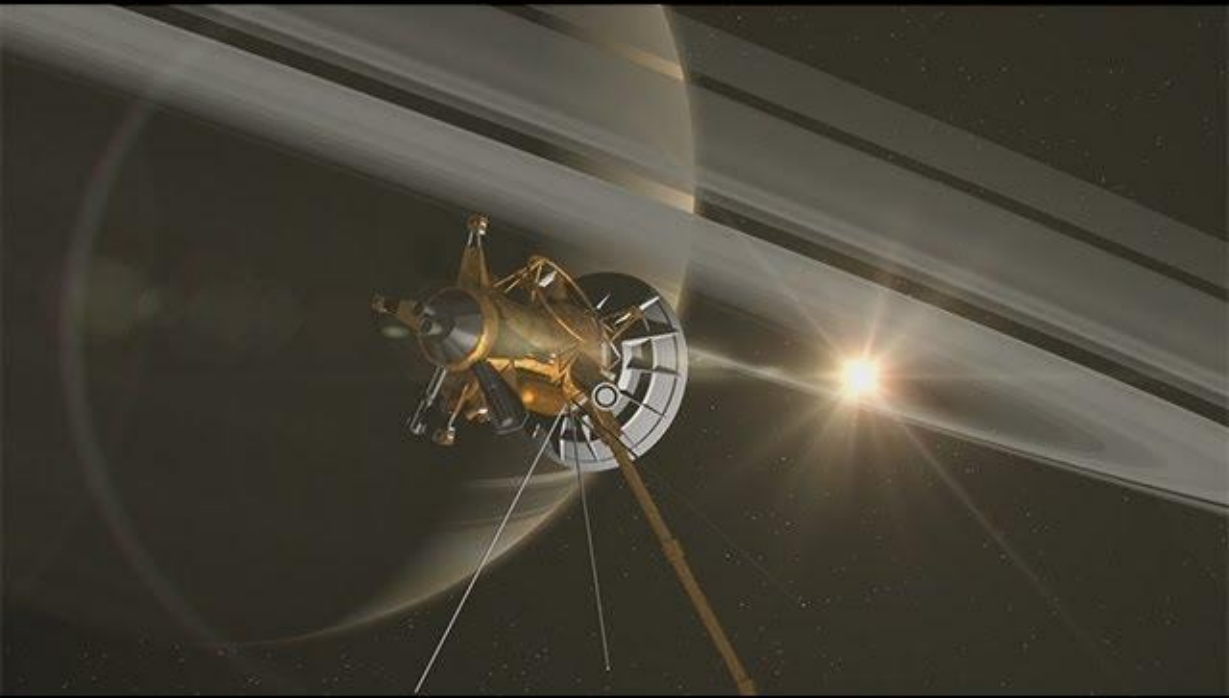

1
00:00:00,000 --> 00:00:12,000
(MUSIC)

2
00:00:12,000 --> 00:00:15,000
Cassini is there in the Saturn system now.

3
00:00:15,000 --> 00:00:24,000
It has been making discoveries for the last several years and there's more to come.

4
00:00:24,000 --> 00:00:28,000
By studying the satellites in the Saturnian system,

5
00:00:28,000 --> 00:00:33,000
we begin to understand something also about the origin of the solar system.

6
00:00:33,000 --> 00:00:38,000
There is strong evidence now that most of the surface of Titan is, in fact,

7
00:00:38,000 --> 00:00:43,000
covered with organic material of some kind.

8
00:00:43,000 --> 00:00:48,000
We're going to be looking at lakes on the surface of this moon in detail.

9
00:00:48,000 --> 00:00:53,000
We're going to be looking at the atmosphere to see how the climate changes over time.

10
00:00:53,000 --> 00:00:56,000
We have some global circulation models that tell us that if the winds pick up,

11
00:00:56,000 --> 00:01:01,000
we think there could be waves on the lakes of liquid methane.

12
00:01:01,000 --> 00:01:09,000
Can you imagine anybody thinking that we would discover active cryovolcanism on one of these moons?

13
00:01:09,000 --> 00:01:12,000

Geysers?

14
00:01:12,000 --> 00:01:17,000
One of the things that we'll do in the next couple of years is make the first ever fly-by,

15
00:01:17,000 --> 00:01:22,000
through the plume, when the plume output is at its maximum.

16
00:01:22,000 --> 00:01:27,000
And then of course there's the planet Saturn itself. As we go through our series of orbits

17
00:01:27,000 --> 00:01:30,000
and as the seasons change, it's like having a brand new mission.

18
00:01:30,000 --> 00:01:34,000
One Saturn year is nearly 30 Earth years.

19
00:01:34,000 --> 00:01:38,000
To be there for nearly half of a Saturn year is a once-in-a-lifetime opportunity.

20
00:01:38,000 --> 00:01:43,000
The sun now is coming up on the north pole,

21
00:01:43,000 --> 00:01:48,000
so we're getting to see territory that was in darkness when we first arrived in 2004.

22
00:01:48,000 --> 00:01:53,000
Pretty soon we'll have the whole hexagon and the hurricane inside of it illuminated by the sun.

23
00:01:53,000 --> 00:01:57,000
And then of course the mission end itself is completely unique.

24
00:01:57,000 --> 00:02:00,000
Starting in 2016 ending in 2017,

25
00:02:00,000 --> 00:02:04,000
these orbits will take us up and over the north and south poles of the planet.

26
00:02:04,000 --> 00:02:09,000
We're actually going to dive in between the innermost edge of the D ring

27
00:02:09,000 --> 00:02:11,000
and the upper atmosphere of the planet itself.

28
00:02:11,000 --> 00:02:16,000
From that we're going to learn how is Saturn constructed from inside out.

29
00:02:16,000 --> 00:02:21,000
We'll also get the magnetic field of the planet, the mass of the rings, for the very first time

30
00:02:21,000 --> 00:02:26,000
and get to sample a place that no spacecraft has ever flown before.