

Uploaded Date	Channel	Video URL	Video Title	Description
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2023 06 28	Hubble Space Telescope	<a href="https://youtu.be/7gJNW Rp5aJk">https://youtu.be/7gJNW Rp5aJk</a>	Nancy Grace Roman and the Roman Space Telescope	<p>Joan Gordon and Rachael Beaton</p> <p>In coordination with the science conference "Roman Science Inspired by Emerging JWST Results," two guest speakers will present the history and science of the Nancy Grace Roman Space Telescope.</p> <p>Joan Gordon, Ph.D., will provide insights into the remarkable life of the Nancy Grace Roman, the Roman mission's namesake and NASA's first chief of astronomy who is also known as "The Mother of Hubble."</p> <p>Dr. Rachael Beaton of the Space Telescope Science Institute will follow with a discussion about the Roman Space Telescope mission, detailing how this wide-field and high-resolution observatory will achieve breakthrough science.</p> <p>Host: Brandon Lawton, STScI Recorded live on Thursday, June 22, 2023 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p> <p>#STScI #galaxies #astronomy #space #telescopes #Roman #NancyGraceRoman #science</p>
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[Transcript Link](#)

2023 06 20	Hubble Space Telescope	<a href="https://youtu.be/Qnr7H DcF3LQ">https://youtu.be/Qnr7H DcF3LQ</a>	Stephan's Quintet A Multi-wavelength Exploration	<p>This visualization explores the galaxy group called Stephan's Quintet using observations in visible, infrared, and x-ray light. The sequence contrasts images from NASA's Hubble Space Telescope, Spitzer Space Telescope, Webb Space Telescope, and Chandra X-ray Observatory to provide insights across the electromagnetic spectrum.</p> <p>Exploring the grouping in three dimensions, the video showcases the galaxy distances, diverse shapes, and the interactions between them. In particular, the stretched and distorted galactic features, along with a ridge of high-energy emission, provide evidence of a high-speed collision occurring within the group.</p> <p>Multi-wavelength views enable contrasting and complimentary studies of this complex compact group.</p> <p>Visualization: F. Summers, A. Pagan, J. DePasquale, L. Hustak, J. Olmsted, G. Bacon (STScI)</p> <p>Images: NASA, ESA, CSA, STScI, JPL-Caltech, CXC, CfA, Hubble SM4 ERO Team, E. O'Sullivan, A. Fujii</p> <p>Music: "Cylinder Three", Chris Zabriskie CC-BY-NC 4.0</p> <p>Audio Editing: D. Kirshenblat (STScI)</p> <p>NASA's Universe of Learning</p>
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[Transcript Link](#)

2023 05 03	Hubble Space Telescope	<a href="https://youtu.be/Vdg7cStgxbM">https://youtu.be/Vdg7cStgxbM</a>	A Drop in the Light Bucket How Do We Measure a Galaxy	<p>Amanda Pagul, Space Telescope Science Institute</p> <p>Tracing back to the Hubble Deep Field in the 1990s, galaxy surveys with space telescopes have become a fundamental part of cosmological studies. Newer surveys have grown both larger and deeper to probe more galaxies at greater distance and detail. One such survey, Hubble's Frontier Fields program, leverages gravitational lensing to push Hubble beyond even its impressive technical limits.</p> <p>To extract understanding of how galaxies change across space and time, a crucial process is to convert these images into catalogs of galaxies with measured properties. Given the various observed wavelengths, cosmological redshift, galaxy development over billions of years, and numerous other factors, defining a reliable set of galaxy characteristics is a significant challenge. Dr. Pagul will describe previous survey results with galaxy cluster data from the Hubble Space Telescope and future work with the James Webb Space Telescope.</p>	<a href="#">Transcript Link</a>
				<p>4:30 - News from the Universe 14:54 - Featured Speaker 1:07:54 - Live Q&amp;A</p>	
				<p>Host: Frank Summers, , Space Telescope Science Institute Recorded live on Tuesday, May 2, 2023 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	
2023 04 20	Hubble Space Telescope	<a href="https://youtu.be/nLxF3g4yWVI">https://youtu.be/nLxF3g4yWVI</a>	Take a Tour of NGC 1333	<p>This is a video tour of the nebula NGC 1333 that lies on the edge of a gigantic dark cloud of cold molecular hydrogen laced with soot-like dust. This raw material fuels a firestorm of star birth taking place inside the dusty cocoon. Parts of it have broken through the veil of dust for the Hubble Space Telescope to see nascent stars that are creating a fireworks show.</p> <p>VIDEO: Danielle Kirshenblat (STScI) IMAGE PROCESSING: Joseph DePasquale (STScI) MUSIC: Joseph DePasquale (STScI) SCIENCE: NASA, ESA, STScI</p>	<a href="#">Transcript Link</a>
2023 04 13	Hubble Space Telescope	<a href="https://youtu.be/N7ymUXwwTic">https://youtu.be/N7ymUXwwTic</a>	3D model of M87	<p>This is a Hubble Space Telescope photo of the huge elliptical galaxy M87. A grid is overlaid to trace out its three-dimensional shape. This was gleaned from meticulous observations made with the Hubble and Keck telescopes. Because the galaxy is too far away for astronomers to employ stereoscopic vision, they instead followed the motion of stars around the center of M87, like bees around a hive. This created a three-dimensional view of how stars are distributed within the galaxy.</p>	<a href="#">Transcript Link</a>
				<p>ANIMATION: NASA, ESA, Joseph Olmsted (STScI) 3D MODEL: Frank Summers (STScI) SCIENCE: Chung-Pei Ma (UC Berkeley)</p>	

2023 04 05	Hubble Space Telescope	<a href="https://youtu.be/4RGu-gxaQ_o">https://youtu.be/4RGu-gxaQ_o</a>	Exploring Rocky Worlds On the Precipice of a New Frontier	Katherine Bennett, Johns Hopkins University	<a href="#">Transcript Link</a>
<p>The simple, significant question, "Do other planets like Earth exist?" has slowly pushed from science fiction speculation into serious scientific inquiry. Having discovered thousands of planets around other stars, astronomers now think rocky planets are common in our Milky Way galaxy. The detailed and difficult exploration of these small worlds is boosted by the James Webb Space Telescope's ability to examine their atmospheres. Are these atmospheres thin and cold like Mars, thick and hot like Venus, or perhaps just right for life, like Earth? These answers will come over the next several decades as we survey and measure the landscape of rocky planets, and take important steps toward understanding habitability in the Milky Way.</p>					
<p>4:39 - News from the Universe 15:35 - Main talk 1:14:33 - Live Q&amp;A</p>					
<p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, April 4, 2023 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>					
<p>#STScI #galaxies #astronomy #space #telescopes #MilkyWay #RockyPlanets #NASAWebb #JWST</p>					
2023 03 08	Hubble Space Telescope	<a href="https://youtu.be/BMqm4jzSIAs">https://youtu.be/BMqm4jzSIAs</a>	Active Galaxies Monsters of the Deep (Space)	Travis Fischer, Space Telescope Science Institute	<a href="#">Transcript Link</a>
<p>Active galaxies are some of the most fascinating objects in the universe. They emit copious amounts of energy, often far exceeding the energy output of an entire galaxy of stars. But what makes them so active? Dr. Fischer will explore the nature of active galaxies, including their energetic processes and the role they play in shaping the universe we see today. Hear about some of the latest research in the field, including the use of telescopes and other observational tools to study these enigmatic objects. Join us on this journey to the heart of the most powerful objects in the cosmos.</p>					
<p>- News from the Universe starts at 3:57 - Main talk starts at 15:06</p>					
<p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, March 7, 2023 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>					

2023 02 08	Hubble Space Telescope	<a href="https://youtu.be/8a6PrAk84eM">https://youtu.be/8a6PrAk84eM</a>	Supermassive Black Holes in the Centers of Galaxies	Darshan Kakkad, Space Telescope Science Institute	<a href="#">Transcript Link</a>
				Most galaxies have a supermassive black hole at their center, including our Milky Way. Despite being surrounded by a galaxy that is 1,000 times heavier, these black holes are no mere ornament—they help determine how galaxies are going to develop over time. Join Dr. Kakkad for an overview of black holes across a phenomenal range of different masses and to explore how supermassive black holes may decide the fate of galaxies.	
				- News from the Universe starts at 4:01 - Main talk starts at 14:25	
				Host: Frank Summers Recorded live on Tuesday, February 7, 2023 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a>	
2023 01 19	Hubble Space Telescope	<a href="https://youtu.be/dJXORAyugos">https://youtu.be/dJXORAyugos</a>	The Art & Science of Webb Imagery	Alyssa Pagan & Joseph DePasquale, Space Telescope Science Institute	<a href="#">Transcript Link</a>
				The amazing visions from the Webb Space Telescope have captivated the world. However, there is a long and involved process by which the scientist's black and white observational data are transformed into dynamic color imagery for the public. Join image specialists Alyssa Pagan and Joe DePasquale as they discuss, detail, and demonstrate the art and science of translating infrared light. Further, they will highlight the importance of creating these images in the first place, in serving to educate, engage and inspire.	
				- News from the Universe starts at 3:06 - Main talk starts at 8:56	
				Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, January 17, 2023 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a>	
2022 12 09	Hubble Space Telescope	<a href="https://youtu.be/fvlqJipNDf0">https://youtu.be/fvlqJipNDf0</a>	Surprising Supercharged Science with Swift	Steve Kerby, Penn State University	<a href="#">Transcript Link</a>
				The Neil Gehrels Swift Observatory was originally designed to study gamma-ray bursts, but now does many types of multi-wavelength astronomy. Though lesser-known than flagship spacecraft like the James Webb or Hubble space telescopes, Swift has nonetheless made a staggering variety of discoveries since its launch in 2004. Join PhD candidate Steve Kerby for a discussion on the history of the plucky satellite, its diverse observational capabilities, and an ongoing project to investigate mysterious supermassive black holes in the distant universe.	
				- News from the Universe starts at 3:48 - Main talk starts at 13:24	
				NOTE: Due to software difficulties, the latter part of the talk (from about 48:00) had to be recorded at a separate time. The questions at the end only reflect the earlier part of the talk that was recorded live.	
				Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, December 6, 2022 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a>	

2022 11 03	Hubble Space Telescope	<a href="https://youtu.be/LWmTj-p-UQfc">https://youtu.be/LWmTj-p-UQfc</a>	Black Holes How Do We See That Which Gives Off No Light	<p>Stephanie La Massa, Space Telescope Science Institute</p> <p>Black holes are the most enigmatic objects in the Universe, objects so dense that not even light can escape from them. A natural consequence of Einstein's theory of general relativity, they have in the past been considered theoretical curiosities. However, observational evidence of black holes has become abundant over the past several decades.</p> <p>Though black holes give off no light, we can infer their presence based on the effect they have on their surroundings. Dr. La Massa will highlight the clues we use to discover black holes from within our Galaxy to the edges of the Universe. Recent ground-breaking observations from the Event Horizon Telescope and gravitational waves have pushed the boundaries of our knowledge about black holes. Still, many important questions remain, which the next generation of ground and space-based telescopes will help answer.</p> <p>- News from the Universe starts at 3:08 - Main talk starts at 12:22</p> <p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, November 1, 2022 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	<a href="#">Transcript Link</a>
2022 10 25	Hubble Space Telescope	<a href="https://youtu.be/24cV8GYe-iw">https://youtu.be/24cV8GYe-iw</a>	Cosmic Wonders	<p>Cosmic Wonders presents a stunning series of 18 astronomy visualizations. Each sequence combines Hubble Space Telescope images or research computer simulations with scientific knowledge and insight to create three dimensional visions of awesome celestial sights. Created by astronomers and artists at the Space Telescope Science Institute, all of the individual visualizations are available for viewing on the Hubble Space Telescope channel on YouTube and for download at <a href="http://hubblesite.org">hubblesite.org</a>.</p> <p>Producer: Office of Public Outreach, Space Telescope Science Institute Editor: Danielle Kirschenblat Visualization Leads: Greg Bacon, Frank Summers Visualization Artists: Greg Bacon, Joseph DePasquale, Leah Hustak, Joseph Olmsted, Alyssa Pagan, Frank Summers, Tiffany Borders, Lisa Frattare, Zolt Levay, Dani Player</p> <p>Visualization Links:</p> <p>The Bubble Nebula: Winds &amp; Radiation from a Massive Star HubbleSite: <a href="https://hubblesite.org/contents/media/videos/812-Video.html">https://hubblesite.org/contents/media/videos/812-Video.html</a> YouTube: <a href="https://youtu.be/teJ01WXYp6M">https://youtu.be/teJ01WXYp6M</a></p> <p>A Flight Through the CANDELS Ultra Deep Survey Field HubbleSite: <a href="https://hubblesite.org/contents/media/videos/984-Video.html">https://hubblesite.org/contents/media/videos/984-Video.html</a></p>	<a href="#">Transcript Link</a>

2022 10 05	Hubble Space Telescope	<a href="https://youtu.be/IRCsTU">https://youtu.be/IRCsTU</a> <a href="#">GwlsE</a>	The Universe of Dante Alighieri	<p>“The Divine Comedy” by Dante Alighieri is the story of a journey through the universe—a sort of ante litteram science fiction book, written as a poem. Dante had a good knowledge of astronomy and a great passion for it, traits shared with his descendant, astrophysicist Dr. Sperello di Serego Alighieri.</p> <p>As a medieval man, Dante straddled the beliefs of the ancients and modern knowledge. Dr. Alighieri will explore how his ancestor repeatedly anticipated later views on topics such as features of the Moon, our Milky Way galaxy—and the curved universe, unlimited but finite, which anticipates the hypersphere of Einstein. Join us for an invitation to reread Dante's poem with different eyes, ones turned upward.</p>	<a href="#">Transcript Link</a>
				<p>To be recorded live on Tuesday, October 4, 2022 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	
2022 09 08	Hubble Space Telescope	<a href="https://youtu.be/ZC9kQgw6dhQ">https://youtu.be/ZC9kQgw6dhQ</a>	First Light Hunting for Galaxies at the Dawn of Cosmic Time	<p>Guido Roberts-Borsani, UCLA</p> <p>The emergence of the first galaxies some 13.5 billion years ago had a profound effect on the state of the universe. It marks the end of the so-called "Dark Ages" and begins the Epoch of Reionization. Finding and characterizing the distant sources responsible for ionizing the intergalactic medium is imperative to answer questions such as: When did the first galaxies form? Did they have supermassive black holes? What kind of stars did they host?</p> <p>Dr. Roberts-Borsani will discuss how astronomers are pushing the limits of current observatories to hunt for these initial galaxies and describe the efforts to characterize their exceptional natures. He will also illustrate how first results from the James Webb Space Telescope are already revolutionizing our search and providing an unprecedented window into early galaxy evolution.</p>	<a href="#">Transcript Link</a>
				<p>- News from the Universe starts at 3:27 - Main talk starts at 15:34</p>	
				<p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, September 6, 2022 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	
2022 08 03	Hubble Space Telescope	<a href="https://youtu.be/OtmVtyOwt4">https://youtu.be/OtmVtyOwt4</a>	Webb’s First Look Images and Spectra from NASA’s Newest Great Observatory	<p>Alexandra Lockwood, Space Telescope Science Institute</p> <p>The Webb Space Telescope has recently showcased its spectacular first images and is now ready to do incredible science! It has been a long road to get here, including meticulous planning, exacting execution, and an amazing amount of teamwork! Join Dr. Lockwood as she talks about the journey from launch to commissioning, explores details of the first images and spectra, and helps us understand the awesome scientific potential of NASA's newest great observatory.</p>	<a href="#">Transcript Link</a>
				<p>- News from the Universe starts at 3:29 - Main talk starts at 11:27</p>	
				<p>Host: Frank Summers, Space Telescope Science Institute Broadcast live on Tuesday, August 2, 2022 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	

2022 07 06	Hubble Space Telescope	<a href="https://youtu.be/nnvaczvdhRo">https://youtu.be/nnvaczvdhRo</a>	How Yavin IV and Orbital Mechanics Destroyed the Death Star	Mia Bovill, Texas Christian University	At the end of “Star Wars: Episode IV,” the Death Star orbits the moon Yavin IV while seeking to target the rebel base on its surface. This maneuver takes long enough that Luke Skywalker is able to destroy the celestial juggernaut in the nick of time. Was this delay scientifically reasonable? The answer lies in the basic tenets of orbital mechanics.	<a href="#">Transcript Link</a>
				In addition, given the wealth of observational data on exoplanetary systems from telescopes like NASA’s Kepler Mission, one can address many other questions about this scenario. Is it possible to have a gas giant planet orbited by a planet-sized moon that has dense vegetation and a breathable atmosphere? How massive would Yavin IV be and what is its likely composition? Dr. Bovill explains how astrophysics is the force that offers a new hope in comprehending this encounter with the dark side of a moon.		
				Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, July 5, 2022 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a>		
2022 06 30	Hubble Space Telescope	<a href="https://youtu.be/x8ODmShoOdI">https://youtu.be/x8ODmShoOdI</a>	How the Roman Space Telescope Will Study Galaxies	NASA’s Nancy Grace Roman Space Telescope will be a powerful tool for studying galaxies throughout the cosmos. It will be able to provide spectra for every galaxy in its field of view. And with a field of view 200 times that of the Hubble Space Telescope at infrared wavelengths, Roman can capture thousands of objects of interest in a single observation.	<a href="#">Transcript Link</a>	
				Video credit: Robert Hurt (IPAC/Caltech) Hubble Ultra Deep Field Visualization courtesy of Frank Summers (STScI)/NASA’s Universe of Learning Music: “Red Giant” by Stellardrone		
2022 06 10	Hubble Space Telescope	<a href="https://youtu.be/ebwbME0-7k">https://youtu.be/ebwbME0-7k</a>	Understanding the Formation and Evolution of Galaxies	Cameron Hummels, Caltech	Galaxies—like our own Milky Way—are among the basic building blocks of our universe. Discovered only one hundred years ago, galaxies are complex systems consisting of billions of stars, along with gas, dust, and dark matter. They occupy much of what we see when we gaze at the night sky through our telescopes.	<a href="#">Transcript Link</a>
				Astronomers learn about galaxies using both telescope observations and sophisticated computer simulations. These numerical investigations are crucial in helping us better understand how galaxies form and evolve since the birth of our universe.		
				To be broadcast live on Tuesday, June 7, 2022 at 8 PM EDT (UTC-4) More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a>		

2022 05 05	Hubble Space Telescope	<a href="https://youtu.be/H1WuijVZJaM">https://youtu.be/H1WuijVZJaM</a>	Eta Carinae and the Homunculus Nebula in 3D	Frank Summers, Space Telescope Science Institute	<a href="#">Transcript Link</a>
<p>Eta Carinae is the closest, best known, and most studied of the stars known as "supernova impostors". After surviving a supernova-like brightening in the 1840's, Eta Car faded away for the rest of the 19th century, and slowly grew more luminous over the 20th century. Modern observations across visible, ultraviolet, and x-ray wavelengths reveal complex, nested structures of gas and dust that resulted from the 1840's Great Eruption and other outbursts from this massive star system. Dr. Summers will showcase a 3D visualization of these nebulae as well as delve into the colliding wind binary star at the core of this remarkable celestial object.</p>					
<p>- News from the Universe starts at 3:21 - Main talk starts at 8:53</p>					
<p>Recorded live on Tuesday, May 3, 2022 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>					
2022 04 19	Hubble Space Telescope	<a href="https://youtu.be/-QZ15QJrfs">https://youtu.be/-QZ15QJrfs</a>	Hickson Compact Group 40 A Flight Through Interacting Galaxies	This visualization, which uses scientific data, begins by illustrating the location of the Hickson Compact Group 40 in the constellation Hydra. It then zooms into a lonely patch of sky inhabited by the close-knit group's five galaxies. Finally, it shows a fly-through of this eclectic bunch — which includes three spiral-shaped galaxies, an elliptical galaxy and a lenticular (lens-like) galaxy — and how they are situated in relation to each other.	<a href="#">Transcript Link</a>
<p>Credits: Video: NASA, ESA, STScI Visualization: Joseph DePasquale , Alyssa Pagan Muic: Joseph DePasquale Acknowledgement: Akira Fujii, DSS, David Malin</p>					
2022 04 06	Hubble Space Telescope	<a href="https://youtu.be/KRn1Gi-OJBc">https://youtu.be/KRn1Gi-OJBc</a>	Neutrino Astronomy A New Window into the Extreme Universe	Marcos Santander, University of Alabama	<a href="#">Transcript Link</a>
<p>Located under a mile of glacial ice near the South Pole is IceCube, the largest neutrino telescope in the world. IceCube detects high-energy neutrinos, elementary particles that can be produced in distant cosmic objects such as supernova remnants and active galactic nuclei powered by supermassive black holes. Pinpointing the neutrino sources will help answer the century-old question of the origin of cosmic rays, the highest energy particles known in the Universe. In addition, combining observations of neutrinos with those of photons and gravitational waves will enable a new area of multi-messenger astronomical studies. Join Dr. Santander for an overview of the current status of neutrino astronomy, recent highlights from IceCube, and a look at the next-generation neutrino telescopes around the world.</p>					
<p>- News from the Universe starts at 4:27 - Main talk starts at 12:59</p>					
<p>Host: Quyen Hart, Space Telescope Science Institute Recorded live on Tuesday, April 5, 2022 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>					

2022 03 07 Hubble Space Telescope <https://youtu.be/wH3NRkmgkSA> Hubble ACS 20th Anniversary Video The Hubble Space Telescope's Advanced Camera for Surveys (ACS) forever changed our view of the universe. Two decades into its epic mission, ACS continues to deliver ground-breaking science and stunning images. ACS has taken over 125,000 pictures and spawned numerous discoveries. [Transcript Link](#)

Credit: NASA, ESA, Danielle Kirshenblat (STScI)  
Music Credit: Associated Production Music (APM)

2022 03 03 Hubble Space Telescope <https://youtu.be/GH6blqHOjuY> Hubble from Space and Integral-field Spectroscopy from the Ground Marc Sarzi, Armagh Observatory & Planetarium [Transcript Link](#)

Integral-field spectroscopy (IFS) has driven tremendous progress in many areas of astronomy in the past two decades. Using a combination of imaging and spectroscopy, IFS observations can simultaneously map a variety of physical properties across extended objects such as stellar clusters, gas nebulae or galaxies.

Until recently, however, IFS has been the sole province of ground-based telescopes, which cannot rival the spatial resolution of the Hubble Space Telescope (HST) even when assisted by adaptive optics techniques. This situation has led to several instances where IFS data have been combined with HST observations to drive progress - ranging from the study of supermassive black holes to that of distant and early galaxies.

Join Dr. Sarzi for an overview of IFS and some of its most fruitful ground/space collaborative studies.

- News from the Universe starts at 3:23
- Main Talk starts at 12:16

Host: Frank Summers, Space Telescope Science Institute  
Recorded live on Tuesday, March 1, 2022  
More information: [www.stsci.edu/public-lectures](http://www.stsci.edu/public-lectures)

2022 02 02	Hubble Space Telescope	<a href="https://youtu.be/dLQOyT0TCmg">https://youtu.be/dLQOyT0TCmg</a>	To Catch a Dancing Star The Story of 'Extreme Precision' Spectroscopy	<p>Arpita Roy, Space Telescope Science Institute</p> <p>It has been three decades since astronomers first discovered planets outside our Solar System. This profound scientific moment established the field of exoplanet science and has led us on a whirlwind tour of other worlds, none of which (so far) have been quite like our own. With a few thousand planets under our belt, we are now preparing to hone in on truly Earth-like planets by upgrading some of our oldest planet-hunting tools. Dr. Roy will trace the history of the Nobel Prize-winning "radial velocity" or "Doppler" technique — from the 1970s to current day, from non-precision to extreme precision spectroscopy. We will traverse four orders of magnitude in improvement, and encounter surprisingly dangerous experiments. All of these developments have led to an unprecedented view of the subtle dance being performed by the stars in our sky.</p> <p>- News from the Universe starts at 3:36 - Main talk starts at 12:55</p> <p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, February 1, 2022 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	<a href="#">Transcript Link</a>
2022 01 25	Hubble Space Telescope	<a href="https://youtu.be/07hqULmszC8">https://youtu.be/07hqULmszC8</a>	Eta Carinae The Great Eruption of a Massive Star	<p>Eta Carinae, or Eta Car, is famous for a brilliant and unusual outburst, called the "Great Eruption", observed in the 1840s. This visualization presents the story of that event and examines the resulting multiwavelength emissions and three-dimensional structures surrounding Eta Car today.</p> <p>Massive stars are known to have major outbursts. Eta Car, one of the most massive stars known, expelled about 10% of its mass in the Great Eruption, creating a small nebula, called the Homunculus Nebula, around it. Images taken in different wavelengths of light reveal different structures, each providing more information about the outbursts of Eta Car.</p> <p>For this visualization, astronomers and artists have used NASA observations to model both the close-up and wide views of this massive and eruptive star. The Hubble Space Telescope and the Chandra X-ray Observatory have observed the nested layers of gas and dust around Eta Car using visible, ultraviolet, and x-ray light, as well as in the Hydrogen Alpha emission line. The Spitzer Space Telescope provides a larger view of the Carina Nebula, along with Eta Car's dominant position within this star-forming region.</p> <p>This visualization is presented by the AstroViz Project of NASA's Universe of Learning. Viewers gain appreciation for how the observations from two centuries ago connect to the resulting structures seen today. Full 360-degree 3D views help to assemble a complete mental model that aids interpretation of the NASA</p>	<a href="#">Transcript Link</a>

2022 01 25	Hubble Space Telescope	<a href="https://youtu.be/kbeC98hm9dl">https://youtu.be/kbeC98hm9dl</a>	Eta Carinae 2D Images to 3D Models	<p>This visualization showcases the multiwavelength emissions and three-dimensional structures surrounding Eta Carinae, one of the most massive and eruptive stars in our galaxy.</p> <p>Two of NASA's Great Observatories, the Hubble Space Telescope and the Chandra X-ray Observatory, have observed Eta Carinae using visible, ultraviolet, and x-ray light, as well as in the Hydrogen Alpha emission line. These 2D portraits have been modeled by astronomers and artists to create a 3D visualization that brings the telescope images to life.</p> <p>The sequence presents the layered model one wavelength region at a time, and builds up the complex nested structure. The viewer gets a full 360-degree view and can assemble a complete mental model that aids interpretation of the NASA observations.</p> <p>Credits: J. Olmsted, D. Player, L. Hustak, J. DePasquale, G. Bacon, F. Summers (STScI), NASA, ESA</p> <p>Images: J. Morse (BoldlyGo Inst), N. Smith (U Arizona), NASA, ESA, STScI, CXC</p> <p>Music: "Sleepy Frieda", Maarten Schellekens, CC BY-NC 4.0</p>	<a href="#">Transcript Link</a>
2022 01 05	Hubble Space Telescope	<a href="https://youtu.be/WaXRVs2oTYE">https://youtu.be/WaXRVs2oTYE</a>	The Vibrant Life in Cities of Galaxies	<p>Mireia Montes, Space Telescope Science Institute</p> <p>A galaxy cluster is a collection of hundreds to thousands of galaxies—a "city" of galaxies. Similar to our human cities, these cities of galaxies are busy, vibrant places with lots of activity. As the crossroads where galaxies interact, these cities provide us with important insights into many fundamental astrophysical processes. They also hold a hidden secret: There is more in them than what we can see. Join Dr. Montes as she visits the cosmic metropolis and unveils the hidden mysteries in clusters of galaxies.</p> <p>- News from the Universe starts at 3:38 - Main talk starts at 14:18</p> <p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, January 4, 2022 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	<a href="#">Transcript Link</a>
2021 12 09	Hubble Space Telescope	<a href="https://youtu.be/Jlo8l463200">https://youtu.be/Jlo8l463200</a>	The Webb Space Telescope Launching a Legacy	<p>Alexandra Lockwood, Space Telescope Science Institute</p> <p>Originally envisioned in the mid-1990s, NASA's next flagship observatory, the Webb Space Telescope, is now reaching fruition. Its scientific capabilities will revolutionize our understanding of the Universe. As we enter the final weeks before liftoff, come learn about the astronomy motivations of the mission, the incredible technology powering it all, and the latest updates on launch preparations. Dr. Lockwood will also look ahead to the coming months of commissioning, and the much-anticipated first images and spectra to arrive next summer!</p> <p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, December 7, 2021 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	<a href="#">Transcript Link</a>

2021 11 04	Hubble Space Telescope	<a href="https://youtu.be/SClf2vWf2I4">https://youtu.be/SClf2vWf2I4</a>	4000 Years of Women in Science	Sethanne Howard, Washington Academy of Sciences	<a href="#">Transcript Link</a>
<p>For more than 4,000 years of written knowledge, women have participated in the great human adventure of science. This historical record demonstrates that science and technology are by no means gender specific. Female creativity and genius fill our technical past, yet their fundamental contributions can be missing from our textbooks and data. The stories of these women not only provide role models for future scientists, but they also strengthen and broaden our ability to respond to today's challenges. Dr. Howard covers the exciting and enchanting history of women in science and technology — where we have been, where we are, and where we are going.</p>					
<p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, November 2, 2021 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>					
2021 10 13	Hubble Space Telescope	<a href="https://youtu.be/QZjuOg5vGtg">https://youtu.be/QZjuOg5vGtg</a>	Moving Winds in Jupiter's Great Red Spot	<p>Each loop in this video represents approximately 10 Earth hours or one Jupiter day, approximating what it would look like if the Great Red Spot were constantly illuminated. By analyzing this set of data from NASA's Hubble Space Telescope, researchers were able to simulate what the wind flow looks like around Jupiter's Great Red Spot: Just south of the Great Red Spot is an eastward jet and at the southern border is a westward jet.</p> <p>Read the news release: <a href="https://hubblesite.org/contents/news-releases/2021/news-2021-055">https://hubblesite.org/contents/news-releases/2021/news-2021-055</a></p>	<a href="#">Transcript Link</a>
<p>NASA, ESA, Michael H. Wong (University of California, Berkeley)</p>					
2021 10 06	Hubble Space Telescope	<a href="https://youtu.be/1axNjibYCGc">https://youtu.be/1axNjibYCGc</a>	How Dark Is Space	Tod Lauer, NSF's NOIRLab	<a href="#">Transcript Link</a>
<p>Looking at the sky on a clear moonless night, one sees stars against black space. Powerful telescopes reveal faint stars and galaxies strewn between the bright stars, but still set against a black background. But we can ask, "Is space really, truly, completely dark?"</p>					
<p>Unfortunately, looking for a faint glow from the universe itself is tricky from the vantage point of the inner Solar System, where sunlight is scattered by interplanetary dust. NASA's New Horizons space probe, however, is now more than 50 times further away from the Sun than Earth, and its background sky is much darker than the one the Hubble Space Telescope observes.</p>					
<p>Join Dr. Tod Lauer as he describes an intriguing experiment that employed this perfect camera for gauging the blackness of space, and found evidence for an unknown source of light from the universe, itself.</p>					
<p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, October 5, 2021 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>					

2021 09 08	Hubble Space Telescope	<a href="https://youtu.be/iHGDS7roye4">https://youtu.be/iHGDS7roye4</a>	Astronomy vs. Astrology What's the Difference, Really	<p>Nicole Arulanantham, Space Telescope Science Institute</p> <p>It is inevitable in every astronomer's career that sometime, someplace, someone will refer to them as an astrologer. Although the scientist may cringe at this misnomer, pop culture has many examples where the terms "astronomy" and "astrology" are mistakenly used interchangeably. This modern misconception has some ancient roots. Join Dr. Arulanantham in exploring such celestial confusion by going back through history, to learn about the origins of studying the cosmos.</p> <p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, September 7, 2021. More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	<a href="#">Transcript Link</a>
2021 08 04	Hubble Space Telescope	<a href="https://youtu.be/JWzWnxYvdNo">https://youtu.be/JWzWnxYvdNo</a>	The Importance of Small Objects Exocomets	<p>Isabel Rebolledo, Space Telescope Science Institute</p> <p>Comets, asteroids, and other minor bodies in the solar system are thought to have played an important role in the formation of planets. They may even affect the appearance of life on Earth. Although we can't directly observe these small bodies in other planetary systems, we can infer their presence through various techniques. Studies into exocomets have been pursued for decades, with recent advances in the exoplanetary field bringing them into the limelight. In particular, comets trace chemical and dynamical information that could eventually be key to determine the habitability of new planetary systems.</p> <p>Host: Brandon Lawton, Space Telescope Science Institute Recorder live on Tuesday, August 3, 2021 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	<a href="#">Transcript Link</a>
2021 07 08	Hubble Space Telescope	<a href="https://youtu.be/iObda0Ndphw">https://youtu.be/iObda0Ndphw</a>	Armchair Astrophysics, Volume 2	<p>Quyen Hart, Space Telescope Science Institute</p> <p>Pull up a chair, get comfortable, and look all around you. Can you spot some familiar objects or common phenomena that can be connected to a topic in astrophysics? Some of your everyday experiences can be explained using some basic physics concepts and some of our cosmic observations have analogs in what we see around us.</p> <p>Join us to explore the physics of familiar phenomena and learn where the same physics is working "out there" in the cosmos. Discover what you and the universe have in common. Armchairs are not required, but highly recommended.</p> <p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, July 6, 2021 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	<a href="#">Transcript Link</a>

2021 06 02	Hubble Space Telescope	<a href="https://youtu.be/yuWEn9pc_vw">https://youtu.be/yuWEn9pc_vw</a>	How to Hunt for Distant Worlds	Emily Rickman, European Space Agency/Space Telescope Science Institute	<a href="#">Transcript Link</a>
<p>Since the discovery of the first planet orbiting a Sun-like star in 1995, more than 4,000 exoplanets have been found. These widespread planetary systems confirm that our solar system is just one of many in our Milky Way galaxy. The discovery of such systems provided intriguing insights, challenging our perspectives about how planetary systems form and evolve. But how do astronomers search for these exoplanets and what can we find out about them? Join Dr. Rickman as she describes the scientific hunt for these distant worlds.</p>					
<p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, June 1, 2021 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>					
2021 05 06	Hubble Space Telescope	<a href="https://youtu.be/rzHvduKxLEg">https://youtu.be/rzHvduKxLEg</a>	Finding the Music of the Spheres Hearing Stars	The Consonance Collective and the Bergamot Quartet, Peabody Institute	<a href="#">Transcript Link</a>
<p>Presenting "Hearing Stars," a visual album of string quartets depicting the life cycles of stars produced by the Consonance Collective with support from the Space Telescope Science Institute (STScI). The album follows the stars through five stages: 1) protostar (Celeste Forma), 2) star system (Iridescence), 3) supernova (SN 1054), 4) black hole (Beyond the Horizon), and 5) dark matter (Dark Mysteries).</p>					
<p>Created over the last year, the composers of the collective wrote original pieces for the Bergamot Quartet based on these stellar life stages, with STScI providing images, visualizations, and access to scientists. We hope you enjoy the results of this special collaboration!</p>					
<p>Videos may be viewed on the STScI YouTube channel in the "Hearing Stars - Consonance Collective" playlist: <a href="https://www.youtube.com/playlist?list=PLm0MBdI3VIBUbdQhZewZQC6Q8lzTxGnJP">https://www.youtube.com/playlist?list=PLm0MBdI3VIBUbdQhZewZQC6Q8lzTxGnJP</a></p>					
<p>Celeste Forma (Protostar) - Bobby Ge: <a href="https://youtu.be/IPeLZWZyhfM">https://youtu.be/IPeLZWZyhfM</a> Iridescence (Star System) - Zach Gulaboff Davis: <a href="https://youtu.be/T-mikiFLQ40">https://youtu.be/T-mikiFLQ40</a> SN 1054 (Supernova) - Seo Yoon Kim:</p>					
2021 04 23	Hubble Space Telescope	<a href="https://youtu.be/ARTW Ck1ieg4">https://youtu.be/ARTW Ck1ieg4</a>	Zoom to AG Carinae	This visualization starts with a wide-view of the Carina constellation and zooms down to the Hubble Space Telescope view of the massive star, AG Carinae. One of the brightest stars in our galaxy, AG Carinae undergoes eruptions that have ejected a small nebula of gas and dust. The emission from ionized gas glows red, while the dust reflects the light of the star and appears bluish-white.	<a href="#">Transcript Link</a>
<p>Credits: NASA, ESA, A. Pagan (STScI)</p>					

2021 04 23	Hubble Space Telescope	<a href="https://youtu.be/QENjQH1g88c">https://youtu.be/QENjQH1g88c</a>	Flight to AG Carinae	<p>This visualization starts with the Hubble Space Telescope view of the massive star, AG Carinae. One of the brightest stars in our galaxy, AG Carinae undergoes eruptions that have ejected a small nebula of gas and dust. The sequence flies into a 3D model that shows the structure of the surrounding nebula. The 3D model is based upon Hubble images and spectroscopic data of the nebula's motion. The emission from ionized gas glows red, while the dust reflects the light of the star and appears bluish-white.</p> <p>Visualization: NASA, ESA, STScI, L. Hustak, F. Summers, A. Pagan, J. DePasquale, and G. Bacon (STScI)</p>	<a href="#">Transcript Link</a>
2021 04 23	Hubble Space Telescope	<a href="https://youtu.be/y2nRNj3HWlc">https://youtu.be/y2nRNj3HWlc</a>	AG Carinae A Luminous Blue Variable Star	<p>This visualization starts with a wide-field view of the Carina constellation and zooms down to the Hubble Space Telescope view of the massive star, AG Carinae. One of the brightest stars in our galaxy, AG Carinae undergoes eruptions that have ejected a small nebula of gas and dust.</p> <p>The sequence then transitions from the 2D Hubble image to a 3D model that shows the structure of the surrounding nebula. The 3D model is based on Hubble images and spectroscopic data of the nebula's motion. The emission from ionized gas glows red, while the dust reflects the light of the star and appears bluish-white.</p> <p>CREDITS:  VIDEO: NASA, ESA, Leah Hustak, Frank Summers, Alyssa Pagan, Joseph DePasquale and Greg Bacon (STScI)  MUSIC: "Luminous Beings" by Joseph DePasquale (STScI) CC BY 4.0</p>	<a href="#">Transcript Link</a>
2021 04 08	Hubble Space Telescope	<a href="https://youtu.be/C4RGbeEp7D0">https://youtu.be/C4RGbeEp7D0</a>	Spacefarers How Humans Will Settle the Moon, Mars, and Beyond	<p>Christopher Wanjek</p> <p>More than 50 years after the Apollo 11 moon landing, why is there so little human presence in space? Will we ever reach Mars? What will it take to become a multi-planet species, colonizing the Solar System and traveling to other stars?</p> <p>This lecture meets these questions head on with a discourse of what we can expect in the next 30 years based not simply on what is possible, but rather on what is practical and thus plausible when considering the biological, economic, and philosophical concerns that adjoin the engineering challenges of space habitation and travel.</p> <p>We will be returning to the Moon and exploring Mars in the coming decades, given the potential scientific and commercial bonanza. Private industry already is taking a leading role and earning profits from human space activity. This can be a sustainable venture and a natural extension of Earth-bound science, business, and leisure.</p> <p>Join us as the noted author discusses plans for factories and hotels in low-Earth orbit, as well as science, mining, and tourism on the Moon modeled on activities in Antarctica. In addition, explore a vision of slow, steady development of science bases on Mars, to be followed by settlements if Martian gravity will permit reproduction and healthy child development.</p>	<a href="#">Transcript Link</a>

2021 04 06 Hubble Space Telescope <https://youtu.be/3-oCIEPGzCA> The Flickering Light of Dual Quasars

This simulation shows the brilliant, flickering light from a pair of quasars. Astronomers in a recent study deduced that the blinking light is a telltale sign of the presence of two quasars and not a single object.

