COUNTDOWN TO MARS

DR. HEATHER GRAHAM

1
00:00:13,360 --> 00:00:15,839
So, the great thing about the Perseverance

2
00:00:15,839 --> 00:00:19,520
rover for my work,
is that it's actually going to bring,

3
00:00:19,520 --> 00:00:22,240
make it possible to bring back a piece of

4
00:00:22,240 --> 00:00:27,279
Mars and you know the exciting work that
we've been able to do with the Mars

5
00:00:27,279 --> 00:00:30,480
cience lander, the Curiosity rover, is
really great, you know, they've done some

6
00:00:30,480 --> 00:00:33,520
great science,
but there's nothing that quite compares

7
00:00:33,520 --> 00:00:37,600
to the kind of
fine-scale resolution work we're able to

8
00:00:37,600 --> 00:00:40,960
do in our laboratories here on earth so
actually getting that piece of the

9
00:00:40,960 --> 00:00:45,039
planet into our labs is so important.
And the other really exciting thing is

10
00:00:45,039 --> 00:00:47,920
these are drill cores we're bringing back

11
00:00:47,920 --> 00:00:51,039
and so we'll be able to look at chemistry

12
00:00:51,039 --> 00:00:55,440
at depth in those rocks and the important
thing about that is, you know, with

13
00:00:55,440 --> 00:00:59,840
with curiosity we've been able to find
very small organic molecules

14
00:00:59,840 --> 00:01:04,640
on the surface, but when we do those
analyses we're just using a hunk of rock.

15
00:01:04,640 --> 00:01:08,000
It's just a bulk analysis and so we
don't have any sense

16
00:01:08,000 --> 00:01:13,040
of what's just below the surface and
it's possible that the preservation

17
00:01:13,040 --> 00:01:17,439
deeper in the rock of those fragile
organic molecules is much

18
00:01:17,439 --> 00:01:20,560
better, and we'll be able to find that out with

19
00:01:20,560 --> 00:01:23,759
the combination of the really great labs
we have on Earth

20
00:01:23,760 --> 00:01:26,640
and the actual drill core samples.

21
00:01:30,000 --> 00:01:33,759
The most exciting thing to me about the
Perseverance rover

22

00:01:33,759 --> 00:01:37,200
is that we're sending along some really
great extras.

23
00:01:37,200 --> 00:01:41,840
We're sending along things we call
witness tubes and a drillable blank.

24
00:01:41,840 --> 00:01:45,439
So, a witness tube is what you would just
call a blank if you were doing an

25
00:01:45,439 --> 00:01:49,200
experiment here on Earth.
It's just a drill core that we're not

26
00:01:49,200 --> 00:01:53,680
going to collect any sample in
and when we get it back we'll be able to

27
00:01:53,680 --> 00:01:57,840
say if there was any effect that the
container has on the sample,

28
00:01:57,840 --> 00:02:01,280
because we will have had a core,
a witness tube,

29
00:02:01,280 --> 00:02:05,439
that went to Mars and came back.
And the great thing about the drillable blank,

30
00:02:05,439 --> 00:02:09,039
which is what we would call here on
Earth: a control.

31
00:02:09,039 --> 00:02:12,560
So, if there's any effect of the drilling,
of the collection,

32

00:02:12,560 --> 00:02:16,160
of the storage on the surface, of the transport back on

33
00:02:16,160 --> 00:02:19,920
back and forth from Earth to Mars, we'll be able to track that

34
00:02:19,920 --> 00:02:23,120
with this control that we've sent along with the rover.

35
00:02:23,120 --> 00:02:26,800
So, this gives us a really great way of understanding the noise floor