Simulation of 'dust devil' from data provided by the Mars Reconnaissance Orbiter

1
00:00:01,370 --> 00:00:10,099
Hi, I'm Ashwin Vasavada, the deputy project scientist for the Curiosity rover and this

2
00:00:10,099 --> 00:00:12,769
is your Curiosity rover update.

3
00:00:12,769 --> 00:00:17,130
A lot of what this mission is about is figuring out the possibility that ancient Mars was

4
00:00:17,130 --> 00:00:18,460
a habitable environment.

5
00:00:18,460 --> 00:00:21,010
But we're also studying the present environment.

6
00:00:21,010 --> 00:00:25,162
Two instruments that help with that are the RAD instrument and the REMS instrument.

7
00:00:25,162 --> 00:00:27,840
The RAD instrument is a radiation assessment detector.

8
00:00:27,840 --> 00:00:33,470
It measures the high-energy radiation coming up from the cosmic rays and the sun.

9
00:00:33,470 --> 00:00:38,129
That radiation is changed as it goes through Mars' atmosphere to where we detect it on

10
00:00:38,129 --> 00:00:39,359
the surface.

11
00:00:39,359 --> 00:00:47,890
By measuring the radiation at Mars' surface Curiosity is helping prepare for human missions

12
00:00:47,890 --> 00:00:48,890
to Mars.

13
00:00:48,890 --> 00:00:53,260
Another instrument that Curiosity has that
measures the modern environment is called

14
00:00:53,260 --> 00:00:55,579
the rover environmental monitoring station.

15
00:00:55,579 --> 00:00:57,770
It’s basically our weather station.

16
00:00:57,770 --> 00:01:02,329
We measure a lot of things including pressure,
and humidity, temperature and wind.

17
00:01:02,329 --> 00:01:07,440
It’s been seeing little dips in pressure
around noon that seemed like the signature

18
00:01:07,440 --> 00:01:08,800
of dust devils.

19
00:01:08,800 --> 00:01:12,160
Only thing is our pictures haven’t turned
up any dust devils.

20
00:01:12,160 --> 00:01:16,010
Spirit and Opportunity saw lots of dust devils
moving across the horizon.

21
00:01:16,010 --> 00:01:20,870
Our best guess at what’s going on is that
Curiosity is seeing dust devils go right over

22
00:01:20,870 --> 00:01:21,870
it, only thing is we’re not seeing the dust

devils.

23
00:01:21,870 --> 00:01:26,220
So what we think is happening is the same
sorts of vortexes, driven by convection are

24
00:01:26,220 --> 00:01:30,280
occurring on Mars at the Curiosity's site
but just not picking up dust.

25
00:01:30,280 --> 00:01:33,350
Another thing that REMS has been measuring
is winds.

26
00:01:33,350 --> 00:01:36,080
Turns out we're in a pretty interesting
place inside of Gale Crater.

27
00:01:36,080 --> 00:01:40,390
We're right at the base of a 5-kilometer
high mountain to the south of us and then

28
00:01:40,390 --> 00:01:43,721
there's a pretty tall crater rim to the
north of us and we're sitting in kind of

29
00:01:43,721 --> 00:01:46,140
a flat depression between the two.

30
00:01:46,140 --> 00:01:50,390
The winds blow up and down the mountain as
the temperature changes during the day and

31
00:01:50,390 --> 00:01:54,530
up and down the crater slopes and then along
the depression where we're at.

32
00:01:54,530 --> 00:01:57,860
So right now we're trying to figure out
from the REMS data exactly which parts of

33
00:01:57,860 --> 00:02:00,430
that wind field we’re measuring.

34
00:02:00,430 --> 00:02:04,220
With Thanksgiving coming up we’ve been preparing
a few days worth of commands to send up to

35
00:02:04,220 --> 00:02:08,140
the rover to keep it busy while people here
take some much needed time off.

36
00:02:08,140 --> 00:02:12,329
The rover will be acquiring a big panorama
of our surroundings while we’re away.