communication with a satellite at the moon, scientists with NASA's Lunar Reconnaissance Orbiter (LRO) beamed an image of the Mona Lisa to the spacecraft from Earth. [Transcript Link](#)

The iconic image traveled nearly 240,000 miles in digital form from the Next Generation Satellite Laser Ranging (NGSLR) Station at NASA's Goddard Space Flight Center in Greenbelt, MD, to the Lunar Orbiter Laser Altimeter (LOLA) instrument on the spacecraft. By transmitting the image piggyback on laser pulses that are routinely sent to track LOLA's position, the team achieved simultaneous laser communication and tracking.

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2013 01 15	NASA Goddard	https://youtu.be/J3BfIJx6TFk	NASA Summer Extremes Getting More Extreme	People who live north of the equator are experiencing both higher summer temperatures and a greater frequency of extreme bouts of heat, according to a NASA statistical analysis of decades of Northern Hemisphere temperature data. A basic bell curve shows breakdown of these temperatures. Initially, the mean summer temperature for the Northern Hemisphere from 1951-1980 is centered at the top of the curve, with the frequency of cooler summers in blue and the frequency of warmer summers in red. Watch how the frequency of hotter temperatures increases as the visualization moves forward in time, showing how hotter summer temperatures are the new normal. Data source: Goddard Institute for Space Studies Credit: NASA/Goddard Space Flight Center Scientific Visualization Studio For more information on this analysis, go to: http://www.nasa.gov/topics/earth/features/warming-links.html This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?3975 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2013 01 15	NASA Goddard	https://youtu.be/NnjTnUm9t-0	NASA NASA's Analysis of 2012 Global Temperature	NASA's analysis of Earth's surface temperature found that 2012 ranked as the ninth warmest year since 1880. NASA scientists at the Goddard Institute for Space Studies (GISS) compare the average global temperature each year to the average from 1951 to 1980. This 30-year period provides a baseline from which to measure the warming Earth has experienced due to increasing atmospheric levels of heat-trapping greenhouse gases. While 2012 was the ninth warmest year on record, all 10 of the warmest years in the GISS analysis have occurred since 1998, continuing a trend of temperatures well above the mid-20th century average. The record dates back to 1880 because that is when there were enough meteorological stations around the world to provide global temperature data. Data source: Goddard Institute for Space Studies Credit: NASA/Goddard Space Flight Center Scientific Visualization Studio For more information on the GISS temperature analysis, go to: http://www.nasa.gov/topics/earth/features/2012-temps.html This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?4030 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link

2013 01 15 NASA Goddard <https://youtu.be/lpZTarbKGjE> NASA RRM Day One Captured!

Day One of NASA's Robotic Refueling Mission (RRM) wraps, and mission planners are giving it high marks. Designed to push the boundaries of what robots can do in space, the five-day RRM effort has ambitious goals. Operational managers at the Goddard Space Flight Center and the Johnson Space Center manipulate the Dextre robot arm on International Space Station, overcoming obstacles and successfully removing a mechanical cap without a human hand in sight.

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2013 01 14 NASA Goddard <https://youtu.be/6eh4EqVCXLk> NASA Landsat Senses a Disturbance in the Forest

This is a sequence of Landsat-based data in the Pacific Northwest. There is one data set for each year representing an aggregate of the approximate peak of the growing season (around August). The data was created using a sophisticated algorithm called LandTrendr. The visualization zooms into the Portland area showing different types of land such as agricultural, urban, and forests. We move south to a region that was evergreen forest for a number of years (blue), then was clear cut in 1999 (orange), then began to regrow (yellow). A graph shows the history for a particular location in the clearcut as the years repeat. The dots represent the original data from Landsat; and, the line represents LandTrendr analysis. Subsequent sequences examine the effects of insect infestations in the Three Sisters region, southwest of Mt. Hood, and east of Mt. Rainier. The final piece demonstrates the visible differences in management policy between forests inside and outside of National Park Service boundaries.

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2013 01 10	NASA Goddard	https://youtu.be/XkF_m2gA9d0	NASA Space Station Robots Test Techniques of the Future	In an important demonstration of new technical methodologies, from January 14-24, 2013, NASA engineers will try to simulate the transfer of fuel from one vehicle to another, in space, with nothing but robots doing the physical work. Called the Robotic Refueling Mission, it's a major step on the road to developing a robust suite of essential robotic capabilities in space. This International Space Station demo may one day substantially impact the many satellites that deliver products Americans rely upon daily, such as weather reports, cell phones and television news. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a010900/a010988/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard Learn more about the Robotic Refueling Mission at: http://ssco.gsfc.nasa.gov/rrm_refueling_task.html	Transcript Link
2012 12 26	NASA Goddard	https://youtu.be/6EAOU2msE7k	NASA TDRS Communicating Critical Data	As a vital information pipeline for space-based research and exploration ambitions, the TDRS constellation fulfills NASA's broadest communication demands. Now into it's fourth operational decade, the TDRS legacy continues to be communications excellence. The addition of the third generation of spacecraft will replenish the constellation and ensure that the critical lifeline of space-to-ground communication support will be available for many years to come. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11164 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 12 14	NASA Goddard	https://youtu.be/UtLvpYLRXeo	NASA Operación IceBridge Explorando la Antártida	Operación IceBridge: Explorando la Antártida Published on Dec. 13, 2012 Operación IceBridge es una misión aérea de la NASA dedicada a estudiar cambios en el hielo marino y terrestre en ambos polos del planeta. En octubre y noviembre de 2012, IceBridge completó su cuarta campaña antártica, consistente en un total de dieciséis vuelos. Doce de las misiones estudiaron cambios en el hielo terrestre y las cuatro restantes observaron el hielo que cubre los mares de Weddell, Bellingshausen y Amundsen, en la zona oeste del continente. Para aprender más sobre IceBridge, visita este blog en español (una colaboración de NASA y National Public Radio): http://www.sciencefriday.com/blogs/?series=22&audience=3 NASA OPERATION ICEBRIDGE: Exploring Antarctica Operation IceBridge is an airborne NASA mission aimed at studying changes in land and sea ice at Earth's poles. In October and November 2012, IceBridge completed its fourth Antarctic campaign. Twelve of the campaign's missions focused on changes in land ice, while the remaining four studied the ice that covers the seas of Weddell, Bellingshausen and Amundsen, in the west coast of the continent. To learn more about IceBridge, visit this blog in Spanish (a	Transcript Link
2012 12 10	NASA Goddard	https://youtu.be/xHCMcB5ii3g	NASA GPM Enters Thermal Vacuum Chamber	On Tuesday Nov. 13, 2012, the GPM core observatory was moved from the clean room to the thermal vacuum chamber. The spacecraft, wrapped in protective blankets, made the short trip by crane across the testing facility where it was then lowered into the 40-foot (12 meter) diameter test chamber. http://pmm.nasa.gov http://www.nasa.gov/GPM http://www.twitter.com/NASA_Rain http://www.facebook.com/NASA.Rain This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11134 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 12 06 NASA Goddard <https://youtu.be/N2tngd9F8N4> NASA Fermi Finds Radio Bursts from Terrestrial Gamma-ray Flashes Lightning in the clouds is directly linked to events that produce some of the highest-energy light naturally made on Earth: terrestrial gamma-ray flashes (TGFs). An instrument aboard NASA's Fermi Gamma-ray Space Telescope was recently fine-tuned to better catch TGFs, and this allowed scientists to discover that TGFs emit radio waves, too.

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2012 12 05 NASA Goddard <https://youtu.be/2u73bjzg5CU> NASA Why are We Seeing So Many Sungrazing Comets Before 1979, there were less than a dozen known sungrazing comets. As of December 2012, we know of 2,500. Why did this number increase? With solar observatories like SOHO, STEREO, and SDO, we have not only better means of viewing the sun, but also the comets that approach it. SOHO allows us to see smaller, fainter comets closer to the sun than we have ever been able to see before. Even though many of these comets do not survive their journey past the sun, they survive long enough to be observed, and be added to our record of sungrazing comets.

[Transcript](#)
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2012 12 05 NASA Goddard <https://youtu.be/Q3YYwIsMHzw> NASA Earth at Night

In daylight our big blue marble is all land, oceans and clouds. But the night - is electric. [Transcript Link](#)

This view of Earth at night is a cloud-free view from space as acquired by the Suomi National Polar-orbiting Partnership Satellite (Suomi NPP). A joint program by NASA and NOAA, Suomi NPP captured this nighttime image by the satellite's Visible Infrared Imaging Radiometer Suite (VIIRS). The day-night band on VIIRS detects light in a range of wavelengths from green to near infrared and uses filtering techniques to observe signals such as city lights, gas flares, and wildfires. This new image is a composite of data acquired over nine days in April and thirteen days in October 2012. It took 312 satellite orbits and 2.5 terabytes of data to get a clear shot of every parcel of land surface.

This video uses the Earth at night view created by NASA's Earth Observatory with data processed by NOAA's National Geophysical Data Center and combined with a version of the Earth Observatory's Blue Marble: Next Generation.

<http://earthobservatory.nasa.gov/NightLights>

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2012 12 05 NASA Goddard <https://youtu.be/zAfyWQSLWe0> NASA The Evaporative Stress Index

The Evaporative Stress Index (ESI) provides objective, high-resolution information about the evaporation of water from land surface. The ESI model combines satellite data with other meteorological factors to determine how much water is used by crops and vegetation. The resulting data helps to detect drought.

[Transcript Link](#)

This visualization shows ESI data for 2010, 2011, and 2012. 2010 was a relatively wet year despite occasional drought. In 2011, the ESI shows extremely dry conditions across all of Texas, Louisiana, and Oklahoma, tracking one of the country's most devastating droughts. In 2012, the ESI shows plant stress in the Corn Belt region as early as May. These warning signs later developed into a full drought that impacted the world's corn and soy bean supply.

The kind of early-warning detection system ESI provides will enhance the US arsenal of drought monitoring tools and help farmers adapt to drought before it evolves.

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2012 12 04	NASA Goddard	https://youtu.be/CKLElr5y7sg	NASA Death-Defying Comets Explore the Sun's Atmosphere	To observe how winds move high in Earth's atmosphere, scientists sometimes release clouds of barium as tracers to track how the material corkscrews and sweeps around  but scientists have no similar technique to study the turbulent atmosphere of the sun. So researchers were excited in December 2011, when Comet Lovejoy swept right through the sun's corona with its long tail streaming behind it. NASA's Solar Dynamics Observatory (SDO) captured images of the comet, showing how its long tail was buffeted by systems around the sun, offering scientists a unique way of observing movement as if they'd orchestrated the experiment themselves. Since comet tails have ionized gases, they are also affected by the sun's magnetic field, and can act as tracers of the complex magnetic system higher up in the atmosphere. Comets can also aid in the study of coronal mass ejections and the solar wind. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011100/a011158/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 12 04	NASA Goddard	https://youtu.be/pagJROxMj_4	NASA 2012 and the Future of Fire	The U.S. fire season in 2012 was by some measures a record-breaking season. NASA scientist Doug Morton discusses the links between climate and wildfires and the likelihood of seeing more extreme fire events in the future. Learn more at: http://www.nasa.gov/topics/earth/features/climate-fire.html This video is public domain and can be downloaded. To see a video of the active fires across the United States in 2012: http://svs.gsfc.nasa.gov/goto?4011 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 12 03 NASA Goddard https://youtu.be/XXaa4_02Edw NASA Curiosity Rover Shakes, Bakes, and Tastes Mars with SAM

NASA's Curiosity rover analyzed its first solid sample of Mars with a variety of instruments, including the Sample Analysis at Mars (SAM) instrument suite. Developed at NASA's Goddard Space Flight Center in Greenbelt, Md., SAM is a portable chemistry lab tucked inside the Curiosity rover. SAM examines the chemistry of samples it ingests, checking particularly for chemistry relevant to whether an environment can support or could have supported life. Learn more about how SAM processes samples by watching this video!

[Transcript](#)
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2012 11 27 NASA Goddard https://youtu.be/Xo2pBjc_71M NASA TRMM at 15 The Reign of Rain

TRMM Project Scientist Scott Braun looks back at the legacy of the Tropical Rainfall Measuring Mission and a few of the major scientific milestones the satellite has helped achieve.

[Transcript](#)
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<http://pmm.nasa.gov>
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2012 11 21	NASA Goddard	https://youtu.be/QYyVxiQxz-4	NASA Operation Icebridge Recovery Offshore 01	On Nov. 2, 2012 Operation IceBridge flew an 11-hour mission over the Recovery Glacier and Filchner Ice Shelf in eastern Antarctica. On the transit back home, NASA scientist John Sonntag gave a two-minute breakdown of the mission over the aircraft headset, including the purpose of the day's flight, the challenges of working with Antarctic weather forecasts, and what the team found when they arrived on site. This video is public domain and can be downloaded. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 11 20	NASA Goddard	https://youtu.be/oRsYUviBPE	NASA GEOS-5 Aerosols	Satellites, balloon-borne instruments and ground-based devices make 30 million observations of the atmosphere each day. Yet these measurements still give an incomplete picture of the complex interactions within Earth's atmosphere. Enter climate models. Through mathematical experiments, modelers can move Earth forward or backward in time to create a dynamic portrait of the planet. NASA Goddard's Global Modeling and Assimilation Office recently ran a simulation of the atmosphere that captured how winds whip aerosols around the world. Such simulations allow scientists to better understand how these tiny particulates travel in the atmosphere and influence weather and climate. In this visualization, covering August 2006 to April 2007, watch as dust and sea salt swirl inside cyclones, carbon bursts from fires, sulfate streams from volcanoes—and see how these aerosols paint the modeled world. This video is public domain and can be downloaded: http://svs.gsfc.nasa.gov/goto?30017 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 11 20	NASA Goddard	https://youtu.be/ixroBOCm8M8	NASA Moon Phase & Libration Moon With Additional Graphics	This visualization shows the moon's phase and libration throughout the year 2013, at hourly intervals. Each frame represents one hour. In addition, this visualization also shows other relevant information, including moon orbit position, subearth and subsolar points, distance from the Earth. Click each graphic to learn more about what it means! Finally, to learn more about this visualization, or to see what the moon will look like at any hour in 2013, visit http://svs.gsfc.nasa.gov/goto?4000! This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?4000 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 11 20	NASA Goddard	https://youtu.be/qGwRp38-gzE	NASA Moon Phase & Libration 2013 Moon Only	This visualization shows the moon's phase and libration throughout the year 2013, at hourly intervals. Each frame represents one hour. To learn more about this visualization, or to see what the moon will look like at any hour in 2013, visit http://svs.gsfc.nasa.gov/goto?4000! This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?4000 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 11 19	NASA Goddard	https://youtu.be/Tv9Kwg4PtR8	NASA OIB High and Low over the Rift	This year Operation IceBridge has returned twice to the Pine Island Glacier, the site of a massive glacial crack poised to potentially create an iceberg the size of New York City. Operation IceBridge returned to the Pine Island Glacier twice in 2012, and NASA glaciologist Kelly Brunt discusses the implications of the glacier's impending calving event. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11135 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 11 09	NASA Goddard	https://youtu.be/XU-2BWMBzhs	NASA The Van Allen Probes - Instrument Overview	Dr. David Sibeck explains the instruments on the twin Van Allen Probes (formerly the Radiation Belt Storm Probe, RBSP). The Van Allen Probes will explore the Van Allen Radiation Belts in the Earth's magnetosphere. The charged particles in these regions can be hazardous to both spacecraft and astronauts. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11069 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 11 05	NASA Goddard	https://youtu.be/XyoSfyJ7hBQ	NASA OIB Sea Ice Interlude	Sea ice doesn't always hold the allure of a massive ice sheet, or a crevassed blue glacier spilling between mountains, but it comes in array of shapes and sizes and has its own ephemeral beauty. Operation IceBridge studies sea ice at both poles, and also runs across interesting formations on route to other targets. This video is public domain. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 11 05	NASA Goddard	https://youtu.be/8ytLN0HyQW8	NASA Planetary CSI Crater Science Investigations	If you want to learn more about the history of Earth and other rocky planets in the solar system, craters are a great place to look. Now, thanks to LRO's LROC instrument, we can take a much closer look at Linn? Crater on the moon--a pristine crater that's great to use to compare with other craters! This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10792 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 11 01	NASA Goddard	https://youtu.be/L51cqVTv37I	NASA Fermi Explores the Early Universe	This animation tracks several gamma rays through space and time, from their emission in the jet of a distant blazar to their arrival in Fermi's Large Area Telescope (LAT). During their journey, the number of randomly moving ultraviolet and optical photons (blue) increases as more and more stars are born in the universe. Eventually, one of the gamma rays encounters a photon of starlight and the gamma ray transforms into an electron and a positron. The remaining gamma-ray photons arrive at Fermi, interact with tungsten plates in the LAT, and produce the electrons and positrons whose paths through the detector allows astronomers to backtrack the gamma rays to their source. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a011100/a011117/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 10 31	NASA Goddard	https://youtu.be/luoBvES2IHw	NASA The Hunt for P.I.G. in October	NASA's Operation IceBridge has launched its Antarctic 2012 campaign, flying high-priority missions measuring polar ice from a base of operations at the tip of Patagonia on the Strait of Magellan. They have even made a return visit to the Pine Island Glacier, the site of last year's discovery of a massive rift in the ice. This video is public domain and can be downloaded. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 10 25	NASA Goddard	https://youtu.be/PuY0GfGLFMU	NASA Zombie Fomalhaut b Study of Hubble Data Revives a 'Dead' Exoplanet	A second look at data from NASA's Hubble Space Telescope is reanimating the claim that the nearby star Fomalhaut hosts a massive exoplanet. The study suggests that the planet, named Fomalhaut b, is a rare and possibly unique object that is completely shrouded by dust.	Transcript Link

Fomalhaut is the brightest star in the constellation Piscis Austrinus and lies 25 light-years away.

In November 2008, Hubble astronomers announced the exoplanet, named Fomalhaut b, as the first one ever directly imaged in visible light around another star. The object was imaged just inside a vast ring of debris surrounding but offset from the host star. The planet's location and mass -- about three times Jupiter's -- seemed just right for its gravity to explain the ring's appearance.

Recent studies have claimed that this planetary interpretation is incorrect. Based on the object's apparent motion and the lack of an infrared detection by NASA's Spitzer Space Telescope, they argue that the object is a short-lived dust cloud unrelated to any planet.

A new analysis, however, brings the planet conclusion back to life.

The full paper is available here: <http://arxiv.org/abs/1210.6620>

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2012 10 25	NASA Goddard	https://youtu.be/O7O8Hsuxjyo	NASA Saturn's Record-Setting Storm	Saturn's 2010 Great White Spot storm has set a new record for largest temperature change ever recorded for a storm on Saturn. By studying the monstrous disturbance using NASA's Cassini spacecraft, researchers spotted a massive belch of energy that sent temperatures soaring to an unprecedented 150 degrees Fahrenheit above normal in Saturn's stratosphere, accompanied by an enormous release of ethylene gas.	Transcript Link

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2012 10 24 NASA Goddard <https://youtu.be/EoOAp9ZnNa0> NASA Atomic Interferometry

Einstein predicted gravity waves in his general theory of relativity, but to date these ripples in the fabric of space-time have never been observed. Now a scientific research technique called Atomic Interferometry is trying to re-write the canon. In conjunction with researchers at Stanford University, scientists at NASA Goddard are developing a system to measure the faint gravitational vibrations generated by movement of massive objects in the universe. The scientific payoff could be important, helping better clarify key issues in our understanding of cosmology. But application payoff could be substantial, too, with the potential to develop profound advances in fields like geolocation and timekeeping. In this video we examine how the system would work, and the scientific underpinnings of the research effort.

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2012 10 23 NASA Goddard <https://youtu.be/N3idSmROZYk> NASA Active Region on the Sun Emits Another Flare

The sun emitted a significant solar flare on Oct. 22, 2012, peaking at 11:17 p.m. EDT. The flare came from an active region on the left side of the sun that has been numbered AR 1598, which has already been the source of a number of weaker flares. This flare was classified as an X.1-class flare.

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"X-class" denotes the most intense flares, while the number provides more information about its strength. An X2 is twice as intense as an X1, an X3 is three times as intense, and on. An X-class flare of this intensity can cause degradation or blackouts of radio communications for about an hour.

Solar flares are powerful bursts of radiation. Harmful radiation from a flare cannot pass through Earth's atmosphere to physically affect humans on the ground, however -- when intense enough -- they can disturb the atmosphere in the layer where GPS and communications signals travel. This can disrupt radio signals for anywhere from minutes to hours.

The National Oceanic and Atmospheric Association, which is the United States government's official source for space weather forecasts and alerts, categorized the radio blackout associated with this flare as an R3, on a scale from R1 to R5. It has since subsided.

Increased numbers of flares are quite common at the moment, since the sun's normal 11-year activity cycle is ramping up toward solar maximum, which is expected in 2013. Humans have tracked

2012 10 19	NASA Goddard	https://youtu.be/vog3Wfr5cho	NASA Astronomers Uncover a Surprising Trend in Galaxy Evolution	A study of 544 star-forming galaxies observed by the Keck and Hubble telescopes shows that disk galaxies like our own Milky Way unexpectedly reached their current state long after much of the universe's star formation had ceased. Over the past 8 billion years, the galaxies lose chaotic motions and spin faster as they develop into settled disk galaxies. Please note: The closing time-lapse in this video is Copyright © 2012 by Rochner Films. All rights reserved. Used under authorization. Courtesy of Rochner Films. http://www.rochnerfilms.com/ This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11087 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 10 19	NASA Goddard	https://youtu.be/Ssc1GsqHds	NASA Computer Model Shows a Disk Galaxy's Life History	This cosmological simulation follows the development of a single disk galaxy over about 13.5 billion years, from shortly after the Big Bang to the present time. Colors indicate old stars (red), young stars (white and bright blue) and the distribution of gas density (pale blue); the view is 300,000 light-years across. The simulation ran on the Pleiades supercomputer at NASA's Ames Research Center in Moffett Field, Calif., and required about 1 million CPU hours. It assumes a universe dominated by dark energy and dark matter. Credit: F. Governato and T. Quinn (Univ. of Washington), A. Brooks (Univ. of Wisconsin, Madison), and J. Wadsley (McMaster Univ.). This video is public domain and can be downloaded here: http://svs.gsfc.nasa.gov/vis/a010000/a011000/a011087/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 10 18 NASA Goddard <https://youtu.be/HpE5iZeul7A> NASA Petermann Ice Island 2012

This time-lapse video shows the calving of an ice island from Greenland's Petermann Glacier and the drifting of the ice down the fjord and southward through Nares Strait. The images were captured between July 9 and September 13, 2012, by NASA's Terra and Aqua earth-observing satellites. This is the second time in three years that a city-sized hunk of ice has ripped off from the glacier. Credit: NASA's Earth Observatory

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For more information, visit:

<http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=78556>

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2012 10 18 NASA Goddard <https://youtu.be/aUL4JY15jSg> NASA Gradient Sun

Watching a particularly beautiful movie of the sun helps show how the lines between science and art can sometimes blur. But there is more to the connection between the two disciplines: science and art techniques are often quite similar, indeed one may inform the other or be improved based on lessons from the other arena. One such case is a technique known as a "gradient filter" -- recognizable to many people as an option available on a photo-editing program. Gradients are, in fact, a mathematical description that highlights the places of greatest physical change in space. A gradient filter, in turn, enhances places of contrast, making them all the more obviously different, a useful tool when adjusting photos. Scientists, too, use gradient filters to enhance contrast, using them to accentuate fine structures that might otherwise be lost in the background noise. On the sun, for example, scientists wish to study a phenomenon known as coronal loops, which are giant arcs of solar material constrained to travel along that particular path by the magnetic fields in the sun's atmosphere. Observations of the loops, which can be more or less tangled and complex during different phases of the sun's 11-year activity cycle, can help researchers understand what's happening with the sun's complex magnetic fields, fields that can also power great eruptions on the sun such as solar flares or coronal mass ejections.

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The images here show an unfiltered image from the sun next to one that has been processed using a gradient filter. Note how the coronal loops are sharp and defined, making them all the more easy to study. On the other hand, gradients also make great art. Watch

2012 10 18	NASA Goddard	https://youtu.be/pcX5ZsVGbOE	NASA ESW Career Spotlight Janel Thomas	A short video profile of Janel Thomas. She was a member of NASA's Genesis and Rapid Intensification Processes (GRIP) field campaign in 2010 where she operated the dropsonde instrument onboard NASA's DC-8 aircraft. She was a part of four successful missions into Hurricane Earl during late August and early September, 2010. Her research extends from the GRIP project where she is investigating the rapid intensification of tropical cyclones and the dynamic processes involved. She is currently forecasting for the NASA Hurricane and Severe Sentinel (HS3) Mission. For more information, go to http://climate.nasa.gov/esw2012 This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10782 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 10 17	NASA Goddard	https://youtu.be/N-spij6xN-0	NASA ESW12 Career Spotlight Christy Hansen	Join Operation IceBridge Project Manager Christy Hansen on location near Antarctica as she discusses her career at NASA. Hansen, who began in NASA's space flight program, recently joined the Operation IceBridge team. As Project Manager, she helps to organize daily operations and ensures that the team works together efficiently as they collect information about polar ice sheets. Christy Hansen will answer questions about her background and the work she does. Join Christy live on Google+ Hangout. Wednesday, October 17, 2012, 1pm ET/12noon CT/11am MT/10am PT. http://gplus.to/NASAGoddard This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11101 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 10 17	NASA Goddard	https://youtu.be/BaCY3JTOKWA	NASA Lynn Carter, Planetary Scientist	From a distance, the dry, ancient surfaces of the Moon, Venus, and Mars look nothing like the dynamic planet we live on. But the same forces that shape our world -- volcanoes, plate tectonics, and impact craters -- have also driven the evolution of our closest neighbors. As part of NASA's Planetary Geodynamics Laboratory, scientist Lynn Carter discusses her passion for geology, both here on Earth and throughout the solar system. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11113 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 10 12	NASA Goddard	https://youtu.be/pMJ69eIL4Cs	NASA X-ray Satellites Monitor the Clashing Winds of a Colossal Binary	O-type stars are among the most massive and hottest known, pounding their surroundings with intense ultraviolet light and powerful outflows called stellar winds. NASA's Swift and ESA's XMM-Newton X-ray observatories took part in a 2011 campaign to monitor the interaction of two O stars bound together in the same binary system: Cygnus OB2 #9. http://www.nasa.gov/mission_pages/swift/bursts/binary-clash.html This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11109 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 10 05	NASA Goddard	https://youtu.be/W-QEs8sKE0	NASA X-ray Nova Reveals a New Black Hole in Our Galaxy	On Sept. 16, NASA's Swift satellite detected a rising tide of high-energy X-rays from a source toward the center of our Milky Way galaxy. The outburst, produced by a rare X-ray nova, announced the presence of a previously unknown stellar-mass black hole. An X-ray nova is a short-lived X-ray source that appears suddenly, reaches its emission peak in a few days and then fades out over a period of months. The outburst arises when a torrent of stored gas suddenly rushes toward one of the most compact objects known, either a neutron star or a black hole. Named Swift J1745-26 after the coordinates of its sky position, the nova is located a few degrees from the center of our galaxy toward the constellation Sagittarius. While astronomers do not know its precise distance, they think the object resides about 20,000 to 30,000 light-years away in the galaxy's inner region. The pattern of X-rays from the nova signals that the central object is a black hole. Ground-based observatories detected infrared and radio emissions, but thick clouds of obscuring dust have prevented astronomers from catching Swift J1745-26 in visible light. The black hole must be a member of a low-mass X-ray binary (LMXB) system, which includes a normal, sun-like star. A stream of gas flows from the normal star and enters into a storage disk around the black hole. In most LMXBs, the gas in the disk spirals inward, heats up as it heads toward the black hole, and produces a	Transcript Link
2012 10 03	NASA Goddard	https://youtu.be/OQdD-BL1JD5o	NASA Earth Science Week Discover Your Career	For more information, visit http://climate.nasa.gov/esw2012 Join us during Earth Science Week (ESW) 2012 to meet an incredible group of NASA Earth Explorers -- from scientists and engineers, to multimedia producers, educators and writers. Find out about their careers, why and how they study the planet, and what their typical days are like. From video interviews to blog posts and more, there will be a variety of multimedia activities that will allow Explorers to tell their stories. Have questions of your own? Participate in live Twitter interviews and Google+ Hangouts held throughout the week, as well as during a radio interview and webinar in Spanish. On October 18, learn about the many contributions of women at NASA to Earth science as part of Female Geoscientists Day. The 2012 NASA ESW website will be your one-stop-source for Earth science careers and resources during ESW and beyond. There you will find a collection of articles, information about events, links to blog posts, transcripts of Twitter interviews, and educational products in English and Spanish. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11096 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast:	Transcript Link

2012 09 27 NASA Goddard <https://youtu.be/7y9AtdN4BIM> NASA Simulations Uncover 'Flashy' Secrets of Merging Black Holes

According to Einstein, whenever massive objects interact, they produce gravitational waves -- distortions in the very fabric of space and time -- that ripple outward across the universe at the speed of light. While astronomers have found indirect evidence of these disturbances, the waves have so far eluded direct detection. Ground-based observatories designed to find them are on the verge of achieving greater sensitivities, and many scientists think that this discovery is just a few years away.

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Catching gravitational waves from some of the strongest sources -- colliding black holes with millions of times the sun's mass -- will take a little longer. These waves undulate so slowly that they won't be detectable by ground-based facilities. Instead, scientists will need much larger space-based instruments, such as the proposed Laser Interferometer Space Antenna, which was endorsed as a high-priority future project by the astronomical community.

A team that includes astrophysicists at NASA's Goddard Space Flight Center in Greenbelt, Md., is looking forward to that day by using computational models to explore the mergers of supersized black holes. Their most recent work investigates what kind of "flash" might be seen by telescopes when astronomers ultimately find gravitational signals from such an event.

To explore the problem, a team led by Bruno Giacomazzo at the University of Colorado, Boulder, and including Baker developed computer simulations that for the first time show what happens in

2012 09 27 NASA Goddard <https://youtu.be/B3VI7y8ZiHk> NASA Landsat Making a Difference, One User At A Time

The Landsat Data Continuity Mission will continue and improve upon the 40-year-old Landsat program. This video examines two uses of Landsat data to monitor agriculture. Both wineries and timber companies rely on Landsat data to check whether their vines and trees are getting enough (or too much) water and fertilizer. The small resolution and regular repeat cycle of the satellite data is crucial to monitoring the health of their crops. NASA and the U.S. Department of the Interior through the U.S. Geological Survey (USGS) jointly manage Landsat, and the USGS preserves a 40-year archive of Landsat images that is freely available over the Internet. The next Landsat satellite, now known as the Landsat Data Continuity Mission (LDCM) and later to be called Landsat 8, is scheduled for launch in 2013.

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2012 09 19 NASA Goddard <https://youtu.be/9Gsr1503TNg> NASA Arctic Cyclone Breaks Up Sea Ice

Watch how the winds of a large Arctic cyclone broke up the thinning sea ice cover of the Arctic Ocean in early August 2012. The storm likely contributed to the ice cap's shrinking to the smallest recorded extent in the past three decades. [Transcript Link](#)

The frozen cap of the Arctic Ocean likely reached its annual summertime minimum extent and broke a new record low on Sept. 16, the National Snow and Ice Data Center (NSIDC) at the University of Colorado in Boulder has reported. Analysis of satellite data by NASA and the NASA-supported NSIDC showed that the sea ice extent shrunk to 1.32 million square miles (3.41 million square kilometers), or 293,000 square miles less than the previous lowest extent in the satellite record, set in mid-September, 2007.

"Climate models have predicted a retreat of the Arctic sea ice; but the actual retreat has proven to be much more rapid than the predictions," said Claire Parkinson, a climate scientist at NASA Goddard Space Flight Center, Greenbelt, Md. "There continues to be considerable interannual variability in the sea ice cover, but the long-term retreat is quite apparent."

This year, the cyclone formed off the coast of Alaska and moved on Aug. 5 to the center of the Arctic Ocean, where it churned the weakened ice cover for several days. The storm cut off a large section of sea ice north of the Chukchi Sea and pushed it south to warmer waters that made it melt entirely. It also broke vast extensions of ice into smaller pieces more likely to melt.

2012 09 12 NASA Goddard <https://youtu.be/f8LL2rRnw9o> NASA Laser Comm That's a Bright Idea

Laser light made records obsolete. NASA is on the verge of doing the same thing with space based communications. Before the end of the decade, the Laser Communication Relay Demonstration (LCRD) mission will revolutionize the way we move tons of data from orbit to ground and all around the solar system. [Transcript Link](#)

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2012 09 05 NASA Goddard <https://youtu.be/GrnGi-g6iWc> NASA Magnificent Eruption in Full HD

On August 31, 2012 a long filament of solar material that had been hovering in the sun's atmosphere, the corona, erupted out into space at 4:36 p.m. EDT. The coronal mass ejection, or CME, traveled away from the sun at over 900 miles per second. This movie shows the ejection from a variety of viewpoints as captured by NASA's Solar Dynamics Observatory (SDO), NASA's Solar Terrestrial Relations Observatory (STEREO), and the joint ESA/NASA Solar Heliospheric Observatory (SOHO).

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2012 09 04 NASA Goddard <https://youtu.be/Em7eJjV-0ag> NASA Name That Asteroid!

The OSIRIS-REx Asteroid Sample Return Mission is going to an asteroid to return a sample to Earth. The OSIRIS-REx spacecraft will launch in 2016, visit the asteroid in 2019-2020 and return a sample to Earth in 2023. Scientists will study the asteroid's orbit, composition, and characteristics to answer questions about the early Solar System, building blocks of life, and potential impact hazards.

Instead of traveling to asteroid (1010955) 1999 RQ36, the asteroid's current name, we're asking for help to find a new name. The Planetary Society, NASA's OSIRIS-REx mission, and the discoverers at MIT's Lincoln Lab, will recommend selected names to the International Astronomical Union for selection.

Contestants choose a name, explain their choice and submit the application on the Planetary Society website.

Contest starts Tuesday September 4, 2012. The deadline is Sunday December 2, 2012.

For contest rules, guidelines, and application visit:
www.planetary.org/name

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2012 08 30 NASA Goddard <https://youtu.be/kWvLiQ23beo> NASA Birth of a Space Laser Instrument

A new CO₂ laser, which will globally measure carbon dioxide from space, is due to be launched in 2023 on the ASCENDS mission. One of the exciting things about this project is that you can actually watch trees eat and breathe. Of course, trees are breathing all the time, but they are only eating, meaning, performing photosynthesis when the sun is out. The main science is to measure how much carbon dioxide there is in the atmosphere at this particular time on the Earth, how much is there total and where is it located.

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2012 08 28 NASA Goddard <https://youtu.be/WP5HA7fKDXk> NASA Afterschool Universe Life Cycle of a Small Star

Afterschool Universe is an out-of-school-time astronomy program for middle school students that explores basic astronomy concepts through engaging hands-on activities and then takes participants on a journey through the Universe beyond the Solar System.

[Transcript](#)
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This video shows a simple kinesthetic activity that models the life cycle of a star with a mass similar to our sun.

If you are interested in the Afterschool Universe program, visit their website at <http://universe.nasa.gov/afterschool/>

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2012 08 28	NASA Goddard	https://youtu.be/QLY6Fn16_2Y	NASA GPM The Trouble with Irene	NASA's Global Precipitation Measurement mission, or GPM, a joint NASA/JAXA mission, will provide rainfall data on storms and hurricanes like Irene that move out of the tropics. The data will be available when the GPM Core Observatory launches in 2014 and will show in 3D how these storm systems develop and intensify as they move poleward. GPM's Core Observatory, partnered with a constellation of international satellites, will provide a global picture of rain and snow every three hours. http://pmm.nasa.gov http://www.nasa.gov/GPM http://www.twitter.com/NASA_Rain http://www.facebook.com/NASA.Rain For more information please visit http://pmm.nasa.gov	Transcript Link
2012 08 21	NASA Goddard	https://youtu.be/ZXVNkY4Y95I	NASA Yellowstone Burn Recovery	A combination of lightning, drought and human activity caused fires to scorch more than one-third of Yellowstone National Park in the summer of 1988. Within a year, burn scars cast a sharp outline on the 793,880 acres affected by fire, distinguishing wide sections of recovering forest, meadows, grasslands and wetlands from unburned areas of the park. After more than two decades, satellite instruments can still detect these scars from space. Landsat Project Scientist Jeff Masek has been studying the recovery of the forest after the 1988 Yellowstone fires. In the video below, he talks about how Landsat satellites detect the burn scars from space and distinguish them from healthy, un-burned forest and from new growth. NASA and the U.S. Department of the Interior through the U.S. Geological Survey (USGS) jointly manage Landsat, and the USGS preserves a 40-year archive of Landsat images with free distribution of data over the Internet. The next Landsat satellite, now known as the Landsat Data Continuity Mission (LDCM) and later to be called Landsat 8, is scheduled for a launch in 2013. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11029 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html	Transcript Link

2012 08 16	NASA Goddard	https://youtu.be/Q88WYDDfJHU	NASA The QWIP Detector; an Infrared Instrument	All objects emit infrared radiation and the characteristics of the infrared radiation are primarily dependent on the temperature of the object. One of the unique features of the new Quantum Well Infrared Photodetector (QWIP) instrument technology is the ability to, what engineers call "band gap." This means it can spectrally respond to specific wavelengths. This video shows the evolution of taking this instrument from inception, to testing on the ground and from a plane, and ultimately to a NASA science mission. The applications are range from finding caves on Mars to looking for thermal pollution in rivers or residual hot spots in forest fires, or monitoring food spoilage. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 08 16	NASA Goddard	https://youtu.be/r7bP3E8doka	NASA Space Geodesy Profiles Jan McGarry	Mathematician Jan McGarry discusses the science and history of Satellite Laser Ranging (SLR), her role in developing the Next Generation Satellite Laser Ranging system, and her career at NASA's Goddard Space Flight Center. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11031 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 08 09 NASA Goddard <https://youtu.be/poIRBKQ8bRc> NASA The Radiation Belt Storm Probe

The Radiation Belt Storm Probe mission (RBSP) will explore the Van Allen Radiation Belts in the Earth's magnetosphere. The charge particles in these regions can be hazardous to both spacecraft and astronauts. Project Scientist David Sibeck explains the how the mission will explore space weather -- changes in Earth's space environment caused by the sun -- that can disable satellites, create power grid failures and disrupt GPS service. The mission also will allow researchers to understand fundamental radiation and particle acceleration processes throughout the universe.

[Transcript Link](#)

The 2-year mission is scheduled to launch no earlier than 4:08 a.m. Thursday, Aug. 23 from Cape Canaveral Air Force Station in Florida. The twin probes will lift off on a United Launch Alliance Atlas V rocket.

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2012 08 07 NASA Goddard <https://youtu.be/x3ln3le8gU> NASA Increasing Extreme Summer Temperatures

The Northern Hemisphere over the past 30 years has seen an increase in the amount of land area experiencing what NASA scientists define as "extremely hot" summer temperatures, according to a new analysis led by James Hansen at the NASA Goddard Institute for Space Studies. These regions of "extremely hot" temperatures are shown on the map as brown.

[Transcript Link](#)

Hansen and colleagues looked at statistics and linked this increase in extreme heat waves to climate change.

These "extremely hot" temperatures covered less than 1 percent of the Northern Hemisphere land surface during the time period 1951 to 1980. Since 2006 these extreme temperatures have covered about 10 percent of this land area.

The visualization shows how temperatures by region differed from the 1951-1980 seasonal average for June, July and August. White areas are considered "normal" temperatures, while blues and purples represent colder than usual temperatures. The range of hotter than normal temperatures is defined by the scientists as "hot" (orange), "very hot" (red) and "extremely hot" (brown).

Notice how the areas covered by "extremely hot" temperatures increases from the 1980s to the present. The massive heat waves of Western Europe in 2003, Russia in 2010 and Texas, Oklahoma and Mexico in 2011 particularly stand out.

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2012 08 03	NASA Goddard	https://youtu.be/6vgvTeuoDWY	NASA The Ocean A Driving Force for Weather and Climate	The Ocean is essential to life on Earth. Most of Earth's water is stored in the ocean. Although 40 percent of Earth's population lives within, or near coastal regions- the ocean impacts people everywhere. Without the ocean, our planet would be uninhabitable. This animation helps to convey the importance of Earth's oceanic processes as one component of Earth's interrelated systems. This animation uses Earth science data from a variety of sensors on NASA Earth observing satellites to measure physical oceanography parameters such as ocean currents, ocean winds, sea surface height and sea surface temperature. These measurements, in combination with atmospheric measurements such as surface air temperature, precipitation and clouds can help scientists understand the ocean's impact on weather and climate and what this means for life here on Earth. NASA satellites and their unique view from space are helping to unveil the vast... and largely unexplored.... OCEAN. NASA Earth Observing System Data and Information Systems (EOSDIS) EOSDIS is a distributed system of twelve data centers and science investigator processing systems. EOSDIS processes, archives, and distributes data from Earth observing satellites, field campaigns, airborne sensors, and related Earth science programs. These data enable the study of Earth from space to advance scientific understanding. For more information about the data sets used in this animation please visit, http://earthdata.nasa.gov This video is public domain and can be downloaded at:	Transcript Link
2012 08 03	NASA Goddard	https://youtu.be/oaDkph9yQBs	NASA Earth's Water Cycle	Water is the fundamental ingredient for life on Earth. Looking at our Earth from space, with its vast and deep ocean, it appears as though there is an abundance of water for our use. However, only a small portion of Earth's water is accessible for our needs. How much fresh water exists and where it is stored affects us all. This animation uses Earth science data from a variety of sensors on NASA Earth observing satellites as well as cartoons to describe Earth's water cycle and the continuous movement of water on, above and below the surface of the Earth. Sensors on a suite of NASA satellites observe and measure water on land, in the ocean and in the atmosphere. These measurements are important to understanding the availability and distribution of Earth's water -- vital to life and vulnerable to the impacts of climate change on a growing world population. NASA Earth Observing System Data and Information Systems (EOSDIS) EOSDIS is a distributed system of twelve data centers and science investigator processing systems. EOSDIS processes, archives, and distributes data from Earth observing satellites, field campaigns, airborne sensors, and related Earth science programs. These data enable the study of Earth from space to advance scientific understanding. For more information about the data sets used in this animation please visit: http://earthdata.nasa.gov	Transcript Link

2012 08 02	NASA Goddard	https://youtu.be/ctLjBai-fR2I	NASA Imported Dust in American Skies	NASA and university scientists have made the first measurement-based estimate of the amount and composition of tiny airborne particles that arrive in the air over North America each year. With a 3D view of the atmosphere now possible from satellites, the scientists distinguished dust from pollution, and calculated that dust is the main ingredient of these foreign imports. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11068 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 08 02	NASA Goddard	https://youtu.be/ataZY-9yPog	NASA Space Geodesy Profiles Carey Noll	Computer scientist Carey Noll talks about her job as manager of the Crustal Dynamics Data Information System (CDDIS), the applications of her work for various space geodesy techniques such as GPS, and her career at NASA's Goddard Space Flight Center. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11031 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 08 01	NASA Goddard	https://youtu.be/GdvcmXpoSrk	NASA What is SAM	Tucked inside the Curiosity rover is a miniature chemistry lab designed to unlock the secrets of Mars. Principal Investigator Paul Mahaffy, Deputy Principal Investigator Pamela Conrad, and MSL Participating Scientist Jennifer Eigenbrode discuss their work on SAM, the Sample Analysis at Mars, and its mission to the figure out the past and present chemistry of the Red Planet. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11018 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 07 26 NASA Goddard <https://youtu.be/HQd7XFuoWZw> NASA Mars Landing Sites

The visualization shows the landing sites of all six NASA spacecraft to reach Mars—Viking 1, Viking 2, Pathfinder, Spirit, Opportunity, Phoenix—and the target location where Curiosity will touch down on August 6, 2012.

