



1  
00:00:07,100 --> 00:00:14,750  
This Week at NASA...

2  
00:00:14,750 --> 00:00:20,590  
After handing over the reins of the International  
Space Station to NASA astronaut Kevin Ford,

3  
00:00:20,590 --> 00:00:26,750  
Expedition 33 Commander Suni Williams of NASA,  
Soyuz Commander Yuri Malenchenko and Flight

4  
00:00:26,750 --> 00:00:32,529  
Engineer Aki Hoshide of the Japan Aerospace  
Exploration Agency, all of whom have been

5  
00:00:32,529 --> 00:00:37,780  
on the station since July 17, made a safe  
parachute-assisted landing in their Soyuz

6  
00:00:37,780 --> 00:00:42,239  
spacecraft in Kazakhstan on Nov. 19 local  
time.

7  
00:00:42,239 --> 00:00:47,570  
Expedition 34 crewmembers Ford, Oleg Novitskiy  
and Evgeny Tarelkin will be joined onboard

8  
00:00:47,570 --> 00:00:54,280  
the station by Russian cosmonaut Roman Romanenko,  
NASA's Tom Marshburn and Chris Hadfield

9  
00:00:54,280 --> 00:00:56,760  
of the Canadian Space Agency.

10  
00:00:56,760 --> 00:01:04,449  
Their arrival Dec. 21 will restore to six  
the number of people aboard the orbiting laboratory.

11  
00:01:04,449 --> 00:01:08,210

“We hear you loud and clear aboard the International Space Station.

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00:01:08,210 --> 00:01:09,210

Welcome aboard!”

13

00:01:09,210 --> 00:01:15,321

The Smithsonian National Air and Space Museum’s Moving Beyond Earth gallery was among 25 North

14

00:01:15,321 --> 00:01:20,210

American locations at which participants of the Student Spaceflight Experiments Program

15

00:01:20,210 --> 00:01:26,810

(SSEP) plugged into life onboard the International Space Station during a live video-conference

16

00:01:26,810 --> 00:01:28,229

with the ISS.

17

00:01:28,229 --> 00:01:33,670

The event gave U.S. and Canadian students an opportunity to ask station crew members

18

00:01:33,670 --> 00:01:36,670

about daily activities onboard the orbiting laboratory.

19

00:01:36,670 --> 00:01:42,179

“What advice can you give young kids like me about pursuing our dreams?”

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00:01:42,179 --> 00:01:46,071

“Just have your eyes wide open and get ready for all of those challenges – because they’ll

21

00:01:46,071 --> 00:01:51,000

be out there but they’ll be fun and the rewards are great if you try hard, work hard

22

00:01:51,000 --> 00:01:52,249

and do your best.”

23

00:01:52,249 --> 00:01:57,039

A panel of spaceflight and science experts  
also fielded questions -- including astronaut

24

00:01:57,039 --> 00:02:01,499

Leland Melvin – NASA’s Associate Administrator  
for Education.

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00:02:01,499 --> 00:02:06,499

The SSEP program is a joint venture between  
the Smithsonian National Air and Space Museum,

26

00:02:06,499 --> 00:02:12,210

the National Center for Earth and Space Science  
Education (NCESE), NASA, and the U.S. Department

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00:02:12,210 --> 00:02:13,930

of Education.

28

00:02:13,930 --> 00:02:17,930

“One, two three ... space!”

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00:02:17,930 --> 00:02:23,050

A new NASA service will help sky watchers  
pinpoint where and when the International

30

00:02:23,050 --> 00:02:26,160

Space Station will make an appearance in the  
skies above them.

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00:02:26,160 --> 00:02:31,630

NASA’s “Spot the Station” service sends  
a text or email to anyone with an email account

32

00:02:31,630 --> 00:02:38,070

or an SMS-enabled phone to alert them when the ISS is scheduled for a flyover in the

33

00:02:38,070 --> 00:02:39,070  
area.

34

00:02:39,070 --> 00:02:43,540  
Mission Control at the Johnson Space Center compiles sighting opportunities for 4,600

35

00:02:43,540 --> 00:02:44,830  
locations worldwide.

36

00:02:44,830 --> 00:02:48,760  
To sign up, visit [spotthestation.nasa.gov](http://spotthestation.nasa.gov).

37

00:02:48,760 --> 00:02:54,590  
If your city or town isn't listed, just pick one that's close by!