[Transcript Link](#)

Quasars reside at the hearts of galaxies. They are ignited by monster black holes voraciously feeding on infalling matter, unleashing a torrent of radiation. A quasar's light fluctuates in brightness based on how much material its black hole is gobbling up at the time.

This quasar pair is pouring out light because their galaxies are in the process of merging, which provides plenty of fuel for their hungry black holes. The quasars appear close together because they, too, are in the process of merging, along with their galaxies.

The quasars were first identified by the European Space Agency's Gaia spacecraft, which measures small changes in the brightness of stars. The quasar pair is too far away for Gaia to resolve. Instead, the pair looks like a single bright object. However, Gaia also measured an apparent "jiggle" in the light. The "jiggle" is a signal of the independent flickering light between two separate quasars, similar to a pair of alternating lights on a railroad-crossing signal. The Hubble Space Telescope is sharp enough to resolve the quasar pair, which astronomers had suspected from the Gaia data.

Credit: NASA, ESA, and J. Olmsted (STScI)

2021 03 05 Hubble Space Telescope [https://youtu.be/5ocbo5\\_wn40](https://youtu.be/5ocbo5_wn40) The Hubble Space Telescope From Cosmological Conflict to Alien Atmospheres

Tom Brown, Space Telescope Science Institute

[Transcript Link](#)

The Hubble Space Telescope is one of the most successful scientific experiments in history: It maps the accelerating expansion of the cosmos, explores distant galaxies in the early universe, reveals the birth of stellar systems, and probes planets orbiting our sun and other stars. As one of the largest telescopes ever launched into orbit, Hubble's unique capabilities drive diverse discoveries across all of astrophysics and extend the work of other observatories on the ground and in space. Join Dr. Brown as he highlights some of Hubble's most exciting results and our expectations for the coming decade.

Host: Frank Summers, Space Telescope Science Institute  
Recorded live on Tuesday, March 2, 2021.  
More information: [www.stsci.edu/public-lectures](http://www.stsci.edu/public-lectures)

2021 02 05 Hubble Space Telescope <https://youtu.be/0JoFe1T1fOQ> The Milky Way vs. Andromeda When Galaxies Collide Laura Prichard, Space Telescope Science Institute

Our sun is one of hundreds of billions of stars that make up the spiral disk of our Milky Way galaxy. In turn, our galaxy is one of a hundred billion more that we can observe in the universe.

Join Dr. Prichard as she delves into the discovery of these “island universes” and explains how many types of galaxies form.

Take a tour of our galaxy’s neighborhood, including an adventure into our prospects of interstellar travel. The exploration will reveal the ultimate fate of the Milky Way when it collides with our massive spiral neighbor, the Andromeda galaxy, in 4 billion years.

Host: Frank Summers, Space Telescope Science Institute  
Recorded live on Tuesday, February 2, 2021  
More information: [www.stsci.edu/public-lectures](http://www.stsci.edu/public-lectures)

[Transcript Link](#)

2021 01 22 Hubble Space Telescope <https://youtu.be/ANLScWHQEBA> The Darkest Secrets of the Universe Raja GuhaThakurta, University of California–Santa Cruz

The cosmos contains many mysteries that intrigue even the most experienced researchers. The interplay between known and unknown constantly shifts and aligns. For example, there lies a hidden connection between dark matter, the Periodic Table of elements, cosmic inflation, and Schrödinger's Cat. Other confounding conundrums include galaxy cannibalism, black holes, gravitational lensing, and gravitational waves. Join Dr. GuhaThakurta as these dark secrets of the universe are revealed and explored.

Host: Frank Summers, Space Telescope Science Institute  
Recorded live on Tuesday, January 19, 2021.  
More information: [www.stsci.edu/public-lectures](http://www.stsci.edu/public-lectures)

[Transcript Link](#)

2021 01 11	Hubble Space Telescope	<a href="https://youtu.be/yfWYXY85mBk">https://youtu.be/yfWYXY85mBk</a>	Ultra Deep Field Looking Out into Space, Looking Back into Time	<p>This six-minute visual exploration of the Hubble Ultra Deep Field showcases the characteristics and contents of this landmark observation, as well as its four-dimensional nature across both space and time. In particular, galaxies are seen to more than 12 billion light-years away / 12 billion years ago, allowing astronomers to trace the development of galaxies across cosmic time.</p> <p>A deep field is a long exposure on a small field of view to observe the faintest objects possible. The Ultra Deep Field (UDF) represents the deepest visible light observation of the universe (deeper views are extensions / subsets of this 2004 image). Containing about 10,000 sources, the UDF provides a statistical sample of galaxies across the universe.</p> <p>In this sequence, the three-dimensional model of the UDF data set uses NASA and other images and source catalogs. More than 5000 galaxies with cross-matched image cutout and distance measure are placed in their correct relative position throughout the long thin pyramid of the observation. To keep the fly-throughs succinct, the depth of the pyramid is shortened by a factor of a few hundred.</p> <p>The visualization encompasses a suite of UDF science points in a single camera shot journey. Zooms, fades, fly-throughs, and overlay graphics visually express and highlight aspects such as the field of view, long exposure time, variety of galaxies, and extent across the observable universe. The critical idea that "looking farther out into space is also looking farther back in time" leads to examples, drawn</p>	<a href="#">Transcript Link</a>
2020 12 04	Hubble Space Telescope	<a href="https://youtu.be/H2sihmvLw">https://youtu.be/H2sihmvLw</a>	Shaping Galaxies with Supermassive Black Hole Winds	<p>Mitchell Revalski, Space Telescope Science Institute</p> <p>Galaxies are a diverse population with a wide range of sizes, shapes, intensity of star formation, and masses of the supermassive black holes at their cores. These seemingly distinct characteristics can show intriguing correlations. A key ingredient in forming those relationships may be supermassive black hole winds, which are energetic flows of gas powered by the light emitted from growing black holes. These winds can sculpt the shapes of galaxies, determine the rate at which stars are able to form, and push heavy elements into the voids between galaxies. Join us for a visual exploration of what recent observations and simulations have taught us about these winds and how they may influence the development of galaxies.</p> <p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, December 1, 2020 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	<a href="#">Transcript Link</a>
2020 12 03	Hubble Space Telescope	<a href="https://youtu.be/fk1QWQ50ZWU">https://youtu.be/fk1QWQ50ZWU</a>	Fading Stingray Nebula	<p>This video shows the drastic changes to the planetary nebula Hen 3-1357, nicknamed the Stingray nebula, over two decades as captured by NASA's Hubble Space Telescope. The nebula is first seen as it was in 1996, with filaments and tendrils of gas glowing bright blue at its center. The wavy outer edges of gas also stand out against the dark background of the universe. The 1996 portrait then transitions to Hubble's 2016 image, which shows a much dimmer nebula lacking in the pronounced wavy edges.</p> <p>Credit: NASA, ESA, B. Balick (University of Washington), M. Guerrero (Instituto de Astrofísica de Andalucía), and G. Ramos-Larios (Universidad de Guadalajara), and J. DePasquale (STScI)</p>	<a href="#">Transcript Link</a>

2020 11 25	Hubble Space Telescope	<a href="https://youtu.be/EtHArjpbfT4">https://youtu.be/EtHArjpbfT4</a>	Stellar Greetings from Globular Cluster M79	<p>This video starts with a wide-field view of the sky covering the constellations of Orion, the hunter, and Lepus, the hare. The view zooms down to the relatively tiny field of the Hubble image of globular star cluster Messier 79 (M79). The sequence then dissolves to a visualization of a rotating star cluster that provides three-dimensional perspective. The simulated star cluster is modeled to reflect the number, color, and distribution of stars in M79, but not its exact structure. Finally, the scene pulls back to reveal a special holiday greeting.</p> <p>Credit: NASA, ESA, and F. Summers, J. DePasquale, D. Player, Z. Levay and G. Bacon (STScI)</p>	<a href="#">Transcript Link</a>
2020 11 12	Hubble Space Telescope	<a href="https://youtu.be/EwzdkX1ekcM">https://youtu.be/EwzdkX1ekcM</a>	Hearing The Light Astronomy Data Sonification	<p>Hearing The Light: How Sonification Deepens our Understanding of the Cosmos and Makes Astronomy More Accessible Scott Fleming, Clara Brasseur, and Jennifer Kotler, Space Telescope Science Institute</p> <p>Sonification is the process of representing data as sound. Rather than looking at a chart or graph, the underlying information can be transformed into audio and analyzed by listening. This technique offers exciting new ways for scientists to study data, and provides blind and low-vision people a new level of data access and analysis. Astronify is our tool for sonifying archival data from NASA missions. We will discuss the goals of the project and describe how our software converts measurements of a star's changes in brightness to changes in pitch. After learning about Astronify, the audience is invited to play in our online game show to see how well one can hear and identify transiting exoplanets and stellar flares in real data from the Kepler Space Telescope.</p> <p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, November 10, 2020 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	<a href="#">Transcript Link</a>

2020 10 08 Hubble Space Telescope <https://youtu.be/QIHxdXxGDsc> The Nancy Grace Roman Space Telescope Jennifer Wiseman & Julie McEnery, NASA Goddard Space Flight Center [Transcript Link](#)

NASA recently announced that its next-generation space telescope, formerly called the Wide Field Infrared Survey Telescope (WFIRST), has been named in honor of Dr. Nancy Grace Roman. As NASA's first Chief Astronomer, Dr. Roman paved the way for space telescopes focused on the broader universe. She is credited with making the Hubble Space Telescope a reality, leading to her nickname as the "mother of Hubble."

When it launches in the mid-2020s, NASA's Nancy Grace Roman Space Telescope will create enormous space panoramas of unprecedented detail. The mission's wide field of view will enable scientists to conduct sweeping cosmic surveys, yielding a wealth of information about celestial realms from our solar system to the edge of the observable universe.

Roman will survey the sky in infrared light, which is invisible to human eyes. It will have the same resolution in near-infrared wavelengths as NASA's Hubble Space Telescope, but will capture a field of view about 100 times larger.

Roman's surveys will deliver new insights into the history and structure of the universe, including the mysterious "dark energy" that is making space itself expand faster and faster. This powerful new observatory will also build on the broad foundation of work

2020 09 02 Hubble Space Telescope [https://youtu.be/d2V\\_A60uuKI](https://youtu.be/d2V_A60uuKI) Sailing across the Local Universe with ULLYSES Sailing across the Local Universe with ULLYSES: A Hubble Program to Observe Ultraviolet Light from Young Stars Will Fischer, Space Telescope Science Institute [Transcript Link](#)

We've all heard that a picture is worth a thousand words. Astronomers go further and say that a spectrum is worth a thousand pictures. Spectra show how bright a target is over a range of colors, revealing the temperature, composition, and other properties of planets, stars, galaxies, dust, and gas. With the help of astronomy researchers around the world, the Space Telescope Science Institute is carrying out a major program called ULLYSES that is obtaining spectra of young stars in our galaxy and beyond using the Hubble Space Telescope. It focuses on ultraviolet spectroscopy, one of Hubble's unique strengths. Join us to learn about stellar spectroscopy and our ongoing epic journey with ULLYSES.

Host: Frank Summers, Space Telescope Science Institute  
Recorded live on Tuesday, September 1, 2020  
More information: [www.stsci.edu/public-lectures](http://www.stsci.edu/public-lectures)

2020 08 05	Hubble Space Telescope	<a href="https://youtu.be/qUBEPdkwizk">https://youtu.be/qUBEPdkwizk</a>	Armchair Astrophysics Finding Physics Far and Wide	Quyên Hart, Space Telescope Science Institute	<a href="#">Transcript Link</a>
<p>What do echoes, bubbles, and fireworks have to do with astrophysics? What do highway traffic jams and galaxy spiral arms have in common? Some of your everyday experiences can be explained using some basic physics concepts, and some of our cosmic observations have analogues in what we see around us. The laws of physics are universal, so astronomers apply our understanding of physics here on Earth to everything in the universe. Join us to explore the physics of familiar phenomena and to learn where the same physics is working 'out there' in the cosmos. Armchairs are not required, but highly recommended.</p>					
<p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, August 4, 2020 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>					
2020 07 08	Hubble Space Telescope	<a href="https://youtu.be/R_VY9g7aKmw">https://youtu.be/R_VY9g7aKmw</a>	'Oumuamua A Mysterious Interstellar Interloper	Amaya Moro-Martin, Space Telescope Science Institute	<a href="#">Transcript Link</a>
<p>During the formation of our solar system, a tremendous number of asteroids, comets, and planetesimals were ejected into interstellar space by gravitational encounters. If extrasolar planetary systems, which are now known to be quite common, experienced a similar development, then our galaxy should be teeming with these expelled objects. Astronomers were perplexed that none had been found passing through our solar system.</p>					
<p>Then, in 2017, the discovery of 'Oumuamua transformed the situation from puzzlement to bewilderment. Observations with a wide range of telescopes followed the brightness and trajectory of this first interstellar interloper but left important questions about its origin and composition unanswered. Further, what process was responsible for the non-gravitational acceleration found in its unbound orbit?</p>					
<p>This cosmic visitor will not return to provide explanations. Thus, the intriguing inquiries 'Oumuamua left behind will remain as we seek out and study other guests from beyond our solar system.</p>					
<p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Tuesday, July 7, 2020 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>					

2020 06 04	Hubble Space Telescope	<a href="https://youtu.be/QWfzEk5m6TY">https://youtu.be/QWfzEk5m6TY</a>	Rubin's Galaxy A Gentle Giant Spiral Galaxy	Benne Holwerda, University of Louisville	<p>In the 1980s, astronomer Vera Rubin discovered that the spiral galaxy UGC 2885 is the most extended disk galaxy in the local universe. In addition, this galaxy is close enough for high-resolution Hubble studies. As such, this galaxy provides an intriguing test of the observed scaling relationships between the characteristics of a galaxy and the characteristics of its globular star cluster population. As part of Hubble's 30th anniversary commemoration, a new, 74-megapixel, mosaic image of the newly nicknamed "Rubin's Galaxy" was released in January 2020. Dr. Holwerda will describe the observation and analysis, with first results on the globular cluster population of this massive disk galaxy.</p> <p>Host: Frank Summers, Space Telescope Science Institute Recorded live on Wednesday, June 3, 2020 More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	<a href="#">Transcript Link</a>
2020 05 13	Hubble Space Telescope	<a href="https://youtu.be/WoFQTYUSiU">https://youtu.be/WoFQTYUSiU</a>	Cosmic Reef NGC 2014 & NGC 2020 [Ultra HD]	<p>This science visualization presents the dramatic landscape of two nebulas in the Large Magellanic Cloud. The video, based on images by NASA's Hubble Space Telescope, takes viewers on a close-up tour of the nebulas' three-dimensional structures, as envisioned by scientists and artists.</p> <p>The movie begins with the Hubble view of NGC 2014 (lower left) and NGC 2020 (upper right). The region has been nicknamed the "Cosmic Reef," because of its resemblance to an undersea world. The camera then flies past myriad stars for a close-up look at NGC 2014. The first stop is the bubble of hot gas on the left that has a coral-like appearance. Energetic ultraviolet light from the system's most massive stars has heated the gas, while strong stellar winds (streams of charged particles) help create its bubble structure.</p> <p>The journey continues into the heart of the nebula, home to extraordinarily massive and bright stars. The glowing gas in this region is bathed in the stars' intense luminosity. In contrast, the dark, denser gas is resisting that radiation, and is blown back to form craggy, mountainous shapes. The virtual flight moves past ridges, valleys, and pockets of new star formation.</p> <p>The camera then rises up and over a ridge of NGC 2014, revealing the three-dimensional structure of neighboring NGC 2020. The Wolf-Rayet star at its core is the mammoth, intensely hot source of this nebula. Episodes of outbursts from the young star have produced cloudy rings and clumps in the bright blue gas. While Hubble views</p>	<a href="#">Transcript Link</a>	
2020 04 24	Hubble Space Telescope	<a href="https://youtu.be/calC3hIMApQ">https://youtu.be/calC3hIMApQ</a>	Hubble Space Telescope 30th Anniversary Image Unveiling	<p>Presenting the Hubble Space Telescope 30th anniversary image!</p> <p>Join us for a journey through space! Dr. Frank Summers and Dr. Elena Sabbi describe the science and the visual splendor of the "Cosmic Reef", an image that commemorates Hubble's 30 years of observing the cosmos.</p> <p>Recorded live on Friday, April 24, at 1 p.m.</p>	<a href="#">Transcript Link</a>	

2020 04 24 Hubble Space Telescope <https://youtu.be/1qO6SG1Hzyl> Cosmic Reef NGC 2014 & NGC 2020 This science visualization presents the dramatic landscape of two nebulas in the Large Magellanic Cloud. The video, based on images by NASA's Hubble Space Telescope, takes viewers on a close-up tour of the nebulas' three-dimensional structures, as envisioned by scientists and artists. [Transcript Link](#)

The movie begins with the Hubble view of NGC 2014 (lower left) and NGC 2020 (upper right). The region has been nicknamed the "Cosmic Reef," because of its resemblance to an undersea world. The camera then flies past myriad stars for a close-up look at NGC 2014. The first stop is the bubble of hot gas on the left that has a coral-like appearance. Energetic ultraviolet light from the system's most massive stars has heated the gas, while strong stellar winds (streams of charged particles) help create its bubble structure.

The journey continues into the heart of the nebula, home to extraordinarily massive and bright stars. The glowing gas in this region is bathed in the stars' intense luminosity. In contrast, the dark, denser gas is resisting that radiation, and is blown back to form craggy, mountainous shapes. The virtual flight moves past ridges, valleys, and pockets of new star formation.

The camera then rises up and over a ridge of NGC 2014, revealing the three-dimensional structure of neighboring NGC 2020. The Wolf-Rayet star at its core is the mammoth, intensely hot source of this nebula. Episodes of outbursts from the young star have produced cloudy rings and clumps in the bright blue gas. While Hubble views

2020 04 24 Hubble Space Telescope <https://youtu.be/ySwDNiBghCo> Pan Across NGC 2014 & NGC 2020 This video pans across a diverse landscape of colorful, iridescent gases, streamers of dust, and a plethora of brilliant newborn stars in the nebula NGC 2014, located 163,000 light-years away in the Large Magellanic Cloud, a satellite galaxy of our Milky Way. The camera then sweeps toward a blue ring of glowing oxygen in neighboring nebula NGC 2020. The blue gas is formed by a torrential gaseous outflow from a lone, massive, super-hot star at its center. [Transcript Link](#)

Credit: NASA, ESA, and A. Pagan (STScI)

2020 04 24 Hubble Space Telescope <https://youtu.be/PoSgO-5lik4> Zoom to NGC 2014 & NGC 2020 This video begins by zooming into the Large Magellanic Cloud, a satellite galaxy of our Milky Way, located 163,000 light-years away. The small galaxy is ablaze with new star formation. The camera zooms up on one such region, called NGC 2014, which is full of colorful, glowing gases energized by a central cluster of newborn stars. The blue, ring-like feature at lower left (NGC 2020) is formed by a torrential gaseous outflow from a lone, massive, super-hot star at its center. [Transcript Link](#)

Credit: NASA, ESA, and A. Pagan (STScI)

Acknowledgement: A. Fujii and Digitized Sky Survey

2020 02 25	Hubble Space Telescope	<a href="https://youtu.be/qDXUsLnYhxU">https://youtu.be/qDXUsLnYhxU</a>	The Hubble Space Telescope Three Decades of Discovery	<p>This montage of more than 600 images from the Hubble Space Telescope celebrates the telescope's 30 years of discovery. From our own cosmic neighborhood to the far reaches of the universe, Hubble has opened our eyes to breathtaking new views of the cosmos. The rapid sequence echoes Hubble's fast pace of exploration. Though numerous, these images are just a glimpse of the data collected by Hubble over the past 30 years, and only a tiny sliver of our vast universe.</p> <p><a href="https://hubblesite.org/30">https://hubblesite.org/30</a></p> <p>CREDITS:  NASA, ESA, D. Player, J. DePasquale, and M. Carruthers (STScI)  Music: J. DePasquale</p>	<a href="#">Transcript Link</a>
2020 01 05	Hubble Space Telescope	<a href="https://youtu.be/Qm1VsCnIMK8">https://youtu.be/Qm1VsCnIMK8</a>	Crab Nebula The Multiwavelength Structure of a Pulsar Wind Nebula	<p>This visualization features a three-dimensional multiwavelength representation of the Crab Nebula, a pulsar wind nebula that is the remains of an exploded star. The movie is based on images from NASA's three Great Observatories: the Chandra X-ray Observatory and the Hubble and Spitzer Space Telescopes.</p> <p>The movie begins by showing the Crab Nebula in context, pinpointing the location of the observed supernova in the constellation Taurus. This view zooms in to present the Hubble, Spitzer, and Chandra images of the Crab Nebula, each highlighting one of the nested structures in the system.</p> <p>The video then begins a slow buildup of the three-dimensional X-ray structure, showing the pulsar and disk of energized material, and adding jets of particles firing off from opposite sides of the energetic dynamo.</p> <p>Appearing next is a rotating infrared view of a glowing cloud of emission, called synchrotron radiation, enveloping the pulsar system. This distinctive form of radiation occurs when streams of charged particles spiral around the pulsar's magnetic field lines.</p> <p>The visible-light outer shell of the Crab Nebula appears next. Looking like a cage around the entire system, this shell of glowing gas consists of tentacle-shaped filaments of ionized oxygen. The tsunami of particles unleashed by the pulsar is pushing on this expanding debris cloud like an animal rattling its cage.</p>	<a href="#">Transcript Link</a>

2019 12 13	Hubble Space Telescope	<a href="https://youtu.be/LYFYeVgGhvk">https://youtu.be/LYFYeVgGhvk</a>	Zoom and Pan of the Coma Cluster	<p>This video zooms into and then pans across a Hubble Space Telescope mosaic of the immense Coma cluster of over 1,000 galaxies, located 300 million light-years from Earth, revealing thousands of globular star clusters (circled in green).</p> <p>Hubble was used to do a comprehensive census of the cluster's most diminutive members: a whopping 22,426 globular star clusters (circled in green). Among the earliest homesteaders of the universe, globular star clusters are snow-globe-shaped islands of several hundred thousand ancient stars. The survey found the globular clusters scattered in space between the galaxies. They have been orphaned from their home galaxy due to galaxy near-collisions inside the traffic-jammed galaxy cluster. Astronomers will use the globular cluster field for mapping the distribution of matter and dark matter in the Coma galaxy cluster.</p> <p>Read the news release: <a href="https://hubblesite.org/contents/news-releases/2018/news-2018-44.html">https://hubblesite.org/contents/news-releases/2018/news-2018-44.html</a></p> <p>Credit: NASA, ESA, and J. DePasquale and G. Bacon (STScI)</p>	<a href="#">Transcript Link</a>
2019 11 01	Hubble Space Telescope	<a href="https://youtu.be/qVTgWPFRQCo">https://youtu.be/qVTgWPFRQCo</a>	Zoom Into the Triangulum Galaxy (M33)	<p>Fly across the local galactic neighborhood to the Triangulum galaxy (M33), a smaller spiral than our Milky Way galaxy. Zoom in first on one of M33's bright regions of star birth, nebula NGC 604, glowing with hot ionized hydrogen gas. The remarkable ability of NASA's Hubble Space Telescope to resolve millions of individual stars is on display in this pan across M33's dense star field.</p> <p>Read the press release: <a href="https://hubblesite.org/contents/news-releases/2019/news-2019-01.html">https://hubblesite.org/contents/news-releases/2019/news-2019-01.html</a></p> <p>Credits: NASA, ESA, and G. Bacon (STScI)</p>	<a href="#">Transcript Link</a>
2019 10 16	Hubble Space Telescope	<a href="https://youtu.be/chBobpb7wug">https://youtu.be/chBobpb7wug</a>	Hubble Timelapse of Interstellar Comet 2I Borisov	<p>This is a time-lapse sequence compressing Hubble Space Telescope observations of Comet 2I/Borisov, spanning a seven-hour period. As the second known interstellar object to enter our solar system, the comet is moving along at a breakneck speed of 110,000 miles per hour. To photograph the comet Hubble has to track it, like a photographer tracking a racetrack horse. Therefore, background stars are streaked in the exposure frames. An artificial satellite also crosses the field of view. Hubble reveals a central concentration of dust around an unseen solid icy nucleus. Comet 2I/Borisov is only the second such interstellar object known to have passed through the solar system. In 2017, the first identified interstellar visitor, an object dubbed 'Oumuamua, swung within 24 million miles of the Sun before racing out of the solar system.</p> <p>Read the press release: <a href="https://hubblesite.org/contents/news-releases/2019/news-2019-53">https://hubblesite.org/contents/news-releases/2019/news-2019-53</a></p> <p>Credit: NASA, ESA, and D. Jewitt (UCLA)</p>	<a href="#">Transcript Link</a>

2019 09 25	Hubble Space Telescope	<a href="https://youtu.be/y629xwYL06g">https://youtu.be/y629xwYL06g</a>	Hubble Legacy Field - Zoom Out	<p>This video begins with a view of the thousands of galaxies in the Hubble Ultra Deep Field and slowly zooms out to reveal the larger Hubble Legacy Field, containing 265,000 galaxies. The Hubble Legacy Field combines 16 years' worth of Hubble observations into a single image that represents the largest and most comprehensive "history book" of galaxies ever made. They stretch back through 13.3 billion years of time to just 500 million years after the universe's birth in the big bang.</p> <p>Read the news release: <a href="https://hubblesite.org/contents/news-releases/2019/news-2019-17.html">https://hubblesite.org/contents/news-releases/2019/news-2019-17.html</a></p> <p>Credit: NASA, ESA, G. Illingworth (University of California, Santa Cruz), and G. Bacon (STScI)</p>	<a href="#">Transcript Link</a>
2019 09 17	Hubble Space Telescope	<a href="https://youtu.be/vDGAA YCtmaY">https://youtu.be/vDGAA YCtmaY</a>	The Astronomer's Toolkit	<p>Brandon Lawton of the Space Telescope Science Institute</p> <p>For thousands of years, astronomers have employed increasingly precise angular measures to track the positions of stars in the night sky. The invention of the telescope, just a few hundred years ago, greatly expanded our view beyond what the human eye could see. Technology, in the forms of photography, electronics, digital detectors, and computer analysis, brought revolutions to our capabilities and knowledge. Join us for an exploration of the modern tools and methods used by astronomers with highlights of the recent results they have enabled. In addition, get acquainted with several hands-on tools that you can use to explore authentic NASA data.</p> <p>Host: Dr. Frank Summers of the Space Telescope Science Institute</p> <p>Recorded live on Tuesday, September 3, 2019, at the Space Telescope Science Institute in Baltimore, Maryland, U.S.A.</p> <p>More information: <a href="http://www.stsci.edu/public-lectures">www.stsci.edu/public-lectures</a></p>	<a href="#">Transcript Link</a>
2019 09 12	Hubble Space Telescope	<a href="https://youtu.be/JDDbN8xnjE">https://youtu.be/JDDbN8xnjE</a>	Video of Moons Circling Saturn	<p>This Hubble time-lapse movie shows the orbits of some of Saturn's icy moons as they circle the planet over an 18-hour period. The video is composed of 33 Hubble snapshots of the planet, taken June 19 to 20, 2019, by the Wide Field Camera 3. The closer the moon is to Saturn, the faster it orbits, according to the laws of gravity.</p> <p>Read the news release: <a href="https://hubblesite.org/contents/news-releases/2019/news-2019-43">https://hubblesite.org/contents/news-releases/2019/news-2019-43</a></p> <p>Credit: NASA, ESA, A. Simon (Goddard Space Flight Center), M.H. Wong (University of California, Berkeley), the OPAL Team, and J. DePasquale (STScI)</p>	<a href="#">Transcript Link</a>

2019 09 11 Hubble Space Telescope <https://youtu.be/ix1Izur2QLQ> Flight Through the Orion Nebula in Infrared Light This visualization explores the Orion Nebula as seen in infrared-light observations from the Spitzer Space Telescope. This movie is designed to be compared and contrasted against the companion movie using visible-light observations from the Hubble Space Telescope. [Transcript Link](#)

As the camera flies into the star-forming region, it reveals a glowing gaseous landscape that has been illuminated and carved by the high-energy radiation and strong stellar winds from the massive hot stars in the central cluster. The infrared observations generally show cool temperature gas at a deep layer that shows the full bowl shape of the nebula. In addition, the infrared showcases many faint stars that shine primarily at longer wavelengths.

Visualization: F. Summers, G. Bacon, Z. Levay, J. DePasquale, L. Hustak, M. Robberto and M. Gennaro (STScI), R. Hurt (Caltech/IPAC)

Music: "Dvorak - Serenade for Strings in E Major", Advent Chamber Orchestra, CC BY-SA

2019 09 11 Hubble Space Telescope <https://youtu.be/KEld9edjw0c> Flight Through the Orion Nebula in Visible Light This visualization explores the Orion Nebula as seen in visible-light observations from the Hubble Space Telescope. This movie is designed to be compared and contrasted against the companion movie using infrared-light observations from the Spitzer Space Telescope. [Transcript Link](#)

As the camera flies into the star-forming region, it reveals a glowing gaseous landscape that has been illuminated and carved by the high-energy radiation and strong stellar winds from the massive hot stars in the central cluster. The high-resolution visible observations show fine details including the wispy bow shocks and tadpole-shaped proplyds.

Visualization: F. Summers, G. Bacon, Z. Levay, L. Frattare, M. Robberto and L. Hustak (STScI)

Acknowledgement: R. Gendler

Music: "Dvorak - Serenade for Strings in E Major", Advent Chamber Orchestra, CC BY-SA

2019 08 23	Hubble Space Telescope	<a href="https://youtu.be/SSOdXbAtvIQ">https://youtu.be/SSOdXbAtvIQ</a>	Animation of Hubble's Global View of Jupiter	<p>This animation of a rotating Jupiter was assembled from a Hubble Space Telescope photographic mosaic of almost the entire planet. The resulting flat map was computer-projected onto a sphere to create a rotating globe (excluding the polar regions above 80 degrees latitude). Jupiter completes one rotation every 9.8 hours.</p> <p>The giant planet's trademark Great Red Spot is the orange-colored oval that is as big as Earth. Distinct parallel bands of roiling clouds dominate our view above Jupiter's deep hydrogen/helium atmosphere. The colorful cloud bands are confined by jet streams blowing in opposite directions at different latitudes. A characteristic string of white oval-shaped anticyclones appears along one latitude band in the planet's southern hemisphere.</p> <p>Hubble takes images of the entire planet as part of the Outer Planets Atmospheres Legacy program, or OPAL. This program provides yearly Hubble global views of the outer planets to look for changes in their storms, winds, and clouds.</p> <p>Read the news release: <a href="https://hubblesite.org/contents/news-releases/2019/news-2019-36">https://hubblesite.org/contents/news-releases/2019/news-2019-36</a></p> <p>Credit: NASA, ESA, A. Simon (Goddard Space Flight Center), M.H. Wong (University of California, Berkeley), and L. Hustak (STScI)</p>	<a href="#">Transcript Link</a>
2019 08 12	Hubble Space Telescope	<a href="https://youtu.be/sQ4-YTCYOO8">https://youtu.be/sQ4-YTCYOO8</a>	Our Colorful Universe Translating Cosmic Light	<p>Our Colorful Universe: Translating Cosmic Light Joseph DePasquale of the Space Telescope Science Institute</p> <p>Vivid and fantastical images of the cosmos can amaze and astound both scientists and the public alike. Have you ever wondered how the data from the Hubble Space Telescope and other observatories are transformed into these celestial works of art? How is light beyond the visible spectrum presented and combined to create multi-wavelength masterpieces? And does the strange term “false color” mean that the images are not real? Join us for an engaging discussion exploring how these colorful cosmic images are created, and delve into the broader context of the history of our understanding of light.</p> <p>Host: Dr. Frank Summers of the Space Telescope Science Institute</p> <p>Recorded live on Tuesday, July 2, 2019, at the Space Telescope Science Institute in Baltimore, Maryland, U.S.A.</p> <p>More information: <a href="https://hubblesite.org/resource-galle...">https://hubblesite.org/resource-galle...</a></p>	<a href="#">Transcript Link</a>

2019 05 20	Hubble Space Telescope	<a href="https://youtu.be/HWQslu4S5eQ">https://youtu.be/HWQslu4S5eQ</a>	Constructing the Hertzsprung-Russell Diagram for Globular Star Cluster	A Hubble Space Telescope color image of the core of the globular star cluster Omega Centauri is used to construct a Hertzsprung-Russell diagram of the stellar populations in the cluster. When stars are sorted by brightness and color they can be used to create a graph that astronomers use to trace stellar evolution.	<a href="#">Transcript Link</a>
				Read the news release: <a href="http://hubblesite.org/news_release/news/2010-28">http://hubblesite.org/news_release/news/2010-28</a>	
2019 05 20	Hubble Space Telescope	<a href="https://youtu.be/jkssboGLV1s">https://youtu.be/jkssboGLV1s</a>	Hubble Chronicles Brightening of Ring around an Exploded Star	This time-lapse video sequence of Hubble Space Telescope images reveals dramatic changes in a ring of material around the exploded star Supernova 1987A.	<a href="#">Transcript Link</a>
				The images, taken from 1994 to 2016, show the effects of a shock wave from the supernova blast smashing into the ring. The ring begins to brighten as the shock wave hits it. The ring is about one light-year across.	
				Discovered in 1987, Supernova 1987A is the closest observed supernova to Earth since 1604. The exploded star resides 163,000 light-years away in the Large Magellanic Cloud, a satellite galaxy of our Milky Way.	
				Read the news release: <a href="http://hubblesite.org/news_release/news/2017-08">http://hubblesite.org/news_release/news/2017-08</a>	
2019 05 20	Hubble Space Telescope	<a href="https://youtu.be/npLLUKK0aI0">https://youtu.be/npLLUKK0aI0</a>	Visible and Infrared Visualization of the Orion Nebula	This visualization explores the Orion Nebula using both visible and infrared light. Two correlated computer models were created based on visible-light observations from the Hubble Space Telescope and infrared-light observations from the Spitzer Space Telescope.	<a href="#">Transcript Link</a>
				As the camera flies into the star-forming region, the sequence cross-fades back and forth between the visible and infrared views. The glowing gaseous landscape has been illuminated and carved by the high-energy radiation and strong stellar winds from the massive hot stars in the central cluster. The infrared observations generally show cooler temperature gas at a deeper layer of the nebula that extends well beyond the visible image. In addition, the infrared showcases many faint stars that shine primarily at longer wavelengths. The higher resolution visible observations show finer details including the wispy bow shocks and tadpole-shaped proplyds. In this manner, the movie illustrates the contrasting features uncovered by multi-wavelength astronomy.	
				Read the news release: <a href="http://hubblesite.org/news_release/news/2018-04">http://hubblesite.org/news_release/news/2018-04</a>	

2019 05 14	Hubble Space Telescope	<a href="https://youtu.be/gVpORu639Go">https://youtu.be/gVpORu639Go</a>	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.	<a href="#">Transcript Link</a>
				<p>CREDITS:  NASA's Goddard Space Flight Center and K. Jackson;  Music: "Deep Groove" by Danny McCarthy [ASCAP] and Thomas Dill [ASCAP]; Soundcast Music SESAC; Chronic Trax; Killer Tracks Production Music</p>	
2019 04 11	Hubble Space Telescope	<a href="https://youtu.be/C628xyDN40o">https://youtu.be/C628xyDN40o</a>	A Zoom to the Black Hole in M87	A zoom into the giant elliptical galaxy Messier 87 (M87) from a wide field view of the entire galaxy to the supermassive black hole at its core. This series of nine images starts with visible light views, but quickly transitions to radio wavelengths. The final image from the Event Horizon Telescope has a resolution 2500 times better than the Hubble Space Telescope.	<a href="#">Transcript Link</a>
				<p>Visualization: Frank Summers, Space Telescope Science Institute  Music: "First Day of Spring", David Hilowitz, CC BY-NC</p>	
2019 03 29	Hubble Space Telescope	<a href="https://youtu.be/eVagmrA6IUg">https://youtu.be/eVagmrA6IUg</a>	A Galaxy Grouping in 2D and 3D Stephan's Quintet	<p>In 1877, Edouard Stephan discovered a tight visual grouping of five galaxies located in the constellation Pegasus. The galaxies of Stephan's Quintet are both overlapping and interacting, and have become the most famous among the compact groups of galaxies. Astronomers have long known that four of the galaxies (all of which are yellowish-white in this video) form a physical group in space, while the fifth (bluish) is a foreground galaxy. In addition, a sixth galaxy (yellowish-white and on the far left) is likely to be part of the physical grouping. Hence, this 2D quintet that is a 3D quartet may actually be a 2D sextet that is a 3D quintet.</p> <p>This visualization makes apparent the spatial distribution of these galaxies. The video starts with a view that matches our 2D perspective. As the sequence travels in 3D, the foreground blue spiral, NGC 7320, quickly passes by the camera. The possible sixth galaxy member on the left, NGC 7320C, is seen at roughly the same distance as the remaining four galaxies. The camera turns to pass between two strongly interacting galaxies, NGC 7319 (left) and NGC 7318B (right), with each galaxy's spiral structure distorted by the gravitational interaction. In contrast, NGC 7318B overlaps in 2D with the more distant elliptical NGC 7318A, but does not have a strong interaction. The other elliptical, NGC 7317, is also seen as more distant than the strongly interacting pair. In 3D, the four or five galaxies in this group are gathered together by their mutual gravity, and may collide and merge together in the future.</p> <p>Credits: G. Bacon, J. DePasquale, F. Summers, Z. Levay (STScI)</p>	<a href="#">Transcript Link</a>

2019 03 08 Hubble Space Telescope <https://youtu.be/ikdXEcMligA> Flyby of the Whirlpool Galaxy

The Whirlpool Galaxy, also known as Messier 51, is one of the nearest and best examples of a grand design spiral galaxy. Located about 25 million light-years away, the face-on galaxy exposes the full details of its swirling structures of stars, gas, and dust. The striking symmetry of its spiral pattern may be due to a gravitational interaction with a companion dwarf galaxy, NGC 5195, which is not included in this visualization.

