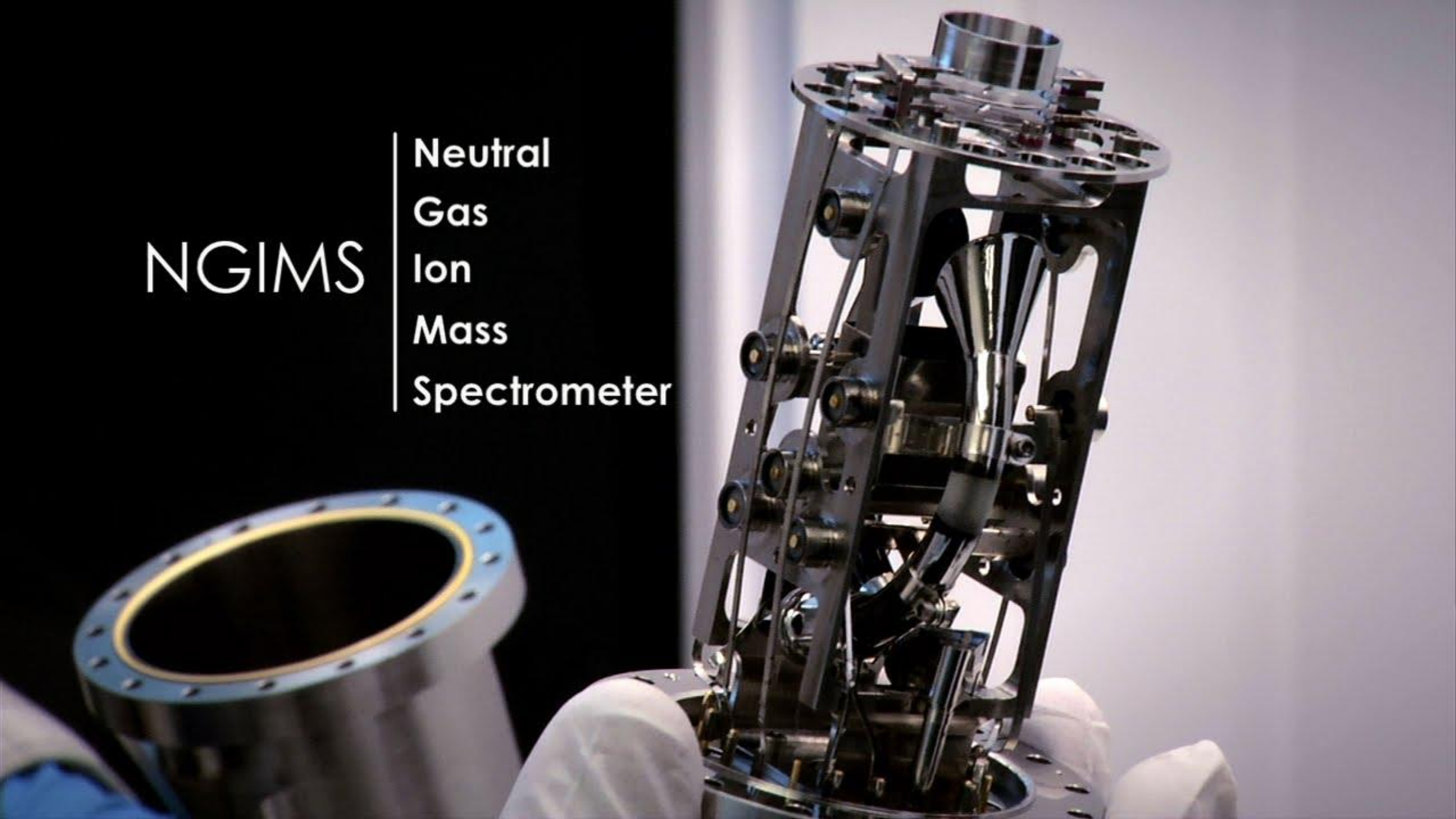
NGIMS

Neutral
Gas
Ion
Mass
Spectrometer



1
00:00:00,020 --> 00:00:04,380
[music]

2
00:00:04,400 --> 00:00:09,270
So a real outstanding question is, what was the early atmosphere of Mars like,

3
00:00:09,290 --> 00:00:15,380
and for how long did it last, and did the conditions on Mars early on that might have been favorable for life

4
00:00:15,400 --> 00:00:20,680
persist for hundreds of millions of years, for tens of millions of years, for how long exactly did they persist?

5
00:00:20,700 --> 00:00:26,710
So the MAVEN mission is designed to really get at the climate history of Mars.

6
00:00:26,730 --> 00:00:30,900
My name is Paul Mahaffy. I'm Chief of the Planetary Environments Lab

7
00:00:30,920 --> 00:00:35,620
in the Solar System Exploration Division of NASA Goddard Space Flight Center.

8
00:00:35,640 --> 00:00:39,780
MAVEN is a Mars orbiter, not designed to take pictures of Mars,

9
00:00:39,800 --> 00:00:47,150
but really with chemical sensors to understand how the present atmosphere is escaping from Mars,

10
00:00:47,170 --> 00:00:51,210
and then through modeling try and extrapolate that back in time,

11
00:00:51,230 --> 00:00:57,920
and try to understand whether the ancient atmosphere of Mars was similar or different than it was today.

12
00:00:57,940 --> 00:01:02,700
MAVEN stands for Mars Atmosphere and Volatile EvolutioN mission.

13
00:01:02,720 --> 00:01:11,620

The NGIMS experiment on MAVEN is the Neutral Gas and Ion Mass Spectrometer, we have an acronym for ev

14
00:01:11,640 --> 00:01:16,750
and this experiment is a quadrupole mass spectrometer with two ion sources

15
00:01:16,770 --> 00:01:22,910
designed to look at both neutral gases and ions in the upper atmosphere of Mars.

16
00:01:22,930 --> 00:01:30,730
In fact as we dip down into the atmosphere, we will measure the altitude variation of those chemical constituen

17
00:01:30,750 --> 00:01:35,130
we'll look for the composition, we'll look for how that composition changes with solar events

18
00:01:35,150 --> 00:01:42,630
like big solar flares and solar activity, and we'll do that for a whole Earth year on many, many orbits around Ma

19
00:01:42,650 --> 00:01:47,730
The closest place we can look in our solar system, the place that we can get to easiest,

20
00:01:47,750 --> 00:01:52,480
that has an atmosphere, that has evidence for past water on the surface, is Mars.

21
00:01:52,500 --> 00:01:59,980
If the ancient atmosphere of Mars was much heavier, the potential of Mars to support life might have been muc

22
00:02:00,000 --> 00:02:06,200
And so the MAVEN mission is designed to really let us understand current escape processes on Mars,