38

00:02:54,590 --> 00:03:00,730  
Hi, I'm Ashwin Vasavada, the deputy project scientist for the Curiosity rover and this

39

00:03:00,730 --> 00:03:03,400  
is your Curiosity rover update.

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00:03:03,400 --> 00:03:07,820  
A lot of what this mission is about is figuring out the possibility that ancient Mars was

41

00:03:07,820 --> 00:03:09,100  
a habitable environment.

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00:03:09,100 --> 00:03:11,650  
But we're also studying the present environment.

43

00:03:11,650 --> 00:03:15,740  
Two instruments that help with that are the

RAD instrument and the REMS instrument.

44  
00:03:15,740 --> 00:03:18,480  
The RAD instrument is a radiation assessment detector.

45  
00:03:18,480 --> 00:03:24,100  
It measures the high-energy radiation coming up from the cosmic rays and the sun.

46  
00:03:24,100 --> 00:03:32,420  
That radiation is changed as it goes through Mars' atmosphere to where we detect it on

47  
00:03:32,420 --> 00:03:33,420  
the surface.

48  
00:03:33,420 --> 00:03:38,640  
By measuring the radiation at Mars' surface Curiosity is helping prepare for human missions

49  
00:03:38,640 --> 00:03:39,640  
to Mars.

50  
00:03:39,640 --> 00:03:43,890  
Another instrument that Curiosity has that measures the modern environment is called

51  
00:03:43,890 --> 00:03:46,340  
the rover environmental monitoring station.

52  
00:03:46,340 --> 00:03:48,180  
It's basically our weather station.

53  
00:03:48,180 --> 00:03:52,850  
We measure a lot of things including pressure, and humidity, temperature and wind.

54  
00:03:52,850 --> 00:03:58,080

It's been seeing little dips in pressure  
around noon that seemed like the signature

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00:03:58,080 --> 00:03:59,430

of dust devils.

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00:03:59,430 --> 00:04:02,930

Only thing is our pictures haven't turned  
up any dust devils.

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00:04:02,930 --> 00:04:06,650

Spirit and Opportunity saw lots of dust devils  
moving across the horizon.

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00:04:06,650 --> 00:04:11,340

Our best guess at what's going on is that  
Curiosity is seeing dust devils go right over

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00:04:11,340 --> 00:04:12,340

it, only thing is we're not seeing the dust  
devils.

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00:04:12,340 --> 00:04:16,840

So what we think is happening is the same  
sorts of vortexes, driven by convection are

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00:04:16,840 --> 00:04:21,120

occurring on Mars at the Curiosity's site  
but just not picking up dust.

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00:04:21,120 --> 00:04:23,980

Another thing that REMS has been measuring  
is winds.

63

00:04:23,980 --> 00:04:26,810

Turns out we're in a pretty interesting  
place inside of Gale Crater.

64

00:04:26,810 --> 00:04:31,050

We're right at the base of a 5-kilometer

high mountain to the south of us and then

65

00:04:31,050 --> 00:04:34,351

there's a pretty tall crater rim to the north of us and we're sitting in kind of

66

00:04:34,351 --> 00:04:36,750

a flat depression between the two.

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00:04:36,750 --> 00:04:41,010

The winds blow up and down the mountain as the temperature changes during the day and

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00:04:41,010 --> 00:04:45,260

up and down the crater slopes and then along the depression where we're at.

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00:04:45,260 --> 00:04:48,490

So right now we're trying to figure out from the REMS data exactly which parts of

70

00:04:48,490 --> 00:04:51,060

that wind field we're measuring.

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00:04:51,060 --> 00:04:54,851

With Thanksgiving coming up we've been preparing a few days worth of commands to send up to

72

00:04:54,851 --> 00:04:58,780

the rover to keep it busy while people here take some much needed time off.

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00:04:58,780 --> 00:05:02,800

The rover will be acquiring a big panorama of our surroundings while we're away.

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00:05:02,800 --> 00:05:09,090

I'm Ashwin Vasavada and this has been your Curiosity rover update.

75  
00:05:09,090 --> 00:05:14,150  
NASA has announced the successful completion  
of the Kepler space telescope's baseline

76  
00:05:14,150 --> 00:05:17,600  
mission to search for planets in other solar  
systems.

77  
00:05:17,600 --> 00:05:23,960  
Since its launch in 2009, scientists using  
Kepler have identified more than 100 exoplanets

78  
00:05:23,960 --> 00:05:27,000  
and another 23-thousand-plus candidates.

