
Peter Jenniskens
Meteor Astronomer, SETI Institute

1
00:00:07,040 --> 00:00:15,340
This Week at NASA…

2
00:00:15,340 --> 00:00:23,880
The
Russian Soyuz spacecraft carrying Expedition

3
00:00:23,880 --> 00:00:29,770
31 Soyuz Commander Gennady Padalka, NASA Flight
Engineer Joe Acaba and Flight Engineer Sergei

4
00:00:29,770 --> 00:00:34,460
Revin is shown launching from the Baikonur
Cosmodrome in Kazakhstan to the International

5
00:00:34,460 --> 00:00:36,590
Space Station.

6
00:00:36,590 --> 00:00:43,910
There, Padalka, Acaba and Revin are joining
up with their Expedition 31 crewmates already

7
00:00:43,910 --> 00:00:50,070
aboard the ISS, Commander Oleg Kononenko,
NASA Flight Engineer Don Pettit and European

8
00:00:50,070 --> 00:00:58,080
Space Agency Flight Engineer Andre Kuipers;
they've been on the outpost since December.

9
00:00:58,080 --> 00:01:02,980
SpaceX continues its preparations for the
launch of Falcon 9 at Florida's Cape Canaveral

10
00:01:02,980 --> 00:01:04,510
Air Force Station.

11
00:01:04,510 --> 00:01:09,490
The Falcon 9 rocket will send aloft the unmanned

Dragon spacecraft to the International Space

12
00:01:09,490 --> 00:01:14,690
Station, where it will be grappled remotely
by the Expedition 31 crew.

13
00:01:14,690 --> 00:01:20,040
The SpaceX mission, now scheduled to launch
on the morning of May 19, will be the first

14
00:01:20,040 --> 00:01:24,640
commercial venture to the ISS.

15
00:01:24,640 --> 00:01:29,909
Administrator Charlie Bolden headed a delegation
of senior NASA leadership that met with Japanese

16
00:01:29,909 --> 00:01:35,520
Prime Minister Yoshihiko Noda to discuss international
cooperation in space.

17
00:01:35,520 --> 00:01:41,220
Presented by Bolden with a montage of mementos
flown on STS-135, the final space shuttle

18
00:01:41,220 --> 00:01:46,659
mission, Prime Minister Noda said he wants
to excite young people about careers exploring

19
00:01:46,659 --> 00:01:52,909
space, noting his envy of five meeting attendees
who'd actually done that.

20
00:01:52,909 --> 00:01:56,600
"Which is also telling us something fundamental…"

21
00:01:56,600 --> 00:02:02,330
The first global analysis by the Dawn spacecraft
of Vesta has uncovered some interesting new

22
00:02:02,330 --> 00:02:04,220
findings about the giant asteroid.

23
00:02:04,220 --> 00:02:10,479
“We now know that Vesta is the only intact
layered planetary building block surviving

24
00:02:10,479 --> 00:02:12,900
from the very earliest days of the solar system.

25
00:02:12,900 --> 00:02:19,469
Vesta exhibits many characteristics that define
it more as a body that is transitional between

26
00:02:19,469 --> 00:02:25,349
asteroids and planets than being more like
your garden variety asteroid.

27
00:02:25,349 --> 00:02:30,459
Vesta is special because it survived the intense
collisional environment of the main asteroid

28
00:02:30,459 --> 00:02:36,219
belt for billions of years allowing us to
interrogate a key witness to the events at

29
00:02:36,219 --> 00:02:38,409
the very beginning of the solar system.”

30
00:02:38,409 --> 00:02:43,800
Dawn has also confirmed that a certain class
of meteorites found here on Earth originally

31
00:02:43,800 --> 00:02:49,870
came from Vesta, making Dawn the first "reverse"
sample return mission in space exploration

32
00:02:49,870 --> 00:02:51,780
history.

