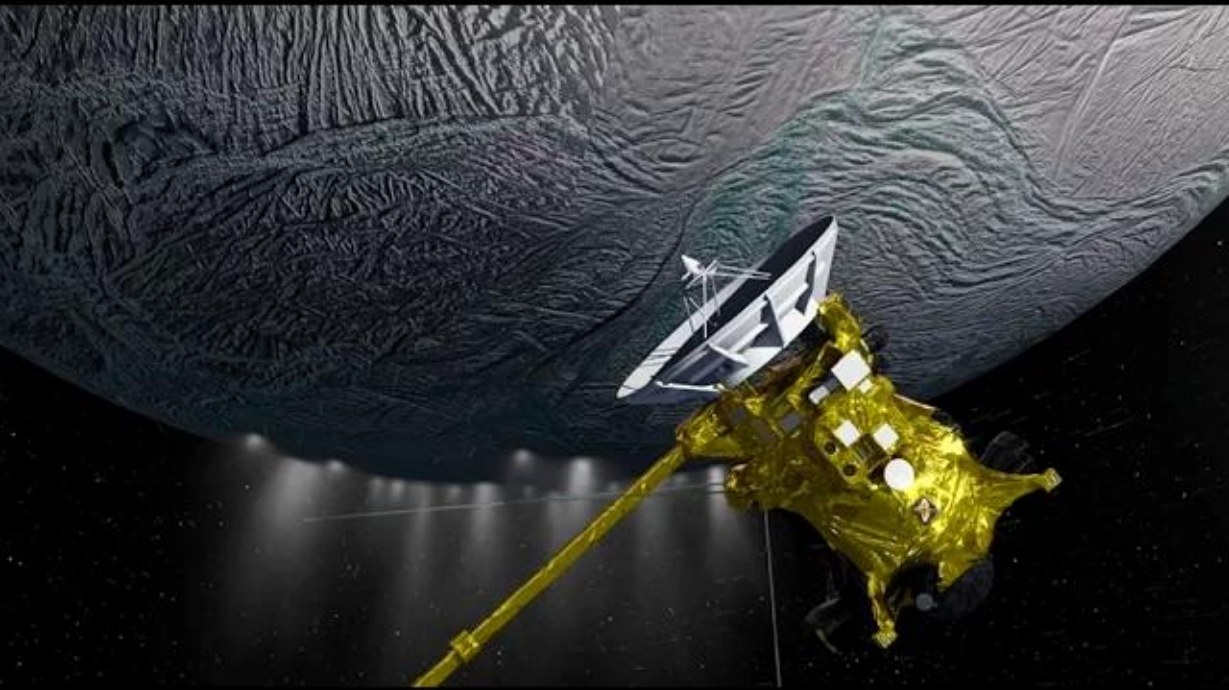

1
00:00:00,000 --> 00:00:03,000
(Music)

2
00:00:03,000 --> 00:00:10,000
The flyby is geared primarily towards sampling the plume of Enceladus.

3
00:00:10,000 --> 00:00:14,000
We'll fly by at roughly an altitude of 30 miles, which is approximately the distance

4
00:00:14,000 --> 00:00:16,000
between Washington, D.C. and Baltimore.

5
00:00:16,000 --> 00:00:21,000
We go screaming by Enceladus at speeds in excess of 19,000 miles per hour.

6
00:00:21,000 --> 00:00:25,000
We're flying deep. The deepest we've ever been through this plume and these instruments

7
00:00:25,000 --> 00:00:31,000
will be sensing the gases and we'll be looking at the particles that make up this plume.

8
00:00:31,000 --> 00:00:33,000
(Music) Cassini was never designed

9
00:00:33,000 --> 00:00:36,000
to look for life in the Enceladus ocean

10
00:00:36,000 --> 00:00:41,000
but it does have powerful instruments that can be used to look for habitability.

11
00:00:41,000 --> 00:00:44,000
So, we're looking for the conditions suitable for life.

12
00:00:44,000 --> 00:00:48,000
Now, Enceladus is a tiny moon but it's really intriguing.

13
00:00:48,000 --> 00:00:53,000

It's got this plume that is shooting out from its south pole.

14
00:00:53,000 --> 00:00:59,000
The plume is mostly comprised of water, water ice, that get's frozen when it's ejected into space.

15
00:00:59,000 --> 00:01:03,000
Most of these particles are coming from these four major fractures that we call 'tiger stripes'.

16
00:01:03,000 --> 00:01:09,000
Life needs three things, right? It needs water. It needs chemistry and it needs energy.

17
00:01:09,000 --> 00:01:14,000
And right now, some of these lines of evidence are telling us that Enceladus has these three things.

18
00:01:14,000 --> 00:01:19,000
We see some salts, but most importantly, we see organic molecules.

19
00:01:19,000 --> 00:01:23,000
Things like methane. We also see CO2, ammonia.

20
00:01:23,000 --> 00:01:28,000
One of the things that Cassini can look for is molecular hydrogen.

21
00:01:28,000 --> 00:01:34,000
This is the smallest molecule that exists in the universe. It's two hydrogens bonded together.

22
00:01:34,000 --> 00:01:39,000
This molecule can tell us about things like hydrothermal activity going on in the ocean of Enceladus