79  
00:05:27,000 --> 00:05:30,440  
"The tapestry of everything that goes on  
in the Kepler.

80  
00:05:30,440 --> 00:05:32,000  
It's really a team mission.

81  
00:05:32,000 --> 00:05:36,240  
It's an enormous number of people who come  
together to make this kind of mission happen."

82  
00:05:36,240 --> 00:05:41,930  
In April of this year, NASA awarded the Kepler  
mission up to four more years of funding,

83  
00:05:41,930 --> 00:05:47,840  
allowing the telescope to continue its planetary  
census and to help scientists better understand

84  
00:05:47,840 --> 00:05:53,220  
solar system and planetary formation.

85  
00:05:53,220 --> 00:05:58,570  
Engineers at the Marshall Space Flight Center

are using a new, cost-saving method to create

86

00:05:58,570 --> 00:06:02,730

intricate metal parts for America's next heavy-lift rocket.

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00:06:02,730 --> 00:06:08,810

Called "Selective Laser Melting" the process uses a high-energy laser to melt a fine metal

88

00:06:08,810 --> 00:06:11,900

powder into a computer-aided designed pattern.

89

00:06:11,900 --> 00:06:18,139

A hybrid of 3-D printing and artistic welding, SLM creates intricately-designed parts with

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00:06:18,139 --> 00:06:25,090

complex geometries that are more strong and safe in less time, saving millions in manufacturing

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00:06:25,090 --> 00:06:26,090

costs.

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00:06:26,090 --> 00:06:35,500

These new, SLM-created parts will be on the first SLS test flight in 2017.

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00:06:35,500 --> 00:06:40,840

The Goddard Space Flight Center hosted a 2012 Veterans Day Recognition Program, with former

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00:06:40,840 --> 00:06:46,480

NASA astronaut and retired Navy captain Scott Altman serving as featured speaker.

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00:06:46,480 --> 00:06:54,020

Altman, who flew four space shuttle missions and commanded STS-125, the final Hubble servicing

96  
00:06:54,020 --> 00:07:03,320  
mission, praised those who've defended and  
upheld those freedoms upon which our nation

97  
00:07:03,320 --> 00:07:05,610  
stands.

98  
00:07:05,610 --> 00:07:10,770  
Hundreds of students celebrated the 20th annual  
Young Astronauts Day at the Glenn Research

99  
00:07:10,770 --> 00:07:11,770  
Center.

100  
00:07:11,770 --> 00:07:16,650  
They competed in a variety of activities testing  
their skills in science and engineering.

101  
00:07:16,650 --> 00:07:21,830  
Meeting with the students was Center Director  
Ray Lugo, and NASA astronaut and Ohio native,

102  
00:07:21,830 --> 00:07:27,260  
Greg Johnson, who serves as Associate Director  
of External Programs at Glenn.

103  
00:07:27,260 --> 00:07:31,210  
This year's event was sponsored by Glenn's  
Exploration Flight and Development Project

104  
00:07:31,210 --> 00:07:37,280  
Office and the Northern Ohio Section of the  
American Institute of Aeronautics and Astronautics.

105  
00:07:37,280 --> 00:07:44,930  
Providing support was the center's Educational  
Programs Office.

106  
00:07:44,930 --> 00:07:50,139

At the fifth annual Wernher von Braun Memorial Symposium in Huntsville, Marshall Space Flight

107

00:07:50,139 --> 00:07:57,080

Center personnel and guests discussed a wide range of topics, including human space exploration,

108

00:07:57,080 --> 00:08:03,460

space commerce, national space security and policy, and trends in engineering education.

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00:08:03,460 --> 00:08:08,300

The von Braun Symposium, organized by the American Astronautical Society in conjunction

110

00:08:08,300 --> 00:08:14,070

with UA - Huntsville, the National Space Club of Huntsville and NASA strives for the advancement

111

00:08:14,070 --> 00:08:21,760

of astronautics in the United States.

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00:08:21,760 --> 00:08:27,660

Registration is now open for the 20th annual Great Moonbuggy Race, scheduled for next April

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00:08:27,660 --> 00:08:32,110

25 thru 27 at the U.S. Space and Rocket Center in Huntsville.

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00:08:32,110 --> 00:08:36,820

The Marshall-sponsored event provides high school, college and university students from

115

00:08:36,820 --> 00:08:42,749

around the world with real-world engineering experience, and inspiration to pursue careers

116

00:08:42,749 --> 00:08:49,860

in science, technology, engineering and math.