33
00:02:51,780 --> 00:02:58,069
NASA’s Solar Dynamics Observatory captured
these photos of a powerfully active region

34
00:02:58,069 --> 00:03:03,779
of the Sun called 1476 that’s more than
60,000 miles across.

35
00:03:03,779 --> 00:03:08,819
This so-called Monster sunspot has released
multiple large flares.

36
00:03:08,819 --> 00:03:13,049
Sunspots occur where the magnetic field lines
emerge from the inside of the Sun to form

37
00:03:13,049 --> 00:03:15,090
expanding loops above its surface.

38
00:03:15,090 --> 00:03:20,340
They appear dark because temperatures are
considerably lower than in surrounding areas.

39
00:03:20,340 --> 00:03:26,250
SDO is the first launched mission in NASA's
Living With a Star Program designed to understand

40
00:03:26,250 --> 00:03:31,140
the causes of solar variability and its impacts
on Earth.

41
00:03:31,140 --> 00:03:35,199
“Save at the innovative process and government’s
role in it.”

42
00:03:35,199 --> 00:03:38,629
“That’s a great way to frame the problem
because I think that’s exactly the question.”

43
00:03:38,629 --> 00:03:44,430
NASA Chief Technologist Mason Peck offered
his take on the role of research and development

44
00:03:44,430 --> 00:03:50,139
in revitalizing the nation's economic future
in a special innovation summit held at Washington's

45
00:03:50,139 --> 00:03:52,309
Reagan National Airport.

46
00:03:52,309 --> 00:03:56,980
Sponsored by the Atlantic Monthly magazine,
Peck's panel discussed how investment in

47
00:03:56,980 --> 00:04:00,769
American R&D and manufacturing benefits our
economy.

48
00:04:00,769 --> 00:04:06,419
"When you pose difficult problems such as
sending humans to Mars, which is on NASA's

49
00:04:06,419 --> 00:04:10,939
plate right now – when you pose those kinds
of problems and you put American industry

50
00:04:10,939 --> 00:04:20,709
to work and academia to work on those problems,
you get innovation."

51
00:04:20,709 --> 00:04:25,440
Researchers with the Mars Science Laboratory
Project at the Jet Propulsion Laboratory recently

52
00:04:25,440 --> 00:04:29,840
took science journalists on a two-day field
trip and workshop to California's Mojave

53

00:04:29,840 --> 00:04:32,370
Desert.

54
00:04:32,370 --> 00:04:39,090
The journalists were shown sedimentary rock
exposures that, like those the Curiosity rover

55
00:04:39,090 --> 00:04:44,120
will study on Mars, reveal to scientists the
history of their environment.

56
00:04:44,120 --> 00:04:47,900
The hard part is how to extract the information
in the rock, so that's what everybody is

57
00:04:47,900 --> 00:04:50,690
learning to do here, is how to make measurements.

58
00:04:50,690 --> 00:04:55,600
We measure the thickness of the beds, we measure
the grain size, we look at the mineralogy

59
00:04:55,600 --> 00:05:00,920
as best as we can understand it and we record
all of this information and then from that,

60
00:05:00,920 --> 00:05:05,510
it will eventually allow us to reconstruct
what kind of environment was here."

61
00:05:05,510 --> 00:05:12,500
"Liftoff of the Atlas V with Curiosity – seeking
clues to the planetary puzzle about life on

62
00:05:12,500 --> 00:05:13,500
Mars."

63
00:05:13,500 --> 00:05:19,720
The MSL spacecraft, carrying Curiosity, was
launched Nov. 26, 2011 and is scheduled for

64
00:05:19,720 --> 00:05:25,750
an August 2012 landing on Mars at a site known as Gale Crater.

65
00:05:25,750 --> 00:05:30,820
A full-scale test version of NASA’s Orion spacecraft has arrived at the Virginia Air

66
00:05:30,820 --> 00:05:35,580
& Space Center in Hampton, where it will be on display through the summer.

