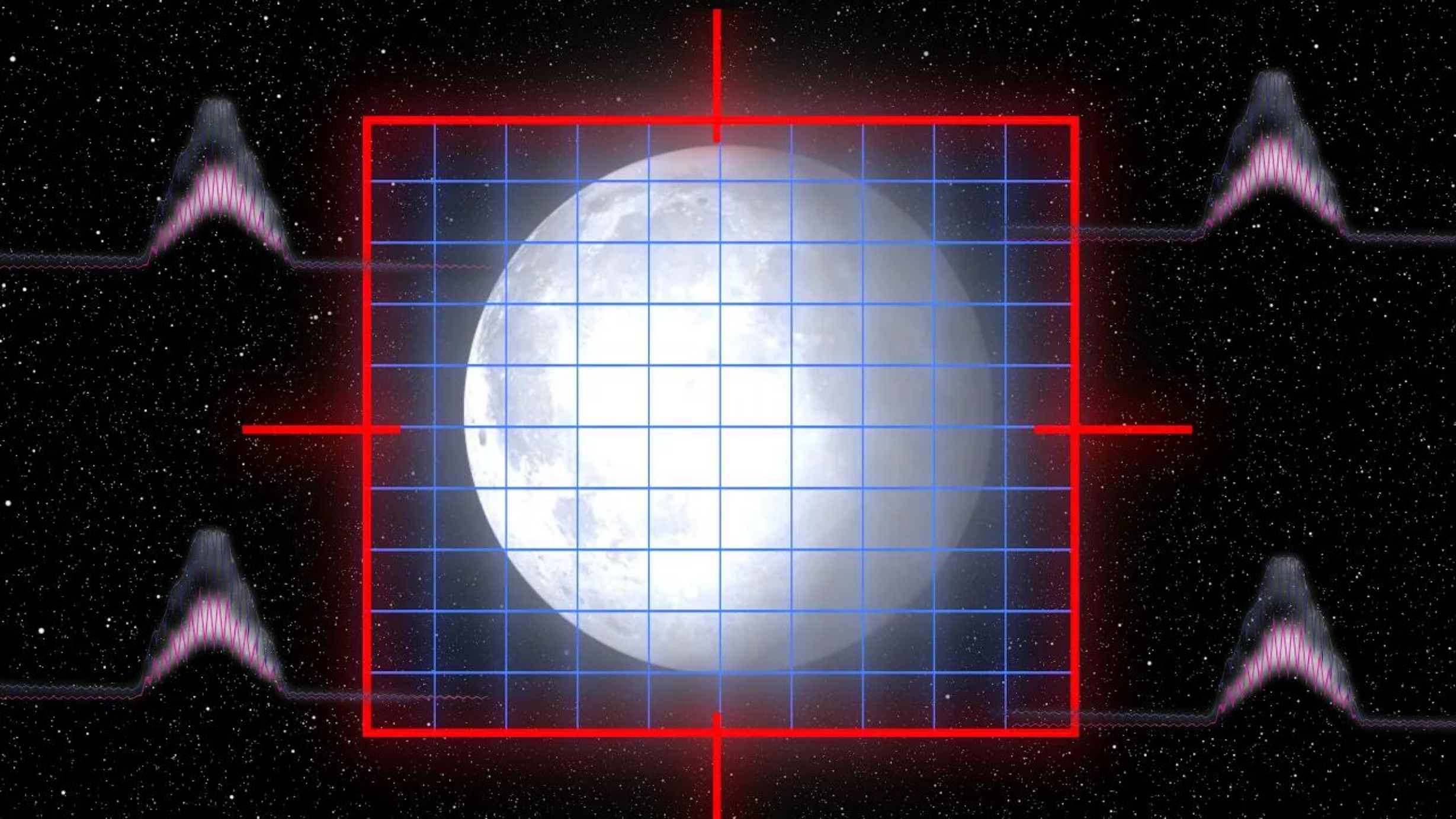

1
00:00:00,940 --> 00:00:03,340
[Music]

2
00:00:04,020 --> 00:00:08,640
>>air-LUSI stands for the Airborne Lunar Spectral
Irradiance mission.

