
SPACE
TO
GROUND

1
00:00:01,300 --> 00:00:02,735
>> Houston Station
on "Space to Ground".

2
00:00:02,735 --> 00:00:03,836
>> Josh Byerly: Welcome
to "Space to Ground".

3
00:00:03,836 --> 00:00:05,237
I'm Josh Byerly.

4
00:00:05,237 --> 00:00:07,106
The Space Station crew has been
busy this week unloading a lot

5
00:00:07,106 --> 00:00:10,309
of the cargo that was delivered
aboard Orbital Sciences' Cygnus.

6
00:00:10,309 --> 00:00:12,578
The vehicle, carrying more
than a ton of supplies,

7
00:00:12,578 --> 00:00:14,380
arrived this past weekend
and will be unloaded

8
00:00:14,380 --> 00:00:15,948
over the next couple of weeks.

9
00:00:15,948 --> 00:00:17,716
The crew will then start
packing Cygnus full

10
00:00:17,716 --> 00:00:19,251
of stuff they no longer need.

11
00:00:19,251 --> 00:00:22,121
The vehicle will depart the

Station on February 18th

12
00:00:22,121 --> 00:00:24,690
and head toward a destructive
re-entry in Earth's atmosphere.

13
00:00:24,690 --> 00:00:27,193
One of the experiments that
was on the Orbital flight looks

14
00:00:27,193 --> 00:00:29,295
at how bacteria grow in space.

15
00:00:29,295 --> 00:00:32,364
We've learned that bacteria
grow like crazy in microgravity,

16
00:00:32,364 --> 00:00:35,434
to the point that it's difficult
to combat them with antibiotics.

17
00:00:35,434 --> 00:00:38,237
The Antibiotic Effectiveness in
Space #1 experiment,

18
00:00:38,237 --> 00:00:42,608
or AES-1, looks at why these
microorganisms are so resistant.

19
00:00:42,608 --> 00:00:44,810
What is it about being up
there that allows them to grow

20
00:00:44,810 --> 00:00:46,812
so well, and how can
we figure out how

21
00:00:46,812 --> 00:00:49,949
to fight this growth both
in space and here on Earth.

22
00:00:49,949 --> 00:00:51,150
Another piece of science flown

23
00:00:51,150 --> 00:00:53,085
on Cygnus called SPHERES-Slosh actually looks

24
00:00:53,085 --> 00:00:54,386
at rocket fuel.

25
00:00:54,386 --> 00:00:55,921
As you can imagine,
when rockets launch,

26
00:00:55,921 --> 00:00:58,090
the fuel inside tends
to slosh around.

27
00:00:58,090 --> 00:01:00,759
The experiment will use the
bowling ball-sized satellites

28
00:01:00,759 --> 00:01:03,729
on board to figure out
exactly how the sphere moves.

29
00:01:03,729 --> 00:01:06,265
>> So this experiment is
giving us all of the test data

30
00:01:06,265 --> 00:01:08,901
that we're hoping to use
to simulate what happens

31
00:01:08,901 --> 00:01:11,904
to the propellant
tanks on our vehicles.

32
00:01:11,904 --> 00:01:13,272

>> Josh Byerly: This
can not only lead

33
00:01:13,272 --> 00:01:15,241
to better rocket design but
also to better fuel efficiency

34
00:01:15,241 --> 00:01:17,910
in our cars and trucks
here on the ground.

35
00:01:17,910 --> 00:01:19,912
@GeeksNGamers asked
us, "What's the upload

36
00:01:19,912 --> 00:01:21,647
and download speed
in space right now?

37
00:01:21,647 --> 00:01:23,682
Guessing fiber isn't an option?"

38
00:01:23,682 --> 00:01:26,252
Well, considering the space
station is 260 miles high

39
00:01:26,252 --> 00:01:28,154
and traveling pretty
fast, that would have

40
00:01:28,154 --> 00:01:30,289
to be one long fiber cable.

41
00:01:30,289 --> 00:01:32,458
So we use NASA's communication
satellites, which are more

42
00:01:32,458 --> 00:01:34,727
than 20,000 miles up in the sky.

43
00:01:34,727 --> 00:01:36,829
There are actually several
different ways we rely data,

44
00:01:36,829 --> 00:01:39,365
but the highest rate is
in the KU band system

45
00:01:39,365 --> 00:01:42,568
with downlink speeds up to
300 megabytes per second.

46
00:01:42,568 --> 00:01:43,936
Make sure you send
us your questions