67
00:05:35,580 --> 00:05:40,280
The 18-thousand pound test vehicle, built at the nearby Langley Research Center, was

68
00:05:40,280 --> 00:05:45,710
used in the successful Pad Abort 1test of Orion’s launch abort system in May 2010.

69
00:05:45,710 --> 00:05:52,950
NASA’s first space-bound Orion capsule will undergo an un-crewed Exploration Flight Test-1

70
00:05:52,950 --> 00:05:54,740
planned for 2014.

71
00:05:54,740 --> 00:06:01,180
EFT-1 will see Orion travel farther into space than any human-rated spacecraft has gone in

72
00:06:01,180 --> 00:06:03,920
more than 40 years.

73
00:06:03,920 --> 00:06:10,390
Recently, a team of scientists and volunteers from NASA Ames Research Center searched for

74

00:06:10,390 --> 00:06:14,900
debris left in the wake of a large meteor
that plummeted into Northern California on

75
00:06:14,900 --> 00:06:17,780
April 22, 2012.

76
00:06:17,780 --> 00:06:22,900
To expedite their search, researchers enlisted
the services of an airship called “Eureka”

77
00:06:22,900 --> 00:06:26,490
for an airborne survey of the debris field.

78
00:06:26,490 --> 00:06:30,270
During a five hour flight, they searched a
300-square mile area.

79
00:06:30,270 --> 00:06:36,160
They used a sophisticated video camera system
that is commonly used to cover sporting events.

80
00:06:36,160 --> 00:06:41,340
Researcher were also conducting ground surveys
to look for fragments.

81
00:06:41,340 --> 00:06:46,750
Within days, a NASA team was able to find
and identify a fragment as a type of meteorite

82
00:06:46,750 --> 00:06:48,790
known as a carbonaceous chondrite.

83
00:06:48,790 --> 00:06:57,560
“It is a really special meteorite because
this particular one contains the goodies that

84
00:06:57,560 --> 00:07:01,690
scientists are interested in – the amino
acids – all of the compounds that could

85
00:07:01,690 --> 00:07:06,450
have made life possible on our planet.”

86
00:07:06,450 --> 00:07:10,740
Because meteorite fragments will quickly degrade
when exposed to the elements, the rush to

87
00:07:10,740 --> 00:07:13,480
find them as soon as possible began.

88
00:07:13,480 --> 00:07:16,900
One of the larger fragments was discovered
in the de Hass family pasture.

89
00:07:16,900 --> 00:07:22,960
“I’m glad you found it there and I’m
glad it’s a piece that’s going to be valuable

90
00:07:22,960 --> 00:07:28,120
to science and I’m looking forward to hearing
some of the results from it.”

91
00:07:28,120 --> 00:07:32,480
Along with the de Haas fragment, over 20 specimens
have been recovered.

92
00:07:32,480 --> 00:07:37,480
Some of the largest are now undergoing tests
in a lab at Ames Research Center.

93
00:07:37,480 --> 00:07:42,330
This discovery could provide clues as to what
our planet may have been made from and how

94
00:07:42,330 --> 00:07:47,870
life could have begun on Earth.

95
00:07:47,870 --> 00:07:53,240

About 50 followers of NASA's social media
websites got an up-close-and-personal, behind-the-scenes

96
00:07:53,240 --> 00:07:58,389
look at NASA's Dryden Flight Research Center
during a "NASA Social" on May 4.

97
00:07:58,389 --> 00:08:02,830
The social media visitors, along with several
news media representatives, were briefed on

98
00:08:02,830 --> 00:08:07,490
what Dryden is and does by center management,
project engineers and technicians.

99
00:08:07,490 --> 00:08:12,760
“We’re responsible for that collision
avoidance stewardship throughout aviation.”

