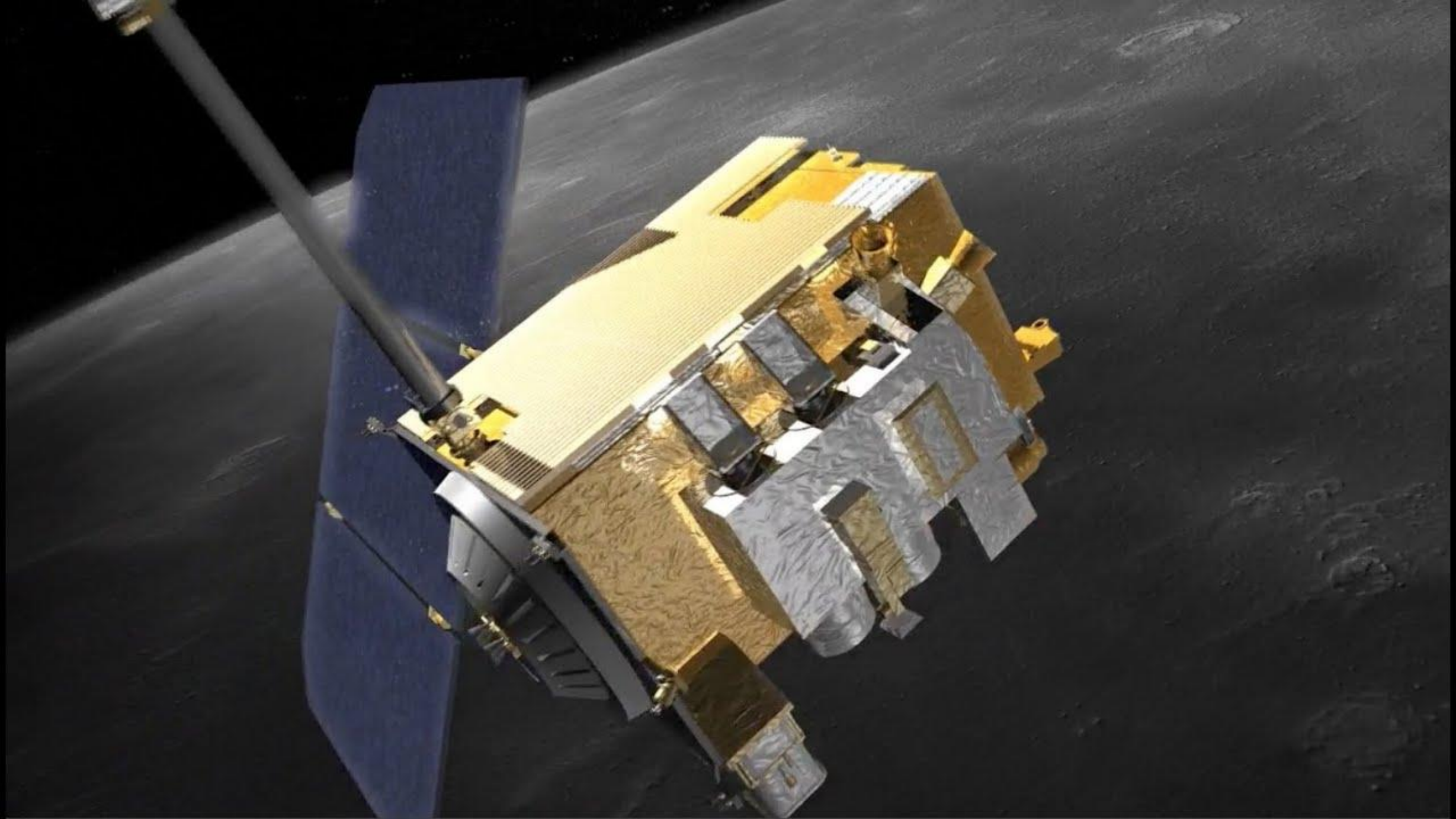

1
00:00:08,350 --> 00:00:04,170
(music)

2
00:00:08,370 --> 00:00:12,390
Cold. Grey. Lifeless. True.

