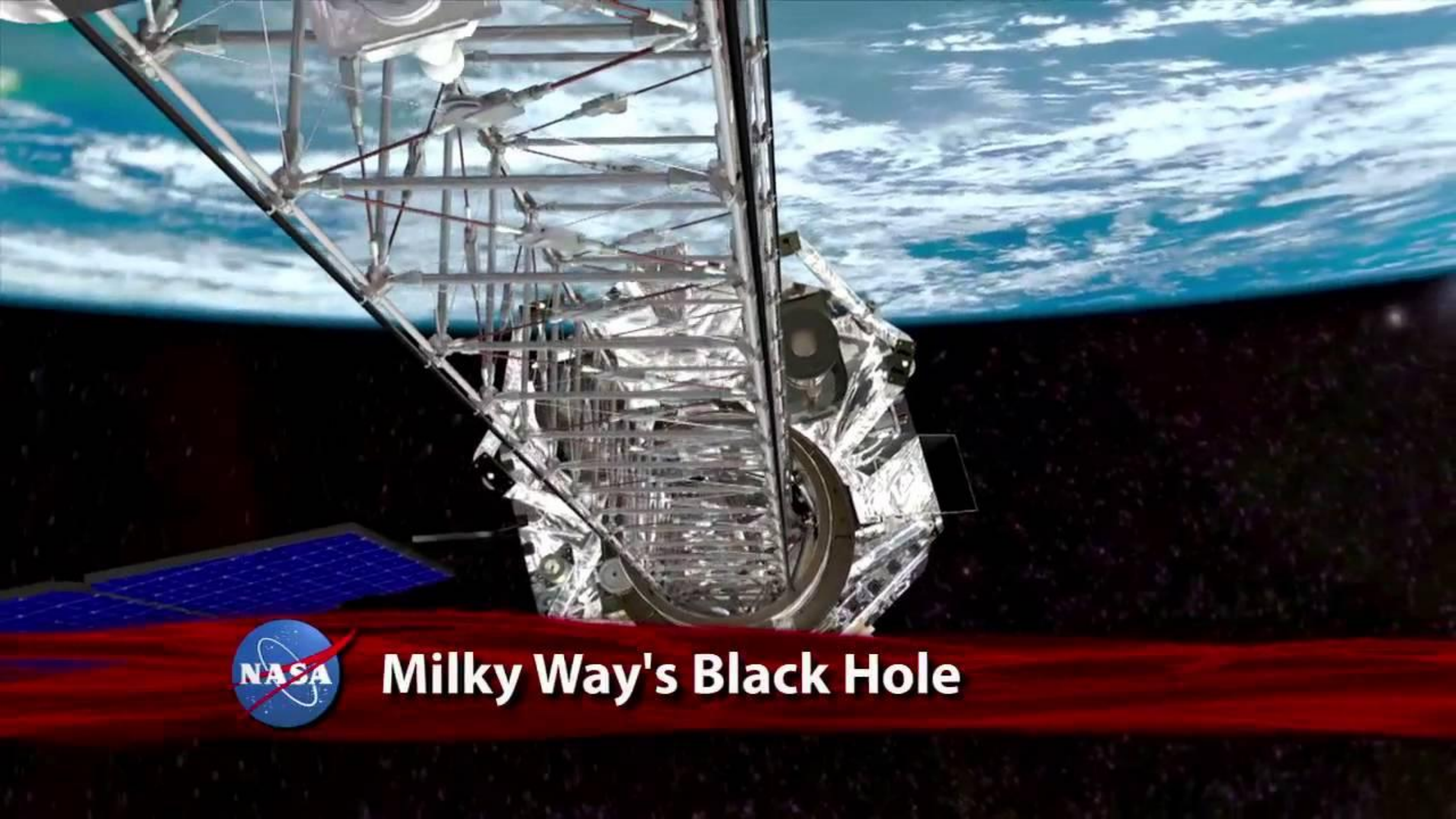
NASA
Milky Way's Black Hole

1
00:00:07,040 --> 00:00:12,889
This Week at NASA…

2
00:00:12,889 --> 00:00:17,020
Following the docking of their Soyuz capsule,
the newest residents of the International

3
00:00:17,020 --> 00:00:22,170
Space Station were welcomed to the place they'll
call home for the next five months.