100
00:08:12,760 --> 00:08:17,580
They also toured various facilities, viewed
research and support aircraft, had their photos

101
00:08:17,580 --> 00:08:27,160
taken in the cockpit of a NASA F/A-18, and
were even regaled by a low-level flyover…

102
00:08:27,160 --> 00:08:32,130
and a sonic boom…

103
00:08:32,130 --> 00:08:35,149
during the day-long event.

104
00:08:35,149 --> 00:08:39,740
The NASA Social attendees responded by posting
hundreds of "tweets" and comments about their

105
00:08:39,740 --> 00:08:48,120
experience on their Twitter, Facebook and
Google-Plus accounts.

106
00:08:48,120 --> 00:08:52,410
National Take Our Children to Work Day was
upbeat and full of energy for students and

107
00:08:52,410 --> 00:08:54,670
children of Marshall Space Flight Center employees.

108
00:08:54,670 --> 00:08:58,019
“Alright now as you can see filling the
rocket with air pressure – and that’s

109
00:08:58,019 --> 00:09:02,339
the action – all of the pressure builds
(launch sound) – there it goes!

110
00:09:02,339 --> 00:09:04,050
Liftoff is the reaction.”

111
00:09:04,050 --> 00:09:07,330
Performers in the educational show FMA Live!

112
00:09:07,330 --> 00:09:11,870
brought Sir Isaac Newton's laws of motion
to life for the potential future scientists

113
00:09:11,870 --> 00:09:12,870
and engineers!

114
00:09:12,870 --> 00:09:14,040
FMA Live!

115
00:09:14,040 --> 00:09:19,220
-- created by NASA and Honeywell International
-- is an award-winning, traveling hip-hop

116
00:09:19,220 --> 00:09:24,709
science program designed to inspire elementary
and middle school students to pursue studies

117
00:09:24,709 --> 00:09:32,720
in science, technology, engineering and math
by using interactive demonstrations in an

118
00:09:32,720 --> 00:09:38,029
entertaining way.

119
00:09:38,029 --> 00:09:51,100
“I’m Allen Chen; I’m the operations
lead on the Entry, Descent and Landing team

120
00:09:51,100 --> 00:09:53,259
for the Mars Science Laboratory project.

121
00:09:53,259 --> 00:09:57,680
“Right now I’m coordinating our preparations
for entry, descent and landing.

122
00:09:57,680 --> 00:10:01,690
We land in August, a few months from now and
we’re still hurrying to get all our stuff

123
00:10:01,690 --> 00:10:05,010
ready to make sure that we’re ready to take
the plunge.

124
00:10:05,010 --> 00:10:08,050
I’ll be telling people exactly what the
spacecraft is doing, you know roughly where

125
00:10:08,050 --> 00:10:14,259
it is and what it’s telling us is going
on during EDL.

126
00:10:14,259 --> 00:10:19,579
“My parents always displayed an example
that education never stops.

127

00:10:19,579 --> 00:10:23,029
You always want to learn as much as you can
and it doesn’t stop when you leave the classroom.

128
00:10:23,029 --> 00:10:27,910
My parents added new skills while I was still
in high school and you know they got other

129
00:10:27,910 --> 00:10:31,170
degrees and a lot of the times it was just
for fun.

130
00:10:31,170 --> 00:10:34,769
We have essentially a copy of the spacecraft
over in a different building here where we

131
00:10:34,769 --> 00:10:38,610
can try to get this virtual spacecraft to
run through the motions that we’ll go through

132
00:10:38,610 --> 00:10:39,610
during EDL.

133
00:10:39,610 --> 00:10:43,180
We run trajectory simulations to understand
its performance, we probably literally run

134
00:10:43,180 --> 00:10:46,959
millions of simulated cases from pre-stage
separation all the way to the ground to make

135
00:10:46,959 --> 00:10:48,189
sure we get where we’re going.

136
00:10:48,189 --> 00:10:49,189
You’ve gotta work hard.