[Transcript](#)
[Link](#)

Data collected by NASA's Mars Global Surveyor spacecraft was used to create the topography and surface color details seen here.

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2012 07 25 NASA Goddard <https://youtu.be/uVkfH89iyeU> NASA Aqua CERES Tracking Earth's Heat Balance

Is the heat budget of the planet changing? Thermometers on the ground can give us a snapshot of a summer heatwave or winter cold spell, but it takes something like NASA's CERES instruments to give a long term picture of whether the planet is keeping more of its heat than it loses back into space.

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2012 07 23 NASA Goddard <https://youtu.be/Tq88dRFokgg> NASA Best of Earth As Art -- Top Five

Counting down the Top Five Earth As Art images, as voted on by the public. Landsat has been collecting data of the Earth's surface since 1972. Some of the images are visually striking, and they have been selected for the "Earth As Art" collection. These are the best. [Transcript Link](#)

A series of Landsat satellites have surveyed the Earth's surface since 1972. In that time, Landsat data have become a vital reference worldwide, used for understanding scientific issues related to land use and natural resources. However, some Landsat images are simply striking to look at - presenting spectacular views of mountains and valleys, forests and farms. To celebrate the 40th anniversary of Landsat, the US Geological Survey and NASA asked for your help in selecting the top five Earth As Art images.

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2012 07 23 NASA Goddard <https://youtu.be/xSBD0zUrUn0> NASA Landsat - From the Archives

The Landsat program is the longest continuous global record of Earth observations from space -- ever. On July 23, 1972 NASA launched the first satellite in this program, then known as ERTS, the Earth Resources Technology Satellite and later renamed Landsat 1. In honor of today (Monday, July 23, 2012) being the 40th birthday of Landsat, NASA edited together selections of an archive video from 1973 about the ERTS launch. Featured in this 1973 video was a senior geologist at NASA, Nicholas Short, and at Dartmouth College, Robert Simpson and David Lindgren. NASA and the U.S. Department of the Interior through the U.S. Geological Survey (USGS) jointly manage Landsat, and the USGS preserves a 40-year archive of Landsat images that is freely available over the Internet. The next Landsat satellite, now known as the Landsat Data Continuity Mission (LDCM) and later to be called Landsat 8, is scheduled for launch in 2013.

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2012 07 19	NASA Goddard	https://youtu.be/FciD033Eaiw	NASA AR1520's Parting Shot - July 19 M7.7 Flare	Sun Sends Out Moderate Solar Flare The sun emitted a moderate solar flare on July 19, 2012, beginning at 1:13 AM EDT and peaking at 1:58 AM. Solar flares are gigantic bursts of radiation that cannot pass through Earth's atmosphere to harm humans on the ground, however, when strong enough, they can disrupt the atmosphere and degrade GPS and communications signals. The flare is classified as an M7.7 flare. This means it is weaker than the largest flares, which are classified as X-class. M-class flares can cause brief radio communications blackouts at the poles. Increased numbers of flares are currently quite common, since the sun's standard 11-year activity cycle is ramping up toward solar maximum, which is expected in 2013. It is quite normal for there to be many flares a day during the sun's peak activity. Updates will be provided as they are available on the flare and whether there was an associated Earth-directed coronal mass ejection (CME), another solar phenomenon that can send solar particles into space and affect electronic systems in satellites and on Earth. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11047	Transcript Link
2012 07 19	NASA Goddard	https://youtu.be/Qi0XrL14i-E	NASA Van Gogh Sun	A crucial, and often underappreciated, facet of science lies in deciding how to turn the raw numbers of data into useful, understandable information -- often through graphs and images. Such visualization techniques are needed for everything from making a map of planetary orbits based on nightly measurements of where they are in the sky to colorizing normally invisible light such as X-rays to produce "images" of the sun. More information, of course, requires more complex visualizations and occasionally such images are not just informative, but beautiful too. Such is the case with a new technique created by Nicholeen Viall, a solar scientist at NASA's Goddard Space Flight Center in Greenbelt, Md. She creates images of the sun reminiscent of Van Gogh, with broad strokes of bright color splashed across a yellow background. But it's science, not art. The color of each pixel contains a wealth of information about the 12-hour history of cooling and heating at that particular spot on the sun. That heat history holds clues to the mechanisms that drive the temperature and movements of the sun's atmosphere, or corona. To look at the corona from a fresh perspective, Viall created a new kind of picture, making use of the high resolution provided by NASA's Solar Dynamics Observatory (SDO). SDO's Atmospheric Imaging Assembly (AIA) provides images of the sun in 10 different wavelengths, each approximately corresponding to a single	Transcript Link

2012 07 18	NASA Goddard	https://youtu.be/fKMUjoiagvo	NASA The Mars Chamber	The Mars chamber is a box--about the size of a refrigerator--that re-creates the temperatures, pressures, and atmosphere of the Martian surface, essentially creating a Mars environment on Earth! Scientists and engineers use this chamber to test experiments on the Sample Analysis at Mars (SAM) instrument suite--a fully functioning chemistry lab about the Curiosity Mars rover. By re-creating Mars on Earth and using an exact duplicate of SAM, scientists can "pre-run" experiments on SAM to make sure everything will work properly on the Mars rover. Learn more about the Mars chamber by watching this video! This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11045 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 07 16	NASA Goddard	https://youtu.be/ivzy3HEgrPo	NASA Before the Flare	The sun emitted a large flare on July 12, 2012, but earlier in the week it gave a demonstration of how gorgeous solar activity can be. This movie shows the sun from late July 8 to early July 10 shortly before it unleashed an X-class flare beginning at 12:11 PM EDT on July 12 as captured by the Solar Dynamics Observatory (SDO). The flare isn't shown here, but the movie shows how the sun is constantly, and complexly, active. The region responsible for the flare, known as Active Region 1520, and sitting in the lower left part of the sun, crackles with giant loops of magnetized solar material that can help scientists understand how magnetic energy in the region creates these giant explosions. On the right side of the sun, the shimmering loops offer us the last vision of Active Region 1515 -- which was also responsible for many solar flares -- as it disappears out of view along with the sun's rotation. The movie represents light in the 171 Angstrom wavelength, a wavelength of light that is particularly good at highlighting these magnetic loops. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11044 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter:	Transcript Link

2012 07 13	NASA Goddard	https://youtu.be/rOj12Yof0YQ	NASA Big Sunspot 1520 Releases X1.4 Class Flare	An X1.4 class flare erupted from the center of the sun, peaking on July 12, 2012 at 12:52 PM EDT. It erupted from Active Region 1520 which rotated into view on July 6. This video uses SDO AIA footage in 131(teal), 171(gold) and 335 (blue) angstrom wavelengths. Each wavelength shows different temperature plasma in the sun's atmosphere. 171 shows 600,000 Kelvin plasma, 335 shows 2.5 million Kelvin plasma, and 131 shows 10 million Kelvin plasma. The final shot is a composite of 171 and 335 angstrom footage. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11043 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 07 12	NASA Goddard	https://youtu.be/EWPetzfPUtA	NASA Space Geodesy Profile Chopo Ma	Space geodesist Chopo Ma explains the science of Very Long Baseline Interferometry (VLBI): using radio emissions from distant galaxies to create a precise reference frame for the Earth. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11031 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 07 05	NASA Goddard	https://youtu.be/b37fkXtV3TA	NASA Space Geodesy Profiles Stephen Merkowitz	Project manager Stephen Merkowitz talks about his work with NASA's Space Geodesy Project, including a brief overview of the four fundamental techniques of space geodesy: GPS, VLBI, SLR, and DORIS. Learn more about space geodesy at: http://space-geodesy.nasa.gov/ This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11031 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 07 03	NASA Goddard	https://youtu.be/U_jFrWm_ers	NASA A Young Star Flaunts its X-ray Spots	Using combined data from a trio of orbiting X-ray telescopes, including NASA's Chandra X-ray Observatory and the Japan-led Suzaku satellite, astronomers have obtained a rare glimpse of the powerful phenomena that accompany a still-forming star. A new study based on these observations indicates that intense magnetic fields drive torrents of gas into the stellar surface, where they heat large areas to millions of degrees. X-rays emitted by these hot spots betray the newborn star's rapid rotation. Astronomers first took notice of the young star, known as V1647 Orionis, in January 2004, near the peak of an outburst. The eruption had brightened the star so much that it illuminated a conical patch of dust now known as McNeil's Nebula. Both the star and the nebula are located about 1,300 light-years away in the constellation Orion. Astronomers quickly determined that V1647 Ori was a protostar, a stellar infant still partly swaddled in its birth cloud. Protostars have not yet developed the energy-generating capabilities of a normal star such as the sun, which fuses hydrogen into helium in its core. For V1647 Ori, that stage lies millions of years in the future. Until then, the protostar shines from the heat energy released by the gas that continues to fall onto it, much of which originates in a rotating circumstellar disk. The mass of V1647 Ori is likely only about 80 percent of the sun's, but its low density bloats it to nearly five times the sun's size.	Transcript Link
2012 06 29	NASA Goddard	https://youtu.be/8NTGLX56REs	NASA OPERACIÓN ICEBRIDGE Explorando cambios en el hielo de Groenlandia	Operación Icebridge es una misión aérea de la NASA dedicada a estudiar cambios en la capa de hielo y el hielo marino en ambos polos del planeta. En la primavera de 2012, IceBridge llevó a cabo su cuarta misión ártica, sobrevolando áreas de gran interés científico, como Jakobshavn Isbrae, uno de los glaciares que se están derritiendo más rápido en todo el mundo. Para aprender más sobre IceBridge, visita este blog en español (una colaboración de NASA y National Public Radio): http://www.sciencefriday.com/blogs/?series=22&audience=3 NASA OPERATION ICEBRIDGE: Exploring changes in Greenland's ice Operation IceBridge is an airborne NASA mission aimed at studying changes in the icesheets and sea ice at both extremes/poles of the planet. In spring 2012, IceBridge carries its 4th Arctic mission, flying over areas of great scientific interest, such as Jakobshavn Isbrae, one of the fastest-melting glaciers in the world. To learn more about IceBridge, visit this blog in Spanish (a collaboration of NASA and National Public Radio): http://www.sciencefriday.com/blogs/?series=22&audience=3 This video is public domain. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook:	Transcript Link

2012 06 28 NASA Goddard <https://youtu.be/s9b0md5oGWw> NASA Exoplanet Atmosphere Blasted by Stellar Flare

An international team of astronomers using data from NASA's Hubble Space Telescope has detected significant changes in the atmosphere of a planet located beyond our solar system. The scientists conclude the atmospheric variations occurred in response to a powerful eruption on the planet's host star, an event observed by NASA's Swift satellite.

The exoplanet is HD 189733b, a gas giant similar to Jupiter, but about 14 percent larger and more massive. The planet circles its star at a distance of only 3 million miles, or about 30 times closer than Earth's distance from the sun, and completes an orbit every 2.2 days. Its star, named HD 189733A, is about 80 percent the size and mass of our sun.

Astronomers classify the planet as a "hot Jupiter." Previous Hubble observations show that the planet's deep atmosphere reaches a temperature of about 1,900 degrees Fahrenheit (1,030 C). HD 189733b periodically passes across, or transits, its parent star, and these events give astronomers an opportunity to probe its atmosphere and environment. In a previous study, a group led by Lecavelier des Etangs used Hubble to show that hydrogen gas was escaping from the planet's upper atmosphere. The finding made HD 189733b only the second-known "evaporating" exoplanet at the time.

The system is just 63 light-years away, so close that its star can be seen with binoculars near the famous Dumbbell, or Apple Core, Nebula. This makes HD 189733b an ideal target for studying the processes that drive atmospheric escape.

When HD 189733b transits its star, some of the star's light passes

[Transcript](#)
[Link](#)

2012 06 21 NASA Goddard <https://youtu.be/cnE4oYcCw8g> NASA WMAP-- From the Archives

On June 20, 2012, Dr. Charles Bennett and the WMAP team were awarded the Gruber Cosmology Prize.

[Transcript](#)
[Link](#)

The Wilkinson Microwave Anisotropy Probe (WMAP) was built and launched by NASA to measure a remnant of the early universe - its oldest light. The conditions of the early times are imprinted on this light. It is the result of what happened earlier, and a backlight for the later development of the universe. This light lost energy as the universe expanded over 13.7 billion years, so WMAP now sees the light as microwaves. By making accurate measurements of microwave patterns, WMAP has answered many longstanding questions about the universe's age, composition and development.

This video from Goddard's tape archive features Dr. Bennett after the first results were announced in 2003.

This video is public domain and can be downloaded at:
<http://svsdev.gsfc.nasa.gov/goto?11008>

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2012 06 21	NASA Goddard	https://youtu.be/IVivBNlg9z8	NASA Shackleton Crater	This visualization, created using Lunar Reconnaissance Orbiter laser altimeter data, offers a view of Shackleton Crater located in the south pole of the moon. Thanks to these measurements, we now have our best-yet maps of the crater's permanently-shadowed interior! Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 06 21	NASA Goddard	https://youtu.be/IVB8kArRZ6I	NASA Using Quasars to Measure the Earth A Brief History of VLBI - 3D	This video is available in 2D here: http://youtu.be/59BI8cjNg-Y VLBI, or Very Long Baseline Interferometry, is a technique that uses multiple radio telescopes to very precisely measure the Earth's orientation. It was originally invented back in the 1960s to take better pictures of quasars, but scientists soon found out that if you threw the process in reverse, you could measure how the ground beneath the telescopes moves around, how long days really are, and how the Earth wobbles on its axis as it revolves around the sun! Learn more about VLBI here! For more information about NASA's Space Geodesy Project, visit http://space-geodesy.nasa.gov This video is presented in both stereoscopic 3D and standard 2D versions. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10964 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter:	Transcript Link

2012 06 21 NASA Goddard <https://youtu.be/59Bl8ciNg-Y> NASA Using Quasars to Measure the Earth A Brief History of VLBI

VLBI, or Very Long Baseline Interferometry, is a technique that uses multiple radio telescopes to very precisely measure the Earth's orientation. It was originally invented back in the 1960s to take better pictures of quasars, but scientists soon found out that if you threw the process in reverse, you could measure how the ground beneath the telescopes moves around, how long days really are, and how the Earth wobbles on its axis as it revolves around the sun! Learn more about VLBI here!

[Transcript Link](#)

For more information about NASA's Space Geodesy Project, visit <http://space-geodesy.nasa.gov>!

This video is presented in both stereoscopic 3D and standard 2D versions.

This video is public domain and can be downloaded at: <http://svs.gsfc.nasa.gov/goto?10964>

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2012 06 19 NASA Goddard <https://youtu.be/ujBi9Ba8hqs> NASA Dynamic Earth

This was the version submitted to the 2013 Science and Engineering Visualization Challenge. For the original version, with a narration by Liam Neeson, go here: <https://www.youtube.com/watch?v=6hD52H7rQak>

[Transcript Link](#)

Watch Earth's magnetic shield protect the planet from a pelting by the solar wind. See how the sun's energy drives a remarkable planetary engine, the climate.

This video, originally created by NASA's Scientific Visualization Studio as part of a full-length planetarium film called "Dynamic Earth," was awarded first place in the video category in the 2013 International Science and Engineering Visualization Challenge, sponsored by the journal Science and the National Science Foundation.

While the full movie highlights many aspects of the Earth's complexity, the contribution from the SVS depicts the vast scale of the sun's influence on the Earth, from the flowing particles of the solar wind and the fury of coronal mass ejections to the winds and currents driven by the solar heating of the atmosphere and ocean.

The data visualization in this excerpt represents a high point in the Scientific Visualization Studio's work in recent years to show "flows" -- ocean currents, winds, the movement of glaciers. Using data from sophisticated NASA models, the studio's visualizers have figured out how to illustrate the velocities of these natural phenomena. Dynamic Earth, produced and written by Thomas Lucas, has been

2012 06 18	NASA Goddard	https://youtu.be/5i1ajG0PR8M	NASA Mapping The Future With Landsat	Many non-profits are using Landsat as a tool to identify and protect areas that are important for conservation. This video shows how The African Wildlife Foundation (AWF) has used Landsat in the Democratic Republic of the Congo to protect a wildlife corridor in the Maringa Lopori Wanga (MLW) region. This area is located in the northern part of the Democratic Republic of the Congo (DRC) immediately south of the Congo River. Within its borders are two major reserves: The Lomako-Yokokala Faunal Reserve and the Luo Scientific Reserve. Wildlife travels between these two reserves via a natural wildlife corridor. With Landsat, the AWF identified this corridor as a critical area for conservation and then began working with the DRC government and local communities to map the region. This process has had and will have significant impact on land use planning and zoning in the Democratic Republic of the Congo. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11004 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 06 18	NASA Goddard	https://youtu.be/kreCqCGJqTs	NASA Goddard's Innovation	For more than half a century, NASA's Goddard Space Flight Center has been at the forefront of discovery, creating new instruments and managing high-profile missions that have expanded our understanding of the world around us. Perhaps less well known is its enviable culture of innovation. Through its Internal Research and Development Program, Goddard technologists are pursuing new cutting-edge technologies — everything from nanotech coatings and miniaturized electronic components to lighter, more capable telescope mirrors — that will enable discovery in the future. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11002 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 06 13	NASA Goddard	https://youtu.be/V0vHIWakQ0	NASA Five Teachers, 500 Meters Above Greenland	This year five teachers were invited on board NASA's P-3B aircraft to fly at 500 meters above the glaciers of Greenland with Operation IceBridge, a six-year mission to study Arctic and Antarctic ice. Two teachers from Greenland, two from Denmark, and one from the United States were given the opportunity to see polar research first hand, and then take that experience back to their classrooms. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?11001 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 06 12	NASA Goddard	https://youtu.be/mc-wQwaUh_Q	NASA Fermi Detects Gamma Rays from a Solar Flare	During a powerful solar blast in March, NASA's Fermi Gamma-ray Space Telescope detected the highest-energy light ever associated with an eruption on the sun. The discovery heralds Fermi's new role as a solar observatory, a powerful new tool for understanding solar outbursts during the sun's maximum period of activity. "For most of Fermi's four years in orbit, its Large Area Telescope (LAT) saw the sun as a faint, steady gamma-ray source thanks to the impacts of high-speed particles called cosmic rays," said Nicola Omodei, an astrophysicist at Stanford University in California. "Now we're beginning to see what the sun itself can do." A solar flare is an explosive blast of light and charged particles. The powerful March 7 flare, which earned a classification of X5.4 based on the peak intensity of its X-rays, is the strongest eruption so far observed by Fermi's LAT. The flare produced such an outpouring of gamma rays -- a form of light with even greater energy than X-rays -- that the sun briefly became the brightest object in the gamma-ray sky. At the flare's peak, the LAT detected gamma rays with two billion times the energy of visible light, or about 4 billion electron volts (GeV), easily setting a record for the highest-energy light ever detected during or just after a solar flare. The flux of high-energy gamma rays, defined as those with energies beyond 100 million electron volts (MeV), was 1,000 times greater than the sun's steady output. The March 7 flare also is notable for the persistence of its gamma-	Transcript Link

2012 06 11	NASA Goddard	https://youtu.be/LE2vf7XVmKY	NASA Suomi Sees Asian Fires Migrate To North America	Research scientist Colin Seftor talks about images from the OMPS instrument on the Suomi NPP satellite. Suomi (NPP) launched in the fall of 2011. These images show smoke from Asia that migrates to North America. Seftor explains the importance of aerosols to the studies of climate as well as how critical it is to collect long term data records. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10997 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 06 08	NASA Goddard	https://youtu.be/7sbjLlgP5MI	NASA Goddard Spring Interns 2012	Ever wonder what it's like to be part of a NASA team? Well, three student interns have been given the opportunity of a lifetime. They were asked to create a major component for the Balloon Experimental Twin Telescope for Infrared Interferometry (BETTII) mission. Principal Investigator Stephen Rinehart mentored the students and gave them the freedom to be creative in making a star camera, which will study star birth in deep space. For more info about Goddard Internships go to: http://www.nasa.gov/centers/goddard/education/index.html This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10995 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 06 07	NASA Goddard	https://youtu.be/cpUf2EAmHxk	NASA Massive Phytoplankton Bloom Discovered Under Arctic Sea Ice	Scientists have made a biological discovery in Arctic Ocean waters as dramatic and unexpected as finding a rainforest in the middle of a desert. A NASA-sponsored expedition punched through three-foot thick sea ice to find waters richer in microscopic marine plants, essential to all sea life, than any other ocean region on Earth. The discovery is the result of an oceanographic expedition called ICESCAPE, or Impacts of Climate on EcoSystems and Chemistry of the Arctic Pacific Environment. The NASA-sponsored mission explored the seas along Alaska's western and northern coasts onboard a U.S. Coast Guard icebreaker during the summers of 2010 and 2011. The finding reveals a new consequence of the Arctic's warming climate and provides an important clue to understanding the impacts of a changing climate and environment on the Arctic Ocean and its ecology. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10907 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 06 06	NASA Goddard	https://youtu.be/4Z9rM8ChTjY	NASA SDO's Ultra-high Definition View of 2012 Venus Transit	Launched on Feb. 11, 2010, the Solar Dynamics Observatory, or SDO, is the most advanced spacecraft ever designed to study the sun. During its five-year mission, it will examine the sun's atmosphere, magnetic field and also provide a better understanding of the role the sun plays in Earth's atmospheric chemistry and climate. SDO provides images with resolution 8 times better than high-definition television and returns more than a terabyte of data each day. On June 5 2012, SDO collected images of the rarest predictable solar event--the transit of Venus across the face of the sun. This event happens in pairs eight years apart that are separated from each other by 105 or 121 years. The last transit was in 2004 and the next will not happen until 2117. The videos and images displayed here are constructed from several wavelengths of extreme ultraviolet light and a portion of the visible spectrum. The red colored sun is the 304 angstrom ultraviolet, the golden colored sun is 171 angstrom, the magenta sun is 1700 angstrom, and the orange sun is filtered visible light. 304 and 171 show the atmosphere of the sun, which does not appear in the visible part of the spectrum. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a010900/a010996/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast:	Transcript Link

2012 06 04 NASA Goddard <https://youtu.be/sUJZ0psnnKs> NASA It's Coming...

The LASCO C3 coronagraph on board the SOHO spacecraft has been watching the approach of Venus for its last solar transit until 2117. [Transcript](#) [Link](#)

With coronagraphs, the Sun is being blocked by an occulting disk, seen here in blue, so that SOHO can observe the much fainter features in the Sun's corona. The actual size of the Sun is represented by the white disk.

The transit of Venus begins tomorrow, June 5, at about 6pm Eastern Daylight Time, or about 10pm Universal Time. It will last approximately 6 hours.

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2012 05 31 NASA Goddard <https://youtu.be/M3qwnHAMJu0> NASA X-ray 'Echoes' Probe Habitat of Monster Black Hole

Astronomers using data from the European Space Agency's XMM-Newton satellite have found a long-sought X-ray signal from NGC 4151, a galaxy that contains a supermassive black hole. The discovery promises a new way to unravel what's happening in the neighborhood of these powerful objects. Most big galaxies host a big central black hole containing millions of times the sun's mass. When matter streams toward one of these supermassive black holes, the galaxy's center lights up, emitting billions of times more energy than the sun. For years, astronomers have been monitoring such "active galactic nuclei" (AGN) to better understand what happens on the brink of a monster black hole. [Transcript](#) [Link](#)

Matter falling toward a black hole collects into a rotating disk, where it becomes compressed and heated before eventually spilling over the black hole's event horizon, the point beyond which nothing can escape and astronomers cannot observe. A mysterious and intense X-ray source near the black hole shines onto the surface layers of the accretion disk, causing iron atoms to radiate characteristic emission -- what astronomers call the iron K line -- at about 6,000 to 7,000 electron volts. The inner part of the disk is orbiting the black hole so fast that the effects of Einstein's relativity come into play -- most notably, how time slows down close to the black hole. These relativistic effects broaden and distort the X-ray signal in a unique way. When the X-ray source near NGC 4151's black hole flares up, the accretion disk reflects the emission about half an hour later. Moving at the speed of light, the X-rays associated with the echo must have traveled an additional 400 million miles -- equivalent to about four times Earth's average

2012 05 30 NASA Goddard <https://youtu.be/jvXJzOrlTE> NASA MAVEN Profiles Carlos Gomez-Rosa

Systems Engineer Carlos Gomez-Rosa discusses his work on the ground communication system for the Mars Atmosphere and Volatile Evolution (MAVEN) mission, and his experience at NASA's Goddard Space Flight Center. This video is the second of a two-part Spanish-language series.

[Transcript](#)
[Link](#)

English captions available by clicking closed caption button on player.

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2012 05 24 NASA Goddard https://youtu.be/3Cx_FH_t3f4 NASA Tornadoes with Tim Samaras

Credits: NASA, NOAA

[Transcript](#)
[Link](#)

In this video severe storm researcher and engineer Tim Samaras talks about his view on tornadoes and what remains to be understood. He also covers the importance of satellite imagery to his research.

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2012 05 23 NASA Goddard <https://youtu.be/yAO9QVrEa-E> NASA Incandescent Sun

This video takes SDO images and applies additional processing to enhance the structures visible. While there is no scientific value to this processing, it does result in a beautiful, new way of looking at the sun. The original frames are in the 171 Angstrom wavelength of extreme ultraviolet. This wavelength shows plasma in the solar atmosphere, called the corona, that is around 600,000 Kelvin. The loops represent plasma held in place by magnetic fields. They are concentrated in "active regions" where the magnetic fields are the strongest. These active regions usually appear in visible light as sunspots. The events in this video represent 24 hours of activity on September 25, 2011.

[Transcript](#)
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2012 05 22 NASA Goddard <https://youtu.be/ZZx1xmNGcXI> NASA A Landsat Flyby

The Landsat program is the longest continuous global record of the Earth's surface, and continues to deliver both visually stunning and scientifically valuable images of our planet. This short video highlights Landsat's many benefits to society.

[Transcript](#)
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nasa.gov/landsat

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2012 05 21	NASA Goddard	https://youtu.be/Q3GpP_XU_ps	NASA TDRS Heart of Communication	The most recent evaluations of NASA's Tracking and Data Relay Satellite (TDRS) project confirmed all systems go for TDRS-K, a third generation upgrade of the orbiting communications network. TDRS-K is scheduled for launch aboard an Atlas V rocket from Cape Canaveral, Florida during the 2012 holiday season. The launch of TDRS-K will begin the replenishment of the fleet through the development and deployment of the next generation spacecraft. These satellites will ensure NASA's Space Network continues to provide around-the-clock, high throughput communications services to NASA's missions and serving the scientific community and human spaceflight program for years to come. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10976 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 05 18	NASA Goddard	https://youtu.be/KqRAnpJu8jQ	NASA Forest Recovering From Mt St Helens Eruption	The 1980 eruption of Mount St. Helens leveled surrounding forest, blasted away over a thousand feet of the mountain's summit, and claimed 57 human lives. Landsat satellites have tracked the recovery of the surrounding forest. This video shows that recovery, in a timelapse of annual images from 1979-2011. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10550 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 05 17	NASA Goddard	https://youtu.be/aBDXV3Qu0zw	NASA GPM The Fresh(water) Connection	The Global Precipitation Measurement (GPM) is an international satellite mission to provide next-generation observations of rain and snow worldwide every three hours. NASA and the Japan Aerospace Exploration Agency (JAXA) will launch a "Core" satellite carrying advanced instruments that will set a new standard for precipitation measurements from space. The data they provide will be used to unify precipitation measurements made by an international network of partner satellites to quantify when, where, and how much it rains or snows around the world. The GPM mission will help advance our understanding of Earth's water and energy cycles, improve the forecasting of extreme events that cause natural disasters, and extend current capabilities of using satellite precipitation information to directly benefit society. http://pmm.nasa.gov http://www.nasa.gov/GPM http://www.twitter.com/NASA_Rain http://www.facebook.com/NASA.Rain This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10989 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook:	Transcript Link
2012 05 15	NASA Goddard	https://youtu.be/1jqFxZI_2XY	NASA Aqua MODIS Science and Beauty	Beautiful images from the MODIS instrument on NASA's Aqua and Terra satellites are used by people all over the world every day. But MODIS is about more than just pretty pictures -- the instrument's contributions to science include a better understanding of the Earth's cloud cover, aerosols, phytoplankton levels, and land cover. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10893 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 05 10 NASA Goddard <https://youtu.be/LBn9VMzQco8> NASA IBEX Observing the Sun's Horizon

The Interstellar Boundary Explorer, or IBEX, is the first mission designed to map the entire region of the boundary of our Solar System. As charged particles from the Sun, called the "solar wind," flow outward well beyond the orbits of the planets, they collide with the material between the stars, called the "interstellar medium" (ISM). These interactions create energetic neutral atoms (ENAs), particles with no charge that move very quickly. This region emits no light that can be collected by conventional telescopes so, instead, IBEX, measures the particles that happen to be traveling inward from the boundary. IBEX contains two detectors designed to collect and measure ENAs, providing data about the mass, location, direction of origin, and energy of these particles. From these data, maps of the boundary are created. IBEX's sole, focused science objective is to discover the nature of the interactions between the solar wind and the interstellar medium at the edge of our Solar System.

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2012 05 09 NASA Goddard <https://youtu.be/7E-0j90Cwpk> NASA Afterschool Universe Stellar Fusion Demonstration

Afterschool Universe is an out-of-school-time astronomy program for middle school students that explores basic astronomy concepts through engaging hands-on activities and then takes participants on a journey through the Universe beyond the Solar System.

[Transcript](#)
[Link](#)

This video shows a simple activity with clay that demonstrates the stages of fusion within the core of a star. Depending on its mass, a star can fuse and create many different elements before it finally runs out of fuel.

If you are interested in the Afterschool Universe program, visit their website at <http://universe.nasa.gov/afterschool/>

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2012 05 01	NASA Goddard	https://youtu.be/5tE5XJzZ-Rw	NASA Pursuit of Light	NASA dreams big science. In this awesome new short, NASA presents the Earth, the planets, the Sun, and the endless universe beyond. Come for the cool, stay for the music, take away a sense of wonder to share. It's six minutes from Earth to forever, and you can see it here! This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10958 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 04 27	NASA Goddard	https://youtu.be/0lJbyKNlFeo	NASA Dalhart, Texas 1972-2011	A water-rich polka dot pattern takes over the traditional rectangular patchwork of fields in this 40 year sequence of Landsat images showing the dry Texas panhandle near the town of Dalhart. In this series, vegetation appears red and the bare soil of fallow fields or sparsely vegetated grasslands appear white to green. The blue-gray X near the center of the images marks the town of Dalhart. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10967 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 04 27	NASA Goddard	https://youtu.be/CUA7mEDe0ck	NASA GOES-R Changing the Future of Storm Prediction	This short video features highlights from a live Nationwide broadcast that took place on April 3, 2012 from the studio of NASA Goddard TV. NOAA's Deputy Administrator and Chief Scientist Dr. Kathryn Sullivan and Severe Storm Chaser and Engineer Tim Samaras talk about an important new satellite, GOES-R, that will be able to see tornadoes like never before. This video is public domain. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 04 26	NASA Goddard	https://youtu.be/JNEQUVPQUpA	NASA MAVEN Profiles Sandra Cauffman	Deputy Project Manager Sandra Cauffman talks about her work on the Mars Atmosphere and Volatile EvolutioN (MAVEN) mission and her career at NASA's Goddard Space Flight Center. This video is the first of a two-part Spanish-language series. Closed captions in English. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10968 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 04 25	NASA Goddard	https://youtu.be/08sDlxhNEHQ	NASA Warm Ocean Currents Cause Majority of Ice Loss from Antarctica	Warm ocean currents attacking the underside of ice shelves are the dominant cause of recent ice loss from Antarctica. This animation shows the circulation of ocean currents around the western Antarctic ice shelves. The shelves are indicated by the rainbow color; red is thicker (greater than 550 meters), while blue is thinner (less than 200 meters). Credit: NASA/Goddard CGI Lab This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?3948 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 04 25	NASA Goddard	https://youtu.be/i_11HEGHLAk	NASA OIB NASA and ESA in an Arctic Alliance	For the second straight year, NASA's Operation IceBridge is collaborating with the European Space Agency's CryoVEx program, flying aircraft low over Arctic sea ice while ESA's CryoSat satellite orbits above. In this video, IceBridge Project Scientist Michael Studinger discusses the benefits of the long term joint data set the agencies are creating.	Transcript Link

2012 04 25	NASA Goddard	https://youtu.be/8OcqhI6Mso	NASA Scientists Answer Top Space Weather Questions, Part II	NASA scientists answer some common questions about the sun, space weather, and how they affect the Earth. This is a two-part series. Part Two addresses: 1. Do all flares and CMEs affect the Earth? 2. What happens when a flare or CME hits the Earth? 3. How quickly can we feel the effects of space weather? 4. Why are there more flares and CMEs happening now? For more information about all these questions and more, visit NASA's Space Weather FAQ. http://www.nasa.gov/mission_pages/sunearth/spaceweather/index.html This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10959 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2012 04 24	NASA Goddard	https://youtu.be/LD8YB2q_9Mc	NASA Scientists Answer Top Space Weather Questions, Part 1	NASA scientists answer some common questions about the sun, space weather, and how they affect the Earth. This is a two-part series. Part One addresses: 1. What is space weather? 2. What are coronal mass ejections? 3. What are solar flares? 4. What are solar energetic particles? 5. What causes flares and CMEs? This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10959 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 04 20	NASA Goddard	https://youtu.be/G3TejSf5B7k	NASA SDO Year 2	April 21, 2012 marks the two-year anniversary of the Solar Dynamics Observatory (SDO) First Light press conference, where NASA revealed the first images taken by the spacecraft. This video highlights just some of the amazing events witnessed in SDO's second year. Learn more about this video at: http://www.nasa.gov/mission_pages/sdo/news/sdo-year2.html Music courtesy of Moby Gratis. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10966 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 04 19	NASA Goddard	https://youtu.be/FYWtYjW9FWQ	NASA Discovery Comes to Dulles	On April 17, 2012 the space shuttle Discovery hitched a ride on the back of a 747 jumbo jet especially designed as a space shuttle transport. It landed at Dulles Airport in Washington, DC, and the process to deliver Discovery to its new home at the Steven F. Udvar-Hazy Center got under way. Through the eyes of a veteran NASA tour guide and aficionado, DJ Emmanuel, we get a behind-the-scenes view of what it was like to be there on such an historic and exciting day!	Transcript Link

2012 04 19	NASA Goddard	https://youtu.be/0N8yvxCsrBk	NASA LRO Brings Earthrise to Everyone	On December 24, 1968, Apollo 8 Commander Frank Borman and crew members William A. Anders and James A. Lovell, Jr. became the first humans to photograph the Earth rising over the moon. Now, the rest of us can see what it was like in a new NASA visualization that draws on richly detailed maps of the moon's surface made from data gathered by NASA's Lunar Reconnaissance Orbiter! The narration in this visualization comes from the original audio recording of the Apollo 8 astronauts. The flight time has been compressed for effect. The Earth in this visualization is not an exact duplication of what the astronauts saw but a mosaic of more recent images taken by Earth-observing satellites. Representative clouds were then layered on top of the mosaic. For more information, visit http://www.nasa.gov/mission_pages/LRO/news/apollo8-retrace.html This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10961 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: https://www.facebook.com/nasagoddard	Transcript Link
2012 04 18	NASA Goddard	https://youtu.be/gIX58g-suouA	NASA Earth Day 2012 Video Contest	Create NASA Earth Day Video, Win Seats To A Launch http://www.nasa.gov/topics/earth/features/earthday-vid-2012.html From the first television images of Earth from space, to the now iconic Apollo photographs of Earth, to Voyager's "pale blue dot," NASA has changed how we think about exploring Earth and even how we see Earth. Looking back from space provides far more than thought-provoking pictures. NASA's fleet of Earth-observing satellites orbits our planet multiple times each day, scanning the air, land and seas for critical information about how our planet behaves and how it is changing. Computer-aided visualization of these otherwise invisible realms of data continues to show us radical new ways of looking at Earth. To mark Earth Day 2012, we are for the second year in a row inviting you to create your own compelling video vision of NASA's exploration of Earth -- The Home Frontier. Submit your creation to us and a panel of judges will select the best submission, with a fitting award on the line. The winner will receive behind-the-scenes access to the next rocket launch of a NASA Earth-observing satellite. The Landsat Data Continuity Mission (LDCM), a joint project of NASA and the U.S. Geological Survey, is scheduled to launch from Vandenberg Air Force Base in California in January 2013.	Transcript Link

2012 04 16 NASA Goddard <https://youtu.be/W7brf0OG6P0> NASA A Big Blast A beautiful prominence eruption producing a coronal mass ejection (CME) shot off the east limb (left side) of the sun on April 16, 2012. Such eruptions are often associated with solar flares, and in this case an M1 class (medium-sized) flare occurred at the same time, peaking at 1:45 PM EDT. The CME was not aimed toward Earth.

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2012 04 02 NASA Goddard <https://youtu.be/i5ucytz2C7I> NASA Fermi Provides New Insights on Dark Matter

There's more to the cosmos than meets the eye. About 80 percent of the matter in the universe is invisible to telescopes, yet its gravitational influence is manifest in the orbital speeds of stars around galaxies and in the motions of clusters of galaxies. Yet, despite decades of effort, no one knows what this "dark matter" really is. Many scientists think it's likely that the mystery will be solved with the discovery of new kinds of subatomic particles, types necessarily different from those composing atoms of the ordinary matter all around us. The search to detect and identify these particles is underway in experiments both around the globe and above it.

[Transcript](#)
[Link](#)

Scientists working with data from NASA's Fermi Gamma-ray Space Telescope have looked for signals from some of these hypothetical particles by zeroing in on 10 small, faint galaxies that orbit our own. Although no signals have been detected, a novel analysis technique applied to two years of data from the observatory's Large Area Telescope (LAT) has essentially eliminated these particle candidates for the first time.

WIMPs, or Weakly Interacting Massive Particles, represent a favored class of dark matter candidates. Some WIMPs may mutually annihilate when pairs of them interact, a process expected to produce gamma rays -- the most energetic form of light -- that the LAT is designed to detect.

The team examined two years of LAT-detected gamma rays with

2012 03 29	NASA Goddard	https://youtu.be/CCmTYOPKGDs	NASA Perpetual Ocean	This visualization shows ocean surface currents around the world during the period from June 2005 through Decemeber 2007. The visualization does not include a narration or annotations; the goal was to use ocean flow data to create a simple, visceral experience. This visualization was produced using NASA/JPL's computational model called Estimating the Circulation and Climate of the Ocean, Phase II or ECCO2.. ECCO2 is high resolution model of the global ocean and sea-ice. ECCO2 attempts to model the oceans and sea ice to increasingly accurate resolutions that begin to resolve ocean eddies and other narrow-current systems which transport heat and carbon in the oceans.The ECCO2 model simulates ocean flows at all depths, but only surface flows are used in this visualization. The dark patterns under the ocean represent the undersea bathymetry. Topographic land exaggeration is 20x and bathymetric exaggeration is 40x. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a000000/a003800/a003827/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2012 03 27	NASA Goddard	https://youtu.be/3iK21nqBh4	NASA Lighting the Sky NASA's ATREX Mission Launches	Or find us on Twitter: NASA successfully launched five suborbital sounding rockets this morning from its Wallops Flight Facility in Virginia as part of a study of the upper level jet stream. The first rocket was launched at 4:58 a.m. EDT and each subsequent rocket was launched 80 seconds apart. Each rocket released a chemical tracer that created milky, white clouds at the edge of space. Tracking the way the clouds move can help scientists understand the movement of the winds some 65 miles up in the sky, which in turn will help create better models of the electromagnetic regions of space that can damage man-made satellites and disrupt communications systems. The launches and clouds were reported to be seen from as far south as Wilmington, N.C.; west to Charlestown, W. Va.; and north to Buffalo, N.Y. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link

2012 03 20 NASA Goddard <https://youtu.be/2GXICapp5q4> NASA Dual
Precipitation
Radar Arrives at
Goddard

The Dual-frequency Precipitation Radar (DPR) built by the Japan Aerospace Exploration Agency (JAXA) for the Global Precipitation Measurement (GPM) mission's Core Observatory arrived on Friday, March 16 and was unloaded today at NASA's Goddard Space Flight Center, Greenbelt, Md. Comprised of two radars, the DPR is one of two instruments that will fly on the Core Observatory scheduled for launch in February 2014. The GPM mission will provide a new generation of satellite observations of rain and snow worldwide every three hours for scientific research and societal benefits. NASA's mission partner JAXA developed the DPR in cooperation with Japan's National Institute of Information and Communications Technology. The instrument will provide 3-D measurements of the shapes and sizes of raindrops and snowflakes and other physical characteristics that will allow scientists to better understand the physical properties of storms.

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2012 03 19 NASA Goddard <https://youtu.be/plajhcgbum8> NASA GPM
Wraps Up Cold
Season Field
Campaign

For six weeks in Ontario, Canada, scientists and engineers lead a field campaign to study the science and mechanics of falling snow. The datasets retrieved will be used to generate algorithms which translate what the GPM Core satellite "sees" into precipitation rates, including that of falling snow. Ground validation science manager Walt Petersen gives a summary of the GCPEX field campaign. Field campaigns are critical in improving satellite observations and precipitation measurements.