4
00:00:22,170 --> 00:00:27,970
Expedition 33/34 Soyuz Commander Oleg Novitskiy
of the Russian Federal Space Agency, NASA

5
00:00:27,970 --> 00:00:33,220
Flight Engineer Kevin Ford and Russian Flight
Engineer Evgeny Tarelkin were warmly greeted

6
00:00:33,220 --> 00:00:39,220
by station Commander Suni Williams of NASA,
Flight Engineer Aki Hoshide of the Japan Aerospace

7
00:00:39,220 --> 00:00:44,140
Exploration Agency and Russian Flight Engineer
Yuri Malenchenko.

8
00:00:44,140 --> 00:00:49,440
The Expedition crew will continue to expand
the scope of research aboard the ISS, taking

9
00:00:49,440 --> 00:00:55,730
advantage of its unique microgravity environment,
performing experiments that cover human research,

10
00:00:55,730 --> 00:01:01,980
biological and physical sciences, technology
development, Earth observations and education.

11

00:01:01,980 --> 00:01:09,939
“We don’t know exactly where the leak
is, it’s possible the leak is in the PVR

12
00:01:09,939 --> 00:01:15,220
itself, the radiator itself it could be in
the pump system or it could be in any one

13
00:01:15,220 --> 00:01:16,260
of the lines.”

14
00:01:16,260 --> 00:01:21,650
A station spacewalk by Suni Williams and Aki
Hoshide is scheduled for November first.

15
00:01:21,650 --> 00:01:26,670
ISS program managers met with the media at
the Johnson Space Center to discuss repairs

16
00:01:26,670 --> 00:01:33,240
the duo will perform to close an ammonia leak
on one of the station’s port-side radiators.

17
00:01:33,240 --> 00:01:37,130
Ammonia circulated through the station’s
external thermal control system keeps cool

18
00:01:37,130 --> 00:01:40,810
the orbiting laboratory’s electronics and
other equipment.

19
00:01:40,810 --> 00:01:47,280
The November first EVA is scheduled to begin
at 8:15 a.m Eastern and last approximately

20
00:01:47,280 --> 00:01:50,420
6-and-a-half hours.

21
00:01:50,420 --> 00:01:55,451
Several days before the spacewalk, on October

28, the ISS crew will send off the visiting

22
00:01:55,451 --> 00:01:58,690
Dragon spacecraft for its return to Earth.

23
00:01:58,690 --> 00:02:03,590
The SpaceX cargo craft has been attached to
the station since October 10, when it delivered

24
00:02:03,590 --> 00:02:05,850
about a half-ton of supplies.

25
00:02:05,850 --> 00:02:10,509
The successful return of Dragon this Sunday
with more than 12-hundred pounds of scientific

26
00:02:10,509 --> 00:02:15,380
material and station hardware will confirm
that the nation once again has the ability

27
00:02:15,380 --> 00:02:20,180
to transport supplies between Earth and the
orbiting laboratory.

28
00:02:20,180 --> 00:02:24,709
Same day splashdown and recovery of Dragon
is expected to happen in the Pacific Ocean

29
00:02:24,709 --> 00:02:26,840
off the coast of southern California.

30
00:02:26,840 --> 00:02:35,849
Dragon’s CRS-1 mission is the first commercial
cargo resupply mission to the station by SpaceX.

31
00:02:35,849 --> 00:02:45,170
Ferrying astronauts to and from the ISS is
a step closer for Blue Origin.

32

00:02:45,170 --> 00:02:50,409
NASA’s commercial crew program partner conducted
a successful pad escape test at the company's

33
00:02:50,409 --> 00:02:56,450
West Texas Launch Site, firing its pusher
escape motor and launching a full-scale suborbital

34
00:02:56,450 --> 00:02:59,939
crew capsule from a propulsion module simulator.

35
00:02:59,939 --> 00:03:04,269
NASA is working with commercial companies
to develop space transportation systems that

36
00:03:04,269 --> 00:03:11,709
can carry humans to low Earth orbit and the
International Space Station by 2017.

37
00:03:11,709 --> 00:03:16,980
Those watching Hurricane Sandy down here on
the ground have been helped by views like

38
00:03:16,980 --> 00:03:19,439
these from up there in space.

39
00:03:19,439 --> 00:03:24,650
Here’s the storm as it’s appeared to the
Expedition 33 crew aboard the ISS.

40
00:03:24,650 --> 00:03:29,969
And data collected by GOES satellites allow
animators at the Goddard Space Flight Center

41
00:03:29,969 --> 00:03:34,640
to create movies like this/these of how the
storm tracked through the Caribbean and up

42
00:03:34,640 --> 00:03:41,540
the East Coast of the U.S. These space-based

assets help forecasters and emergency personnel

43
00:03:41,540 --> 00:03:47,430
assess a storm’s strength and prepare for
any eventuality

44
00:03:47,430 --> 00:03:52,480
The aftermath of a rare, massive storm on
Saturn has caught the infrared eye of NASA's

45
00:03:52,480 --> 00:03:54,549
Cassini spacecraft.