137
00:10:49,189 --> 00:10:54,639
There’s a lot of academics that you need
to get to this point in your career.

138
00:10:54,639 --> 00:10:57,980
Beyond that I would also emphasize that it's
not just about science and math, per se.

139
00:10:57,980 --> 00:11:01,420
If you can't talk about what you're doing,
you're not going to get very far in this.

140
00:11:01,420 --> 00:11:02,740
You're going to have to convince people.

141
00:11:02,740 --> 00:11:06,670
"This is a type of mission and type of project
and type of thing that we do here that no

142
00:11:06,670 --> 00:11:07,770
one person can do by themselves.

143
00:11:07,770 --> 00:11:12,850
So you got to work with a lot people and learning
how to work with those people is just as important

144
00:11:12,850 --> 00:11:15,320
as learning those basics in science and math.

145
00:11:15,320 --> 00:11:18,910
That's kind of the starting point but to
grow beyond that you need to be able to work

146
00:11:18,910 --> 00:11:19,910
with people.

147
00:11:19,910 --> 00:11:23,199
"There's a kind of exploration that we
do here that can't be done anywhere else.

148
00:11:23,199 --> 00:11:27,389
There's certainly other places where you're

doing things to make money or you're doing

149
00:11:27,389 --> 00:11:33,490
things related to exploration, but here the
entire point of the place is about exploration.

150
00:11:33,490 --> 00:11:37,079
So I think I finally came to that realization
sometime in late high school or early college

151
00:11:37,079 --> 00:11:50,850
that this is the type of place I want to be
at."

152
00:11:50,850 --> 00:11:57,009
Fifteen years ago, on May 15, 1997, Space
Shuttle Atlantis launched from the Kennedy

153
00:11:57,009 --> 00:12:00,110
Space Center on STS-84.

154
00:12:00,110 --> 00:12:05,050
The mission was the sixth shuttle docking
to the Russian Mir space station, exchanging

155
00:12:05,050 --> 00:12:11,649
astronaut Mike Foale for U.S. crew member
Jerry Linenger, who'd spent 123 days there.

156
00:12:11,649 --> 00:12:17,029
Rounding out the Atlantis crew were commander
Charlie Precourt, a 2012 inductee into the

157
00:12:17,029 --> 00:12:23,170
U.S. Astronaut Hall of Fame, Pilot Eileen
Collins and Mission Specialists Carlos Noriega,

158
00:12:23,170 --> 00:12:33,819
Ed Lu, Jean-Francois Clervoy of the European
Space Agency and Elena Kondakova of Russia.

159
00:12:33,819 --> 00:12:44,550
And, May 16 marks the one-year anniversary
of the launch of STS-134 – the final spaceflight

160
00:12:44,550 --> 00:12:48,170
of Space Shuttle Endeavour.

161
00:12:48,170 --> 00:12:54,569
NASA's youngest orbiter lifted off from
the Kennedy Space Center at 8:56 a.m. EDT

162
00:12:54,569 --> 00:12:59,379
to the International Space Station, carrying
with it the six-person crew of Commander Mark

163
00:12:59,379 --> 00:13:05,170
Kelly, Pilot Greg "Box" Johnson, and Mission
Specialists Mike Fincke, Drew Feustel, Greg

164
00:13:05,170 --> 00:13:07,800
Chamitoff and Roberto Vittori.

165
00:13:07,800 --> 00:13:14,760
The 16-day mission delivered the Alpha Magnetic
Spectrometer (AMS), the Express Logistics

166
00:13:14,760 --> 00:13:21,040
Carrier-3, a high-pressure gas tank and spare
parts for other station hardware.

167
00:13:21,040 --> 00:13:29,179
STS-134 was the 36th, and next-to-last shuttle
mission to the International Space Station.

168
00:13:29,179 --> 00:13:31,399
And that's This Week @ NASA!

169
00:13:31,399 --> 00:13:36,720

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