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2012 03 14	NASA Goddard	https://youtu.be/UIKmSQqp8wY	NASA Evolution of the Moon	From year to year, the moon never seems to change. Craters and other formations appear to be permanent now, but the moon didn't always look like this. Thanks to NASA's Lunar Reconnaissance Orbiter, we now have a better look at some of the moon's history. Learn more in this video! This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10930 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 03 14	NASA Goddard	https://youtu.be/2iSZMv64wuU	NASA Tour of the Moon	Although the moon has remained largely unchanged during human history, our understanding of it and how it has evolved over time has evolved dramatically. Thanks to new measurements, we have new and unprecedented views of its surface, along with new insight into how it and other rocky planets in our solar system came to look the way they do. See some of the sights and learn more about the moon here! This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10929 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 03 13	NASA Goddard	https://youtu.be/c6OmFYEgzA0	NASA TIRS The Thermal InfraRed Sensor on LDCM	The Thermal InfraRed Sensor (TIRS) is one of the instruments on the Landsat Data Continuity Mission (LDCM) satellite. It will continue the archive of thermal imaging and support emerging applications such as evapotranspiration rate measurements for water management. TIRS is being built by NASA GSFC and has a three-year design life. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 03 13	NASA Goddard	https://youtu.be/YHAPD4ACf7U	NASA Rattling Jet Stream on Jupiter	New movies of Jupiter are the first to catch an invisible wave shaking up one of the giant planet's jet streams, an interaction that also takes place in Earth's atmosphere and influences the weather. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10927 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 03 13	NASA Goddard	https://youtu.be/Auf4-4gNpdl	NASA Viz iPad App Expands Coverage Across the Universe	Download the app now: http://svs.gsfc.nasa.gov/nasaviz/ NASA has peered 13 billion years back into the history of the universe. You won't have to look as far to find our cutting-edge science. The NASA Visualization Explorer app has broadened its scope to include more awe-inspiring discoveries beamed back to Earth from the agency's entire fleet of satellites, spacecraft and space telescopes. Expect stories each week that cover all four fields of NASA's science research: planetary, heliophysics, astrophysics and Earth. You'll get new views of the planets and sun from satellites such as Cassini and Solar Dynamics Observatory; visualizations and animations of stars, distant galaxies and the cosmic stuff in between; and dramatic images taken by the legendary Hubble Space Telescope. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a010900/a010909/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 03 12	NASA Goddard	https://youtu.be/2nceMzGAASw	NASA GOES Sees Tornadoes	Tornado season began rather early in 2012. The GOES satellites send valuable data to help meteorologists stay a step ahead of severe storms. This video shows satellite imagery from the March 2-3, 2012 tornado outbreak that damaged severely Henryville, Indiana. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 03 09	NASA Goddard	https://youtu.be/LboVN38ZdgU	NASA Behind the Scenes at the Satellite Servicing Center and Robotic Lab	NASA's highly anticipated Robotic Refueling Mission (RRM) began operations on the International Space Station with the Canadian Dextre robot and RRM tools March 7-9, 2012, marking important milestones in satellite-servicing technology and the use of the space station robotic capabilities. A joint effort between NASA and the Canadian Space Agency (CSA), RRM is an external station experiment designed to demonstrate the technologies, tools, and techniques needed to robotically service and refuel satellites in orbit, especially those not built with servicing in mind. RRM represents the first time the space station's Dextre robot is used for technology research and development, moving it beyond robotic maintenance of the orbiting superstructure. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 03 08	NASA Goddard	https://youtu.be/nsCi9Iyib94	NASA Aqua's AMSR-E Scans Earth's Water Cycle	From June 2002 to early October 2011, the Advanced Microwave Scanning Radiometer for the Earth Observing System (AMSR-E) on the Aqua satellite provided a wealth of data about the Earth's water cycle. Among the many variables calculated from AMSR-E data are sea surface temperature, atmospheric water vapor, rainfall, Arctic and Antarctic sea ice coverages, and snow cover. The AMSR-E data allow the calculation of surface variables under nearly all weather conditions, irrespective of cloud cover and irrespective of whether it is daytime or nighttime. AMSR-E was provided to NASA's Aqua program by the Japan Aerospace Exploration Agency (JAXA), which also has a follow-on AMSR-2 instrument scheduled to be launched in 2012. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10893 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 03 07 NASA Goddard <https://youtu.be/4xKRBkBBEP0> NASA Massive Solar Flare gets HD Close Up

Take a closer look at the flare that erupted on March 6, 2012.

[Transcript Link](#)

This movie of the March 6, 2012 X5.4 flare was captured by the Solar Dynamics Observatory (SDO) in the 171 and 131 Angstrom wavelength. One of the most dramatic features is the way the entire surface of the sun seems to ripple with the force of the eruption. This movement comes from something called EIT waves -- because they were first discovered with the Extreme ultraviolet Imaging Telescope (EIT) on the Solar Heliospheric Observatory. Since SDO captures images every 12 seconds, it has been able to map the full evolution of these waves and confirm that they can travel across the full breadth of the sun. The waves move at over a million miles per hour, zipping from one side of the sun to the other in about an hour. The movie shows two distinct waves. The first seems to spread in all directions; the second is narrower, moving toward the southeast. Such waves are associated with, and perhaps trigger, fast coronal mass ejections, so it is likely that each one is connected to one of the two CMEs that erupted on March 6.

Caption: NASA/SDO

2012 03 07 NASA Goddard <https://youtu.be/uFkLGe1BYic> NASA ATREX Studies Earth's Ultra-High Super Wind

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High in the sky, 60 to 65 miles above Earth's surface, winds rush through a little understood region of Earth's atmosphere at speeds of 200 to 300 miles per hour. Lower than a typical satellite's orbit, higher than where most planes fly, this upper atmosphere jet stream makes a perfect target for a particular kind of scientific experiment: the sounding rocket. Some 35 to 40 feet long, sounding rockets shoot up into the sky for short journeys of eight to ten minutes, allowing scientists to probe difficult-to-reach layers of the atmosphere.

In March, NASA will launch five such rockets in approximately five minutes to study these high-altitude winds and their intimate connection to the complicated electrical current patterns that surround Earth. First noticed in the 1960s, the winds in this jet stream shouldn't be confused with the lower jet stream located around 30,000 feet, through which passenger jets fly and which is reported in weather forecasts. This rocket experiment is designed to gain a better understanding of the high-altitude winds and help scientists better model the electromagnetic regions of space that can damage man-made satellites and disrupt communications systems. The experiment will also help explain how the effects of atmospheric disturbances in one part of the globe can be transported to other parts of the globe in a mere day or two.

The five sounding rockets, known as the Anomalous Transport Rocket Experiment (ATREX), will launch from NASA's Wallops Flight Facility in Virginia releasing a chemical tracer into the air. The

[Transcript Link](#)

2012 03 07	NASA Goddard	https://youtu.be/fVcT_fhlrEY	NASA X5.4 Flare	This movie of the March 6, 2012 X5.4 flare was captured by the Solar Dynamics Observatory (SDO) in the 171 Angstrom wavelength. One of the most dramatic features is the way the entire surface of the sun seems to ripple with the force of the eruption. This movement comes from something called EIT waves -- because they were first discovered with the Extreme ultraviolet Imaging Telescope (EIT) on the Solar Heliospheric Observatory. Since SDO captures images every 12 seconds, it has been able to map the full evolution of these waves and confirm that they can travel across the full breadth of the sun. The waves move at over a million miles per hour, zipping from one side of the sun to the other in about an hour. The movie shows two distinct waves. The first seems to spread in all directions; the second is narrower, moving toward the southeast. Such waves are associated with, and perhaps trigger, fast coronal mass ejections, so it is likely that each one is connected to one of the two CMEs that erupted on March 6. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 03 05	NASA Goddard	https://youtu.be/edRuLAlAysE	NASA Active Region on the Sun Spits Out Three Flares	On March 2, 2012 a new active region on the sun, region 1429, rotated into view. It has let loose two M-class flares and one X-class so far. The M-class flares erupted on March 2 and on March 4. The third flare, rated an X1, peaked at 10:30 ET on March 4. A CME accompanied each flare, though due to the fact that this active region is still off to the side of the sun, they will likely have a weak effect on Earth's magnetosphere. The M class flare on March 4 flare also came with what's called a Type IV radio burst that lasted for about 46 minutes. Sending out broadband radio waves, these bursts can occur towards the end of a solar flare and are believed to be created by moving electrons trapped in great, looping magnetic fields left over from the initial flare. The bursts can interfere with radio communications on Earth. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 03 01 NASA Goddard <https://youtu.be/xFzdyxwx50M> NASA What Doesn't Stay in Vegas Sprawl.

When Landsat 5 launched on March 1, 1984, Las Vegas was a smaller city. This image series, done in honor of the satellite's 28th birthday, shows the desert city's massive growth spurt since 1972. The outward expansion of the city is shown in a false-color time lapse of data from all the Landsat satellites.

[Transcript](#)
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The large red areas are actually green space, mostly golf courses and city parks. You'll notice the images become a lot sharper around 1984, when new instrument designs improved the ability to resolve smaller parcels of land.

These Las Vegas images were created using reflected light from the near-infrared, red and green portions of the electromagnetic spectrum (Landsat 5 TM bands 4,3,2 and Landsat 1-3 MSS bands 4,2,1).

Landsat data have been instrumental in increasing our understanding of forest health, storm damage, agricultural trends, urban growth, and many other ongoing changes to our land resources. Studies using Landsat data have helped land managers keep track of the pace of urbanization in locations around the world.

NASA and the U.S. Department of the Interior through the U.S. Geological Survey (USGS) jointly manage Landsat, and the USGS preserves a 40-year archive of Landsat images with free distribution of data over the Internet. The next Landsat satellite, now known as the Landsat Data Continuity Mission (LDCM) and later to be called

2012 02 28 NASA Goddard <https://youtu.be/WqD7OLfPMlg> NASA Flying Through the Rift

An update on the notorious P.I.G. (Pine Island Glacier)

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2012 02 27	NASA Goddard	https://youtu.be/R8x6lG64_es	NASA TIRS Over Time	The Thermal InfraRed Sensor (TIRS) is one of the instruments on the Landsat Data Continuity Mission (LDCM) satellite. It will continue the archive of thermal imaging and support emerging applications such as evapotranspiration rate measurements for water management. TIRS is being built by NASA GSFC and has a three-year design life. This timelapse shows the 92 hours during which TIRS was cleaned, bagged, and packed to ship to Orbital Sciences Corporation in Arizona, where it will be integrated with the spacecraft. For more information about TIRS and LDCM, please visit: http://www.nasa.gov/landsat This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10914 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 02 27	NASA Goddard	https://youtu.be/0gs7Lms8Gtw	NASA Visions of Goddard	Excerpts from 14 short films about NASA's Goddard Space Flight Center. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 02 23	NASA Goddard	https://youtu.be/Cj1vgmXr5M	NASA Looking Down a Well A Brief History of Geodesy	Geodesy is a field of study that deals with the measurement and representation of the Earth, and it all started when a clever human named Eratosthenes discovered that you could measure the circumference of the Earth by looking down a well. Over time, the field of geodesy has expanded and evolved dramatically, and NASA uses technology like radio telescopes, ground surveys, and satellites to contribute! Learn more about geodesy in this video! This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10910 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 02 20	NASA Goddard	https://youtu.be/h64bXkGAas	NASA Recent Geological Activity on the Moon	New images acquired by NASA's Lunar Reconnaissance Orbiter (LRO) spacecraft show that the moon's crust is being slightly stretched, forming small valleys - at least in some small areas. High-resolution images obtained by the Lunar Reconnaissance Orbiter Camera (LROC) provide evidence that these valleys are very young, suggesting the moon has experienced relatively recent geologic activity. Smithsonian Institution Senior Scientist Tom Watters explains more about the moon's recent geological activity in this short video. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10915 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 02 17	NASA Goddard	https://youtu.be/foYOftZY9NU	NASA Twisting Plasma on the Sun	Darker, cooler plasma slid and shifted back and forth above the Sun's surface seen here for 30 hours (Feb. 7-8, 2012) in extreme ultraviolet light. An active region rotating into view provides a bright backdrop to the gyrating streams of plasma. The particles are being pulled this way and that by competing magnetic forces. They are tracking along strands of magnetic field lines. This kind of detailed solar observation with high-resolution frames and a four-minute cadence was not possible until SDO, which launched two years ago on Feb. 11, 2010. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2012 02 10	NASA Goddard	https://youtu.be/noNyWjV5IAY	NASA Afterschool Universe How Light Carries Information	Afterschool Universe is an out-of-school-time astronomy program for middle school students that explores basic astronomy concepts through engaging hands-on activities and then takes participants on a journey through the Universe beyond the Solar System. This video shows a simple kinesthetic activity that demonstrates how all the information we obtain about objects in the universe is carried to us by light, and it takes time for light to travel to us from those objects. The amount of time it takes depends on how far away they are. If you are interested in the Afterschool Universe program, visit their website at http://universe.nasa.gov/afterschool/ You can also go to the Afterschool Universe YouTube channel for more demonstration videos http://www.youtube.com/user/AfterschoolUniverse This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?1011 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link

2012 02 08	NASA Goddard	https://youtu.be/YYymZgqZLb4	NASA Glacial Ice Loss Himalayas	In the first comprehensive satellite study of its kind, a University of Colorado Boulder-led team used NASA data to calculate how much Earth's melting land ice is adding to global sea level rise. This animation shows the average yearly change in mass, as measured by the NASA/German Aerospace Center Gravity Recovery And Climate Experiment (GRACE) satellite mission. The animation shows ice loss over the Indian subcontinent, as measured in centimeters of water, from 2003 to 2010. The yellow circles mark locations of glaciers. There is significant mass loss in this region (denoted by the blue and purple colors), but it is concentrated over the plains south of the glaciers, and is caused by groundwater depletion. A colorbar overlay shows the range of values displayed. Read more about this study, published Feb. 8, 2012 in Nature, here: http://www.nasa.gov/topics/earth/features/grace20120208.html See animations of a global glacier inventory and ice loss around the world here:	Transcript Link
2012 02 08	NASA Goddard	https://youtu.be/qwvWH5tn1Tk	NASA Glacial Ice Loss Greenland and Antarctica	In the first comprehensive satellite study of its kind, a University of Colorado Boulder-led team used NASA data to calculate how much Earth's melting land ice is adding to global sea level rise. This animation shows the average yearly change in mass, as measured by the NASA/German Aerospace Center Gravity Recovery And Climate Experiment (GRACE) satellite mission. The animation shows ice loss over Greenland and Antarctica, as measured in centimeters of water from 2003 to 2010. These two landmasses are covered with the largest land-based ice sheets in the world, and are the key sources of scientists' concern about future sea-level rise. Regions with large ice loss rates are denoted with the blue and purple colors. There are enormous ice loss rates over substantial regions of both ice sheets. A colorbar shows the range of values displayed. Read more about this study, published Feb. 8, 2012 in Nature, here: http://www.nasa.gov/topics/earth/features/grace20120208.html See animations of a global glacier inventory and ice loss around the	Transcript Link

2012 02 08	NASA Goddard	https://youtu.be/6FTPPge13b0	NASA Glacial Ice Loss Around the World	In the first comprehensive satellite study of its kind, a University of Colorado Boulder-led team used NASA data to calculate how much Earth's melting land ice is adding to global sea level rise. This animation begins with yellow dots showing the study's global inventory of individual glaciers, as measured by the NASA/German Aerospace Center Gravity Recovery And Climate Experiment (GRACE) satellite mission. The animation then fades to show the average yearly change in mass, as measured in centimeters of water from 2003 to 2010 from all of the worlds glaciers and ice caps (excluding Greenland and Antarctica). This is essentially a measure of how much ice the world's glaciers are losing, and in some cases gaining. Regions with large ice loss rages stand out clearly as blue and purple. A colorbar overlay shows the range of values displayed. Read more about this study, published Feb. 8, 2012 in Nature, here: http://www.nasa.gov/topics/earth/features/grace20120208.html See animations of ice loss in Greenland and Antarctica: http://svs.gsfc.nasa.gov/vis/a000000/a003900/a003910/	Transcript Link
2012 02 06	NASA Goddard	https://youtu.be/r2yg-KcOnWo	NASA Aqua AIRS Visions of Weather and Climate	One of the primary instruments on NASA's Aqua spacecraft is the Atmospheric Infrared Sounder (AIRS), which is providing a detailed three-dimensional view of the atmosphere. This new view is helping scientists to better understand the climate system and is proving of great value also in several practical applications, including weather forecasting. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10893 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2012 02 01 NASA Goddard <https://youtu.be/DZVVR-C2TJgs> NASA Uncovering Winter's Mystery A brief recap of the satellite news media tour on February 1, 2012 that looked at the science of falling snow, how NASA observes snow from space, and the factors that lead to the 2010 "Snowmageddon." For more on the story, check out <http://www.nasa.gov/topics/earth/features/know-snow.html>

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2012 02 01 NASA Goddard <https://youtu.be/GqUTyD4lCeM> NASA Studying the Science of Falling Snow GPM Deputy Project Scientist Gail Skofronick-Jackson tells us about the science of falling snow and what the GPM mission will do to study this critical component of the Earth's water cycle. [Transcript](#) [Link](#)

For the full story, go here
<http://www.nasa.gov/topics/earth/features/know-snow.html>

2012 01 31 NASA Goddard <https://youtu.be/uXfoAYghGVE> NASA IBEX Spacecraft Observes Matter from Interstellar Space

A great magnetic bubble surrounds the solar system as it cruises through the galaxy. The sun pumps the inside of the bubble full of solar particles that stream out to the edge until they collide with the material that fills the rest of the galaxy, at a complex boundary called the heliosheath. On the other side of the boundary, electrically charged particles from the galactic wind blow by, but rebound off the heliosheath, never to enter the solar system. Neutral particles, on the other hand, are a different story. They saunter across the boundary as if it weren't there, continuing on another 7.5 billion miles for 30 years until they get caught by the sun's gravity, and sling shot around the star. There, NASA's Interstellar Boundary Explorer lies in wait for them. Known as IBEX for short, this spacecraft methodically measures these samples of the mysterious neighborhood beyond our home. IBEX scans the entire sky once a year, and every February, its instruments point in the correct direction to intercept incoming neutral atoms. IBEX counted those atoms in 2009 and 2010 and has now captured the best and most complete glimpse of the material that lies so far outside our own system.

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The results? It's an alien environment out there: the material in that galactic wind doesn't look like the same stuff our solar system is made of.

More than just helping to determine the distribution of elements in the galactic wind, these new measurements give clues about how and where our solar system formed, the forces that physically shape

2012 01 24 NASA Goddard <https://youtu.be/GHGg6pEPON4> NASA Biggest Solar Storm Since 2003

The sun erupted late on January 22, 2012 with an M8.7 class flare, an earth-directed coronal mass ejection (CME), and a burst of fast moving, highly energetic protons known as a "solar energetic particle" event. The latter has caused the strongest solar radiation storm since September 2005 according to NOAA's Space Weather Prediction Center.

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NASA's Goddard Space Weather Center's models predict that the CME is moving at almost 1,400 miles per second, and could reach Earth's magnetosphere -- the magnetic envelope that surrounds Earth -- as early as tomorrow, Jan 24 at 9 AM ET (plus or minus 7 hours). This has the potential to provide good auroral displays, possibly at lower latitudes than normal.

What is a CME? Learn more here:

http://www.nasa.gov/mission_pages/sunearth/spaceweather/index.html

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2012 01 20 NASA Goddard <https://youtu.be/EoOrtvYTKeE> NASA Temperature Data 1880-2011

<http://www.nasa.gov/topics/earth/features/2011-temps.html>

[Transcript Link](#)

The global average surface temperature in 2011 was the ninth warmest since 1880. The finding sustains a trend that has seen the 21st century experience nine of the 10 warmest years in the modern meteorological record. NASA's Goddard Institute for Space Studies (GISS) in New York released an analysis of how temperatures around the globe in 2011 compared to the average global temperature from the mid-20th century. The comparison shows how Earth continues to experience higher temperatures than several decades ago. The average temperature around the globe in 2011 was 0.92 degrees F (0.51 C) higher than the mid-20th century baseline.

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2012 01 18 NASA Goddard <https://youtu.be/sCxlqgZA7ag> NASA This World Is Black and White

A look at how the historic DaisyWorld model illustrates earth science concepts, such as albedo and feedback loops. This webshort was produced as an educational tie-in with the Science on a Sphere feature LOOP. For more information go to <http://svs.gsfc.nasa.gov/loop>
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2012 01 12 NASA Goddard <https://youtu.be/unlfchZaRo0> NASA An Introduction to Aqua

The first in a series of episodes looking at the instruments and applications of the Aqua satellite.

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2012 01 10 NASA Goddard <https://youtu.be/dF-KhAXbV8k> NASA Black Hole Launches 'Bullets' of Gas.

Using observations from NASA's Rossi X-ray Timing Explorer (RXTE) satellite and the National Science Foundation's (NSF) Very Long Baseline Array (VLBA) radio telescope, an international team of astronomers has identified the moment when a black hole in our galaxy launched superfast knots of gas into space.

[Transcript Link](#)

Racing outward at about one-quarter the speed of light, these "bullets" of ionized gas are thought to arise from a region located just outside the black hole's event horizon, the point beyond which nothing can escape.

The research centered on the mid-2009 outburst of a binary system known as H1743-322, located about 28,000 light-years away toward the constellation Scorpius. Discovered by NASA's HEAO-1 satellite in 1977, the system is composed of a normal star and a black hole of modest but unknown masses.

Their orbit around each other is measured in days, which puts them so close together that the black hole pulls a continuous stream of matter from its stellar companion. The flowing gas forms a flattened accretion disk millions of miles across, several times wider than our sun, centered on the black hole. As matter swirls inward, it is compressed and heated to tens of millions of degrees, so hot that it emits X-rays.

Some of the infalling matter becomes re-directed out of the accretion disk as dual, oppositely directed jets. Most of the time,

2012 01 05 NASA Goddard <https://youtu.be/y8diugAI6YA> NASA Russian Runoff Freshens Canadian Arctic

The transpolar drift (purple arrows) is a dominant circulation feature in the Arctic Ocean that carries freshwater runoff (red arrows) from rivers in Russia across the North Pole and south towards Greenland. Under changing atmospheric conditions, emergent circulation patterns (blue arrows) drive freshwater runoff east towards Canada, resulting in freshening of Arctic water in the Canada Basin. Understanding this more complex pathway will help scientists make better predictions about the Arctic's response to climate change. The findings appear in the Jan. 5 issue of the journal Nature. A link to the press release is here:
<http://www.nasa.gov/topics/earth/features/earth20120104.html>

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2011 12 16 NASA Goddard <https://youtu.be/fFC2IU-O8M0> NASA SDO Sees Comet Lovejoy Survive Close Encounter with Sun

One instrument watching for the comet was the Solar Dynamics Observatory (SDO), which adjusted its cameras in order to watch the trajectory. Not only does this help with comet research, but it also helps orient instruments on SDO -- since the scientists know where the comet is based on other spacecraft, they can finely determine the position of SDO's mirrors. This first clip from SDO from the evening of Dec 15, 2011 shows Comet Lovejoy moving in toward the sun.

Comet Lovejoy survived its encounter with the sun. The second clip shows the comet exiting from behind the right side of the sun, after an hour of travel through its closest approach to the sun. By tracking how the comet interacts with the sun's atmosphere, the corona, and how material from the tail moves along the sun's magnetic field lines, solar scientists hope to learn more about the corona. This movie was filmed by the Solar Dynamics Observatory in 171 Angstrom wavelength, which is typically shown in yellow.

Credit: NASA/SDO

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2011 12 15 NASA Goddard <https://youtu.be/YIHS-JIkYP> NASA RXTE Detects 'Heartbeat' Of Smallest Black Hole Candidate

This animation compares the X-ray 'heartbeats' of GRS 1915 and IGR J17091, two black holes that ingest gas from companion stars. GRS 1915 has nearly five times the mass of IGR J17091, which at three solar masses may be the smallest black hole known. A fly-through relates the heartbeats to hypothesized changes in the black hole's jet and disk.

Data from NASA's Rossi X-ray Timing Explorer (RXTE) satellite has identified a candidate for the smallest-known black hole. The evidence comes from a specific type of X-ray pattern -- nicknamed a "heartbeat" because of its resemblance to an electrocardiogram -- that until now has been recorded in only one other black hole system.

Named IGR J17091-3624 after the astronomical coordinates of its sky position, the binary system pairs a normal star with a black hole that may weigh less than three times the sun's mass, near the theoretical boundary where black-hole status is first becomes possible. Flare-ups occur when gas from the normal star streams toward the black hole and forms a disk around it. Friction within the disk heats the gas to millions of degrees, which is hot enough to radiate X-rays.

Many black hole binaries show distinct and highly structured patterns of X-ray changes, which scientists distinguish by Greek-letter names. But to date only IGR J17091 and one other system, named GRS 1915+105, exhibit so-called rho-class oscillations that astronomers describe as a 'heartbeat' reflecting the accretion and ejection of matter.

It's thought that strong magnetic fields near the black hole's event

2011 12 13 NASA Goddard <https://youtu.be/tfOF4IMizkw> NASA Developing a Comet Harpoon for Sample Return

The Comet Nucleus Sample Return mission will collect subsurface samples from a comet and return them to Earth. Comets and asteroids are leftover remnants from the early solar system and by studying samples from these objects, we can learn more about the formation of our solar system and may find clues to the origin of life on Earth.

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2011 12 09	NASA Goddard	https://youtu.be/p3A9Eo7oDP4	NASA LRO's Diviner Takes the Moon's Temperature During Dec. 10, 2011 Eclipse	During the December 2011 lunar eclipse, scientists will be able to get a unique view of the moon. While the sun is blocked by the Earth, LRO's Diviner instrument will take the temperature on the lunar surface. Since different rock sizes cool at different rates, scientists will be able to infer the size and density of rocks on the moon. This video is public domain. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 12 08	NASA Goddard	https://youtu.be/B5J3hyvzmKY	NASA December 10, 2011 Lunar Eclipse Essentials	When the moon passes through the Earth's shadow, it causes the moon to look very unusual for a short period of time. This event is called a lunar eclipse, and it occurs roughly twice a year. Learn more about how lunar eclipses work in this video! This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10787 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 12 05	NASA Goddard	https://youtu.be/BalJJ-btleM	NASA Ancient Dry Spells Offer Clues About the Future of Drought	Ancient Meso-American civilizations of the Mayans and Aztecs likely amplified droughts in the Yucatan and southern Mexico by clearing rainforests to make room for pastures and farmland. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10879 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 12 01	NASA Goddard	https://youtu.be/8WNpSDCx0Ig	NASA NPP Making the News	When it comes to a NASA mission, it is not just about the science and engineering but it is also important to educate the public about the program. In this video television crews work night and day to make sure that the audience is well informed and up to date on the NPP mission events. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10742 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 11 30	NASA Goddard	https://youtu.be/cQ7rSScb2I0	NASA The Dual Personality of the 'Christmas Burst'	The Christmas burst, also known as GRB 101225A, was discovered in the constellation Andromeda by Swift's Burst Alert Telescope at 1:38 p.m. EST on Dec. 25, 2010. Two very different scenarios successfully reproduce features of this peculiar cosmic explosion. It was either caused by novel type of supernova located billions of light-years away or an unusual collision much closer to home, within our own galaxy. Common to both scenarios is the presence of a neutron star, the crushed core that forms when a star many times the sun's mass explodes. According to one science team, the burst occurred in an exotic binary system where a neutron star orbited a normal star that had just entered its red giant phase. The outer atmosphere of the giant expanded so much that it engulfed the neutron star, which resulted in both the ejection of the giant's atmosphere and rapid tightening of the neutron star's orbit. Once the two stars became wrapped in a common envelope of gas, the neutron star may have merged with the giant's core after just five orbits, or about 18 months. The end result of the merger was the birth of a black hole and the production of oppositely directed jets of particles moving at nearly the speed of light, which made the gamma rays, followed by a weak supernova. Based on this interpretation, the event took place about 5.5 billion light-years away, and the team has detected what may be a faint galaxy at the right location. Another team supports an alternative model that involves the tidal disruption of a large comet-like object and the ensuing crash of	Transcript Link

2011 11 28	NASA Goddard	https://youtu.be/1UNYT-i36zCg	NASA Fermi Reveals a Cosmic-ray Cocoon in Cygnus	Tour the Cygnus X star factory. This video opens with wide optical and infrared images of the constellation Cygnus, then zooms into the Cygnus X region using radio, infrared and gamma-ray images. Fermi LAT shows that gamma rays fill cavities in the star-forming clouds. The emission occurs when fast-moving cosmic rays strike hot gas and starlight.	Transcript Link

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2011 11 14	NASA Goddard https://youtu.be/dPm6cDJB5WU	NASA Women@Goddard Meet Alberta Moran	Meet Alberta Moran - From someone who learned to drive a Model T car to someone who saw the space shuttle and saw a man landing on the moon, there's really no words to explain her time at Goddard. She has worked at Goddard for forty plus years, both as an employee and a volunteer.	Transcript Link

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2011 11 10 NASA Goddard https://youtu.be/vtEvuz_oQ5o NASA Swift Captures Flyby of Asteroid 2005 YU55 Asteroid 2005 YU55 whisks through the field of view of Swift's Ultraviolet/Optical Telescope (UVOT) on Nov. 9, just hours after the space rock made its closest approach to Earth. The video plays on a background image from the Digital Sky Survey that shows the same region, which lies within the Great Square asterism of the constellation Pegasus (times UT). Credit: NASA/Swift/Stefan Immler and DSS [Transcript Link](#)

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http://www.nasa.gov/mission_pages/swift/bursts/asteroid-yu55.html

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2011 11 10 NASA Goddard <https://youtu.be/cBHsdjPYLsk> NASA New Model Predicts Fire Season Severity in the Amazon By analyzing nearly a decade of satellite data, a team of scientists led by researchers from the University of California, Irvine and funded by NASA has created a model that can successfully predict the severity and geographic distribution of fires in the Amazon rain forest and the rest of South America months in advance. Though previous research has shown that human settlement patterns are the primary factor that drives the distribution of fires in the Amazon, the new research demonstrates that environmental factors--specifically small variations in ocean temperatures--amplify human impacts and underpin much of the variability in the number of fires the region experiences from one year to the next. In the video UC Irvine scientist Jim Randerson provides an overview of the findings, which appear this week in the journal Science. [Transcript Link](#)

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2011 11 10 NASA Goddard <https://youtu.be/HvJfjVdJ79o> NASA The Truth about 2012 - Solar Storms Should we be concerned about solar storms in 2012? Heliophysicist Alex Young from NASA Goddard Space Flight Center sorts out truth from fiction. [Transcript](#) [Link](#)

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2011 11 03 NASA Goddard <https://youtu.be/eZL-xynHopo> NASA Fermi Finds a Youthful Pulsar Among Ancient Stars In three years, NASA's Fermi has detected more than 100 gamma-ray pulsars, but something new has appeared. Among a type of pulsar with ages typically numbering a billion years or more, Fermi has found one that appears to have been born only millions of years ago. [Transcript](#) [Link](#)

A pulsar is a type of neutron star that emits electromagnetic energy at periodic intervals. A neutron star is the closest thing to a black hole that astronomers can observe directly, crushing half a million times more mass than Earth into a sphere no larger than a city. This matter is so compressed that even a teaspoonful weighs as much as Mount Everest.

Millisecond pulsars are thought to achieve such speeds because they are gravitationally bound in binary systems with normal stars. During part of their stellar lives, gas flows from the normal star to the pulsar. Over time, the impact of this falling gas gradually spins up the pulsar's rotation.

Be sure to go here
(<http://www.nasa.gov/externalflash/fermipulsar/>) to see a new interactive map of all known pulsars.

This video is public domain and can be downloaded at:
<http://svs.gsfc.nasa.gov/goto?10858>

2011 11 03	NASA Goddard	https://youtu.be/i96JmNcoSi4	NASA Making Tractor Beams a Reality (Eventually)	Tractor beams -- the ability to trap and move objects using laser light -- are the stuff of science fiction, but a team of NASA scientists has won funding to study the concept for remotely capturing planetary or atmospheric particles and delivering them to a robotic rover or orbiting spacecraft for analysis. This animation shows how a hypothetical future mission might eventually employ tractor beam technology. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?20189 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 11 02	NASA Goddard	https://youtu.be/CuvAtyXvpoc	NASA Operation IceBridge Discovers Massive Crack in Ice Shelf	In October, 2011, NASA's Operation IceBridge discovered a major rift in the Pine Island Glacier in western Antarctica. This crack, which extends at least 18 miles and is 50 meters deep, could produce an iceberg more than 800 square kilometers in size. IceBridge scientists returned soon after to make the first-ever detailed airborne measurements of a major iceberg calving in progress. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10860 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 10 31	NASA Goddard	https://youtu.be/H0vbO-jAGj0	NASA TIRS TVAC1 Opening the Vacuum Chamber	The Thermal InfraRed Sensor (TIRS) is part of the Landsat Data Continuity Mission (LDCM) to continue thermal imaging and to support emerging applications such as evapotranspiration rate measurements for water management. TIRS is being built by NASA's Goddard Space Flight Center and has a three-year design life. TIRS completed its first round of thermal vacuum testing on Tuesday, October 4, marking the first time engineers evaluated the fully-assembled instrument at its normal operating temperature. When operational, TIRS is only 43 Kelvin (-382 degrees Fahrenheit). Such a cold temperature is necessary so the instrument itself does not overwhelm the heat radiated by Earth. The Landsat Program is a series of Earth observing satellite missions jointly managed by NASA and the U.S. Geological Survey. Landsat satellites have been consistently gathering data about our planet since 1972. They continue to improve and expand this unparalleled record of Earth's changing landscapes for the benefit of all. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10859 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2011 10 27	NASA Goddard	https://youtu.be/sASbVkk-p0w	NASA Solar Cycle	The number of sunspots increases and decreases over time in a regular, approximately 11-year cycle, called the sunspot cycle. The exact length of the cycle can vary. It has been as short as eight years and as long as fourteen, but the number of sunspots always increases over time, and then returns to low again. This video is public domain and can be downloaded at: http://svsdev.gsfc.nasa.gov/goto?10804 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 10 26 NASA Goddard <https://youtu.be/69rGJuPSTK0> NASA NPP Final Steps to Countdown NPP is nearly ready to be launched! This video describes the final steps for this Earth-observing climate and weather satellite before it launches, currently scheduled for the morning of Oct. 28, 2011. [Transcript](#) [Link](#)

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2011 10 26 NASA Goddard <https://youtu.be/MNzH4gpuC-0> NASA On Board NPP The Five Instruments The NPP satellite has 5 instruments on board: VIIRS, CERES, CrIS, ATMS, and OMPS. Each one will deliver a specific set of data helping weather prediction and climate studies. This video is a quick overview of each instrument and its placement on the spacecraft done at the Ball Aerospace clean room by the NPP Systems Engineer Rob Baltrum. [Transcript](#) [Link](#)

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2011 10 25	NASA Goddard	https://youtu.be/u8EpE4BDnSs	NASA Laser Comm The Next Generation of Space Communications	NASA is looking for the next generation of space communications technology and Laser Comm may be the answer. Optical communications provide higher bandwidth, which allows for faster data flow and even opens the door to streaming high-def video from distant planets to ground stations on Earth. The Laser Communications Relay Demonstration (LCRD) mission will be put to the test in 2017 on a commercial satellite. There will be ground stations based at JPL in California and White Sands Complex in New Mexico and the demonstration is expected to run for two to three years. (Updated Info) For video downloads go to: http://svs.gsfc.nasa.gov/goto?10848 For more information about Laser Comm go to: http://www.nasa.gov/topics/technology/features/laser-comm.html For more NASA technology stories go to: http://www.nasa.gov/offices/oct/home/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 10 24	NASA Goddard	https://youtu.be/SfOQyx316mM	NASA Meanwhile at the Bottom of the Ocean	The Ben Franklin mission has been forgotten by time, overshadowed by the concurrent Apollo 11 mission. However, the scientific findings obtained by the six aquanauts has provided a foundation for understanding the Gulf Stream and ocean currents. This webshort was produced as an educational tie-in with the Science on a Sphere feature LOOP, visit http://svs.gsfc.nasa.gov/loop for more information. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10849 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 10 24	NASA Goddard	https://youtu.be/C8mhGBzPK50	NASA Ten Years of Global Fire Observations	This visualization leads viewers on a narrated global tour of fire detections beginning in July 2002 and ending July 2011. The visualization also includes vegetation and snow cover data to show how fires respond to seasonal changes. The tour begins in Australia in 2002 by showing a network of massive grassland fires spreading across interior Australia as well as the greener Eucalyptus forests in the northern and eastern part of the continent. The tour then shifts to Asia where large numbers of agricultural fires are visible first in China in June 2004, then across a huge swath of Europe and western Russia in August, and then across India and Southeast Asia through the early part of 2005. It moves next to Africa, the continent that has more abundant burning than any other. MODIS observations have shown that some 70 percent of the world's fires occur in Africa alone. In what's a fairly average burning season, the visualization shows a huge outbreak of savanna fires during the dry season in Central Africa in July, August, and September of 2006, driven mainly by agricultural activities but also by the fact that the region experiences more lightning than anywhere else in the world. The tour shifts next to South America where a steady flickering of fire is visible across much of the Amazon rainforest with peaks of activity in September and November of 2009. Almost all of the fires in the Amazon are the direct result of human activity, including slash-and-burn agriculture, because the high moisture levels in the region prevent inhibit natural fires from occurring. It concludes in North America, a region where fires are comparatively rare. North American fires make up just 2 percent of the world's burned area each year. The fires that receive the most attention in the United	Transcript Link
2011 10 20	NASA Goddard	https://youtu.be/930MLXtoSZk	NASA On Board NPP Ozone Mapper Profiler Suite	This video talks about the importance of the Ozone Mapper Profiler Suite (OMPS), flying on board NPP. OMPS is critical for measuring the health of the stratospheric ozone. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10742 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 10 19	NASA Goddard	https://youtu.be/3i_zMsFLtno	NASA Spiral Arms Point to Possible Planets in a Star's Dusty Disk	Simulations of young stellar systems suggest that planets embedded in a circumstellar disk can produce many distinctive structures, including rings, gaps and spiral arms. This video compares computer simulations of hypothetical systems to the Subaru image of SAO 206462. A new image of the disk of gas and dust around a sun-like star is the first to show spiral-arm-like structures. These features may provide clues to the presence of embedded but as-yet-unseen planets. The newly imaged disk surrounds SAO 206462, an 8.7-magnitude star located about 456 light-years away in the constellation Lupus. Astronomers estimate that the system is only about 9 million years old. The gas-rich disk spans some 14 billion miles, which is more than twice the size of Pluto's orbit in our own solar system. The Subaru near-infrared image reveals a pair of spiral features arcing along the outer disk. Theoretical models show that a single embedded planet may produce a spiral arm on each side of a disk. The structures around SAO 206462 do not form a matched pair, suggesting the presence of two unseen worlds, one for each arm. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10847 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2011 10 14	NASA Goddard	https://youtu.be/gQihyXc9To0	NASA Operation IceBridge Antarctica 2011 Mission Preview	In preparation for Operation IceBridge's Antarctica 2011 campaign, flight crews at NASA Dryden worked to outfit the DC-8 aircraft -- NASA's long-haul "workhorse" -- with an array of different instruments designed to measure sea ice, ice sheets, and even the bedrock below Antarctic glaciers. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10845 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 10 05	NASA Goddard	https://youtu.be/U1h-rdQSWU	NASA NPP Why another Earth observing satellite	NASA's NPP mission will continue collecting critical climate data to help scientist unravel the mysteries of climate change. This fun interactive mission overview video featuring TV meteorologists Topper Shutt (WUSA9), Veronica Johnson (NBC4) and Justin Berk (ABC2). Learn about the two key messages of the NPP mission! Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 10 05	NASA Goddard	https://youtu.be/Z4zl2tDhMLs	NASA Incoming Comet; Outgoing CME	A bright comet fell into the sun on October 2, 2011 in synch with a coronal mass ejection bursting out on the other side. Credit: ESA/NASA/LASCO C2 This video is public domain and can be downloaded at: http://www.nasa.gov/mission_pages/sunearth/news/comet-cme.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 10 05	NASA Goddard	https://youtu.be/e-91PbbaKl8	NASA Afterschool Universe Supernova Ball Bounce	Afterschool Universe is an out-of-school-time astronomy program for middle school students that explores basic astronomy concepts through engaging hands-on activities and then takes participants on a journey through the Universe beyond the Solar System. These videos are designed for instructors using the Afterschool Universe program. They are designed to give a better understanding of the assembly, technique and layout of some of the more complicated demonstrations. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10116 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 10 03	NASA Goddard	https://youtu.be/MvV6i0zyDsc	NASA LOOP Trailer	LOOP connects viewers to a moving world. Engines of circulation pump energy and matter, and LOOP presents circulation's story in poetic, energetic, and compelling cinema. See it exclusively on Science On a Sphere--now showing in theaters around the country. LOOP: beautiful, enigmatic, essential. What goes around comes around! Learn more at svs.gsfc.nasa.gov/loop This video is public domain. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Facebook: http://www.facebook.com/NASA.GSFC Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 09 20	NASA Goddard	https://youtu.be/1gv3sFKDxrl	NASA Arctic Sea Ice Shrinks to Yearly Minimum -- Sept. 9, 2011	On Sept. 9th, 2011, Arctic sea ice most likely hit its minimum extent for the year. On Sept. 20th, NASA's Cryosphere Program Manager, Tom Wagner, shared his perspectives on the ice with television audiences across the country. On the top of the world, a pulsing, shifting body of ice has profound effects on the weather and climate of the rest of the planet. Every winter as temperatures dip, sea ice freezes out of cold Arctic Ocean waters, and every summer the extent of that ice shrinks as warm ocean temperatures eat it away. Ice cover throughout the year can affect polar ecosystems, world-wide ocean currents, and even the heat budget of the Earth. During the last 30 years we've been monitoring the ice with satellites, there has been a consistent downward trend, with less and less ice making it through the summer. The thickness of that ice has also diminished. In 2011 Arctic sea ice extent was its second smallest on record, opening up the fabled Northwest Passages and setting the stage for more years like this in the future. In this video, NASA's Cryosphere Program Manager, Tom Wagner, shares his perspectives on the 2011 sea ice minimum.	Transcript Link
2011 09 08	NASA Goddard	https://youtu.be/SXkokkklHbQ	NASA NASA's Fermi Shows How Active Galaxies Can Be	Active galaxies called blazars make up the largest class of objects detected by Fermi's Large Area Telescope (LAT). Massive black holes in the hearts of these galaxies fire particle jets in our direction. Fermi team member Elizabeth Hays narrates this quick tour of blazars, which includes LAT movies showing how rapidly their emissions can change. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10819 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 09 06	NASA Goddard	https://youtu.be/WZ26s4ik2w	NASA Noah Petro Explains New LRO Images of Apollo 12, 14, and 17 Sites	Learn more about the new images from Noah Petro, Research Scientist and member of the LRO Project Science team! NASA's Lunar Reconnaissance Orbiter (LRO) has captured the sharpest images ever taken from space of the Apollo 12, 14 and 17 sites, revealing the twists and turns of the paths made when the astronauts explored these areas. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10818 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 09 06	NASA Goddard	https://youtu.be/yi1WoZzeXWs	NASA Sharper Views of Apollo 12, 14, and 17 Sites	Short video showing the new images and identifying important features of the Apollo missions. NASA's Lunar Reconnaissance Orbiter (LRO) has captured the sharpest images ever taken from space of the Apollo 12, 14 and 17 sites, revealing the twists and turns of the paths made when the astronauts explored these areas. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10818 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 08 31	NASA Goddard	https://youtu.be/SNq3BmgQTrA	NASA On Board NPP - VIIRS Enabling Future Climate Science	NASA's NPP mission will continue collecting critical climate data to help scientist unravel the mysteries of climate change. NPP is carrying five instruments on board. The biggest and most important instrument is The Visible/Infrared Imager Radiometer Suite or VIIRS. This video focuses on VIIRS and why it is so important to Earth's science. Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link

2011 08 30 NASA Goddard <https://youtu.be/xgOM0ALsw8> NASA Desert R.A.T.S. 2011

Desert Research And Technology Studies (D-R.A.T.S) kicks off an exciting new year of field testing. The crew is back in action, testing communication scenarios for near-Earth asteroids, and 2 new instruments from Goddard: ExPED and VAPoR.