3
00:00:12,410 --> 00:00:16,440
Dynamic. Complex. Surprising.

4
00:00:16,460 --> 00:00:20,530
Also true. Welcome to

5
00:00:20,550 --> 00:00:24,640
Earth's moon. For such a close neighbor, separated by a

6
00:00:24,660 --> 00:00:28,660
profound void, it mattered how we planned to visit. That's

7
00:00:28,680 --> 00:00:32,760
why NASA built LRO, the Lunar Reconnaissance Orbiter.

8
00:00:32,780 --> 00:00:36,820
Shortly after liftoff in June 2009, LRO

9
00:00:36,840 --> 00:00:40,870
began to transform our relationship. Because

10
00:00:40,890 --> 00:00:44,910
of LRO we now know the the Moon's topography--it's surface shape

11
00:00:44,930 --> 00:00:49,090
better than any other planet in the solar system, including Earth.

12
00:00:49,110 --> 00:00:53,270
Why? Because most of the Earth...is covered with

13
00:00:53,290 --> 00:00:57,440

this... But not the moon. There's more.

14
00:00:57,460 --> 00:01:01,450
LRO discovered the coldest measured places in the

15
00:01:01,470 --> 00:01:05,590
solar system measured in craters that never see sunlight.

16
00:01:05,610 --> 00:01:09,770
Evidence that the moon has been shrinking relatively recently and evidence

17
00:01:09,790 --> 00:01:13,830
of water ice at its surface. All by itself

18
00:01:13,850 --> 00:01:17,940
LRO has amassed a trove of discoveries. But LRO

19
00:01:17,960 --> 00:01:22,020
has not been to the moon all by itself. Working in

20
00:01:22,040 --> 00:01:26,100
concert with several companion missions, LRO made careful measurements

21
00:01:26,120 --> 00:01:30,160
as other vehicles intentionally blasted through the dusty exterior

22
00:01:30,180 --> 00:01:34,200
to probe this structure of the moons crust. What they

23
00:01:34,220 --> 00:01:38,210
learned, is that we've barely scratched the surface of all their is to

24
00:01:38,230 --> 00:01:42,380
discover. The moon remains a cypher,

25
00:01:42,400 --> 00:01:46,560
a mystery, a puzzle box. Home

26
00:01:46,580 --> 00:01:50,760
to one of the oldest large craters in the solar system, the Moon's surfaces

27
00:01:50,780 --> 00:01:54,940
is also a time machine. A witness to asteroid and comet impacts on

28
00:01:54,960 --> 00:01:59,120
Earth billions of years ago, the moon was pelted by ancient

29
00:01:59,140 --> 00:02:03,290
space rocks, too. Through examination of those craters, we travel

30
00:02:03,310 --> 00:02:07,320
into the past. The more we learn about the moon,

31
00:02:07,340 --> 00:02:11,350
the more we learn about the early solar system, and thus our own planet,

32
00:02:11,370 --> 00:02:15,450
Earth. The moon becomes the rediscovered

33
00:02:15,470 --> 00:02:19,540
history book of our solar system's great library, returning

34
00:02:19,560 --> 00:02:23,590
a precious volume we thought might have been lost to the sands

35
00:02:23,610 --> 00:02:27,660
of time. For all its silvery promised in our night sky,

36
00:02:27,680 --> 00:02:31,680
it's not easy to visit our nearest neighbor. But the chasm

37
00:02:31,700 --> 00:02:35,850
of vacuum in between still hasn't kept us away.

38
00:02:35,870 --> 00:02:40,040

Everyday the Lunar Reconnaissance Orbiter continues to probe

39
00:02:40,060 --> 00:02:44,210
vital questions, and amass essential data about a place close

40
00:02:44,230 --> 00:02:48,390
enough to light our nights, and illuminate new dreams of adventure

41
00:02:48,410 --> 00:02:52,590
future generations of explorers. For more information