[Transcript Link](#)

The Hubble Space Telescope's high-resolution view of this magnificent spiral galaxy comes to life in this 3D visualization. The flight across the pancake-shaped disk features the older, yellow stars toward the center and the younger, bluer stars in the outer regions. Dark dust lanes outline the spiral arms, along which are strewn an array of bright pink star-forming regions.

Credit: F. Summers, J. DePasquale, and D. Player (STScI)

2019 02 06 Hubble Space Telescope <https://youtu.be/4m4V8k2yWx4> Our Place in the Stars

The video referenced in the lecture may be found here: <https://www.youtube.com/watch?v=GO5FwsblpT8>

[Transcript Link](#)

Our Place in the Stars  
Amaya Moro-Martin of the Space Telescope Science Institute

What is our place in the stars? How did we get here? Are we alone? Dr. Amaya Moro-Martin will address these essential questions, which drive scientific and philosophical pursuits—and each new answer blossoms into yet more questions that seed further inquiries. This is a journey of self-discovery, full of wonders and wanderers, and makes us reflect on our role to enable exploration to continue.

Host: Dr. Frank Summers

Recorded live on Tuesday, February 5, 2019, at the Space Telescope Science Institute in Baltimore, Maryland, U.S.A.

More information: [http://hubble.stsci.edu/about\\_us/public\\_talks/](http://hubble.stsci.edu/about_us/public_talks/)

2019 01 24	Hubble Space Telescope	<a href="https://youtu.be/M8XQFVyYfL4">https://youtu.be/M8XQFVyYfL4</a>	Shedding New Light on the Whirlpool Galaxy	<p>The Whirlpool Galaxy is a magnificent spiral galaxy that has been studied across the spectrum by NASA's Great Observatories. This remarkable video uses two dimensional images and three dimensional visualizations to contrast and compare the different views of infrared (Spitzer Space Telescope), visible (Hubble Space Telescope), and X-ray (Chandra X-ray Observatory) observations. Within these spectral bands, each wavelength region illustrates a different component of the stars, gas, and dust that comprise the galaxy. By both separating and combining seven multiwavelength views, astronomers gain a broader and richer look into the detailed structure of a spiral galaxy.</p> <p>Run time: 3 minutes 5 seconds</p> <p>Visualization: Frank Summers, Joseph DePasquale, Dani Player (STScI), Kim Arcand (SAO/CXC), Robert Hurt (Caltech/IPAC)</p> <p>Music: "Cylinder Five", Chris Zabriskie, CC BY 4.0</p> <p>Acknowledgement: NASA's Universe of Learning</p>	<a href="#">Transcript Link</a>
2019 01 10	Hubble Space Telescope	<a href="https://youtu.be/7LDyVXUd2bc">https://youtu.be/7LDyVXUd2bc</a>	Tonight's Sky Has Moved	<p>Starting in 2019, you will find "Tonight's Sky" on Space Telescope Science Institute's YouTube channel:  <a href="https://www.youtube.com/user/spacetelescopevision">https://www.youtube.com/user/spacetelescopevision</a></p> <p>"Tonight's Sky" is a monthly video of constellations you can observe in the night sky. The series is produced by the Space Telescope Science Institute, home of science operations for the Hubble Space Telescope, in partnership with NASA's Universe of Learning.</p>	<a href="#">Transcript Link</a>
2018 11 26	Hubble Space Telescope	<a href="https://youtu.be/QPePOb5zVys">https://youtu.be/QPePOb5zVys</a>	Tonight's Sky December 2018	<p>In December, look for Saturn's iconic rings, and Mercury and Venus's appearances. Eta Cassiopeiae, a double star, is visible with binoculars or a small telescope—look for its gold and blue hues. Finally, don't miss the mid-December Geminid meteor shower, which boasts as many as 60 colorful meteors per hour.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a></p>	<a href="#">Transcript Link</a>
2018 10 24	Hubble Space Telescope	<a href="https://youtu.be/MtHmgnBFZFs">https://youtu.be/MtHmgnBFZFs</a>	Tonight's Sky November 2018	<p>In November, look for Pisces, Aries, and Triangulum in the night sky. Also be sure to catch the Taurid meteor shower, which features 5 to 10 meteors per hour on its peak night of November 5 to 6, and for meteors radiating from the constellation of Leo in the evening of November 17 and early morning of November 18.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a></p>	<a href="#">Transcript Link</a>

2018 10 03	Hubble Space Telescope	<a href="https://youtu.be/DS0FE-ijm74">https://youtu.be/DS0FE-ijm74</a>	Chasing Supernovae with Kepler	Chasing Supernovae with Kepler Gautham Narayan of the Space Telescope Science Institute	<a href="#">Transcript Link</a>
<p>The Kepler spacecraft launched in 2009 with the goal of discovering exoplanets. However, its highly precise brightness measurements can be used for much more science. When Kepler was repurposed as the K2 mission, one team of astronomers decided to use it to hunt for supernovas. By catching the critical first few hours of an exploding star, scientists can learn more about these colossal blasts.</p>					
<p>Host: Dr. Frank Summers</p>					
<p>Recorded live on Tuesday, October 2, 2018 at the Space Telescope Science Institute in Baltimore, Maryland, U.S.A.</p>					
<p>More information: <a href="http://hubble.stsci.edu/about_us/public_talks/">http://hubble.stsci.edu/about_us/public_talks/</a></p>					
2018 09 26	Hubble Space Telescope	<a href="https://youtu.be/jyQKON_JCQ0">https://youtu.be/jyQKON_JCQ0</a>	Tonight's Sky October 2018	This October, look for Pegasus, the great winged horse of Greek mythology, prancing across the autumn night sky. Binoculars and small telescopes will reveal the glowing nucleus and spiral arms of the Andromeda Galaxy, and the Orionid meteor shower peaks on the night of October 21.	<a href="#">Transcript Link</a>
<p>“Tonight’s Sky” is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a></p>					
2018 08 27	Hubble Space Telescope	<a href="https://youtu.be/IY2Rd4hALzk">https://youtu.be/IY2Rd4hALzk</a>	Tonight's Sky September 2018	In September, your binoculars will reveal the rusty surface of Mars, iconic rings of Saturn, the waxing Moon—and the comet Giacobini-Zinner, which passes through the constellation of Auriga.	<a href="#">Transcript Link</a>
<p>“Tonight’s Sky” is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a></p>					
2018 07 25	Hubble Space Telescope	<a href="https://youtu.be/gBOC2-ncxM">https://youtu.be/gBOC2-ncxM</a>	Tonight's Sky August 2018	Save the date to watch the peak of the Perseid meteor shower—an always-anticipated feature of the night sky—August 12 and 13th. This month, backyard telescopes will also reveal sunlight reflecting off the clouds of Venus’s thick atmosphere and the Ring Nebula, an expanding shell of glowing gas in the constellation Lyra.	<a href="#">Transcript Link</a>
<p>“Tonight’s Sky” is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a></p>					

2018 07 23	Hubble Space Telescope	<a href="https://youtu.be/mUQOyI0w0iQ">https://youtu.be/mUQOyI0w0iQ</a>	Milky Way Center in Multiple Wavelengths [UltraHD]	<p>Our solar system and sun is located inside a pancake shaped galaxy. Imagine a scale model where the plane of the Milky Way is a DVD, and the central bulge is a ping pong ball glued in the center. It is this narrow plane that we see across the sky on a sufficiently dark night from Earth, from our vantage point inside it. Dust blocks much of our view. But at other wavelengths astronomers can probe the heart of our galaxy.</p> <p>The center of our Milky Way Galaxy, located 26,000 light-years away, houses a black hole as massive as a million suns, surrounded by very dense nest of stars and bright clouds. The density of stars in the innermost regions of the Milky Way is up to one million times greater than in our portion of the galaxy. This region contains extreme and unusual conditions that can influence the types of stars that reside there. The density of stars and clouds creates streaming patterns. There are large massive star clusters that cannot not be found outside that region. The radiation environment is intense in the galactic center.</p> <p>The near-infrared image (Hubble) shows the knots of cloud edges and emission that mark the plane of our galaxy. The mid-infrared image (Spitzer) highlights the clouds of gas and dust and star forming regions. The X-ray image (Chandra) tracks the most luminous and powerful stars in the area conspicuously revealing the galactic center region itself - including the million-solar mass black hole at the very hub of our galaxy. In addition, several other X-ray emitting locations can be seen, linked to massive star clusters.</p>	<a href="#">Transcript Link</a>
2018 06 29	Hubble Space Telescope	<a href="https://youtu.be/GqYVtr8i5M8">https://youtu.be/GqYVtr8i5M8</a>	Galaxy Collision Simulation [Dome Version]	<p>In this scientific visualization, two spiral galaxies are set on a collision course. As one slices through the other, both are disrupted. The tidal forces of gravity produce long tails of material streaming away from the collision. The central regions relatively quickly fall together and merge. The visualization is based on research data from a supercomputer simulation, with stars shown in yellow and gas shown blue. Time passes at about 30 million years per second, lasting a total of about 1.5 billion years.</p> <p>This version was rendered for a planetarium dome format (polar coordinate hemisphere projection). The camera choreography was designed for uni-directional seating, where there is a common focus point of the audience (front and center, about 60 degrees up).</p> <p>The camera motion is somewhat complex, and can be discerned by watching the movement of the background galaxy field. The camera starts by dropping down to reveal the first galaxy in the front right and then the second galaxy to the front left. The camera also moves in toward the galaxies to get a closer view of the initial collision. After the initial collision, the camera continues to drop slowly, now increasing the distance to the galaxies and tilting a bit to keep the tidal tails on screen as much as possible. The camera also rotates slowly to increase the sweeping feel of the tidal tails passing above.</p> <p>Visualization: Frank Summers, Space Telescope Science Institute</p> <p>Simulation: Chris Mihos, Case Western Reserve University, and Lars</p>	<a href="#">Transcript Link</a>

2018 06 29	Hubble Space Telescope	<a href="https://youtu.be/a9bZ1YtKWg">https://youtu.be/a9bZ1YtKWg</a>	Cruising the Cosmic Web, V2 [Dome Version]	<p>This visualization of a computer simulation showcases the ‘cosmic web’, the large scale structure of the universe. Each bright knot is an entire galaxy, while the purple filaments show where material exists between the galaxies. To the human eye, only the galaxies would be visible, and this visualization allows us to see the strands of material connecting the galaxies and forming the cosmic web.</p> <p>This visualization is based on a scientific simulation of the growth of structure in the universe. The matter, dark matter, and dark energy in a region of the universe are followed from very early times of the universe through to the present day using the equations of gravity, hydrodynamics, and cosmology. The normal matter has been clipped to show only the densest regions, which are the galaxies, and is shown in white. The dark matter is shown in purple. The size of the simulation is a cube with a side length of 134 megaparsecs (437 million light-years).</p> <p>The camera choreography is a straight line path through the simulation. The camera accelerates from a standstill at the start, flies at a constant speed, and then decelerates to a stop at the end. The “cruising speed” of the camera is 250,000 parsecs per frame, or about 20 million light-years per second (at 24 frames per second). That’s more than 600 trillion times the speed of light. Buckle your seatbelts.</p> <p>The simulation is periodic, and the camera flies through it several times. A skew angle is used to avoid showing the same structures on</p>	<a href="#">Transcript Link</a>
2018 06 29	Hubble Space Telescope	<a href="https://youtu.be/FVhd-7D4T-M">https://youtu.be/FVhd-7D4T-M</a>	Flight Through the Orion Nebula in Visible Light - Dome Version	<p>This version of "Flight Through the Orion Nebula in Visible Light" has been rendered onto a hemispherical format (azimuthal equidistant projection) for use in planetarium domes. The black circular mask in the images denotes the edge of the hemispherical dome projection. The video is for preview purposes. Planetariums will want to download the frames and the audio files from HubbleSite: <a href="http://hubblesite.org/video/1155">http://hubblesite.org/video/1155</a></p> <p>This visualization explores the Orion Nebula as seen in visible-light observations from the Hubble Space Telescope. This movie is designed to be compared and contrasted against the companion movie using infrared-light observations from the Spitzer Space Telescope.</p> <p>As the camera flies into the star-forming region, it reveals a glowing gaseous landscape that has been illuminated and carved by the high-energy radiation and strong stellar winds from the massive hot stars in the central cluster. The high-resolution visible observations show fine details including the wispy bow shocks and tadpole-shaped proplyds.</p>	<a href="#">Transcript Link</a>

2018 06 29 Hubble Space Telescope <https://youtu.be/63Ys1rOdbVU> Flight Through the Orion Nebula in Infrared Light - Dome Version

This version of "Flight Through the Orion Nebula in Infrared Light" has been rendered onto a hemispherical format (azimuthal equidistant projection) for use in planetarium domes. The black circular mask in the images denotes the edge of the hemispherical dome projection. The video is for preview purposes. Planetariums will want to download the frames and the audio files from HubbleSite: <http://hubblesite.org/video/1154>

[Transcript Link](#)

This visualization explores the Orion Nebula as seen in infrared-light observations from the Spitzer Space Telescope. This movie is designed to be compared and contrasted against the companion movie using visible-light observations from the Hubble Space Telescope.

As the camera flies into the star-forming region, it reveals a glowing gaseous landscape that has been illuminated and carved by the high-energy radiation and strong stellar winds from the massive hot stars in the central cluster. The infrared observations generally show cool temperature gas at a deep layer that shows the full bowl shape of the nebula. In addition, the infrared showcases many faint stars that shine primarily at longer wavelengths.

2018 06 29 Hubble Space Telescope <https://youtu.be/BpkUa pPZfEU> Flight Through the Orion Nebula in Visible and Infrared Light - Dome Version

This version of "Flight Through the Orion Nebula in Visible and Infrared Light" has been rendered onto a hemispherical format (azimuthal equidistant projection) for use in planetarium domes. The black circular mask in the images denotes the edge of the hemispherical dome projection. The video is for preview purposes. Planetariums will want to download the frames and the audio files from the HubbleSite page: <http://hubblesite.org/video/1153>

[Transcript Link](#)

This visualization explores the Orion Nebula using both visible and infrared light. The sequence begins with a wide-field view of the sky showing the plane of our Milky Way Galaxy, then zooms down to the scale of the Orion Nebula. The visible light observation (from the Hubble Space Telescope) and the infrared light observation (from the Spitzer Space Telescope) are compared first in two-dimensional images, and then in three-dimensional models.

As the camera flies into the star-forming region, the sequence cross-fades back and forth between the visible and infrared views. The glowing gaseous landscape has been illuminated and carved by the high energy radiation and strong stellar winds from the massive hot stars in the central cluster. The infrared observations generally show cooler temperature gas at a deeper layer of the nebula that extends well beyond the visible image. In addition, the infrared showcases many faint stars that shine primarily at longer wavelengths. The higher resolution visible observations show finer details including the wispy bow shocks and tadpole-shaped proplyds. In this manner, the movie illustrates the contrasting

2018 06 25	Hubble Space Telescope	<a href="https://youtu.be/CQyUr2Ls6OE">https://youtu.be/CQyUr2Ls6OE</a>	Tonight's Sky July 2018	<p>This year, Mars reaches its long-awaited opposition on July 27—and is visible all night. Look for its south polar cap and dark features that shift as the planet rotates. You will also spot constellations Scorpius and Sagittarius, and the annual Delta Aquarid meteor shower.</p> <p>“Tonight’s Sky” is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a></p>	<a href="#">Transcript Link</a>
2018 06 25	Hubble Space Telescope	<a href="https://youtu.be/ebaUBUmIB9M">https://youtu.be/ebaUBUmIB9M</a>	Kepler Supernova Remnant in Multiple Wavelengths [UltraHD]	<p>This animation shows the remnant of Kepler's Supernova, shown first in infrared, then visible, then low energy X-ray, then high-energy X-ray emission and finally in combination.</p> <p>In 1604, astronomer Johannes Kepler noted the appearance of a new bright object in the sky, visible to the naked eye for the next 18 months. Today we know that he was seeing the death of a star 20,000 light years from Earth. It was more than ten times the mass of our sun.</p> <p>Now, more than four hundred years later, several of NASA’s Great Observatories combined to produce a multi-wavelength image of the expanding remnant. Although the initial blast was caused by the implosion of the star core that rebounded to violently eject material. The supernova today can be seen as it impacts surrounding material that was likely ejected in previous episodes of losing mass into space.</p> <p>The multiple wavelengths show separated layers of emission that represent different portions of the impact. Infrared (Spitzer) traces the coolest material as it is heated by the ejecta. The optical emission (Hubble) traces hot (several thousand degree) gas that is excited by the collision. The lower energy X-ray (Chandra) represents much hotter gas - up to a few million degrees, Fahrenheit, similar to the hot corona of our sun. The highest energy X-ray emission can reach tens of millions of degrees. This emission is closest to the most powerful portions of the expanding blast wave.</p>	<a href="#">Transcript Link</a>
2018 06 18	Hubble Space Telescope	<a href="https://youtu.be/k0m1isyRX-U">https://youtu.be/k0m1isyRX-U</a>	M101 - Pinwheel Galaxy [UltraHD]	<p>This animation shows the Messier 101 (Pinwheel) Galaxy, with simulated rotation, in visible, then infrared, then X-ray, and finally all three combined.</p> <p>M101 is a comparable in size to the Milky Way. The disk is 100 billion solar masses, and the central bulge of about 3 billion solar masses. M101 is rich in pinkish star forming regions, many of which are very large and bright. Unlike most spiral galaxies, M101's spiral shape is notably asymmetrical. This is due to the tidal forces from interactions with its companion galaxies. These gravitational interactions compress interstellar hydrogen gas, which then triggers strong star formation activity in M101's spiral arms.</p> <p>Video Credit: NASA, ESA, and G. Bacon (STScI)  Image Credit: NASA, ESA, K. Kuntz (JHU), F. Bresolin (University of Hawaii), J. Trauger (Jet Propulsion Lab), J. Mould (NOAO), Y.-H. Chu (University of Illinois, Urbana), and STScI</p>	<a href="#">Transcript Link</a>

2018 06 11	Hubble Space Telescope	<a href="https://youtu.be/ipkFlgXYDZQ">https://youtu.be/ipkFlgXYDZQ</a>	30 Doradus A Massive Star- Forming Region [Ultra HD]	30 Doradus (the Tarantula Nebula) is a very bright and active star-forming region outside of the Milky Way galaxy, at 160,000 light-years away. "30 Dor" is home to the central star cluster NGC 2070, including the most active region, R136, which appears in the central-right area of the image. R136 is a few million years old and contains many thousands of young stars, including several of the largest known. The bright blue stars shine out of the cleared cavity that is excavated by stellar winds. The redder stars are still partially embedded in the cloud material, seen in shadow except where illuminated by the cavity stars. In the infrared view the embedded stars shine more clearly through the intervening cloud material.	<a href="#">Transcript Link</a>
				Video Credit: NASA, ESA, G.Bacon (STScI) Image Credit: NASA, ESA, F. Paresce (INAF-IASF, Bologna, Italy), R. O'Connell (University of Virginia, Charlottesville), and the Wide Field Camera 3 Science Oversight Committee	
2018 05 28	Hubble Space Telescope	<a href="https://youtu.be/SSCSC5SWoTY">https://youtu.be/SSCSC5SWoTY</a>	The Orion Nebula Visible and Infrared Views [UltraHD]	This sequence uses infrared (Spitzer) and visible (Hubble) images to reveal the formation of stars within a large cloud of hydrogen gas and dust. The warm gas lights up in the infrared view as red, and the hydrocarbon dust appears in green. The starlight from young stars appears in blue. The flood of starlight provides extra illumination throughout the dusty environment and in front of the cloud. The threads of gas, reminiscent of clouds on Earth, are compressed and pushed into knots by the winds from forming stars throughout the region. The clouds appear as shadows in this visible-light view. However, in areas where the gas has mostly been cleared or thinned, glowing cavities can be seen inside these cocoons. The combined view hints at the nebula's complex three-dimensional structure.	<a href="#">Transcript Link</a>
				Video: NASA, ESA, and G. Bacon (STScI) Image: NASA, ESA, M. Robberto (STScI/ESA) and the Hubble Space Telescope Orion Treasury Project Team (STScI)	
2018 05 23	Hubble Space Telescope	<a href="https://youtu.be/vPhFHhdajQ8">https://youtu.be/vPhFHhdajQ8</a>	Tonight's Sky June 2018	In June, the constellations Boötes, Corona Borealis and Draco, and the planets Venus, Jupiter, Mars and Saturn are all visible from the Northern Hemisphere.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a>	

2018 05 21	Hubble Space Telescope	<a href="https://youtu.be/u8jGr2WSFD8">https://youtu.be/u8jGr2WSFD8</a>	The Whirlpool Galaxy Visible and X-ray Views [UltraHD]	<p>This sequence uses visible (Hubble) and X-ray (Chandra) imagery to highlight different structures within the Whirlpool galaxy (Messier 51). As seen in visible light, the familiar whirlpool shape is traced out by glowing spiral arms. These arms are composed of billions of stars orbiting about the center of the galaxy over millions of years. The pink color is from hot hydrogen gas that permeates the galaxy and indicates sites of new star formation. Silhouetted in the bright arms are dark lanes of obscuring dust that blocks visible light. The stars farther away from the center orbit more slowly and fall behind, creating the signature spiral "winding" arm. A massive black hole lies at the galaxy's center. The black hole can't be seen directly, but its presence is hinted at by the dense star clusters at the center. A second smaller spiral galaxy can be seen in the upper-right portion of the image. The second image shows the X-ray view, highlighting the very hottest gas at millions of degrees Fahrenheit. The X-rays most closely match the visible pink hot gas in active star-forming regions and are particularly strong near the galactic centers of both galaxies. X-rays are also penetrating obscuring dust.</p> <p>Video: NASA, ESA, and G. Bacon (STScI) Image: NASA and The Hubble Heritage Team (STScI)</p>	<a href="#">Transcript Link</a>
2018 05 16	Hubble Space Telescope	<a href="https://youtu.be/37inzFez9vA">https://youtu.be/37inzFez9vA</a>	Flight Through the Orion Nebula in Infrared Light - 360 Video	<p>360 Video - Use the mouse to scroll the view on a computer. For full immersion, watch using a virtual reality device and a 360 video player.</p> <p>This visualization explores the Orion Nebula as seen in infrared-light observations from the Spitzer Space Telescope. This movie is designed to be compared and contrasted against the companion movie using visible-light observations from the Hubble Space Telescope.</p> <p>As the camera flies into the star-forming region, it reveals a glowing gaseous landscape that has been illuminated and carved by the high-energy radiation and strong stellar winds from the massive hot stars in the central cluster. The infrared observations generally show cool temperature gas at a deep layer that shows the full bowl shape of the nebula. In addition, the infrared showcases many faint stars that shine primarily at longer wavelengths.</p> <p>Credits: NASA, ESA, F. Summers, G. Bacon, Z. Levay, J. DePasquale, L. Hustak, M. Robberto and M. Gennaro (STScI), and R. Hurt (Caltech/IPAC)</p> <p>Music: "Dvorak – Serenade for Strings Op22 in E Major larghetto", performed by The Advent Chamber Orchestra, CC BY-SA</p>	<a href="#">Transcript Link</a>

2018 05 16 Hubble Space Telescope <https://youtu.be/Jn15U83v07Y> Flight Through the Orion Nebula in Visible Light - 360 Video

360 Video - Use the mouse to scroll the view on a computer. For full immersion, watch using a virtual reality device and a 360 video player.

[Transcript Link](#)

This visualization explores the Orion Nebula as seen in visible-light observations from the Hubble Space Telescope. This movie is designed to be compared and contrasted against the companion movie using infrared-light observations from the Spitzer Space Telescope.

As the camera flies into the star-forming region, it reveals a glowing gaseous landscape that has been illuminated and carved by the high-energy radiation and strong stellar winds from the massive hot stars in the central cluster. The high-resolution visible observations show fine details including the wispy bow shocks and tadpole-shaped proplyds.

Credits: NASA, ESA, F. Summers, G. Bacon, Z. Levay, J. DePasquale, L. Hustak, L. Frattare, and M. Robberto (STScI)

Acknowledgement: R. Gendler

Music: "Dvorak – Serenade for Strings Op22 in E Major larghetto", performed by The Advent Chamber Orchestra, CC BY-SA

2018 05 16 Hubble Space Telescope <https://youtu.be/3DyaQ1xR7Gk> Flight Through the Orion Nebula in Visible and Infrared Light - 360 Video

360 Video - Use the mouse to scroll the view on a computer. For full immersion, watch using a virtual reality device and a 360 video player.

[Transcript Link](#)

This visualization explores the Orion Nebula using both visible-light observations from the Hubble Space Telescope and infrared-light observations from the Spitzer Space Telescope. The contrast between visible and infrared views of the nebula are examined using two spatially matched three-dimensional models.

As the camera flies into the star-forming region, the sequence cross-fades back and forth between the visible and infrared views. The glowing gaseous landscape has been illuminated and carved by the high-energy radiation and strong stellar winds from the massive hot stars in the central cluster. The infrared observations generally show cooler temperature gas at a deeper layer of the nebula that extends well beyond the visible image. In addition, the infrared showcases many faint stars that shine primarily at longer wavelengths. The higher resolution visible observations show finer details including the wispy bow shocks and tadpole-shaped proplyds. In this manner, the movie illustrates the contrasting features uncovered by multi-wavelength astronomy.

Credits: NASA, ESA, F. Summers, G. Bacon, Z. Levay, J. DePasquale, L. Hustak, L. Frattare, M. Robberto and M. Gennaro (STScI), R. Hurt (Caltech/IPAC)

2018 05 14 Hubble Space Telescope <https://youtu.be/eLSBFeo3Hx4> HH666 The Hidden Jet Launch [UltraHD]

Herbig Haro 666 is a young star that is shooting out narrow collimated jets in opposite directions. The jets are a byproduct of material falling onto to the star. The material is heated and then escapes along the star's spin axis. Blazing across space at 200,000 miles per hour, the jets provide a way for the star to slow its spin by carrying off angular momentum. The star is hidden deep within the obscuring cloud of gas and dust shown in the Hubble visible-light image. In Hubble's infrared view, the cloud mostly disappears, revealing the stars within. The jets will extend out to a light-year before dissipating. Jets are a dramatic example of the interaction between stars and the gas and dust that surrounds them.

Video: NASA, ESA, G. Bacon (STScI)  
Image: NASA, ESA, and the Hubble SM4 ERO Team (STScI)

[Transcript Link](#)

2018 05 07 Hubble Space Telescope <https://youtu.be/xBNJumQd4WM> Vision Across the Full Spectrum The Crab Nebula, from Radio to X-ray [Ultra HD]

The Crab Nebula (Messier 1) is the remnant of a supernova that exploded in the year 1054 AD. This mysterious "new star," as early skywatchers called it, was observed around the world and most notably recorded by Chinese astronomers. The supernova was triggered when the progenitor star abruptly collapsed onto its iron core, and rebounded to expel most of its layers of gas into a blast wave. This wave is seen as an optical and infrared set of filaments that continues to impact surrounding material. This material was expelled from the dying red giant progenitor star 20,000 years prior to the supernova. The ultra-dense remnant core, called a neutron star, is crushed to the size of a city. Spinning furiously, the neutron star sends out twin beams of radiation, like a lighthouse. A lot of this energy comes from the neutron star's intense magnetic fields.

The initial radio image (from the Very Large Array Radio Telescope) shows the cool gas and dust blown out by the supernova winds. The infrared (Spitzer) image shows synchrotron radiation, an unusual form of light produced by electrons trapped in magnetic fields. The infrared image also shows hot gas. The visible-light image (Hubble) shows the detailed filamentary structure of the blast wave as it impacts the surrounding material. The ultraviolet image (XMM-Newton) shows hot, ionized gas. Finally, the X-ray emission (Chandra) from high-energy particles ejected from the pulsar shows the expanding nebula. The bipolar structure represents a powerful jet of material funneled along the neutron star's spin axis.

Video: NASA, ESA, and G. Bacon (STScI)

[Transcript Link](#)

2018 04 30	Hubble Space Telescope	<a href="https://youtu.be/nMPaYuJg_P4">https://youtu.be/nMPaYuJg_P4</a>	Lagoon Nebula M8 [UltraHD]	<p>This video compares the colorful Hubble Space Telescope visible-light image of the core of the Lagoon Nebula and a Hubble infrared-light view of the same region.</p> <p>This visible-light image of the central region of the Lagoon nebula reveals a fantasy landscape of ridges, canyons, pillars, and mountains of gas and dust surrounding a very hot newborn star. When the visible view crossfades into an image taken in near-infrared light, the most obvious difference is the abundance of stars that fill the field of view. Most of them are more distant, background stars located behind the nebula itself. However, some of these pinpricks of light are young stars within the Lagoon Nebula. Only the densest of the gas clouds remain in the infrared view.</p> <p>Video: NASA, ESA, and G. Bacon (STScI) Optical and Infrared images: NASA, ESA, and STScI</p>	<a href="#">Transcript Link</a>
2018 04 23	Hubble Space Telescope	<a href="https://youtu.be/03xuhCl9jrg">https://youtu.be/03xuhCl9jrg</a>	NGC 2207 Colliding Galaxies [Ultra HD]	<p>NGC 2207 is a pair of colliding spiral galaxies. Their bright central nuclei resemble a striking set of eyes. In visible light, trails of stars and gas trace out spiral arms, stretched by the tidal pull between the galaxies. When seen in infrared light (IR), the glow of warm dust appears. This dust is the raw material for the creation of new stars and planets. Complementary to the IR, the X-ray view reveals areas of active star formation and the birth of super star clusters. Though individual stars are too far apart to collide, the material between the stars merges to create high-density pockets of gas. These regions gravitationally collapse to trigger a firestorm of starbirth. The galaxy collision will go on for several millions of years, leaving the galaxies completely altered in terms of their shapes.</p> <p>Video Credit: NASA, ESA, and G. Bacon (STScI) Optical image: NASA, ESA, and The Hubble Heritage Team (STScI) X-ray image: NASA/CXC/SAO/S. Mineo et al Infrared image: NASA/JPL-Caltech</p>	<a href="#">Transcript Link</a>
2018 04 20	Hubble Space Telescope	<a href="https://youtu.be/dUpSfuicqKA">https://youtu.be/dUpSfuicqKA</a>	Tonight's Sky May 2018	<p>In May, the stars and galaxies of Virgo and Canes Venatici, the full disc of Jupiter, and the Eta Aquarid meteor shower are all on view in the Northern Hemisphere.</p> <p>“Tonight’s Sky” is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a></p>	<a href="#">Transcript Link</a>

2018 04 19	Hubble Space Telescope	<a href="https://youtu.be/FhpMyaJ3ahc">https://youtu.be/FhpMyaJ3ahc</a>	Sculpture Garden of Gas and Dust Core of the Lagoon Nebula	<p>This video zooms into the core of a rich star-birth region called the Lagoon Nebula, located in the constellation Sagittarius in the direction of our Milky Way galaxy's central bulge. The sequence then dissolves to a series of imagined three-dimensional flights past striking structures of this gaseous landscape. Viewers examine dark, dusty clouds silhouetted against a colorful background of luminous gas that has been heated by a massive star. Pillars of dense gas and bow shocks around newborn stars are shaped by the strong winds from the brightest stars. The intense high-energy emission from these same stars creates the glowing ridges of gas in ionization fronts. These features are some of the highlights of this vibrant region where new stars and planets are born.</p> <p>Credit: NASA, ESA, and G. Bacon, D. Player, J. DePasquale, F. Summers, and Z. Levay (STScI)  Music: J. DePasquale  Acknowledgement: A. Fujii, Digitized Sky Survey, ESO/VPHAS, and R. Crisp</p> <p>Publication: April 19, 2018</p>	<a href="#">Transcript Link</a>
2018 04 11	Hubble Space Telescope	<a href="https://youtu.be/mEcoSaqp1U">https://youtu.be/mEcoSaqp1U</a>	HH 901 Pillars in the Carina Nebula [Ultra HD]	<p>Herbig Haro 901 is an immense pillar of gas and dust inside the Carina Nebula, a huge star-forming region in our galaxy. The pillar is several light-years tall and contains a few massive young stars. They shoot out powerful jets that emerge from the cloud. In some cases, the jets create bow-shock patterns similar to the effects of a ship plowing through the ocean. In the visible-light view, very few stars can be seen because the gas and dust block starlight. But in the infrared view, stars become visible and numerous. The visible-light colors emerge from the glow of different gases: oxygen (blue), hydrogen/nitrogen (green), and sulfur (red). The Carina Nebula is approximately 7,500 light years from Earth.</p> <p>Video: NASA, ESA, and G. Bacon (STScI)  Image Credit: NASA, ESA, and the Hubble 20th Anniversary Team (STScI)</p>	<a href="#">Transcript Link</a>
2018 03 26	Hubble Space Telescope	<a href="https://youtu.be/FGrZubqXeZl">https://youtu.be/FGrZubqXeZl</a>	Tonight's Sky April 2018	<p>The April night sky is full of celestial wonders: with Venus in the early evening, the double-star Mizar and Alcor at night, and Saturn, Mars, and Jupiter in the morning—topped off with the Lyrid meteor shower on April 22.</p> <p>Find out more about what you can see from your backyard, local park, or rooftop deck by viewing our monthly program Tonight's Sky: <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a></p>	<a href="#">Transcript Link</a>

2018 02 26 Hubble Space Telescope <https://youtu.be/EWw0Vmmly4k> Tonight's Sky March 2018 In March, Cancer the crab, the twins of Gemini, and a string of planets—Saturn, Mars, and Jupiter—are all visible from the Northern Hemisphere. [Transcript Link](#)

"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <http://hubblesite.org/videos/science>

2018 02 06 Hubble Space Telescope <https://youtu.be/dyRvmDBeYA4> Journey Into the Orion Nebula - 360 Video 360 Video - Use the mouse to scroll the view on a computer. For full immersion, watch using a virtual reality device and a 360 video player. [Transcript Link](#)

This visualization journeys into the famous star-forming region of the Orion Nebula based on an image from the Hubble Space Telescope. This exhilarating trip begins by flying through a layer of gas above the nebula, called the "veil". The descent to the gaseous surface provides an overview of the structure of the region as the winds and radiation from the central cluster have carved out a long "valley" in the cloud. The massive bright stars are responsible for heating the gas to temperatures at which it glows. Their strong stellar winds also blow back the gas around nearby newly formed stars creating tadpole-shaped structures. Within these objects, called proplyds, planets may be forming inside dark, dusty disks encircling the stars. These young stars can also emit jets of radiation which, in turn, create wispy bow shocks throughout the region. All of these features are found in the Hubble image and have been modeled for this visualization.

Credit: Frank Summers, Greg Bacon, Zolt Levay, Lisa Frattare, Massimo Robberto (STScI)

Acknowledgment: Robert Gendler

Music: "Blizzard (PON I)", Kai Engel, CC BY-NC

2018 01 19 Hubble Space Telescope [https://youtu.be/42jCVx9e7\\_c](https://youtu.be/42jCVx9e7_c) Journey Into the Orion Nebula - Dome Preview

This version of "Journey Into the Orion Nebula" has been rendered onto a hemispherical format (azimuthal equidistant projection) for use in planetarium domes. The black circular mask in the images denotes the edge of the hemispherical dome projection. The video is for preview purposes.

[Transcript Link](#)

This visualization journeys into the famous star-forming region of the Orion Nebula based on an image from the Hubble Space Telescope. This exhilarating trip begins by flying through a layer of gas above the nebula, called the "veil". The descent to the gaseous surface provides an overview of the structure of the region as the winds and radiation from the central cluster have carved out a long "valley" in the cloud. The massive bright stars are responsible for heating the gas to temperatures at which it glows. Their strong stellar winds also blow back the gas around nearby newly formed stars creating tadpole-shaped structures. Within these objects, called proplyds, planets may be forming inside dark, dusty disks encircling the stars. These young stars can also emit jets of radiation which, in turn, create wispy bow shocks throughout the region. All of these features are found in the Hubble image and have been modeled for this visualization.

Credit: Frank Summers, Greg Bacon, Zolt Levay, Lisa Frattare, Massimo Robberto (STScI)

Acknowledgment: Robert Gendler

2018 01 19 Hubble Space Telescope <https://youtu.be/maqCZhl9uU> Journey Into the Orion Nebula

This visualization journeys into the famous star-forming region of the Orion Nebula based on an image from the Hubble Space Telescope. This exhilarating trip begins by flying through a layer of gas above the nebula, called the "veil". The descent to the gaseous surface provides an overview of the structure of the region as the winds and radiation from the central cluster have carved out a long "valley" in the cloud. The massive bright stars are responsible for heating the gas to temperatures at which it glows. Their strong stellar winds also blow back the gas around nearby newly formed stars creating tadpole-shaped structures. Within these objects, called proplyds, planets may be forming inside dark, dusty disks encircling the stars. These young stars can also emit jets of radiation which, in turn, create wispy bow shocks throughout the region. All of these features are found in the Hubble image and have been modeled for this visualization.

