



1
00:00:00,010 --> 00:00:04,120
[silence]

2
00:00:04,140 --> 00:00:08,170
[silence, followed by music]

3
00:00:08,190 --> 00:00:12,250
[music] Narrator: As the moon orbits the Earth, it occasionally passes through the Earth's shadow, resulting

4
00:00:12,270 --> 00:00:16,340
in a spectacular change in the moon's appearance for a short time. This event is called a

5
00:00:16,360 --> 00:00:20,420
lunar eclipse, and it happens at least twice a year, providing a rare show that's worth staying awake

6
00:00:20,440 --> 00:00:24,460
for. But what would a lunar eclipse look like if you were on the moon? From that perspective,

7
00:00:24,480 --> 00:00:28,510
you would actually be viewing a solar eclipse, with the Earth blocking the Sun for a short period of

8
00:00:28,530 --> 00:00:32,560
time. The view would be spectacular, but there's more to it than that.

9
00:00:32,580 --> 00:00:36,580
Having such a large-scale "lights out" on the moon gives scientists a unique opportunity to study

10
00:00:36,600 --> 00:00:40,600
the moon's surface, and NASA's Lunar Reconnaissance Orbiter is in a position to do just

11
00:00:40,620 --> 00:00:44,720
that. So, what exactly does LRO plan to study? When the Sun is

12
00:00:44,740 --> 00:00:48,830
obscured, the moon cools down, but not every area cools at the same rate.

13
00:00:48,850 --> 00:00:52,950

Rough areas of the moon, with large rocks and boulders, cool down more slowly than areas with fewer

14

00:00:52,970 --> 00:00:57,040

large rocks. By measuring the temperature of the moon as it cools, scientists can identify

15

00:00:57,060 --> 00:01:01,070

which areas are rougher than areas. Earth-based telescopes have been doing something like this

16

00:01:01,090 --> 00:01:05,110

for years, but they're so far away that it's hard to get a good view. LRO's DIVINER

17

00:01:05,130 --> 00:01:09,150

instrument, on the other hand, can measure temperature at an extremely high resolution,

18

00:01:09,170 --> 00:01:13,200

giving scientists a first-ever up-close measurement of this kind. By taking these

19

00:01:13,220 --> 00:01:17,220

measurements, scientists can infer the size and density of moon rocks on a very small scale,

20

00:01:17,240 --> 00:01:21,240

teaching them new things about the moon's surface. And while they might not be able to get

21

00:01:21,260 --> 00:01:25,360

a view of the solar eclipse from the moon, they'll still get a look at the moon that's just as exciting.

22

00:01:33,530 --> 00:01:29,460

[beeping]