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2011 08 24 NASA Goddard <https://youtu.be/azLDH9ZPbVs> NASA Animation
NASA's Swift
Satellite Spots
Black Hole
Devouring A Star

In late March 2011, NASA's Swift satellite alerted astronomers to intense and unusual high-energy flares from a new source in the constellation Draco. They soon realized that the source, which is now known as Swift J1644+57, was the result of a truly extraordinary event -- the awakening of a distant galaxy's dormant black hole as it shredded and consumed a star. The galaxy is so far away that the radiation from the blast has traveled 3.9 billion years before reaching Earth.

[Transcript](#)
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Most galaxies, including our own, possess a central supersized black hole weighing millions of times the sun's mass. According to the new studies, the black hole in the galaxy hosting Swift J1644+57 may be twice the mass of the four-million-solar-mass black hole lurking at the center of our own Milky Way galaxy. As a star falls toward a black hole, it is ripped apart by intense tides. The gas is corralled into a disk that swirls around the black hole and becomes rapidly heated to temperatures of millions of degrees.

The innermost gas in the disk spirals toward the black hole, where rapid motion and magnetism creates dual, oppositely directed "funnels" through which some particles may escape. Particle jets driving matter at velocities greater than 80-90 percent the speed of light form along the black hole's spin axis. In the case of Swift J1644+57, one of these jets happened to point straight at Earth.

Theoretical studies of tidally disrupted stars suggested that they would appear as flares at optical and ultraviolet energies. The

2011 08 18	NASA Goddard	https://youtu.be/1kSx7AOwEco	NASA Spacecraft Track Solar Storms From Sun To Earth	NASA's STEREO spacecraft and new data processing techniques have succeeded in tracking space weather events from their origin in the Sun's ultrahot corona to impact with the Earth 96 million miles away, resolving a 40-year mystery about the structure of the structures that cause space weather: how the structures that impact the Earth relate to the corresponding structures in the solar corona. Despite many instruments that monitor the Sun and a fleet of near-earth probes, the connection between near-Earth disturbances and their counterparts on the Sun has been obscure, because CMEs and the solar wind evolve and change during the 96,000,000 mile journey from the Sun to the Earth. STEREO includes "heliospheric imager" cameras that monitor the sky at large angles from the Sun, but the starfield and galaxy are 1,000 times brighter than the faint rays of sunlight reflected by free-floating electron clouds inside CMEs and the solar wind; this has made direct imaging of these important structures difficult or impossible, and limited understanding of the connection between space storms and the coronal structures that cause them. Newly released imagery reveals absolute brightness of detailed features in a large geoeffective CME in late 2008, connecting the original magnetized structure in the Sun's corona to the intricate anatomy of an interplanetary storm as it impacted the Earth three days later. At the time the data were collected, in late 2008, STEREO-A was nearly 45 degrees ahead of the Earth in its orbit,	Transcript Link
2011 08 11	NASA Goddard	https://youtu.be/F7FjEglVYq0	NASA Goddard Summer Interns Christine Redmond	Christine Redmond is a third year intern at Goddard working in the Advanced Manufacturing Branch on the electrohydrodynamic pump. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10746 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 08 09 NASA Goddard <https://youtu.be/vVNhSPYNCvE> NASA Sun Sends Out X6.9 Class Solar Flare

On August 9, 2011 beginning at 3:48 AM EDT, the sun emitted an Earth-directed X6.9 flare, as measured by the NOAA GOES satellite. These gigantic bursts of radiation cannot pass through Earth's atmosphere to harm humans on the ground, however they can disrupt the atmosphere and disrupt GPS and communications signals. In this case, it appears the flare is strong enough that it could cause some radio communication blackouts. It also produced increased solar energetic proton radiation -- enough to affect humans in space if they do not protect themselves.

[Transcript Link](#)

There was also a coronal mass ejection (CME) associated with the flare. CMEs are another solar phenomenon that can send solar particles into space and affect electronic systems in satellites and on Earth. However, this CME is not traveling toward Earth and should not affect it.

AIA 304 movie (red one):

Credit: NASA/SDO/Heliviewer

Caption: An x-class flare began at 3:48 AM EDT on August 9, 2011 and peaked at 4:05 AM. The flare burst from sun spot region AR11263, before it rotated out of view. The image here was captured by NASA's Solar Dynamics Observatory (SDO) in light at 304 Angstroms.

2011 08 09 NASA Goddard <https://youtu.be/oOXVZo7KikE> NASA X-Class A Guide to Solar Flares

Flares happen when the powerful magnetic fields in and around the sun reconnect. They're usually associated with active regions, often seen as sun spots, where the magnetic fields are strongest. Flares are classified according to their strength. The smallest ones are B-class, followed by C, M and X, the largest. Similar to the Richter scale for earthquakes, each letter represents a ten-fold increase in energy output. So an X is 10 times an M and 100 times a C. Within each letter class, there is a finer scale from 1 to 9. C-class flares are too weak to noticeably affect Earth. M-class flares can cause brief radio blackouts at the poles and minor radiation storms that might endanger astronauts. Although X is the last letter, there are flares more than 10 times the power of an X1, so X-class flares can go higher than 9. The most powerful flare on record was in 2003, during the last solar maximum. It was so powerful that it overloaded the sensors measuring it. They cut-out at X28. A powerful X-class flare like that can create long lasting radiation storms, which can harm satellites and even give airline passengers, flying near the poles, small radiation doses. X flares also have the potential to create global transmission problems and world-wide blackouts.

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2011 08 08 NASA Goddard <https://youtu.be/1g7AKVZ3HC4> NASA DNA Building Blocks Can Be Made in Space NASA-funded researchers have evidence that some building blocks of DNA, the molecule that carries the genetic instructions for life, found in meteorites were likely created in space. The research gives support to the theory that a "kit" of ready-made parts created in space and delivered to Earth by meteorite and comet impacts assisted the origin of life.

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2011 08 08 NASA Goddard <https://youtu.be/GL5gVPoz-uE> NASA Tohoku Tsunami Creates Antarctic Icebergs Nearly 50 square miles of ice broke off the Sulzberger Ice Shelf on the coast of Antarctica, resulting from waves generated by the Tohoku earthquake and tsunami that struck Japan in March 2011.

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2011 08 03	NASA Goddard	https://youtu.be/mWVzA6gBk-I	NASA Goddard Summer Interns Andy Ryan	Andy Ryan is an intern staff assistant with the Lunar and Planetary Science Academy. This summer the LPSA traveled to the Channeled Scablands of eastern Washington to study and map the geology of the area, which serves as a planetary analogy for certain areas mapped on Mars by the HiRISE camera on board the Mars Reconnaissance Orbiter. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10746 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 07 26	NASA Goddard	https://youtu.be/GNAfyvxUy7E	NASA NASA VIZ App for iPad	Get it here http://bit.ly/p3G0zG http://svs.gsfc.nasa.gov/nasaviz/ NASA science: revealed! This is the NASA Visualization Explorer, the coolest way to get stories about advanced space-based research delivered right to your iPad. A direct connection to NASA's extraordinary fleet of research spacecraft, this app presents cutting edge research stories in an engaging and exciting format. See the Earth as you've never seen it before; travel to places otherwise unavailable to even the most intrepid explorers! Download it now, tap into the power of NASA's cutting-edge research today and check for new stories every week!	Transcript Link

2011 07 26 NASA Goddard <https://youtu.be/bcvFkvYsj8> NASA Afterschool Universe Supernova Can Crunch

Afterschool Universe is an out-of-school-time astronomy program for middle school students that explores basic astronomy concepts through engaging hands-on activities and then takes participants on a journey through the Universe beyond the Solar System.

[Transcript](#)
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This video shows a demonstration of the principle of why a large star collapses at the end of its life.

If you are interested in the Afterschool Universe program, visit their website at <http://universe.nasa.gov/afterschool/>

You can also go to the Afterschool Universe YouTube channel for more demonstration videos
<http://www.youtube.com/user/AfterschoolUniverse>

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2011 07 22 NASA Goddard <https://youtu.be/AK04FVMZ6pl> NASA So, You Want to Build a Satellite

Part 2: Putting It Together

[Transcript](#)
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Building satellites isn't easy. They're complex, expensive, and not to mention hard to make! This is why whenever NASA makes a new satellite--like the MAVEN mission to Mars--its scientists and engineers do everything they can to make sure it's done right.

Now, putting a satellite together is nothing like putting together, say, an office chair. A single bolt can take hours to install, and you can't even imagine how complex the electronics are! Find out more about the whole process in this video!

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2011 07 21	NASA Goddard	https://youtu.be/vo0CcNB7Xp8	NASA A Lifeline Home Goddard's Final Shuttle Mission	Controllers at Goddard's Network Integration Center share their thoughts as the 30-year-old Shuttle Program comes to an end with the final flight of STS-135. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10778 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 07 21	NASA Goddard	https://youtu.be/MOhJZHGZWaQ	NASA Goddard Summer Interns Alejandro Arambula	Alejandro Arambula is an aerospace engineering student at M.I.T. and a summer intern in the Propulsion Lab. This summer he is working with his mentor Khary Parker in building a test assembly for a specific zone of the propulsion system to be used in the upcoming Magnetospheric Multiscale (MMS) mission. Alejandro also discusses the differences in working in a university and working at NASA. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10746 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 07 21	NASA Goddard	https://youtu.be/9JTcHtNMI8s	NASA Space Shuttle Time Lapse	Segment 1: NASA's Shuttle Discovery (STS131), while docked to the ISS, captured these images on April 12, 2010 as it moved from the night side of the Earth to the daytime. In the process the Aurora Borealis can be seen on the Earth's limb. A solar panel from the ISS and a docked Soyuz module can be seen in the foreground. Segment 2: NASA's Shuttle Discovery (STS131), while docked to the ISS, captured these images on April 16, 2010. The sequence begins as the Shuttle emerges from darkness over the Canadian Rockies, traversing the United States southeast towards Florida. The Bahamas and Hispaniola are seen as the Shuttle continues over Venezuela, Brazil and finally the southern Atlantic ocean before returning to darkness. Images courtesy of the NASA/JSC Gateway to Astronaut Photography http://eol.jsc.nasa.gov Segment 3: The Sun rises behind space shuttle Atlantis in this time-lapse sequence from July 19, 2011, one of the last days of the historic final mission of the shuttle program.	Transcript Link
2011 07 20	NASA Goddard	https://youtu.be/Qzp8GuNqc4U	NASA Hubble & Galaxy Evolution	Three astronomers explain how Hubble acts like a time machine by detecting which galaxies are moving toward and away from us. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10619 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 07 13	NASA Goddard	https://youtu.be/IIQoCn9eEf0	NASA Goddard Summer Interns Danielle Wood	A video profile of NASA intern Danielle Wood. During her career, Danielle has pursued diverse experiences with NASA as an intern, guest researcher, graduate fellow, contractor and Student Ambassador. Danielle is currently interning at Goddard in the Innovative Partnerships Program and at NASA Headquarters in the Office of the Chief Technologist. The mission of her current internship is to consider new ways that NASA technology spin-offs can be deployed for the benefit of developing countries.	Transcript Link

2011 07 05 NASA Goddard <https://youtu.be/TTfgOYb1Fn8> NASA Riding on a Sounding Rocket On March 23, 2011, two on-board cameras followed a sounding rocket on its journey from Earth to space and back again. The rocket was launched to measure solar energy output and calibrate the EVE instrument on the Solar Dynamics Observatory. [Transcript](#) [Link](#)

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2011 07 01 NASA Goddard <https://youtu.be/HloC4xMg4Z4> NASA Massive Solar Eruption Close-up Turn on captions for more information about what you are seeing. [Transcript](#) [Link](#)

On June 7, 2011 the Sun unleashed an M-2 (medium-sized) solar flare with a spectacular coronal mass ejection (CME). The large cloud of particles mushroomed up and fell back down looking as if it covered an area almost half the solar surface.

SDO observed the flare's peak at 1:41 AM ET. SDO recorded these images in extreme ultraviolet light that show a very large eruption of cool gas. It is somewhat unique because at many places in the eruption there seems to be even cooler material -- at temperatures less than 80,000 K.

This video uses the full-resolution 4096 x 4096 pixel images at a 1 minute time cadence and to provide the highest quality, finest detail version possible. It also shows the event in multiple wavelengths.

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2011 06 30	NASA Goddard	https://youtu.be/RXPMuocgPFI	NASA MicroSpec Revolutionary Instrument on a Chip	Scientists may finally get a glimpse at our adolescent universe from a revolutionary new technology being developed at NASA's Goddard Space Flight Center. An instrument on a chip. This new, potentially game-changing instrument, called MicroSpec, is a far-infrared spectrometer that will be 10,000 times more sensitive and infinitely smaller than it's predecessor. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10799 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 06 29	NASA Goddard	https://youtu.be/W4Bx4s45Xeo	NASA Stellar Odd Couple Makes Striking Flares	Every 3.4 years, pulsar B1259--63 dives twice through the gas disk surrounding the massive blue star it orbits. With each pass, it produces gamma rays. During the most recent event, NASA's Fermi observed that the pulsar's gamma-ray flare was much more intense the second time it plunged through the disk. Astronomers don't yet know why. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10798 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 06 28 NASA Goddard <https://youtu.be/XeRn49c4MZI> NASA Discover-AQ NASA's launching a new mission this summer designed to better understand air pollution and gather data that could allow pollutants to be monitored more exactly from space. The field study coined, "Discover-AQ", will take place over the Baltimore/DC region on select days in July. [Transcript](#) [Link](#)

DISCOVER-AQ home page
<http://go.usa.gov/WzU>
Maryland Flights 2011
<http://go.usa.gov/Zle>
Flight Route Map
<http://go.usa.gov/ZiP>

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2011 06 15 NASA Goddard <https://youtu.be/3f21N3wcX8> NASA Moon Phase and Libration The animation archived on this page shows the geocentric phase, libration, position angle of the axis, and apparent diameter of the Moon throughout the year 2011, at hourly intervals. The Current Moon image is the frame from this animation for the current hour. [Transcript](#) [Link](#)

This marks the first time that accurate shadows at this level of detail are possible in such a computer simulation. The shadows are based on the global elevation map being developed from measurements by the Lunar Orbiter Laser Altimeter (LOLA) aboard the Lunar Reconnaissance Orbiter (LRO). LOLA has already taken more than 10 times as many elevation measurements as all previous missions combined.

The Moon always keeps the same face to us, but not exactly the same face. Because of the tilt and shape of its orbit, we see the Moon from slightly different angles over the course of a month. When a month is compressed into 12 seconds, as it is in this animation, our changing view of the Moon makes it look like it's wobbling. This wobble is called libration.

The word comes from the Latin for "balance scale" (as does the name of the zodiac constellation Libra) and refers to the way such a scale tips up and down on alternating sides. The sub-Earth point gives the amount of libration in longitude and latitude. The sub-Earth point is also the apparent center of the Moon's disk and the location on the Moon where the Earth is directly overhead.

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2011 06 10	NASA Goddard	https://youtu.be/tUL3RdQDryE	NASA LRO's Diviner Takes the Moon's Temperature	During the June 2011 lunar eclipse, scientists will be able to get a unique view of the moon. While the sun is blocked by the Earth, LRO's Diviner instrument will take the temperature on the lunar surface. Since different rock sizes cool at different rates, scientists will be able to infer the size and density of rocks on the moon. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10794 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 06 10	NASA Goddard	https://youtu.be/Z9rnb4iPrEO	NASA Rocket Launch Completed from Wallops	NASA video June 10, 2011 WALLOPS ISLAND, Va. -- The launch of a NASA Terrier-Improved Orion suborbital rocket was successfully conducted at 7:16 a.m. EDT today from NASA's Wallops Flight Facility in Virginia. The launch was to test several new rocket and spacecraft technologies. Further information on this mission is available at: www.nasa.gov/centers/wallops/news/SMARTfeature.html www.nasa.gov/topics/technology/features/thermal-control-t... Information on future missions from Wallops is available on the Internet at: www.nasa.gov/wallops The next launch currently scheduled from Wallops is a NASA Terrier-Improved Orion carrying educational experiments. The launch window is June 23 -- 25 between 6 and 9 a.m. To read more go here NASA Goddard Space Flight Center enables NASA's mission through four scientific endeavors: Earth Science, Heliophysics, Solar System Exploration, and Astrophysics. Goddard plays a leading role in NASA's accomplishments by contributing compelling scientific knowledge to advance the Agency's mission.	Transcript Link

2011 06 09 NASA Goddard <https://youtu.be/5HbJiY1wATQ> NASA Voyager Finds Magnetic Bubbles at Solar System's Edge

The sun's magnetic field spins opposite directions on the north and south poles. These oppositely pointing magnetic fields are separated by a layer of current called the heliospheric current sheet. Due to the tilt of the magnetic axis in relation to the axis of rotation of the Sun, the heliospheric current sheet flaps like a flag in the wind. The flapping current sheet separates regions of oppositely pointing magnetic field, called sectors. As the solar wind speed decreases past the termination shock, the sectors squeeze together, bringing regions of opposite magnetic field closer to each other. The Voyager spacecraft have now found that when the separation of sectors becomes very small, the sectorized magnetic field breaks up into a sea of nested "magnetic bubbles" in a phenomenon called magnetic reconnection. The region of nested bubbles is carried by the solar wind to the north and south filling out the entire front region of the heliopause and the sector region in the heliosheath.

This discovery has prompted a complete revision of what the heliosheath region looks like. The smooth, streamlined look is gone, replaced with a bubbly, frothy outer layer.

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2011 06 08 NASA Goddard <https://youtu.be/wuhNZejHeBg> NASA Lunar Eclipse Essentials

When the moon passes through the Earth's shadow, it causes the moon to look very unusual for a short period of time. This event is called a lunar eclipse, and it occurs roughly twice a year. There's one viewable to folks outside of North America on June 15, so sit back and learn more about how lunar eclipses work in this video!

This video is also available in stereoscopic 3D, viewable by many kinds of 3D devices, including common red/blue paper glasses that you might have lying around! To view this video in 3D, click here: <http://youtu.be/F5JRVOW6mes>

Credit goes to TheWusa from de.wikipedia.org for the illustrations that this video's light scattering animations are based on.

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2011 06 08 NASA Goddard <https://youtu.be/F5JRVQw6mes> NASA Lunar Eclipse Essentials in 3D

When the moon passes through the Earth's shadow, it causes the moon to look very unusual for a short period of time. This event is called a lunar eclipse, and it occurs roughly twice a year. There's one viewable to folks outside of North America on June 15, so sit back and learn more about how lunar eclipses work in this video!

[Transcript](#)
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This version of the video is presented in several formats of stereoscopic 3D that can be viewed by many kinds of 3D devices, including common red/blue paper glasses that you might have lying around! Just click the "3D" button on the playbar to pick which version works best for you. If you don't see the version you need, click "Other options" from the pop-up.

Credit goes to TheWusa from de.wikipedia.org for the illustrations that this video's light scattering animations are based on.

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2011 06 08 NASA Goddard <https://youtu.be/LLqJdtOzFv8> NASA Who Is NPPy

The main character in the 'Big Planet, Little Bear' video series represents the NPP mission mascot who happens to be a little stuffed polar bear, named NPPy. NPPy was found by the NPP Ground Project Manager Dan DeVito in a place called Svalbard, located 600 miles from the North Pole. Since then, Dan and other people on the NPP project have taken NPPy along when they travel to different locations involved in the mission. So the little stuffed bear NPPy has travelled to every continent and learned a lot about how important the NPP mission is to life on Earth. Watch this video to learn more about NPPy and find out why he has so many pins on his vest.

[Transcript](#)
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2011 06 07	NASA Goddard	https://youtu.be/IzGu9AdEgxA	NASA SDO Catches Surf Waves on the Sun	Scientists have spotted the iconic surfer's wave rolling through the atmosphere of the sun. This makes for more than just a nice photo-op: the waves hold clues as to how energy moves through that atmosphere, known as the corona. Read more at: http://www.nasa.gov/mission_pages/sunearth/news/sun-surfing.html This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10745 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 06 06	NASA Goddard	https://youtu.be/JeWp34lhJCo	NASA NPPy Big Planet, Little Bear	NPP is the prototype of the next generation weather satellites, named JPSS. NPP has five instruments on board and will continue the legacy of existing weather satellites like Terra and Aqua. NPP will deliver critical data not only for weather forecasters but for scientists who are trying to understand how climate is changing over long periods of time. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10789 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 05 27	NASA Goddard	https://youtu.be/gomRweB6moc	NASA Swift Finds Most Distant Gamma-ray Burst Yet	On April 29, 2009, a five-second-long burst of gamma rays from the constellation Canes Venatici triggered the Burst Alert Telescope on NASA's Swift satellite. As with most gamma-ray bursts, this one -- now designated GRB 090429B -- heralded the death of a star some 30 times the sun's mass and the likely birth of a new black hole. "What's important about this event isn't so much the 'what' but the 'where,'" said Neil Gehrels, lead scientist for Swift at NASA's Goddard Space Flight Center in Greenbelt, Md. "GRB 090429B exploded at the cosmic frontier, among some of the earliest stars to form in our universe." Because light moves at finite speed, looking farther into the universe means looking back in time. GRB 090429B gives astronomers a glimpse of the universe as it appeared some 520 million years after the universe began. Now, after two years of painstaking analysis, astronomers studying the afterglow of the explosion say they're confident that the blast was the farthest explosion yet identified -- and at a distance of 13.14 billion light-years, a contender for the most distant object now known. Swift's discoveries continue to push the cosmic frontier deeper back in time. A gamma-ray burst detected on Sept. 4, 2005, was shown to be lie 12.77 billion light-years away. Until the new study dethroned it, GRB 090423, which was detected just six days before the current record-holder, reigned a distance of about 13.04 billion light-years. All of these gamma-ray bursts were among the first 500 detected by Swift.	Transcript Link
2011 05 25	NASA Goddard	https://youtu.be/e6XbYLGWmOs	NASA NASA selects OSIRIS-REx as New Frontiers Mission	OSIRIS-Rex will visit asteroid 1999 RQ36 and return with samples that may hold clues to the origin of the solar system and life on Earth. For the mission, NASA has selected the team led by Principal Investigator Dr. Michael Drake from the University of Arizona. NASA GSFC will manage the mission. Lockheed Martin will build the spacecraft. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 05 20	NASA Goddard	https://youtu.be/bOjCrVQusYI	NASA Radio Telescopes Capture Best-Ever Snapshot of a Black Hole's Jet	Centaurus A is a giant elliptical active galaxy 12 million light years away. Radio and X-ray images reveal features associated with jets emanating from near the galaxy's central supermassive black hole, which has a mass of 55 million suns. Now, the TANAMI project has provided the best-ever view of these jets. In the radio image of the galaxy's core, the black hole is invisible but the jets show in great detail. Features as small as 15 light-days across can be resolved. The powerful jets feed vast lobes of radio-emitting gas that reach far beyond the visible galaxy. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10770 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 05 19	NASA Goddard	https://youtu.be/5ju1boh5bq8	NASA Mississippi Flooding 2011	Heavy spring rains and snowmelt led to devastating floods along the Mississippi River in May 2011. Landsat 5 flew over the Mississippi River on May 10, 2011, giving a distinct view of the extraordinary extent of the flooding. This was only eight days after the Army Corps of Engineers began blasting holes in earthen levees near Cairo, Illinois, when the river reached a depth of 61 feet. The extent of the 2011 flooding is compared with the same locations in April 2010 Read more at: http://www.nasa.gov/topics/earth/features/ms-flood-20110519.html This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10773 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 05 14	NASA Goddard	https://youtu.be/UVbZytbXtwM	NASA Explore@Goddard Day 2011	On Saturday, May 14, NASA Goddard invited the community for a day full of family fun, music, food, and science. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10768 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 05 13	NASA Goddard	https://youtu.be/ckuGl6zH7uM	NASA Operation IceBridge Flies the Ice Caps	Ice caps are simply small versions of ice sheets, measuring in at a maximum area of 50,000 square kilometers (about 19,000 square miles). It's their small and thin stature that makes ice caps more prone to melt in a warming Arctic. Charles Webb of NASA's Goddard Space Flight Center in Greenbelt, Md., explains the importance of monitoring ice caps in the Canadian Arctic A few flights within NASA's Operation IceBridge -- an airborne mission to monitor Earth's polar ice -- are adding to the long-term record of ice cap changes. Such a record can provide insight into ice cap dynamics as well as provide an early-warning indicator of the impacts of climate change. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10739 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 05 11 NASA Goddard https://youtu.be/qDhdw_gK218E NASA Fermi Spots 'Superflares' in the Crab Nebula

The famous Crab Nebula supernova remnant has erupted in an enormous flare five times more powerful than any previously seen from the object. The outburst was first detected by NASA's Fermi Gamma-ray Space Telescope on April 12 and lasted six days.

[Transcript](#)
[Link](#)

The nebula, which is the wreckage of an exploded star whose light reached Earth in 1054, is one of the most studied objects in the sky. At the heart of an expanding gas cloud lies what's left of the original star's core, a superdense neutron star that spins 30 times a second. With each rotation, the star swings intense beams of radiation toward Earth, creating the pulsed emission characteristic of spinning neutron stars (also known as pulsars).

Apart from these pulses, astrophysicists regarded the Crab Nebula to be a virtually constant source of high-energy radiation. But in January, scientists associated with several orbiting observatories -- including NASA's Fermi, Swift and Rossi X-ray Timing Explorer -- reported long-term brightness changes at X-ray energies.

Scientists think that the flares occur as the intense magnetic field near the pulsar undergoes sudden restructuring. Such changes can accelerate particles like electrons to velocities near the speed of light. As these high-speed electrons interact with the magnetic field, they emit gamma rays in a process known as synchrotron emission.

To account for the observed emission, scientists say that the electrons must have energies 100 times greater than can be

2011 05 10 NASA Goddard <https://youtu.be/8LiEEEvnO10> NASA Aquarius Climate

Sea surface salinity has a massive influence on Earth's climate. With Aquarius, scientists will have a new way to measure that influence in a consistent way. With its unprecedented accurate and consistent salinity measurements, Aquarius will help climate modelers to better understand the ocean-atmosphere processes that are changing Earth's climate.

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2011 05 10 NASA Goddard <https://youtu.be/KsV7kvyxGQU> NASA Aquarius Water Cycle Scientists need a breadth of information to understand the ocean's processes. That's where Aquarius comes in: the sensor will use advanced technologies to give NASA its first space-based measurements of sea surface salinity, helping scientists to improve predictions of future climate trends and events. [Transcript Link](#)

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2011 05 10 NASA Goddard <https://youtu.be/vP4QTyVQTUo> NASA Aquarius Ocean Circulation Until now, researchers did not have a full set of data on ocean salinity and how it impacts climate change. Aquarius salinity data, combined with data from other sensors that measure sea level, ocean color, temperature, winds, and rainfall, will give us a much clearer picture of how the ocean works. [Transcript Link](#)

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2011 04 28	NASA Goddard	https://youtu.be/qchvgRUDUzA	NASA Swift and Hubble Probe an Asteroid Crash	Late last year, astronomers noticed that an asteroid named Scheila had unexpectedly brightened and it was sporting short-lived plumes. Data from NASA's Swift satellite and Hubble Space Telescope show that these changes likely occurred after Scheila was struck by a much smaller asteroid. On Dec. 11, 2010, images from the University of Arizona's Catalina Sky Survey, a project of NASA's Near Earth Object Observations Program, revealed the Scheila to be twice as bright as expected and immersed in a faint comet-like glow. Looking through the survey's archived images, astronomers inferred the outburst began between Nov. 11 and Dec. 3. Three days after the outburst was announced, Swift's Ultraviolet/Optical Telescope (UVOT) captured multiple images and a spectrum of the asteroid. Ultraviolet sunlight breaks up the gas molecules surrounding comets; water, for example, is transformed into hydroxyl (OH) and hydrogen (H). But none of the emissions most commonly identified in comets -- such as hydroxyl or cyanogen (CN) -- show up in the UVOT spectrum. The absence of gas around Scheila led the Swift team to reject scenarios where exposed ice accounted for the activity. Images show the asteroid was flanked in the north by a bright dust plume and in the south by a fainter one. The dual plumes formed as small dust particles excavated by the impact were pushed away from the asteroid by sunlight. Hubble observed the asteroid's fading	Transcript Link
2011 04 22	NASA Goddard	https://youtu.be/F-ejWjVRoIM	NASA NPP and the Earth System	NPP is a continuation of the existing Earth-observing satellites (EOS) and it builds on the legacy of multi decades of critical data. In this video, NPP Project Scientist, James Gleason (NASA Goddard Space Flight Center), summarizes the primary messages and explains the essentials of the NPP mission. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10742 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 04 22 NASA Goddard <https://youtu.be/ICUvHeOV57U> NASA Home Frontier Video Contest

This Earth Day, we're asking you to share with us your inspiring vision about what NASA's exploration of Earth means to you.

[Transcript Link](#)

Check out the rules and other details at <http://1.usa.gov/eYvaO9>

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2011 04 21 NASA Goddard <https://youtu.be/GJ-1p1Znmk> NASA Astrogeologist Jim Rice

Meet Jim Rice, an astrogeologist whose work has taken him to every continent on the globe. Among the many activities he does as part of his work at NASA Goddard Space Flight Center, some of Dr. Rice's favorites include participating in Desert R.A.T.S and working with the Mars rovers.

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2011 04 21	NASA Goddard	https://youtu.be/U_MKL_fjDLo	NASA SDO Year One	April 21, 2011 marks the one-year anniversary of the Solar Dynamics Observatory (SDO) First Light press conference, where NASA revealed the first images taken by the spacecraft. In the last year, the sun has gone from its quietest period in years to the activity marking the beginning of solar cycle 24. SDO has captured every moment with a level of detail never-before possible. The mission has returned unprecedented images of solar flares, eruptions of prominences, and the early stages of coronal mass ejections (CMEs). In this video are some of the most beautiful, interesting, and mesmerizing events seen by SDO during its first year. In the order they appear in the video the events are: 1. Prominence Eruption from AIA in 304 Angstroms on March 30, 2010 2. Cusp Flow from AIA in 171 Angstroms on February 14, 2011 3. Prominence Eruption from AIA in 304 Angstroms on February 25, 2011 4. Cusp Flow from AIA in 304 Angstroms on February 14, 2011 5. Merging Sunspots from HMI in Continuum on October 24-28, 2010	Transcript Link
2011 04 20	NASA Goddard	https://youtu.be/6EQLE_TODICM	NASA Gulf Oil Spill One Year Later	This short video reveals a space-based view of the burning oil rig, the spill, and the location through April 1, 2011. The MODIS instrument, on board NASA's Terra and Aqua satellites, captured images of the oil spill in the Gulf of Mexico. The spill began on April 20, 2010 with the explosion of the Deepwater Horizon oil rig. The oil slick appears grayish-beige in the images and changes due to changing weather, ocean currents, and the use of oil dispersing chemicals. You can learn more about NASA's satellite observations of the oil spill by visiting go.nasa.gov/Oil_Spill_Images . This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10562 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 04 15	NASA Goddard	https://youtu.be/7w3-5WLu-A0	NASA Women@Goddard - Meet Wanda Peters	Meet Wanda Peters, who works at Goddard Space flight Center as the Assistant Division Chief for the Mechanical systems Division. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10728 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 04 14	NASA Goddard	https://youtu.be/Y4rrx4D7gcU	NASA Intro to LIDAR - 2D Version	Want to know the 3D shape of terrain on another planet? Want to study the height and density of Earth's forests? An amazing tool called LIDAR can help! Learn more in this video. This video is also available in stereoscopic 3D, viewable by many kinds of 3D devices, including common red/blue paper glasses that you might have lying around! To view this video in 3D, click here: http://www.youtube.com/watch?v=s9gx3k6k2Gw This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10757 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 04 13	NASA Goddard	https://youtu.be/s9gx3k6k2Gw	NASA Intro to LIDAR - 3D Version	Want to know the 3D shape of terrain on another planet? Want to study the height and density of Earth's forests? An amazing tool called LIDAR can help! Learn more in this video. This version of the video is presented in several formats of stereoscopic 3D that can be viewed by many kinds of 3D devices, including common red/blue paper glasses that you might have lying around! Just click the "3D" button on the playbar to pick which version works best for you. If you don't see the version you need, click "Other options" from the pop-up. Directions to make your own 3D glasses here: http://stereo.gsfc.nasa.gov/classroom/glasses.shtml This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10757 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 04 12	NASA Goddard	https://youtu.be/riLg5U2akpQ	NASA IceBridge 2011 Update from Greenland	In this update from the field, the OIB team discusses the challenges they face in their mission. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 04 08	NASA Goddard	https://youtu.be/08rMlpvUP3w	NASA See Goddard in 3D!	See NASA Goddard in 3D! This short promotional video highlights some of the best that the Goddard Space Flight Center has to offer - showcasing the science and technology born from the efforts of the dedicated Goddard family. This video is public domain and both the 2D and 3D versions can be downloaded at: http://svs.gsfc.nasa.gov/goto?10744 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 04 08	NASA Goddard	https://youtu.be/E7NG62ilzT8	NASA Explore@NASA Goddard Day Promo	Saturday, May 14, 2011, 11am -- 5pm NASA Goddard Space Flight Center in Greenbelt, Md. Goddard Space Flight Center will open its doors to the public for a FREE day of fun-filled activities, hands-on demonstrations, exhibits, entertainment, and food. Explore NASA missions. Engage NASA scientists, engineers, and astronauts. Experience the extraordinary at NASA Goddard! Learn more at: www.nasa.gov/exploreatnasagoddard	Transcript Link
2011 04 08	NASA Goddard	https://youtu.be/VXkLmHU4Tcu4	NASA LAMP Peering into the Lunar Dark	The Lyman-Alpha Mapping Project (LAMP) is an instrument on NASA's Lunar Reconnaissance Orbiter mission to map and study the Moon. LAMP is a spectrograph that images the ultraviolet region of the spectrum. Utilizing the faint glow of stars and other light reflected off the lunar surface, LAMP can see inside the darkest areas of the Moon to search for water ice and other valuable resources. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10755 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 04 07	NASA Goddard	https://youtu.be/ZKzgwV8qa3Q	NASA Astrogeologist Jake Bleacher	Meet Jake Bleacher, an astrogeologist in the solar system exploration division at Goddard Space Flight Center. He studies lava flows on the Earth and on other planets. Dr. Bleacher is also a participant in the Desert Research and Technology Studies (Desert R.A.T.S. or D-R.A.T.S.). This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10741 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 04 07	NASA Goddard	https://youtu.be/ow9JCXy1QdY	NASA Colliding Neutron Stars Create Black Hole and Gamma-ray Burst	Armed with state-of-the-art supercomputer models, scientists have shown that colliding neutron stars can produce the energetic jet required for a gamma-ray burst. Earlier simulations demonstrated that mergers could make black holes. Others had shown that the high-speed particle jets needed to make a gamma-ray burst would continue if placed in the swirling wreckage of a recent merger. Now, the simulations reveal the middle step of the process--how the merging stars' magnetic field organizes itself into outwardly directed components capable of forming a jet. The Damiana supercomputer at Germany's Max Planck Institute for Gravitational Physics needed six weeks to reveal the details of a process that unfolds in just 35 thousandths of a second--less than the blink of an eye. Read more: https://www.nasa.gov/topics/universe/features/gamma-ray-engines.html#.WA4phz_VTZE This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10740 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2011 04 06	NASA Goddard	https://youtu.be/uneIPNizmw	NASA IceBridge 2011 Eight Down, One to Go	As of April 6, 2011, crew and scientists with NASA's Operation IceBridge mission have completed eight out of nine planned sea ice flights from Thule, Greenland, and plan to fly one more from Kangerlussuaq. Michael Studinger, IceBridge project scientist at NASA's Goddard Space Flight Center in Greenbelt, Md., talks about the successes and challenges of logging 30,000 kilometers in an Arctic environment.	Transcript Link
2011 04 04	NASA Goddard	https://youtu.be/8Soi7AVnUOE	NASA End of SeaWiFS	After 13 years of service, researchers are no longer able to communicate with SeaWiFS. This extremely important instrument, which gave scientists data on ocean color, filled in a vital information gap. Subtle changes in ocean color signify various types and quantities of marine phytoplankton (microscopic marine plants), the knowledge of which has both scientific and practical applications. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10738 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 04 01	NASA Goddard	https://youtu.be/YcM8KSrwFKs	NASA Explore@NASA Goddard Day	Saturday, May 14, 2011, 11am -- 5pm NASA Goddard Space Flight Center in Greenbelt, Md. Goddard Space Flight Center will open its doors to the public for a FREE day of fun-filled activities, hands-on demonstrations, exhibits, entertainment, and food. Explore NASA missions. Engage NASA scientists, engineers, and astronauts. Experience the extraordinary at NASA Goddard! Learn more at: www.nasa.gov/exploreatnasagoddard	Transcript Link
2011 04 01	NASA Goddard	https://youtu.be/4Si6mxT5eDM	NASA Earth's Climate Checkup Operation IceBridge Monitors Arctic	NASA scientists have just begun the most recent leg of the Operation IceBridge Mission, an unprecedented six-year mission to study the Earth's polar regions, not through the lens of a satellite, but from onboard an airplane. In fact, IceBridge is the largest airborne survey of Earth's polar ice ever flown. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10751 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 03 31	NASA Goddard	https://youtu.be/zzJ0jQFHrdU	NASA LEND The Lunar Neutron Counter	How would you find water on the Moon? NASA's Lunar Reconnaissance Orbiter has a unique idea: Count the neutrons coming from the Moon! Find out more in this video. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a010700/a010743/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 03 22	NASA Goddard	https://youtu.be/B3U0sCTD7dc	NASA Women@Goddard Meet Sabrina Thompson	Meet Sabrina Thompson, who works at Goddard Space Flight Center in the Occupational, Safety and Health Division; Safety Engineer. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10728 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 03 15	NASA Goddard	https://youtu.be/n5z5erU7fm0	NASA Building a Bigger Bridge	Operation IceBridge is heading back into the Arctic with two aircraft and the most sophisticated suite of instruments ever flown in polar regions. This year's mission will focus on sea ice thickness, the Canadian Ice Caps, Greenland ice sheet dynamics, and flyovers of the European Space Agency's CryoSat-2 ground validation sites. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10734 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 03 15	NASA Goddard	https://youtu.be/5kJlpxfBOM	NASA LRO PDS Release	Using thousands of images from LRO's wide angle camera, scientists are able to create a global mosaic of the moon's features. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10146 Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or like NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or follow us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 02 22	NASA Goddard	https://youtu.be/dxmmGZaXz9s	NASA Glory Glory's Suncatcher	The Sun's energy is one of the biggest forcings on Earth's climate, and for years satellites have measured total solar irradiance. Glory will continue collection of this critical climate data, which will contribute to the long-term climate record. The cutting edge TIM instrument will continue the work of NASA's SORCE mission. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10524 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 02 17	NASA Goddard	https://youtu.be/JpAJtsGcJgY	NASA Women@Goddard Meet Maria Nowak	Meet Maria Nowak, who works at Goddard Space Flight Center in the Optics Board Alignment/Integration Testing group. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 02 16	NASA Goddard	https://youtu.be/Zx34s0T_cf8	NASA Glory Hello Crud	This segment provides an introduction to aerosols- their varied sources, brief lifetimes, and erratic behavior. Glory's APS will help researchers determine the global distribution of aerosol particles. This unique instrument will unravel the microphysical properties of aerosols, and will shed light on the chemical composition of natural and anthropogenic aerosols and clouds. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10525 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 02 10 NASA Goddard <https://youtu.be/gi1Dd5ztb9Y> NASA Glory The Particle Puzzle This episode explores the complexity of atmospheric aerosols- how they impact climate and how researchers study them. Glory's Aerosol Polarimetry Sensor and Cloud Camera will provide an unprecedented data set for helping scientists understand aerosol particles. [Transcript Link](#)

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2011 02 06 NASA Goddard <https://youtu.be/qLB5ma2Yz1I> NASA STEREO reveals the Entire Sun Launched in October 2006, STEREO traces the flow of energy and matter from the sun to Earth. It also provides unique and revolutionary views of the sun-Earth system. STEREO, when paired with SDO, can now give us the first complete view of the sun's entire surface and atmosphere. Read more at:
http://www.nasa.gov/mission_pages/stereo/news/entire-sun.html [Transcript Link](#)

Got questions about STEREO? Ask a scientist via @NASAGoddard on Twitter on Wed., Feb. 9, 2011, from 1:30-2:30 pm EST. Use hashtag #sun360.