117

00:08:49,860 --> 00:08:56,139

For details, go to [moonbuggy.msfc.nasa.gov/](http://moonbuggy.msfc.nasa.gov/).

118

00:08:56,139 --> 00:09:03,300

I'm Jeanne Lynch and I'm Chief of the Flight Dynamics Division in the Mission Operations

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00:09:03,300 --> 00:09:04,300

Directorate.

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00:09:04,300 --> 00:09:08,529

The Flight Dynamics Division is responsible for the trajectory of the International Space

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00:09:08,529 --> 00:09:15,050

Station so that includes the visiting vehicles and how they fly to the ISS, as well as where

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00:09:15,050 --> 00:09:19,470

the ISS is located; basically the altitude of how far it is from the Earth.

123

00:09:19,470 --> 00:09:22,119

My grandmother's grandmother was Cherokee.

124

00:09:22,119 --> 00:09:26,459

We moved to Florida next to my grandmother and my mother started getting more involved

125

00:09:26,459 --> 00:09:30,370

in the genealogy and our culture.

126

00:09:30,370 --> 00:09:35,360

So when I was in high school and even in college before I moved away, I participated in a number

127

00:09:35,360 --> 00:09:40,470

of the local Pow-Wows and other Native American

Functions.

128

00:09:40,470 --> 00:09:45,019

When I started for NASA, I was actually a new hire right out of college so I wasn't

129

00:09:45,019 --> 00:09:51,410

a Co-Op, but I did do my senior project when I was in engineering school that was a NASA

130

00:09:51,410 --> 00:09:56,790

funded project through my university where we essentially built a little kind of lunar

131

00:09:56,790 --> 00:09:59,670

servicing station for a lunar lander.\h

132

00:09:59,670 --> 00:10:02,889

And it was amazing and a lot of fun.\h

133

00:10:02,889 --> 00:10:07,779

In any job you have, you need to give it your all; you need to take personal responsibility

134

00:10:07,779 --> 00:10:13,269

for the quality of your work, getting it done, and really being passionate about what you

135

00:10:13,269 --> 00:10:14,269

do.\h

136

00:10:14,269 --> 00:10:18,779

And I know if you do that, then it gets noticed and everyone appreciates it and then your

137

00:10:18,779 --> 00:10:28,819

career will just continue to grow.

138

00:10:28,819 --> 00:10:35,550

Fourteen years ago, on Nov. 20, 1998, Zarya,  
the first component of the new International

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00:10:35,550 --> 00:10:40,420

Space Station was launched atop a Russian  
Proton rocket from the Baikonur Cosmodrome

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00:10:40,420 --> 00:10:42,100

in Kazakhstan.

141

00:10:42,100 --> 00:10:47,290

During the initial assembly stage of the ISS  
Zarya provided the station with propulsion,

142

00:10:47,290 --> 00:10:53,170

guidance, battery power, fuel storage, and  
rendezvous and docking capability for Soyuz

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00:10:53,170 --> 00:10:55,399

and Progress space vehicles.

144

00:10:55,399 --> 00:11:00,540

Now that specialized components handle those  
chores for the station, Zarya is primarily

145

00:11:00,540 --> 00:11:09,370

used for storage.

146

00:11:09,370 --> 00:11:20,230

Three years ago on November 16, 2009 Space  
Shuttle Atlantis rose skyward from the Kennedy

147

00:11:20,230 --> 00:11:26,470

Space Center on STS-129 – an assembly flight  
to the International Space Station.

148

00:11:26,470 --> 00:11:32,639

Atlantis' crew consisted of Commander Charlie  
Hobaugh, Pilot Barry Wilmore and Mission specialists

149

00:11:32,639 --> 00:11:37,850

Bobby Satcher, Mike Foreman, Randy Bresnik  
and Leland Melvin.

150

00:11:37,850 --> 00:11:43,709

Atlantis delivered parts to the space station,  
including a spare gyroscope and a UHF communications

151

00:11:43,709 --> 00:11:48,350

unit to be used for future station flights  
by SpaceX.

152

00:11:48,350 --> 00:11:53,230

The mission, the final space shuttle crew  
rotation flight to or from the space station,

153

00:11:53,230 --> 00:11:59,199

also returned to Earth NASA astronaut and  
station crew member Nicole Stott.

154

00:11:59,199 --> 00:12:00,730

And that's This Week @NASA.