46
00:03:54,549 --> 00:04:00,540
Data captured during the storm from January
2011 to March 2012 reveal record-setting disturbances

47
00:04:00,540 --> 00:04:05,900
in the planet's upper atmosphere long after
the visible signs of the storm abated, indicating

48
00:04:05,900 --> 00:04:09,970
that the storm was more forceful than previously
thought.

49
00:04:09,970 --> 00:04:15,760
Cassini's composite infrared spectrometer,
the CIRS, revealed the storm's powerful discharge

50
00:04:15,760 --> 00:04:24,810
sent the temperature in Saturn's stratosphere
soaring 150 degrees Fahrenheit above normal.

51
00:04:24,810 --> 00:04:29,910
NASA's newest set of X-ray eyes in the sky,
the Nuclear Spectroscopic Telescope Array

52
00:04:29,910 --> 00:04:35,400
(NuSTAR), has caught its first look at the
giant black hole parked at the center of our

53
00:04:35,400 --> 00:04:36,700
galaxy.

54
00:04:36,700 --> 00:04:42,480
The observations show the usually-quiet Sagittarius
A star in the middle of a flare-up.

55
00:04:42,480 --> 00:04:47,160
That happens when a black hole gobbles up
stars and other fuel around them.

56
00:04:47,160 --> 00:04:52,680
Sagittarius A is thought only to nibble or
not eat at all, a process that is not fully

57
00:04:52,680 --> 00:04:54,180
understood.

58
00:04:54,180 --> 00:05:00,061
Launched June 13, NuSTAR is the only telescope
capable of producing focused images of the

59
00:05:00,061 --> 00:05:02,540
highest-energy X-rays.

60
00:05:02,540 --> 00:05:08,200
Among other telescopes contributing to these
observations was NASA's Chandra X-ray Observatory,

61
00:05:08,200 --> 00:05:09,200
and the W.M.

62
00:05:09,200 --> 00:05:13,210
Keck Observatory atop Mauna Kea in Hawaii.

63
00:05:13,210 --> 00:05:18,710
Hi, I'm Nina Lanza, I’m a post-doc on the
ChemCam instrument and this is your Curiosity

64
00:05:18,710 --> 00:05:20,700
rover update.

65
00:05:20,700 --> 00:05:23,890
This has been a very exciting week for the
Curiosity rover.

66
00:05:23,890 --> 00:05:28,070
It delivered its 3rd sample to the CHIMRA
to complete its cleaning regimen and also

67
00:05:28,070 --> 00:05:32,480
we've done our first CheMin analysis and
we've got a second one on the way.

68
00:05:32,480 --> 00:05:36,200
In its spare time, Curiosity has also been
making measurements with other instruments,

69
00:05:36,200 --> 00:05:38,840
including the ChemCam instrument, which is
what I work on.

70
00:05:38,840 --> 00:05:41,010
ChemCam is actually two instruments in one.

71
00:05:41,010 --> 00:05:45,810
It includes a camera with a telephoto lens
and it also has a laser that vaporizes a very

72
00:05:45,810 --> 00:05:49,430
small amount of rock so we can tell what its
chemical composition is.

73
00:05:49,430 --> 00:05:54,550
And as of this week, we will have done 10,000
shots with the ChemCam laser.

74

00:05:54,550 --> 00:05:59,240
This week we've been analyzing rocks in
an area called Rocknest, and I'll tell you

75
00:05:59,240 --> 00:06:02,240
in particular about one called Zephyr.

76
00:06:02,240 --> 00:06:05,710
This one is interesting because it appears
to be made of 2 different types of materials.

77
00:06:05,710 --> 00:06:10,800
It's got this harder, more resistant material
on the top, capping it, and then beneath it

78
00:06:10,800 --> 00:06:15,000
has a lighter colored softer material that
appears to erode more easily.

79
00:06:15,000 --> 00:06:19,700
It's actually eroded into a set of natural
arches, so some of our team members have taken

80
00:06:19,700 --> 00:06:22,490
to calling it, "Stonehenge."

81
00:06:22,490 --> 00:06:28,030
This feature is really only an inch long and
we're shooting this from about 8 feet away,

82
00:06:28,030 --> 00:06:29,510
making the pointing very difficult.

83
00:06:29,510 --> 00:06:33,860
So that's why we decided to do 9 points
instead of just 2, just to make sure we would

84
00:06:33,860 --> 00:06:35,630
hit the material of interest.