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2011 02 04	NASA Goddard	https://youtu.be/a5E1slYVjYY	NASA From Stonehenge to STEREO	Humans have always wanted to learn about the Sun, but our understanding of our favorite star has changed through the centuries. In preparation for Sun360, when the STEREO spacecrafts will provide the first uninterrupted view of the Sun, this video is a condensed history of how we have studied the Sun over time. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10720 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 02 03	NASA Goddard	https://youtu.be/EqahMk-VFul	NASA Glory The Rough Road to Space	Space is a harsh environment, and building a space-bound satellite is no small feat. Here's a look at how NASA engineers get the Glory mission off the ground and safely into space. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10522 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 02 02	NASA Goddard	https://youtu.be/Z9ITDs-n7gQ	NASA STEREO Sun360 Teaser	For the past 4 years, the two STEREO spacecraft have been moving away from the Earth and gaining a more complete picture of the sun. On February 6, 2011, NASA will reveal the first ever images of the entire sun and discuss the importance of seeing all of our dynamic star. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10713 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 01 31	NASA Goddard	https://youtu.be/wE-z_TJyzil	NASA Kids Intro to Engineering	What is engineering, and who exactly is an engineer? Learn more in this video! This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10719 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 01 28	NASA Goddard	https://youtu.be/2wgiy3Qo6gg	NASA Glory The Cloud Makers	This segment provides an introduction to aerosols- their varied sources, brief lifetimes, and erratic behavior. Glory's APS will help researchers determine the global distribution of aerosol particles. This unique instrument will unravel the microphysical properties of aerosols, and will shed light on the chemical composition of natural and anthropogenic aerosols and clouds. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10333 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 01 28	NASA Goddard	https://youtu.be/nwUgWAsAq-s	NASA OPTIMUS PRIME and NASA Team Up To Raise Awareness of NASA Technology	NASA and OPTIMUS PRIME have teamed up to educate! Kids everywhere created videos showing how NASA technology is truly more than meets the eye, and now you can vote on your favorite! Visit ipp.gsfc.nasa.gov/optimus/ to learn more. OPTIMUS PRIME is a trademark of Hasbro and is used with permission. © 2011 Hasbro. All Rights Reserved. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 01 20	NASA Goddard	https://youtu.be/RyWFT886IUY	NASA Swift Finds 'Missing' Active Galaxies	Most large galaxies contain a giant central black hole. In an active galaxy, matter falling toward the supermassive black hole powers high-energy emissions so intense that two classes of active galaxies, quasars and blazars, rank as the most luminous objects in the universe. Thick clouds of dust and gas near the central black hole screens out ultraviolet, optical and low-energy (or soft) X-ray light. Although there are many different types of active galaxy, astronomers explain the different observed properties based on how the galaxy angles into our line of sight. We view the brightest ones nearly face on, but as the angle increases, the surrounding ring of gas and dust absorbs increasing amounts of the black hole's emissions. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10698 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2011 01 12	NASA Goddard	https://youtu.be/jycN13T3JLs	NASA A Flickering X-ray Candle	The Crab Nebula, created by a supernova seen nearly a thousand years ago, is one of the sky's most famous "star wrecks." For decades, most astronomers have regarded it as the steadiest beacon at X-ray energies, but data from orbiting observatories show unexpected variations, showing astronomers their hard X-ray "standard candle" isn't as steady as they once thought. From 1999 to 2008, the Crab brightened and faded by as much as 3.5 percent a year, and since 2008, it has faded by 7 percent. The Gamma-ray Burst Monitor on NASA's Fermi satellite first detected the decline, and Fermi's Large Area Telescope also spotted two gamma-ray flares at even higher energies. Scientists think the X-rays reveal processes deep within the nebula, in a region powered by a rapidly spinning neutron star -- the core of the star that blew up. But figuring out exactly where the Crab's X-rays are changing over the long term will require a new generation of X-ray telescopes. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10708 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2011 01 10	NASA Goddard	https://youtu.be/IXKt7Uvjd-I	NASA Terrestrial Gamma-ray Flashes Create Antimatter	NASA's Fermi Gamma-ray Space Telescope has detected beams of antimatter launched by thunderstorms. Acting like enormous particle accelerators, the storms can emit gamma-ray flashes, called TGFs, and high-energy electrons and positrons. Scientists now think that most TGFs produce particle beams and antimatter. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10706 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 12 16	NASA Goddard	https://youtu.be/q7BT2LafUIA	NASA Taking on Titan An Interview with Carrie Anderson	When she was a little girl, Carrie Anderson dreamed of becoming an astronomer. Now, as a space scientist at NASA Goddard Space Flight Center, Carrie studies the atmosphere on Titan, one of Saturn's moons and the second largest moon in the solar system. Titan is also a model for what the early Earth might have been like. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10705 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 12 14	NASA Goddard	https://youtu.be/6MiQ4g20h38	NASA Human Consumption of NPP	On Dec. 14, 2010 NASA Goddard researchers will conduct a press briefing at the American Geophysical Union Fall 2010 meeting, entitled, "Satellite Supported Estimates of Human Rate of NPP carbon Use on Land: Challenges Ahead." In the first measurement of this trend, the research showed humans are using an increasing amount of Earth's annual production of photosynthetic land plants and that consumption rose from 20 to 25 percent from 1995 to 2005. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10701 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 12 10 NASA Goddard <https://youtu.be/lnBO4vX82Fs> NASA Urban Heat Islands

At the 2010 American Geophysical Union (AGU) conference in San Francisco, Dr. Ping Zhang will present her findings on the Urban Heat Island effect. The data collected spans from 1995 to 2005 and will give scientists an idea of why cities are warmer than their surrounding areas, as well as what effect this will have on the planet.

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2010 12 02 NASA Goddard <https://youtu.be/rQQN7LxBqm0> NASA Blacker Than Black

The NASA Goddard Space Flight Center has a team of scientists testing micro and nano technology to use on spacecraft. The goal is to reduce the reflection off the surface of the instruments so that the data does not get polluted by the scattered light. The carbon nanotubes that the team grows have proven to be 10 times better than the NASA Z306 paint, currently used on spacecraft instruments. The nanotubes are also very robust and can be grown on different materials. The team is really close to getting the carbon nanotubes approved for spaceflight.

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2010 11 22	NASA Goddard	https://youtu.be/-vEzYs5_nw	NASA Teen Sailor Meets Team That Saved Her Life	n June 2010, at age 16, Abby Sunderland attempted to be the youngest person to sail the world solo. When she found herself stranded and lost at sea, Abby's life was saved by NASA-developed satellite-based search and rescue technologies that allowed rescuers to detect her distress signal and pinpoint her location thousands of miles off the Australian coast. On October 25, 2010 Abby visited NASA Goddard Space Flight Center in Greenbelt, MD to meet the team that developed the SARSAT technology, which ultimately saved her life. This video captures her visit to NASA GSFC.	Transcript Link

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2010 11 22	NASA Goddard	https://youtu.be/eZwLV RdETr8	NASA IceBridge 2010 Pine Island Flight	On November 19, Operation IceBridge flew a successful 10.9 hour mission to the Pine Island region of Antarctica. All instruments collected data along previous ICESat and CryoSat satellite tracks in an effort to calibrate and validate the measurements taken by the spacecraft. IceBridge wraps up next week after an exciting campaign based in Punta Arenas, Chile. Be sure to check out the IceBridge blog (www.nasa.gov/icebridge) and twitter feed (www.twitter.com/icebridge) for more.	Transcript Link

2010 11 19	NASA Goddard	https://youtu.be/ljfa1R9JXWk	NASA Magnetometry 101	NASA satellites use very sensitive devices called magnetometers to measure the magnetic fields of planets. Like very sensitive compasses, these devices can measure both direction and strength of planetary magnetic fields. Learn more about how magnetometry works!	Transcript Link

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2010 11 19	NASA Goddard	https://youtu.be/EWHIMBrIs6o	NASA Fluxgate Magnetometry	NASA satellites use very sensitive devices called magnetometers to measure the magnetic fields of planets. Like very sensitive compasses, these devices can measure both direction and strength of planetary magnetic fields. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10682 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 11 15	NASA Goddard	https://youtu.be/aHgZTjpFmQA	NASA IceBridge Mission Over the Antarctic Peninsula	The IceBridge science team and DC-8 crew flew a mission over the Antarctic Peninsula on Saturday, November 13th. This video provides a snapshot of the flight from the field and describes the challenges faced with weather and terrain. Though the forecast showed low cloud ceilings over the target area, the team departed for the peninsula on Saturday morning, optimistic for a successful flight. All instruments collected data for several glaciers before the weather conditions forced an early return to Punta Arenas. For more, check out the IceBridge blog at http://bit.ly/bbSUSH and twitter.com/icebridge. This video is Public Domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10693 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 11 10	NASA Goddard	https://youtu.be/x0S3IUT4hGI	NASA Inside Astrobiology Inge ten Kate	Inge ten Kate talks about the origin of life, the VAPOR instrument, and the unique opportunity to be both a scientist AND an engineer. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10615 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f... Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 11 10 NASA Goddard <https://youtu.be/sXmPxSP225Y> NASA Fermi discovers giant gamma-ray bubbles in the Milky Way

Using data from NASA's Fermi Gamma-ray Space Telescope, scientists have discovered a gigantic, mysterious structure in our galaxy. This never-before-seen feature looks like a pair of bubbles extending above and below our galaxy's center.

[Transcript](#)
[Link](#)

But these enormous gamma-ray emitting lobes aren't immediately visible in the Fermi all-sky map. By processing the data, a group of scientists was able to bring these unexpected structures into sharp relief.

Each lobe is 25,000 light-years tall and the whole structure may be only a few million years old. Within the bubbles, extremely energetic electrons are interacting with lower-energy light to create gamma rays, but right now, no one knows the source of these electrons.

Are the bubbles remnants of a massive burst of star formation? Leftovers from an eruption by the supermassive black hole at our galaxy's center? Or did these forces work in tandem to produce them? Scientists aren't sure yet, but the more they learn about this amazing structure, the better we'll understand the Milky Way.

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2010 11 04 NASA Goddard <https://youtu.be/zOX2gKRiE6M> NASA JWST Feature - Planetary Evolution

A fully produced video about planetary evolution and how the Webb Telescope's ability to see inside dense clouds of gas and dust will help us better understand solar system formation and evolution.

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2010 11 04	NASA Goddard	https://youtu.be/xQxZEv4jiaw	NASA JWST Feature - Colliding Galaxies	Deep surveys by the James Webb Space Telescope will capture the full panorama of galaxy evolution, from the earliest dwarf galaxies that formed to the familiar galaxies we see today. The Webb Telescope will help us understand how the shape, structure and chemical content of galaxies change over the sweep of cosmic history. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10658 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 11 04	NASA Goddard	https://youtu.be/C6vxOchSzsM	NASA JWST Feature - Galaxy Evolution	Astrophysicists and astronomers will use the James Webb Space Telescope to see further than Hubble to witness the origin and development of galaxies. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10657 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 11 04	NASA Goddard	https://youtu.be/Mt9aqsIUHQ	NASA JWST Feature - Evolution of the Universe	Astrophysicists and astronomers will use the James Webb Space Telescope to unravel mysteries about the evolution of the Universe. The Webb telescope will help observe how the first stars gathered into the first galaxies, and those first galaxies collided and merged into larger galaxies and evolved into the Universe we see today. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10656 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 11 03	NASA Goddard	https://youtu.be/Wl48MH5yvLo	NASA Webb Telescope Planetary Studies Web Feature	The Webb Space Telescope will study planetary bodies with our solar system and planets orbiting other stars to help scientists better understand how planets form and how they evolve. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10689 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 11 02	NASA Goddard	https://youtu.be/vXsWjh_jnho	NASA Using Color to Search for Alien Earths	NASA astronomer Lucy McFadden and UCLA graduate Carolyn Crow recently made a discovery that will help identify characteristics of extrasolar planets. By comparing the reflected red, blue, and green light from planets in our solar system, they and their team were able to group the planets according to their similarities. The planets fall into very distinct regions on this plot, where the vertical direction indicates the relative amount of blue light, and the horizontal direction the relative amount of red light. This technique works even when the source of the reflected light is visible only as a point, like exoplanets appear when observed through a telescope. Therefore, scientists can use it to identify earthlike planets more easily. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10679 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 10 27 NASA Goddard <https://youtu.be/rcKRk3WdhT0> NASA ARTEMIS Orbits Magnetic Moon

Launched in 2007, NASA's five THEMIS spacecraft have now successfully completed their 2 year mission to determine the cause of geomagnetic substorms. Because they are continuing to work perfectly, NASA is re-directing the outermost two spacecraft to special orbits at and around the Moon. This new mission, which is called ARTEMIS, uses some very complex maneuvers over two years (2009-2010) to get both spacecraft into position.

[Transcript](#)
[Link](#)

As the Moon orbits the Earth, it passes in and out of the Earth's magnetic field and the million-mile per hour stream of particles emitted by the Sun known as the solar wind. While in these regions, the two ARTEMIS spacecraft will seek evidence for turbulence, particle acceleration, and magnetic reconnection, three fundamental phenomena that control the nature of the solar wind's interaction with the Earth's magnetosphere. Employing their full complement of instruments and unique two-point vantage points, the spacecraft will study the vacuum the Moon carves out in the solar wind, and the processes that eventually fill this lunar wake. Nearer the Moon, they will observe the effects of surface electric fields, ions sputtered off the lunar surface, and determine the internal structure of the Moon from transient variations in its magnetic field induced by external changes.

This video is public domain and can be downloaded at:
<http://svs.gsfc.nasa.gov/goto?10636>

2010 10 21 NASA Goddard <https://youtu.be/up1h-ziAK5E> NASA LRO Observes the LCROSS Impact

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NASA scientists have revealed the lunar soil inside shadowy craters is rich in useful materials, that the moon is chemically active, and that it also has a water cycle. The Lunar Reconnaissance Orbiter, by observing the impact of the LCROSS spacecraft, helped contribute to these new findings.

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2010 10 20	NASA Goddard	https://youtu.be/inQoKMRCn7M	NASA A New Dimension to Learning	The Space Operations Institute (SOI) was established at Capitol College, Laurel, MD in 2002 with a grant from the National Aeronautics and Space Administration. This partnership combines the infrastructure necessary to manage satellite operations with an educational program. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?106321 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 10 18	NASA Goddard	https://youtu.be/5AO0jo3prqc	NASA IceBridge Kicks Off Antarctic 2010 Campaign	On October 18th, NASA's Operation IceBridge scientists and the DC-8 crew departed for Punta Arenas, Chile where they will begin the Antarctic 2010 phase of the mission. For the next five weeks, instruments aboard the DC-8 will collect data to determine surface elevation and ice characteristics near and over Antarctica. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10678 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on Facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 10 14 NASA Goddard <https://youtu.be/SMfG1UEgT-w> NASA NASA Aids in Medical Imaging **Reporters can download additional HD b-roll and interview clips at: <http://svs.gsfc.nasa.gov/goto?10681> [Transcript Link](#)

NASA software has been incorporated into a new medical imaging device that could one day aid in the interpretation of mammograms, ultrasounds, and other medical imagery. The new MED-SEG system, developed by Bartron Medical Imaging LLC, a small Connecticut-based company with satellite offices in Maryland, relies on an innovative software program developed at NASA's Goddard Space Flight Center in Greenbelt, Md. This software was originally designed to analyze imagery of Earth, but soon will be doing much more.

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2010 10 14 NASA Goddard <https://youtu.be/zmiU5tJRId4> NASA Exploring Energy Infrared How does NASA "see" thermal radiation? This video explores what infrared energy is and how NASA detects it to study our Earth's systems more completely. Satellite measurements over time allow scientists to study seasonal changes in local and global temperatures, as well as longer term trends in temperature over time. This video also includes a look at the experiment Sir William Herschel conducted that led to the discovery of infrared. [Transcript Link](#)

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2010 10 12	NASA Goddard	https://youtu.be/BRsrDZARTHg	NASA Exploring Energy Hurricanes	This year's theme for Earth Science Week is "Exploring Energy." How do hurricanes get their energy? NASA hurricane scientist Dr. Jeff Halverson explains how hurricanes draw energy from the ocean surface. The video also provides an example of a classroom activity that allows students to map the change in sea surface temperature over time. This activity from My NASA Data uses actual data gathered from Hurricane Rita, which struck the Gulf of Mexico in September 2005. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10664 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 10 07	NASA Goddard	https://youtu.be/2M-3YImVO8	NASA Planetary Scientist Profile Noah Petro	Noah Petro is a NASA planetary geologist who studies the surface of airless bodies in space, primarily focusing on the moon. In this video profile, Noah talks about how he was inspired to become a NASA researcher and what excites him most about his career in science. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10642 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 10 05	NASA Goddard	https://youtu.be/yegfeUz_Abw	NASA MAVEN Science Teaser	The Mars Atmosphere and Volatile Evolution Mission (MAVEN), set to launch in 2013, will explore the planet's upper atmosphere, ionosphere and interactions with the sun and solar wind. Scientists will use MAVEN data to determine the role that loss of volatile compounds from the Mars atmosphere to space has played through time, giving insight into the history of Mars atmosphere and climate, liquid water, and planetary habitability. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10666 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 10 05	NASA Goddard	https://youtu.be/UqISLiqFT4	NASA The How-To Guide to Satellites The Design Review	Building satellites isn't easy. They're complex, expensive, and not to mention hard to make! This is why whenever NASA makes a new satellite--like the MAVEN mission to Mars--its scientists and engineers do everything they can to make sure it's done right. One of the most important steps in this process is the design review, where everything is checked and double-checked to make sure the satellite is ready to build! This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10667 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 10 01	NASA Goddard	https://youtu.be/hdz5gpM_VXs	NASA JWST ISIM Completes Cryo Test	A video snap shot showing JWST's Integrated Science Instrument Module (ISIM) structure inside Goddard's Space Environment Simulator after it completed cryogenic testing. The snap shot also shows engineers removing the ISIM and returning it to the clean room. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10675 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 10 01	NASA Goddard	https://youtu.be/Wbk0JhP3ubk	NASA JWST Fine Guidance Sensor Engineering Test Unit Arrives at Goddard	A video snap shot showing the arrival and unpacking of the JWST Fine Guidance Sensor Engineering Test Unit at NASA Goddard Space Flight Center. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10676 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 09 27	NASA Goddard	https://youtu.be/bQDo1DDU9Wc	NASA Hurricane Hunters	During the 2010 hurricane season, NASA deployed its piloted DC-8 and WB-57, and unmanned Global Hawk aircraft in a massive effort to collect as much data as possible, arming hurricane researchers with the information needed to predict the growth and intensification of hurricanes. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10655 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 09 23	NASA Goddard	https://youtu.be/op1mSfLbiY	NASA Dust Simulations Paint Alien's View of the Solar System	Dust ground off icy bodies in the Kuiper Belt, the cold-storage zone that includes Pluto and millions of other objects, creates a faint infrared disk potentially visible to alien astronomers looking for planets around the sun. Neptune's gravitational imprint on the dust is always detectable in new simulations of how this dust moves through the solar system. By ramping up the collision rate, the simulations show how the distant view of the solar system might have changed over its history. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10635 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 09 22 NASA Goddard <https://youtu.be/21m6KxAlGX0> NASA Inside Astrobiology Danny Glavin

Danny Glavin talks about crushing meteorite samples, funding, and how having the right chemistry (no pun intended) is important in an astrobiology lab. [Transcript](#) [Link](#)

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2010 09 20 NASA Goddard <https://youtu.be/ON1Tffzi7h8> NASA Firefly Teaser

The small satellite, with a big mission, is appropriately named "Firefly." Sponsored by the National Science Foundation (NSF), the pint-sized satellite will study the most powerful natural particle accelerator on Earth — lightning — when it launches from the Marshall Islands aboard an Air Force Falcon 1E rocket vehicle next year.

[Transcript](#) [Link](#)

Although no one knows why, it appears that flashes of gamma rays that were once thought to occur only far out in space near black holes or other high-energy cosmic phenomena are somehow linked to lightning.

Using measurements gathered by Firefly's instruments, Goddard scientist Doug Rowland and his collaborators hope to answer what causes these high-energy flashes. In particular, they want to find out if lightning triggers them or if they trigger lightning. Firefly is expected to observe up to 50 lightning strokes per day, and about one large TGF every couple days.

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2010 09 20	NASA Goddard	https://youtu.be/AqVRA_C7xyA8	NASA Robots on the Roof	The Aerosol Robotic Network (AERONET) is one of the first places that scientists turn when volcanoes, wildfires, pollution plumes, dust storms and many other phenomena—both natural and manmade—make an appearance. The network of ground-based instruments, called sun photometers, measures the many tiny particles blowing about in the atmosphere called aerosols. The particles are often impossible to see with human eyes, but AERONET's sensors can detect their presence by measuring subtle fluctuations in sunlight as the particles reflect and scatter the sun's rays. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10621 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 09 16	NASA Goddard	https://youtu.be/hhSkRIj6wyQ	NASA Counting Craters on the Moon	Using the Lunar Reconnaissance Orbiter's Lunar Orbiter Laser Altimeter (LOLA), NASA scientists have created the first-ever comprehensive catalog of large craters on the moon. In this animation, lunar craters larger than 20km in diameter "light up" using LOLA elevation data. Craters light up in an east to west (Tranquillitatis toward Orientale) sweep around the Moon. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a010600/a010646/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 09 10	NASA Goddard	https://youtu.be/6opllPcXN50	NASA Inside Astrobiology - Conozca a Geronimo Villanueva	(turn on closed captions for English subtitles) Geronimo Villanueva habla de la posibilidad de vida en Marte, viajes a telescopios remotos, y las oportunidades de investigación en la NASA Goddard. Geronimo Villanueva talks about the possibility of life on Mars, trips to remote telescopes, and the research opportunities at NASA Goddard. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a010600/a010615/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 09 09	NASA Goddard	https://youtu.be/2Q13dyRi5ok	NASA Desert RATS	Desert Research and Technology Studies (Desert RATS) tests procedures and equipment that could one day be a part of human space flight missions to the moon and Mars. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a010600/a010641/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 09 09	NASA Goddard	https://youtu.be/WRwX6fY8ZCw	NASA Hubble & Exoplanets	Three astronomers in NASA Goddard's Exoplanets and Stellar Astrophysics Laboratory discuss how Hubble's coronagraph and resulting images have helped scientists find planets orbiting distant stars. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10619 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 09 08 NASA Goddard <https://youtu.be/9U-hJ3k7Oe4> NASA Satellites See Smoke Plume from Fourmile Canyon Fire On the morning of September 6, 2010, a wildfire known as the Fourmile Canyon Fire broke out just west of Boulder, Colorado. The Moderate Resolution Imaging Spectroradiometer (MODIS) on NASA's Terra and Aqua satellites captured these images of the Fourmile Canyon Fire and its resulting smoke plume on September 7th and 8th. The red outline corresponds with the unusually high surface temperatures associated with an active fire. [Transcript](#) [Link](#)

To read more about this and other NASA satellite images of fires, visit:

<http://www.nasa.gov/fires>

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2010 09 08 NASA Goddard <https://youtu.be/dCFyIcGLw> NASA Wildfire and Pine Beetles Mountain pine beetles are native to Western forests, but in recent years their numbers have skyrocketed. As they damage more trees and kill whole regions of forest, some worry that the dead forest left behind has become a tinderbox ready to burn. But do pine beetles really increase fire risk? Using Landsat satellite data, University of Wisconsin forest ecologist Phil Townsend and his team are discovering that pine beetle damage appears not to have a significant impact in the risk of large fires. In fact, it might even reduce fire risk in some instances. [Transcript](#) [Link](#)

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2010 09 02	NASA Goddard	https://youtu.be/-BardUQyb-0	NASA Hurricane Scientist talks GRIP, Hurricane Earl	NASA's Hurricane expert Dr. Jeff Halverson explains how NASA's GRIP mission is keeping a close eye on Hurricane Earl and other storms over the Atlantic. Scientists use data collected from NASA's DC-8, Global Hawk and WB-57 aircraft to study the Genesis and Rapid Intensification Process that hurricanes undergo as they become major storms. To learn more visit: http://www.nasa.gov/hurricanes Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 08 30	NASA Goddard	https://youtu.be/mHbFFv1Pq5c	NASA Exploring the Inner Solar System (Part 6 6)	In the final part of Dr. Garvin's lecture he continues discussion for the future of exploring Mars with the upcoming Mars Science Lab/Curiosity Rover, the concepts for a future Mars sample-return mission, and his dreams of one day sending humans to Mars. (Show Description) Chief Scientist of NASA's Goddard Space Flight Center, Dr. Jim Garvin, takes us on a journey to Mercury, Venus, Earth, the moon, near-Earth objects, and Mars. Why does space matter? Why is exploring the inner solar system so crucial? Where will humans and robots venture to next? In this video lecture, filmed July 14, 2010 in NASA Goddard's HD Science Studio with an audience of summer interns and co-op students, Dr. Garvin discusses NASA's past, present, and future of discovery on our nearest neighbors in the solar system. This video can also be downloaded in full at: http://svs.gsfc.nasa.gov/vis/a010000/a010600/a010618/ To learn more about NASA missions and science, visit our homepage, www.nasa.gov.	Transcript Link

2010 08 30 NASA Goddard <https://youtu.be/znx77MdPTxg> NASA Exploring the Inner Solar System (Part 5 6) In part 5, Dr. Garvin conveys the amazing past successes of robotic explorations on Mars and what we have to look forward to with the upcoming Mars Science Lab, also known as the Curiosity rover. [Transcript Link](#)

(Show Description)

Chief Scientist of NASA's Goddard Space Flight Center, Dr. Jim Garvin, takes us on a journey to Mercury, Venus, Earth, the moon, near-Earth objects, and Mars. Why does space matter? Why is exploring the inner solar system so crucial? Where will humans and robots venture to next? In this video lecture, filmed July 14, 2010 in NASA Goddard's HD Science Studio with an audience of summer interns and co-op students, Dr. Garvin discusses NASA's past, present, and future of discovery on our nearest neighbors in the solar system.

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2010 08 30 NASA Goddard <https://youtu.be/0VsbXLVr2P0> NASA Exploring the Inner Solar System (Part 4 6) Part 4 of Dr. Garvin's talk includes a hypothetical trip to a near-Earth object, a look at NASA's explorations of our own place in the solar system, planet Earth, and an introduction to what makes Mars such a fascinating place to study. [Transcript Link](#)

(Show Description)

Chief Scientist of NASA's Goddard Space Flight Center, Dr. Jim Garvin, takes us on a journey to Mercury, Venus, Earth, the moon, near-Earth objects, and Mars. Why does space matter? Why is exploring the inner solar system so crucial? Where will humans and robots venture to next? In this video lecture, filmed July 14, 2010 in NASA Goddard's HD Science Studio with an audience of summer interns and co-op students, Dr. Garvin discusses NASA's past, present, and future of discovery on our nearest neighbors in the solar system.

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2010 08 30 NASA Goddard <https://youtu.be/hXE2rEodGEA> NASA Exploring the Inner Solar System (Part 3 6) In part 3, Dr. Garvin talks about the recent science and exploration breakthroughs at Earth's moon and explains why there's so much interest these days in near-Earth objects. [Transcript Link](#)

(Show Description)

Chief Scientist of NASA's Goddard Space Flight Center, Dr. Jim Garvin, takes us on a journey to Mercury, Venus, Earth, the moon, near-Earth objects, and Mars. Why does space matter? Why is exploring the inner solar system so crucial? Where will humans and robots venture to next? In this video lecture, filmed July 14, 2010 in NASA Goddard's HD Science Studio with an audience of summer interns and co-op students, Dr. Garvin discusses NASA's past, present, and future of discovery on our nearest neighbors in the solar system.

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2010 08 30 NASA Goddard <https://youtu.be/-dQ2YYrE8yl> NASA Exploring the Inner Solar System (Part 2 6) In part 2, Dr. Garvin continues explaining how much left we have to learn about Venus and recounts NASA's visits to the moon with the Apollo program. [Transcript Link](#)

(Show Description)

Chief Scientist of NASA's Goddard Space Flight Center, Dr. Jim Garvin, takes us on a journey to Mercury, Venus, Earth, the moon, near-Earth objects, and Mars. Why does space matter? Why is exploring the inner solar system so crucial? Where will humans and robots venture to next? In this video lecture, filmed July 14, 2010 in NASA Goddard's HD Science Studio with an audience of summer interns and co-op students, Dr. Garvin discusses NASA's past, present, and future of discovery on our nearest neighbors in the solar system.

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2010 08 30	NASA Goddard	https://youtu.be/ePffS0N_HZk	NASA Exploring the Inner Solar System (Part 1 6)	Chief Scientist of NASA's Goddard Space Flight Center, Dr. Jim Garvin, takes us on a journey to Mercury, Venus, Earth, the moon, near-Earth objects, and Mars. Why does space matter? Why is exploring the inner solar system so crucial? Where will humans and robots venture to next? In this video lecture, filmed July 14, 2010 in NASA Goddard's HD Science Studio with an audience of summer interns and co-op students, Dr. Garvin discusses NASA's past, present, and future of discovery on our nearest neighbors in the solar system. In part 1, Dr. Garvin introduces his talk, discusses what we know about the planet Mercury, and begins unwrapping the mysteries of Venus. This video can also be downloaded in full at: http://svs.gsfc.nasa.gov/vis/a010000/a010600/a010618/ To learn more about NASA missions and science, visit our homepage, www.nasa.gov.	Transcript Link
2010 08 27	NASA Goddard	https://youtu.be/j02hLczdzaQ	NASA Hurricane Danielle Churns in the Atlantic	The Moderate Resolution Imaging Spectroradiometer (MODIS) on NASA's Aqua satellite captured this natural-color image of Hurricane Danielle on August 26 at 1555 UTC. At this time, she was a category 2 storm with winds of 90 knots and a pressure reading of 982 mb. Danielle has a distinct eye with the storm's longest spiral arms stretching toward the northeast. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a000000/a003700/a003757 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 08 26	NASA Goddard	https://youtu.be/QDlx8lnAlcM	NASA Inside Astrobiology Jason Dworkin	Jason Dworkin, Chief of the Astrochemistry Laboratory, talks about solving problems, analyzing comets, and the great team of people working to answer science's biggest questions. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10615 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 08 24	NASA Goddard	https://youtu.be/mulmp_rCHrE8	NASA Katrina Retrospective 5 Years After the Storm	On August 29, 2005, Hurricane Katrina made landfall along the Gulf Coast. Five years later, NASA revisits the storm with a short video that shows Katrina as captured by satellites. Before and during the hurricane's landfall, NASA provided data gathered from a series of Earth observing satellites to help predict Katrina's path and intensity. In its aftermath, NASA satellites also helped identify areas hardest hit. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a010600/a010633/index.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 08 19	NASA Goddard	https://youtu.be/xjsvL23Sw9Q	NASA Plant Productivity in a Warming World	The past decade is the warmest on record since instrumental measurements began in the 1880s. Previous research suggested that in the '80s and '90s, warmer global temperatures and higher levels of precipitation -- factors associated with climate change - were generally good for plant productivity. An updated analysis published this week in Science indicates that as temperatures have continued to rise, the benefits to plants are now overwhelmed by longer and more frequent droughts. High-resolution data from the Moderate Resolution Imaging Spectroradiometer, or MODIS, indicate a net decrease in NPP from 2000-2009, as compared to the previous two decades. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/vis/a010000/a010600/a010630/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 08 19	NASA Goddard	https://youtu.be/pHWOaOBYiMk	NASA LRO Reveals Incredible Shrinking Moon	Newly discovered cliffs in the lunar crust indicate the moon shrank globally in the geologically recent past and might still be shrinking today, according to a team analyzing new images from NASA's Lunar Reconnaissance Orbiter (LRO) spacecraft. The results provide important clues to the moon's recent geologic and tectonic evolution. To read more about this story, visit: http://www.nasa.gov/mission_pages/LRO/news/shrinking-moon.html To download this video, visit: http://svs.gsfc.nasa.gov/goto?10631 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or get tweeted by NASA: http://twitter.com/NASAGoddard Or find us on facebook: http://www.facebook.com/nasa.gsfc Or check our our images on Flickr: http://www.flickr.com/photos/gsfcc/	Transcript Link
2010 08 12	NASA Goddard	https://youtu.be/wyGLDBIRuSo	NASA Inside Astrobiology Joe Nuth	Joe Nuth, Senior Scientist for Primitive Bodies, talks about his job, his research, and how scientists are just like everyone else, but a little nerdier. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10615 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 07 27	NASA Goddard	https://youtu.be/Lf02hLJR73E	NASA Inside Astrobiology Jaime Cook	Jamie Cook, an astrobiologist at the Goddard Space Flight Center, talks about her work in the lab and some of her most exciting discoveries. This video is public domain and can be downloaded at: http://svs.gsfc.nasa.gov/goto?10615 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/NASA.GSFC Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 07 23	NASA Goddard	https://youtu.be/cZXOzr93OaI	NASA NOAA Tropical Storm Bonnie Strengthens Over Florida	This video sequence from the GOES-13 satellite using images between July 21st and July 23rd shows Tropical Depression 3 strengthen into tropical storm Bonnie over southern Florida. Tropical storm warnings went into effect for the Northwestern Bahamas, the Florida east coast from Deerfield Beach southward, including all of the Florida Keys, Florida Bay and along the Florida west coast northward to Englewood. Credit: NASA GOES Project This video is public domain and can be downloaded at: http://goes.gsfc.nasa.gov/goescolor/goeseast/hurricane2/movie/all_ey_east_conus.mp4 To read more about Tropical Storm Bonnie, visit: http://www.nasa.gov/mission_pages/hurricanes/archives/2010/h2010_Bonnie.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/nasa.gsfc Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 07 22	NASA Goddard	https://youtu.be/L4U6ImYSi0	NASA The Molecule Dissector - Mass Spectrometry	What do you do if you have a sample from another planet, and you want to find out if it contains a certain molecule...maybe even one that will reveal that the planet can sustain life? When scientists face a situation like this, they employ an amazing tool: the mass spectrometer. It does the hard work of separating out materials, allowing scientists to look very closely at a sample and see what's inside. Learn more about this tool in the video from NASA Goddard's Solar System Exploration Division. To download this video, visit: http://svs.gsfc.nasa.gov/goto?10620 To visit NASA Goddard's Solar Systems Exploration Division home page, visit: http://science.gsfc.nasa.gov/sed/index.cfm?fuseAction=home.main&&navOrgCode=690 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/nasa.gsfc Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 07 20	NASA Goddard	https://youtu.be/Pfop1sgyOdc	NASA Satellites View Growing Gulf Oil Spill (Update 7 14 2010)	Two NASA satellites are capturing images of the oil spill in the Gulf of Mexico, which began April 20, 2010 with the explosion of the Deepwater Horizon oil rig. This short video reveals a space-based view of the burning oil rig and, later, the resulting spread of the oil spill. This version updates a previous version of the video through July 14th. The timelapse uses imagery from the MODIS instrument, on board NASA's Terra and Aqua satellites. The oil slick appears grayish-beige in the image and changes due to changing weather, currents, and use of oil dispersing chemicals. The oil slick only appears clearly in MODIS imagery when the sun is at a particular angle in relation to the satellite's position as it orbits over the Gulf. In areas where sunlight reflects off the ocean's surface toward the satellite, oil-slicked water usually looks brighter than cleaner ocean water in the region. (no narration, music only) This video can be downloaded in full resolution at: http://svs.gsfc.nasa.gov/goto?10617 Images in this video times series were selected that show the spill most clearly. The full image archive is available at: http://rapidfire.sci.gsfc.nasa.gov You can learn more about the oil spill by visiting: http://www.nasa.gov/topics/earth/features/oilspill	Transcript Link
2010 07 13	NASA Goddard	https://youtu.be/08yoBapDjMw	NASA Inside Astrobiology Michael Mumma	Imagery and information about the oil spill is also available on Astrobiology is the study of the origin, evolution, distribution, and future of life in the universe. The Goddard Center for Astrobiology and the NASA Astrobiology Institute focus on this amazing field through research, experimentation, and work with scientists from all over the world. In this video, meet Dr. Michael Mumma, Director of the Goddard Center for Astrobiology, and learn about his role in the lab. This is the first in a series of profile videos featuring employees of the Goddard Center for Astrobiology. To learn more about the Goddard Center for Astrobiology, visit: http://astrobiology.gsfc.nasa.gov/ To download this video, visit: http://svs.gsfc.nasa.gov/goto?10615 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or get tweeted by NASA: http://twitter.com/NASAGoddard Or find us on facebook: http://www.facebook.com/nasa.gsfc	Transcript Link

2010 07 02	NASA Goddard	https://youtu.be/AebYmI6FfJo	NASA Know Your Earth	This animated video shares a series of fascinating facts about how climate change affects oceans, land, the atmosphere, and ice sheets around the world. With the help of an animated astronaut touring the Earth, the video explains how NASA's Earth observing satellite fleet enables scientists to gather accurate data and understand those changes. Produced by NASA Earth Science experts, the animation will play in movie theater lobbies all over America. (no narration, audio is music-only) To learn more about this video, visit: http://www.nasa.gov/topics/earth/features/KnowYourEarth.html To download this video, visit: http://svs.gsfc.nasa.gov/goto?10605 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or get tweeted by NASA: http://twitter.com/NASAGoddard Or find us on facebook: http://www.facebook.com/nasa.gsfc	Transcript Link
2010 07 02	NASA Goddard	https://youtu.be/ZfdQXPMP0d4	NASA Earth Most Unusual	In exploring the universe, NASA has uncovered one planet more unusual than all others. This 30 second video shows you which planet that is, and explains that NASA science helps us better understand this world without equal. (no narration, audio is music-only) To learn more about this video, visit: http://www.nasa.gov/topics/earth/features/KnowYourEarth.html To download this video, visit: http://svs.gsfc.nasa.gov/goto?10606 Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/itunes/f0004_index.html Or get tweeted by NASA: http://twitter.com/NASAGoddard Or find us on facebook: http://www.facebook.com/nasa.gsfc	Transcript Link

2010 06 29	NASA Goddard	https://youtu.be/Q19kXSrG02c	NASA SAM Engineer Profile Synthia Tonn	This video profiles Synthia Tonn, a junior engineer on the Sample Analysis at Mars (SAM) instrument team responsible for SAM's ground support equipment as well as its 'plumbing,' or the series of tiny, winding gas lines that connect SAM's various instruments. Sample Analysis at Mars (SAM) is a suite of instruments developed for use on the Mars Science Laboratory. By looking for evidence of water, carbon, and other important building blocks of life in the Mars soil and atmosphere, this suite will help answer one of humankind's biggest questions about the planet: did it ever support life? SAM was designed and built in an international collaboration between Goddard Space Flight Center, the Jet Propulsion Laboratory, the University of Paris, and Honeybee Robotics. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/nasa.gsfc Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 06 23	NASA Goddard	https://youtu.be/Ha-LEpvZNSA	NASA Ten Cool Things Seen in the First Year of LRO	To celebrate one year in orbit, here are ten cool things already observed by NASA's Lunar Reconnaissance Orbiter. Note that the stories here are just a small sample of what the LRO team has released and barely touch on the major scientific accomplishments of the mission. Visit http://www.nasa.gov/LRO to read about these images and many more! Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/nasa.gsfc Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link

2010 06 16	NASA Goddard	https://youtu.be/K3Pzywx73cl	NASA The Road to Glory	Glory is a unique research satellite designed to orbit the Earth and achieve two major goals. Glory's first goal is to collect data on the properties of aerosols and black carbon in the Earth's atmosphere and climate system; its second goal is to collect data on solar irradiance for Earth's long-term climate record. This seven-minute video introduces Glory's science objectives, people, and instruments, and provides an overview of the Glory mission. Get to know NASA's Glory mission: http://www.nasa.gov/glory Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or get tweeted by NASA: http://twitter.com/NASAGoddard Or find us on facebook: http://www.facebook.com/nasa.gsfc	Transcript Link
2010 06 03	NASA Goddard	https://youtu.be/Vsri2sQAJWo	NASA Ship Tracks Reveal Pollution's Effects on Clouds	NASA's MODIS satellite instrument reveals how air pollution may alter clouds, affecting global temperatures. This narrated visualization illustrates the effect by showing how ship exhaust leaves brights cloud trails in clean ocean air. The ship tracks themselves are too small to affect global temperatures, but they help us understand how larger pollution sources might change clouds on a bigger scale. To find downloadable versions of this video, visit: http://svs.gsfc.nasa.gov/goto?3667 Like our stuff? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or get tweeted by NASA: http://twitter.com/NASAGoddard Or find us on facebook: http://www.facebook.com/nasa.gsfc	Transcript Link

2010 06 02 NASA Goddard <https://youtu.be/jj0WsQYtT7M> NASA Supercomputing the Climate

Goddard Space Flight Center is the home of a state-of-the-art supercomputing facility called the NASA Center for Climate Simulation (NCCS) that is capable of running highly complex models to help scientists better understand Earth's climate. This short video introduces the NCCS and takes you behind-the-scenes into the fascinating field of climate modeling. Using supercomputers to process data from satellite observations, these models are used to predict weather and give a picture of how the Earth's systems and climate are changing.

[Transcript](#)
[Link](#)

To learn more about the NCCS, visit:

<http://www.nasa.gov/topics/earth/features/climate-sim-center.html>

Download this video: <http://svs.gsfc.nasa.gov/goto?10563>

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2010 06 01 NASA Goddard <https://youtu.be/H-33UJyaqxA> NASA NOAA Hurricane Season 2009

The NASA/NOAA GOES Project is releasing a comprehensive video of the 2009 hurricane season to kick off the Atlantic Ocean hurricane season that starts June 1.

[Transcript](#)
[Link](#)

To learn more about this video, visit:

<http://www.nasa.gov/topics/earth/features/2009-hurricane-vid.html>

To get the latest news and updates on hurricanes, cyclones, and tropical storms, visit NASA's hurricane page:

<http://www.nasa.gov/hurricane>

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Or get our twitter updates:

<http://twitter.com/NASAGoddard>

2010 05 27	NASA Goddard	https://youtu.be/mCW5xt3Hc8	NASA Satellites View Growing Gulf Oil Spill	Two NASA satellites are capturing images of the oil spill in the Gulf of Mexico, which began April 20, 2010 with the explosion of the Deepwater Horizon oil rig. This short video reveals a space-based view of the burning oil rig and, later, the ensuing oil spill through May 24. The timelapse uses imagery from the MODIS instrument, on board NASA's Terra and Aqua satellites. The oil slick appears grayish-beige in the image and changes due to changing weather, currents, and use of oil dispersing chemicals. This video can be downloaded in full resolution at: http://svs.gsfc.nasa.gov/goto?10562 Images in this video times series were selected that show the spill most clearly. The full image archive is available at: http://rapidfire.sci.gsfc.nasa.gov You can learn more about the oil spill by visiting: http://www.nasa.gov/topics/earth/features/oilspill Imagery and information about the oil spill is also available on NASA's Earth Observatory Natural Hazards Web page: http://earthobservatory.nasa.gov/NaturalHazards Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook:	Transcript Link
2010 05 25	NASA Goddard	https://youtu.be/Oe4jGbbXnvw	NASA TIROS-1 The Forecast Revolution Begins (50th Anniversary)	April 1, 1960: the world's first experimental weather satellite, TIROS-1, was launched. Within three months, TIROS-1 generated over 23,000 images of earth and its atmosphere, providing an unprecedented perspective from above and revolutionizing weather forecasting. This is an historical overview of TIROS-1, its legacy and, ultimately, the birth of remote earth observation as we know it today. Read more about 50 years of watching weather from space: http://www.nasa.gov/home/hqnews/2010/apr/HQ_10-072_TIROS1_Anniversary.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/nasa.gsfc Or get tweeted by us: http://twitter.com/NASAGoddard	Transcript Link

2010 05 24 NASA Goddard https://youtu.be/zU_0gz5T7Rc NASA NOAA
Saved By A
Weather Satellite

The Geostationary Operational Environmental Satellites (GOES) have the ability to constantly oversee a large area of the Earth and send real time data to users. GOES sends not only weather data but it also watches the sun continuously and at the same time provides critical data that helps rescue personal locate victims in distress.