[Transcript Link](#)

Credit: Frank Summers, Greg Bacon, Zolt Levay, Lisa Frattare, Massimo Robberto (STScI)

Acknowledgment: Robert Gendler

Music: "Blizzard (PON I)", Kai Engel, CC BY-NC

2018 01 16	Hubble Space Telescope	<a href="https://youtu.be/L-cgevXMFa4">https://youtu.be/L-cgevXMFa4</a>	Tonight's Sky February 2018	<p>In February, the northern hemisphere is treated to views of Orion, Canis Major, Jupiter, and Mars.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes – and other astronomy videos – at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a></p>	<a href="#">Transcript Link</a>
2018 01 11	Hubble Space Telescope	<a href="https://youtu.be/07dve0EnUX8">https://youtu.be/07dve0EnUX8</a>	Flight Through the Orion Nebula in Visible and Infrared Light [Ultra HD]	<p>This visualization explores the Orion Nebula using both visible and infrared light. The sequence begins with a wide-field view of the sky showing the plane of our Milky Way Galaxy, then zooms down to the scale of the Orion Nebula. The visible light observation (from the Hubble Space Telescope) and the infrared light observation (from the Spitzer Space Telescope) are compared first in two-dimensional images, and then in three-dimensional models.</p> <p>As the camera flies into the star-forming region, the sequence cross-fades back and forth between the visible and infrared views. The glowing gaseous landscape has been illuminated and carved by the high energy radiation and strong stellar winds from the massive hot stars in the central cluster. The infrared observations generally show cooler temperature gas at a deeper layer of the nebula that extends well beyond the visible image. In addition, the infrared showcases many faint stars that shine primarily at longer wavelengths. The higher resolution visible observations show finer details including the wispy bow shocks and tadpole-shaped proplyds. In this manner, the movie illustrates the contrasting features uncovered by multi-wavelength astronomy.</p> <p>Credit: NASA, ESA, and F. Summers, G. Bacon, Z. Levay, J. DePasquale, L. Hustak, L. Frattare, M. Robberto (STScI), R. Hurt (Caltech/IPAC), M. Kornmesser (ESA), A. Fujii</p> <p>Acknowledgement: R. Gendler</p>	<a href="#">Transcript Link</a>
2017 12 19	Hubble Space Telescope	<a href="https://youtu.be/px0Qy1isCcg">https://youtu.be/px0Qy1isCcg</a>	Tonight's Sky January 2018	<p>In January, the northern hemisphere is treated to beautiful views of Saturn and Mercury, Jupiter and Mars, Auriga the goat herder, and the Quadrantid meteor shower.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a></p>	<a href="#">Transcript Link</a>

2017 11 22	Hubble Space Telescope	<a href="https://youtu.be/VL5Qh-Gxulw">https://youtu.be/VL5Qh-Gxulw</a>	Tonight's Sky December 2017	In December, the northern hemisphere is treated to a view of Perseus, Cassiopeia, and the Geminid meteor shower.	<a href="#">Transcript Link</a>	
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a>		
2017 10 25	Hubble Space Telescope	<a href="https://youtu.be/5hWJfPXEZ_E">https://youtu.be/5hWJfPXEZ_E</a>	Tonight's Sky November 2017	In November the northern hemisphere is treated to views of Pisces, Aries, Triangulum, and the Leonid Meteor Shower.	<a href="#">Transcript Link</a>	
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a>		
2017 09 29	Hubble Space Telescope	<a href="https://youtu.be/SUyDcyHpFhc">https://youtu.be/SUyDcyHpFhc</a>	A Flight Through the CANDELS Ultra Deep Survey Field [Ultra HD]	This visualization traverses the CANDELS Ultra Deep Survey (UDS) field to showcase the varied appearances of galaxies and their three-dimensional distribution. The sequence features a dense cluster of galaxies about 6 billion light-years away and extends to galaxies at more than twice that distance. Because the light from these galaxies has travelled for billions of years across space, the images show the galaxies as they appeared billions of years ago. In addition, the expansion of space has redshifted the light of these galaxies toward longer wavelengths (i.e., to the red end of the visible-light region and into the infrared-light region). The changes seen in galaxies during the fly-through illustrate the changes in galaxy structure and appearance over billions of years of cosmic history.	<a href="#">Transcript Link</a>	
				CANDELS is an acronym for the Cosmic Assembly Near-infrared Deep Extragalactic Legacy Survey project. One of the largest projects ever done with the Hubble Space Telescope, CANDELS surveyed five fields to study the development of galaxies over time. The CANDELS observations of the UDS field complement ground-based observations from the United Kingdom Infrared Telescope.		
				Astronomers and visual artists extracted over 26,000 galaxies from the Hubble UDS images and created a computer model based on the measured and estimated properties. Note that the distances used in the visualization are significantly compressed for cinematic purposes.		
				Credits: NASA, ESA, F. Summers, J. DePasquale, G. Bacon, and Z.		

2017 09 25	Hubble Space Telescope	<a href="https://youtu.be/8N3p3gsQL50">https://youtu.be/8N3p3gsQL50</a>	Tonight's Sky October 2017	In October, the northern hemisphere is treated to a view of Pegasus, Andromeda, and the Orionid Meteor Shower.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a>	
2017 08 29	Hubble Space Telescope	<a href="https://youtu.be/uP7Z92-lqSk">https://youtu.be/uP7Z92-lqSk</a>	Tonight's Sky September 2017	In September, the northern hemisphere is treated to a view of Aquarius, the water god, and Capricornus, the water goat.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a>	
2017 07 27	Hubble Space Telescope	<a href="https://youtu.be/lqdt07W5Dg">https://youtu.be/lqdt07W5Dg</a>	Tonight's Sky August 2017	In August, the moons of Jupiter, the rings of Saturn, the Perseid meteor shower, a partial lunar eclipse and more will be visible.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes—and other astronomy videos—at <a href="http://hubblesite.org/videos/science">http://hubblesite.org/videos/science</a>	
2017 06 29	Hubble Space Telescope	<a href="https://youtu.be/aC2s-lcLcg">https://youtu.be/aC2s-lcLcg</a>	Tonight's Sky July 2017	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In July, large planets preside over southern skies.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
				Visit Tonight's Sky on HubbleSite: <a href="http://hubblesite.org/videos/tonights_sky">http://hubblesite.org/videos/tonights_sky</a>	
2017 05 26	Hubble Space Telescope	<a href="https://youtu.be/yRcbc112faA">https://youtu.be/yRcbc112faA</a>	Tonight's Sky June 2017	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." Early June is one of the best times to view our brightest planet.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
				Visit Tonight's Sky on HubbleSite: <a href="http://hubblesite.org/videos/tonights_sky">http://hubblesite.org/videos/tonights_sky</a>	

2017 04 25	Hubble Space Telescope	<a href="https://youtu.be/h1b2stdJboE">https://youtu.be/h1b2stdJboE</a>	Tonight's Sky May 2017	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In May, one of the largest constellations fills the southern sky.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite:  <a href="http://hubblesite.org/videos/tonights_sky">http://hubblesite.org/videos/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2017 04 20	Hubble Space Telescope	<a href="https://youtu.be/frapYF0eBs">https://youtu.be/frapYF0eBs</a>	Perspectives on Spiral Galaxies	<p>Spiral galaxies are pancake-shaped collections of billions of stars, along with vast clouds of gas and dust. This video illustrates how their observed shapes can differ greatly depending upon the angle at which they are observed. The spiral galaxies NGC 4302 (left) and NGC 4298 (right) are visualized in three dimensions and rotated to showcase how they might look if viewed from other perspectives. Each galaxy could be seen as a roughly circular face-on spiral, as a long, thin, edge-on spiral, or as any of the oblong shapes in between.</p> <p>The galaxy models are based on observations by the Hubble and Spitzer space telescopes, as well as on the statistical properties of galaxies. Because NGC 4302 is seen nearly edge on, and its structure is not well-defined, its model was based upon observations of the spiral galaxy Messier 51.</p> <p>Credit: NASA, ESA, F. Summers, J. DePasquale, Z. Levay, and G. Bacon (STScI)</p>	<a href="#">Transcript Link</a>
2017 03 28	Hubble Space Telescope	<a href="https://youtu.be/ae7rVLTscwc">https://youtu.be/ae7rVLTscwc</a>	Tonight's Sky April 2017	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." Skies should be fairly dark for this year's annual "April shower."</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite:  <a href="http://hubblesite.org/videos/tonights_sky">http://hubblesite.org/videos/tonights_sky</a></p>	<a href="#">Transcript Link</a>

2017 03 03	Hubble Space Telescope	<a href="https://youtu.be/MBGP5DMNISO">https://youtu.be/MBGP5DMNISO</a>	Blast Wave from a Stellar Explosion Simulation of Supernova 1987A	This scientific visualization shows the development of Supernova 1987A, from the initial blast observed three decades ago to the luminous ring of material we see today.	<a href="#">Transcript Link</a>	
				<p>The sequence, using data from a computer simulation, begins with the star before it exploded. A ring of material around the star was expelled about 20,000 years before the supernova outburst. A flash of light signals the stellar explosion. The supernova sends a blast wave outward from the dying star. As the blast wave slams into the ring, high-density knots of material become intensely heated and glow brightly, while lower-density gas is blown outward. The computer simulation provides one data set per year, and thus the visualization steps between them at four years per second. Upon reaching the present day, the time development is halted, and the camera circles around the ring to showcase its structure.</p>		
				Visualization Credit: NASA, ESA, and F. Summers and G. Bacon (STScI)		
				Simulation Credit: S. Orlando (INAF-Osservatorio Astronomico di Palermo)		
2017 02 22	Hubble Space Telescope	<a href="https://youtu.be/o_lfHxjPJxA">https://youtu.be/o_lfHxjPJxA</a>	Tonight's Sky March 2017	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." The March equinox still grants plenty of dark nighttime skies for planet-hunting.	<a href="#">Transcript Link</a>	
				<p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p>		
				<p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>		
2017 02 03	Hubble Space Telescope	<a href="https://youtu.be/udW0xLoXwho">https://youtu.be/udW0xLoXwho</a>	Tonight's Sky February 2017 (updated)	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." This February, a penumbral lunar eclipse will be visible throughout most of the world.	<a href="#">Transcript Link</a>	
				<p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p>		
				<p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/videos/tonights_sky">http://hubblesite.org/videos/tonights_sky</a></p>		
2017 01 30	Hubble Space Telescope	<a href="https://youtu.be/hlktb1ohB4I">https://youtu.be/hlktb1ohB4I</a>	Tonight's Sky February 2017	NOTICE: An error was discovered in this video. The updated file can be found here: <a href="https://youtu.be/udW0xLoXwho">https://youtu.be/udW0xLoXwho</a>	<a href="#">Transcript Link</a>	
				<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." This February, a penumbral lunar eclipse will be visible throughout most of the world.</p>		
				<p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p>		
				<p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/videos/tonights_sky">http://hubblesite.org/videos/tonights_sky</a></p>		

2016 12 29	Hubble Space Telescope	<a href="https://youtu.be/Dk7MQa2I4lo">https://youtu.be/Dk7MQa2I4lo</a>	Tonight's Sky January 2017	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In December, an annual meteor shower peaks early.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2016 12 13	Hubble Space Telescope	<a href="https://youtu.be/fJr4tJA0Vc">https://youtu.be/fJr4tJA0Vc</a>	Debris Disks and the Evolution of Planetary Systems [repost]	<p>[This repost fixes audio problems with the original recording.]</p> <p>Debris Disks and the Evolution of Planetary Systems  Christine Chen, Space Telescope Science Institute</p> <p>Debris disks are dusty disks around middle-aged stars, believed to be analogous to the asteroid and Kuiper belts in our own Solar System. The dust in these systems absorbs and scatters star light, with the absorbed light heating up the dust. Space-based infrared observatories are the best tools with which to not only discover, but also characterize these planetary systems. These studies probe the nature and diversity of extrasolar systems, and help place our own into proper context. Is our Solar System common or rare?</p> <p>- Astronomy from a 747 starts at 2:20  - Main talk starts at 14:56</p> <p>Host: Dr. Joel Green</p> <p>Recorded live on December 1, 2016 at the Space Telescope Science Institute in Baltimore, MD, USA</p> <p>MORE INFO: <a href="http://hubblesite.org/about_us/public_talks/">http://hubblesite.org/about_us/public_talks/</a></p>	<a href="#">Transcript Link</a>
2016 12 05	Hubble Space Telescope	<a href="https://youtu.be/4UHRV4-CU9s">https://youtu.be/4UHRV4-CU9s</a>	2016 Outstanding Young Scientist Award - Dr. Laurent Pueyo	<p>The Maryland Academy of Sciences has selected Dr. Laurent Pueyo of the Space Telescope Science Institute (STScI) in Baltimore, Maryland, as the recipient of the 2016 Outstanding Young Scientist award.</p> <p>Pueyo joined STScI in 2013 as an associate astronomer after spending three years as a Sagan Fellow at Johns Hopkins University in Baltimore. His duties at STScI include working on improving the extrasolar-planet imaging capabilities of NASA's James Webb Space Telescope, scheduled to launch in late 2018.</p> <p>Credit: NASA and M. Estacion (STScI)</p>	<a href="#">Transcript Link</a>

2016 11 28	Hubble Space Telescope	<a href="https://youtu.be/iNJXgMNSxNo">https://youtu.be/iNJXgMNSxNo</a>	Globular Star Cluster Exploration [Dome Version]	<p>This movie is a low resolution preview of the hemispheric projection sequence for planetarium domes.</p> <p>This scientific visualization presents a flight to a small globular star cluster and a few hundred thousand years of its development. Globular star clusters contain many thousands to millions of stars all orbiting around their common center of gravity. During the flight to and around the globular star cluster, time has been stopped to allow one to examine the structure of the cluster. After arrival, the stars begin their swarming orbits.</p> <p>The visualization uses data from a simulation that followed the orbits of 6144 stars using the special purpose supercomputer GRAPE-4. This small globular star cluster is simulated in its early stages, with the sample of stars drawn from a zero-age main sequence. Hence, there are many more blue stars than would be found in a typical old globular cluster. The star brightnesses are calculated and calibrated to approximate what the human eye would see. The colors are a bit exaggerated in an attempt to compensate for desaturation during dome projection. For context, the globular cluster is placed within a random star field taken from the Yale Bright Star Catalog. The piece of the simulation shown here covers about 122 thousand years of the star cluster's development. Time passes at a rate of about 2350 years per second, which corresponds to 78 years per frame at 30 frames per second.</p>	<a href="#">Transcript Link</a>
2016 11 28	Hubble Space Telescope	<a href="https://youtu.be/Ex-pYPVsCN8">https://youtu.be/Ex-pYPVsCN8</a>	Tonight's Sky December 2016	<p>The full resolution planetarium dome sequence is available at:</p> <p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In December, Perseus and Cassiopeia dominate the night.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2016 10 26	Hubble Space Telescope	<a href="https://youtu.be/zOVE3wUUoUo">https://youtu.be/zOVE3wUUoUo</a>	Tonight's Sky November 2016	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In November, Jupiter shines in the sky before dawn.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>

2016 10 19 Hubble Space Telescope <https://youtu.be/96YLkY-N0o4> The Red Bubble Supernova Remnant SNR 0509-67.5 [Ultra HD]

This movie presents a visualization of the supernova remnant known as SNR 0509-67.5. The delicate sphere of gas, photographed by NASA's Hubble Space Telescope, is the result of gas that is being shocked by the expanding blast wave from a supernova. The bubble is the visible remnant of a powerful stellar explosion in the Large Magellanic Cloud (LMC), a small galaxy about 160,000 light-years from Earth. Ripples in the shell's surface may be caused by either subtle variations in the density of the ambient interstellar gas, or possibly driven from the interior by pieces of the ejecta. The bubble-shaped shroud of gas is 23 light-years across and is expanding at more than 11 million miles per hour (5,000 kilometers per second).

The unique three-dimensional view of the visualization reminds us that the objects in Hubble images are not all at the same distance, but rather spread across light-years of space. The stars and the shell of glowing gas from the Hubble two-dimensional image have been separated using both scientific knowledge and artistic license to create the depth in the movie. Of note, the relative distances between stars and the nebula have been greatly compressed.

Credit: NASA, ESA, and G. Bacon, T. Borders, L. Frattare, Z. Levay, and F. Summers (STScI)

For more information and movie file downloads:  
<http://hubblesite.org/video/896>

[Transcript Link](#)

2016 10 19 Hubble Space Telescope <https://youtu.be/RZj0Y1-EP5A> The Red Bubble 3D Supernova Remnant SNR 0509-67.5

This is the stereo 3d version of "The Red Bubble: Supernova Remnant SNR 0509-67.5".

This movie presents a visualization of the supernova remnant known as SNR 0509-67.5. The delicate sphere of gas, photographed by NASA's Hubble Space Telescope, is the result of gas that is being shocked by the expanding blast wave from a supernova. The bubble is the visible remnant of a powerful stellar explosion in the Large Magellanic Cloud (LMC), a small galaxy about 160,000 light-years from Earth. Ripples in the shell's surface may be caused by either subtle variations in the density of the ambient interstellar gas, or possibly driven from the interior by pieces of the ejecta. The bubble-shaped shroud of gas is 23 light-years across and is expanding at more than 11 million miles per hour (5,000 kilometers per second).

The unique three-dimensional view of the visualization reminds us that the objects in Hubble images are not all at the same distance, but rather spread across light-years of space. The stars and the shell of glowing gas from the Hubble two-dimensional image have been separated using both scientific knowledge and artistic license to create the depth in the movie. Of note, the relative distances between stars and the nebula have been greatly compressed.

Credit: NASA, ESA, and G. Bacon, T. Borders, L. Frattare, Z. Levay, and F. Summers (STScI)

For more information and movie file downloads:

[Transcript Link](#)

2016 09 27	Hubble Space Telescope	<a href="https://youtu.be/H-hvKGj1HR8">https://youtu.be/H-hvKGj1HR8</a>	Tonight's Sky October 2016	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In October, the Andromeda Galaxy is visible even to naked eyes.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2016 09 23	Hubble Space Telescope	<a href="https://youtu.be/7DQe-OzrcJM">https://youtu.be/7DQe-OzrcJM</a>	Behind the Webb Give Me Five (Episode 31)	<p>NASA's James Webb Space Telescope will be looking at the universe with infrared vision. In order to optimally accomplish this mission, the observatory has to be kept as cold as possible. A carefully designed set of 5 coated layers of a special material called Kapton work together to enable the heat to be deflected from the telescope. This episode of Behind the Webb shows what the deployment of the sunshield and its layers looks like from the ground.</p>	<a href="#">Transcript Link</a>
2016 09 23	Hubble Space Telescope	<a href="https://youtu.be/V6_OHlwMdv5">https://youtu.be/V6_OHlwMdv5</a>	Hubble Galaxies Across Space and Time [Ultra HD, Captioned]	<p>This is the captioned version of the film.</p> <p>This award-winning short film transforms images and data from NASA's Hubble Space Telescope into a voyage that sweeps viewers across the universe and back into cosmic history.</p> <p>The film opens with looming images of two mature galaxies that are relatively nearby Earth, and then pans through the vibrant and diverse panorama of thousands of galaxies in an image from the Great Observatories Origins Deep Survey. The ensuing 3-D journey through these galaxies provides more than just a new perspective in space; it also takes the audience back in time. Because light takes time to journey across space, the galaxies farther away from Earth are seen further back in cosmic history. The virtual voyage reveals galaxies as they appeared billions of years ago, when they were still in the process of forming.</p> <p>Originally released as an IMAX film, "Hubble: Galaxies Across Space and Time" was named "Best Short Film" of 2004 by the Large Format Cinema Association.</p> <p>A production of the Office of Public Outreach at the Space Telescope Science Institute (STScI)          Producer: John Stoke          Director: Frank Summers          Writers: John Stoke and Frank Summers          Visualization Leads: Greg Bacon and Frank Summers</p>	<a href="#">Transcript Link</a>

2016 09 23	Hubble Space Telescope	<a href="https://youtu.be/q0P2-gcos90">https://youtu.be/q0P2-gcos90</a>	Hubble Galaxies Across Space and Time [Ultra HD]	This award-winning short film transforms images and data from NASA's Hubble Space Telescope into a voyage that sweeps viewers across the universe and back into cosmic history.	<a href="#">Transcript Link</a>
<p>The film opens with looming images of two mature galaxies that are relatively nearby Earth, and then pans through the vibrant and diverse panorama of thousands of galaxies in an image from the Great Observatories Origins Deep Survey. The ensuing 3-D journey through these galaxies provides more than just a new perspective in space; it also takes the audience back in time. Because light takes time to journey across space, the galaxies farther away from Earth are seen further back in cosmic history. The virtual voyage reveals galaxies as they appeared billions of years ago, when they were still in the process of forming.</p> <p>Originally released as an IMAX film, "Hubble: Galaxies Across Space and Time" was named "Best Short Film" of 2004 by the Large Format Cinema Association.</p> <p>A production of the Office of Public Outreach at the Space Telescope Science Institute (STScI)          Producer: John Stoke          Director: Frank Summers          Writers: John Stoke and Frank Summers          Visualization Leads: Greg Bacon and Frank Summers          Narrator: Barbara Feldon          Music: Jon Serrie</p>					
2016 08 30	Hubble Space Telescope	<a href="https://youtu.be/EUUfA2li0Nk">https://youtu.be/EUUfA2li0Nk</a>	Tonight's Sky September 2016	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In September, an eclipse dims African skies.	<a href="#">Transcript Link</a>
<p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>					
2016 07 28	Hubble Space Telescope	<a href="https://youtu.be/G74raU41EU4">https://youtu.be/G74raU41EU4</a>	Tonight's Sky August 2016	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In August, Saturn and Mars dance with the star Antares.	<a href="#">Transcript Link</a>
<p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>					

2016 07 27	Hubble Space Telescope	<a href="https://youtu.be/FfmH2VTEyww">https://youtu.be/FfmH2VTEyww</a>	Hubble at 25 Hubble, Hubble, Everywhere	NASA's Hubble Space Telescope has arguably been the quintessential symbol of scientific achievement for decades. But that notoriety has parlayed into a unique position in pop culture. Hubble, and the images of the universe it produces, has not only helped astronomers rewrite textbooks but also has permeated areas traditionally isolated from science. In this episode of the Hubble at 25 and Beyond series, we take a look at some examples of how Hubble has indeed become a household name all over the world.	<a href="#">Transcript Link</a>	
2016 07 01	Hubble Space Telescope	<a href="https://youtu.be/kYhmwT_NJzU">https://youtu.be/kYhmwT_NJzU</a>	Celestial Fireworks Star Cluster Westerlund 2 [Ultra HD]	Ultra HD Resolution Version (4K UHD)  The nebula Gum 29 is a star-forming region about 20,00 light-years away in the constellation Carina. At the core of the nebula is a cluster of several thousand stars called Westerlund 2. These newborn stars are approximately 2 million years old, and their light illuminates, heats, and erodes the surrounding gas. The Hubble image, utilizing both visible and infrared light observations, was released in celebration of the telescope's 25th anniversary.	<a href="#">Transcript Link</a>	
				This visualization provides a three-dimensional perspective on the nebula and star cluster. The flight traverses the foreground stars and approaches the lower left rim of the nebula. Passing through the wispy darker clouds on the near side, the journey reveals bright gas illuminated by the intense radiation of the newly formed star cluster. Within the nebula, several pillars of dark, dense gas are being shaped by the energetic light and strong stellar winds from the brilliant cluster of thousands of stars. Note that the visualization is intended only as a scientifically reasonable interpretation and that distances within the model are significantly compressed.		
				Credit: Jay Anderson, Greg Bacon, Lisa Frattare, Zolt Levay, and Frank Summers (STScI)		
				Acknowledgment: The Hubble Heritage Team (STScI/AURA), A. Nota (ESA/STScI), the Westerlund 2 Science Team, and ESO		
2016 06 27	Hubble Space Telescope	<a href="https://youtu.be/DW0cgvWmQDY">https://youtu.be/DW0cgvWmQDY</a>	Behind the Webb Webb's First Eye Exam (Episode 30)	The Webb Telescope's Aft Optics System houses two of the mirrors that direct the light from the universe to the cameras in the observatory. In this episode of "Behind the Webb," engineers show how they will test the alignment of the mirrors and the path of light through the telescope from end to end, ensuring proper images. While engineers are using mostly test components, the actual Aft Optics System that will go into orbit is part of this test. As we get closer to launch, the full telescope will be tested.	<a href="#">Transcript Link</a>	

2016 06 27	Hubble Space Telescope	<a href="https://youtu.be/54Z6vTBUgSY">https://youtu.be/54Z6vTBUgSY</a>	Tonight's Sky July 2016	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In July, watch for the Delta Aquarid meteor shower.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
				Visit Tonight's Sky on HubbleSite. <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a>	
2016 06 24	Hubble Space Telescope	<a href="https://youtu.be/eld7fvPvxwA">https://youtu.be/eld7fvPvxwA</a>	Frontiers of Science and Science Fiction	How will we discover life in the universe? What are the cosmos' biggest unknowns? How do scientific discoveries inspire and transform the stories we tell?	<a href="#">Transcript Link</a>
				Join sci-fi authors Larry Niven, Kim Stanley Robinson, Connie Willis, Charlie Stross, Joe Haldeman and Harry Turtledove and a panel of the scientists and engineers of the Hubble and Webb space telescopes as they explore the places where their worlds collide.	
				Get insight into the scientific and creative processes as they discuss topics ranging from why we can't seem to find evidence of intelligent aliens to the ways that science happens in real life.	
				Recorded live on May 27, 2016 at the Space Telescope Science Institute in Baltimore, MD, USA.	
2016 06 01	Hubble Space Telescope	<a href="https://youtu.be/OpGfPaA_Cgo">https://youtu.be/OpGfPaA_Cgo</a>	Vibrant Gaseous Ribbons The Veil Supernova Remnant [Ultra HD]	Ultra HD Resolution Version (4K UHD)  This 3-D visualization flies across a small portion of the Veil Nebula as photographed by the Hubble Space Telescope. This region is a small part of a huge expanding remnant from a star that exploded many thousands of years ago. Hubble resolves tangled rope-like filaments of glowing gases. They have been shocked and heated by colliding with cooler, denser interstellar gas.	<a href="#">Transcript Link</a>
				The 3-D model has been created for illustrative purposes and shows that the giant bubble of gas has a thin, rippled surface. It also highlights that the emission from different chemical elements arises from different layers of gas within the nebula. In the imagery, emission from Sulfur, Hydrogen, and Oxygen are shown in red, green, and blue, respectively.	
				Credit: NASA, ESA, and F. Summers, G. Bacon, Z. Levay, and L. Frattare (Viz 3D Team, STScI)	
				Acknowledgment: NASA, ESA, and the Hubble Heritage Team (STScI/AURA)	
				For more information, images, and videos: <a href="http://hubblesite.org/newscenter/archive/releases/2015/29/">http://hubblesite.org/newscenter/archive/releases/2015/29/</a>	

2016 05 27	Hubble Space Telescope	<a href="https://youtu.be/NN1MpRsVVQw">https://youtu.be/NN1MpRsVVQw</a>	Demonstration of Gravitational Lensing by a Massive Cluster of Galaxies	The largest clusters of galaxies are massive enough to produce visual distortions of distant galaxies known as "gravitational lensing". This video demonstrates these visual effects. A scientific simulation shows the imagery that would be obtained if a nearby galaxy could pass behind a large cluster. By using a recognizable object for the distant galaxy, the effects of the gravitational lensing become more apparent.	<a href="#">Transcript Link</a>
				Get more information at this blog post: <a href="https://frontierfields.org/2016/05/26/the-whirlpool-galaxy-seen-through-a-cosmic-lens/">https://frontierfields.org/2016/05/26/the-whirlpool-galaxy-seen-through-a-cosmic-lens/</a>	
2016 05 24	Hubble Space Telescope	<a href="https://youtu.be/RJdX1nROT_c">https://youtu.be/RJdX1nROT_c</a>	Tonight's Sky June 2016	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In June, look toward the constellation Hercules to find compact globular clusters of stars.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
				Visit Tonight's Sky on HubbleSite. <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a>	
2016 05 06	Hubble Space Telescope	<a href="https://youtu.be/7Dy0CyUCaPs">https://youtu.be/7Dy0CyUCaPs</a>	Celestial Fireworks Hubble's Universe Unfiltered	Celestial Fireworks Presented by Dr. Frank Summers, Space Telescope Science Institute  To help commemorate Hubble's 25th anniversary in April 2015, our imaging team captured an amazing cluster of thousands of massive, hot, bright stars. The brilliance of the cluster inspired the metaphor of "celestial fireworks," celebrating decades of astronomical accomplishments. To make this beautiful image even more eye-popping, our visualization team processed it into a three-dimensional computer model and created a flight into the nebula. In this episode, Dr. Summers explores the spectacular image and reveals behind-the-scenes details of how the visualization was made.	<a href="#">Transcript Link</a>
				For more information: <a href="http://hubblesite.org/explore_astronomy/hubbles_universe_unfiltered">http://hubblesite.org/explore_astronomy/hubbles_universe_unfiltered</a>	
				Hubble Press Release: Hubble Space Telescope Celebrates 25 Years of Unveiling the Universe <a href="http://hubblesite.org/newscenter/archive/releases/2015/12/">http://hubblesite.org/newscenter/archive/releases/2015/12/</a>	
				Show Notes:	

2016 05 03	Hubble Space Telescope	<a href="https://youtu.be/ygevBQWt_LE">https://youtu.be/ygevBQWt_LE</a>	Zoom into the Center of Our Galaxy	<p>This video sequence zooms into the Hubble Space Telescope view of the galactic core. Hubble's infrared vision pierced the dusty heart of our Milky Way galaxy to reveal more than half a million stars at its core. Except for a few blue, foreground stars, the stars are part of the Milky Way's nuclear star cluster, the most massive and densest stellar cluster in our galaxy. Located 27,000 light-years away, this region is so packed with stars, it is equivalent to having a million suns crammed into the volume of space between us and our closest stellar neighbor, Alpha Centauri, 4.3 light-years away. At the very hub of our galaxy, this star cluster surrounds the Milky Way's central supermassive black hole, which is about 4 million times the mass of our sun.</p> <p>CREDITS:  NASA, ESA, and G. Bacon (STScI);  Acknowledgment: NASA, ESA, A. Fujii, Digitized Sky Survey (DSS), STScI/AURA, Palomar/Caltech, UKSTU/AAO, NASA/JPL-Caltech/S. Stolovy (Spitzer Science Center/Caltech), Q.D. Wang (University of Massachusetts, Amherst), the Hubble Heritage Team (STScI/AURA), T. Do and A. Ghez (UCLA), and V. Bajaj (STScI)</p> <p>Read the HubbleSite news release:  <a href="https://hubblesite.org/contents/news-releases/2016/news-2016-11.html">https://hubblesite.org/contents/news-releases/2016/news-2016-11.html</a></p>	<a href="#">Transcript Link</a>
2016 04 29	Hubble Space Telescope	<a href="https://youtu.be/wCsVu7BbQd8">https://youtu.be/wCsVu7BbQd8</a>	Tonight's Sky May 2016	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In May, look for galaxies embedded in the constellation Virgo.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2016 04 27	Hubble Space Telescope	<a href="https://youtu.be/bSm5T2RMMxs">https://youtu.be/bSm5T2RMMxs</a>	Zoom into the Bubble Nebula	<p>This video starts with a backyard view of the constellation Cassiopeia and zooms into the central region of the Bubble Nebula observed by the Hubble Space Telescope.</p> <p>Credit: NASA, ESA, and G. Bacon (STScI)</p> <p>Acknowledgment: A. Fujii, USNO/STScI, Digitized Sky Survey (DSS), STScI/AURA, Palomar/Caltech, and UKSTU/AAO, T. Rector/University of Alaska Anchorage, H. Schweiker/WIYN and NOAO/AURA/NSF, NASA, ESA, and the Hubble Heritage Team (STScI/AURA)</p> <p>For more information:  <a href="http://hubblesite.org/newscenter/archive/releases/2016/13">http://hubblesite.org/newscenter/archive/releases/2016/13</a></p>	<a href="#">Transcript Link</a>

2016 04 25	Hubble Space Telescope	<a href="https://youtu.be/tej01WXYp6M">https://youtu.be/tej01WXYp6M</a>	The Bubble Nebula Winds & Radiation from a Massive Star [Ultra HD]	Ultra HD Resolution Version (4K UHD)	<a href="#">Transcript Link</a>
<p>This visualization of the Bubble Nebula begins with a ground-based view that encompasses the glowing cloud. The high-energy light from the massive O star, BD +60°2522, is responsible for ionizing the entire region. The virtual camera flies through the foreground stars and approaches the central bubble imaged by Hubble. The massive star continuously sheds some of its outer layers in a mass-loss wind, which has blown a bubble of gas seven light-years across. The video's three-dimensional perspective emphasizes the extended nature of the structure and the fact that BD +60°2522 is not located at the center. The pressure inside the bubble is able to expand more rapidly in the directions away from the surrounding nebula. The computer model incorporates both scientific and artistic interpretation of the data. In particular, distances are significantly compressed.</p>					
<p>Credit: NASA, ESA, and F. Summers, G. Bacon, Z. Levay, and L. Frattare (Viz 3D Team, STScI)</p>					
<p>Acknowledgment: T. Rector/University of Alaska Anchorage, H. Schweiker/WIYN and NOAO/AURA/NSF, NASA, ESA, and the Hubble Heritage Team (STScI/AURA)</p>					
<p>For more information and to download movie files and frames: <a href="http://hubblesite.org/video/812">http://hubblesite.org/video/812</a></p>					
2016 04 21	Hubble Space Telescope	<a href="https://youtu.be/dwcmSiDxVhg">https://youtu.be/dwcmSiDxVhg</a>	The Bubble Nebula Winds & Radiation from a Massive Star	<p>This visualization of the Bubble Nebula begins with a ground-based view that encompasses the glowing cloud. The high-energy light from the massive O star, BD +60°2522, is responsible for ionizing the entire region. The virtual camera flies through the foreground stars and approaches the central bubble imaged by Hubble. The massive star continuously sheds some of its outer layers in a mass-loss wind, which has blown a bubble of gas seven light-years across. The video's three-dimensional perspective emphasizes the extended nature of the structure and the fact that BD +60°2522 is not located at the center. The pressure inside the bubble is able to expand more rapidly in the directions away from the surrounding nebula. The computer model incorporates both scientific and artistic interpretation of the data. In particular, distances are significantly compressed.</p>	<a href="#">Transcript Link</a>
<p>Credit: NASA, ESA, and F. Summers, G. Bacon, Z. Levay, and L. Frattare (Viz 3D Team, STScI)</p>					
<p>Acknowledgment: T. Rector/University of Alaska Anchorage, H. Schweiker/WIYN and NOAO/AURA/NSF, NASA, ESA, and the Hubble Heritage Team (STScI/AURA)</p>					
<p>For more information and to download movie files and frames: <a href="http://hubblesite.org/video/812">http://hubblesite.org/video/812</a></p>					

2016 03 30	Hubble Space Telescope	<a href="https://youtu.be/-WoLSL3EDES">https://youtu.be/-WoLSL3EDES</a>	Crash of the Titans Milky Way & Andromeda Collision [Annotated] [Ultra HD]	<p>This visualization is the annotated version of "Crash of the Titans". It includes the running time and galaxy identifications.</p> <p>In about 4 billion years, the Milky Way and Andromeda galaxies will collide.</p> <p>The three largest galaxies in our Local Group of Galaxies are our Milky Way along with the Andromeda (also known as Messier 31) and Triangulum (also known as Messier 33) galaxies. This scientific visualization of a computer simulation depicts their joint evolution over the next several billion years and features the inevitable massive collision between the Milky Way and Andromeda. Hubble Space Telescope observations indicate that the two galaxies, pulled together by their mutual gravity, will crash together in a head-on collision about 4 billion years from now. The thin disk shapes of these spiral galaxies are strongly distorted and irrevocably transformed by the encounter. Around 6 billion years from now, the two galaxies will merge to form a single elliptical galaxy. The Triangulum galaxy continues to orbit the merged pair through the end of this computer simulation, though other computer models show it becoming part of the collision.</p>	<a href="#">Transcript Link</a>
2016 03 30	Hubble Space Telescope	<a href="https://youtu.be/Jsqh-kNMxoM">https://youtu.be/Jsqh-kNMxoM</a>	Crash of the Titans Milky Way & Andromeda Collision [Ultra HD]	<p>In about 4 billion years, the Milky Way and Andromeda galaxies will collide.</p> <p>The three largest galaxies in our Local Group of Galaxies are our Milky Way along with the Andromeda (also known as Messier 31) and Triangulum (also known as Messier 33) galaxies. This scientific visualization of a computer simulation depicts their joint evolution over the next several billion years and features the inevitable massive collision between the Milky Way and Andromeda. Hubble Space Telescope observations indicate that the two galaxies, pulled together by their mutual gravity, will crash together in a head-on collision about 4 billion years from now. The thin disk shapes of these spiral galaxies are strongly distorted and irrevocably transformed by the encounter. Around 6 billion years from now, the two galaxies will merge to form a single elliptical galaxy. The Triangulum galaxy continues to orbit the merged pair through the end of this computer simulation, though other computer models show it becoming part of the collision.</p> <p>The visualization covers 8.2 billion years into the future at 105 million years per second. Colors are representative: light blue for spiral galaxies (considered "blue" in astronomy parlance because of their active star formation) and orange-yellow for elliptical galaxies (called "red" by astronomers for their old stellar populations). A random background field of galaxies has been added to the simulation in order to indicate the camera motion through the simulation volume.</p>	<a href="#">Transcript Link</a>

2016 03 30 Hubble Space Telescope <https://youtu.be/5JsP0yZ6LBc> Future Galaxy Merger [Annotated] [Ultra HD]

This visualization is the annotated version of "Future Galaxy Merger". It includes the running time and galaxy identifications.

