



1
00:00:07,520 --> 00:00:10,290
This Week at NASA...

2
00:00:10,290 --> 00:00:17,720
A NASA-sponsored mission in Alaska is exploring how changes in the Arctic's sea ice

3
00:00:17,720 --> 00:00:23,480
cover may be contributing to global warming. ICESCAPE, for Impacts of Climate on

4
00:00:23,480 --> 00:00:28,390
Ecosystems and Chemistry of the Arctic Pacific Environment," is working its way

5
00:00:28,390 --> 00:00:33,120
through the Bering Strait headed for the Chukchi and Beaufort seas. For the next few

6
00:00:33,120 --> 00:00:38,750
weeks, biologists and biogeochemists aboard a high-tech icebreaker called the "Healy"

7
00:00:38,750 --> 00:00:43,850
will study ocean and sea ice samples for their physical, chemical, and biological

8
00:00:43,850 --> 00:00:44,850
characteristics.

9
00:00:44,850 --> 00:00:49,280
"First we will be measuring how thick the ice is, we will be doing surveys along to

10
00:00:49,280 --> 00:00:53,790
see the variability and ice thickness and then we will also be looking at how

11
00:00:53,790 --> 00:00:58,149

sunlight interacts with that ice cover. What we will doing is measuring how much

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00:00:58,149 --> 00:01:02,649

sunlight reaches that surface, how much of that sunlight is reflected from the

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00:01:02,649 --> 00:01:07,060

surface, how much sunlight is absorbed in the ice and how much is transmitted

14

00:01:07,060 --> 00:01:08,210

into the ocean.”

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00:01:08,210 --> 00:01:12,890

Scientists want to determine how changes in the polar region may inhibit the ocean’s

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00:01:12,890 --> 00:01:18,450

ability to absorb carbon from the atmosphere. The greenhouse gas carbon dioxide is a

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00:01:18,450 --> 00:01:22,670

leading cause of global warming.

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00:01:22,670 --> 00:01:28,579

It was the first satellite of its kind, able to relay commands, navigate, receive data

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00:01:28,579 --> 00:01:30,909

and allow ground controllers to talk with space

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00:01:30,909 --> 00:01:36,779

shuttle crews in orbit. Now, after years of continuous service to more than a dozen missions,

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00:01:36,779 --> 00:01:40,829

NASA’s Tracking and Data Relay Satellite, TDRS 1 is retiring.

22
00:01:40,829 --> 00:01:46,959
And Liftoff, liftoff of the orbiter Challenger
and the sixth flight of the Space

23
00:01:46,959 --> 00:01:50,039
shuttle!!!! We have a go for deploy!!!

24
00:01:50,039 --> 00:01:55,119
Launched with shuttle Challenger on the orbiter's
maiden voyage in 1983, TDRS 1

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00:01:55,119 --> 00:02:00,649
replaced NASA's reliance upon a system of
ground-based stations having limited global

26
00:02:00,649 --> 00:02:05,770
coverage with 24/7 global space communications
capabilities.

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00:02:05,770 --> 00:02:08,810
"When the TDRS went up, it was for the shuttle,
and so the shuttle was really the

28
00:02:08,810 --> 00:02:13,830
first mission to use it, and so eventually
then, we had Earth Science missions and

29
00:02:13,830 --> 00:02:17,500
Space Science missions and obviously, I think
the most famous is what we do

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00:02:17,500 --> 00:02:21,230
with Hubble today that uses the TDRS space
craft to relay all it's marvelous

31
00:02:21,230 --> 00:02:22,970
pictures of the heavens."

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00:02:22,970 --> 00:02:27,550

Among other successes, TDRS1 was the first satellite used to support launches from

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00:02:27,550 --> 00:02:32,890

the Kennedy Space Center in Florida in the early 1990s, and it relayed the first phone

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00:02:32,890 --> 00:02:34,920

call between the South and North poles.

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00:02:34,920 --> 00:02:41,970

“When TDRS became a daily service for the National Science Foundation team at

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00:02:41,970 --> 00:02:49,720

the South Pole they set up their day around when TDRS F1 was available,

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00:02:49,720 --> 00:02:54,930

normally about 5 to 6 hours a day so they could do their emails, send files, you

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00:02:54,930 --> 00:02:59,120

know, receive information, communicate with, you know, their families and loved

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00:02:59,120 --> 00:03:03,110

ones. So, it was, for them it was an absolute game changer.”

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00:03:03,110 --> 00:03:08,570

And, literally, the South Pole Station’s lifeline. During a highly-publicized medical

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00:03:08,570 --> 00:03:15,190

emergency there in 1999, U.S. doctors used TDRS1’s high-speed connectivity to assist

42

00:03:15,190 --> 00:03:19,280

weather-stranded scientist Jerri Nielsen through her own breast-biopsy.