[Transcript](#)
[Link](#)

This is a story about an incredibly challenging rescue that took place on January 2nd, 2010, 250 miles off the shore of North Carolina. Dennis Clements was on his way to the Caribbean when severe weather struck and damaged his boat leaving him alone in the middle of the frigid Atlantic Ocean. Miraculously, after an hour floating in the cold water, he bumped into a life raft thrown by the US Coast Guard and shortly after that he was pulled out by a Navy rescue diver. The USS Eisenhower was on its way to Afghanistan when they heard the Coast Guards call for help. Dennis was saved thanks to a distress signal sent from his emergency beacon (EPIRB) to the GOES satellite shortly before he was dragged under water.

Read more about this story:

<http://www.nasa.gov/topics/technology/features/search-rescue2010.html>

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2010 05 18 NASA Goddard <https://youtu.be/1m3a4fdSipw> NASA Mount St.
Helens Thirty
Years Later

Thirty years ago, on May 18, 1980, Mount St. Helens roared back into major activity with a massive eruption that leveled surrounding forest, blasted away over a thousand feet of the mountain's summit, and claimed 57 human lives.

[Transcript](#)
[Link](#)

This short video shows the catastrophic eruption - and the amazing recovery of the surrounding ecosystem - through the eyes of the Landsat satellites, which have been imaging our planet for almost forty years.

See the images and read more, visit NASA's "World of Change" site:

<http://earthobservatory.nasa.gov/Features/WorldOfChange/sthelen.s.php>

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2010 05 17	NASA Goddard	https://youtu.be/10zZxWTu2gg	NASA SDO Commissioning and Handover	In order to provide the clearest scientific data for its entire 5 year mission, SDO had to undergo a rigorous, 2 month testing phase. After giving it an all-clear, the team of people who designed, built and tested the satellite now have to say goodbye as they hand it over to the scientists who will begin collecting data. Read more about SDO's handover: http://www.nasa.gov/mission_pages/sdo/news/mission-begins.html Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or find NASA Goddard Space Flight Center on facebook: http://www.facebook.com/nasa.gsfc Or find us on Twitter: http://twitter.com/NASAGoddard	Transcript Link
2010 05 12	NASA Goddard	https://youtu.be/vlp3tuYRFDE	NASA The Smog Bloggers	Has pollen got you sneezing? Wondering what's causing that mysterious afternoon haze? How do you find out what's in the air you are breathing? For the thousands of people who visit the University of Maryland Baltimore County's "Smog Blog" each day, the answer is just a web click away. The Smog Bloggers combine laser measurements of current air quality with NASA satellite data to paint a daily picture of air pollution across the US. To date, the blog has received over two million hits, and is itself a big hit with weather forecasters, astronomers, asthma sufferers, and those with just a healthy curiosity about what kinds of pollution they may be breathing in. How's U.S. air quality right now? Go check the Smog Blog: http://alg.umbc.edu/usaq/ Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or get tweeted by NASA: http://twitter.com/NASAGoddard Or find us on facebook: http://www.facebook.com/nasa.gsfc	Transcript Link

2010 04 27	NASA Goddard	https://youtu.be/PpV01CysQeg	NASA NOAA A Weather Satellite Watches The Sun	GOES is a series of weather satellites providing continuous delivery of real time data helping meteorologists predict weather on Earth with great accuracy. The GOES satellites also look at the Sun and send critical data to space weather forecasters who issue warnings to users such as power companies, airplanes, astronauts, and many more. Watch this video to learn why space weather data is so important for every day life here on Earth. To learn more about GOES-P visit: http://www.nasa.gov/goes-p Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 04 26	NASA Goddard	https://youtu.be/_gf-l9zwSfA	NASA Operation IceBridge A Science Lab in the Arctic Sky	One of the keys to gathering data for Operation IceBridge is a highly modified McDonnell Douglas DC-8 jetliner, which NASA operates as a flying science laboratory. This workhorse DC-8 can fly long trips, allowing a suite of scientific instruments to study the Arctic ice sheet, glaciers and sea ice. Find out more about NASA's 2010 Operation IceBridge campaign: http://www.nasa.gov/mission_pages/icebridge/	Transcript Link
2010 04 23	NASA Goddard	https://youtu.be/wFWYt3B5cE	NASA Hubble's 20th - A 3D Trip into the Carina Nebula	This is a three-dimensional trip into a giant "mountain" of cool hydrogen and dust in the Carina Nebula, a vast star-forming region in our Milky Way Galaxy. The nebula is too far away for Hubble Space Telescope to see in true three dimensions. But this visualization creates foreground and background elements based on an approximation of how the region might be distributed in a 3-D volume. A virtual camera flies through this synthesized space to create a 3-D effect. To learn more about Hubble and it's 20 years of space observations, visit: http://www.nasa.gov/hubble	Transcript Link

2010 04 22	NASA Goddard	https://youtu.be/f8NiE-Q51MY	NASA DLN Presents Earth Day with Bella Gaia	NASA Digital Learning Network celebrated Earth Day and joined musician/artist Kenji Williams for a special performance of "Bella Gaia" (Beautiful Earth) on Monday, April 19, 2010. "Bella Gaia" is a "living atlas" multimedia journey of our planet and combines stunning perspectives of Earth from space with Williams' original and eclectic score. UMBC cryospheric scientist Christopher Shuman joined Williams on Earth Day to give a first-hand look at a changing Antarctica. Shuman discussed what it is like to work in such a difficult and rewarding place as Antarctica and showed how the glacial poles affect our entire Earth and climate system. Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/ITunes/f0004_index.html Or get tweeted by NASA: http://twitter.com/NASAGoddard Or find us on facebook: http://www.facebook.com/nasa.gsfc	Transcript Link
2010 04 21	NASA Goddard	https://youtu.be/OrmU-Ucr4HXg	NASA New Eye on the Sun Delivers Stunning First Images	This compilation of video shows some of the first imagery and data sent back from NASA's Solar Dynamics Observatory (SDO). Most of the imagery comes from SDO's AIA instrument, and different colors are used to represent different temperatures, a common technique for observing solar features. SDO sees the entire disk of the Sun in extremely high spacial and temporal resolution and this allows scientists to zoom in on notable events like flares, waves, and sunspots. Enjoy the imagery and post in the comments the parts you found most captivating. To learn more about the SDO mission, visit: http://sdo.gsfc.nasa.gov To find these videos for download, check out: http://www.nasa.gov/mission_pages/sdo/news/briefing-materials-20100421.html http://svs.gsfc.nasa.gov/Gallery/SDOFirstLight.html Launched on Feb. 11, 2010, SDO is the most advanced spacecraft ever designed to study the sun. During its five-year mission, it will examine the sun's magnetic field and also provide a better understanding of the role the sun plays in Earth's atmospheric chemistry and climate. Since launch, engineers have been conducting testing and verification of the spacecrafts components. Now fully operational, SDO will provide images with clarity 10 times better than high-definition television and will return more comprehensive science data faster than any other solar observing spacecraft.	Transcript Link

2010 04 21	NASA Goddard	https://youtu.be/VBf_WsHTH_c	NASA SDO Launch and Deployment (animated)	This animation follows the Solar Dynamics Observatory from its launch at pad 41A from Kennedy Space Center through deployment. To learn more about the SDO mission, visit: http://www.nasa.gov/sdo Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 04 21	NASA Goddard	https://youtu.be/mq3mLDAfiHM	NASA From the Sun, to You.	The sun is BIG and to study such a huge and active subject requires an incredible amount of data. The mission up to the task is NASA's Solar Dynamics Observatory (SDO), a spacecraft built to send back 150 mbs of data per second, 24 hours a day, 7 days a week. Read more about the SDO mission: http://www.nasa.gov/sdo Like our videos? Subscribe to NASA's Goddard Shorts HD podcast: http://svs.gsfc.nasa.gov/vis/iTunes/f0004_index.html Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 04 20	NASA Goddard	https://youtu.be/m3IDJFmD9Ss	NASA Swift Targets 500 Gamma-ray Bursts	Gamma-ray bursts are the most powerful explosions known in the Universe and a NASA satellite called Swift is the Gamma-ray burst look-out. Originally tasked with the mission to target 200 bursts, on April 13, 2010 Swift greatly outpaced that goal and discovered its 500th burst. This video shows all 500 bursts detected by Swift and identifies some of the more notable bursts. To read more about Swift's 5 years and 500 Gamma-ray bursts, visit: http://www.nasa.gov/mission_pages/swift/bursts/500th.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link

2010 04 16	NASA Goddard	https://youtu.be/VKslxfydl2I	NASA Lunar Polar Craters May Be Electrified	New research from NASA's Lunar Science Institute indicates that the solar wind may be charging certain regions at the lunar poles to hundreds of volts. In this short video Dr. Bill Farrell discusses this research and what it means for future exploration of the Moon's poles. To read more about this story, visit: http://www.nasa.gov/topics/moonmars/features/electric-craters.html Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 04 13	NASA Goddard	https://youtu.be/p2qyiw t1_68	NASA The Global Hawk Eyes for Science	NASA pilots and flight engineers, together with colleagues from the National Oceanic and Atmospheric Administration (NOAA), have successfully completed the first science flight of the Global Hawk aircraft over the Pacific Ocean. The Global Hawk is a robotic plane that can fly autonomously to altitudes above 60,000 feet (18.3 kilometers) -- roughly twice as high as a commercial airliner -- and as far as 11,000 nautical miles (20,000 kilometers) -- half the circumference of Earth. GloPac researchers will directly measure and sample greenhouse gases, ozone-depleting substances, aerosols, and constituents of air quality in the upper troposphere and lower stratosphere. Read more about NASA's Global Hawk Pacific (GloPac) mission: http://www.nasa.gov/topics/earth/features/global-hawk.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 04 07	NASA Goddard	https://youtu.be/zZP8vm5nuxg	NASA Making the Impossible Possible	From concept to reality, that's the NASA way. Since the first directive to put a man on the moon, NASA has been on the cutting edge of technology and innovation and continues to turn the impossible into the possible everyday. http://www.nasa.gov This video is available for download: http://svs.gsfc.nasa.gov/goto?10594 Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link

2010 04 06	NASA Goddard	https://youtu.be/XWYfiN7GfSY	NASA IceBridge 2010 with Lora Koenig	This video shows a live interview with NASA Goddard cryospheric scientist Lora Koenig regarding Operation IceBridge and the 2010 Arctic sea ice maximum. Find out more: http://www.nasa.gov/icebridge Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 03 23	NASA Goddard	https://youtu.be/0BBIKy0lqH8	NASA The Webb Telescope	The Webb Telescope will be the premier observatory of the next decade, serving thousands of astronomers worldwide. It will study every phase in the history of our Universe, ranging from the first luminous glows after the Big Bang, to the formation of solar systems capable of supporting life on planets like Earth, to the evolution of our own Solar System. Formerly known as the "Next Generation Space Telescope" (NGST) and considered the successor to the Hubble Space Telescope, the telescope was renamed in Sept. 2002 after former NASA administrator, James Webb. For more information about the Webb Telescope go to: http://www.jwst.nasa.gov/ Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 03 22	NASA Goddard	https://youtu.be/T7TKfR3i6RI	NASA Operation IceBridge Greenland, Spring 2010	The Operation IceBridge mission, the largest airborne survey ever flown of Earth's polar ice, kicked off its second year of study with NASA aircraft arriving in Greenland March 22, 2010. Visit the Operation IceBridge web site: http://www.nasa.gov/mission_pages/icebridge Or follow along by finding @IceBridge on Twitter: http://twitter.com/IceBridge Or check out the Operation IceBridge blog: http://blogs.nasa.gov/cm/blog/icebridge/	Transcript Link
2010 03 22	NASA Goddard	https://youtu.be/m9B5h1oIFXQ	NASA The Heliophysics Program	This short program overview for NASA's heliophysics division explains how NASA studies the sun--and more importantly--how it affects our daily lives. Learn more: http://www.nasa.gov/topics/solarsystem/sunearthsystem/main/ Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link

2010 03 19	NASA Goddard	https://youtu.be/XPdO5cddyAw	NASA NOAA GOES Weather With Topper Shutt	WUSA 9 Chief Meteorologist Topper Shutt answers viewers questions about how he uses GOES satellite data to accurately predict the weather.	Transcript Link
				On March 4th, 2010, NASA launched GOES-P (soon to be re-named GOES-15), the last satellite in the N-O-P series. With GOES-P now in orbit ensuring GOES weather observations for years to come, the NASA and NOAA team will turn their attention to the next generation GOES-R series, satellites that will provide images with even greater resolution and speed of data delivery. Visit NASA's GOES-P web site: http://www.nasa.gov/goes-p Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	
2010 03 16	NASA Goddard	https://youtu.be/awi-RrKjaeA	NASA Surprise Shrimp Under Antarctic Ice	At a depth of 600 feet beneath the West Antarctic ice sheet, a small shrimp-like creature managed to brighten up an otherwise gray polar day in late November 2009. This critter is a three-inch long Lyssianasid amphipod found beneath the Ross Ice Shelf, about 12.5 miles away from open water. NASA scientists were using a borehole camera to look back up towards the ice surface when they spotted this pinkish-orange creature swimming beneath the ice. Credit: NASA	Transcript Link
				Download the video from nasa.gov: http://www.nasa.gov/topics/earth/features/antarctic-shrimp.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	
2010 03 15	NASA Goddard	https://youtu.be/r79egcvgQV8	NASA LRO Data Release	The seven instruments aboard the Lunar Reconnaissance Orbiter provide varied and unique datasets, but because of its polar orbit, the data coverage from LRO is best at the lunar poles. This visualization shows datasets from three LRO instruments at the moons south pole and then flies around the lunar terrain shown by the last of the three, the Lunar Orbiter Laser Altimeter.	Transcript Link
				On March 15, the publicly accessible Planetary Data System will release data sets from the seven instruments on board NASAs Lunar Reconnaissance Orbiter: http://www.nasa.gov/mission_pages/LRO/news/image_release.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	

2010 03 08	NASA Goddard	https://youtu.be/BPbHDKgBBxA	NASA A Landsat Flyby	The Landsat program is the longest continuous global record of the Earth's surface, and continues to deliver both visually stunning and scientifically valuable images of our planet. This short video highlights Landsat's many benefits to society. For more info: http://landsat.gsfc.nasa.gov Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 03 03	NASA Goddard	https://youtu.be/yMue1ZxYHLU	NASA NOAA GOES-P Readied For Launch	GOES-P, set to launch in March of 2010, is the last in the N-O-P series of weather satellites and will continue providing critical data for predicting Earth and space weather. This video takes you on a tour of some of the critical facilities at Cape Canaveral's Air Force Station, where go or no go decisions are made on the day of launch. For more information, visit: https://www.nasa.gov/goes-p Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 02 26	NASA Goddard	https://youtu.be/9R9TdtopdVk	NASA Marco Midon - Black History Month	This video profile shows how one individual has let neither race nor visual impairment keep him from becoming one of NASA's most talented engineers. As a Lead Systems Engineer, Marco Midon oversees the design and implementation of NASA ground stations in the area of radio frequencies. Working with new, higher data-rate dishes at White Sands in New Mexico, he was instrumental in two recent successfully launched NASA missions - the Solar Dynamics Observatory (SDO) and the Lunar Reconnaissance Orbiter (LRO). He is also the Lead Systems Engineer for the new ground station at the McMurdo Station in Antarctica. Marco's extraordinary work continues in updating compatibility equipment testing for the next generation of vehicles and spacecraft. Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link

2010 02 23	NASA Goddard	https://youtu.be/LjFz1FCKfT8	NASA A Warming World	This short video announces the launch of the A Warming World Web page on NASAs Global Climate Change Web site: http://climate.nasa.gov/warmingworld/ A Warming World features videos, images, articles and interactive visuals that discuss rising global temperatures and the impact of greenhouse gases as the main contributor to modern climate trends.	Transcript Link
2010 02 23	NASA Goddard	https://youtu.be/DjILZWw6Ko0	NASA Piecing Together the Temperature Puzzle	The decade from 2000 to 2009 was the warmest in the modern record. "Piecing Together the Temperature Puzzle" illustrates how NASA satellites enable us to study possible causes of climate change. The video explains what role fluctuations in the solar cycle, changes in snow and cloud cover, and rising levels of heat-trapping gases may play in contributing to climate change. For more info on NASA and Climate Change, visit: http://climate.nasa.gov To download this video visit the Scientific Visualization Studio: http://svs.gsfc.nasa.gov/goto?10574 Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 02 22	NASA Goddard	https://youtu.be/QpBSwWcPC94	NASA NOAA GOES-P Mission Overview Video	GOES-P is set to launch in 2010. It will be the last in an improved series of satellites that has helped forecast the development of severe weather for 35 years. Operated by NOAA and launched by NASA, GOES-P will continue providing critical data used for real-time weather prediction on Earth as well as space weather events, and search and rescue efforts. Learn more: http://www.nasa.gov/goes-p Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link

2010 02 10	NASA Goddard	https://youtu.be/SYtIQ_C836s	NASA SDO's Instruments AIA	SDO Project Scientist Dean Pesnell explains how the SDO's Atmospheric Imaging Assembly (AIA) instrument suite will allow us to take pictures of the sun at multiple temperatures and at resolutions never before seen. Learn more about the SDO mission at: http://www.nasa.gov/SDO Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 02 02	NASA Goddard	https://youtu.be/qB_X-iU1qFc	NASA Introducing Little SDO	Meet Little SDO! This comically animated version of NASA's Solar Dynamics Observatory is here to introduce you to all the great new ways we'll be looking at the sun and predicting how it will affect our lives on Earth. Learn more about Little SDO's big sister: http://www.nasa.gov/sdo Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 02 02	NASA Goddard	https://youtu.be/EPqhLlzZX6I	NASA Little SDO Big Sun	Little SDO demonstrates the fact that he takes really, really large pictures of the sun. Read about SDO's High-Def pictures of the Sun: http://www.nasa.gov/sdo Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 01 25	NASA Goddard	https://youtu.be/BthDupBQXpQ	NASA SDO Exploring the Sun in High Definition	The Solar Dynamics Observatory is designed to help us understand the Sun's influence on Earth and Near-Earth space by studying the solar atmosphere on small scales of space and time and in many wavelengths simultaneously. Dean Pesnell, the SDO Project Scientist, explains the science that will be done using NASA's SDO spacecraft. SDO is getting ready for launch! Learn more: http://www.nasa.gov/sdo Want more videos? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link

2010 01 21	NASA Goddard	https://youtu.be/H2_M7iMjkc4	NASA 2009 Tied For Second Hottest Year Ever Recorded	For more information visit www.nasa.gov/topics/earth/features/temp-analysis-2009.html Scientists at the Goddard Institute for Space Science found that 2009 was tied as the second hottest year ever recorded. Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 01 13	NASA Goddard	https://youtu.be/TNrhADcTNBk	NASA BEST Living on the Moon	The Beginning Engineering, Science, and Technology (BEST) team teaches a playful lesson about the challenges of living away from planet Earth. There's no free delivery in outer space! Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2010 01 06	NASA Goddard	https://youtu.be/VosCxEsV1A	NASA Welcome to the Sun	This short teaser video introduces NASA's newest spacecraft to the heliophysics fleet, the Solar Dynamics Observatory. For more info: http://www.nasa.gov/sdo Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2009 12 23	NASA Goddard	https://youtu.be/ssXPrG0PGDY	NASA BEST Graphing	Students learn the basics of graphing with a little help from NASA's BEST (Beginning Engineering, Science, and Technology). Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link

2009 12 17	NASA Goddard	https://youtu.be/oOAFp0fZzDo	NASA Terra@10 Terra's 10th Anniversary	The Earth-observing satellite Terra celebrates its tenth anniversary in 2009. This video highlights how Terra has helped us better understand our home planet. Learn more: http://www.nasa.gov/terra Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2009 12 15	NASA Goddard	https://youtu.be/RNoLTmBKizE	NASA Climate in a Box	For more information visit www.hec.nasa.gov Climate modeling requires massive computational power. Until recently, that power required room sized machines with daunting technical and logistic requirements. But new advances in computer design, including hardware and software, continue to facilitate a paradigm shift. In an effort to broaden and democratize climate research tools, NASA has begun to facilitate the operation of new desktop sized supercomputers, with the goal of making it substantially easier for more researchers to do meaningful work on vital and essential questions for our world. Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2009 12 09	NASA Goddard	https://youtu.be/-2Az1KDn-YM	NASA Repeatability	Why do engineers need to test things over and over and over again? Find out in this video made for students by BEST (Beginning Engineering, Science, and Technology). Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link

2009 12 02 NASA Goddard https://youtu.be/C_ky8G9gDI8 NASA Suzaku The Intergalactic Prospector

For more information visit
http://www.nasa.gov/mission_pages/astro-e2/news/intergalactic_metal.html

[Transcript](#)
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Or get tweeted by NASA:
<http://twitter.com/NASAGoddard>

Recently astronomers used the Suzaku orbiting X-ray observatory, operated jointly by NASA and the Japanese space agency, to discover the largest known reservoir of rare metals in the universe. Suzaku detected the elements chromium and manganese while observing the central region of the Perseus galaxy cluster. The metallic atoms are part of the hot gas, or "intergalactic medium," that lies between galaxies. Exploding stars, or supernovas, forge the heavy elements. The supernovas also create vast outflows, called superwinds. These galactic gusts transport heavy elements into the intergalactic void.

2009 11 30 NASA Goddard <https://youtu.be/a358QLi4Wgs> NASA The Sun Song

For more info: <http://www.thechromatics.com>

[Transcript](#)
[Link](#)

Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

Or get tweeted by NASA:
<http://twitter.com/NASAGoddard>

The "Chromatics" is a unique, high-energy, a-capella vocal band that delights audiences across the country. Originally formed in 1993 at NASA's Goddard Space Flight Center, the Chromies wrote and produced their astronomically correct songs, a project they call AstroCappella. Performed in this video, "The Sun Song" is among their many compositions. One of their CD's has even flown in space!

The Chromatics are an a professional cappella group, which started at Goddard Space Flight Center and sprung out of the Centers drama group called Music and Drama (MAD). There are 3 GSFC employees in this group who are astrophysicists working at Goddard.....Padi Boyd, Alan Smale, and his wife Karen Smale. Theyve sung locally and at many Goddard events. They have several CDs, their own website.....and write many of their own songs.

2009 11 24 NASA Goddard <https://youtu.be/JRaylgKublg> NASA Taking Earth's Temperature

For more information visit
<http://svs.gsfc.nasa.gov/ClimateEssentials>

[Transcript](#)
[Link](#)

Next month, world leaders will gather in Copenhagen at the United Nations Climate Change Conference to negotiate a new global climate treaty. In anticipation of this event, NASA has compiled a multimedia resource collection for editors and producers developing climate-related stories. Taking Earth's Temperature, a short film explaining how researchers use computer models to study climate change, is one of the many resources included in the gallery.

Organized by topic, the videos, data visualizations, conceptual animations, and print-resolution images illustrate key concepts and discoveries in climate science. The compilation also features ten of NASA's most popular climate visualizations.

The gallery can be found at NASA's Scientific Visualization Studio (<http://svs.gsfc.nasa.gov/ClimateEssentials>) and NASA's Global Climate Change site (<http://climate.nasa.gov/ClimateReel>). Images and videos can be downloaded directly from those pages and may also be available by request.

Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

2009 11 18 NASA Goddard <https://youtu.be/H5Hxhgnni2E> NASA The Cosmic Background Explorer (COBE) - Vintage Reissue

NASA's Cosmic Background Explorer (COBE) satellite rocketed into Earth orbit on Nov. 18, 1989, and quickly revolutionized our understanding of the early cosmos. This video was reissued by NASA for COBE's 20th Anniversary.

[Transcript](#)
[Link](#)

For more info:
http://www.nasa.gov/topics/universe/features/cobe_20th.html

Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

Or get tweeted by NASA:
<http://twitter.com/NASAGoddard>

This COBE informational video was produced more than 20 years ago, before the satellite embarked on its mission to study the cosmic microwave background.

2009 11 09	NASA Goddard	https://youtu.be/9_j3oKzNFOc	NASA NOAA Hurricane Ida viewed by GOES	Residents of the U.S. Gulf coast thought they were getting a break this hurricane season until they heard news of Ida. Fortunately, Ida weakened substantially and was downgraded to a Tropical Storm as she prepared to make landfall. This video from the NASA/NOAA GOES satellites shows Ida's development between November 6th and 9th 2009. For more info: http://www.nasa.gov/mission_pages/hurricanes/archives/2009/h2009_Ida.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2009 11 04	NASA Goddard	https://youtu.be/hjT_OpDn6E	NASA Science for a Hungry World Part 6	As our series concludes, we ask NASA researchers: how will climate change impact agriculture? To find out more visit: http://www.nasa.gov/topics/earth/features/ag_casts/index.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard This episode explores the need for accurate, continuous and accessible data and computer models to track and predict the challenges farmers face as they adjust to a changing climate.	Transcript Link

2009 10 29	NASA Goddard	https://youtu.be/1mkKh n53L68	NASA Einstein's Cosmic Speed Limit	This version of the film is missing a shot. If you want to see the full version in all its glory, go to its listing in our film archive: http://svs.gsfc.nasa.gov/goto?10510 To find out more visit: http://www.nasa.gov/mission_pages/GLAST/news/first_year.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard In its first year of operations, NASA's Fermi Gamma-ray Space Telescope has mapped the entire sky with unprecedented resolution and sensitivity in gamma-rays, the highest-energy form of light. On May 10, 2009 a pair of gamma-ray photons reached Fermi only 900 milliseconds apart after traveling for 7 billion years. Fermi's measurement gives us rare experimental evidence that space-time is smooth as Einstein predicted, and has shut the door on several approaches to gravity where space-time is foamy enough to interfere strongly with light. To read more about the science behind the story: Late light reveals what space is made of :	Transcript Link
2009 10 28	NASA Goddard	https://youtu.be/o1QsCa7RmmU	NASA Science for a Hungry World Part 5	This episode discusses dwindling groundwater resources in India. To find out more visit: http://www.nasa.gov/topics/earth/features/ag_casts/index.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard One of the biggest changes to global agriculture is less about the food itself as it is about the water we use to grow it. In some areas, farmers are using freshwater resources - including groundwater - at an alarming rate. The GRACE satellites enable scientists to discover changes to underground aquifers by monitoring changes in the Earth's gravity. In northern India, farmers rely heavily on irrigation to grow crops, and the resulting massive aquifer depletion creates an uncertain future for the region.	Transcript Link

2009 10 23	NASA Goddard	https://youtu.be/BQxFDwGLHrU	NASA The Women of Astronomy	To find out more visit www.nasa.gov/centers/goddard/news/women_astronomy.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Space science research institutions have traditionally been populated by a strong male workforce, but this structure is rapidly changing. Today's workforce is much more diverse with individuals from various cultures and backgrounds, a higher percentage of women, and in many cases, up to six generations in the same workplace.	Transcript Link
2009 10 21	NASA Goddard	https://youtu.be/HDQ7XIOIAfY	NASA Science for a Hungry World Part 4	This episode discusses food security. To find out more visit: http://www.nasa.gov/topics/earth/features/ag_casts/index.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Sponsored by USAID, the Famine Early Warning System Network (FEWS NET) was designed to help governments and aid agencies assess the need for food aid before a famine develops. This episode describes FEWS NET and looks at how FEWS NET uses NASA data to make decisions on the ground.	Transcript Link
2009 10 13	NASA Goddard	https://youtu.be/FgEZpX3n5mo	NASA Earth Science Week Keeping Up With Carbon	"Keeping Up With Carbon" is the final episode in the six-part series "Tides of Change", exploring amazing NASA ocean science to celebrate Earth Science Week 2009. To find out more visit http://climate.nasa.gov/esw Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Carbon is all around us. This unique atom is the basic building block of life, and its compounds form solids, liquids, or gases. Carbon helps form the bodies of living organisms; it dissolves in the ocean; mixes in the atmosphere; and can be stored in the crust of the planet. A carbon atom could spend millions of years moving through this complex cycle. The ocean plays the most critical role in regulating Earth's carbon balance, and understanding how the carbon cycle is changing is key to understanding Earth's changing climate.	Transcript Link

2009 10 13 NASA Goddard <https://youtu.be/VEuEqgdJXHg> NASA Earth Science Week Melting Ice, Rising Seas

"Melting Ice, Rising Seas" is Episode 5 in the six-part series "Tides of Change", exploring amazing NASA ocean science to celebrate Earth Science Week 2009.

[Transcript Link](#)

To find out more visit <http://climate.nasa.gov/esw>

Want more? Subscribe to NASA on iTunes!

<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

Or get tweeted by NASA: <http://twitter.com/NASAGoddard>

Sea level rise is an indicator that our planet is warming. Much of the world's population lives on or near the coast, and rising seas are something worth watching. Sea level can rise for two reasons, both linked to a warming planet. When ice on land, such as mountain glaciers or the ice sheets of Greenland or Antarctica, melt, that water contributes to sea level rise. And when our oceans get warmer - another indicator of climate change - the water expands, also making sea level higher. Using satellites, lasers, and radar in space, and dedicated researchers on the ground, NASA is studying the Earth's ice and water to better understand how sea level rise might affect us all.

2009 10 13 NASA Goddard <https://youtu.be/EqpJZGyS4Bw> NASA Earth Science Week Salt of the Earth

"Salt of the Earth" is Episode 4 in the six-part series "Tides of Change", exploring amazing NASA ocean science to celebrate Earth Science Week 2009.

[Transcript Link](#)

To find out more visit <http://climate.nasa.gov/esw>

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<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

Or get tweeted by NASA: <http://twitter.com/NASAGoddard>

Salinity plays a major role in how ocean waters circulate around the globe. Salinity changes can create ocean circulation changes that, in turn, may impact regional and global climates. The extent to which salinity impacts our global ocean circulation is still relatively unknown, but NASA's new Aquarius mission will help advance that understanding by painting a global picture of our planet's salty waters.

2009 10 13	NASA Goddard	https://youtu.be/H7sACT0Dx0Q	NASA Earth Science Week The Ocean's Green Machines	"The Ocean's Green Machines" is Episode 3 in the six-part series "Tides of Change", exploring amazing NASA ocean science to celebrate Earth Science Week 2009.	Transcript Link

To find out more visit <http://climate.nasa.gov/esw>

Want more? Subscribe to NASA on iTunes!

<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

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One tiny marine plant makes life on Earth possible: phytoplankton. These microscopic photosynthetic drifters form the basis of the marine food web, they regulate carbon in the atmosphere, and are responsible for half of the photosynthesis that takes place on this planet. Earth's climate is changing at an unprecedented rate, and as our home planet warms, so does the ocean. Warming waters have big consequences for phytoplankton and for the planet.

2009 10 13	NASA Goddard	https://youtu.be/qyb4qz19hEk	NASA Earth Science Week Water, Water Everywhere!	"Water, Water Everywhere!" is Episode 2 in the six-part series "Tides of Change", exploring amazing NASA ocean science to celebrate Earth Science Week 2009.	Transcript Link

To find out more visit <http://climate.nasa.gov/esw>

Want more? Subscribe to NASA on iTunes!

<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

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Water is all around us, and its importance to nearly every natural process on earth cannot be underestimated. The water cycle is the movement of water around the Earth in all its forms, from the ocean to the atmosphere, to snow, soil, aquifers, lakes, and streams on land, and ultimately backs to the ocean. This video explains what the water cycle is and how important it is to life on earth.

2009 10 13	NASA Goddard	https://youtu.be/BLR-DtxfHPY	NASA Earth Science Week Climate Change & The Global Ocean	"Climate Change and The Global Ocean" is the first episode in the six-part series "Tides of Change", exploring amazing NASA ocean science to celebrate Earth Science Week 2009. To find out more visit http://climate.nasa.gov/esw Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard We know climate change can affect us, but does climate change alter something as vast, deep and mysterious as our oceans? For years, scientists have studied the world's oceans by sending out ships and divers, deploying data-gathering buoys, and by taking aerial measurements from planes. But one of the better ways to understand oceans is to gain an even broader perspective - the view from space. NASA's Earth observing satellites do more than just take pictures of our planet. High-tech sensors gather data, including ocean surface temperature, surface winds, sea level, circulation, and even marine life. Information the satellites obtain help us understand the complex interactions driving the world's oceans today - and gain valuable insight into how the impacts of climate change on oceans might affect us on dry land.	Transcript Link
2009 10 07	NASA Goddard	https://youtu.be/GXuS9gX7CRM	NASA Science for a Hungry World Part 3	This episode discusses land cover and land use change. To find out more visit: http://www.nasa.gov/topics/earth/features/ag_casts/index.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard NASA remote sensing data is used to measure how much land is used for agriculture and where farms are in relation to population density. This episode explore the transition between native vegetation, farms, and cities. Satellites show where land use changes have been most significant.	Transcript Link
2009 10 06	NASA Goddard	https://youtu.be/m-M37vc-m0	NASA Arctic Sea Ice 101	NASA climate scientist Tom Wagner provides a look at the state of Arctic sea ice in 2009 and discusses NASA's role in monitoring the cryosphere. Learn More: http://www.nasa.gov/topics/earth/features/seaicemin09.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link

2009 10 06	NASA Goddard	https://youtu.be/ZHsbpEEC68k	NASA Earth Science Week 2009 Trailer 2	For more info: http://climate.nasa.gov/esw Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Join NASA as we celebrate Earth Science Week from October 11 through 17. This year's theme looks at climate change and our oceans. Check out http://climate.nasa.gov for educational resources, interactive features, new multimedia resources and the "Tides of Change" video podcast series. On Wednesday, October 14 at 1:00 PM EST, NASA will host an interactive webcast featuring NASA oceanographer Gene Feldman. The webcast will be available on UStream and at http://dln.nasa.gov.	Transcript Link
2009 10 06	NASA Goddard	https://youtu.be/3GTAYuc9UjE	NASA Earth Science Week 2009 Trailer 1	For more info: http://climate.nasa.gov/esw Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Join NASA as we celebrate Earth Science Week from October 11 through 17. This year's theme looks at climate change and our oceans. Check out http://climate.nasa.gov for educational resources, interactive features, new multimedia resources and the "Tides of Change" video podcast series. On Wednesday, October 14 at 1:00 PM EST, NASA will host an interactive webcast featuring NASA oceanographer Gene Feldman. The webcast will be available on UStream and at http://dln.nasa.gov.	Transcript Link
2009 10 02	NASA Goddard	https://youtu.be/nNsmt_hHa_gE	NASA SDO Engineers Create What Never Was	To find out more visit: http://www.nasa.gov/SDO Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Engineers from NASA's Goddard Space Flight Center talk about what it is like to build, assemble, integrate, and test a custom-made spacecraft like the soon to be launched Solar Dynamics Observatory (SDO).	Transcript Link

2009 09 30	NASA Goddard	https://youtu.be/3rucWGuJOLk	NASA Science for a Hungry World Part 2	To find out more visit: http://www.nasa.gov/topics/earth/features/ag_casts/index.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Episode two reveals why a space-based perspective is crucial to understanding how the food supply is distributed around the world. Satellites can reveal how many fields have been planted and how a crop is growing, providing a way to predict how much of a give commodity will be available at harvest. Governments and aid agencies around the world use this information to help them make informed decisions about food prices and trade and the possible need for aid long before harvest. The organizations that use NASA data include the United States Department of Agriculture's Foreign Agricultural Service and USAID's Famine Early Warning System Network.	Transcript Link
2009 09 24	NASA Goddard	https://youtu.be/rPinA6rTDs0	NASA LARGEST Check Your Local Sphere for Listings	To find out more visit: http://www.nasa.gov/largest Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard LARGEST introduces mainstream audiences to the planet Jupiter. Though the film itself has been prepared exclusively for playback on spherical projections systems, this trailer showcases some of the visual themes contained in the movie and points to the film's main website.	Transcript Link
2009 09 23	NASA Goddard	https://youtu.be/1RJ6AqWAOEg	NASA Science for a Hungry World Part 1	To find out more visit: http://www.nasa.gov/topics/earth/features/ag_casts/index.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard As the first of six episodes, Science for a Hungry World: Part 1 sets the groundwork for explaining why NASA data is critical to ensure a stable global food system. This video reveals how satellite remote sensing data provide the world with essential information like the Normalized Difference Vegetation Index, or NDVI, which allows scientists and governments to see the health of crops on a global scale. This video reinforces the idea that a unique perspective from space is essential for continuous global agricultural monitoring and accurate forecasting.	Transcript Link

2009 09 22	NASA Goddard	https://youtu.be/lkQDqG61qtQ	NASA SDO's Instruments EVE	Dean Pesnell, the SDO Project Scientist, explains how the the Extreme Ultraviolet Variability Experiment (EVE) instrument will allow us to better measure solar irradiance in extreme ultraviolet wavelengths. This type of irradiance, which is absorbed completely by Earth's upper atmosphere, can be dangerous to astronauts and electronics in space. Learn more about the SDO mission at: http://www.nasa.gov/SDO Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2009 09 22	NASA Goddard	https://youtu.be/eppRVuY-QnE	NASA NOAA Watch Hurricane Season 2009 With Fresh Eyes	As the 2009 hurricane season reaches its peak, NASA and NOAA are tracking storms using the GOES series of satellites including the newest GOES-14 spacecraft. On the morning of September 22, TV stations nationwide interviewed NASA GOES Deputy Project Manager Andre Dress to get more information about the 2009 hurricane season. Learn more about the GOES-14 mission at: http://www.nasa.gov/GOES-O Read about SDO's veritable avalanche of data: http://www.nasa.gov/mission_pages/sdo/news/avalanche.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2009 09 17	NASA Goddard	https://youtu.be/RghDys8nEmo	NASA LOLA Defining the Lunar Terrain	The Lunar Orbiter Laser Altimeter (LOLA) instrument on board NASA's LRO spacecraft will be responsible for building the highest detail topography available of the lunar terrain. In this video David Smith, LOLA's Principal Investigator, explains how this technology works. Learn more about the LRO mission at: http://www.nasa.gov/LRO Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link

2009 09 16	NASA Goddard	https://youtu.be/HWxBTHVhc3I	NASA Take a Swift Tour of the Andromeda Galaxy	For more info visit: http://www.nasa.gov/mission_pages/swift/bursts/uv_andromeda.html Want more videos? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard NASA's Swift satellite has acquired the highest-resolution view of the neighboring spiral galaxy M31. Also known as the Andromeda Galaxy, M31 is the largest and closest such galaxy to our own. It's more than 220,000 light-years across and lies 2.5 million light-years away in the constellation Andromeda. Between May 25 and July 26, 2008, Swift's Ultraviolet/Optical Telescope (UVOT) acquired 330 images of M31 at wavelengths of 192.8, 224.6, and 260 nanometers. The images represent a total exposure time of 24 hours. Some 20,000 ultraviolet sources are visible in the image, including M32, a small galaxy in orbit around M31. Dense clusters of hot, young, blue stars sparkle in the disk beyond the galaxy's smooth, redder central bulge. Star clusters are especially plentiful along a ring about 150,000 light-years across.	Transcript Link
2009 09 14	NASA Goddard	https://youtu.be/Go45F1QviZA	NASA USGS Landsat A Space Age Water Gauge	Water specialists Rick Allen, Bill Kramber and Tony Morse have created an innovative satellite-based method that maps agricultural water consumption. The team uses Landsat thermal band data to measure the amount of water evaporating from the soil and transpiring from plants leaves. Evapotranspiring water absorbs energy, so farm fields consuming more water appear cooler in the thermal band. The Landsat observations provide an objective way for water managers to assess on a field-by-field basis how much water agricultural growers are using. Landsat is a joint program of NASA and the US Geological Survey. Want more videos? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2009 09 11	NASA Goddard	https://youtu.be/NkfvO0I1vwl	NASA A Tour of the LRO Instrument Suite	Lunar Reconnaissance Orbiter Project Scientist Rich Vondrak explains the LRO suite of instruments and how each will greatly benefit our understanding of the Moon. Learn more about LRO at: http://www.nasa.gov/LRO Want more videos? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link

2009 09 01	NASA Goddard	https://youtu.be/PjAXoETeVlc	NASA A Tour of the Cryosphere 2009	It has been said that the frozen parts of our planet, also known as the cryosphere, may be the proverbial 'canary in the coal mine' when it comes to climate change. This video shows some of the most dramatic fluctuations to our cryosphere in recent years using visuals created with a variety of satellite-based data. Read more about and download this video: http://svs.gsfc.nasa.gov/goto?3619 Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2009 08 25	NASA Goddard	https://youtu.be/vd0uvqYYUQw	NASA Feeling the Sting of Climate Change	NASA's Wayne Esaias sees honeybees as important data collectors to help us understand our changing climate. Read about this story: http://www.nasa.gov/topics/earth/features/beekeepers.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2009 08 20	NASA Goddard	https://youtu.be/KkhGunnBaiXE	NASA NOAA GOES-14 Views of Hurricane Bill	NASA and NOAA's newest weather satellite, GOES-14, has captured some fascinating views of Hurricane Bill. This is a collection of a few quick movies put together by the GOES-14 team. Find more about these videos at: http://goes.gsfc.nasa.gov/text/goes14results.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2009 08 06	NASA Goddard	https://youtu.be/UoOppimoi70	NASA Little SDO Tons of Data	Little SDO demonstrates just how much data he sends every day. Read about SDO's veritable avalanche of data: http://www.nasa.gov/mission_pages/sdo/news/avalanche.html Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link

2009 08 04	NASA Goddard	https://youtu.be/AqRQ93kFKs	NASA Sentinels of the Heliosphere	What NASA calls its 'Heliophysics Observatory' is an impressive fleet of spacecraft designed (often with international partnership) to study the relationship between the Sun, Earth, and Solar System. Flying in an array of trajectories and orbits, many of these satellites do not take images in the conventional sense but record fields, particle energies and fluxes in situ to give mankind a better understanding of space weather and space environments. Find this video for HD download at: http://svs.gsfc.nasa.gov/goto?3595 Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard	Transcript Link
2009 07 28	NASA Goddard	https://youtu.be/a1FHgplkHVc	NASA NOAA First Images from NOAA's GOES-14 Weather Satellite	Find out more at: http://www.nasa.gov/mission_pages/GOES-O Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Exactly a month ago on June 27, 2009. NASA launched a new and improved weather satellite called GOES-O. Now that GOES-O is safely into its orbit, it has been renamed to GOES-14. Today, we visited NOAA's Satellite Operations Facility in Suitland, MD where NASA and NOAA will be releasing the very first image from GOES-14, a satellite that will provide weather forecasters with more stable images at a greater resolution.	Transcript Link
2009 07 22	NASA Goddard	https://youtu.be/czJgpDcuKTO	NASA Goddard Space Flight Center (1976)	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Celebrating its 50th Anniversary in 2009, Goddard Space Flight Center has seen a lot of changes over its first five decades. Yet despite the time that has passed, the core values and mission of the center has changed little. This vintage film from 1976 shows a time-capsule glimpse of GSFC's early foundations and how remarkably relevant they remain today. Find out more: http://www.nasa.gov/centers/goddard/50th/	Transcript Link

2009 07 22 NASA Goddard <https://youtu.be/nTEiva5QZU4> NASA Journey to Galapagos Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

Or get tweeted by NASA:
<http://twitter.com/NASAGoddard>

NASA oceanographer Dr. Gene Carl Feldman is no stranger to the Galapagos Islands, although he has never been there. He has studied these "Enchanted Isles" from the vantage point of space for the last 25 years, but in July 2009 he will set foot on the islands for the first time.