[Transcript Link](#)

This scientific visualization of a computer simulation depicts the inevitable collision between our Milky Way galaxy and the Andromeda galaxy (also known as Messier 31). NASA Hubble Space Telescope observations indicate that the two galaxies, pulled together by their mutual gravity, will crash together in a near-head-on collision about 4 billion years from now. The thin disk shapes of these spiral galaxies are strongly distorted and irrevocably transformed by the encounter. Around 6 billion years from now, the two galaxies will merge to form a single elliptical galaxy.

The visualization covers 8.2 billion years into the future at 105 million years per second. Colors are representative: light blue for spiral galaxies (considered "blue" in astronomy parlance because of their active star formation) and orange-yellow for elliptical galaxies (called "red" by astronomers for their old stellar populations). A random background field of galaxies has been added to the simulation in order to indicate the camera motion through the simulation volume.

This visualization depicts the same simulation as the "Crash of the Titans" visualization, but does not include the Triangulum galaxy and utilizes a simpler camera choreography.

Visualization: Frank Summers (STScI)

2016 03 30 Hubble Space Telescope <https://youtu.be/CcopGM8iUCY> Future Galaxy Merger [Ultra HD]

This scientific visualization of a computer simulation depicts the inevitable collision between our Milky Way galaxy and the Andromeda galaxy (also known as Messier 31). NASA Hubble Space Telescope observations indicate that the two galaxies, pulled together by their mutual gravity, will crash together in a near-head-on collision about 4 billion years from now. The thin disk shapes of these spiral galaxies are strongly distorted and irrevocably transformed by the encounter. Around 6 billion years from now, the two galaxies will merge to form a single elliptical galaxy.

[Transcript Link](#)

The visualization covers 8.2 billion years into the future at 105 million years per second. Colors are representative: light blue for spiral galaxies (considered "blue" in astronomy parlance because of their active star formation) and orange-yellow for elliptical galaxies (called "red" by astronomers for their old stellar populations). A random background field of galaxies has been added to the simulation in order to indicate the camera motion through the simulation volume.

This visualization depicts the same simulation as the "Crash of the Titans" visualization, but does not include the Triangulum galaxy and utilizes a simpler camera choreography.

Visualization: Frank Summers (STScI)

Simulation: Gurtina Besla (Columbia University) and Roeland van der Marel (STScI)

2016 03 22	Hubble Space Telescope	<a href="https://youtu.be/oEPDvm9_DO8">https://youtu.be/oEPDvm9_DO8</a>	Tonight's Sky April 2016	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In April, the Great Bear and Leo the Lion stalk the night sky.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astrono...">http://hubblesite.org/explore_astrono...</a></p>	<a href="#">Transcript Link</a>
2016 03 17	Hubble Space Telescope	<a href="https://youtu.be/tSO8evHlafA">https://youtu.be/tSO8evHlafA</a>	The Great Photon Escape	<p>In a flash known as the Big Bang, our universe was born. Yet for hundreds of thousands of years, light from the Big Bang was scattered and trapped in a dense fog. Eventually, though, that light made its “great escape” and the universe was plunged into total darkness. These cosmic “Dark Ages” lasted for millions of years until the first stars and galaxies burst to life and began to illuminate the universe. However, no one knows just when this happened or what the earliest stars and galaxies were really like, because we’ve never seen them.</p> <p>NASA’s James Webb Space Telescope, currently under construction and due to launch in 2021, will use its powerful infrared vision to spy the very first stars and galaxies forming out of the darkness of the early universe and help us understand how today’s universe came to be.</p> <p>This video is produced by the Space Telescope Science Institute’s Office of Public Outreach and is narrated by Alia Shawkat.</p> <p>Learn more about the James Webb Space Telescope at <a href="http://webbtelescope.org/">http://webbtelescope.org/</a></p>	<a href="#">Transcript Link</a>
2016 03 10	Hubble Space Telescope	<a href="https://youtu.be/QcDtJ-idMw">https://youtu.be/QcDtJ-idMw</a>	A Galactic Smash Hit Galaxy Collision Simulation	<p>In this visualization of a computer simulation, two spiral galaxies are set on a collision course. As one slices through the other, both are disrupted. The tidal forces of gravity produce long tails of material streaming away from the collision. The central regions relatively quickly fall together and merge.</p> <p>The visualization is based on a supercomputer simulation, which calculated the motions of 262,144 particles under the forces of gravity and hydrodynamics. The gas particles are shown in blue and the stars in yellow. Each particle is visualized with a size corresponding to its effective size in the calculation. A background field of galaxies was added to provide camera motion clues and astronomical context. The simulation covers roughly 1.5 billion years of the collision.</p> <p>Visualization: Frank Summers, Space Telescope Science Institute  Simulation: Chris Mihos, Case Western Reserve University, and Lars Hernquist, Harvard University</p>	<a href="#">Transcript Link</a>

2016 03 04	Hubble Space Telescope	<a href="https://youtu.be/JqZ2xtsJRGc">https://youtu.be/JqZ2xtsJRGc</a>	New Views of the Pillars of Creation Hubble's Universe Unfiltered	<p>New Views of the Pillars of Creation Presented by Dr. Frank Summers, Space Telescope Science Institute</p> <p>One of Hubble's most famous images was taken in 1995. The iconic "Pillars of Creation" shows the tall and beautiful gaseous pillar structures that can form inside star-forming regions. Within these dark clouds, stars are being born. Hubble kicked off its 25th anniversary year in 2015 with some images that used its improved cameras to revisit these beautiful pillars. This larger, higher resolution, and expanded wavelength examination uncovered new details, new features, and new perspectives on a classic image.</p> <p>For more information: <a href="http://hubblesite.org/explore_astronomy/hubbles_universe_unfiltered">http://hubblesite.org/explore_astronomy/hubbles_universe_unfiltered</a></p> <p>Hubble press release: Hubble Goes High Def to Revisit the Iconic 'Pillars of Creation' <a href="http://hubblesite.org/newscenter/archive/releases/2015/01">http://hubblesite.org/newscenter/archive/releases/2015/01</a></p> <p>Show Notes:</p> <p>-- Most will remember that there was an initial flaw in Hubble's mirror that was corrected in 1993. After that repair mission, it took some time for the public to recognize just how amazing Hubble's views of the universe really were. The 'Pillars of Creation' image, released in November 1995, was a watershed in that regard. The</p>	<a href="#">Transcript Link</a>
2016 02 26	Hubble Space Telescope	<a href="https://youtu.be/wpWT4W05xCI">https://youtu.be/wpWT4W05xCI</a>	Tonight's Sky March 2016	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In March, the constellations of spring arrive.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite. <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>

2016 02 11	Hubble Space Telescope	<a href="https://youtu.be/g2V1KY05P6s">https://youtu.be/g2V1KY05P6s</a>	Hidden Giants - Supermassive Black Holes in Galaxies	Due to technical issues, our live broadcast was split into two separate videos. We have combined them into one to better help our viewers watch after the fact.  Part 1. <a href="https://www.youtube.com/watch?v=Mtv9L...">https://www.youtube.com/watch?v=Mtv9L...</a> Part 2. <a href="https://www.youtube.com/watch?v=ayaaf...">https://www.youtube.com/watch?v=ayaaf...</a>  Supermassive black holes are enormous black holes with sizes hundreds of thousands to billions of solar masses. They reside in the centers of galaxies - some are more active than others, and many are gigantic masses more hidden.  "Gravitational Waves" February 12 at 3:00 pm EST (20:00 UTC/GMT)  YouTube: <a href="https://www.youtube.com/watch?v=YYBLxMrzN8">https://www.youtube.com/watch?v=YYBLxMrzN8</a> Facebook: <a href="https://www.facebook.com/events/1695651323984064/">https://www.facebook.com/events/1695651323984064/</a> G+: <a href="https://plus.google.com/b/116092146128069853604/events/c9dga8g254a2si8mbhgtuhiuv4">https://plus.google.com/b/116092146128069853604/events/c9dga8g254a2si8mbhgtuhiuv4</a>	<a href="#">Transcript</a> <a href="#">Link</a>
2016 01 28	Hubble Space Telescope	<a href="https://youtu.be/V6Y6FB6Cx44">https://youtu.be/V6Y6FB6Cx44</a>	Tonight's Sky February 2016	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In February, cold winter skies present a number of bright, easy-to-find stars.  "Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.  Visit Tonight's Sky on HubbleSite. <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a>	<a href="#">Transcript</a> <a href="#">Link</a>
2016 01 19	Hubble Space Telescope	<a href="https://youtu.be/gOWmbENSF9w">https://youtu.be/gOWmbENSF9w</a>	Hubble at 25 Paving the Way	This segment of the Hubble at 25 series discusses how the Hubble Space Telescope has not only given us a better understanding of our solar system, but it has also helped pave the way for interplanetary missions to be successful. By monitoring target destinations, Hubble has enabled spacecraft mission planners to optimize the science return from the planetary visits.	<a href="#">Transcript</a> <a href="#">Link</a>

2016 01 06 Hubble Space Telescope <https://youtu.be/rkN7MPK4pp0> White House Astronomy Night White House Astronomy Night Vanessa Thomas, Max Mutchler, & Rosa Diaz, Space Telescope Science Institute [Transcript Link](#)

On October 19, 2015, the White House hosted its second Astronomy Night on the South Lawn. Intended to excite students about science and space, the event featured an address from the president, stargazing through telescopes, discussions with astronauts and science celebrities, as well as exhibits and activities from space-related agencies and companies from across the country. Three STScI employees were honored to be among about 20 individuals invited to serve as telescope operators for the event. Come hear about what it's like to attend a star party on the White House grounds and other celestial happenings at this truly star-studded event.

Hosted by Dr. Frank Summers. Recorded live on January 5, 2016 at the Space Telescope Science Institute in Baltimore, MD.

For more information: [http://hubblesite.org/about\\_us/public\\_talks/](http://hubblesite.org/about_us/public_talks/)

2015 12 28 Hubble Space Telescope <https://youtu.be/H6QcEPRuVbc> Tonight's Sky January 2016 Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In January, Mars peeks above the horizon in the early morning hours [Transcript Link](#)

"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.

Visit Tonight's Sky on HubbleSite.

[http://hubblesite.org/explore\\_astronomy/tonights\\_sky](http://hubblesite.org/explore_astronomy/tonights_sky)

2015 12 17	Hubble Space Telescope	<a href="https://youtu.be/YWrUhvI7L8I">https://youtu.be/YWrUhvI7L8I</a>	Celestial Lightsabers Stellar Jets in HH24	<p>This sequence combines a two-dimensional zoom and a three-dimensional flight to explore Hubble's striking image of the Herbig-Haro object known as HH24. The movie starts with a night sky view of the Orion constellation and zooms in. Located above the left side of Orion's Belt is the vast dark nebula called the Orion B molecular cloud complex. Within this molecular cloud are many bright regions where stars are forming. This video closes in toward one particularly energetic example.</p> <p>The movie then switches to an envisioned three-dimensional perspective. As the virtual camera flies into the dark nebula, the stars pass off-screen and the details of the forming stars and their jets of emission are revealed. The central star is hidden by gas and dust, but its prominent twin jets of emission resemble a cosmic, double-bladed lightsaber. These jets have carved an hourglass-shaped cavity in the near side of the nebula. The jet from another stellar newborn in this region has created a cylindrical tunnel through the gas extending to the left. Careful study of the Hubble data reveals a few other jets heating and displacing the gas and dust around them. The nebula provides a vivid example of a gas cloud shaped by stellar emission.</p> <p>Credit: NASA, ESA, G. Bacon, L. Frattare, Z. Levay, and F. Summers (Viz3D Team, STScI)</p> <p>Acknowledgment: NASA, ESA, A. Fujii, Digitized Sky Survey (DSS), STScI/AURA, Palomar/Caltech, UKSTU/AAO, T. Rector/University of</p>	<a href="#">Transcript Link</a>
2015 11 23	Hubble Space Telescope	<a href="https://youtu.be/AaS3zoKlpDE">https://youtu.be/AaS3zoKlpDE</a>	Tonight's Sky December 2015	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In December, Jupiter, Mars, Venus and Saturn all make an appearance, as does the Geminid Meteor Shower.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite. <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2015 10 29	Hubble Space Telescope	<a href="https://youtu.be/hGDazUwaXEc">https://youtu.be/hGDazUwaXEc</a>	Behind the Webb Working Stiff (Episode 29)	<p>The James Webb Space Telescope needs to be kept as cold as possible in order to detect infrared light from faint and very distant objects. A key component of this is the observatory's tennis court-sized sunshield, which obstructs the warmth of the Sun. In this episode of "Behind the Webb," engineers add special structures to the sunshield that shape it to best reflect heat.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.</p> <p>"Behind the Webb" archive: <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>

2015 10 22	Hubble Space Telescope	<a href="https://youtu.be/gE2JuiQyhSU">https://youtu.be/gE2JuiQyhSU</a>	Tonight's Sky November 2015	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In November, the Leonid meteor shower promises around 40 meteors per hour.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2015 10 08	Hubble Space Telescope	<a href="https://youtu.be/O4UWjihKbQ">https://youtu.be/O4UWjihKbQ</a>	Dissolve of the Eagle Nebula 'Pillars of Creation' (UVIS to IR)	<p>Hubble's iconic 1995 image of the 'Pillars of Creation' dissolves into the 2015 version; revealing greater detail and a much wider view. Hubble's infrared view shows these structures in new light — as cold hydrogen and dust silhouetted against a myriad of background stars.</p> <p>Credit: NASA, ESA, and G. Bacon (STScI)</p> <p>Acknowledgment: NASA, ESA, the Hubble Heritage Team (STScI/AURA), and J. Hester and P. Scowen (Arizona State University)</p>	<a href="#">Transcript Link</a>
2015 10 08	Hubble Space Telescope	<a href="https://youtu.be/l31K9R3lZaw">https://youtu.be/l31K9R3lZaw</a>	3-D Flyover Visualization of Veil Nebula	<p>This 3-D visualization flies across a small portion of the Veil Nebula as photographed by the Hubble Space Telescope. This region is a small part of a huge expanding remnant from a star that exploded many thousands of years ago. Hubble resolves tangled rope-like filaments of glowing gases. The 3-D model has been created for illustrative purposes and shows that that the giant bubble of gas has a thin, rippled surface. It also highlights that the emission from different chemical elements arises from different layers of gas within the nebula. In the imagery, emission from hydrogen, sulfur, and oxygen are shown in red, green, and blue, respectively.</p> <p>Credit: NASA, ESA, and F. Summers, G. Bacon, Z. Levay, and L. Frattare (Viz 3D Team, STScI)</p> <p>Acknowledgment: NASA, ESA, and the Hubble Heritage Team (STScI/AURA)</p>	<a href="#">Transcript Link</a>
2015 10 05	Hubble Space Telescope	<a href="https://youtu.be/R4LOLIJGlvk">https://youtu.be/R4LOLIJGlvk</a>	Tonight's Sky October 2015	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In October spot Andromeda, our galactic neighbor.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p> <p>Music: "The Far River" by Jonn Serrie (Google Play • AmazonMP3 • eMusic • iTunes)</p>	<a href="#">Transcript Link</a>

2015 09 24	Hubble Space Telescope	<a href="https://youtu.be/03eTaYSAfFE">https://youtu.be/03eTaYSAfFE</a>	Vibrant Gaseous Ribbons The Veil Supernova Remnant	This 3-D visualization flies across a small portion of the Veil Nebula as photographed by the Hubble Space Telescope. This region is a small part of a huge expanding remnant from a star that exploded many thousands of years ago. Hubble resolves tangled rope-like filaments of glowing gases. They have been shocked and heated by colliding with cooler, denser interstellar gas.	<a href="#">Transcript Link</a>
<p>The 3-D model has been created for illustrative purposes and shows that the giant bubble of gas has a thin, rippled surface. It also highlights that the emission from different chemical elements arises from different layers of gas within the nebula. In the imagery, emission from Sulfur, Hydrogen, and Oxygen are shown in red, green, and blue, respectively.</p>					
<p>Credit: NASA, ESA, and F. Summers, G. Bacon, Z. Levay, and L. Frattare (Viz 3D Team, STScI)</p>					
<p>Acknowledgment: NASA, ESA, and the Hubble Heritage Team (STScI/AURA)</p>					
<p>For more information, images, and videos:  <a href="http://hubblesite.org/newscenter/archive/releases/2015/29/">http://hubblesite.org/newscenter/archive/releases/2015/29/</a></p>					
2015 09 23	Hubble Space Telescope	<a href="https://youtu.be/ml_McDQCxdI">https://youtu.be/ml_McDQCxdI</a>	Behind the Webb Strong and Steady (Episode 28)	Because the Webb Telescope will be launched into space and operate in an extremely cold environment, it needs to be built with materials that are both lightweight and stable. It needs to maintain its shape despite a range of temperatures. One of the science instruments on the telescope, NIRSPEC, or Near Infrared Spectrograph, is largely made from a ceramic known as silicon carbide. This episode of Behind the Webb takes us on a journey from the origins of this special material to how it's incorporated into the next great space observatory.	<a href="#">Transcript Link</a>
2015 09 03	Hubble Space Telescope	<a href="https://youtu.be/vxM0HutF3X4">https://youtu.be/vxM0HutF3X4</a>	Tonight's Sky September 2015	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In September the Moon darkens in a lunar eclipse.	<a href="#">Transcript Link</a>
<p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p>					
<p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>					
2015 08 19	Hubble Space Telescope	<a href="https://youtu.be/_00e-gVfxw0">https://youtu.be/_00e-gVfxw0</a>	Behind the Webb Cosmic Shutterbug (Episode 27)	This episode of "Behind the Webb" explores the multi-tasking capabilities of one of the cameras on the Webb Space Telescope, the Near-Infrared Spectrograph. Newly designed technology known as "microshutters" – tens of thousands of tiny shutters that open and close to allow only the light from targeted objects to enter the instrument -- enables scientists to study the spectrum of more than one galaxy at a time. As many as 100 objects can be simultaneously observed.	<a href="#">Transcript Link</a>

2015 08 11	Hubble Space Telescope	<a href="https://youtu.be/G6FsJP1WvzU">https://youtu.be/G6FsJP1WvzU</a>	Tonight's Sky August 2015	Note: The previous version of August's Tonight's Sky did not fully upload. This is the complete video.	<a href="#">Transcript Link</a>
				Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." August brings the Perseid meteor shower and the eye-catching stellar features of the constellation Cygnus.	
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
				Visit Tonight's Sky on HubbleSite. <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a>	
2015 07 01	Hubble Space Telescope	<a href="https://youtu.be/Vf7hFcKp6o4">https://youtu.be/Vf7hFcKp6o4</a>	Tonight's Sky July 2015	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In July, the Lagoon, Trifid and Omega nebulae are dazzling sights.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
				Visit Tonight's Sky on HubbleSite. <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a>	
2015 06 05	Hubble Space Telescope	<a href="https://youtu.be/u_gVTOrYp9I">https://youtu.be/u_gVTOrYp9I</a>	Hubble at 25 Oh Planet, What Art Thou	This episode of "Hubble at 25" uncovers Hubble's key role in the study of planets beyond our own solar system. Thousands of "exoplanet" candidates have been discovered. While Hubble is not responsible for most exoplanet detections, it is able to examine the chemical compositions of their atmospheres. Since these planets are too far away to ever visit in the foreseeable future, analyzing their atmospheres provides critical clues about the existence of life elsewhere in the universe.	<a href="#">Transcript Link</a>
2015 05 28	Hubble Space Telescope	<a href="https://youtu.be/vtC98HTkkiw">https://youtu.be/vtC98HTkkiw</a>	Tonight's Sky June 2015	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In June, Hercules and Draco the Dragon battle for territory in the night sky.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
				Visit Tonight's Sky on HubbleSite. <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a>	

2015 05 19	Hubble Space Telescope	<a href="https://youtu.be/3ZTdkRtim4U">https://youtu.be/3ZTdkRtim4U</a>	Behind the Webb Struttin' Its Stuff (Episode 26)	<p>The James Webb Space Telescope has a series of mirrors to get the light from the universe into the observatory's cameras. After the light reaches the primary mirror, it is then bounced up 25 feet to the secondary mirror. This much smaller mirror is deployed using three arms, or struts. Engineers at NASA's Goddard Space Flight Center are conducting tests to ensure a successful deployment after launch. This episode of Behind the Webb shows us the scope of the task at hand and how the test is being done to simulate a zero-gravity environment.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at <a href="http://hubblesite.org">Hubblesite.org</a>.</p> <p>"Behind the Webb" archive:  <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>
2015 05 04	Hubble Space Telescope	<a href="https://youtu.be/TIVuXMMoW0">https://youtu.be/TIVuXMMoW0</a>	Tonight's Sky May 2015	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In May, the Eta Aquarid meteor shower streaks through the sky, and face-on spiral galaxy M51 makes an appearance.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2015 04 24	Hubble Space Telescope	<a href="https://youtu.be/_lhcO4f3CEM">https://youtu.be/_lhcO4f3CEM</a>	Hubble at 25 The Incredible Time Machine	<p>With about a million observations under its belt during its 25 years of service, some of the Hubble Space Telescope's most memorable images have been of the vastness of space and the early days of the universe. These "deep-field" images actually improved over the years because shuttle astronauts were able to upgrade the observatory. This episode, entitled "The Incredible Time Machine" shows us how Hubble has been able to give us a glimpse of a cosmos in its formative years.</p>	<a href="#">Transcript Link</a>

2015 04 23	Hubble Space Telescope	<a href="https://youtu.be/xnUzbqiwlM">https://youtu.be/xnUzbqiwlM</a>	Celestial Fireworks Star Cluster Westerlund 2	<p>The nebula Gum 29 is a star-forming region about 20,00 light-years away in the constellation Carina. At the core of the nebula is a cluster of several thousand stars called Westerlund 2. These newborn stars are approximately 2 million years old, and their light illuminates, heats, and erodes the surrounding gas. The Hubble image, utilizing both visible and infrared light observations, was released in celebration of the telescope's 25th anniversary.</p> <p>This visualization provides a three-dimensional perspective on the nebula and star cluster. The flight traverses the foreground stars and approaches the lower left rim of the nebula. Passing through the wispy darker clouds on the near side, the journey reveals bright gas illuminated by the intense radiation of the newly formed star cluster. Within the nebula, several pillars of dark, dense gas are being shaped by the energetic light and strong stellar winds from the brilliant cluster of thousands of stars. Note that the visualization is intended only as a scientifically reasonable interpretation and that distances within the model are significantly compressed.</p> <p>Credit: Jay Anderson, Greg Bacon, Lisa Frattare, Zolt Levay, and Frank Summers (STScI)</p> <p>Acknowledgment: The Hubble Heritage Team (STScI/AURA), A. Nota (ESA/STScI), the Westerlund 2 Science Team, and ESO</p> <p>For more information:  <a href="http://hubblesite.org/newscenter/archive/releases/2015/12/">http://hubblesite.org/newscenter/archive/releases/2015/12/</a></p>	<a href="#">Transcript Link</a>
2015 04 23	Hubble Space Telescope	<a href="https://youtu.be/H5MwOCgzQ6M">https://youtu.be/H5MwOCgzQ6M</a>	Flight to Star Cluster Westerlund 2	<p>This visualization provides a three-dimensional perspective on Hubble's 25th anniversary image of the nebula Gum 29 with the star cluster Westerlund 2 at its core. The flight traverses the foreground stars and approaches the lower left rim of the nebula Gum 29. Passing through the wispy darker clouds on the near side, the journey reveals bright gas illuminated by the intense radiation of the newly formed stars of cluster Westerlund 2. Within the nebula, several pillars of dark, dense gas are being shaped by the energetic light and strong stellar winds from the brilliant cluster of thousands of stars. Note that the visualization is intended to be a scientifically reasonable interpretation and that distances within the model are significantly compressed.</p> <p>Credit: NASA, ESA, G. Bacon, L. Frattare, Z. Levay, and F. Summers (Viz3D Team, STScI), and J. Anderson (STScI)</p> <p>Acknowledgment: The Hubble Heritage Team (STScI/AURA), A. Nota (ESA/STScI), the Westerlund 2 Science Team, and ESO</p>	<a href="#">Transcript Link</a>
2015 04 23	Hubble Space Telescope	<a href="https://youtu.be/OkzPboBxPM">https://youtu.be/OkzPboBxPM</a>	Zoom into M16	<p>Credit: NASA, ESA, and G. Bacon (STScI)</p> <p>Acknowledgment: NASA, ESA, the Hubble Heritage Team (STScI/AURA), the Digitized Sky Survey ((DSS), STScI/AURA, Palomar/Caltech, and UKSTU/AAO), T.A. Rector (NRAO/AUI/NSF and NOAO/AURA/NSF) and B.A. Wolpa (NOAO/AURA/NSF), and A. Fujii</p> <p>Additional information is available on HubbleSite:  <a href="http://hubblesite.org/newscenter/archive/releases/2015/01">http://hubblesite.org/newscenter/archive/releases/2015/01</a></p>	<a href="#">Transcript Link</a>

2015 04 09	Hubble Space Telescope	<a href="https://youtu.be/V8OT2dEGsLo">https://youtu.be/V8OT2dEGsLo</a>	Tonight's Sky April 2015	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In April, look for the Great Bear, Ursa Major, and the Lyrid meteor shower.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2015 04 08	Hubble Space Telescope	<a href="https://youtu.be/g889ve rOmbE">https://youtu.be/g889ve rOmbE</a>	Hubble at 25 Expect the Unexpected	<p>NASA's Hubble Space Telescope is one of the most powerful scientific instruments ever conceived. Hubble's most important discoveries have provided answers to questions that astronomers did not yet know how to ask, and found objects that were not yet imagined. This installment of the "Hubble at 25" series looks at how Hubble far exceeds its original science goals and unveiled an even more complex and mysterious universe than once envisioned.</p>	<a href="#">Transcript Link</a>
2015 03 31	Hubble Space Telescope	<a href="https://youtu.be/gGb45O8i1s">https://youtu.be/gGb45O8i1s</a>	Behind the Webb A Perfect Pair (Episode 25)	<p>The Webb telescope is composed of some very large structures, and those have to fit together before, during, and after launch. Extreme care has to be taken when moving equipment that weighs thousands of pounds. This episode of Behind the Webb gives us a glimpse into what it takes to test the compatibility between the backplane that will hold the primary mirror segments, the sunshield, and the spacecraft bus. We also see how the sunshield will be pulled into position, giving us a sense of how large the observatory will be when it's in orbit.</p> <p>The 21-foot-wide primary mirror of the Webb Telescope is so large that it will have to fold up to fit into a rocket and be launched to space. Join host Mary Estacion as she travels to ATK in Magna, Utah, where the mirror's foldable backplane "wings" have been constructed.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.</p> <p>"Behind the Webb" archive:  <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>
2015 02 23	Hubble Space Telescope	<a href="https://youtu.be/N5uZyW9-wms">https://youtu.be/N5uZyW9-wms</a>	Hubble at 25 The Original Hubble	<p>The Hubble Space Telescope is named after one of the preeminent astronomers of the last century, Edwin Hubble. Among his notable discoveries is that the universe we live in is both enormous and expanding. This episode takes us on a journey through the life and times of the person whose name graces one of the most significant scientific instruments ever built.</p>	<a href="#">Transcript Link</a>

2015 02 02	Hubble Space Telescope	<a href="https://youtu.be/mV09be3m6gU">https://youtu.be/mV09be3m6gU</a>	Tonight's Sky February 2015	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." Venus and Mars huddle together on cold February nights, and star clusters are prominent in the month's constellations.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2015 01 29	Hubble Space Telescope	<a href="https://youtu.be/8PwJleiz_vl">https://youtu.be/8PwJleiz_vl</a>	Hubble at 25 Hubble – The Beginning	<p>This segment looks at the state of astronomy before Hubble and the difficulties of observing from the ground that drove the need for a space telescope. Astronomers instrumental in the Hubble project in the 60s and 70s reflect on how the design of the telescope was forced to evolve because methods used by ground-based observatories weren't practical in space.</p>	<a href="#">Transcript Link</a>
2015 01 21	Hubble Space Telescope	<a href="https://youtu.be/p-u0yAe3oNk">https://youtu.be/p-u0yAe3oNk</a>	AAS 225 UVOIR Space Astronomy Beyond the 2020's	<p>Astronomers gathered at the 225th meeting of the American Astronomical Society on January 6, 2015 to discuss the future of space telescopes in the Ultraviolet, Optical, and Infrared (UVOIR) wavelengths.</p> <p>Here are presentations outlining what may be achieved and how.</p>	<a href="#">Transcript Link</a>
2015 01 16	Hubble Space Telescope	<a href="https://youtu.be/OIXAwFkiY5M">https://youtu.be/OIXAwFkiY5M</a>	AAS 225 Hubble Space Telescope Town Hall	<p>On Thursday, January 8, members of the Hubble Space Telescope Mission presented mission status and upcoming plans in a Town Hall meeting.</p>	<a href="#">Transcript Link</a>
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/81o-slg5WNk">https://youtu.be/81o-slg5WNk</a>	Hubble at 25	<p>This is a preview of the video series that will showcase the Hubble Space Telescope as it's never been seen before. For the past 25 years Hubble has transformed our view of the universe, become a cultural icon, and even contributed to medical technology, among its many other accomplishments.</p>	<a href="#">Transcript Link</a>

- 2014 12 31 Hubble Space Telescope [https://youtu.be/le3ASDvZy\\_s](https://youtu.be/le3ASDvZy_s) Zoom into the Hubble Ultra Deep Field Credit: NASA, ESA, H. Teplitz and M. Rafelski (IPAC/Caltech), A. Koekemoer (STScI), R. Windhorst (Arizona State University), and Z. Levay and G. Bacon (STScI) [Transcript Link](#)
- Additional information is available on HubbleSite:  
<http://hubblesite.org/newscenter/archive/releases/2014/27>
- 2014 12 31 Hubble Space Telescope <https://youtu.be/qAyRziYQmco> Zoom into Abell 370 Credit: NASA, ESA, and the SM4 ERO Team [Transcript Link](#)
- Additional information is available on HubbleSite:  
<http://hubblesite.org/newscenter/archive/releases/2009/25/image/ao>
- 2014 12 31 Hubble Space Telescope <https://youtu.be/FOhTkps2GM> Zoom into Abell 2744 Credit: NASA, ESA, and J. Lotz, M. Mountain, A. Koekemoer, G. Bacon, and the HFF Team (STScI) [Transcript Link](#)
- Additional information is available on HubbleSite:  
<http://hubblesite.org/newscenter/archive/releases/2014/01>
- 2014 12 31 Hubble Space Telescope <https://youtu.be/JxaEDzW4YSA> A 3D visualization of Arp 273 Credit: NASA, ESA, and G. Bacon, T. Borders, L. Frattare, Z. Levay, and F. Summers (Viz 3D team, STScI) Image Credits: A. Block, Mount Lemmon SkyCenter, University of Arizona, and the Hubble Heritage Team (STScI/AURA) [Transcript Link](#)
- Additional information is available on HubbleSite:  
<http://hubblesite.org/newscenter/archive/releases/2011/11>
- 2014 12 31 Hubble Space Telescope <https://youtu.be/gczyyDMnfKU> Zoom into Stephen's Quintet Credit: NASA, ESA, and the Hubble SM4 ERO Team [Transcript Link](#)
- Additional information is available on HubbleSite:  
<http://hubblesite.org/newscenter/archive/releases/2009/25/image/x>

2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/7kwZWVzq2Ow">https://youtu.be/7kwZWVzq2Ow</a>	Zoom into the Antennae Galaxies	Credit: NASA, ESA, M. Kornmesser (ESA/Hubble), and G. Bacon (STScI)	<a href="#">Transcript Link</a>
				Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2006/46">http://hubblesite.org/newscenter/archive/releases/2006/46</a>	
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/chjmuYzsoCs">https://youtu.be/chjmuYzsoCs</a>	Zoom into NGC 1300	Credit: NASA, ESA, and G. Bacon (STScI)	<a href="#">Transcript Link</a>
				Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2005/01">http://hubblesite.org/newscenter/archive/releases/2005/01</a>	
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/7OIGUvJI-98">https://youtu.be/7OIGUvJI-98</a>	Jupiter's Shrinking Great Red Spot	Video Credit: NASA, ESA, and G. Bacon and M. Estacion (STScI) Acknowledgment: C. Go, H. Hammel (Space Science Institute and AURA), and R. Beebe (New Mexico State University) Science Credit: A. Simon (Goddard Space Flight Center), G. Orton (Jet Propulsion Laboratory), J. Rogers (University of Cambridge, UK), and M. Wong and I. de Pater (University of California, Berkeley)	<a href="#">Transcript Link</a>
				Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2014/24">http://hubblesite.org/newscenter/archive/releases/2014/24</a>	
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/C-PXrsT6MM">https://youtu.be/C-PXrsT6MM</a>	Science Visualization of Quadruple Saturn Moon Transit	Credit: NASA, ESA, and G. Bacon (STScI) Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2009/12">http://hubblesite.org/newscenter/archive/releases/2009/12</a>	<a href="#">Transcript Link</a>

2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/GjzTM6xEyJM">https://youtu.be/GjzTM6xEyJM</a>	3D Flythrough of the Orion Nebula	<p>This scientific visualization takes the viewer across interstellar space and into a 3D model of the Orion Nebula. Seven individual shots of about ten seconds each are cross-faded together to form the sequence. After traversing among the stars, the camera descends through Orion's veil of bluish gas, down the valley carved by winds and high energy radiation, and past the bright stars of the trapezium in the core of the nebula. The 3D model combines astronomical knowledge, scientific intuition, and artistic interpretation to create an awe-inspiring journey into the star forming cloud.</p> <p>NASA, ESA, F. Summers, G. Bacon, L. Frattare, Z. Levay, and K. Litaker (STScI)          Acknowledgment: A. Mellinger, R. Gendler, and R. Andreo</p> <p>Additional information about the Orion Nebula Hubble image is available on HubbleSite:  <a href="http://hubblesite.org/newscenter/archive/releases/2006/01">http://hubblesite.org/newscenter/archive/releases/2006/01</a></p>	<a href="#">Transcript Link</a>
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/UygDaCDVZZs">https://youtu.be/UygDaCDVZZs</a>	Zoom into an Infrared 3D Visualization of the Horsehead Nebula	<p>Credit: NASA, ESA, and G. Bacon, T. Davis, L. Frattare, Z. Levay, and F. Summers (Science Visualization Team, STScI)          Image Credits: NASA, ESA, and the Hubble Heritage Team (STScI/AURA), J. Emerson (ESO, VISTA), and Cambridge Astronomical Survey Unit</p> <p>Additional information is available on HubbleSite:  <a href="http://hubblesite.org/newscenter/archive/releases/2013/12">http://hubblesite.org/newscenter/archive/releases/2013/12</a></p>	<a href="#">Transcript Link</a>
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/JhBRbq287FQ">https://youtu.be/JhBRbq287FQ</a>	Zoom into NGC 5189	<p>Credit: NASA, ESA, and G. Bacon (STScI)</p> <p>Additional information is available on HubbleSite:  <a href="http://hubblesite.org/newscenter/archive/releases/2012/49">http://hubblesite.org/newscenter/archive/releases/2012/49</a></p>	<a href="#">Transcript Link</a>
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/jnU_gSEBdrY">https://youtu.be/jnU_gSEBdrY</a>	Zoom into the Cat's Eye Nebula	<p>Credit: ESA, NASA, HEIC, NOT, Digitized Sky Survey 2, G. Bacon and The Hubble Heritage Team (STScI/AURA) and R. Corradi (Isaac Newton Group of Telescopes, Spain)</p> <p>Additional information is available on HubbleSite:  <a href="http://hubblesite.org/newscenter/archive/releases/2004/27">http://hubblesite.org/newscenter/archive/releases/2004/27</a></p>	<a href="#">Transcript Link</a>

2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/Z2SYnROwLzI">https://youtu.be/Z2SYnROwLzI</a>	A Pan Across the Butterfly Nebula	Credit: NASA, ESA, and G. Bacon (STScI)	<a href="#">Transcript Link</a>
				Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2009/25/image/f">http://hubblesite.org/newscenter/archive/releases/2009/25/image/f</a>	
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/faafFt2ApyY">https://youtu.be/faafFt2ApyY</a>	Zoom into NGC 2174 (the Monkey Head Nebula)	Credit: NASA, ESA, and G. Bacon (STScI)	<a href="#">Transcript Link</a>
				Acknowledgment: A. Fujii, the Digitized Sky Survey 2, and the Hubble Heritage Team (STScI/AURA)	
				Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2014/18/image/a">http://hubblesite.org/newscenter/archive/releases/2014/18/image/a</a>	
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/vPxLVgTIAbk">https://youtu.be/vPxLVgTIAbk</a>	Zoom into the Crab Nebula	Credit: NASA, ESA, and G. Bacon (STScI)	<a href="#">Transcript Link</a>
				Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2005/37">http://hubblesite.org/newscenter/archive/releases/2005/37</a>	
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/28BybE1Le14">https://youtu.be/28BybE1Le14</a>	Zoom into the Carina Nebula	Credit: NASA, ESA, and G. Bacon (STScI)	<a href="#">Transcript Link</a>
				Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2007/16">http://hubblesite.org/newscenter/archive/releases/2007/16</a>	
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/PsS80huL47c">https://youtu.be/PsS80huL47c</a>	Constructing the Hertzsprung-Russell Diagram for Globular Star Cluster Omega Centauri	A real Hubble Space Telescope color image of the core of the globular star cluster Omega Centauri is used to construct a Hertzsprung-Russell diagram of the stellar populations in the cluster. When stars are sorted by brightness and color, they can be used to create a graph that astronomers use to trace cluster evolution.	<a href="#">Transcript Link</a>
				Credit: NASA, ESA, and J. Anderson, R. van der Marel, G. Bacon, and M. Estacion (STScI)	
				Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2010/28">http://hubblesite.org/newscenter/archive/releases/2010/28</a>	

