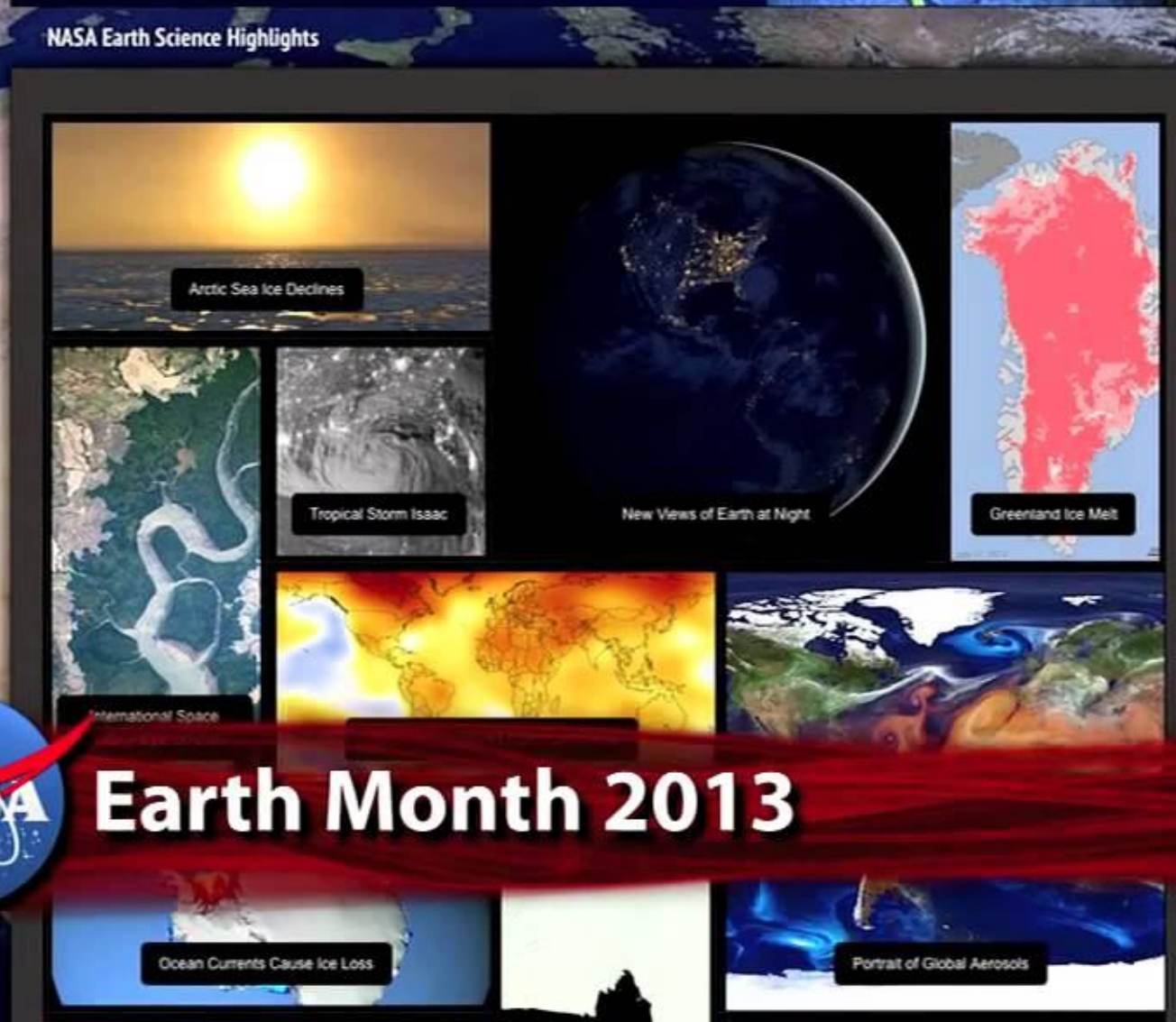
EARTH MONTH 2013

Understanding and Sustaining Our Home Planet



Earth Month 2013

1
00:00:07,140 --> 00:00:11,340
This Week at NASA…

2
00:00:11,340 --> 00:00:15,620
Orbital Sciences Corporation’s Antares rocket
was rolled out to the Mid-Atlantic Regional

3
00:00:15,620 --> 00:00:21,480
Spaceport's Pad-0A at Wallops Flight Facility
in preparation for a test flight targeted

4
00:00:21,480 --> 00:00:23,360
for later this month.

5
00:00:23,360 --> 00:00:29,390
Antares is designed to propel a Cygnus cargo
spacecraft laden with experiments and supplies

6
00:00:29,390 --> 00:00:31,679
to the International Space Station.