Read Gene's Blog from the Galapagos:
<http://earthobservatory.nasa.gov/blogs/fromthefield>

2009 07 16 NASA Goddard <https://youtu.be/V6Kv07bfRdE> NASA The 40th Anniversary of Apollo 11 Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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This short video montage honors the events of the Apollo 11 Mission.

To commemorate the 40th anniversary of Apollo 11, NASA released partially restored video of a series of 15 memorable moments from the July 20 moonwalk. The source material for the restoration project is the best of the available broadcast-format video. Lowry Digital, Burbank, Calif., is significantly enhancing the video using the company's proprietary software technology and other restoration techniques. The video is part of a larger restoration project that will be completed in September and provide a newly restored high definition video of the entire Apollo 11 moonwalk. The completed restoration will provide the public with the highest quality video of this historic event.

Find out more:
http://www.nasa.gov/mission_pages/apollo/

2009 07 16 NASA Goddard <https://youtu.be/wd6ekSYpt9w> NASA Plant the Flag - Partially Restored Apollo 11 Video

Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

Or get tweeted by NASA:
<http://twitter.com/NASAGoddard>

This video comparison between the original and the newly restored Apollo 11 video shows Neil Armstrong and Buzz Aldrin raise the American flag on the moon.

To commemorate the 40th anniversary of Apollo 11, NASA released partially restored video of a series of 15 memorable moments from the July 20 moonwalk. The source material for the restoration project is the best of the available broadcast-format video. Lowry Digital, Burbank, Calif., is significantly enhancing the video using the company's proprietary software technology and other restoration techniques. The video is part of a larger restoration project that will be completed in September and provide a newly restored high definition video of the entire Apollo 11 moonwalk. The completed restoration will provide the public with the highest quality video of this historic event.

Find out more:
http://www.nasa.gov/mission_pages/apollo/

2009 07 16 NASA Goddard https://youtu.be/S-04_HF0AqI NASA Moon Landing Plaque - Partially Restored ...

Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

Or get tweeted by NASA:
<http://twitter.com/NASAGoddard>

This video comparison between the original and the newly restored Apollo 11 video shows Neil Armstrong read the Apollo 11 plaque that is dedicated to the mission.

To commemorate the 40th anniversary of Apollo 11, NASA released partially restored video of a series of 15 memorable moments from the July 20 moonwalk. The source material for the restoration project is the best of the available broadcast-format video. Lowry Digital, Burbank, Calif., is significantly enhancing the video using the company's proprietary software technology and other restoration techniques. The video is part of a larger restoration project that will be completed in September and provide a newly restored high definition video of the entire Apollo 11 moonwalk. The completed restoration will provide the public with the highest quality video of this historic event.

Find out more:
http://www.nasa.gov/mission_pages/apollo/

2009 07 16 NASA Goddard <https://youtu.be/CKl5sQNhOuY> NASA Buzz Descends - Partially Restored Apollo 11 Video

Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

Or get tweeted by NASA:
<http://twitter.com/NASAGoddard>

This video comparison between the original and the newly restored Apollo 11 video shows Buzz Aldrin as he follows Neil Armstrong down the lunar module ladder.

To commemorate the 40th anniversary of Apollo 11, NASA released partially restored video of a series of 15 memorable moments from the July 20 moonwalk. The source material for the restoration project is the best of the available broadcast-format video. Lowry Digital, Burbank, Calif., is significantly enhancing the video using the company's proprietary software technology and other restoration techniques. The video is part of a larger restoration project that will be completed in September and provide a newly restored high definition video of the entire Apollo 11 moonwalk. The completed restoration will provide the public with the highest quality video of this historic event.

Find out more:
http://www.nasa.gov/mission_pages/apollo/

2009 07 16 NASA Goddard <https://youtu.be/t-Sm4kTUGCc> NASA One Small Step - Partially Restored Apollo 11 Video

Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

Or get tweeted by NASA:
<http://twitter.com/NASAGoddard>

This video comparison between the original and the newly restored Apollo 11 video shows Neil Armstrong making his way to the lunar surface, by climbing down the lunar module ladder.

To commemorate the 40th anniversary of Apollo 11, NASA released partially restored video of a series of 15 memorable moments from the July 20 moonwalk. The source material for the restoration project is the best of the available broadcast-format video. Lowry Digital, Burbank, Calif., is significantly enhancing the video using the company's proprietary software technology and other restoration techniques. The video is part of a larger restoration project that will be completed in September and provide a newly restored high definition video of the entire Apollo 11 moonwalk. The completed restoration will provide the public with the highest quality video of this historic event.

Find out more:
http://www.nasa.gov/mission_pages/apollo/

2009 07 16	NASA Goddard	https://youtu.be/v48EVfRMqnI	NASA Highlight Reel of Partially Restored Apollo 11 Video	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard To commemorate the 40th anniversary of Apollo 11, NASA released partially restored video of a series of 15 memorable moments from the July 20 moonwalk. The source material for the restoration project is the best of the available broadcast-format video. Lowry Digital, Burbank, Calif., is significantly enhancing the video using the company's proprietary software technology and other restoration techniques. The video is part of a larger restoration project that will be completed in September and provide a newly restored high definition video of the entire Apollo 11 moonwalk. The completed restoration will provide the public with the highest quality video of this historic event. Find out more: http://www.nasa.gov/mission_pages/apollo/	Transcript Link
2009 07 13	NASA Goddard	https://youtu.be/ZLAhTeHSIBM	NASA Bon Voyage SDO!	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard NASA's Solar Dynamics Observatory (SDO) will study the sun in unprecedented detail and its effects on Earth. See SDO rolled through Goddard Space Flight Centers hallways, where it was built and tested, and prepared for transport to KSC. SDO will undergo final testing at Astrotech Space Operations, located near Kennedy Space Center, in preparation for its anticipated November 2009 launch.	Transcript Link
2009 07 09	NASA Goddard	https://youtu.be/vSSs7-O5IqY	NASA SDO's Helioseismic and Magnetic Imager (HMI)	Learn more: http://www.nasa.gov/SDO Find out more: http://www.nasa.gov/SDO Dean Pesnell, the SDO Project Scientist, explains how the Helioseismic and Magnetic Imager (HMI) instrument will allow us to see activity inside the sun and even on the other side of the sun. Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard This video is available for download from the SVS: http://svs.gsfc.nasa.gov/goto?10441	Transcript Link

2009 07 09	NASA Goddard	https://youtu.be/YwLcqjo-kCs	NASA Little SDO Looking Inside the Sun	Find out more: http://www.nasa.gov/SDO Little SDO explains both how he can see inside the sun and how he can tell what you ate for lunch today. Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard This video is available for download at: http://svs.gsfc.nasa.gov/goto?10261	Transcript Link
2009 07 08	NASA Goddard	https://youtu.be/7lQs05bHQ8E	NASA NOAA GOES-O Countdown To Launch	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard In this video, two days prior to the GOES-O launch, NASA Goddard Producer Silvia Stoyanova visits Cape Canaveral's Air Force Station, launch pad 37, to talk to NASA GOES N-P Deputy Project Manager Andre' Dress, about the factors that could cause a launch delay, what's special about GOES geosynchronous orbit, and how valuable the mission is to the public by helping predict severe weather, thus saving lives and properties. This video also includes footage from the GOES-O launch.	Transcript Link
2009 07 07	NASA Goddard	https://youtu.be/052DotsGtJLs	NASA HD Lunar Flyover of the First Images from the LRO Camera	Want more? Check out YouTube channel "Return2Moon09" for the most up to date flyovers from the LRO Camera! Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard A starkly beautiful region a few kilometers east of Hell E crater, which is located on the floor of the ancient Imbrian-aged Deslandres impact structure in the lunar highlands south of Mare Nubium. Numerous small, secondary craters can be identified, including several small crater chains. Also identifiable are distinctive lineations made readily apparent by the extreme lighting, representing ejecta from a nearby impact. The NAC image shown here has not been calibrated and the pixel values were stretched to enhance contrast. The full image width is 3.5 kilometers making features discernable down to a few meters in size. Download this video from: http://svs.gsfc.nasa.gov/goto?10447 See original image info and caption at: http://wms.lroc.asu.edu/lroc_browse/view/nacl000000fd	Transcript Link

2009 06 29	NASA Goddard	https://youtu.be/VbNQDYokDZ8	NASA NOAA GOES-O Launch in HD	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard NASA/NOAA's GOES-O, the next weather satellite to join the NOAA fleet of satellites, was launched successfully on June 27, 2009 at 6:51pm EST from Cape Canaveral, FL. For more info: http://www.nasa.gov/GOES-O http://www.noaa.gov	Transcript Link
2009 06 26	NASA Goddard	https://youtu.be/wapFsjICDQk	NASA NOAA Countdown to GOES-O Severe Weather Satellite Launch	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard NASA is preparing for the launch of the Geostationary Operational Environmental Satellite-O (GOES-O) from Space Launch Complex 37 at the Cape Canaveral Air Force Station, Fla. The GOES-O launch is targeted for June 26 during a launch window from 6:14 to 7:14 p.m. EDT. GOES-O will contribute the data needed for accurate NOAA forecasts for severe weather, including hurricanes that threaten at least 35 million Americans living in areas vulnerable to land-falling hurricanes. Watch the launch live at http://www.nasa.gov/ntv For more info: http://www.nasa.gov/GOES-O http://www.noaa.gov	Transcript Link
2009 06 26	NASA Goddard	https://youtu.be/g0IQNxf7Qgs	NASA How does NASA launch a rocket	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard NASA is preparing for the launch of the Geostationary Operational Environmental Satellite-O (GOES-O) from Space Launch Complex 37 at the Cape Canaveral Air Force Station, Fla. The GOES-O launch is targeted for June 26 during a launch window from 6:14 to 7:14 p.m. EDT. GOES-O will contribute the data needed for accurate NOAA forecasts for severe weather, including hurricanes that threaten at least 35 million Americans living in areas vulnerable to land-falling hurricanes. Watch the launch live at http://www.nasa.gov/ntv For more info: http://www.nasa.gov/GOES-O http://www.noaa.gov	Transcript Link

2009 06 26	NASA Goddard	https://youtu.be/IJ4Ye4ZakBA	NASA Behind the Scenes at the GOES-O Launch Pad	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard NASA is preparing for the launch of the Geostationary Operational Environmental Satellite-O (GOES-O) from Space Launch Complex 37 at the Cape Canaveral Air Force Station, Fla. The GOES-O launch is targeted for June 26 during a launch window from 6:14 to 7:14 p.m. EDT. GOES-O will contribute the data needed for accurate NOAA forecasts for severe weather, including hurricanes that threaten at least 35 million Americans living in areas vulnerable to land-falling hurricanes. Watch the launch live at http://www.nasa.gov/ntv For more info: http://www.nasa.gov/GOES-O http://www.noaa.gov	Transcript Link
2009 06 23	NASA Goddard	https://youtu.be/8h8zmugnB-E	NASA Back to the Moon. It's Official.	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard After a four and a half day journey from the Earth, the Lunar Reconnaissance Orbiter, or LRO, has successfully entered orbit around the moon. Engineers at NASA's Goddard Space Flight Center in Greenbelt, Md., confirmed the spacecraft's lunar orbit insertion at 6:27 a.m. EDT Tuesday.	Transcript Link
2009 06 19	NASA Goddard	https://youtu.be/tuW-HQYmmWM	NASA HD LRO and LCROSS Atlas 5 Launch	For more info: http://www.nasa.gov/LRO Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard NASA's Lunar Reconnaissance Orbiter launched at 5:32 p.m. EDT aboard an Atlas V rocket from Cape Canaveral Air Force Station in Florida. The satellite will relay more information about the lunar environment than any other previous mission to the moon. For more info: http://www.nasa.gov/LRO	Transcript Link

2009 06 18	NASA Goddard	https://youtu.be/JyB2jKiP5xs	NASA LRO LCROSS Launch Prep Behind the Scenes with Jim Garvin	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Jim Garvin, NASA Goddard's Chief Scientist, gives his take on the LRO/LCROSS launch, NASAs first venture back to the moon in a decade. Be prepared for excitement and adventure! For more info: http://www.nasa.gov/LRO	Transcript Link
2009 06 18	NASA Goddard	https://youtu.be/uHbgdy3HHrc	NASA Behind the Scenes at the LRO LCROSS Launch Prep	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Excitement is running high at Kennedy Space Center as NASA's top lunar experts prepare for the LRO/LCROSS launch. For more info: http://www.nasa.gov/LRO	Transcript Link
2009 06 17	NASA Goddard	https://youtu.be/IURH8LFH0ao	NASA NOAA's GOES-O Ready To Launch	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard This video shows a quick tour and overview of the facilities where the GOES-O satellite was built and tested prior to launch. GOES-O was integrated by Boeing Space and Intelligence Systems in El Segundo, CA and then transported to the testing facility in Titusville, FL. After completion of the test program, performed at the Astrotech facility in Titusville, the spacecraft will be launched on a United Launch Alliance Delta IV rocket from Cape Canaveral, FL. For more info: http://www.nasa.gov/GOES-O	Transcript Link

2009 06 11 NASA Goddard <https://youtu.be/cpMuGi-OSBI> NASA Meet a Hubble Engineer Ben Reed Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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These profiles begin to explore what systems engineering is as seen through the roles of Benjamin Reed and Jackie Townsend on the Hubble Space Telescope. Reed is a materials assurance engineer who has a background in chemistry and has most recently worked on improving Hubble's outer blanket layer. Townsend came to Goddard with a background in physics and has served as the instrument manager of Hubble's newest imager, Wide Field Camera 3. Through their personal backgrounds and current work, Reed and Townsend show that great engineers share patience, tenacity, and a passion for problem solving.

For more info: <http://www.nasa.gov/hubble>

2009 06 11 NASA Goddard <https://youtu.be/LXTfghmOkG4> NASA Meet a Hubble Engineer Jackie Townsend Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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For more info: <http://www.nasa.gov/hubble>

2009 06 09 NASA Goddard <https://youtu.be/jFHT5wbSPOc> NASA NOAA's GOES-O The Future of Hurricane Forecasts Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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The GOES-O satellite is set for launch in 2009, and will be the latest in a series of satellites that have forecasted the development of severe weather for over 25 years. Operated by NOAA and launched by NASA, GOES-O will continue providing critical data used for real-time weather prediction on Earth as well as space weather events.

For more info: <http://www.nasa.gov/GOES-O>

2009 06 08 NASA Goddard <https://youtu.be/27oJpcTkqVs> NASA LRO Coming Soon to a Moon Near You Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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The Lunar Reconnaissance Orbiter (LRO) mission will conduct investigations preparing for and supporting future human exploration of the Moon.

For more info: <http://www.nasa.gov/LRO>

2009 06 02 NASA Goddard <https://youtu.be/cQyUgwb9mE> NASA Maryland's Place in Space Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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What a spectacular day for the Goddard Space Flight Center. During the day the Marylands Place in Space Expo was held at the Baltimore Convention Center. It was like exploring the universe in your own back yard. There was over 100 imaginative exhibits, plus interactive activities, NASA astronauts, robotic competitions, musical performances with HD animation and video presentations. During the evening, Goddard celebrated its 50th anniversary with a cocktail reception, sit down dinner, and a special performance from Patti Labelle. More than 900 employees attended, but the fun didnt end there as Goddard continued to dance the night away.

For more info: <http://www.nasa.gov/goddard>

2009 05 21 NASA Goddard <https://youtu.be/7eSzqn dNJts> NASA LRO Mapping Our Future Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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The Lunar Reconnaissance Orbiter (LRO) is the first mission in NASA's planned return to the moon. LRO is an unmanned mission to create the comprehensive atlas of the moon's features and resources necessary to design all future lunar exploration efforts. LRO focuses on the selection of safe landing sites, identification of lunar resources and the study of how lunar radiation will affect humans.

Some lunar elevation provided by JAXA/SELENE.

For more info: <http://www.nasa.gov/LRO>

2009 05 21	NASA Goddard	https://youtu.be/NabRul5gHXc	NASA Senator Mikulski Celebrates Hubble Success	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard The Hubble Space Telescope has been with us for nearly two decades. In that time, its breathtaking images have captured peoples imaginations and its groundbreaking science has revealed some of the many secrets of our universe. After five spacewalks by the STS-125 mission to repair Hubble, commander Scott "Scooter" Altman confirmed a successful release of the Hubble telescope from the Space Shuttle Atlantis. Shortly after the deploy, Maryland Sen. Barbara Mikulski visited controllers in Goddard's Space Telescope Operations Control Center. Mikulski, who praised the Hubble team for their hard work and dedication during this mission. For more info: http://www.nasa.gov/centers/goddard/news/topstory/2009/hubble_deploy.html	Transcript Link
2009 05 19	NASA Goddard	https://youtu.be/eVdagtImKWY	NASA Hubble Team Reactions at the Telescope's Release	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard The Hubble Space Telescope has been with us for nearly two decades. In that time, its breathtaking images have captured peoples imaginations and its groundbreaking science has revealed some of the many secrets of our universe. After five spacewalks by the STS-125 mission to repair Hubble, commander Scott "Scooter" Altman confirmed a successful release of the Hubble telescope from the Space Shuttle Atlantis. As astronaut John Grunsfeld said at the end of the last Hubble spacewalk, Hubble isnt just a satellite. Its about humanitys quest for knowledge. Thanks to this fifth and final shuttle servicing mission, Hubble can continue that quest for years to come. For more info: http://www.nasa.gov/centers/goddard/news/topstory/2009/hubble_deploy.html	Transcript Link

2009 05 19 NASA Goddard <https://youtu.be/HAXbnilcYP8> NASA Update Hubble SM4 Flight Day 8 Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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The Space Operations Control Center, also known as the STOCC, is responsible 24/7, 365 days a year for monitoring all Hubble systems and facilitating all of the telescope's science observations. Two teams of flight controllers designated as the Orbit Team and the Planning Team will work closely with the mission control flight team in Houston in coordinating all of the activities planned as part of the final shuttle servicing mission to the Hubble Telescope.

With the first of the five planned spacewalks completed, two of the three top mission priorities have already been met.

For more info:
http://www.nasa.gov/centers/goddard/news/topstory/2009/STOCC_update_05182009_FD8.html

2009 05 19 NASA Goddard <https://youtu.be/A2KliPilss> NASA Update Hubble SM4 Flight Day 7 Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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For more info:
http://www.nasa.gov/centers/goddard/news/topstory/2009/STOCC_update_05172009_FD7.html

2009 05 18 NASA Goddard https://youtu.be/h_dK1MR5a_k NASA Update Hubble SM4 Flight Day 6 Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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For more info:
http://www.nasa.gov/centers/goddard/news/topstory/2009/STOCC_update_05162009_FD6.html

2009 05 18 NASA Goddard <https://youtu.be/TV3DvSzZRaY> NASA Update Hubble SM4 Flight Day 5 Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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For more info:
http://www.nasa.gov/centers/goddard/news/topstory/2009/STOCC_update_05152009_FD5.html

2009 05 18 NASA Goddard <https://youtu.be/7utHWTy5OI0> NASA Making Hubble More Powerful

Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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The Hubble Space Telescope would not be able to produce its breathtaking science without the upgraded infrastructure targeted during the HST SM4 mission: Fine Guidance Sensor, Scientific Instrument Command and Data Handling, Soft Capture Mechanism, Batteries, and New Outer Blanket Layers. Along with all new cameras, scientific instruments, the Hubble telescope will work better than it ever has in its lifetime.

For more info:
http://www.nasa.gov/mission_pages/hubble/servicing/series/Hubble_space_armor.html

2009 05 16 NASA Goddard <https://youtu.be/xdrDE3wQFA> NASA Hubble's STIS The Quest for Renewed Exploration

Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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Space Telescope Imaging Spectrograph (STIS), the most versatile spectrograph ever to fly on Hubble, ceased operations in August 2004 due to the failure of its power supply. In order to restore STIS to operational status, astronauts will perform a never-before-attempted on-orbit replacement of an electronics board inside STIS's main electronics box. On Earth this operation is relatively simple, but in space many challenges confront the astronauts as they work to replace the failed board including working to remove 111 tiny, non-captive screws with astronaut gloves.

For more info:
http://www.nasa.gov/mission_pages/hubble/servicing/series/instrument_repairs.html

2009 05 15 NASA Goddard https://youtu.be/KBeJFs_h8IYw NASA Inside Hubble's Control Room During a Spacewalk

Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

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Keith Walyus describes the experience of the Servicing Mission 4 spacewalks as head of communications in the Goddard STOCC.

The Space Operations Control Center, also known as the STOCC, is responsible 24/7, 365 days a year for monitoring all Hubble systems and facilitating all of the telescope's science observations. Two teams of flight controllers designated as the Orbit Team and the Planning Team will work closely with the mission control flight team in Houston in coordinating all of the activities planned as part of the final shuttle servicing mission to the Hubble Telescope.

For more info:
http://www.nasa.gov/mission_pages/hubble/servicing/series/stocc.html

2009 05 15 NASA Goddard <https://youtu.be/SzLHYpUdU> NASA Hubble's Cosmic Origins Spectrograph

Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

Or get tweeted by NASA:
<http://twitter.com/NASAGoddard>

Once installed on the Hubble Space Telescope during the upcoming servicing mission this year, COS will dramatically advance physics and astrophysics research on the origin of the Universe, astronomical objects, evolution of galaxies, and planetary system formations. In addition, the spectroscope will significantly enhance the spectroscopic capabilities of the telescope at ultraviolet wavelengths, provide scientists with unparalleled opportunities for observing faint sources of ultraviolet and cosmic web light that will absorb new cosmic information and help the telescope investigate the collected data until the end of its mission, currently 2013.

For more info:
http://www.nasa.gov/mission_pages/hubble/servicing/series/new_instruments.html

2009 05 15 NASA Goddard <https://youtu.be/sUdcqGo8Hu4> NASA Update Hubble SM4 Flight Day 4 Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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The Space Operations Control Center, also known as the STOCC, is responsible 24/7, 365 days a year for monitoring all Hubble systems and facilitating all of the telescope's science observations. Two teams of flight controllers designated as the Orbit Team and the Planning Team will work closely with the mission control flight team in Houston in coordinating all of the activities planned as part of the final shuttle servicing mission to the Hubble Telescope.

With the first of the five planned spacewalks completed, two of the three top mission priorities have already been met.

For more info:
http://www.nasa.gov/centers/goddard/news/topstory/2009/STOCC_update_05142009_FD4.html

2009 05 15 NASA Goddard <https://youtu.be/iCF2LfEvaR0> NASA Update Hubble SM4 Flight Day 3 Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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The major event on Wednesday in the Space Telescope Operations Control Center (STOCC) was Space Shuttle Atlantis rendezvous with the Hubble Space Telescope.

For more info:
http://www.nasa.gov/centers/goddard/news/topstory/2009/STOCC_update_05132009_FD3.html

2009 05 15 NASA Goddard <https://youtu.be/stbeVckOE4> NASA Update Hubble SM4 Flight Day 2 Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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The Space Operations Control Center, also known as the STOCC, is responsible 24/7, 365 days a year for monitoring all Hubble systems and facilitating all of the telescopes science observations. Two teams of flight controllers designated as the Orbit Team and the Planning Team will work closely with the mission control flight team in Houston in coordinating all of the activities planned as part of the final shuttle servicing mission to the Hubble Telescope.

For more info:
http://www.nasa.gov/centers/goddard/news/topstory/2009/STOCC_update_05122009_FD2.html

2009 05 14 NASA Goddard <https://youtu.be/D06MxCMqvrs> NASA The Challenge to Fix Hubble's Best Survey Camera Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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Shortly after NASA Administrator Michael Griffin announced that NASA would add a servicing mission to the Hubble Space Telescope, Hubbles most prominent camera and most used instrument, died.

The incredible engineering challenge to understand the problem, develop a strategy to fix ACS that astronauts could perform, create the tools and new circuit board components in an incredibly short time, could not have been accomplished if the Space Telescope Imaging Spectrograph (STIS) hadn't failed a few years earlier. Goddard Engineers leveraged techniques they developed for STIS repair to fix ACS.

For more info:
http://www.nasa.gov/mission_pages/hubble/servicing/series/new_instruments.html

2009 05 13 NASA Goddard https://youtu.be/WccXe_bfuPkc NASA Hubble and STS-125 Grapple

Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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Space shuttle Atlantis met up with the Hubble Space Telescope today. The grapple of the telescope using the shuttles robotic arm took place at 1:14 p.m. EDT. The telescope will be latched to a high-tech, lazy Susan device known as the Flight Support System for the duration of the servicing work.

The STS-125 crew will perform five spacewalks to refurbish, restore and renew the Hubble Space Telescope. The first spacewalk is scheduled for Thursday.

For more info: http://www.nasa.gov/mission_pages/shuttle

2009 05 13 NASA Goddard <https://youtu.be/et74Bwqw5fM> NASA Wide Field Camera 3 Extending Hubble's Vision

Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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When placed on the Hubble Space Telescope, WFC3 will provide unprecedented capabilities for imaging the cosmos at near-ultraviolet and at near-infrared wavelengths. The Wide Field Camera 3 (WFC3) will study a diverse range of objects and phenomena, from early and distant galaxy formation to nearby planetary nebulae, and finally our own backyard — the planets and other bodies of our Solar System. WFC3 extends Hubble's capability not only by seeing deeper into the universe but also by seeing simultaneously into the infrared and ultraviolet. WFC3 can, for example, simultaneously observe young, hot stars (glowing predominantly in the ultraviolet) and older, cooler stars (glowing predominantly in the infrared) in the same galaxy.

For more info: http://www.nasa.gov/mission_pages/hubble

2009 05 13 NASA Goddard <https://youtu.be/o5DnobgJISU> NASA HD STS-125 Launch for Hubble SM4

Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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Atlantis and the STS-125 crew lifted off on a mission on May 11, to upgrade the world's most famous telescope.

Goddard plays a major role in the Hubble servicing mission. Astronauts trained with sophisticated Hubble models in Goddard facilities, and all of the telescope's components went through extensive testing at the center.

Goddard's Space Telescope Operations Control Center staff upload the commands to Hubble that tell it where to point and when, what sensing instruments to use, and when to send data back to Earth. They also troubleshoot any problems that arise. During the servicing mission, the control center plays a vital role in ensuring all the new Hubble components will operate properly after the astronauts install them.

For more info: <http://www.nasa.gov/hubble>

2009 05 12 NASA Goddard <https://youtu.be/bXT7DgEtkgk> NASA SLIC The Unsung Hero of Hubble SM4

Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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The composite Super Lightweight Interchangeable Carrier (SLIC) is a new breed of equipment carrier that will allow the Space Shuttle to transport a full complement of scientific instruments and other components to Hubble. Made of carbon fiber with a cyanate ester resin and a titanium metal matrix composite, SLIC is the first all-composite carrier to fly on the shuttle. This flat, reusable pallet looks very different from the carriers flown on previous Hubble servicing missions because of its efficient design. This design, plus SLICs composite construction, makes it much lighter and stronger than traditional aluminum carriers. About half the weight of its predecessors, SLIC shows a dramatic increase in performance over other Hubble equipment carriers, with nearly double the carrying capability.

For more info:
http://www.nasa.gov/mission_pages/hubble/servicing/series/SLIC.html

2009 05 12	NASA Goddard	https://youtu.be/zuoYmogzFSo	NASA Hubble SM4 Launch Behind the Scenes at Goddard	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Employees at NASA's Goddard Space Flight Center cheered and applauded as shuttle Atlantis successfully launched at 2:01:56 p.m. ET on May 11. The Atlantis crew embarked on the fifth and final shuttle mission to the Hubble Space Telescope. The work they do will extend Hubble's lifespan by at least five years. Goddard employees had the opportunity to watch the launch in Building 8's auditorium and at the Goddard Visitor Center, where members of the public could enjoy the viewing as well. In the Building 8 auditorium during the hour before the launch, Mansoor Ahmed, manager of the Hubble Operations Project, and Dr. Jim Garvin, Goddard's chief scientist highlighted the complexity of the mission, which will make Hubble more powerful than ever before. Goddard plays a major role in the Hubble servicing mission. Astronauts trained with sophisticated Hubble models in Goddard facilities, and all of the telescope's components went through extensive testing at the center. Goddard's Space Telescope Operations Control Center staff upload	Transcript Link
2009 05 11	NASA Goddard	https://youtu.be/RZwgBocQDYo	NASA The Last Mission to Hubble	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Hubble Space Telescope Servicing Mission 4 is the last time humans will visit Hubble. NASAs scientists, engineers and astronauts are working together to make Hubble better than it has been before. See what NASA has planned for this last mission to Hubble; from new science instruments, to two challenging and never-done-before instrument repairs, and numerous upgrades. For more info: http://www.nasa.gov/hubble	Transcript Link
2009 05 08	NASA Goddard	https://youtu.be/HZmICLEXPLc	NASA Spacecraft Chamber of Horrors	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard To prepare for Servicing Mission 4, Hubble components must endure harsh tests at NASA's Goddard Space Flight Center. This feature explores test facilities at Goddard like: launch phase simulator centrifuge, the acoustic test chamber, electromagnetic interference testing, vibration tables, static load test facility, and the space environment simulator. For more info: http://www.nasa.gov/goddard	Transcript Link

2009 05 08	NASA Goddard	https://youtu.be/nVwplYbX3_c	NASA Hubble SM4 Trailer	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Final preparations are underway for the exciting and challenging final mission to repair Hubble. Liftoff is scheduled for May 11 at 2:01 p.m. EDT, and the countdown clock will start at 4 p.m. Friday. You can watch the prelaunch activities and the mission live on the web from NASA TV. The coverage includes a web cast the day before the launch at 12:30 EDT, news conferences and status briefings.	Transcript Link
2009 05 08	NASA Goddard	https://youtu.be/3kwWdgcxeEE	NASA Earth Observatory A Decade of Incredible Stories	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard April 29, 2009, marked the tenth anniversary of the launch of NASA's Earth Observatory. For the last decade, the Earth Observatory has been using the stunning images and data provided by NASA satellites to tell the story of our planet and the scientists who are working to help us understand it.	Transcript Link
2009 05 01	NASA Goddard	https://youtu.be/Zinf5oUSOp4	NASA 50 Years of Goddard	For more info: http://earthobservatory.nasa.gov Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Pioneer rocket scientist Robert H. Goddard once said, 'It is difficult to say what is impossible, for the dream of yesterday is the hope of today and the reality of tomorrow.' Fifty years after its inception, NASA's Goddard Space Flight Center continues to live by these words, advancing science and engineering to new limits once thought impossible as it explores of the Earth, the sun, the solar system, and the universe. For more info: http://www.nasa.gov/centers/goddard/50th	Transcript Link

2009 04 29	NASA Goddard	https://youtu.be/w0vWFQpMvNk	NASA Earth Day 2009 with Kenji Williams	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard The NASA Distance Learning Network teamed with director and violinist Kenji Williams to present an out of this world experience known as BellaGaia (Beautiful Earth). This one-of-a-kind multimedia journey of Earth as observed from space combined Williams' music with NASA imagery. Bella Gaia was presented to students and teachers around the world during two webcasts from the Goddard studio. For more info: http://www.bellagaia.com/ http://www.nasa.gov/centers/goddard/news/earthday_09.html	Transcript Link
2009 04 27	NASA Goddard	https://youtu.be/pzjklfGtpG8	NASA Road Signs	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Hey, we don't make the laws. We just study them... For more info: http://www.nasa.gov/goddard	Transcript Link
2009 04 22	NASA Goddard	https://youtu.be/TQqlzXD1BqY	NASA Return to PIG	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Return to PIG provides an update to PIG Ice Shelf: First Contact http://svs.gsfc.nasa.gov/goto?10202. Though NASA researcher Bob Bindschadler had hoped to return to Pine Island Glacier Ice Shelf and continue his research during the 2009 season, this video explains how plans hit a snag. Sometimes science takes time, especially when it comes to dealing with the forbidding conditions of Antarctica. For more info: http://www.nasa.gov/topics/earth/features/pineisland_return.html	Transcript Link

2009 04 22 NASA Goddard https://youtu.be/5hZ_OgBXQvU NASA PIG Ice Shelf First Contact Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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This past January NASA scientist Robert Bindschadler led an expedition to a previously untouched part of Antarctica that may be one of the best places to gauge how global warming is affecting the continent. Pine Island Glacier Ice Shelf (PIG for short) is believed to be among the most vulnerable spots of melting on Earth, but it's also among the most remote. While satellite observations provide a wide-angle view of the action on the glacier, boots on the ground with high tech drills and sensors are needed to provide the close up shots to fill in the blanks.

Antarctica footage provided by Polar-Palooza/Passport to Knowledge.uncover.

2009 04 20 NASA Goddard <https://youtu.be/JsZpMwYaevA> NASA The Puffin-Satellite Connection Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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In 2007, science video producer Maria Frostic took a leave of absence from her work at the NASA Goddard Space Flight Center to pursue a Fulbright Scholarship in Iceland. But when she got there and launched into a film about Icelandic puffins, she realized NASA science was an important part of the story...

For more info:
http://www.nasa.gov/centers/goddard/news/topstory/2008/puffin_maria.html

2009 04 14 NASA Goddard <https://youtu.be/B2Bhf42uY3E> NASA Anatomy of a Solar Explosion Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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Dr. Angelos Vourlidas, the Project Scientist for STEREO's Sun Earth Connection Coronal and Heliospheric Investigation (SECCHI) instrument, explains how the STEREO satellites have been able to observe the true size, shape, and three-dimensional structure of a coronal mass ejection for the first time.

For more info: <http://www.nasa.gov/stereo>

2009 04 10	NASA Goddard	https://youtu.be/qZe5D3MSjOI	NASA SOHO and TRACE Solar Discoveries	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard On April 3, 2009, countries from around the world participated in the '100 Hours of Astronomy' webcast to celebrate the International Year of Astronomy. Produced to support the webcast, this movie highlights the discoveries of the SOHO and TRACE satellites, and features NASA solar scientists Alex Young and Dawn Meyers, describing how both satellites view the sun in their own unique way. For more info: http://sohowww.nascom.nasa.gov/ http://sunland.gsfc.nasa.gov/smex/trace/mission/trace.htm	Transcript Link
2009 04 09	NASA Goddard	https://youtu.be/Pfzui39WWT0	NASA Landsat Image Mosaic of Antarctica	For more info: http://lima.nasa.gov/ http://lima.usgs.gov Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard This guided tour of the area surrounding McMurdo Station in Antarctica uses the Landsat Image Mosaic of Antarctica (LIMA). It's a great way to experience the frozen continent without any risk of frostbite.	Transcript Link
2009 04 07	NASA Goddard	https://youtu.be/Z3-68QXo5Zo	NASA Yuri's Night 2009	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Highlights of the Yuri's Night celebration held at Goddard Space Flight Center on April 4, 2009. The night was filled with energy and pulsing beats as hundreds at Goddard Space Flight Center joined millions around the globe to celebrate Yuris Night a world space party celebrating mans achievements in space. Goddard may have joined 171 parties in 41 countries in celebrating Yuris Night, but Goddards celebration couldnt be matched, it was a galactic event to remember. For more info: http://www.nasa.gov/centers/goddard/news/topstory/2009/yuris_night.html	Transcript Link

2009 04 03 NASA Goddard https://youtu.be/Sgg_3fzgDrl NASA Greenland Ice Flights Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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Nearly every spring since 1991, researchers including William Krabill of NASA's Wallops Flight Facility in Wallops Island, Va., have flown on a NASA aircraft over Greenland, collecting measurements of ice thickness from an altitude of about 2,000 feet. Now, on March 30, Krabill and colleagues return to collect updated measurements. This time, however, the mission is set to be more extensive than ever before, and takes place with new urgency. Radars and lasers new to the Greenland flights will be tested and calibrated with measurements currently made from the Ice, Cloud, and land Elevation Satellite (ICESat). Launched in January 2003, ICESat is already more than six years beyond its three-year design lifetime and should it come to an end, the NASA aircraft will be ready to bridge the gap until the launch of ICESat-II, planned for launch no earlier than 2014.

For more info:
http://www.nasa.gov/topics/earth/features/greenland_flights.html

2009 03 19 NASA Goddard <https://youtu.be/M-AggQsSXI> NASA Top Solar Discoveries %231 Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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A countdown of the top 5 solar discoveries from the Sun-Earth Connection Education Forum. These include the discoveries of sunspots, the solar cycle, the heliosphere, aurora formation, and space weather.

Number 1 in the Top 5 Solar Discoveries is the importance of space weather and the research that strives to predict it more accurately.

For more info: <http://sunearthday.nasa.gov>

2009 03 19 NASA Goddard <https://youtu.be/GOM5CyP6w7E> NASA Top Solar Discoveries %232 Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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A countdown of the top 5 solar discoveries from the Sun-Earth Connection Education Forum. These include the discoveries of sunspots, the solar cycle, the heliosphere, aurora formation, and space weather.

Number 2 in the Top 5 Solar Discoveries is the finding of the 'squashed' heliosphere when Voyager 1 and 2 crossed the bubble of solar wind at different distances from the sun. This led to a change in the way we see the shape of our heliosphere.

For more info: <http://sunearthday.nasa.gov>

2009 03 19 NASA Goddard <https://youtu.be/6iioExKErSc> NASA Top Solar Discoveries %233 Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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A countdown of the top 5 solar discoveries from the Sun-Earth Connection Education Forum. These include the discoveries of sunspots, the solar cycle, the heliosphere, aurora formation, and space weather.

Number 3 in the Top 5 Solar Discoveries is the finding of how the auroras form from magnetic reconnection.

For more info: <http://sunearthday.nasa.gov>

2009 03 19 NASA Goddard <https://youtu.be/e3QvkfvpZo> NASA Top Solar Discoveries %234 Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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A countdown of the top 5 solar discoveries from the Sun-Earth Connection Education Forum. These include the discoveries of sunspots, the solar cycle, the heliosphere, aurora formation, and space weather.

Number 4 in the Top 5 Solar Discoveries: The Seasons of the Sun. This talks about the discovery and importance of the 11-year solar cycle.

For more info: <http://sunearthday.nasa.gov>

2009 03 19 NASA Goddard https://youtu.be/gpARW_bfrOw NASA Top Solar Discoveries %235 Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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A countdown of the top 5 solar discoveries from the Sun-Earth Connection Education Forum. These include the discoveries of sunspots, the solar cycle, the heliosphere, aurora formation, and space weather.

An introduction plus Number 5 in the Top 5 Solar Discoveries, which include the discovery of sunspots by Galileo in 1609.

For more info: <http://sunearthday.nasa.gov>

2009 03 17 NASA Goddard <https://youtu.be/CsxwyoTvzF4> NASA You're Welcome Science Galileo's Greatest Hits Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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On March 20, 2009, at 1:00 p.m. EDT, join a panel of scientists for a live Sun-Earth Day Webcast on www.nasa.gov and NASA TV. During the webcast, scientists will share discoveries about the sun, while students monitor the sun and prepare their own space weather forecast. New and exciting images and animations will be shared during the program. Sun-Earth Day is comprised of a series of programs and events that occur throughout the year culminating with a celebration on or near the Spring Equinox. For Sun-Earth Day 2009, NASA will engage a worldwide audience in the celebration of the International Year of Astronomy, with an emphasis on daytime astronomy. Tremendous strides have been made as satellites and ground-based observatories attentively monitor the sun to understand the processes that govern the sun's influence on the solar system. NASA will offer a series of coordinated events to promote and highlight the sun and its connection to Earth and other planets. The events will support the spirit of international collaboration.

For more info:
<http://sunearthday.nasa.gov>

2009 03 13 NASA Goddard <https://youtu.be/n3gAvzvpWb0> NASA Sun-Earth Day - Promo 2

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For more info:
<http://sunearthday.nasa.gov>

2009 03 12 NASA Goddard <https://youtu.be/lqpKvDy0lds> NASA Sun-Earth Day - Promo 1

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For more info:
<http://sunearthday.nasa.gov>

2009 03 03 NASA Goddard <https://youtu.be/ArLvDtsewn0> NASA Earth Observing Landsat 5 Turns 25 Years Old Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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On March 1, the Earth-observing Landsat 5 satellite celebrated 25 years in orbit. Twenty-two years beyond its primary mission lifetime, Landsat 5 is still going strong, making it a keystone of the 37-year Landsat Program. Among Landsat 5's many scientific uses, it has charted urban growth in Las Vegas, monitored fire scars in Yellowstone National Park, and tracked the retreat of a Greenland glacier. Data from the satellite turns up frequently in scientific literature, and should continue to do so, particularly now that the images are available free of charge or copyright.

Read/See More:
http://www.nasa.gov/topics/earth/features/landsat_bday.html

2009 02 23 NASA Goddard <https://youtu.be/ZytYoe-dIIQY> NASA Command Accepted SDO Music Video Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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SDO will help scientists better understand solar variability and aid in predictions of space weather. Ka band dishes at White Sands, New Mexico will be the go-between the satellite and the Mission Control Center at Goddard Space Flight Center.

2009 02 23 NASA Goddard <https://youtu.be/BymSstXSm7E> NASA Meet the SAM Team Jesse Lewis Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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Sample Analysis at Mars (SAM) is a suite of instruments developed for use on the Mars Science Laboratory. By looking for evidence of water, carbon, and other important building blocks of life in the Mars soil and atmosphere, this suite will help answer one of humankind's biggest questions about the planet: did it ever support life? SAM was designed and built in an international collaboration between Goddard Space Flight Center, the Jet Propulsion Laboratory, the University of Paris, and Honeybee Robotics. This video series highlights the mission, its objectives, and some of Goddard's contributors to the project.

This video profiles Jess Lewis, designer of SAM's Solid Sample Inlet Tube (SSIT). The SSIT is essentially a high-tech funnel that helps direct the Mars soil into the SAM suite for analysis.

This video profiles Jess Lewis, designer of SAM's Solid Sample Inlet Tube (SSIT). The SSIT is essentially a high-tech funnel that helps direct the Mars soil into the SAM suite for analysis.

2009 02 23 NASA Goddard <https://youtu.be/9dm8ocDaYx8> NASA Black History Month 2009 Jahi Wartts Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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Join NASA's Goddard Space Flight Center in Greenbelt, Md., in celebrating Black History Month. Each week in February, a different African-American employee from GSFC will be featured. The employees will talk about their careers, career paths and, in some cases, obstacles and challenges they have faced.