2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/7SMs7e46ngg">https://youtu.be/7SMs7e46ngg</a>	Omega Centauri Proper Motion	All the stars in this simulated model of the globular star cluster Omega Centauri appear to be moving in random directions, like a swarm of bees. Astronomers used Hubble's exquisite resolving power to measure positions for stars in 2002 and 2006. From these measurements, they can predict the stars' future movement, shown here for the next 10,000 years.	<a href="#">Transcript Link</a>
				Credit: NASA, ESA, and J. Anderson (STScI)	
				Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2010/28">http://hubblesite.org/newscenter/archive/releases/2010/28</a>	
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/MarcYg2T9Aw">https://youtu.be/MarcYg2T9Aw</a>	Zoom into Omega Centauri	Credit: NASA, ESA, and G. Bacon (STScI)	<a href="#">Transcript Link</a>
				Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2010/28">http://hubblesite.org/newscenter/archive/releases/2010/28</a>	
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/CJiqjppxTol">https://youtu.be/CJiqjppxTol</a>	Image Sequence of V838 Monocerotis Epochs	Credit: NASA, ESA, and Z. Levay and G. Bacon (STScI)	<a href="#">Transcript Link</a>
				Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2006/50">http://hubblesite.org/newscenter/archive/releases/2006/50</a>	
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/43MwDs7MCps">https://youtu.be/43MwDs7MCps</a>	Zoom into NGC 3603	Credit: NASA, ESA, and G. Bacon (STScI)	<a href="#">Transcript Link</a>
				Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2010/22">http://hubblesite.org/newscenter/archive/releases/2010/22</a>	
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/lh2Ca6-W9M">https://youtu.be/lh2Ca6-W9M</a>	A 3D Visualization of Supernova Remnant 0509-67.5	Credit: NASA, ESA, and G. Bacon, T. Borders, L. Frattare, Z. Levay, and F. Summers (STScI)	<a href="#">Transcript Link</a>
				Additional information is available on HubbleSite: <a href="http://hubblesite.org/newscenter/archive/releases/2010/27">http://hubblesite.org/newscenter/archive/releases/2010/27</a>	

2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/A6jSK8wUZwg">https://youtu.be/A6jSK8wUZwg</a>	Zoom into the Tarantula Nebula	<p>Video Credit: NASA, ESA, and G. Bacon (STScI)</p> <p>Science Credit: NASA, ESA, D. Lennon and E. Sabbi (ESA/STScI), J. Anderson, S. E. de Mink, R. van der Marel, T. Sohn, and N. Walborn (STScI), N. Bastian (Excellence Cluster, Munich), L. Bedin (INAF, Padua), E. Bressert (ESO), P. Crowther (University of Sheffield), A. de Koter (University of Amsterdam), C. Evans (UKATC/STFC, Edinburgh), A. Herrero (IAC, Tenerife), N. Langer (AifA, Bonn), I. Platais (JHU), and H. Sana (University of Amsterdam)</p> <p>Additional information is available on HubbleSite:  <a href="http://hubblesite.org/newscenter/archive/releases/2012/01">http://hubblesite.org/newscenter/archive/releases/2012/01</a></p>	<a href="#">Transcript Link</a>
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/IEr40oQb4n0">https://youtu.be/IEr40oQb4n0</a>	Zoom into NGC 602	<p>Credit: NASA, ESA, and G. Bacon and the Hubble Heritage Team (STScI/AURA)</p> <p>Additional information is available on HubbleSite:  <a href="http://hubblesite.org/newscenter/archive/releases/2007/04/image/a">http://hubblesite.org/newscenter/archive/releases/2007/04/image/a</a></p>	<a href="#">Transcript Link</a>
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/5n9WgXv02gQ">https://youtu.be/5n9WgXv02gQ</a>	Zoom into Spiral Galaxy M83	<p>Credit: NASA, ESA, and G. Bacon (STScI)</p> <p>Additional information is available on HubbleSite:  <a href="http://hubblesite.org/newscenter/archive/releases/2014/04">http://hubblesite.org/newscenter/archive/releases/2014/04</a></p>	<a href="#">Transcript Link</a>
2014 12 31	Hubble Space Telescope	<a href="https://youtu.be/oVFc-UzYPXI">https://youtu.be/oVFc-UzYPXI</a>	Zoom into the Sombrero Galaxy	<p>Credit: NASA and G. Bacon (STScI)</p> <p>Additional information is available on HubbleSite:  <a href="http://hubblesite.org/newscenter/archive/releases/2003/28">http://hubblesite.org/newscenter/archive/releases/2003/28</a></p>	<a href="#">Transcript Link</a>

2014 12 30	Hubble Space Telescope	<a href="https://youtu.be/rlxoFFcRXaE">https://youtu.be/rlxoFFcRXaE</a>	Tonight's Sky January 2015	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In January, the Quadrantid meteor shower will flicker through the night sky.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2014 12 01	Hubble Space Telescope	<a href="https://youtu.be/ozlwWdRVtBc">https://youtu.be/ozlwWdRVtBc</a>	Tonight's Sky December 2014	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In December, get great views of Venus, Mars and Jupiter.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2014 11 20	Hubble Space Telescope	<a href="https://youtu.be/1VNQ6TOW1bM">https://youtu.be/1VNQ6TOW1bM</a>	A Black Hole Visits Baltimore	<p>A scientific visualization of a black hole passing through Baltimore's Inner Harbor.</p> <p>This scientific visualization demonstrates the visual distortion known as gravitational lensing. A black hole, with roughly the mass of the planet Saturn, is imagined to pass over the Inner Harbor in Baltimore, MD. The view of the buildings on the far side of the harbor are distorted using the calculated effects of Einstein's general relativity.</p> <p>A black hole warps the space around it. Light that passes near a black hole will follow curved paths and can create multiple images and other visual artifacts. Note that the sky can sometimes be seen by looking below the black hole. These distortions are similar to what can be produced using glass lenses, and are produced by similar optics equations. The effects are called gravitational lensing - lensing that redirects light using mass instead of glass.</p> <p>The calculations for the visualization use a planar approximation that assumes the buildings are all at the same distance, but are otherwise accurate. Note also that foreground objects, like the boat mast, were not isolated and removed from the image before distortion. In a fully accurate visualization, foreground objects would not be distorted.</p> <p>For more information or to download this video, visit:  <a href="http://hubblesite.org/videos/video_details/25-a-black-hole-visits-">http://hubblesite.org/videos/video_details/25-a-black-hole-visits-</a></p>	<a href="#">Transcript Link</a>

2014 10 31	Hubble Space Telescope	<a href="https://youtu.be/ZiKYc3Px63w">https://youtu.be/ZiKYc3Px63w</a>	Tonight's Sky November 2014	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." November boasts the annual Leonid meteor shower.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2014 10 07	Hubble Space Telescope	<a href="https://youtu.be/UKds8gt1hfo">https://youtu.be/UKds8gt1hfo</a>	Tonight's Sky October 2014	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." October boasts an intriguing variety of eclipse, planets and stars. And that faint smudge in the sky is our nearest large galactic companion, Andromeda.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2014 08 27	Hubble Space Telescope	<a href="https://youtu.be/xZepIwINA4E">https://youtu.be/xZepIwINA4E</a>	Tonights Sky September 2014	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In September, Mars and Saturn are visible low in the evening sky and the star cluster M2 in Aquarius is featured.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2014 08 01	Hubble Space Telescope	<a href="https://youtu.be/7oTJEr13egA">https://youtu.be/7oTJEr13egA</a>	Tonight's Sky August 2014	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In August, planets drift together into a stately dance.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2014 07 22	Hubble Space Telescope	<a href="https://youtu.be/jko6gHUzj50">https://youtu.be/jko6gHUzj50</a>	Behind the Webb The X Factor (Episode 24)	<p>The James Webb Space Telescope is being tested at a number of facilities, including some operated by NASA. One of these locations is in Huntsville, Alabama, at the Marshall Space Flight Center. Engineers are repurposing a test chamber originally built to test another one of NASA's Great Observatories, the Chandra X-ray Observatory. 15 years ago, Chandra was launched into space and continues to be a vital contributor to our understanding of the universe. "Behind the Webb" host Mary Estacion takes us to Marshall to check out how Webb and Chandra share a common bond.</p>	<a href="#">Transcript Link</a>

2014 06 30	Hubble Space Telescope	<a href="https://youtu.be/lkGAluOE2oA">https://youtu.be/lkGAluOE2oA</a>	Tonight's Sky July 2014	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In July, the annual Delta Aquarid meteor shower streaks through the night.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2014 06 05	Hubble Space Telescope	<a href="https://youtu.be/Z-cOmbe-xyk">https://youtu.be/Z-cOmbe-xyk</a>	Tonight's Sky June 2014	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." June boasts an intriguing variety of planets and stars.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2014 05 21	Hubble Space Telescope	<a href="https://youtu.be/f-MUcj6fX_g">https://youtu.be/f-MUcj6fX_g</a>	Behind the Webb Star Catcher (Episode 23)	<p>The James Webb Space Telescope will have four "cameras" at its disposal to explore the universe. The Near-Infrared Camera, or NIRCAM, will focus its attention on distant galaxies and help us learn more about planets around other stars. But NIRCAM is unique. Its vision will also be used to help align the telescope, a critical step in making the observatory function properly. Join "Behind the Webb" Host Mary Estacion as she visits the Lockheed Martin facility in Palo Alto, California to find out more about the making of NIRCAM.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.</p> <p>"Behind the Webb" archive:  <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>

2014 05 20	Hubble Space Telescope	<a href="https://youtu.be/tN1RP-rtk24">https://youtu.be/tN1RP-rtk24</a>	Evaporating Peaks 3D Pillars in the Monkey Head Nebula	This video is the stereo 3D version of "Evaporating Peaks: Pillars in the Monkey Head Nebula". Note that the zoom is 2D, and only the second part of the sequence has stereo 3D.	<a href="#">Transcript Link</a>
<p>The Monkey Head Nebula (also known as NGC 2174) is a star-forming region in which bright, newborn stars near the center of the nebula illuminate the surrounding gas with energetic radiation. This radiation, along with strong stellar winds, erodes away the lower density gas. Pockets of higher density gas resist this erosion, and form pillars and peaks along the inner edge of the roughly circular cloud.</p>					
<p>This video showcases visible and infrared light views of a collection of pillars along one edge of the nebula. The sequence begins with a view of the night sky near the constellation of Gemini and Orion. The view zooms through observations from the Digitized Sky Survey 2 to reveal a Hubble Space Telescope visible light view of the top of this region of pillars.</p>					
<p>A cross-fade transitions not only between Hubble's visible and infrared light views, but also from a two-dimensional image to a three-dimensional sculpted model of the region. The camera then pulls back to reveal the landscape of evaporating peaks of gas and dust surrounded by stars. Note that the visualization is intended to be a reasonable interpretation (not scientifically accurate) and that distances within the model are significantly compressed.</p>					
2014 04 29	Hubble Space Telescope	<a href="https://youtu.be/OgLDlrUkiH0">https://youtu.be/OgLDlrUkiH0</a>	Tonight's Sky May 2014	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." May features the Eta Aquarid meteor shower, and could feature a meteor storm later in the month as Earth passes through the debris from Comet 209P/LINEAR.	<a href="#">Transcript Link</a>
<p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p>					

2014 04 25	Hubble Space Telescope	<a href="https://youtu.be/ktwlbc_rQBx8">https://youtu.be/ktwlbc_rQBx8</a>	Evaporating Peaks Pillars in the Monkey Head Nebula	<p>The Monkey Head Nebula (also known as NGC 2174) is a star-forming region in which bright, newborn stars near the center of the nebula illuminate the surrounding gas with energetic radiation. This radiation, along with strong stellar winds, erodes away the lower density gas. Pockets of higher density gas resist this erosion, and form pillars and peaks along the inner edge of the roughly circular cloud.</p> <p>This video showcases visible and infrared light views of a collection of pillars along one edge of the nebula. The sequence begins with a view of the night sky near the constellation of Gemini and Orion. The view zooms through observations from the Digitized Sky Survey 2 to reveal a Hubble Space Telescope visible light view of the top of this region of pillars.</p> <p>A cross-fade transitions not only between Hubble's visible and infrared light views, but also from a two-dimensional image to a three-dimensional sculpted model of the region. The camera then pulls back to reveal the landscape of evaporating peaks of gas and dust surrounded by stars. Note that the visualization is intended to be a reasonable interpretation (not scientifically accurate) and that distances within the model are significantly compressed.</p> <p>For more information and to download this video:  <a href="http://hubblesite.org/videos/video_details/23-evaporating-peaks-pillars-in-the-monkey-head">http://hubblesite.org/videos/video_details/23-evaporating-peaks-pillars-in-the-monkey-head</a></p>	<a href="#">Transcript Link</a>
2014 03 26	Hubble Space Telescope	<a href="https://youtu.be/bwODnCLEzkl">https://youtu.be/bwODnCLEzkl</a>	Celestial Snow Angel 3D Star-forming Region Sharpless 2-106	<p>This video is the stereo 3D version of "Celestial Snow Angel: Star-forming Region Sharpless 2-106"</p> <p>The star-forming region Sharpless 2-106 (S106) has a bi-polar shape that, in a December 2011 Hubble press release, was likened to a "celestial snow angel". The "wings" of the nebula are actually bubbles of hot gas created by stellar winds and high energy radiation coming from a massive, hot, newborn star in the center. A ring of dense gas and dust encircles that star and forces the outflows into two oppositely directed lobes. The blue light in the S106 image represents hotter gas along the interior of the lobes, while the red light comes from cooler gas along the exterior.</p> <p>This movie presents a scientific visualization of S106 in which the Hubble image has been augmented with additional field-of-view from the Subaru Infrared Telescope. A couple research articles in science journals described the basic hourglass-like shape of the nebula. Based on those papers, and augmented by intuition and artistic license as needed, the stars and the lobes of glowing gas from the Hubble/Subaru two-dimensional image have been separated and sculpted to create the depth in the movie. This three-dimensional view illustrates and emphasizes that many of the objects contained within astronomical images are not at the same distance, but, in fact, spread across many light-years of space. Note, however, that the relative distances between stars and the nebula have been compressed.</p>	<a href="#">Transcript Link</a>

2014 03 26	Hubble Space Telescope	<a href="https://youtu.be/YzfbOECnuQg">https://youtu.be/YzfbOECnuQg</a>	Celestial Snow Angel Star-forming Region Sharpless 2-106	<p>The star-forming region Sharpless 2-106 (S106) has a bi-polar shape that, in a December 2011 Hubble press release, was likened to a "celestial snow angel". The "wings" of the nebula are actually bubbles of hot gas created by stellar winds and high energy radiation coming from a massive, hot, newborn star in the center. A ring of dense gas and dust encircles that star and forces the outflows into two oppositely directed lobes. The blue light in the S106 image represents hotter gas along the interior of the lobes, while the red light comes from cooler gas along the exterior.</p> <p>This movie presents a scientific visualization of S106 in which the Hubble image has been augmented with additional field-of-view from the Subaru Infrared Telescope. A couple research articles in science journals described the basic hourglass-like shape of the nebula. Based on those papers, and augmented by intuition and artistic license as needed, the stars and the lobes of glowing gas from the Hubble/Subaru two-dimensional image have been separated and sculpted to create the depth in the movie. This three-dimensional view illustrates and emphasizes that many of the objects contained within astronomical images are not at the same distance, but, in fact, spread across many light-years of space. Note, however, that the relative distances between stars and the nebula have been compressed.</p> <p>News release: <a href="https://hubblesite.org/contents/news-releases/2011/news-2011-38.html">https://hubblesite.org/contents/news-releases/2011/news-2011-38.html</a></p>	<a href="#">Transcript Link</a>
2014 03 26	Hubble Space Telescope	<a href="https://youtu.be/DhvbTScnyHQ">https://youtu.be/DhvbTScnyHQ</a>	A Horse of a Different Color 3D	<p>This is the stereo 3D version of "A Horse of a Different Color".</p> <p>The Horsehead Nebula is a dark cloud of dense gas and dust located just below the belt of Orion on the sky. A visible light view shows a strong silhouette resembling the horse's head used for a knight in chess. Infrared light, however, reveals a more complex scene, as shown in Hubble's 2013 image. The warm parts of the clouds glow in infrared light, plus longer infrared wavelengths can penetrate deeper into the clouds. A dark and relatively featureless scene is revealed as a glowing gaseous landscape.</p> <p>This video presents a scientific visualization of the Horsehead Nebula as seen in infrared light. To fill out the widescreen frame, the central Hubble image has been augmented by ground-based observations from the European Southern Observatory's Visible and Infrared Survey Telescope for Astronomy (VISTA). The three-dimensional interpretation has been sculpted to create a wispy and mountainous environment, with stars distributed in an approximate and statistical manner. The computer graphics model is intended to be scientifically reasonable, but not fully accurate. This imaginative traverse provides an inspiring spaceflight experience that brings the celestial scene to life.</p> <p>For more information or to download this video, visit: <a href="http://hubblesite.org/videos/video_details/12-a-horse-of-a-different-color-3d">http://hubblesite.org/videos/video_details/12-a-horse-of-a-different-color-3d</a></p>	<a href="#">Transcript Link</a>

2014 03 26 Hubble Space Telescope <https://youtu.be/drTtTsEvWBs> A Horse of a Different Color The Gaseous Landscape of the Horsehead Nebula in Infrared

The Horsehead Nebula is a dark cloud of dense gas and dust located just below the belt of Orion on the sky. A visible light view shows a strong silhouette resembling the horse's head used for a knight in chess. Infrared light, however, reveals a more complex scene, as shown in Hubble's 2013 image. The warm parts of the clouds glow in infrared light, plus longer infrared wavelengths can penetrate deeper into the clouds. A dark and relatively featureless scene is revealed as a glowing gaseous landscape.

[Transcript Link](#)

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For more information or to download this video, visit:  
<https://hubblesite.org/contents/news-releases/2013/news-2013-12.html>

2014 03 26 Hubble Space Telescope <https://youtu.be/UTmStdmE6o4> Cosmic eXploration Hubble eXtreme Deep Field

In 2004, the Hubble Ultra Deep Field (HUDF) provided a groundbreaking view of distant galaxies. In 2009, those data were augmented with new infrared observations to create the HUDF-IR. In 2012, the Hubble eXtreme Deep Field (HXDF) combined those images along with a complete census of archival datasets to see yet farther into the universe. The HXDF contains roughly 5500 galaxies stretching over 13 billion light-years of space, and represents astronomy's deepest view into the cosmos.

[Transcript Link](#)

This scientific visualization depicts a flight through the HXDF galaxies. Using measured and estimated distances for approximately three thousand galaxies, astronomers and visualizers constructed a three-dimensional model of the galaxy distribution. The camera traverses through the thirteen-billion-light-year dataset and ends in blackness, not because more distant galaxies do not exist, but because such galaxies have not yet been observed. For cinematic reasons, the exceedingly vast distances in the 3D model have been significantly compressed.

For more information or to download this video, visit:  
[http://hubblesite.org/videos/video\\_details/22-cosmic-exploration-hubble-extreme-deep-field](http://hubblesite.org/videos/video_details/22-cosmic-exploration-hubble-extreme-deep-field)

For more videos, visit: <http://hubblesite.org/videos/>

2014 03 07 Hubble Space Telescope [https://youtu.be/1ekzgn\\_n\\_ilw](https://youtu.be/1ekzgn_n_ilw) Star Clusters in Collision

The dense star cluster called R136 is located within the Tarantula Nebula (also known as 30 Doradus), a giant star-forming region in a nearby dwarf galaxy. Astronomers suspect that the multiple clumps of stars within R136 are actually a pair of interacting star clusters. Supporting evidence for this idea comes from the large number of "runaway stars" -- stars moving with unusually high velocity -- that have been found within the nebula. A single, large star cluster would not produce as many runaway stars as two smaller interacting star clusters. In addition, some of these runaway stars are older than the estimated age of R136.

[Transcript Link](#)

This computer simulation shows the gravitational interaction of two young star clusters. The 3.5 million years of the encounter have been compressed into just 27 seconds. The smaller star cluster approaches from the left, has its trajectory bent strongly as it swings by the larger cluster, and then returns for a second pass. The visualization then zooms in and dissolves to a Hubble Space Telescope image of star cluster R136. After a partial zoom out, the sequence continues forward in time to show the clusters merging into a single cluster.

At the start of the simulation, the smaller cluster is not gravitationally bound to the large cluster. After the first interaction, the pair of star clusters become gravitationally entwined and destined to merge together. A noticeable byproduct of the encounter is that interactions between stars efficiently eject massive stars from the smaller cluster. Some of these ejected stars

2014 03 07 Hubble Space Telescope [https://youtu.be/IUDtKc\\_vGcOo](https://youtu.be/IUDtKc_vGcOo) Across the Universe Hubble Ultra Deep Field

The Hubble Ultra Deep Field (HUDF) peers deeper into the universe than any previous visible-light image. Multiple observations of the same small patch of sky were combined for an equivalent exposure time of more than 11 days. Revealed within the image are thousands of galaxies located many billions of light-years away. Many of these galaxies are too small and too faint to be otherwise seen. Most importantly, because the light from distant galaxies requires billions of years to cross the intervening space, astronomers get to see them as they were billions of years ago. Much of the history of galaxy development can be found within the HUDF image.

[Transcript Link](#)

This scientific visualization flies through a 3D model of the HUDF galaxies. Each of the more than 5,000 galaxies in the model was cut out of the HUDF image and placed at its appropriate distance (as calculated from redshift measurements). The virtual camera flies through this long, thin galaxy dataset, showing how galaxy sizes, shapes, and colors change as one looks both out in space and back in time. Note that, in order to traverse the cosmos in a reasonable amount of time, the distance scale in the model was compressed by a factor of a few hundred.

For more information or to download this video, visit:  
[http://hubblesite.org/videos/video\\_details/3-across-the-universe-hubble-ultra-deep-field](http://hubblesite.org/videos/video_details/3-across-the-universe-hubble-ultra-deep-field)

For more videos, visit: <http://hubblesite.org/videos/>

2014 03 07 Hubble Space Telescope <https://youtu.be/L0bohs9OV88> Moon Shadows on Saturn Saturn's wide, but very thin, rings are tilted with respect to its plane of orbit around the Sun. Once every 15 years, the rings are edge-on (perpendicular) to the Sun. During those times, some of Saturn's moons can cast shadows across the rings. [Transcript Link](#)

This time-lapse movie shows the icy moons Enceladus, Mimas, Dione, and Tethys orbiting Saturn. Enceladus, seemingly chased by Mimas, is first to speed past the rings and in front of the planet. Both moons cast small shadows on the planet, but only Enceladus casts a shadow on the rings. The orbit of Mimas is inclined so that its shadow misses the rings. Dione is next, and its long shadow also tracks across the ring system. As the three moons move across Saturn's disk, the viewer catches a fleeting view of Tethys as it moves behind the planet on the right.

The 30-second movie is created from Hubble images taken over a 9½-hour span. The images were taken Nov. 17, 1995, with Hubble's Wide Field and Planetary Camera 2. The movie has a standard aspect ratio, but is presented within a widescreen frame - the black bars along the sides are normal.

For more information or to download this video, visit:  
[http://hubblesite.org/videos/video\\_details/8-moon-shadows-on-saturn](http://hubblesite.org/videos/video_details/8-moon-shadows-on-saturn)

For more videos, visit: <http://hubblesite.org/videos/>

2014 03 07 Hubble Space Telescope <https://youtu.be/LuJMeYGbOi0> Mystic Mountain 3D Bright Pillar in the Carina Nebula This video is the stereo 3D version of "Mystic Mountain: Bright Pillar in the Carina Nebula." [Transcript Link](#)

The Carina Nebula is a vast, star-forming region in our Milky Way Galaxy. Within the nebula, new stars form out of dense, dark clouds of gas and dust. The bright, high-energy radiation from massive young stars erodes away the dark gas. Tall pillars, such as the ones featured in this sequence, form when dense pockets of gas resist that erosion. The illuminating stars for these pillars are located well off the top of the image. At the peaks of two pillars, jets of emission serve as the birth announcements of the new stars buried within the clouds. The image is nicknamed "Mystic Mountain" and was released in celebration of the 20th anniversary of the launch of the Hubble Space Telescope.

Like most astronomical objects, the Carina Nebula is too far away for the Hubble Space Telescope to see in a three-dimensional perspective. This scientific visualization separates the stars and layers of the nebula to create depth from the 2D image. A virtual camera flies into the resulting 3D model, which is informed by astronomical knowledge but is not scientifically accurate. Distances, in particular, have been greatly compressed.

For more information or to download this video, visit:  
[http://hubblesite.org/videos/video\\_details/2-mystic-mountain-3d-bright-pillar-in-the-carina](http://hubblesite.org/videos/video_details/2-mystic-mountain-3d-bright-pillar-in-the-carina)

2014 03 07 Hubble Space Telescope <https://youtu.be/PBqWy4uTUh8> Active Galaxy Hercules A Visible & Radio Comparison

The active galaxy Hercules A was given that name because it is the brightest radio source in the constellation of Hercules. Astronomers found that the double-peaked radio emission corresponded to a giant elliptical galaxy cataloged as 3C 348. Unusually, this behemoth galaxy is not found within a large cluster of hundreds of galaxies, but rather within a comparatively small group of dozens of galaxies. The 'active' part of the galaxy is the supermassive black hole in its core, which spews out strong jets of energetic particles that produce enormous lobes of radio emission. Some astronomers suspect that Hercules A may be the result of two galaxies merging together.

This video envisions a three-dimensional look at the combined visible light (Hubble Space Telescope) and radio emission (Very Large Array) from Hercules A. The size of these radio lobes dwarfs the large galaxy and extends throughout the volume of the galaxy group. This visualization is intended only to be a scientifically reasonable illustration of the three-dimensional structures. In particular, the galaxy distances within the group are based on a statistical model, and not measured values.

For more information or to download this video, visit:  
[http://hubblesite.org/videos/video\\_details/9-active-galaxy-hercules-a-visible-radio](http://hubblesite.org/videos/video_details/9-active-galaxy-hercules-a-visible-radio)

For more videos, visit: <http://hubblesite.org/videos/>

[Transcript Link](#)

2014 03 07 Hubble Space Telescope <https://youtu.be/QNDNtNFAvI> Jupiter Globe Rotation

The giant planet Jupiter has a diameter of more than 10 times Earth's diameter. Its striped and dynamic atmosphere, dotted with massive, powerful storms, has been a continuing Hubble target over the years.

A collection of images from 2007 have been combined to get full, even coverage of Jupiter. The resulting mosaic has been mapped onto a sphere, and one full rotation is presented in the visualization.

For more information or to download this video, visit:  
[http://hubblesite.org/videos/video\\_details/6-jupiter-globe-rotation](http://hubblesite.org/videos/video_details/6-jupiter-globe-rotation)

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2014 03 07	Hubble Space Telescope	<a href="https://youtu.be/WNVY9BclDok">https://youtu.be/WNVY9BclDok</a>	The True Shape of Orion	<p>Constellations are drawn as stick figures connecting bright stars in the sky. This two-dimensional representation gives the impression that the stars are all at the same distance. In addition, the idea of a "bright star" can be misleading, as the apparent brightness we see depends upon both the star's intrinsic brightness and its distance from Earth. This scientific visualization addresses both of these issues by viewing the Orion constellation from a three-dimensional perspective. The true space distribution of the constellation as well as how stellar brightness changes with viewing position is revealed by circling around the stars.</p> <p>The camera begins with a pan across the sky to Orion. The lines of the 2D stick figure constellation are drawn in. As the camera slowly begins to circle around the centroid of the stars, the stick figure quickly breaks into a long, extended 3D structure. The camera backs up to keep the entire figure onscreen for the complete circle. At the end of the circle, the camera pushes forward to finish at the location of the Earth/Sun (to avoid an obvious distraction, the Sun is not included in the visualization).</p> <p>During that final camera push, notice how Sirius grows in apparent brightness (bottom of frame, just left of center). While Sirius is the brightest star in our night sky, a major contribution of its apparent brightness comes from its proximity to the Sun.</p> <p>For more information or to download this video, visit:  <a href="http://hubblesite.org/videos/video_details/5-the-true-shape-of-">http://hubblesite.org/videos/video_details/5-the-true-shape-of-</a></p>	<a href="#">Transcript Link</a>
2014 03 07	Hubble Space Telescope	<a href="https://youtu.be/n1ntwPDgdbb">https://youtu.be/n1ntwPDgdbb</a>	Flyby of JWST at L2 Point in 3D	<p>This video is the stereo 3D version of "Flyby of JWST at L2 Point".</p> <p>The James Webb Space Telescope (JWST) is the next of NASA's Great Observatories; following in the line of the Hubble Space Telescope, the Compton Gamma-ray Observatory, the Chandra X-ray Observatory, and the Spitzer Space Telescope. JWST combines qualities of two of its predecessors, observing in infrared light, like Spitzer, with fine resolution, like Hubble.</p> <p>The telescope has a 6.5 meter mirror composed of 18 hexagonal segments in a honeycomb pattern. Protecting the sensitive research instruments is a large sunshield about the size of a tennis court. Further protection comes from the observatory's remote location in a place called the second LaGrange point (L2). Orbiting the Sun at L2, JWST will be about a million miles from Earth (roughly four times more distant than the Moon) and will always have Earth and the Sun in the same direction.</p> <p>This animation, designed as an homage to a shot from "2001: A Space Odyssey", flies by and circles around a model of JWST at L2. The opening of the sequence illustrates the L2 location, showing the Moon in the foreground, Earth in the mid-ground, and the Sun in the background.</p> <p>For more information or to download this video, visit:  <a href="http://hubblesite.org/videos/video_details/14-flyby-of-jwst-at-l2-point-in-3d">http://hubblesite.org/videos/video_details/14-flyby-of-jwst-at-l2-point-in-3d</a></p>	<a href="#">Transcript Link</a>

2014 03 07	Hubble Space Telescope	<a href="https://youtu.be/nSxMXFC2aQA">https://youtu.be/nSxMXFC2aQA</a>	Mystic Mountain Bright Pillar in the Carina Nebula	<p>The Carina Nebula is a vast, star-forming region in our Milky Way Galaxy. Within the nebula, new stars form out of dense, dark clouds of gas and dust. The bright, high-energy radiation from massive young stars erodes away the dark gas. Tall pillars, such as the ones featured in this sequence, form when dense pockets of gas resist that erosion. The illuminating stars for these pillars are located well off the top of the image. At the peaks of two pillars, jets of emission serve as the birth announcements of new stars buried within the clouds. The image is nicknamed "Mystic Mountain" and was released in celebration of the 20th anniversary of the launch of the Hubble Space Telescope.</p> <p>Like most astronomical objects, the Carina Nebula is too far away for the Hubble Space Telescope to see in a three-dimensional perspective. This scientific visualization separates the stars and layers of the nebula to create depth from the 2D image. A virtual camera flies into the resulting 3D model, which is informed by astronomical knowledge but is not scientifically accurate. Distances, in particular, have been greatly compressed.</p> <p>For more information or to download this video, visit:  <a href="http://hubblesite.org/videos/video_details/1-mystic-mountain-bright-pillar-in-the-carina">http://hubblesite.org/videos/video_details/1-mystic-mountain-bright-pillar-in-the-carina</a></p> <p>For more videos, visit: <a href="http://hubblesite.org/videos/">http://hubblesite.org/videos/</a></p>	<a href="#">Transcript Link</a>
2014 03 07	Hubble Space Telescope	<a href="https://youtu.be/X7qiiofidB4">https://youtu.be/X7qiiofidB4</a>	Pan Past JWST at L2 Point in 3D	<p>This video is the stereo 3D version of "Pan Past JWST at L2 Point".</p> <p>The James Webb Space Telescope (JWST) is the next of NASA's Great Observatories, following in the line of the Hubble Space Telescope, the Compton Gamma-ray Observatory, the Chandra X-ray Observatory, and the Spitzer Space Telescope. JWST combines qualities of two of its predecessors, observing in infrared light, like Spitzer, with fine resolution, like Hubble.</p> <p>The telescope has a 6.5-meter mirror composed of 18 hexagonal segments in a honeycomb pattern. Protecting the sensitive research instruments is a large sunshield about the size of a tennis court. Further protection comes from the observatory's remote location in a place called the second LaGrange point (L2). Orbiting the Sun at L2, JWST will be about a million miles from Earth (roughly four times more distant than the Moon) and will always be positioned with the Earth and the Sun in the same direction, behind its sunshield.</p> <p>In this animation, designed as an homage to a shot from "2001: A Space Odyssey," we fly by and circle around a model of JWST at L2. The opening of the sequence illustrates the L2 location, showing the Moon in the foreground, Earth in the mid-ground, and the Sun in the background.</p> <p>For more information or to download this video, visit:  <a href="http://hubblesite.org/videos/video_details/16-pan-past-jwst-at-l2-point-in-3d">http://hubblesite.org/videos/video_details/16-pan-past-jwst-at-l2-point-in-3d</a></p>	<a href="#">Transcript Link</a>

2014 03 07	Hubble Space Telescope	<a href="https://youtu.be/mSt6xFpqfUg">https://youtu.be/mSt6xFpqfUg</a>	Active Galaxy Hercules A in 3D Visible & Radio Comparison	<p>This is the stereo 3D version of "Active Galaxy Hercules A: Visible &amp; Radio Comparison."</p> <p>The active galaxy Hercules A was given that name because it is the brightest radio source in the constellation of Hercules. Astronomers found that the double-peaked radio emission corresponded to a giant elliptical galaxy cataloged as 3C 348. Unusually, this behemoth galaxy is not found within a large cluster of hundreds of galaxies, but rather within a comparatively small group of dozens of galaxies. The 'active' part of the galaxy is the supermassive black hole in its core, which spews out strong jets of energetic particles that produce enormous lobes of radio emission. Some astronomers suspect that Hercules A may be the result of two galaxies merging together.</p> <p>This video envisions a three-dimensional look at the combined visible light (Hubble Space Telescope) and radio emission (Very Large Array) from Hercules A. The size of these radio lobes dwarfs the large galaxy and extends throughout the volume of the galaxy group. This visualization is intended only to be a scientifically reasonable illustration of the three-dimensional structures. In particular, the galaxy distances within the group are based on a statistical model, and not measured values.</p> <p>For more information or to download this video, visit:  <a href="http://hubblesite.org/videos/video_details/10-active-galaxy-hercules-a-in-3d-visible-radio">http://hubblesite.org/videos/video_details/10-active-galaxy-hercules-a-in-3d-visible-radio</a></p>	<a href="#">Transcript Link</a>
2014 03 06	Hubble Space Telescope	<a href="https://youtu.be/Q8CNtrN7WGU">https://youtu.be/Q8CNtrN7WGU</a>	Building the Webb Hubble Booth at SXSW	A timelapse video of our team, including Tony Darnell, Dr. Bonnie Meinke and Dr. Frank Summers assembling the Webb and Hubble booth, including the partial Webb mirror model.	<a href="#">Transcript Link</a>
2014 03 04	Hubble Space Telescope	<a href="https://youtu.be/MIKFuhOp1es">https://youtu.be/MIKFuhOp1es</a>	Tonight's Sky March 2014	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In March, the constellations of spring mark the change of seasons.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>

2014 03 01	Hubble Space Telescope	<a href="https://youtu.be/COXNyTp5brM">https://youtu.be/COXNyTp5brM</a>	Galaxy Collisions Simulation vs Observations	Galaxies are vast swarms of billions of stars along with huge interstellar clouds of gas and dust. A spiral galaxy has a broad, thin disk shape, with a bulge of stars in its core, Within the disk are winding arms of dark dust lanes and bright star-forming regions, This structure is stable when left alone, but is relatively easily disturbed when another galaxy passes near. Astronomers have studied galaxy interactions for decades, and Hubble's keen vision has been particularly useful for examining new details.	<a href="#">Transcript Link</a>
				A 2008 Hubble press release unveiled 59 images of galaxy interactions. Each image, however, captures only one moment in a billion-year-long collision process. This visualization of a galaxy collision supercomputer simulation shows the entire collision sequence, and compares the different stages of the collision to different interacting galaxy pairs observed by Hubble. The two spiral galaxies in the simulation distort, twist, and merge together, matching different images at different times and different viewing angles. With this combination of research simulations and high resolution observations, these titanic crashes can be better illustrated and understood.	
				For more information or to download this video, visit: <a href="http://hubblesite.org/videos/video_details/17-galaxy-collisions-simulation-vs-observations">http://hubblesite.org/videos/video_details/17-galaxy-collisions-simulation-vs-observations</a>	
				For more videos, visit: <a href="http://hubblesite.org/videos/">http://hubblesite.org/videos/</a>	
2014 02 28	Hubble Space Telescope	<a href="https://youtu.be/mUuzMPegPQ">https://youtu.be/mUuzMPegPQ</a>	Jupiter Globe Rotation - Loop	This version of "Jupiter Globe Rotation" does not have titles or credits, in order to allow it to be played continuously in a loop.	<a href="#">Transcript Link</a>
				The giant planet Jupiter has a diameter of more than 10 times Earth's diameter. Its striped and dynamic atmosphere, dotted with massive, powerful storms, has been a continuing Hubble target over the years.	
				A collection of images from 2007 have been combined to get full, even coverage of Jupiter. The resulting mosaic has been mapped onto a sphere, and one full rotation is presented in the visualization.	
				For more information or to download this video, visit: <a href="http://hubblesite.org/videos/video_details/7-jupiter-globe-rotation-loop">http://hubblesite.org/videos/video_details/7-jupiter-globe-rotation-loop</a>	
				For more videos, visit: <a href="http://hubblesite.org/videos/">http://hubblesite.org/videos/</a>	
2014 02 07	Hubble Space Telescope	<a href="https://youtu.be/t4YiUwITfCw">https://youtu.be/t4YiUwITfCw</a>	Frontier Fields at AAS 224	At this year's 224th Meeting of the American Astronomical Society, lead investigator for Frontier Fields, Dr. Jennifer Lotz chats with Tony Darnell and Alberto Conti about the latest observations of galaxy cluster Abell 2744	<a href="#">Transcript Link</a>