43
00:03:19,280 --> 00:03:27,230
TDRS-1 arrived at its final destination, about 22,500 miles above the Earth on June 13

44
00:03:27,230 --> 00:03:32,210
and will be shut down this week to begin the updating of NASA's TDRS suite of eight

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00:03:32,210 --> 00:03:36,140
satellites.
"Well, you're saying goodbye to a friend

46
00:03:36,140 --> 00:03:44,963
who has served the nation well, but there will be more friends that will come along

47
00:03:44,963 --> 00:03:46,340
when we launch the next generation of TDRS space craft."

48
00:03:46,340 --> 00:03:47,650
Three, two, one launch, launch, launch!!!

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00:03:47,650 --> 00:03:59,050
The

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00:03:59,050 --> 00:04:03,870
replica Orion crew module used in the highly-successful Launch Abort system Pad

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00:04:03,870 --> 00:04:08,630
Abort-1 flight test in New Mexico May 6 has returned to the Dryden Flight Research

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00:04:08,630 --> 00:04:13,420
Center. The crew module and its separation ring were airlifted back to Dryden from

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00:04:13,420 --> 00:04:17,690
Holloman Air Force Base near the White Sands
Missile Range test site. Dryden

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00:04:17,690 --> 00:04:22,380
engineers and technicians will spend several
months inspecting the module and all of its

55
00:04:22,380 --> 00:04:30,090
systems for possible use in another abort
flight test.

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00:04:30,090 --> 00:04:34,629
The Glenn Research Center's Plum Brook Station
and the Marshall Space Flight Center

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00:04:34,629 --> 00:04:40,650
welcomed members of the STS-131 crew to share
highlights from their recent 15-day

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00:04:40,650 --> 00:04:42,889
mission to the International Space Station.

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00:04:42,889 --> 00:04:47,900
In April, the seven-member crew aboard shuttle
Discovery ferried to the complex a

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00:04:47,900 --> 00:04:53,169
number of projects overseen by Glenn and Marshall,
including four space experiments

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00:04:53,169 --> 00:04:59,139
designed, fabricated, tested and managed by
Glenn, and a multipurpose logistics

62
00:04:59,139 --> 00:05:04,860
module containing the Window Observational
Research Facility, or WORF -- an Earth

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00:05:04,860 --> 00:05:07,509

science observatory rack under Marshall's charge.

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00:05:07,509 --> 00:05:12,219

"We get the honor and privilege of going to fly in space but without the

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00:05:12,219 --> 00:05:16,720

thousands and thousands of people, here and around the country, working on the

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00:05:16,720 --> 00:05:22,249

space shuttle program, it would not be a success like it is today."

67

00:05:22,249 --> 00:05:27,789

Commander Alan Poindexter led the STS-131 mission, and Jim Dutton served as the

68

00:05:27,789 --> 00:05:33,349

pilot. Mission Specialists were Rick Mastracchio, Clay Anderson, Dorothy Metcalf-

69

00:05:33,349 --> 00:05:38,770

Lindenburger, Stephanie Wilson and Japan Aerospace Exploration Agency astronaut

70

00:05:38,770 --> 00:05:48,509

Naoko Yamazaki. STS-131 was the 33rd space shuttle mission to the ISS.

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00:05:48,509 --> 00:05:53,759

While soccer fans around the world watch and await the winner of the 2010 World Cup,

72

00:05:53,759 --> 00:05:58,310

student players from the U.S. and Canada heard scientists and engineers from the

73
00:05:58,310 --> 00:06:03,559
Ames Research Center's Fluid Dynamics Laboratory
explain the aerodynamics of the

74
00:06:03,559 --> 00:06:08,650
"Jabulani" soccer ball. Specially designed
for this year's tournament, the "Jabulani,"

75
00:06:08,650 --> 00:06:14,110
which means celebration in Zulu, has come
under criticism from World Cup goalkeepers

76
00:06:14,110 --> 00:06:16,930
who claim the ball can be unpredictable in
flight.

77
00:06:16,930 --> 00:06:21,689
During a special presentation, professional
soccer player Stephen Beitashour of the

78
00:06:21,689 --> 00:06:26,650
San Jose Earthquakes helped a NASA physicist
identify the reason for the ball's

79
00:06:26,650 --> 00:06:30,999
"flightiness:" an aerodynamic principle
called the "knuckle."

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00:06:30,999 --> 00:06:35,099
"You can see here just from the trail how
the ball changes directions as its flying

81
00:06:35,099 --> 00:06:39,870
away, away from us, and that's what the
knuckling effect is, and with the

82
00:06:39,870 --> 00:06:44,719
smoother balls that critical speed at which
this knuckling occurs is increased and

83
00:06:44,719 --> 00:06:49,129
that is why you are seeing more of it.”
The event was part of NASA’s Long Distance

84
00:06:49,129 --> 00:06:51,759
Learning Network Webcast.

85
00:06:51,759 --> 00:06:53,680
And that’s This Week @ NASA.