2009 02 19 NASA Goddard <https://youtu.be/1WuWDKA24O8> NASA LRO Team Spirit Joanne Plans How To Build a Satellite Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

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The Lunar Reconnaissance Orbiter is a first step to future missions, Mars, and beyond. But a lot has to happen before we get there and one woman played a key role.

For more info go to nasa.gov/LRO

2009 02 18	NASA Goddard	https://youtu.be/RskvDeF-Gew	NASA Black History Month 2009 Danielle Wood	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Join NASA's Goddard Space Flight Center in Greenbelt, Md., in celebrating Black History Month. Each week in February, a different African-American employee from GSFC will be featured. The employees will talk about their careers, career paths and, in some cases, obstacles and challenges they have faced.	Transcript Link
2009 02 09	NASA Goddard	https://youtu.be/vb3B-Fr60Ao	NASA Black History Month 2009 Denna Lambert	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Join NASA's Goddard Space Flight Center in Greenbelt, Md., in celebrating Black History Month. Each week in February, a different African-American employee from GSFC will be featured. The employees will talk about their careers, career paths and, in some cases, obstacles and challenges they have faced.	Transcript Link
2009 02 05	NASA Goddard	https://youtu.be/7dIGQLhrsY	NASA Black History Month 2009 Noble Jones	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Or get tweeted by NASA: http://twitter.com/NASAGoddard Join NASA's Goddard Space Flight Center in Greenbelt, Md., in celebrating Black History Month. Each week in February, a different African-American employee from GSFC will be featured. In the opening week, two will be featured. The employees will talk about their careers, career paths and, in some cases, obstacles and challenges they have faced.	Transcript Link
2009 02 02	NASA Goddard	https://youtu.be/MnBITP0gCIY	NASA Black History Month 2009 Introduction	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Join NASA's Goddard Space Flight Center in Greenbelt, Md., in celebrating Black History Month. Each week in February, a different African-American employee from GSFC will be featured. In the opening week, two will be featured. The employees will talk about their careers, career paths and, in some cases, obstacles and challenges they have faced.	Transcript Link

2009 01 30	NASA Goddard	https://youtu.be/l5gD-YVpnzo	NASA NOAA-N Prime Mission Overview	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 The NOAA-N Prime satellite is slated for launch by NASA on February 4th, 2009. Operated by NOAA, N Prime will be the last in the Television Infrared Observation Satellite Series (TIROS) that have been observing Earth's weather and environment for nearly 50 years. N Prime's main role will be to provide continuity of service until the launch of the next generation, highly advanced National Polar-orbiting Operational Environmental Satellite System (NPOESS). For more info: http://www.nasa.gov/noaa-n-prime	Transcript Link
2009 01 26	NASA Goddard	https://youtu.be/c0-7_2Rvqec	IBEX Exploring The Edge Of Our Solar System	This video explains the way IBEX will create a global map of the boundaries of our solar system. The two Voyager spacecraft launched in the 1970s gave data for two points on the map, but by using energetic neutral atoms, IBEX images the entire global structure of these interstellar boundaries. IBEX is a NASA mission that will for the first time take a picture of the edge of our solar system. This video explains the way IBEX will create a global map of the boundaries of our solar system. IBEX uses energetic neutral atoms to map these boundaries. The Voyagers spacecraft launched in the 1970s is looking at two points only, while IBEX images the global structure of the boundaries that surround our solar system. For more info: http://www.nasa.gov/ibex This video is public domain and along with other supporting visualizations can be downloaded from the Scientific Visualization Studio at: http://svs.gsfc.nasa.gov/10260 Credit: NASA's Goddard Space Flight Center If you liked this video, subscribe to the NASA Goddard YouTube channel: http://www.youtube.com/NASAEExplorer Follow NASA's Goddard Space Flight Center · Facebook: http://www.facebook.com/NASA.GSFC	Transcript Link
2009 01 26	NASA Goddard	https://youtu.be/nU--EQw7J3c	NASA What Do They Do at Goddard Space Flight Center	Come visit NASA's Goddard Space Flight Center: Putting ideas in space.... bringing knowledge home. For more info: nasa.gov/goddard	Transcript Link

2009 01 16	NASA Goddard	https://youtu.be/HvHnYXpeRsA	NASA The Mystery of Martian Methane	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Mike Mumma and his team of researchers at Goddard Space Flight Center have made the first definitive observations of methane in the atmosphere of Mars. The evidence of methane plumes only during certain seasons and the chemical processes that could lead to its possible sources both raise intriguing questions for future study. For more info: http://www.nasa.gov/mission_pages/mars/news/marsmethane.html	Transcript Link
2009 01 15	NASA Goddard	https://youtu.be/IgNG8AxGL18	NASA Up to the Challenge	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 In October 2008, Goddard hosted The Discovery Channel's "Young Scientist Challenge." The challenge brought ten middle school student finalists from across the country to vie for the title of "America's Top Young Scientist" and a chance to win a U.S. Savings Bond. Five teacher finalists contended for recognition as "America's Top Science Teacher." NASA scientists and educators helped design the activities, which both tested the communication skills of the students and celebrated 50 years of NASA space science. For more info: http://www.nasa.gov/centers/goddard/news/topstory/2009/ysc_air.html	Transcript Link
2008 12 22	NASA Goddard	https://youtu.be/sU6k1DdaAzs	NASA GLASTcast 2008 Mission Update	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 The GLAST mission launched on June 11, 2008 and has been returning remarkable and revolutionary discoveries ever since. Recently renamed to the Fermi Space Telescope, after Nobel Prize winner Enrico Fermi, the mission is expected to discover dozens of new pulsars within its first year alone. The telescope is also giving us new insights into gamma-ray bursts and the massive jets that erupt from distant galaxies. Stay tuned -- the mission of NASA's Fermi telescope is just getting started. For more info: http://www.nasa.gov/fermi	Transcript Link
2008 12 17	NASA Goddard	https://youtu.be/c-RM-DCJ6K0	NASA THEMIS Discovers Biggest Breach of Earth's Magnetosphere	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 NASA's THEMIS mission has overturned a longstanding belief about the interaction between solar particles and Earth's protective magnetic field. This new discovery could help scientists predict when the solar storms that can disrupt power grids, satellites and even GPS signals, could be especially severe. For more information: www.nasa.gov/themis	Transcript Link

2008 11 03	NASA Goddard	https://youtu.be/JiTveKwWCeU	NASA Meet the SAM Team Dan Carrigan	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Sample Analysis at Mars (SAM) is a suite of instruments developed for use on the Mars Science Laboratory. By looking for evidence of water, carbon, and other important building blocks of life in the Mars soil and atmosphere, this suite will help answer one of humankind's biggest questions about the planet: did it ever support life? This video profiles Dan Carrigan, the engineer primarily responsible for building SAM's QMS, or Quadrupole Mass Spectrometer. QMS's purpose is to break down the Mars atmosphere and vaporized soil into their components and help scientists identify what those components are. For more info: http://svs.gsfc.nasa.gov/vis/a010000/a010200/a010206/index.html http://ael.gsfc.nasa.gov/marsSAM.shtml	Transcript Link
2008 10 29	NASA Goddard	https://youtu.be/Y2gv-MoQx4	NASA 2003 Halloween Solar Storms	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 On Halloween in 2003, the sun unleashed a series of spooky storms, which ignited lots of ghostly looking auroras, and effected power grids, satellites and other electrical equipment. On the fifth anniversary, NASA takes a look back at the Sun. For more info: http://www.nasa.gov/topics/solarsystem/features/halloween_storms.html	Transcript Link
2008 10 28	NASA Goddard	https://youtu.be/II9Nlw-mE68A	NASA Sample Analysis at Mars (SAM) Trailer	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Sample Analysis at Mars (SAM) is a suite of instruments developed for use on the Mars Science Laboratory. By looking for evidence of water, carbon, and other important building blocks of life in the Mars soil and atmosphere, this suite will help answer one of humankind's biggest questions about the planet: did it ever support life? SAM was designed and built in an international collaboration between Goddard Space Flight Center, the Jet Propulsion Laboratory, the University of Paris, and Honeybee Robotics. For more info: http://svs.gsfc.nasa.gov/vis/a010000/a010200/a010206/index.html	Transcript Link

2008 10 24 NASA Goddard <https://youtu.be/IB1FADETAg> NASA In The Zone

Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

Earth's oceans are wide reaching and teeming with life. One microscopic aquatic organism plays a major role in making life on Earth possible: phytoplankton. Under certain conditions, excessive phytoplankton growth can result in an area known as a dead zone. Dead zones form when big blooms of phytoplankton at the surface trigger large quantities of organic matter, which then sink to the bottom. Bacteria break down the organic material, releasing carbon dioxide but absorbing oxygen as they work. Most marine organisms need oxygen for survival and dead zones prove fatal for many aquatic species. This short web video features dynamic animations, science data visualizations, and interview excerpts with a NASA oceanographer to explore this fascinating marine phenomenon.

For more info:
http://www.nasa.gov/centers/goddard/news/topstory/2008/dead_zones.html

2008 10 20 NASA Goddard <https://youtu.be/PFFsKC UdWlo> NASA Wall E Learns About Proportions

Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

Through a partnership of intergalactic proportions, NASA and Disney/Pixar have teamed up to bring Wall*E into the classroom! In this video, students learn about how to find the size of the moon using everyday objects with a little help from Wall*E and Eve.

For more info:
<http://svs.gsfc.nasa.gov/vis/a010000/a010200/a010288/>

2008 10 16 NASA Goddard <https://youtu.be/ar1PiErKW8c> NASA Earth Science Week The Future of the Earth System

Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

Goddard's Dr. Sushel Unninayar discusses the future of earth systems and in particular the potential human health implications associated with global warming.

For more info:
http://www.nasa.gov/centers/goddard/news/topstory/2008/esw_videos.html

2008 10 16 NASA Goddard https://youtu.be/KaAPUZd_dJI NASA Earth Science Week What are the Consequences ...

Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

Earth's climate system has been remarkably stable over the last 20,000 years or so. Human civilization developed in that time span, and our world's average temperature warmed by about 5 degrees C to the temperature it is today. This fact points to one of climate scientists' main concerns about global warming: the temperature is rising faster than at any other time in the history of human civilization and such rapid climate change is likely to seriously stress some populations who cannot adapt quickly enough to the changes.

In this video, Goddard's Dr. Dave Adamec discusses how hurricanes can factor in.

For more info:
http://www.nasa.gov/centers/goddard/news/topstory/2008/esw_videos.html

2008 10 16 NASA Goddard <https://youtu.be/GUQAa1nRC7U> NASA Earth Science Week How Does the Earth System ...

Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

Climate scientists have been monitoring Earth's energy budget since the 1978 launch of NASA's Nimbus-7 satellite. That mission carried a new instrument into space called the Earth Radiation Budget Experiment (or ERBE), designed to measure all of the energy leaving through the top of Earth's atmosphere. All of the incoming sunlight minus all of the reflected sunlight and emitted heat is our world's energy budget. The second law of thermodynamics compels Earth's climate system to seek equilibrium so that, over the course of a year the amount of energy received equals the amount of energy lost to space. So typically the global energy budget is in balance.

Goddard's Dr. Marc Imhoff discusses similar climate-monitoring functions of NASA's Terra satellite in this video.

For more info:
http://www.nasa.gov/centers/goddard/news/topstory/2008/esw_videos.html

2008 10 16	NASA Goddard	https://youtu.be/gol19mbSkgA	NASA Earth Science Week What are the Primary Forces ...	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 The sun is the primary force in Earth's climate system. Sunlight warms our world. Sunlight drives atmospheric and oceanic circulation patterns. Sunlight powers the process of photosynthesis that plants need to grow. Sunlight causes convection which carries warmth and water vapor up into the sky where clouds form and bring rain. In short, the sun drives almost every aspect of our world's climate system and makes possible life as we know it. For more info: http://www.nasa.gov/centers/goddard/news/topstory/2008/esw_videos.html	Transcript Link
2008 10 16	NASA Goddard	https://youtu.be/tXnOGEVtjQ	NASA Earth Science Week How is the Global Earth ...	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Earth is currently in a period of warming. Over the last century, Earth's average temperature rose about 1.1 F (0.6C). In the last two decades, the rate of our world's warming accelerated. Scientists predict that the globe will continue to warm over the course of the 21st century. Is this warming trend a reason for concern? After all, our world has witnessed extreme warm periods before, such as during the time of the dinosaurs. Earth has also seen numerous ice ages on roughly 11,000-year cycles for at least the last million years. So, change is perhaps the only constant in Earth's 4.5-billion-year history. For more info: http://www.nasa.gov/centers/goddard/news/topstory/2008/esw_videos.html	Transcript Link
2008 10 16	NASA Goddard	https://youtu.be/aoxFSLPUrHU	NASA Earth Science Week Introduction	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Goddard's Dr. Blanche Meeson introduces questions that will be answered in short videos released throughout Earth Science Week. The videos feature other Goddard scientists talking about Earth System subjects. The videos are all part of Earth Science Week: 2008, themed "No Child Left Inside." For more info: http://www.nasa.gov/centers/goddard/news/topstory/2008/esw_videos.html	Transcript Link

2008 09 30	NASA Goddard	https://youtu.be/bUnHu7Rn-L4	NASA Vision. Hope. Triumph	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 During the STS-125 pre-launch press conference Heidi Hammel, a Senior Research Scientist from the Space Science Institute in Boulder, Colorado, expresses her views on the past, present, and future of the Hubble Space Telescope and its upcoming repair mission. For more info: http://www.nasa.gov/hubble	Transcript Link
2008 09 26	NASA Goddard	https://youtu.be/r2RGQfmLI4E	NASA Sea Ice 2008	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Arctic sea ice declined this summer to its second smallest extent in the satellite era, suggesting that the record set in 2007 may not have been an anomaly. If recent trends in the melt rate continue, we could see a virtually ice-free Arctic each summer much sooner than previously thought. For more info: http://www.nasa.gov/centers/goddard/news/topstory/2008/sea_ice_min.html	Transcript Link
2008 09 11	NASA Goddard	https://youtu.be/2c1zV7GDBYU	NASA StarTrackers Light the Way	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 The concept of a Star Tracker can be traced back to the early sailors who used to navigate the open seas using star field patterns. Star Trackers act as the eyes of the satellite pointing it in the right direction. This is important to NASA to get the data it is looking for especially to look at the sun or orbiting the moon. For more info: http://www.nasa.gov/LRO	Transcript Link
2008 09 03	NASA Goddard	https://youtu.be/IHQrCTH4E-g	NASA LRO Scouts for Safe Landing Sites	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 The Lunar Reconnaissance Orbiter (LRO) is NASA's scouting mission to prepare for a return to the moon. One of its primary objectives will be to assess the lunar terrain for areas that would provide safe landing sites for future missions, both manned and unmanned, that plan to touch down on the moon's surface. This video helps explain how LRO will accomplish its objective. The crater depicted in this animation is fictitious and only intended for illustrative purposes. For more info: http://www.nasa.gov/LRO	Transcript Link

2008 08 26	NASA Goddard	https://youtu.be/uHa5e_gkDhU	NASA GLAST Prelude for Brass Quintet, Op.12	For more info: http://www.nasa.gov/LRO	Transcript Link
				NASA's GLAST mission is an astrophysics and particle physics partnership, developed in collaboration with the U.S. Department of Energy, along with important contributions from academic institutions and partners in France, Germany, Italy, Japan, Sweden, and the U.S. Music composed by Nolan Gasser, © 2008 Music performed by the American Brass Quintet.	
				For more info: http://www.nasa.gov/centers/goddard/news/topstory/2008/glast_composition.html	
2008 08 08	NASA Goddard	https://youtu.be/gfxUEYzEAWY	NASA GLASTcast Episode 5 Meet the U.S. Team	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434	Transcript Link
				For more info: http://www.nasa.gov/GLAST	
				NASA's GLAST mission is an astrophysics and particle physics partnership, developed in collaboration with the U.S. Department of Energy, along with important contributions from academic institutions and partners in France, Germany, Italy, Japan, Sweden, and the U.S.	
				This video introduces only a small fraction of the hundreds of U.S. and international GLAST team members. To meet more of the team go to: http://www.nasa.gov/GLAST	
2008 08 01	NASA Goddard	https://youtu.be/sBap15NWmsI	NASA IBEX What are the Boundaries of our Solar System	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434	Transcript Link
				IBEX is a new NASA mission that will study the interaction between the solar wind and the material beyond our Solar System called the interstellar medium. The solar wind flowing out of the sun inflates a bubble that we call the heliosphere. IBEX's job is to study those boundaries and understand how they really work and tell us how the heliosphere is able to do the important job of protecting us here on Earth as well as astronauts in space from the dangerous galactic cosmic rays.	
				For more info: http://www.nasa.gov/ibex	

2008 07 25 NASA Goddard <https://youtu.be/aldjleaY-eg> NASA August 1, 2008 Total Solar Eclipse Preview Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

On August 1, 2008 a rare total solar eclipse will appear in the skies over parts of Canada, Greenland, Russia, Mongolia, and China. During this spectacular event, the moon will cross in front of the sun, completely blocking out the sun's disk, and casting a shadow over part of the Earth. While only people in a small area of the world will be able to see the eclipse in person, viewers all across the globe can view the eclipse as it happens on NASA TV and www.nasa.gov.

For more info:
<http://svs.gsfc.nasa.gov/vis/a010000/a010200/a010287/index.html>

2008 07 25 NASA Goddard <https://youtu.be/Ki4XHvEcyg> NASA Get Ready for the August 1, 2008 Total Solar Eclipse Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

On August 1, 2008 a rare total solar eclipse will appear in the skies over parts of Canada, Greenland, Russia, Mongolia, and China. During this spectacular event, the moon will cross in front of the sun, completely blocking out the sun's disk, and casting a shadow over part of the Earth. While only people in a small area of the world will be able to see the eclipse in person, viewers all across the globe can view the eclipse as it happens on NASA TV and www.nasa.gov.

For more info:
<http://svs.gsfc.nasa.gov/vis/a010000/a010200/a010287/index.html>

2008 06 10 NASA Goddard <https://youtu.be/OV0oSabugXc> NASA GLASTcast Special Edition Launching a Spacecraft

Want more? Subscribe to NASA on iTunes!

<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

[Transcript](#)
[Link](#)

For more information:

<http://www.nasa.gov/GLAST/>

NASA's GLAST mission is an astrophysics and particle physics partnership, developed in collaboration with the U.S. Department of Energy, along with important contributions from academic institutions and partners in France, Germany, Italy, Japan, Sweden, and the U.S.

The GLAST satellite will launch in 2008 from Cape Canaveral Air Station, on Florida's east coast. GLAST will be carried on a Delta II Heavy launch vehicle, with 9 solid rocket boosters. GLAST is the first imaging gamma-ray observatory to survey the entire sky every day and with high sensitivity. It will give scientists a unique opportunity to learn about the ever-changing Universe at extreme energies.

Interviews with (in order of appearance):

Peter Michaelson - Large Area Telescope (LAT) Principal Investigator, Stanford University

Lynn Cominsky -- GLAST Astrophysicist and Education and Public Outreach Lead, Sonoma State University

2008 06 09 NASA Goddard <https://youtu.be/vJwMOQ5e9I> NASA GLASTcast Episode 3 Swift and GLAST

Want more? Subscribe to NASA on iTunes!

<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

[Transcript](#)
[Link](#)

For more information:

<http://www.nasa.gov/GLAST/>

NASA's GLAST mission is an astrophysics and particle physics partnership, developed in collaboration with the U.S. Department of Energy, along with important contributions from academic institutions and partners in France, Germany, Italy, Japan, Sweden, and the U.S.

What's the difference between the Swift and GLAST satellites? Both missions look at gamma-ray bursts (GRBs), but in different ways. Swift can rapidly and precisely determine the locations of GRBs and observe their afterglows at X-ray, ultraviolet, and optical wavelengths. GLAST will provide exquisite observations of the burst over the gamma ray spectrum, giving scientists their first complete view of the total energy released in these extraordinary events. Beyond GRB science, GLAST is a multipurpose observatory that will study a broad range of cosmic phenomena. Swift is also a multipurpose observatory, but was built primarily to study GRBs.

Interviews with (in order of appearance):

David Thompson - GLAST Deputy Project Scientist, NASA Goddard

2008 06 06 NASA Goddard <https://youtu.be/dK84m2FgDbU> NASA IBEX Exploring The Edge Of Our Solar System

Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

IBEX is a new NASA mission that will study the interaction between the solar wind and the material beyond our solar system called the interstellar medium. The solar wind flowing out from the sun inflates a bubble that we call the heliosphere. IBEX's job is to study those boundaries and understand how they really work and tell us how the heliosphere is able to do the important job of protecting us from the dangerous galactic cosmic rays.

For more information:
<http://www.nasa.gov/ibex>

2008 05 29 NASA Goddard <https://youtu.be/okyynBaSOtA> NASA GLASTcast Episode 2 What are Gamma Rays

Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

For more info:
<http://www.nasa.gov/GLAST/>

NASA's GLAST mission is an astrophysics and particle physics partnership, developed in collaboration with the U.S. Department of Energy, along with important contributions from academic institutions and partners in France, Germany, Italy, Japan, Sweden, and the U.S.

Somewhere out in the vast depths of space, a giant star explodes with the power of millions of suns. As the star blows up, a black hole forms at its center. The black hole blows two blowtorches in opposite directions, in narrow jets of gamma rays. NASA's Gamma-ray Large Area Space Telescope, or GLAST, will catch about 200 of these explosions, known as gamma-ray bursts, each year. GLAST's detailed observations may give astronomers the clues they need to unravel the mystery of what exactly produces these gamma-ray bursts, which are the brightest explosions in the universe since the Big Bang.

Interviews with (in order of appearance):

Phil Plait -- Astronomer, Bad Astronomy

2008 05 29	NASA Goddard	https://youtu.be/tBytZniBkCs	NASA GLASTcast Episode 1 What is GLAST	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434	Transcript Link

For more info:
<http://www.nasa.gov/GLAST/>

NASA's GLAST mission is an astrophysics and particle physics partnership, developed in collaboration with the U.S. Department of Energy, along with important contributions from academic institutions and partners in France, Germany, Italy, Japan, Sweden, and the U.S.

The Universe is home to numerous exotic and beautiful phenomena, some of which can generate inconceivable amounts of energy. GLAST will open a new window on this high-energy world. With GLAST, astronomers will have a superior tool to study how black holes, notorious for pulling matter in, can accelerate jets of gas outward at fantastic speeds. Physicists will be able to search for signals of new fundamental processes that are inaccessible in ground-based accelerators and observatories. GLAST's spectacular high-energy gamma-ray "eyeglasses" will reveal hidden wonders, opening our minds to new possibilities and discoveries, expanding our understanding of the Universe and our place in it.

Interviews with (in order of appearance):

2008 04 25	NASA Goddard	https://youtu.be/rIgEL5GFYgQ	NASA Satellites Aid in Chesapeake Bay Recovery	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434	Transcript Link

For more info:
<http://www.nasa.gov/centers/goddard/news/topstory/2008/chesapeake.html>

From the distant reaches of the Universe, to black holes, and the Martian surface, NASA explores some of the most far out parts of space. But NASA also does research much closer to home. In fact, NASA Earth Science satellites are taking part in the management and recovery of an ecosystem right in our backyard, the Chesapeake Bay.

By studying the landscape around the Chesapeake Bay, NASA spacecraft are helping land managers figure out how to battle the harmful pollutants that have added to the destruction of the bay's once legendary productivity.

2008 04 25 NASA Goddard <https://youtu.be/RSN2OnZSIPO> NASA Return to Venus Director's Cut Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

From Galileo and the Heliocentric model of the Solar System to James Hansen and climate research, observations of the planet Venus throughout history have given us the perspective we need to understand our own place in the universe. Yet with nearly two decades since the last U.S. mission there, our sister planet has received little attention in recent years. Return to Venus provides a look back at the history of Venus exploration, how human perceptions of the planet have changed through time, and inspires us think about what secrets we have yet to reveal from our inhospitable and enigmatic neighbor.

Interviews with Dr. Cherilynn Morrow and Tatiana Loboda

For more info:

<http://www.nasa.gov/centers/goddard/news/topstory/2006/vesper.html>

2008 03 07 NASA Goddard <https://youtu.be/PaSFAbATPvk> NASA The Mystery of the Aurora Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

With spring right around the corner it is the season for auroras. The beautiful and mysterious auroras are spectacular to watch, but they are actually a manifestation of violent space weather. This weather can create big problems here on Earth by disrupting power grids, satellites, air travel and even GPS signals. While auroras have fascinated observers for centuries, little had been known about their origin. But NASA is aiming to resolve this mystery with a new mission called THEMIS.

For more information:

http://www.nasa.gov/centers/goddard/news/topstory/2008/aurora_live.html

2008 03 07 NASA Goddard <https://youtu.be/PzOJBSKRhf0> NASA Striking a Solar Balance Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

Planet Earth is an oasis of life, but without the Sun, our home planet would be a drastically different, inhospitable place. The Sun's electromagnetic energy makes life on Earth possible; solar power also generates clouds, cleans our water, and drives ocean currents, thunderstorms, and hurricanes. For three decades, NASA scientists have studied the unique relationship between the Sun and the Earth, and they are particularly interested in the role of the Sun in Earth's energy balance. This short film explores the vital connection between the Earth and the Sun, and includes an interview with Dr. Robert Cahalan, head of the NASA Goddard Climate and Radiation Branch.

For more information, please visit:

<http://climate.gsfc.nasa.gov>

<http://sunclimate.gsfc.nasa.gov>

<http://lasp.colorado.edu/sorce>

2007 12 18	NASA Goddard	https://youtu.be/koqm7vj_Fbl	NASA Return with LRO	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 The Deputy Project Manager for the Lunar Reconnaissance Orbiter (LRO) program, Cathy Peddie, expresses her personal and professional thoughts on the upcoming LRO mission. From following in the footsteps of her childhood heroes, to building, testing, and integrating the LRO, to how LRO may play into future missions. For more info: http://www.nasa.gov/LRO	Transcript Link
2007 11 15	NASA Goddard	https://youtu.be/HZiqvqaLtl	NASA In Katrina's Wake	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Hurricane Katrina took the world by storm when it ravaged Louisiana and surrounding states in late August of 2005. Katrina's effects were far reaching, and researchers continue to uncover new areas of devastation left in her wake. Using data from NASA's Landsat and Terra satellites, along with ecological field investigations and statistical analyses, a group of researchers has quantified losses to Gulf Coast forests inflicted by Hurricane Katrina. The results, published in the 2007 November 16th issue of Science, estimate that Katrina killed or damaged 320 million large trees and affected more than 5 millions acres of forest. In this climate of warming temperatures and frequent, intensified storms, some scientists debate whether this is just the first taste of what's to come. For more information: http://www.nasa.gov/mission_pages/hurricanes/archives/2007/katrina_carbon.html	Transcript Link
2007 11 09	NASA Goddard	https://youtu.be/YgGgSMsVtF8	LRO Mission NASA's First Step Back to the Moon	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 The Lunar Reconnaissance Orbiter (LRO) is NASA's first step in returning humans to the Moon and extending human presence into the solar system. LRO will create the comprehensive atlas of the Moon's features and resources necessary to design and build the lunar outpost. The mission is scheduled to launch in late 2008 and will focus on the selection of safe landing sites, identification of lunar resources and study how the lunar radiation environment will affect humans. For more info: http://www.nasa.gov/lro	Transcript Link

2007 10 25	NASA Goddard	https://youtu.be/szwDoseWik	NASA Satellite Images of California Wildfires 10 25 Update	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 For more information: http://www.nasa.gov/wildfires The Growth of California's Wildfires Between October 21-24, 2007: This series of images shows the growth of the Southern California wildfires between October 21 and October 24, 2007. The first two images depict the area immediately around Los Angeles on October 21. The next images in the series show a wider view of the affected Southern California region. The third image in the series was obtained on October 22. The next two images were captured on October 23 at 2:25 and 5:40 p.m. EST respectively. The final two images in the series show the area on October 24 at 3:10 and 4:45 p.m. EST.	Transcript Link
2007 10 24	NASA Goddard	https://youtu.be/GRg2gi5piwk	NASA Satellite Images of California Wildfires 10 24 Update	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 For more information: http://www.nasa.gov/wildfires The Growth of California's Wildfires Between October 21-23, 2007: This series of images shows the growth of the Southern California wildfires between October 21 and October 23, 2007. The first two images depict the area immediately around Los Angeles on October 21. The next image in the series shows a wider view of the affected region, between Los Angeles and San Diego, on October 22. The last two images show this wider view of the area on October 23, 2007 at 2:25 p.m. and 5:40 p.m. EST respectively.	Transcript Link
2007 10 23	NASA Goddard	https://youtu.be/NLMOr2M8q4M	NASA Satellites Capture Images of Raging California Wildfire	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 For more information: http://www.nasa.gov/wildfires This series of images shows the growth of the Southern California wildfires between October 21 and October 22, 2007. The first two images depict the area immediately around Los Angeles on October 21, while the last image shows a wider view of the affected region between Los Angeles and San Diego on October 22.	Transcript Link

2007 10 19 NASA Goddard <https://youtu.be/qUfVMogldr8> NASA Exploring Ozone Want more? Subscribe to NASA on iTunes! <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> [Transcript](#) [Link](#)

This short video combines dynamic ozone visualizations with an interview with leading atmospheric NASA scientist, Dr. Paul Newman. Dr. Newman explains why ozone is important, he cites the ingredients that cause an ozone hole to form, and he remarks on the future of the ozone, pointing to exciting new areas of ozone research, including the role climate change will play in future years.

For more information:

http://www.nasa.gov/vision/earth/environment/ozone_resource_page.html

2007 10 18 NASA Goddard <https://youtu.be/mNgZA2Xkx-4> NASA Return to Venus Part II Watch "Return to Venus - Part I" at: <http://www.youtube.com/watch?v=QTo-DOJhpXw> [Transcript](#) [Link](#)

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<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

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Interviews with Dr. Cherilynn Morrow and Tatiana Loboda

For more information:

<http://www.nasa.gov/centers/goddard/news/topstory/2006/vesper.html>

2007 10 18	NASA Goddard	https://youtu.be/QTo-DOJhpXw	NASA Return to Venus Part I	Watch "Return to Venus - Part II" at: http://www.youtube.com/watch?v=mNgZA2Xkx-4 Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 From Galileo and the Heliocentric model of the Solar System to James Hansen and climate research, observations of the planet Venus throughout history have given us the perspective we need to understand our own place in the universe. Yet with nearly two decades since the last U.S. mission there, our sister planet has received little attention in recent years. Return to Venus provides a look back at the history of Venus exploration, how human perceptions of the planet have changed through time, and inspires us think about what secrets we have yet to reveal from our inhospitable and enigmatic neighbor. Interviews with Dr. Cherilynn Morrow and Tatiana Loboda For more information: http://www.nasa.gov/centers/goddard/news/topstory/2006/vesper.html	Transcript Link
2007 10 02	NASA Goddard	https://youtu.be/cuFmgTGH9ds	NASA Solar Hurricane Tears Off Tail of Comet Encke	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 NASA's STEREO satellite captured the first images ever of a collision between a solar "hurricane", called a coronal mass ejection (CME), and a comet. The collision caused the complete detachment of the comet's plasma tail. Scientists believe that the disconnection of Comet Encke's tail was likely triggered by reconnection between the magnetic field around the comet and the field entrained in the CME. This same process takes place in the Earth's magnetosphere during geomagnetic storms. For more information: http://www.nasa.gov/stereo	Transcript Link

2007 09 12 NASA Goddard <https://youtu.be/-xF2vSKINK0> NASA Noctilucent Clouds <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> Want more? Subscribe to NASA on iTunes! [Transcript](#) [Link](#)

The Aeronomy of Ice in the Mesosphere (AIM) mission will provide the first detailed exploration of Earth's unique and elusive noctilucent or night shining clouds that are found literally on the "edge of space." Located near the top of the Earth's mesosphere (the region just above the stratosphere), very little is known about how these polar mesospheric clouds form or why they vary. They are being seen at lower latitudes than ever before and have been growing brighter and more frequent, leading some scientists to suggest that this recent increase may be the direct result of human-induced climate change. The mission is led by Dr. James Russell of the Center for Atmospheric Sciences at Hampton University.

Music by The Chromatics:
<http://www.thechromatics.com/>

For more info:
<http://www.nasa.gov/aim/>
<http://aim.hamptonu.edu/>

2007 07 10 NASA Goddard <https://youtu.be/uK4a7kWb6Ro> NASA Sun for Kids <http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434> Want more? Subscribe to NASA on iTunes! [Transcript](#) [Link](#)

We look at the sun rising every day. It's bright, it's big and it warms us up. Our sun happens to be the brightest object in our universe and it has captured our curiosity and imaginations throughout history.

Our sun is very dynamic and its turbulent surface produces some of the largest eruptions in the solar system. Called coronal mass ejections, these eruptions can cause serious damage when they reach our planet by disrupting satellites and other communication devices. Our TV may not work, our cell phones will be down, a high speed train may run loose and if an astronaut happens to be on the moon at the time when the sun erupts, he or she would be in great danger.

NASA uses satellites such as the Solar and Heliospheric Observatory (SOHO), to predict these events so that we have a warning of at least 2-3 days to protect our expensive communication devices during a solar eruption. SOHO is just one of the instruments that NASA uses to help scientists understand our sun better along with other satellites and large observatories on Earth.

For more information visit:

2007 07 10 NASA Goddard <https://youtu.be/xFIQJR52TcQ> NASA Water for Tea Part I

View "Water for Tea: Part II" at:
<http://youtube.com/watch?v=9F5pdDCbBFg>

[Transcript](#)
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Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

One of the critical components of the Earth's hydrological cycle is precipitation. Rainfall is essential for providing the fresh water that sustains life.

Water cycling and the future availability of fresh water resources are immense societal concerns that impact every nation on Earth. In many respects, precipitation is truly the centerpiece of our planet's hydrological cycle, and understanding it is crucial to unraveling many of the uncertainties about Earth's climate.

But, we cannot understand the water and energy cycle or predict weather and climate without an accurate knowledge of the intensity and distribution of global precipitation. Measurement of various aspects of precipitation represents one of the most challenging research problems in Earth science.

The concept of Global Precipitation Measurement (GPM) is NASA's response to the need for accurate global precipitation measurement. In many respects, precipitation is truly the centerpiece of our planet's hydrological cycle, and understanding it

2007 07 09 NASA Goddard <https://youtu.be/S3Wc2boxdYE> NASA Beyond Einstein Part I

View "Beyond Einstein: Part II" at:
http://youtube.com/watch?v=xf_TB_IJpuU

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<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

Albert Einstein's theories rank among humanity's greatest achievements. They sparked the scientific revolution of the 20th Century. In their attempts to understand how space, time and matter are connected, Einstein and his successors made three predictions...

First, that space is expanding from a Big Bang. Second, that black holes exist -- these extremely dense places in the universe where space and time are tied into contorted knots and where time itself -- stops. And third, that there is some kind of energy pulling the universe apart. These three predictions seemed so far-fetched, that everyone, including Einstein himself, thought they were unlikely. Incredibly, all three have turned out to be true. This is where NASA's Beyond Einstein program begins. Using advanced space-based technology to explore these three questions, NASA and its partners begin the next revolution in our understanding of the universe. NASA's Beyond Einstein program is poised to complete Einstein's legacy -- and ultimately unravel the mysteries of the Universe.

For more information visit:

2007 07 05 NASA Goddard https://youtu.be/xf_TB_ljpuU NASA Beyond Einstein Part II

View "Beyond Einstein: Part I" at:
<http://youtube.com/watch?v=S3Wc2boxdYE>

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Want more? Subscribe to NASA on iTunes!
<http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434>

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2007 07 05 NASA Goddard <https://youtu.be/9F5pdDCbBFg> NASA Water for Tea Part II

View "Water for Tea: Part I" at:
<http://youtube.com/watch?v=xFIQJR52TcQ>

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2007 06 27	NASA Goddard	https://youtu.be/LeUcjgghNxM	NASA The Big Bang	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 This dominant cosmological theory suggests the Universe began nearly 13.7 billion years ago, expanding rapidly from a very dense and incredibly hot state. Eventually, stars ignited and galaxies slowly formed. The Big Bang theory has been improved and advanced especially through NASA's Cosmic Background Explorer (COBE) and WMAP missions. This animation conceptualizes these explosive beginnings of the Universe. This animation begins with a pinpoint of light as the Big Bang, and continues to show the formation of the first stars and galaxies. For more information: http://www.nasa.gov/topics/universe	Transcript Link
2007 06 05	NASA Goddard	https://youtu.be/OVAB-BLyN20	NASA The Global Snowflake Network	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Like to catch snowflakes? Try using a card instead of your tongue! Join the Global Snowflake Network for the International Polar Year. NASA Goddard Space Flight Center invites you to be a part of this special data collection effort. Snowflake shapes depend on particular atmospheric conditions. See http://education.gsfc.nasa.gov/how for more info.	Transcript Link
2007 05 16	NASA Goddard	https://youtu.be/oW5jI3brivI	NASA First Images of the Sun in 3-D	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 For the first time ever, NASA has obtained 3-D images of the dynamic churning atmosphere of the sun -- thanks to the two STEREO spacecraft launched in 2006. This new view will greatly aid scientists' ability to understand solar physics and improve space weather forecasting. This is a stereographic version of the movie. Red/Cyan stereo glasses are required to view it properly. For more information: http://www.nasa.gov/stereo	Transcript Link
2007 05 16	NASA Goddard	https://youtu.be/WA9OcO7iEFA	NASA STEREO Satellite	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 By partnering two spacecraft to view the sun simultaneously for the first time, NASA is providing a 3-D view of the ever-changing, turbulent solar atmosphere. This animation depicts one of the twin STEREO spacecraft as a stereographic image. Red/Cyan stereo glasses are required to view it properly. For more information: http://www.nasa.gov/stereo	Transcript Link

2007 05 16	NASA Goddard	https://youtu.be/1V2J0oBj42Y	NASA Destination Earth	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Of all the far-flung worlds explored by NASA, the most important may be our own.... For more info: http://www.nasa.gov/centers/goddard/multimedia/index.html	Transcript Link
2007 05 16	NASA Goddard	https://youtu.be/Elo5cjdV1kM	NASA Daily Arctic Sea Ice 2005-2006	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 This animation shows the seasonal advance and retreat of sea ice over the Arctic from 2005-2006. The false color of the sea ice, derived from the AMSR-E instrument on NASA's Aqua satellite, highlights the fissures in the sea ice by showing warmer areas of ice in a deeper blue and colder areas of sea ice in a brighter white. The yearly cycle is repeated three times while the camera circles the Arctic, providing a view of the sea ice from a wide range of viewpoints.	Transcript Link
2007 05 16	NASA Goddard	https://youtu.be/7pY06jsOQLE	NASA Jakobshavn Glacier Retreat	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Since measurements of Jakobshavn Isbrae were first taken in 1850, the glacier has gradually receded, finally coming to rest at a certain point for the past 5 decades. However, from 1997 to 2006, the glacier has begun to recede again, this time almost doubling in speed. As more ice moves from glaciers on land into the ocean, it raises sea levels. The ice stream's speed-up and near-doubling of ice flow from land into the ocean has increased the rate of sea level rise by about .06 millimeters (about .002 inches) per year, or roughly 4 percent of the 20th century rate of sea level increase. This animation shows the glacier's flow in 2000, along with changes in the glacier's calving front between 2001 and 2006.	Transcript Link
2007 05 16	NASA Goddard	https://youtu.be/kUG4-TEqPYc	NASA Towers in the Tempest	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 A hurricane's "hot towers" can increase its intensity by adding power to boost the storm's heat engine. For the first time, research meteorologists have run complex simulations of these phenomena using a very fine temporal resolution. They have combined this new simulation data with satellite observations to study the innerworking of the "hot towers" in never-before-seen detail. For more information: http://svs.gsfc.nasa.gov/vis/a000000/a003400/a003413/index.html	Transcript Link

2007 04 13	NASA Goddard	https://youtu.be/i9_8_2nL6Vo	NASA AIM Mission Exploring Clouds at the Edge of Space	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 NASA's AIM mission will study Earth's Polar Mesospheric Clouds at the edge of space. The mission is led by Dr. James Russell of the Center for Atmospheric Sciences at Hampton University. For more info: http://aim.hamptonu.edu/ http://www.nasa.gov/aim/	Transcript Link
2007 04 12	NASA Goddard	https://youtu.be/gOYDzgOmWIs	NASA We Did All That in 50 Years!	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Humans have always looked up at the sky. They used astronomy to track time, orient their cities, decide when to plant their crops, and even based their religious practices on their celestial world. But there was much more to learn.	Transcript Link
2007 04 05	NASA Goddard	https://youtu.be/0iP1jYygDZ4	NASA North to South	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 Earth's polar regions: the "canary in the coal mine" of global climate change. The time to learn more is now. Two years of intensive research and education focused on the Earth's poles began March 1, 2007 with the launch of the International Polar Year (IPY). NASA's Earth orbiting satellite observations play a vital role, giving scientists a bird's eye view - a wide angle, global perspective of these frozen frontiers. In addition, NASA has missions planned to the poles of other solar system bodies...namely, the moon and Mars. For more info: http://www.nasa.gov/ipy	Transcript Link
2007 02 01	NASA Goddard	https://youtu.be/dFLVGES4IQ	NASA Climate Change Highlights	Want more? Subscribe to NASA on iTunes! http://phobos.apple.com/WebObjects/MZStore.woa/wa/viewPodcast?id=283424434 From polar ice to phytoplankton, parts of the earth system are constantly changing. At NASA, scientists strive to better understand these changes and how they are interconnected. Using remote-sensing data from satellites, this research diagnoses our planet's current health and will help future generations and explorers understand the earth system as a whole. Find out more at: http://svs.gsfc.nasa.gov/search/PAO/SVSG2007-001HD.html	Transcript Link

2007 01 19 NASA Goddard <https://youtu.be/ZQTVF29Skmw> NASA A Short Tour of the Cryosphere

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[Transcript](#)
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The cryosphere consists of those parts of the Earth's surface where water is found in solid form, including areas of snow, sea ice, glaciers, permafrost, ice sheets, and icebergs. This animation portrays changes in the cryosphere through observations collected from a variety of NASA's satellite-based sensors.

For more info:

<http://svs.gsfc.nasa.gov/vis/a000000/a003300/a003355/index.html>

2007 01 12 NASA Goddard <https://youtu.be/51CiVZQ7xv8> NASA THEMIS Mission

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[Transcript](#)
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NASA's THEMIS mission consists of five identical probes that will track the violent, colorful eruptions of aurora near the North Pole. The satellite is scheduled to liftoff on February 15, 2007 aboard a Delta II rocket from Launch Complex 17-B on Cape Canaveral Air Force Station, Florida.

For more info:

<http://www.nasa.gov/themis>