85
00:06:35,630 --> 00:06:39,950
We ended up hitting both the dark and the
light material and we found that there was

86
00:06:39,950 --> 00:06:42,050
indeed a compositional difference.

87
00:06:42,050 --> 00:06:45,750
In addition to composition, we've also been
able to make a three-dimensional model of

88
00:06:45,750 --> 00:06:50,430
the surface of this target using images from
the Remote Micro-Imager part of ChemCam.

89
00:06:50,430 --> 00:06:53,920
We've also used ChemCam to measure soils,
such as crestaurum.

90
00:06:53,920 --> 00:06:57,830
Here you can see a before image, and then
after image where you can see the crater left

91
00:06:57,830 --> 00:06:59,310
by the laser.

92
00:06:59,310 --> 00:07:03,990
This week ChemCam did its very first depth
profile, in which we shot the laser 600 times

93
00:07:03,990 --> 00:07:07,100
in a single location, in order to tunnel through
the surface of the rock.

94
00:07:07,100 --> 00:07:10,889
Now, this only tunnels about one millimeter
in depth, but it can help us understand how

95
00:07:10,889 --> 00:07:15,120

the composition of the sample changes from
the surface to the interior.

96
00:07:15,120 --> 00:07:18,800
Coming up, we'll be able to use this information
that we've learned from ChemCam in order

97
00:07:18,800 --> 00:07:22,520
to decide which targets we should hit next
with other instruments.

98
00:07:22,520 --> 00:07:25,370
This has been your Curiosity rover report.

99
00:07:25,370 --> 00:07:32,450
Please check back for more updates.

100
00:07:32,450 --> 00:07:38,970
Inspired by Curiosity was this 200-foot mural
dedicated at P.S. 328 in New York City.

101
00:07:38,970 --> 00:07:44,610
The "Red Road to Mars" was created by
artist Pansum Cheng and New York CITYarts

102
00:07:44,610 --> 00:07:50,720
staff, interns and volunteers based on the
ideas, drawings and poems of the elementary

103
00:07:50,720 --> 00:07:54,210
school students' shared dreams of reaching
for the stars.

104
00:07:54,210 --> 00:07:58,300
"Our goal at NASA is more than just the
engineering and science.

105
00:07:58,300 --> 00:08:01,780
Our goal is to also to inspire people and
change lives.

106
00:08:01,780 --> 00:08:08,060
Your mural captures this time in history along
with your future dreams and possibilities.

107
00:08:08,060 --> 00:08:13,680
Keep dreaming, work hard and yes, education
is very important for you to get there."

108
00:08:13,680 --> 00:08:18,960
Helping produce the "Red Road to Mars"
mural was the P.S. 328 after-school center,

109
00:08:18,960 --> 00:08:26,470
with support from NASA, Benjamin Moore Paints
and the Michael Tuch Foundation.

110
00:08:26,470 --> 00:08:31,310
The Michoud Assembly Facility played host
to SLS Industry Day to help suppliers and

111
00:08:31,310 --> 00:08:36,010
other businesses better acquaint themselves
with NASA's acquisition strategies.

112
00:08:36,010 --> 00:08:41,849
More than 90 companies and 40 government entities
explored partnership opportunities with the

113
00:08:41,849 --> 00:08:44,540
Space Launch System Program.

114
00:08:44,540 --> 00:08:49,950
Joining SLS Program manager, Todd May at the
event was Marshall Space Flight Center Director,

115
00:08:49,950 --> 00:08:51,490
Patrick Scheuermann.

116

00:08:51,490 --> 00:08:57,589
Scheuermann, who directed Michoud's Hurricane
Katrina recovery while center director at

117
00:08:57,589 --> 00:09:04,480
Stennis, also was guest at a MAF all-hands
meeting.

118
00:09:04,480 --> 00:09:09,110
The final "roll" of Space shuttle Atlantis
from Kennedy Space Center's Orbiter Processing

119
00:09:09,110 --> 00:09:13,589
Facility 2 to the Vehicle Assembly Building
is complete.

120
00:09:13,589 --> 00:09:21,930
Atlantis has been undergoing preparations
for public display.

121
00:09:21,930 --> 00:09:26,249
The orbiter is scheduled to move to its new
home at the Kennedy Space Center Visitor Complex

122
00:09:26,249 --> 00:09:27,579
on November 2.

123
00:09:27,579 --> 00:09:35,110
A grand opening is planned for Atlantis at
the Visitor Complex next July.