2014 02 03	Hubble Space Telescope	<a href="https://youtu.be/OHve_m1iU1iQ">https://youtu.be/OHve_m1iU1iQ</a>	Behind the Webb 100 Points of Light (Episode 22)	<p>The Webb Telescope's Near Infrared Spectrograph (NIRSpec) instrument will be used to study star formation and the chemical composition of young, distant galaxies. The instrument breaks near-infrared light into its components for closer examination and analysis. But what makes NIRSpec even more special is its 'multi-object' capability which enables it to look at as many as 100 objects at the same time.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at <a href="http://hubblesite.org">Hubblesite.org</a>.</p> <p>"Behind the Webb" archive:  <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>
2014 01 31	Hubble Space Telescope	<a href="https://youtu.be/y7NawhKhT4M">https://youtu.be/y7NawhKhT4M</a>	Tonight's Sky February 2014	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In February, Orion is your guide to a number of fascinating objects.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2014 01 30	Hubble Space Telescope	<a href="https://youtu.be/PV60NeX2DAM">https://youtu.be/PV60NeX2DAM</a>	Disk Detective Finding the Birthplace of Planets	<p>Scientists are combing the galaxy looking for stars that could be harboring planet-forming disks. They need your help to explain this puzzling part of stellar evolution!</p> <p>Using data from the NASA WISE spacecraft, Disk Detectives is a citizen science initiative designed to get the public involved in helping identify stars that could have debris disks around them. These disks suggest that these stars are in the early stages of forming planetary systems.</p> <p>Please join +Tony Darnell and +Alberto Conti as they discuss this exciting new +The Zooniverse project with the science team that developed it!</p> <p>The site was released yesterday, here is the link:  <a href="http://diskdetective.org">http://diskdetective.org</a></p>	<a href="#">Transcript Link</a>
2014 01 07	Hubble Space Telescope	<a href="https://youtu.be/-M2r2fhh6eM">https://youtu.be/-M2r2fhh6eM</a>	Frontier Fields Exploring the Depths of the Universe	<p>This video presents an overview of the Frontier Fields project. While Hubble has a celebrated history of deep field observations, astronomers can use massive galaxy clusters as gravitational lenses to see a little farther into space and a little further back in time. This ambitious, community-developed project is a collaboration among NASA's Great Observatories to probe the earliest stages of galaxy development. Initial data from this multiyear effort was presented at the American Astronomical Society Meeting in January 2014.</p> <p>Credit: NASA, ESA, and F. Summers, B. Lawton, M. Lussier, G. Bacon, and D. Coe (STScI)</p> <p>Music: "The Moments of Our Mornings" (K. Engel)/CC BY-NC 3.0</p>	<a href="#">Transcript Link</a>

2013 12 30	Hubble Space Telescope	<a href="https://youtu.be/IE9_t9DH6uE">https://youtu.be/IE9_t9DH6uE</a>	Tonight's Sky January 2014	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In January, Jupiter blazes through the night, and Mars rises after midnight.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2013 12 11	Hubble Space Telescope	<a href="https://youtu.be/rRMUqfAIWhc">https://youtu.be/rRMUqfAIWhc</a>	Behind the Webb All Sewn Up (Episode 21)	<p>The James Webb Space Telescope's tennis court-sized sunshield is made of a special material called Kapton. But finding Kapton this size is impossible, so engineers must assemble pieces in order to make the sunshield the proper size. This episode of Behind the Webb shows us how the sunshield becomes the proper size and how it's being tested to ensure it will withstand the rigors of space. (Please note: Some parts of the video are obscured due to the proprietary processes used to make the sunshield.)</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.</p> <p>"Behind the Webb" archive:  <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>
2013 12 02	Hubble Space Telescope	<a href="https://youtu.be/5wklfu9KQXo">https://youtu.be/5wklfu9KQXo</a>	Tonight's Sky December 2013	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In December, look for the double-star Eta Cassiopeiae with binoculars, and brave the cold to see the Geminid meteor shower in mid-month.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2013 11 15	Hubble Space Telescope	<a href="https://youtu.be/DiBkYAnQ_CY">https://youtu.be/DiBkYAnQ_CY</a>	Great Comets from Humble Origins & Eyes on ISON	<p>Great Comets from Humble Origins &amp; Eyes on ISON  Dr. Frank Summers, Space Telescope Science Institute</p> <p>Comets can be one of the most amazing sights in the heavens, with bright, naked-eye comas and tails stretching across half the sky. The most spectacular comet appearances are called "great" comets, but such an occurrence is infrequent enough that it is also nicknamed a "comet of the century." In preparation for the Thanksgiving Day perihelion passage of Comet ISON, along with its great possibilities, it's a proper time to examine the humble origins, from the most rural parts of the solar system, of these briefly blazing celestial visitors.</p> <p>Recorded live on November 11, 2013 at the Space Telescope Science Institute in Baltimore, MD, USA</p> <p>For more information: <a href="http://hubblesite.org/about_us/public_talks/">http://hubblesite.org/about_us/public_talks/</a></p>	<a href="#">Transcript Link</a>

2013 10 29	Hubble Space Telescope	<a href="https://youtu.be/efXfKPWvIKQ">https://youtu.be/efXfKPWvIKQ</a>	Tonight's Sky November 2013	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." November brings both the Leonid meteor shower and a hybrid solar eclipse.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2013 09 19	Hubble Space Telescope	<a href="https://youtu.be/A7-zqRU3tRQ">https://youtu.be/A7-zqRU3tRQ</a>	Will Comet ISON Break Up	<p>Comet ISON is an interesting comet in many ways, but we know it won't hit us. There is speculation among astronomers however, that it could break up into pieces.</p> <p>Why? Well, that's why we made this video. Please let us know what you think in the comments!</p> <p>For more on Comet ISON, please visit our blog:  <a href="http://hubblesite.org/go/ison">http://hubblesite.org/go/ison</a></p>	<a href="#">Transcript Link</a>
2013 09 16	Hubble Space Telescope	<a href="https://youtu.be/L7TPADR6F4E">https://youtu.be/L7TPADR6F4E</a>	Behind the Webb Webb's Shaping Up (Episode 20)	<p>The sunshield of the James Webb Space Telescope is made up of five layers of a specially designed material that includes Kapton, aluminum, and silicon. But it's not only what it's made of that allows the sunshield to keep the observatory the right temperature to make its observations. Behind the Webb host Mary Estacion takes us to Huntsville, Alabama, to see how engineers are testing each layer of the sunshield.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.</p> <p>"Behind the Webb" archive:  <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>

2013 09 05	Hubble Space Telescope	<a href="https://youtu.be/LL5L4Vfgkdo">https://youtu.be/LL5L4Vfgkdo</a>	Horse of a Different Color Hubble's Universe Unfiltered	<p>The Horsehead Nebula is a striking, dark gas cloud just below Orion's belt. It is a favorite of both professional and amateur astronomers. However, as a dark nebula, most of its true structure is hidden from visible light observations. To celebrate the 23rd anniversary of the Hubble Space Telescope, we revealed the considerable detail of that unseen nebular structure via an infrared portrait. The result is even more striking, and something one just doesn't see very often: a veritable astronomical horse of a different color.</p> <p>"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at <a href="http://hubblesite.org/explore_astronomy/hubbles_universe_unfiltered/">http://hubblesite.org/explore_astronomy/hubbles_universe_unfiltered/</a></p> <p>Horsehead Nebula <a href="http://hubblesite.org/newscenter/archive/releases/2001/12/image/a/">http://hubblesite.org/newscenter/archive/releases/2001/12/image/a/</a></p> <p>Horsehead Nebula in Infrared Light <a href="http://hubblesite.org/newscenter/archive/releases/2013/12/image/a/">http://hubblesite.org/newscenter/archive/releases/2013/12/image/a/</a></p>	<a href="#">Transcript</a> <a href="#">Link</a>
2013 08 27	Hubble Space Telescope	<a href="https://youtu.be/IWFyRA9FR1E">https://youtu.be/IWFyRA9FR1E</a>	Tonight's Sky September 2013	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." Look for dense star cluster M2, home to 150,000 stars.</p> <p>CORRECTION: The Harvest Moon will occur on September 19 this year, not September 29, as stated in the video.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite. <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript</a> <a href="#">Link</a>

2013 08 06	Hubble Space Telescope	<a href="https://youtu.be/t7Y6YL6YiQk">https://youtu.be/t7Y6YL6YiQk</a>	Planet Discoveries Revisited Hubble's Universe Unfiltered	<p>The field of extrasolar planets has exploded over the last couple decades, providing an entirely new suite of information on planetary systems in general and perspective on our own solar system in particular. One of the most exciting advances came when astronomers were at last able to see a few of these planets directly. Even those who maintain "I'll believe it when I see it" now have visual proof that our solar system is not alone in the universe. However, science advances rapidly, and the discoveries announced only a few years ago are already ripe for an update. Revisiting three direct detections provides confirmation, archival data, and some spirited scientific discussion.</p> <p>"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries.</p> <p>Find more episodes at HubbleSite.org.  <a href="http://hubblesite.org/explore_astronomy/hubbles_universe_unfiltered">http://hubblesite.org/explore_astronomy/hubbles_universe_unfiltered</a></p> <p>Related Links:</p> <p>Hubble Directly Observes Planet Orbiting Fomalhaut  <a href="http://hubblesite.org/newscenter/archive/releases/2008/39/">http://hubblesite.org/newscenter/archive/releases/2008/39/</a></p> <p>Hubble Reveals Rogue Planetary Orbit for Fomalhaut b  <a href="http://hubblesite.org/newscenter/archive/releases/2013/01/">http://hubblesite.org/newscenter/archive/releases/2013/01/</a></p>	<a href="#">Transcript Link</a>
2013 07 30	Hubble Space Telescope	<a href="https://youtu.be/a6O1XfxEAA">https://youtu.be/a6O1XfxEAA</a>	Building the Next Generation Telescope and Preparing the Next Generation of Explorers		<a href="#">Transcript Link</a>
2013 07 29	Hubble Space Telescope	<a href="https://youtu.be/vzi-NROfPEM">https://youtu.be/vzi-NROfPEM</a>	Tonight's Sky August 2013	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." August hosts the Perseid meteor shower and some lovely star clusters.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.</p> <p><a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>

2013 07 18	Hubble Space Telescope	<a href="https://youtu.be/skWt9gtGp6E">https://youtu.be/skWt9gtGp6E</a>	Will Comet ISON Hit The Earth	For more information on Comet ISON: <a href="http://hubblesite.org/go/ison">http://hubblesite.org/go/ison</a>	<a href="#">Transcript Link</a>
				Comets can be pretty intimidating when they appear in our night sky. One of the more pressing questions we ask when a new one is discovered is, "Will it hit us?"	
				Here's a video explaining where Comet ISON will travel through our solar system and whether inhabitants of the Earth have anything to worry about.	
2013 06 28	Hubble Space Telescope	<a href="https://youtu.be/szBKmSowwqU">https://youtu.be/szBKmSowwqU</a>	Tonight's Sky July 2013	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." July hosts the Delta Aquarid meteor shower and and three glorious nebulae.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
				Visit Tonight's Sky on HubbleSite.	
				<a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a>	
2013 06 27	Hubble Space Telescope	<a href="https://youtu.be/PvYF-HUgnoc">https://youtu.be/PvYF-HUgnoc</a>	Behind the Webb Spinning a Webb (Episode 19)	The Webb Space Telescope's launch is a short-lived but stressful phase of the mission. Engineers need to make sure the various parts of the spacecraft can withstand the forces involved. Join us at Goddard Space Flight Center, where one of the portions of the Webb Telescope is being subjected to 1.25 times the launch loads it will see.	<a href="#">Transcript Link</a>
				"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.	
				"Behind the Webb" archive: <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive">http://webbtelescope.org/webb_telescope/behind_the_webb/archive</a>	
2013 06 12	Hubble Space Telescope	<a href="https://youtu.be/gsnQn7fno">https://youtu.be/gsnQn7fno</a>	The Future of Space Astronomy Hubble's Universe Unfiltered	The Hubble Space Telescope has made amazing astronomical discoveries for 23 years. It still has a good number of years left, but without the Space Shuttle, servicing missions are no longer possible. The natural question is "what's next?"	<a href="#">Transcript Link</a>
				"Hubble's Universe Unfiltered" is a recurring broadcast from HubbleSite.org, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at <a href="http://hubblesite.org/explore_astronomy/hubbles_unfiltered/">http://hubblesite.org/explore_astronomy/hubbles_unfiltered/</a>	

2013 06 07	Hubble Space Telescope	<a href="https://youtu.be/MX_nTpFFd4s">https://youtu.be/MX_nTpFFd4s</a>	The Making of a Hubble Image Arp 274	<p>This video story explains the journey of the Hubble Arp 274 raw data to finished color image.</p> <p>CREDITS: NASA, ESA, and M. Estacion (STScI)</p> <p>Read more about this in the HubbleSite news release: <a href="https://hubblesite.org/contents/news-releases/2009/news-2009-14.html">https://hubblesite.org/contents/news-releases/2009/news-2009-14.html</a></p>	<a href="#">Transcript Link</a>
2013 06 06	Hubble Space Telescope	<a href="https://youtu.be/ZnIDHxeyAG0">https://youtu.be/ZnIDHxeyAG0</a>	Behind the Webb at the World Science Festival (Episode 5)	<p>Visitors to the World Science Festival in New York City were greeted by a startling sight: the Webb Space Telescope. The life-sized model of the telescope gave viewers a glimpse at the next big leap for orbiting observatories.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at <a href="http://hubblesite.org">Hubblesite.org</a>.</p> <p>"Behind the Webb" archive: <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive">http://webbtelescope.org/webb_telescope/behind_the_webb/archive</a></p>	<a href="#">Transcript Link</a>
2013 06 06	Hubble Space Telescope	<a href="https://youtu.be/ZRDA4NPRw8Q">https://youtu.be/ZRDA4NPRw8Q</a>	Behind the Webb Got Your Back (Episode 7)	<p>Webb's mirror, made of 18 individual segments, will be folded up inside the rocket that carries the telescope into orbit. Engineers are constructing the frame at the back of the mirror that will adjust Webb's segments to achieve a single perfect focus.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at <a href="http://hubblesite.org">Hubblesite.org</a>.</p> <p>"Behind the Webb" archive: <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive">http://webbtelescope.org/webb_telescope/behind_the_webb/archive</a></p>	<a href="#">Transcript Link</a>
2013 06 06	Hubble Space Telescope	<a href="https://youtu.be/BQ7CugNVhV4">https://youtu.be/BQ7CugNVhV4</a>	Behind the Webb Stretching Webb's Wings (Episode 8)	<p>Webb's protective sunshield will be folded up inside the rocket that carries it into orbit. Engineers explain the process of unfurling the sunshield from a million miles away.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at <a href="http://hubblesite.org">Hubblesite.org</a>.</p> <p>"Behind the Webb" archive: <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive">http://webbtelescope.org/webb_telescope/behind_the_webb/archive</a></p>	<a href="#">Transcript Link</a>
2013 06 06	Hubble Space Telescope	<a href="https://youtu.be/KvF0xPYtSyA">https://youtu.be/KvF0xPYtSyA</a>	Behind the Webb Not So Heavy Metal (Episode 9)	<p>Webb's perfectly polished, highly reflective mirrors start their life as a pile of rubble, mined from a desert in Utah. Join "Behind the Webb" as we explore a beryllium mining operation.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at <a href="http://hubblesite.org">Hubblesite.org</a>.</p> <p>"Behind the Webb" archive: <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive">http://webbtelescope.org/webb_telescope/behind_the_webb/archive</a></p>	<a href="#">Transcript Link</a>

2013 05 31 Hubble Space Telescope <https://youtu.be/TI5j-6vGGnA> Cosmic Collisions Hubble Studies Different Stages in the Collision Between Galaxies (Visualization) An image of a galaxy collision captures only one stage of billion-year-long collision process. This visualization of a galaxy collision shows the entire collision sequence, and compares the different stages of the collision to different interacting galaxy pairs observed by NASA's Hubble Space Telescope. With this combination of research simulations and high resolution observations, these titanic crashes can be better understood.

CREDITS:

NASA, ESA, and F. Summers (STScI)

Simulation: Chris Mihos (Case Western Reserve University) and Lars Hernquist (Harvard University)

Read more about this video in the HubbleSite news release:

<https://hubblesite.org/contents/news-releases/2008/news-2008-16.html>

2013 05 28 Hubble Space Telescope <https://youtu.be/A0bbV FzIsK0> Tonight's Sky June 2013

Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." June's display includes four impressive constellations.

[Transcript Link](#)

"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.

Visit Tonight's Sky on HubbleSite.

[http://hubblesite.org/explore\\_astronomy/tonights\\_sky](http://hubblesite.org/explore_astronomy/tonights_sky)

2013 05 24 Hubble Space Telescope <https://youtu.be/a94pl2lrYM> Exploring the Structure of the Ring Nebula

This video begins with a zoom into the constellation Lyra to the location of the Ring Nebula and the new image from the Hubble Space Telescope and the Large Binocular Telescope. Then the three-dimensional model of the Ring Nebula, developed from the new observations, is explored. The main ring glows in the light of nitrogen, shown in red. That ring is filled with oxygen emission, shown in green. Perpendicular lobes are filled with the hottest emission from helium, shown in blue. Dense dark knots line the interior of the ring, and their shadows glow like spikes in hydrogen emission, shown in red. Hydrogen emission also reveals the inner and outer halos. A circuit around the 3D model showcases the more accurate and more detailed structure astronomers have uncovered.

[Transcript Link](#)

CREDITS:

NASA, ESA, and G. Bacon, F. Summers, and Mary Estacion (STScI)

Read more about this in the HubbleSite news release:

<https://hubblesite.org/contents/news-releases/2013/news-2013-13.html>

2013 05 23	Hubble Space Telescope	<a href="https://youtu.be/jtCFOgiTA9Y">https://youtu.be/jtCFOgiTA9Y</a>	Hubble Galaxies Across Space and Time	"Hubble: Galaxies Across Space and Time" is an award-winning IMAX Super Short. Explore 9 billion years of cosmic history in less than three minutes as you fly through one of Hubble's iconic images. These galaxies were photographed by the Hubble Space Telescope as part of the Great Observatory Origins Deep Survey (GOODS) project. Hubble scientists and imaging specialists worked for months to extract individual galaxy images, placing them in a 3D model according to their approximate true distances.	<a href="#">Transcript Link</a>
2013 05 20	Hubble Space Telescope	<a href="https://youtu.be/jlpjz93zhVQ">https://youtu.be/jlpjz93zhVQ</a>	JWST in Texas Hands-on Education	As part of the Webb exhibit in Austin during South by Southwest, teachers were invited to have their students explore the future of scientific research and technology with projects ranging from models to dioramas. In this video, a middle school teacher and one of her students explain how the Webb Space Telescope captured their attention and helped foster a love for science.	<a href="#">Transcript Link</a>
2013 05 14	Hubble Space Telescope	<a href="https://youtu.be/xfXoave3gl8">https://youtu.be/xfXoave3gl8</a>	Behind the Webb The Great Plane (Episode 11)	The Webb Space Telescope's eighteen separate mirror segments will be held in place by a graphite structure called a backplane. This one-of-a-kind piece needs to be thermally stable to -400 degrees Fahrenheit (204 degrees Celsius), and hold Webb's mirror segments steady to within one-ten thousandth the diameter of a human hair. Engineers at ATK in Magna, Utah, take us through the process of designing and creating the backplane.	<a href="#">Transcript Link</a>
2013 04 29	Hubble Space Telescope	<a href="https://youtu.be/M1p32TDiydE">https://youtu.be/M1p32TDiydE</a>	Tonight's Sky May 2013	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." May is a great month for eclipses, both lunar and solar! And the Eta Aquarid meteors are here to shower the night with lovely sights.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.</p> <p><a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>

2013 04 05	Hubble Space Telescope	<a href="https://youtu.be/r8YQsFZyGzw">https://youtu.be/r8YQsFZyGzw</a>	Crash of the Titans Hubble's Universe Unfiltered	<p>Astronomers have known for decades that our Milky Way Galaxy and the neighboring Andromeda Galaxy are approaching each other. What we haven't known is just how close the encounter will be. Recent Hubble measurements have been able to pin down the trajectory with a smashing conclusion: in about four billion years the two galaxies will crash together in a nearly head-on collision. Further, the spiral galaxies will have completely merged and transformed to create a single elliptical galaxy around six billion years in the future.</p> <p>"Hubble's Universe Unfiltered" is a recurring broadcast from HubbleSite.org, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.</p> <p>HubbleSite page:  <a href="http://hubblesite.org/explore_astronomy/hubbles_universe_unfiltered/episodes/17">http://hubblesite.org/explore_astronomy/hubbles_universe_unfiltered/episodes/17</a></p> <p>* Notes</p> <p>NASA's Hubble Shows Milky Way is Destined for Head-on Collision with Andromeda Galaxy:  <a href="http://hubblesite.org/newscenter/archive/releases/2012/20/">http://hubblesite.org/newscenter/archive/releases/2012/20/</a></p> <p>Milky Way drawing          Credit: NASA, JPL-Caltech, R. Hurt (SSC-Caltech)</p>	<a href="#">Transcript Link</a>
2013 03 29	Hubble Space Telescope	<a href="https://youtu.be/h8R5JD89XHY">https://youtu.be/h8R5JD89XHY</a>	Tonight's Sky April 2013	<p>"Tonight's Sky" provides backyard stargazers with a monthly guide to the northern hemisphere's skywatching events. In April, look for Jupiter and Saturn in the evening skies, investigate the Big Dipper and Leo the Lion, and catch some "falling stars" from the Lyrid meteor shower.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky/">http://hubblesite.org/explore_astronomy/tonights_sky/</a></p>	<a href="#">Transcript Link</a>
2013 03 21	Hubble Space Telescope	<a href="https://youtu.be/4lbXlin2Mo0">https://youtu.be/4lbXlin2Mo0</a>	Behind the Webb On the Wings of Webb (Episode 18)	<p>The 21-foot-wide primary mirror of the Webb Telescope is so large that it will have to fold up to fit into a rocket and be launched to space. Join host Mary Estacion as she travels to ATK in Magna, Utah, where the mirror's foldable backplane "wings" have been constructed.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Telescope, Hubble's successor. Find more episodes at Hubblesite.org.</p> <p>"Behind the Webb" archive:  <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>

2013 03 21	Hubble Space Telescope	<a href="https://youtu.be/YDPUIneWtLw">https://youtu.be/YDPUIneWtLw</a>	Behind the Webb Roundup of JWST at SXSW (Special Edition)	<p>The South by South festival in Austin, Texas, played host to a new guest this year, a full-scale model of the James Webb Space Telescope. The tennis-court-sized replica anchored a NASA exhibit that included interactive activities and talks on astronomy. The three-day event was capped off by the breaking of a Guinness World Record for the largest outdoor astronomy lesson.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.</p> <p>"Behind the Webb" archive:  <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>
2013 03 21	Hubble Space Telescope	<a href="https://youtu.be/--gKFPTiDcg">https://youtu.be/--gKFPTiDcg</a>	Behind the Webb Behind the Breaking of a Guinness Record (Special Edition)	<p>At this year's South by Southwest festival in Austin, Texas, the Guinness World Record for the largest outdoor astronomy class was broken. Capturing the tension and excitement leading up to the event, this video also shows what it takes to break a world record.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.</p> <p>"Behind the Webb" archive:  <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>
2013 03 20	Hubble Space Telescope	<a href="https://youtu.be/kJ5ckYP5PEc">https://youtu.be/kJ5ckYP5PEc</a>	Behind the Webb Shedding Light on the Webb (Special Edition)	<p>During the South by Southwest festival in Austin, Texas, thousands of people have been awed by the sight of the full-scale model of NASA's Webb Telescope, both during the day and at night. "Behind the Webb" host Mary Estacion talks to lighting designer Todd Ward about how he uses light as art to create memorable experiences for guests.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.</p> <p>"Behind the Webb" archive  <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>
2013 03 09	Hubble Space Telescope	<a href="https://youtu.be/XXUMyBNrFIU">https://youtu.be/XXUMyBNrFIU</a>	Behind the Webb NASA's Exhibit at SXSW (Special Edition)	<p>It's Day 1 of NASA's special exhibit at this year's South by Southwest festival. "Behind the Webb" host, Mary Estacion, takes us on a tour of what to expect at the event.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.</p> <p>"Behind the Webb" archive  <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>

2013 03 08	Hubble Space Telescope	<a href="https://youtu.be/g-QpvlNuxRE">https://youtu.be/g-QpvlNuxRE</a>	Behind the Webb Preparations at SXSW (Special Edition)	A full-scale model of NASA's James Webb Space Telescope is on display at this year's South by Southwest Festival. The replica and numerous science education activities are expected to draw thousands of people from all over the country. Set to music, this video captures the excitement of the upcoming event and what visitors can look forward to.	<a href="#">Transcript Link</a>
				"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.	
				"Behind the Webb" archive <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a>	
2013 03 07	Hubble Space Telescope	<a href="https://youtu.be/eoBL8fE87VE">https://youtu.be/eoBL8fE87VE</a>	Behind the Webb Preview of SXSW 2013 (Special Edition)	The South by Southwest Festival being held in Austin this month features a special three-day exhibit of NASA's next great space observatory, the James Webb Space Telescope. A full-scale model of the Webb is being set up on the banks of the city's Lady Bird Johnson Lake. The tennis-court-sized replica is part of NASA's effort to bring the excitement of space exploration to people of all ages. The host of the "Behind the Webb" video podcast series, Mary Estacion, previews this unique educational experience.	<a href="#">Transcript Link</a>
				"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.	
				"Behind the Webb" archive <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a>	
2013 02 25	Hubble Space Telescope	<a href="https://youtu.be/Bhm8iufptZo">https://youtu.be/Bhm8iufptZo</a>	Tonight's Sky March 2013	"Tonight's Sky" provides backyard stargazers with a monthly guide to the northern hemisphere's skywatching events. In March, look for the Beehive Cluster and find out how to spot Jupiter and Saturn.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
				Visit Tonight's Sky on HubbleSite.	
				<a href="http://hubblesite.org/explore_astronomy/tonights_sky/">http://hubblesite.org/explore_astronomy/tonights_sky/</a>	
2013 02 01	Hubble Space Telescope	<a href="https://youtu.be/v1xq28SOLcg">https://youtu.be/v1xq28SOLcg</a>	Behind the Webb Third Light's the Charm (Episode 17)	Before light from the universe reaches Webb's cameras and science instruments, it will reflect off four different mirrors — the primary, secondary, tertiary and fine-steering mirrors. The light's third stop along its zigzagging path is the tertiary mirror, housed within the Aft Optics Subsystem at the center of Webb's 21-foot primary mirror. Mary Estacion visits Ball Aerospace in Boulder, Colorado, to learn about the tertiary mirror's role and to see how the mirror's optics are being tested.	<a href="#">Transcript Link</a>
				"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.	
				"Behind the Webb" archive <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a>	

2013 01 31	Hubble Space Telescope	<a href="https://youtu.be/56DTiFPqTIQ">https://youtu.be/56DTiFPqTIQ</a>	Behind the Webb Canada's Dynamic Duo (Episode 16)	Host Mary Estacion takes us to Ottawa, Canada, to examine the Canadian Space Agency's contributions to the Webb telescope. The Canadian Space Agency is providing the Fine Guidance Sensor, which will enable Webb to point accurately at objects astronomers want to observe, and the Near-Infrared Imager and Slitless Spectrograph, an instrument that will break light into colors for analysis, enabling the study of both extremely bright objects and the detection of faint objects near stars — like distant planets.	<a href="#">Transcript Link</a>
				"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at <a href="http://hubblesite.org">Hubblesite.org</a> .	
				"Behind the Webb" archive <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a>	
2013 01 28	Hubble Space Telescope	<a href="https://youtu.be/zfqjMi03Cjo">https://youtu.be/zfqjMi03Cjo</a>	Tonight's Sky February 2013	"Tonight's Sky" provides backyard stargazers with a monthly guide to the northern hemisphere's skywatching events. In February, look for the brilliant stars of Orion and for dazzling Jupiter blazing overhead.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
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				<a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a>	
2012 11 27	Hubble Space Telescope	<a href="https://youtu.be/Aqi3srqjhvo">https://youtu.be/Aqi3srqjhvo</a>	Tonight's Sky December 2012	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In December, look for open star cluster M34 and keep your eyes open for the Geminid meteor shower.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
				Visit Tonight's Sky on HubbleSite.	
				<a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a>	
2012 09 27	Hubble Space Telescope	<a href="https://youtu.be/rau-nq33xBk">https://youtu.be/rau-nq33xBk</a>	Tonight's Sky October 2012	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In October, remnants of Halley's Comet burn up in the Orionid meteor shower.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
				Visit Tonight's Sky on HubbleSite.	
				<a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a>	

2012 09 25	Hubble Space Telescope	<a href="https://youtu.be/odprMkzOst8">https://youtu.be/odprMkzOst8</a>	Flight Through the Hubble eXtreme Deep Field	<p>This scientific visualization depicts a flight through the galaxies in the Hubble eXtreme Deep Field (XDF). Using measured and estimated distances for approximately three thousand galaxies, astronomers and visualizers constructed a three-dimensional model of the XDF galaxy distribution. The camera traverses more than thirteen billion light-years of space. For cinematic reasons, the exceedingly vast distances in the 3D model have been greatly compressed.</p> <p>CREDITS:  Visualization: NASA, ESA, and F. Summers, L. Frattare, T. Davis, Z. Levay, and G. Bacon (STScI).  Science: G. Illingworth, P. Oesch, and D. Magee (University of California, Santa Cruz).</p>	<a href="#">Transcript Link</a>
2012 09 25	Hubble Space Telescope	<a href="https://youtu.be/gu_VhzhlgGw">https://youtu.be/gu_VhzhlgGw</a>	Hubble Extreme Deep Field Pushes Back Frontiers of Time and Space	<p>This video explains how astronomers meticulously assembled mankind's deepest view of the universe from combining Hubble Space Telescope exposures taken over the past decade. Guest scientists are Dr. Garth Illingworth and Dr. Marc Postman.</p>	<a href="#">Transcript Link</a>
2012 09 12	Hubble Space Telescope	<a href="https://youtu.be/C0unmfkTIG8">https://youtu.be/C0unmfkTIG8</a>	Infrared Beyond the Visible	<p>The answers to some of the universe's greatest mysteries are being beamed through the night sky in light we can't see with human eyes ... but it won't be invisible to us forever. Explore the wonder of infrared astronomy and the promise of the upcoming Webb Space Telescope through the technological wizardry of paper cutouts. Informs you faster and guaranteed to contain 100 percent more llamas than any astronomy video ever produced before!</p> <p>To learn more about this video and infrared astronomy, visit <a href="http://webbtelescope.org/go/beyond">http://webbtelescope.org/go/beyond</a></p> <p>To learn more about the Webb Space Telescope, visit <a href="http://webbtelescope.org/">http://webbtelescope.org/</a></p> <p>Interested in finding out more about Webb's science? Try here: <a href="http://webbtelescope.org/webb_telescope/science_on_the_edge/">http://webbtelescope.org/webb_telescope/science_on_the_edge/</a></p> <p>Curious about the technology that goes into the telescope? This link will help: <a href="http://webbtelescope.org/webb_telescope/technology_at_the_extremes/">http://webbtelescope.org/webb_telescope/technology_at_the_extremes/</a></p>	<a href="#">Transcript Link</a>

2012 07 27	Hubble Space Telescope	<a href="https://youtu.be/YPSwnLZJZ_I">https://youtu.be/YPSwnLZJZ_I</a>	Tonight's Sky August 2012	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In August, we have two full moons in one month, a great look at the Ring Nebula, and the Perseid meteor shower.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.</p> <p><a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2012 06 27	Hubble Space Telescope	<a href="https://youtu.be/2Ebj2QYbusM">https://youtu.be/2Ebj2QYbusM</a>	Tonight's Sky July 2012	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In July, the Delta Aquarid meteors pay a visit, and a trio of nebulae grace the sky.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.</p> <p><a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2012 06 15	Hubble Space Telescope	<a href="https://youtu.be/fgn7bKs042Q">https://youtu.be/fgn7bKs042Q</a>	Behind the Webb The Golden Touch (Episode 15)	<p>The Webb Telescope's mirrors are coated in an extremely thin film of gold. This gold layer, only a few millionths of an inch thick, enables the mirrors to best reflect the infrared light the telescope seeks. The thinner the layer, the better off the telescope will be -- every bit of weight counts when a telescope as big as Webb is being lifted into space by a rocket. Join us at Quantum Coating in New Jersey, where engineers are vaporizing gold to apply a thin, even layer to the telescope's mirrors.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.</p> <p>"Behind the Webb" archive <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>
2012 05 02	Hubble Space Telescope	<a href="https://youtu.be/4EUst2L-YXw">https://youtu.be/4EUst2L-YXw</a>	Black Hole Flare Simulation Star Being Devoured By Black Hole	<p>This computer simulation shows a star being shredded by the gravity of a massive black hole. Some of the stellar debris falls into the black hole and some of it is ejected into space at high speeds. The areas in white are regions of highest density, with progressively redder colors corresponding to lower-density regions. The blue dot pinpoints the black hole's location. The elapsed time corresponds to the amount of time it takes for a Sun-like star to be ripped apart by a black hole a million times more massive than the Sun.</p> <p>Find out more at HubbleSite: <a href="https://hubblesite.org/contents/media/videos/2012/18/691-Video.html">https://hubblesite.org/contents/media/videos/2012/18/691-Video.html</a></p> <p>Credit: NASA, S. Gezari (The Johns Hopkins University), and J. Guillochon (University of California, Santa Cruz)</p>	<a href="#">Transcript Link</a>

2012 04 27	Hubble Space Telescope	<a href="https://youtu.be/fXmIPYOUTpE">https://youtu.be/fXmIPYOUTpE</a>	Tonight's Sky May 2012	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." May brings us the Eta Aquarid meteor shower and a solar eclipse.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.</p> <p><a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2012 04 17	Hubble Space Telescope	<a href="https://youtu.be/H33BXuPXB98">https://youtu.be/H33BXuPXB98</a>	Zoom and Pan into 30 Doradus (with narration and music)	<p>This video is a zoom into the largest star-forming region in the satellite galaxy, Large Magellanic Cloud. At the heart of the small galaxy is the Tarantula nebula. Hubble unveils a rich tapestry of star birth and star destruction among its millions of stars. The video zooms into the core of the Tarantula nebula, which is a region called 30 Doradus that contains several young star clusters.</p> <p>Read the HubbleSite news release: <a href="https://hubblesite.org/contents/news-releases/2012/news-2012-01.html">https://hubblesite.org/contents/news-releases/2012/news-2012-01.html</a></p>	<a href="#">Transcript Link</a>
2012 03 29	Hubble Space Telescope	<a href="https://youtu.be/rj-HLbAT4Qw">https://youtu.be/rj-HLbAT4Qw</a>	Tonight's Sky April 2012	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In April, Saturn reaches opposition and the Lyrid meteor shower streaks through the sky.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.</p> <p><a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>

2012 02 24	Hubble Space Telescope	<a href="https://youtu.be/d0j3Jh7VUGw">https://youtu.be/d0j3Jh7VUGw</a>	Behind the Webb The MIRI Has Two Faces (Episode 14)	The James Webb Space Telescope has multiple science instruments, but only one of them, the Mid-Infrared Instrument (MIRI), sees light in the mid-infrared region of the electromagnetic spectrum. MIRI's design, which allows it to both take both images and obtain the scientific data known as spectra, makes it the equivalent of two instruments in one. These dual techniques allow the Webb telescope to study distant objects in greater detail than ever before.	<a href="#">Transcript Link</a>
<p>"Behind the Webb" is a recurring video series from HubbleSite, home of the Hubble Space Telescope and the upcoming Webb Space Telescope. Join host Mary Estacion as she goes behind the scenes to watch the construction and testing of the parts that will make Webb the world's most powerful infrared telescope.</p>					
<p>You can find the entire "Behind the Webb" archive here:</p>					
<p><a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive">http://webbtelescope.org/webb_telescope/behind_the_webb/archive</a></p>					
<p>Learn more about Webb's technology here: <a href="http://webbtelescope.org/webb_telescope/technology_at_the_extremes/">http://webbtelescope.org/webb_telescope/technology_at_the_extremes/</a></p>					
<p>Learn about MIRI here: <a href="http://webbtelescope.org/webb_telescope/technology_at_the_extremes/webb_instruments.php#miri">http://webbtelescope.org/webb_telescope/technology_at_the_extremes/webb_instruments.php#miri</a></p>					
2012 01 30	Hubble Space Telescope	<a href="https://youtu.be/9jIDE03rT84">https://youtu.be/9jIDE03rT84</a>	Tonight's Sky February 2012	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In February, Orion strides across the night, sporting red giant Betelgeuse on his shoulder.	<a href="#">Transcript Link</a>
<p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p>					
<p>Visit Tonight's Sky on HubbleSite.</p>					
<p><a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>					
2011 12 29	Hubble Space Telescope	<a href="https://youtu.be/DEMNPxQKgkU">https://youtu.be/DEMNPxQKgkU</a>	Hubble Space Telescope Observations on the Sky	This animation starts with a flat projection of the entire sky. In this projection the sky is bisected by the plane of our Milky Way galaxy. Hubble Space Telescope target locations over the 21 years are shown sequentially, from solar system to extragalactic. Stellar targets are spread over the entire celestial sphere; planets lie along the solar system's ecliptic plane (S-shaped in this projection), and distant targets are at high galactic latitudes. As of July 4, 2011, Hubble has made one million science observations.	<a href="#">Transcript Link</a>
<p>Read the HubbleSite news release: <a href="https://hubblesite.org/contents/news-releases/2011/news-2011-22.html">https://hubblesite.org/contents/news-releases/2011/news-2011-22.html</a></p>					

