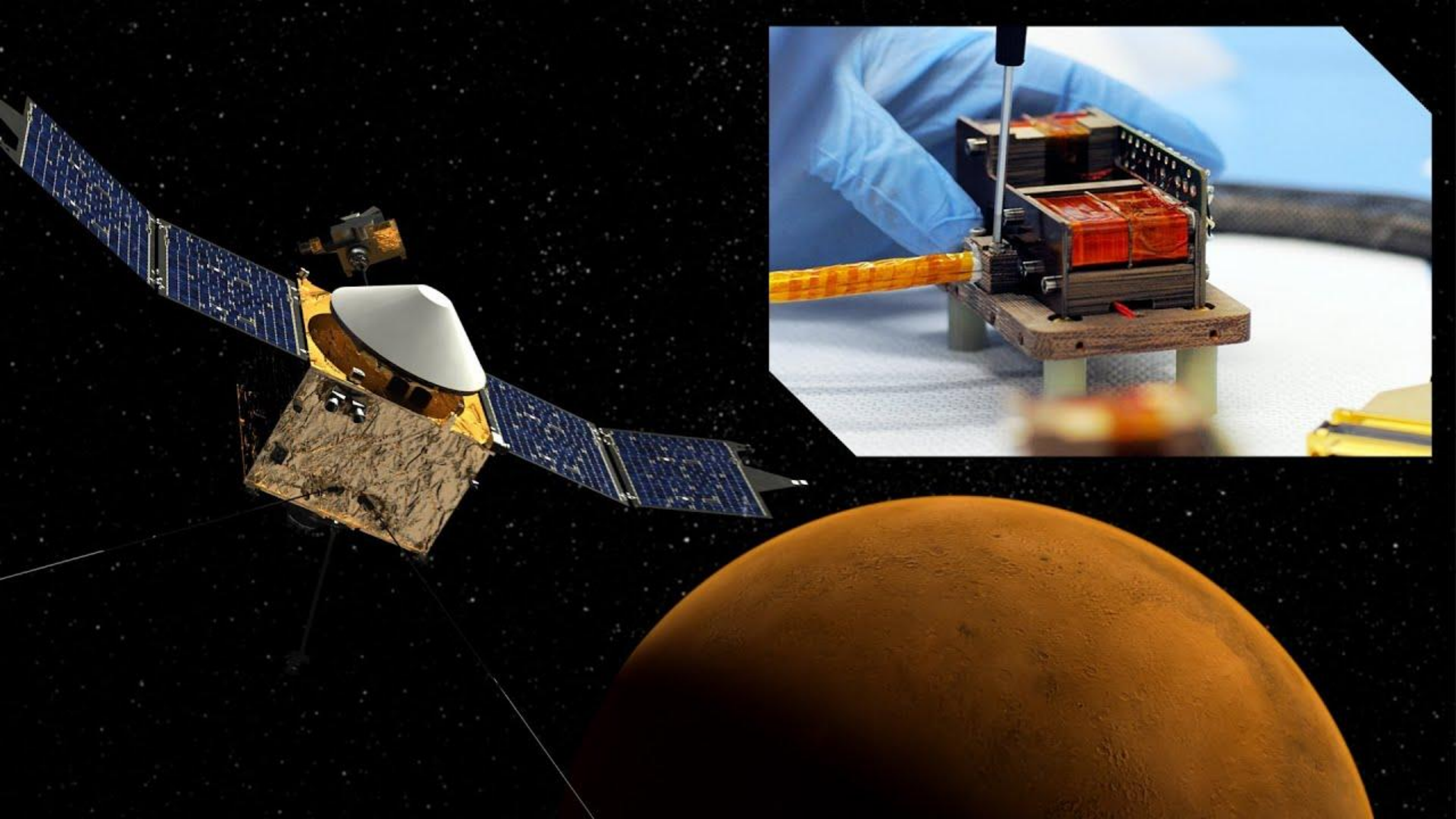

1
00:00:00,030 --> 00:00:05,130
[music]

2
00:00:05,150 --> 00:00:09,530
I'm Jack Connerney, I work at Goddard here in the magnetometer group.

3
00:00:09,550 --> 00:00:14,810
My name is Jared Espley, I'm a space scientist and I work in the Planetary Magnetospheres Lab.

4
00:00:14,830 --> 00:00:20,260
Magnetic fields can be measured in a variety of ways, and the most simple way is with a compass.

5
00:00:20,280 --> 00:00:24,230
The Earth's field is global in nature, so it has a north pole and a south pole,

6
00:00:24,250 --> 00:00:28,700
and wherever you go on the surface of the Earth with a compass, it will point to the north pole.

7
00:00:28,720 --> 00:00:31,480
But on Mars if you were to walk around with a compass,

8
00:00:31,500 --> 00:00:36,730
it would haphazardly point from one anomaly to the other as you walked across the surface,

9
00:00:36,750 --> 00:00:40,410
so it's not quite as useful as a compass on Earth.

10
00:00:40,430 --> 00:00:44,430
MAVEN is our next mission to Mars, it's an orbiter.

11
00:00:44,450 --> 00:00:50,030
It's designed to help us understand what happened to the Martian climate over time,

12
00:00:50,050 --> 00:00:54,780
how the climate has evolved over the lifetime of the solar system.

13
00:00:54,800 --> 00:01:03,110

We're looking at Mars today, and we're looking at how the solar wind strips away what little atmosphere there is

14
00:01:03,130 --> 00:01:08,830
and we'll try to roll that back in time and understand what an early Mars might have looked like,

15
00:01:08,850 --> 00:01:15,670
and whether a magnetic field like the Earth has could have protected that atmosphere from the solar wind.

16
00:01:15,690 --> 00:01:21,400
To measure the magnetic field at Mars then, we use an instrument called a magnetometer.

17
00:01:21,420 --> 00:01:23,980
MAVEN is carrying a pair of magnetometers.

18
00:01:24,000 --> 00:01:30,180
Now the spacecraft itself generates a magnetic field so we have to put those magnetometers as far from the sp

19
00:01:30,200 --> 00:01:35,080
and we've done that by putting the sensors at the very outer end of the solar arrays.

20
00:01:35,100 --> 00:01:39,140
The magnetometers, even though they're small, simple looking instruments there's actually a great deal of

21
00:01:39,160 --> 00:01:43,450
sophisticated electronics and testing and calibration that goes into building them.

22
00:01:43,470 --> 00:01:48,290
They're so sensitive that we ask everyone to use non-magnetic tools when they're working on them.

23
00:01:48,310 --> 00:01:51,710
Even if you had a tiny little fleck of metal that came off of your screwdriver

24
00:01:51,730 --> 00:01:55,690
that would be enough to be noticeable and detected by the magnetometer.

25
00:01:55,710 --> 00:01:58,540
There's no Maytag repairman in space.

26
00:01:58,560 --> 00:02:01,800
So we punish these instruments before we pack them up and launch them,

27
00:02:01,820 --> 00:02:05,880
because we're not going to see them again and we have to make darn sure that they're going to work.

28
00:02:05,900 --> 00:02:09,930
As a scientist, as the person who will eventually be receiving this data and using it,

29
00:02:09,950 --> 00:02:14,090
it's very humbling and gratifying to see all these other people working very hard

30
00:02:14,110 --> 00:02:18,500
to try and make sure that we get the data that we would like to get here at Earth.