124
00:09:35,110 --> 00:09:40,990
Solar System Exploration @ 50, a two-day symposium
about the past, present and future of solar

125
00:09:40,990 --> 00:09:46,610
system exploration was held at the Lockheed
Martin Global Vision Center outside Washington.

126
00:09:46,610 --> 00:09:51,800

The event commemorated the 50th anniversary
of the first successful planetary mission,

127
00:09:51,800 --> 00:09:57,740
Mariner 2’s voyage to Venus in 19-62, and
highlighted the subsequent half-century of

128
00:09:57,740 --> 00:09:58,740
achievements.

129
00:09:58,740 --> 00:10:06,050
“There are countries in this world that
dream about the stuff that NASA does.

130
00:10:06,050 --> 00:10:12,839
And it’s because we do some of these things
that are absolutely astounding because we

131
00:10:12,839 --> 00:10:16,899
need to make progress in the science questions
that we want to answer.”

132
00:10:16,899 --> 00:10:22,460
Solar System Exploration @ 50 was sponsored
by NASA’s History Program Office, Science

133
00:10:22,460 --> 00:10:27,990
Mission Directorate, Jet Propulsion Laboratory
and the Smithsonian National Air and Space

134
00:10:27,990 --> 00:10:31,570
Museum.

135
00:10:31,570 --> 00:10:36,839
Kennedy Space Center employees, their families
and the community across Florida's Space Coast

136
00:10:36,839 --> 00:10:39,829
got a taste of Hollywood Oct. 13.

137
00:10:39,829 --> 00:10:45,190
Turner Classic Movies presented the 1956 sci-fi
classic, "Forbidden Planet," at the Kennedy

138
00:10:45,190 --> 00:10:47,470
Space Center Visitor Complex.

139
00:10:47,470 --> 00:10:52,300
NASA astronaut Mike Massimino, along with
astronaut and Kennedy Space Center Director

140
00:10:52,300 --> 00:10:57,059
Bob Cabana, were joined by Turner Classic
Movies host Ben Mankiewicz.

141
00:10:57,059 --> 00:11:02,310
The event was part of the network's Road to
Hollywood tour, giving communities across

142
00:11:02,310 --> 00:11:06,850
the country the chance to enjoy timeless movies
in a film-festival atmosphere.

143
00:11:06,850 --> 00:11:10,990
“We picked "Forbidden Planet" because I
think it's one of the sci-fi movies from that

144
00:11:10,990 --> 00:11:17,420
sort of seminal age of sci-fi movies that
is taken seriously, that's not, you know...

145
00:11:17,420 --> 00:11:18,660
you don't laugh at "Forbidden Planet."

146
00:11:18,660 --> 00:11:20,209
It's kind of a highbrow movie.

147
00:11:20,209 --> 00:11:21,930
It's pretty sophisticated.

148
00:11:21,930 --> 00:11:26,749
And I think that our fascination with science
fiction, unquestionably, had a lot to do with

149
00:11:26,749 --> 00:11:32,809
the country's willingness to fund and grow
the space program in the seminal years of

150
00:11:32,809 --> 00:11:35,050
the space program in the 50s and 60s."

151
00:11:35,050 --> 00:11:44,319
The nationwide tour leads up to the Classic
Film Festival in Hollywood in April 2013.

152
00:11:44,319 --> 00:11:50,930
Six years ago, on October 26, 2006, NASA released
the Solar Terrestrial Relations Observatory

153
00:11:50,930 --> 00:11:55,930
into the heavens to stereographically image
the sun and its emissions.

154
00:11:55,930 --> 00:12:02,400
The two identical spacecraft, Stereo A, and
Stereo-B, orbit our star, one ahead of the

155
00:12:02,400 --> 00:12:04,540
Earth, the other trailing.

156
00:12:04,540 --> 00:12:10,040
Together, they provide scientists with a better
view of how solar storms begin and evolve

157
00:12:10,040 --> 00:12:17,660
as they move from the sun into space.

158
00:12:17,660 --> 00:12:34,649

And a year ago on October 28, NPP, the National Polar-orbiting Operational Environmental Satellite

159
00:12:34,649 --> 00:12:40,399
System Preparatory Project was launched from Vandenburg Air Force Base in California.

160
00:12:40,399 --> 00:12:45,970
The NOAA weather satellite, since renamed for meteorologist, Verner Suomi, is part of

161
00:12:45,970 --> 00:12:51,610
NASA's Earth Observing System, a series of satellites providing new insight into our

162
00:12:51,610 --> 00:12:54,709
planet’s ecosystem.

163
00:12:54,709 --> 00:12:56,999
And that’s This Week @NASA.

164
00:12:56,999 --> 00:13:02,119
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