7
00:00:31,679 --> 00:00:37,140
This test won’t include the spacecraft or
a rendezvous with the space station.

8
00:00:37,140 --> 00:00:42,620
That full-up demonstration flight is planned
for later this year.

9
00:00:42,620 --> 00:00:46,670
One of the International Space Station’s
most prominent scientific experiments has

10
00:00:46,670 --> 00:00:49,180
produced its first results.

11
00:00:49,180 --> 00:00:54,920
The Alpha Magnetic Spectrometer is a state-of-the-art
cosmic ray particle physics detector located

12
00:00:54,920 --> 00:00:57,960
on the exterior of the orbiting laboratory.

13
00:00:57,960 --> 00:01:03,960
MIT's Sam Ting, AMS principal investigator,
spoke from a science conference in Switzerland

14
00:01:03,960 --> 00:01:05,790
where the results were announced.

15
00:01:05,790 --> 00:01:13,979
"Are you reporting today that you think
you've seen the first evidence of dark matter?"

16
00:01:13,979 --> 00:01:19,100
"Our evidence supports that this is a dark
matter, but cannot rule out that the origin

17
00:01:19,100 --> 00:01:25,060
comes from pulsars but because we will be
on the space station for the lifetime of the

18
00:01:25,060 --> 00:01:27,829
space station, we should be able to solve
this problem."

19
00:01:27,829 --> 00:01:28,829
Scientists hope that by measuring cosmic rays,
AMS will provide new data about the formation

20
00:01:28,829 --> 00:01:29,829
of the Universe, antimatter, and evidence
of the mysterious dark matter believed to

21
00:01:29,829 --> 00:01:30,829
make up most of the Universe.

22
00:01:30,829 --> 00:01:32,009

“Space Station is a really nice platform,
well suited for this instrument.

23
00:01:32,009 --> 00:01:37,130
It allows for a long, long duration of observation
time, which is important to this instrument.

24
00:01:37,130 --> 00:01:41,530
This is a good a good indication of some of
the results that are going to come from Space

25
00:01:41,530 --> 00:01:57,770
Station in the future.”

26
00:01:57,770 --> 00:02:03,020
The Materials on International Space Station
Experiment, or MISSE, is a multi-generational

27
00:02:03,020 --> 00:02:04,880
study conducted on station.

28
00:02:04,880 --> 00:02:10,140
A suitcase-like structure filled with various
coin-shaped samples of materials is mounted,

29
00:02:10,140 --> 00:02:15,590
like the AMS, outside the station – exposing
the materials to space and the Sun's unfiltered

30
00:02:15,590 --> 00:02:17,760
ultraviolet radiation.

31
00:02:17,760 --> 00:02:22,980
Examination of the returned samples has helped
qualify a variety of materials for space flight

32
00:02:22,980 --> 00:02:27,620
– including the white protective thermal
control coating used on the SpaceX Dragon

33
00:02:27,620 --> 00:02:33,099
spacecraft and the coating used to protect
the cooling fins of the Curiosity Mars rover's

34
00:02:33,099 --> 00:02:34,940
power unit.

35
00:02:34,940 --> 00:02:40,390
And, at the Langley Research Center, scientists
and engineers are preparing the Stratospheric

36
00:02:40,390 --> 00:02:46,209
Aerosol and Gas Experiment, or SAGE-3 Earth
observing science instrument for its trip

37
00:02:46,209 --> 00:02:48,020
to the International Space Station.

38
00:02:48,020 --> 00:02:54,519
Due for delivery to the ISS by SpaceX late
next year or early 20-15, SAGE-3 will help

39
00:02:54,519 --> 00:02:59,810
scientists better understand the Earth's
atmosphere by gathering long-term measurements

40
00:02:59,810 --> 00:03:03,480
of ozone, aerosols and other gases.

41
00:03:03,480 --> 00:03:08,349
The International Space Station, the world's
only laboratory in microgravity, is home to

42
00:03:08,349 --> 00:03:14,090
more than 150 scientific experiments and studies.

43
00:03:14,090 --> 00:03:20,150
NASA's Hubble Space Telescope has found the
farthest supernova of the Ia type used by

44
00:03:20,150 --> 00:03:24,260
scientists to measure cosmic distances.

45
00:03:24,260 --> 00:03:30,659
Supernova UDS10Wil, nicknamed SN Wilson after
American President Woodrow Wilson, exploded

46
00:03:30,659 --> 00:03:32,959
more than 10 billion years ago.