3
00:00:08,820 --> 00:00:13,800
What we're measuring is the amount of light
at various wavelengths that are being reflected

4
00:00:13,810 --> 00:00:15,450
off the Moon.

5
00:00:15,450 --> 00:00:19,699
We want to know this because we essentially
are using the Moon as a benchmark so that

6
00:00:19,699 --> 00:00:24,900
Earth-observing satellites can turn and look
at the moon and set the scale on the amount

7
00:00:24,900 --> 00:00:26,850
of light they're measuring from the Earth.

8
00:00:26,850 --> 00:00:31,720
So it's kind of an indirect way of actually
improving our understanding of the Earth.

9
00:00:32,540 --> 00:00:36,840
[Music/Background noise]

10
00:00:41,480 --> 00:00:43,120
>>Both computers are up and running.

11
00:00:43,120 --> 00:00:45,920
Artemis has giving us a power-on.

12

00:00:45,920 --> 00:00:48,310
Ok, so now we're going to start logging data.

13
00:00:48,310 --> 00:00:51,960
So it's sending code to Artemis.

14
00:00:52,760 --> 00:00:55,720
>>So we've set it up here, even before we put
it in the plane.

15
00:00:55,720 --> 00:01:01,160
We have a system that simulates it being in
the airplane, so that we can test it all out.

16
00:01:01,170 --> 00:01:03,460
In the distance you can see a disc of light.

17
00:01:03,460 --> 00:01:08,100
That's our Moon simulator that we use to calibrate
the telescope.

18
00:01:08,100 --> 00:01:13,889
>>We measure the Moon's brightness by using
a spectrometer, which is actually taking light

19
00:01:13,889 --> 00:01:17,759
from a telescope that is pointed at the Moon.

20
00:01:17,759 --> 00:01:21,499
What typically becomes a problem is that you
have to contend with the atmosphere.

21
00:01:21,499 --> 00:01:24,000
The atmosphere actually affects your measurement
greatly.

22
00:01:24,000 --> 00:01:30,350
And so we have to actually put that type of
instrumentation on the ER-2, which flies up

23
00:01:30,350 --> 00:01:37,259
to 70,000 feet, and gives us a viewpoint of
the Moon above 90% of the atmosphere, almost

24
00:01:37,260 --> 00:01:41,960
the same view of the Moon as Earth-Orbiting
satellites would have.

25
00:01:42,660 --> 00:01:46,060
[Music]

26
00:01:59,160 --> 00:02:07,000
[ER-2 taking off]

27
00:02:15,620 --> 00:02:16,240
>>Ok-

28
00:02:16,260 --> 00:02:16,760
>>it's showtime.

29
00:02:16,860 --> 00:02:18,880
>>in a minute, he'll flip the switch.

30
00:02:19,800 --> 00:02:24,300
>>Earth-observing satellites, we try and calibrate
them before they go up, but the calibration

31
00:02:24,300 --> 00:02:28,250
always changes; they slowly degrade being
in the space environment, and they currently

32
00:02:28,250 --> 00:02:33,050
use the Moon to trend that degradation, but
if we could put a good absolute calibration

33
00:02:33,050 --> 00:02:38,710
on the Moon, that would allow them to do an
improvement on their current calibration scheme

34
00:02:38,710 --> 00:02:41,940
and would also allow them to inter-compare
well.

35
00:02:42,620 --> 00:02:44,880
[Music/background noise]

36
00:02:45,080 --> 00:02:48,380
>>Ok, success!

37
00:02:48,380 --> 00:02:53,820
>>So there are a lot of benefits to having all
the earth observing satellites have this common

38
00:02:53,820 --> 00:02:55,680
calibration source.

39
00:02:55,690 --> 00:03:01,470
>>Every instrument that's been launched into
space that looks at the Moon can benefit from

40
00:03:01,470 --> 00:03:08,090
this because knowing what the Moon is, since
the Moon doesn't change, helps us both in