2011 12 29	Hubble Space Telescope	<a href="https://youtu.be/o3RWpdS3Ntk">https://youtu.be/o3RWpdS3Ntk</a>	Hubble Captures Butterfly Emerging from Stellar Demise in Planetary Nebula NGC 6302	This slow pan of the Butterfly or Bug Nebula captures the detail available in the Hubble image of the planetary nebula, located 3,800 light-years away from Earth. The nebula's gas is tearing across space at more than 600,000 miles per hour.	<a href="#">Transcript Link</a>
				Find out more on HubbleSite: <a href="https://hubblesite.org/contents/news-releases/2009/news-2009-25.html">https://hubblesite.org/contents/news-releases/2009/news-2009-25.html</a>	
2011 12 29	Hubble Space Telescope	<a href="https://youtu.be/NA9YOiK6G8">https://youtu.be/NA9YOiK6G8</a>	A Flight Into the Dark Pillars of Carina	This visualization creates a three-dimensional tour of several dark pillars of cool gas and dust in the Carina Nebula.	<a href="#">Transcript Link</a>
				Find out more on HubbleSite: <a href="https://hubblesite.org/contents/news-releases/2010/news-2010-29.html">https://hubblesite.org/contents/news-releases/2010/news-2010-29.html</a>	
2011 12 29	Hubble Space Telescope	<a href="https://youtu.be/nFkzGXnzSss">https://youtu.be/nFkzGXnzSss</a>	Helix Nebula Model	A 3-D model of the Helix Nebula shows a structure much more complex than suspected. The Helix Nebula is a planetary nebula, created when gas is expelled by a dying, Sun-sized star. The star becomes a white dwarf -- look for it in the center of the Helix.	<a href="#">Transcript Link</a>
				Find out more on HubbleSite: <a href="https://hubblesite.org/contents/news-releases/2004/news-2004-32.html">https://hubblesite.org/contents/news-releases/2004/news-2004-32.html</a>	
2011 12 23	Hubble Space Telescope	<a href="https://youtu.be/ILvPUdE3pTw">https://youtu.be/ILvPUdE3pTw</a>	Tonight's Sky January 2012	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In January, see the Quadrantid meteor shower and find the double-star Capella.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
				Visit Tonight's Sky on HubbleSite.	
				<a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a>	

2011 12 22	Hubble Space Telescope	<a href="https://youtu.be/n-6CLCGUReY">https://youtu.be/n-6CLCGUReY</a>	Behind the Webb Good Vibrations (Episode 13)	<p>The James Webb Space Telescope will experience intense forces as it launches into space. To ensure that the different parts of the observatory won't suffer damage during this stage of the mission, engineers shake them rigorously. These two- to three-week-long vibration tests are performed on each of Webb's 18 primary mirror segments and the secondary, tertiary, and fine-steering mirrors. Engineers test the mirror's optics before and after each vibration test to confirm that the simulated launch left the mirror surface unscathed, without deformation or structural changes.</p> <p>"Behind the Webb" is a recurring video series from HubbleSite, home of the Hubble Space Telescope and the upcoming Webb Space Telescope. Join host Mary Estacion as she goes behind the scenes to watch the construction and testing of the parts that will make Webb the world's most powerful infrared telescope.</p> <p>You can find the entire "Behind the Webb" archive here:  <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p>	<a href="#">Transcript Link</a>
2011 12 22	Hubble Space Telescope	<a href="https://youtu.be/7wRwn279tks">https://youtu.be/7wRwn279tks</a>	Tonight's Sky December 2011	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In December, Mars and Saturn are morning planets, and look for the M103 cluster in Perseus.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.</p> <p><a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2011 10 10	Hubble Space Telescope	<a href="https://youtu.be/znrF3NJRSU">https://youtu.be/znrF3NJRSU</a>	Behind the Webb On the Wings of Apollo (Episode 12)	<p>At Johnson Space Center in Houston, Texas, a cavernous chamber is being modified for use in testing the Webb Telescope. Environmental testing is part of the myriad of tests Webb must endure to be deemed space-worthy.</p> <p>"Behind the Webb" is a recurring video series from HubbleSite, home of the Hubble Space Telescope and the upcoming Webb Space Telescope. Join host Mary Estacion as she goes behind the scenes to watch the construction and testing of the parts that will make Webb the world's most powerful infrared telescope.</p>	<a href="#">Transcript Link</a>
2011 10 10	Hubble Space Telescope	<a href="https://youtu.be/7KClSZFMBQw">https://youtu.be/7KClSZFMBQw</a>	Tonight's Sky September 2011 Highlights	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." September is all wet! Look for September constellations Aquarius, the Water Jar, and the Water Goat.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.</p> <p><a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>

2011 10 10	Hubble Space Telescope	<a href="https://youtu.be/HuiExZpJh0o">https://youtu.be/HuiExZpJh0o</a>	Tonight's Sky October 2011 Highlights	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." Views of the Andromeda Galaxy, Jupiter and the Orionid Meteor Shower grace October's skies.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.</p> <p><a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2011 08 23	Hubble Space Telescope	<a href="https://youtu.be/v1J3208E8jU">https://youtu.be/v1J3208E8jU</a>	Mirror Odyssey (Mission Update)	<p>The Webb Space Telescope's giant primary mirror, arguably its most critical and difficult part, is approaching completion. The 18-segment mirror stands two stories high and is designed to best capture the infrared light Webb seeks. Follow the mirror's journey from rough ore to precisely reflective, gold-coated segments in this video, which details how the mirrors are constructed and tested.</p>	<a href="#">Transcript Link</a>
2011 07 28	Hubble Space Telescope	<a href="https://youtu.be/r3v7b6W32yl">https://youtu.be/r3v7b6W32yl</a>	Tonight's Sky Highlights of the August Sky	<p>The Perseid Meteor Shower blazes across the sky. Star clusters and the Ring Nebula grace the night.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.</p> <p><a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2011 06 27	Hubble Space Telescope	<a href="https://youtu.be/JKrqY5WZXxQ">https://youtu.be/JKrqY5WZXxQ</a>	Tonight's Sky July 2011 Highlights	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In July, Scorpius skitters across the night, the Delta Aquarid meteor shower graces the month's end, and star cluster M22 is visible to the naked eye.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.</p> <p><a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>

2011 05 27	Hubble Space Telescope	<a href="https://youtu.be/4jRplhKh9Bg">https://youtu.be/4jRplhKh9Bg</a>	20 Years in 20 Images Hubble's Universe Unfiltered	Dr. Summers explores some of Hubble's greatest hits, from doomed star Eta Carinae to storms on Jupiter, in this 20th anniversary look at the telescope's achievements.	<a href="#">Transcript Link</a>
				"Hubble's Universe Unfiltered" is a recurring broadcast from HubbleSite.org, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.	
				Starry-Eyed Hubble Celebrates 20 years of Awe and Discovery <a href="http://hubblesite.org/newscenter/archive/releases/2010/13/">http://hubblesite.org/newscenter/archive/releases/2010/13/</a>	
2011 05 27	Hubble Space Telescope	<a href="https://youtu.be/TxLUk1WJInk">https://youtu.be/TxLUk1WJInk</a>	A Flash of Brilliance Hubble's Universe Unfiltered	In 2002, star V838 Monocerotis brightened dramatically in a mysterious outburst, allowing Hubble to capture a series of images of the dust and gas around the star.	<a href="#">Transcript Link</a>
				"Hubble's Universe Unfiltered" is a recurring broadcast from HubbleSite.org, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.	
				Hubble Captures a Heavyweight Star Speeding Away from 30 Doradus <a href="http://hubblesite.org/newscenter/archive/releases/2010/14/">http://hubblesite.org/newscenter/archive/releases/2010/14/</a>	
2011 05 27	Hubble Space Telescope	<a href="https://youtu.be/BRLTAEmON7c">https://youtu.be/BRLTAEmON7c</a>	Hubble is Back Hubble's Universe Unfiltered	Hubble is back after its May 2009 servicing mission with new pictures that show off its expanded capabilities. Find out what these new images imply for the future of Hubble astronomy.	<a href="#">Transcript Link</a>
				"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.	
				Hubble Opens New Eyes on the Universe <a href="http://hubblesite.org/newscenter/archive/releases/2009/25/">http://hubblesite.org/newscenter/archive/releases/2009/25/</a>	
				Hubble Captures Rare Jupiter Collison <a href="http://hubblesite.org/newscenter/archive/releases/2009/23/">http://hubblesite.org/newscenter/archive/releases/2009/23/</a>	
2011 05 27	Hubble Space Telescope	<a href="https://youtu.be/Q-maM5BEhRI">https://youtu.be/Q-maM5BEhRI</a>	Tonight's Sky June 2011 Highlights	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In June, a partial solar eclipse greets Alaska, northern Canada, eastern Asia and far-northern Europe.	<a href="#">Transcript Link</a>
				"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	
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2011 04 26	Hubble Space Telescope	<a href="https://youtu.be/IOr3S316-Vk">https://youtu.be/IOr3S316-Vk</a>	Tonight's Sky May 2011 Highlights	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In May, the hat-shaped Sombrero galaxy and the Virgo galaxy cluster grace the skies, and expect an early visit from the Eta Aquarid meteor shower.</p> <p>"Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.</p> <p><a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a> ... (more info)</p>	<a href="#">Transcript</a> <a href="#">Link</a>
2011 04 22	Hubble Space Telescope	<a href="https://youtu.be/14vWGH81Hso">https://youtu.be/14vWGH81Hso</a>	Stereo 3-D Rendezvous with Interacting Galaxies Arp 273	<p>This image of rose-shaped galaxy pair Arp 273 was released in celebration of Hubble's 21st anniversary. Curious what it might look like to a passing space traveler? This special 3-D video takes you in close to the large spiral and its smaller companion galaxy.</p> <p>Arp 273 lies in the constellation Andromeda and is roughly 300 million light-years away from Earth. It's made up of a large spiral galaxy, known as UGC 1810, with a disk that is distorted into a rose-like shape by the gravitational pull of the companion galaxy below it, known as UGC 1813. A swath of blue, jewel-like points across the top is the combined light from clusters of intensely bright and hot young blue stars.</p> <p>The smaller, nearly edge-on companion galaxy shows distinct signs of intense star formation at its nucleus, perhaps triggered by the encounter with the larger galaxy.</p> <p>Find out more about this image on Hubblesite:</p> <p><a href="https://hubblesite.org/contents/news-releases/2011/news-2011-11.html">https://hubblesite.org/contents/news-releases/2011/news-2011-11.html</a></p>	<a href="#">Transcript</a> <a href="#">Link</a>
2011 04 22	Hubble Space Telescope	<a href="https://youtu.be/1B3M CU1VxWI">https://youtu.be/1B3M CU1VxWI</a>	Rendezvous with Interacting Galaxies Arp 273	<p>This image of rose-shaped galaxy pair Arp 273 was released in celebration of Hubble's 21st anniversary. Curious what it might look like to a passing space traveler? This video takes you in close to the large spiral and its smaller companion galaxy.</p> <p>Arp 273 lies in the constellation Andromeda and is roughly 300 million light-years away from Earth. It's made up of a large spiral galaxy, known as UGC 1810, with a disk that is distorted into a rose-like shape by the gravitational pull of the companion galaxy below it, known as UGC 1813. A swath of blue, jewel-like points across the top is the combined light from clusters of intensely bright and hot young blue stars.</p> <p>The smaller, nearly edge-on companion galaxy shows distinct signs of intense star formation at its nucleus, perhaps triggered by the encounter with the larger galaxy.</p> <p>Find out more about this image on Hubblesite:</p> <p><a href="https://hubblesite.org/contents/news-releases/2011/news-2011-11.html">https://hubblesite.org/contents/news-releases/2011/news-2011-11.html</a></p>	<a href="#">Transcript</a> <a href="#">Link</a>

2011 04 05	Hubble Space Telescope	<a href="https://youtu.be/xV2Wj3Vp4G8">https://youtu.be/xV2Wj3Vp4G8</a>	In the Service of Science Hubble's Universe Unfiltered	<p>In May 2009, seven astronauts aboard Space Shuttle Atlantis visited the Hubble Space Telescope for a final servicing mission. The drama of a shuttle flight with ambitious and challenging spacewalks that refreshed, repaired, and renewed astronomy's most beloved telescope captured the attention of the world.</p> <p>"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.</p> <p>Servicing Hubble Step-By-Step <a href="http://hubblesite.org/the_telescope/team_hubble/sm4/servicing-hubble">http://hubblesite.org/the_telescope/team_hubble/sm4/servicing-hubble</a></p> <p>Meet the Crew of Servicing Mission 4 <a href="http://hubblesite.org/the_telescope/team_hubble/sm4/meet-the-crew">http://hubblesite.org/the_telescope/team_hubble/sm4/meet-the-crew</a></p> <p>Meet the Hubble Servicing Team <a href="http://hubblesite.org/the_telescope/team_hubble/sm4/meet-the-people">http://hubblesite.org/the_telescope/team_hubble/sm4/meet-the-people</a></p> <p>From Servicing to Science <a href="http://hubblesite.org/the_telescope/team_hubble/from_servicing_to_science/">http://hubblesite.org/the_telescope/team_hubble/from_servicing_to_science/</a></p>	<a href="#">Transcript Link</a>
2011 04 05	Hubble Space Telescope	<a href="https://youtu.be/BCluxuDry0U">https://youtu.be/BCluxuDry0U</a>	An Un-peculiar Trio of Galaxies Hubble's Universe Unfiltered	<p>In 2009, HubbleSite let the public vote on an object to be observed by the Hubble Telescope. The world picked Arp 274, a trio of galaxies 400 million light-years away in the constellation Virgo. The galaxies appeared at first to be overlapping, but may actually be distant from one another.</p> <p>"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.</p> <p>Hubble Celebrates the International Year of Astronomy with the Galaxy Triplet Arp 274 <a href="http://hubblesite.org/newscenter/archive/releases/2009/14/">http://hubblesite.org/newscenter/archive/releases/2009/14/</a></p> <p>Hubble's Next Discovery: You Decide <a href="http://youdecide.hubblesite.org/">http://youdecide.hubblesite.org/</a></p>	<a href="#">Transcript Link</a>

2011 04 05	Hubble Space Telescope	<a href="https://youtu.be/1DOzrBfLt4">https://youtu.be/1DOzrBfLt4</a>	Hubble Servicing Delayed Hubble's Universe Unfiltered	<p>In September 2008, Hubble was two weeks away from a servicing mission when an electrical problem shut down much of the telescope. Intense work and effort has resulted in a replacement part to fix the problem. The servicing mission took place in 2009 and was entirely successful, and Hubble is expected to continue for many more years.</p> <p>"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.</p> <p>Servicing Hubble Step-By-Step <a href="http://hubblesite.org/the_telescope/team_hubble/sm4/servicing-hubble">http://hubblesite.org/the_telescope/team_hubble/sm4/servicing-hubble</a></p> <p>Meet the Crew of Servicing Mission 4 <a href="http://hubblesite.org/the_telescope/team_hubble/sm4/meet-the-crew">http://hubblesite.org/the_telescope/team_hubble/sm4/meet-the-crew</a></p> <p>Meet the Hubble Servicing Team <a href="http://hubblesite.org/the_telescope/team_hubble/sm4/meet-the-people">http://hubblesite.org/the_telescope/team_hubble/sm4/meet-the-people</a></p> <p>From Servicing to Science <a href="http://hubblesite.org/the_telescope/team_hubble/from_servicing_to_science/">http://hubblesite.org/the_telescope/team_hubble/from_servicing_to_science/</a></p>	<a href="#">Transcript Link</a>
2011 04 05	Hubble Space Telescope	<a href="https://youtu.be/P86GPvZkFBI">https://youtu.be/P86GPvZkFBI</a>	Goodnight Moon Hubble's Universe Unfiltered	<p>Occultation occurs when one celestial body — for instance, a moon or a planet — aligns with another. Striking images of occultation give us an unusual glimpse of the traffic in our cosmic backyard.</p> <p>"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.</p> <p>Hubble Captures Jupiter's Largest Moon Going to the "Dark Side" <a href="http://hubblesite.org/newscenter/archive/releases/2008/42/">http://hubblesite.org/newscenter/archive/releases/2008/42/</a></p> <p>Hubble Spots Rare Triple Eclipse on Jupiter <a href="http://hubblesite.org/newscenter/archive/releases/2004/30/">http://hubblesite.org/newscenter/archive/releases/2004/30/</a></p> <p>Rare Hubble Portrait of Io and Jupiter <a href="http://hubblesite.org/newscenter/archive/releases/1996/30/">http://hubblesite.org/newscenter/archive/releases/1996/30/</a></p>	<a href="#">Transcript Link</a>

2011 03 31	Hubble Space Telescope	<a href="https://youtu.be/JsPauCWacEo">https://youtu.be/JsPauCWacEo</a>	Eye Spy a Planet Hubble's Universe Unfiltered	<p>In 2008, Hubble released the first visible-light picture of a planet around another star. Planets around distant stars are extremely difficult to visualize -- astronomers usually find them by observing the dimming of light as a planet passes in front of a star, or the wobble of the star as its tugged by the planet's gravity.</p> <p>"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.</p> <p>Hubble Directly Observes Planet Orbiting Fomalhaut  <a href="http://hubblesite.org/newscenter/archive/releases/2008/39/">http://hubblesite.org/newscenter/archive/releases/2008/39/</a></p> <p>Discovering Planets Beyond  <a href="http://hubblesite.org/hubble_discoveries/discovering_planets_beyond/">http://hubblesite.org/hubble_discoveries/discovering_planets_beyond/</a></p>	<a href="#">Transcript Link</a>
2011 03 31	Hubble Space Telescope	<a href="https://youtu.be/ZNZKi1-Jh1U">https://youtu.be/ZNZKi1-Jh1U</a>	Through a Lens, Brightly Hubble's Universe Unfiltered	<p>Matter warps the space around it. The more matter there is, the stronger the warp. For really strong distortions of space-time, like black holes, the warping acts like a lens. Such gravitational lenses have been found, and astronomers can use them to study very distant and very faint galaxies.</p> <p>"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.</p> <p>Astronomers Find One of the Youngest and Brightest Galaxies in the Early Universe  <a href="http://hubblesite.org/newscenter/archive/releases/2008/08/">http://hubblesite.org/newscenter/archive/releases/2008/08/</a></p>	<a href="#">Transcript Link</a>
2011 03 31	Hubble Space Telescope	<a href="https://youtu.be/WW_546AQs0o">https://youtu.be/WW_546AQs0o</a>	Jupiter Gets the Measles Hubble's Universe Unfiltered	<p>Jupiter's Great Red Spot, a whirling storm on the gas giant planet's surface, has been one of the planet's most recognizable features for centuries. But in 2006 and 2008, Jupiter's Great Red Spot was joined by two companions, smaller red spot storms.</p> <p>"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.</p> <p>Hubble Snaps Baby Pictures of Jupiter's "Red Spot Jr."  <a href="http://hubblesite.org/newscenter/archive/releases/2006/19/">http://hubblesite.org/newscenter/archive/releases/2006/19/</a></p> <p>New Red Spot Appears On Jupiter  <a href="http://hubblesite.org/newscenter/archive/releases/2008/23/">http://hubblesite.org/newscenter/archive/releases/2008/23/</a></p> <p>Three Red Spots Mix It Up On Jupiter  <a href="http://hubblesite.org/newscenter/archive/releases/2008/27/">http://hubblesite.org/newscenter/archive/releases/2008/27/</a></p>	<a href="#">Transcript Link</a>

2011 03 30	Hubble Space Telescope	<a href="https://youtu.be/gB0BozmGyNk">https://youtu.be/gB0BozmGyNk</a>	Hubble Falls Into Coma Hubble's Universe Unfiltered	Take a safari through the Coma Cluster, one of the richest nearby galaxy collections. Thousands of galaxies are gathered together here, making it an ideal location to witness the diversity of galaxies in the universe.	<a href="#">Transcript Link</a>
				"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.	
				Hubble's Sweeping View of the Coma Cluster <a href="http://hubblesite.org/newscenter/archive/releases/2008/24/">http://hubblesite.org/newscenter/archive/releases/2008/24/</a>	
2011 03 30	Hubble Space Telescope	<a href="https://youtu.be/J9kBoFa8so0">https://youtu.be/J9kBoFa8so0</a>	Interacting Galaxies Galore Hubble's Universe Unfiltered	Hubble celebrated its 18th anniversary in 2008 by releasing a huge image gallery of interacting galaxies. Such galaxies pass close enough to each other that their mutual gravity can stretch and distort their shapes. Eventually, interacting galaxies merge together to form a single larger galaxy. However, since these interactions can take billions of years, how do we study them?	<a href="#">Transcript Link</a>
				"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.	
				Cosmic Collisions Galore <a href="http://hubblesite.org/newscenter/archive/releases/2008/16/">http://hubblesite.org/newscenter/archive/releases/2008/16/</a>	
				Download an interacting galaxies poster <a href="http://hubblesite.org/newscenter/archive/releases/2008/16/image/b/">http://hubblesite.org/newscenter/archive/releases/2008/16/image/b/</a>	
2011 03 28	Hubble Space Telescope	<a href="https://youtu.be/tKNORlCYKjQ">https://youtu.be/tKNORlCYKjQ</a>	Tonight's Sky April 2011 Highlights	Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In April, Saturn reaches its closest point to Earth, the Big Dipper overflows with cosmic sights, and the Lyrid meteor shower streaks the sky. "Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.	<a href="#">Transcript Link</a>
				Visit Tonight's Sky on HubbleSite. <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a>	

2011 03 28	Hubble Space Telescope	<a href="https://youtu.be/DxTZkjav8KI">https://youtu.be/DxTZkjav8KI</a>	Behind the Webb Uncovering MIRI's Detectors (Episode 1)	The digital camera in your home shares a family tree with the James Webb Space Telescope. Webb's instruments use "detectors," similar to the sensors in digital cameras, to convert images into a digital signal. At the Jet Propulsion Laboratory in California, the detectors are undergoing temperature and vibration testing.	<a href="#">Transcript Link</a>
				Webb's Technology Overview <a href="http://webbtelescope.org/webb_telescope/technology_at_the_extremes/overview.php">http://webbtelescope.org/webb_telescope/technology_at_the_extremes/overview.php</a>	
				"Behind the Webb" is a recurring video series from HubbleSite, home of the Hubble Space Telescope and the upcoming Webb Space Telescope. Join host Mary Estacion as she goes behind the scenes to watch the construction and testing of the parts that will make Webb the world's most powerful infrared telescope.	
2011 03 24	Hubble Space Telescope	<a href="https://youtu.be/V7gxXEitgH0">https://youtu.be/V7gxXEitgH0</a>	Behind the Webb Troubleshooting Webb (Episode 6)	The Webb Space Telescope's orbit will place it out of reach of astronauts, so it's important to have perfect control of the telescope from Earth. At Northrop Grumman, engineers are testing the telescope's responses to controllers and simulating the conditions it'll face in space.	<a href="#">Transcript Link</a>
				"Behind the Webb" is a recurring video series from HubbleSite, home of the Hubble Space Telescope and the upcoming Webb Space Telescope. Join host Mary Estacion as she goes behind the scenes to watch the construction and testing of the parts that will make Webb the world's most powerful infrared telescope.	
				Webb's Challenge: Keep It Cold <a href="http://webbtelescope.org/webb_telescope/technology_at_the_extremes/keep_it_cold.php">http://webbtelescope.org/webb_telescope/technology_at_the_extremes/keep_it_cold.php</a>	
				Webb's Tug of War <a href="http://webbtelescope.org/webb_telescope/technology_at_the_extremes/showcase/tug_of_war.php">http://webbtelescope.org/webb_telescope/technology_at_the_extremes/showcase/tug_of_war.php</a>	
2011 03 24	Hubble Space Telescope	<a href="https://youtu.be/isnstTPt8OM">https://youtu.be/isnstTPt8OM</a>	Behind the Webb Reflecting on Webb's Mirrors (Episode 4)	Webb's giant primary mirror is its most striking feature, but several more mirrors help control the flow of light through the telescope. Meet the secondary, tertiary, and fine-steering mirrors.	<a href="#">Transcript Link</a>
				"Behind the Webb" is a recurring video series from HubbleSite, home of the Hubble Space Telescope and the upcoming Webb Space Telescope. Join host Mary Estacion as she goes behind the scenes to watch the construction and testing of the parts that will make Webb the world's most powerful infrared telescope.	
				Links: Technology at the Extremes <a href="http://webbtelescope.org/webb_telescope/technology_at_the_extremes/">http://webbtelescope.org/webb_telescope/technology_at_the_extremes/</a>	

2011 03 24	Hubble Space Telescope	<a href="https://youtu.be/x8QRH7k0338">https://youtu.be/x8QRH7k0338</a>	Behind the Webb The Big Chill (Episode 3)	<p>The Webb Space Telescope's mirror has nearly seven times the area of the Hubble Space Telescope's. In order to launch it into space, the mirror is made out of segments that will be folded up inside the rocket that carries it into orbit. At Marshall Space Flight Center, segments are being tested in the vacuum chamber to expose them to space temperatures.</p> <p>"Behind the Webb" is a recurring video series from HubbleSite, home of the Hubble Space Telescope and the upcoming Webb Space Telescope. Join host Mary Estacion as she goes behind the scenes to watch the construction and testing of the parts that will make Webb the world's most powerful infrared telescope.</p> <p>Technology at the Extremes.  <a href="http://webbtelescope.org/webb_telescope/technology_at_the_extremes/">http://webbtelescope.org/webb_telescope/technology_at_the_extremes/</a></p> <p>Webb's Challenge: Make It Big  <a href="http://webbtelescope.org/webb_telescope/technology_at_the_extremes/make_it_big.php">http://webbtelescope.org/webb_telescope/technology_at_the_extremes/make_it_big.php</a></p>	<a href="#">Transcript Link</a>
2011 03 24	Hubble Space Telescope	<a href="https://youtu.be/ntv1YsqbMJw">https://youtu.be/ntv1YsqbMJw</a>	Behind the Webb Jack of All Sunshields (Episode 2)	<p>The Webb Space Telescope will need to be extraordinarily cold in order to see the infrared light from the farthest reaches of the universe. Webb's enormous sunshield will protect the telescope's instruments from the Sun's energy.</p> <p>"Behind the Webb" is a recurring video series from HubbleSite, home of the Hubble Space Telescope and the upcoming Webb Space Telescope. Join host Mary Estacion as she goes behind the scenes to watch the construction and testing of the parts that will make Webb the world's most powerful infrared telescope.</p> <p>Technology at the Extremes  <a href="http://webbtelescope.org/webb_telescope/technology_at_the_extremes/">http://webbtelescope.org/webb_telescope/technology_at_the_extremes/</a></p> <p>Webb's Challenge: Keep It Cold  <a href="http://webbtelescope.org/webb_telescope/technology_at_the_extremes/keep_it_cold.php">http://webbtelescope.org/webb_telescope/technology_at_the_extremes/keep_it_cold.php</a></p>	<a href="#">Transcript Link</a>
2011 03 16	Hubble Space Telescope	<a href="https://youtu.be/YUMrWcCnE">https://youtu.be/YUMrWcCnE</a>	Behind the Webb Wax On, Wax Off (Episode 10)	<p>The making of the Webb Space Telescope's mirrors is a complex process. Each surface must be precisely shaped to capture and direct the maximum amount of light to the telescope's detectors. The mirrors must be ground and polished to a smooth curve that keeps light from bouncing off in unwanted directions. Join us at Tinsley Laboratories in Richmond, Calif., where engineers are bringing Webb's mirrors to their exact requirements.</p> <p>"Behind the Webb" is an ongoing series that follows the construction of the Webb Space Telescope, Hubble's successor. Find more episodes at Hubblesite.org.</p> <p>"Behind the Webb" archive  <a href="http://webbtelescope.org/webb_telescope/behind_the_webb/archive/">http://webbtelescope.org/webb_telescope/behind_the_webb/archive/</a></p> <p>The Webb Telescope: Technology at the Extremes  <a href="http://webbtelescope.org/webb_telescope/technology_at_the_extremes/">http://webbtelescope.org/webb_telescope/technology_at_the_extremes/</a></p>	<a href="#">Transcript Link</a>

2011 02 28	Hubble Space Telescope	<a href="https://youtu.be/e4ddixyazU">https://youtu.be/e4ddixyazU</a>	Tonight's Sky March 2011 Highlights	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In March, the constellations of spring appear, heralding the change in seasons. Look for Gemini and Cancer as they dominate the night sky. "Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2011 02 17	Hubble Space Telescope	<a href="https://youtu.be/p5c1XoL1KFs">https://youtu.be/p5c1XoL1KFs</a>	Creating a Hubble Galaxy in Two Minutes	<p>Hubble images are made, not born. Images must be woven together from the incoming data from the cameras, cleaned up and given colors that bring out features that eyes would otherwise miss. In this video from HubbleSite.org, online home of the Hubble Space Telescope, a Hubble-imaged galaxy comes together on the screen at super-fast speed.</p> <p>Learn more about how Hubble images are made by visiting Behind the Pictures.</p> <p><a href="http://hubblesite.org/gallery/behind_the_pictures/">http://hubblesite.org/gallery/behind_the_pictures/</a></p>	<a href="#">Transcript Link</a>
2011 01 31	Hubble Space Telescope	<a href="https://youtu.be/W4GKf623Exk">https://youtu.be/W4GKf623Exk</a>	Deep Universe Hubble's Universe Unfiltered	<p>Take a look at some of the most distant galaxies Hubble has ever seen, and find out why, when we look at the most distant objects in the universe, we are also seeing the cosmos' earliest objects.</p> <p>"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.</p> <p>Hubble's Deepest View of the Universe Unveils Bewildering Galaxies across Billions of Years  <a href="http://hubblesite.org/newscenter/archive/releases/1996/01/">http://hubblesite.org/newscenter/archive/releases/1996/01/</a></p> <p>Hubble's Deepest View Ever of the Universe Unveils Earliest Galaxies  <a href="http://hubblesite.org/newscenter/archive/releases/2004/07/">http://hubblesite.org/newscenter/archive/releases/2004/07/</a></p> <p>Hubble Approaches the Final Frontier: The Dawn of Galaxies  <a href="http://hubblesite.org/newscenter/archive/releases/2004/28/">http://hubblesite.org/newscenter/archive/releases/2004/28/</a></p> <p>Hubble Reaches the "Undiscovered Country" of Primeval Galaxies  <a href="http://hubblesite.org/newscenter/archive/releases/2010/02/">http://hubblesite.org/newscenter/archive/releases/2010/02/</a></p> <p>In Deep Galaxy Surveys, Astronomers Get a Boost -- from Gravity  <a href="http://hubblesite.org/newscenter/archive/releases/2011/04/">http://hubblesite.org/newscenter/archive/releases/2011/04/</a></p>	<a href="#">Transcript Link</a>

2011 01 31	Hubble Space Telescope	<a href="https://youtu.be/AvCK4dJQrSw">https://youtu.be/AvCK4dJQrSw</a>	Tonight's Sky February 2011 Highlights	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In February, Orion strides across the cosmos, a famed nebula at his belt, and Saturn is visible before midnight. "Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes — and other astronomy videos — at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky">http://hubblesite.org/explore_astronomy/tonights_sky</a></p>	<a href="#">Transcript Link</a>
2011 01 05	Hubble Space Telescope	<a href="https://youtu.be/w2JCRiOjUL8">https://youtu.be/w2JCRiOjUL8</a>	Tonight's Sky January 2011 Highlights	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In January, the goat-herder Auriga watches over a flock of stars, and Venus and Saturn rule the sky. "Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes -- and other astronomy videos -- at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky/">http://hubblesite.org/explore_astronomy/tonights_sky/</a></p>	<a href="#">Transcript Link</a>
2010 12 22	Hubble Space Telescope	<a href="https://youtu.be/aVsKZWP_BvI">https://youtu.be/aVsKZWP_BvI</a>	Changing Views of Pluto Hubble's Universe Unfiltered	<p>Pluto's classification as a "dwarf planet" came as a shock to some, but in reality our understanding of Pluto has always been in flux. Pluto is a tiny, distant, icy object, difficult to see even with Hubble's vision. Join a Hubble astrophysicist as we explore our history with Pluto, from its discovery to the excitement over the upcoming visit by the New Horizons space probe, in Hubble's Universe Unfiltered.</p> <p>"Hubble's Universe" is a recurring broadcast from HubbleSite, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.</p> <p>Hubble Reveals Surface of Pluto  <a href="http://hubblesite.org/newscenter/archive/releases/1996/09/">http://hubblesite.org/newscenter/archive/releases/1996/09/</a></p> <p>Hubble Confirms New Moons of Pluto  <a href="http://hubblesite.org/newscenter/archive/releases/2006/09/">http://hubblesite.org/newscenter/archive/releases/2006/09/</a></p> <p>Hubble Maps of Pluto Show Surface Change  <a href="http://hubblesite.org/newscenter/archive/releases/2010/06/">http://hubblesite.org/newscenter/archive/releases/2010/06/</a></p>	<a href="#">Transcript Link</a>

2010 12 22	Hubble Space Telescope	<a href="https://youtu.be/ym_lW3GG9IE">https://youtu.be/ym_lW3GG9IE</a>	Tonight's Sky December 2010 Highlights	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In December, a lunar eclipse turns the Moon a festive holiday red. Perseus wanders the night. And binoculars reveal the Double Cluster, a lovely pair of star clusters. "Tonight's Sky" is produced by HubbleSite, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes -- and other astronomy videos -- at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky/">http://hubblesite.org/explore_astronomy/tonights_sky/</a></p>	<a href="#">Transcript Link</a>
2010 11 23	Hubble Space Telescope	<a href="https://youtu.be/Lh8MEzeBpA">https://youtu.be/Lh8MEzeBpA</a>	A Runaway Star Hubble's Universe Unfiltered	<p>An enormous star is on the lam, fleeing its home at a quarter of a million miles per hour. The star, 90 times as massive as the Sun, may have traveled 375 light years from its original locale, the giant star cluster R136 in the 30 Doradus Nebula. How did it get away? A Hubble astrophysicist explores the discovery in the ongoing series, "Hubble's Universe Unfiltered."</p> <p>"Hubble's Universe Unfiltered" is a recurring broadcast from HubbleSite.org, online home of the Hubble Space Telescope. Astrophysicist Frank Summers takes viewers on an in-depth tour of the latest Hubble discoveries. Find more episodes at HubbleSite.org.</p> <p>See the HubbleSite news release.  <a href="http://hubblesite.org/newscenter/archive/releases/2010/14/">http://hubblesite.org/newscenter/archive/releases/2010/14/</a></p> <p>See images of the runaway star.  <a href="http://hubblesite.org/newscenter/archive/releases/2010/14/image/">http://hubblesite.org/newscenter/archive/releases/2010/14/image/</a></p> <p>Zoom in on an infrared image of 30 Doradus.  <a href="http://hubblesite.org/newscenter/archive/releases/2009/32/image/d/">http://hubblesite.org/newscenter/archive/releases/2009/32/image/d/</a></p> <p>Get wallpaper of star-forming region 30 Doradus.  <a href="http://hubblesite.org/gallery/wallpaper/pr2001021a/">http://hubblesite.org/gallery/wallpaper/pr2001021a/</a></p> <p>See more episodes of Hubble's Universe.  <a href="http://hubblesite.org/explore_astronomy/hubbles_universe_unfilter">http://hubblesite.org/explore_astronomy/hubbles_universe_unfilter</a></p>	<a href="#">Transcript Link</a>
2010 11 23	Hubble Space Telescope	<a href="https://youtu.be/Cso7oCbhzJ4">https://youtu.be/Cso7oCbhzJ4</a>	Tonight's Sky November 2010 Highlights	<p>Backyard stargazers get a monthly guide to the northern hemisphere's skywatching events with "Tonight's Sky." In November, the Leonid meteors light the night. The Andromeda Galaxy displays its arms and bright nucleus. And Saturn and Venus return to the eastern horizon. "Tonight's Sky" is produced by HubbleSite.org, online home of the Hubble Space Telescope. This is a recurring show, and you can find more episodes -- and other astronomy videos -- at HubbleSite.org.</p> <p>Visit Tonight's Sky on HubbleSite.  <a href="http://hubblesite.org/explore_astronomy/tonights_sky/">http://hubblesite.org/explore_astronomy/tonights_sky/</a></p>	<a href="#">Transcript Link</a>

- 2010 11 23 Hubble Space Telescope <https://youtu.be/rpCdzVi6NEo> Seeing the Future in the Stars - HubbleSite.org Astronomers use Hubble images of the giant star cluster Omega Centauri to predict where the stars will be in a decade or more. The cluster's 10 million stars, among the first stars to form in the universe, are in constant motion. Studying their movements helps scientists to understand the formation of the universe. [Transcript Link](#)
- This video is from HubbleSite, the online home of the Hubble Space Telescope. Learn more about this topic.
- See the news release.  
<http://hubblesite.org/newscenter/archive/releases/2010/28/>
- See images of star cluster Omega Centauri.  
<http://hubblesite.org/newscenter/archive/releases/2010/28/image/>  
<http://hubblesite.org/newscenter/archive/releases/2001/33/image/a/>
- Get Omega Centauri wallpaper.  
<http://hubblesite.org/gallery/wallpaper/pr2009025q/>
- Print an Omega Centauri picture.  
<http://hubblesite.org/gallery/printshop/ps48/>
- 2008 01 29 Hubble Space Telescope <https://youtu.be/aoAWTA7rIKE> Noreen Grice — Touch the Invisible Sky Thanks to a series of Braille books on astronomy, being blind or visually impaired isn't a road block to understanding and appreciating the cosmos. The author of the books is Noreen Grice, a woman who's made it her life's mission to give everyone access to the universe. In her latest collaboration with NASA, 'Touch the Invisible Sky' introduces the concept of multiwavelength astronomy to give us the complete picture of the origin and evolution of nearby and distant worlds. [Transcript Link](#)
- 2007 12 18 Hubble Space Telescope <https://youtu.be/iobbzLHTDRQ> Hubble Mars Close Encounters of the Red Kind On December 18, 2007, our planetary neighbor will be as close to us than at any time over the past two years. Almost a week later, on December 24th, the orbits of Earth and Mars will bring the two planets in alignment with the Sun during a phenomenon known as Mars Opposition. Because of its relatively close proximity to Earth, Mars will outshine the brightest star, Sirius, and from now until April, you can see the Red Planet all night long. These oppositions occur every 26 months, but each is different. Back in 2003, the two planets converged and were at its closest point in 60,000 years. While the 2007 Opposition isn't setting any records, this is an ideal time for astronomers on the ground to take a closer look at Mars. It won't be this bright and big again until 2016. [Transcript Link](#)
- To learn more visit our website:  
<http://hubblesite.org/newscenter/archive/releases/2007/45/>