47
00:03:32,959 --> 00:03:39,019
SN Wilson and its consistent level of brightness
will serve as a reference point by which astronomers

48
00:03:39,019 --> 00:03:44,659
can measure the expansion of the Universe
and better understand the dark energy accelerating

49
00:03:44,659 --> 00:03:47,850
that expansion.

50
00:03:47,850 --> 00:03:53,000
This animated series of still images captured
by NASA's Mars Reconnaissance Orbiter shows

51
00:03:53,000 --> 00:03:58,410
the parachute that helped safely land the
Curiosity Mars rover last August changing

52
00:03:58,410 --> 00:04:02,049
shape in response to wind on the Martian surface.

53
00:04:02,049 --> 00:04:06,520
Still attached to the Mars Science Laboratory
spacecraft's back shell, the parachute is

54
00:04:06,520 --> 00:04:08,250
about 165 feet long.

55
00:04:08,250 --> 00:04:18,290
The images were captured by MRO’s High Resolution
Imaging Science Experiment, or HiRISE camera.

56
00:04:18,290 --> 00:04:19,290
The month of April is all about Earth here
at NASA.

57
00:04:19,290 --> 00:04:23,050
The ‘Earth Month’ section of nasa.gov
is full of the latest news, events, and interactive

58
00:04:23,050 --> 00:04:29,630
material -- including a Google Plus Hangout
on sea level rise, classic images of Earth,

59
00:04:29,630 --> 00:04:34,470
and feature stories about NASA’s ongoing
mission to help understand and sustain our

60
00:04:34,470 --> 00:04:36,530
home planet.

61
00:04:36,530 --> 00:04:42,910
NASA’s Lunar Atmosphere and Dust Environment
Explorer or LADEE spacecraft is undergoing

62
00:04:42,910 --> 00:04:48,410
final checks and testing in preparation for
its scheduled launch late this year.

63
00:04:48,410 --> 00:04:52,860
Built at the Ames Research Center, the spacecraft
will be the first to collect extensive amounts

64
00:04:52,860 --> 00:04:55,850
of data about the Moon's extremely thin atmosphere.

65

00:04:55,850 --> 00:04:57,250
“We’re pretty excited.

66
00:04:57,250 --> 00:05:00,320
There’s a lot of work that went into this
for the team.

67
00:05:00,320 --> 00:05:06,610
It’s really nice to see the spacecraft operate
as you expect it to in the environmental testing,

68
00:05:06,610 --> 00:05:10,720
so I can tell the team is all excited about
getting it to the range and getting a chance

69
00:05:10,720 --> 00:05:12,250
to launch it.”

70
00:05:12,250 --> 00:05:17,200
The data collected by LADEE will help prepare
future robotic and human missions to the lunar

71
00:05:17,200 --> 00:05:20,470
surface.

72
00:05:20,470 --> 00:05:25,730
Members of the media were invited inside the
Johnson Space Center’s Chamber A, the world's

73
00:05:25,730 --> 00:05:31,110
largest thermal-vacuum chamber, to check out
upgrades being made to prepare the 400,000

74
00:05:31,110 --> 00:05:36,250
cubic foot facility for testing of the agency's
James Webb Space Telescope.

75
00:05:36,250 --> 00:05:41,970
Scheduled for launch in 2018, JWST, the successor
to the Hubble Space Telescope is designed

76
00:05:41,970 --> 00:05:49,370
to enable scientists to see farther back into
history than ever before.

77
00:05:49,370 --> 00:05:55,510
Forty years ago on April 5, 1973, the Pioneer
11 spacecraft launched from Cape Canaveral

78
00:05:55,510 --> 00:06:00,700
to study the asteroid belt, the environment
around Jupiter and Saturn and eventually,

79
00:06:00,700 --> 00:06:04,070
the far reaches of the solar system and heliosphere.

80
00:06:04,070 --> 00:06:08,630
It was the first probe to encounter and take
close-up pictures of Saturn and the second

81
00:06:08,630 --> 00:06:12,220
to fly through the asteroid belt and past
Jupiter.

82
00:06:12,220 --> 00:06:18,780
During its flyby of the gas giant on December
2nd, 1974, Pioneer 11 obtained dramatic images

83
00:06:18,780 --> 00:06:25,120
of the Great Red Spot and made the first observation
of the planet’s immense polar regions.

84
00:06:25,120 --> 00:06:30,190
Its 22-and-a-half year mission officially
ended when communication with Pioneer 11 was

85
00:06:30,190 --> 00:06:33,620
lost in the fall of 1995.

86

00:06:33,620 --> 00:06:35,500
And that’s This Week @NASA.