



1
00:00:08,549 --> 00:00:06,309
one of the key discoveries that the

2
00:00:10,950 --> 00:00:08,559
cassini orbiter and the huygens probe

3
00:00:13,350 --> 00:00:10,960
revealed for us was discovering the

4
00:00:16,150 --> 00:00:13,360
liquid lakes on titan

5
00:00:18,870 --> 00:00:16,160
cassini was able to look at the lakes

6
00:00:21,349 --> 00:00:18,880
get a sense of the course composition of

7
00:00:22,870 --> 00:00:21,359
the lakes but nothing about the organic

8
00:00:24,310 --> 00:00:22,880
molecules that are dissolved in the

9
00:00:26,390 --> 00:00:24,320
lakes

10
00:00:28,310 --> 00:00:26,400
the titan saturn system mission is a

11
00:00:29,269 --> 00:00:28,320
three-in-one mission with an orbiter for

12
00:00:30,710 --> 00:00:29,279
titan

13
00:00:32,630 --> 00:00:30,720

a balloon that will float through

14

00:00:34,709 --> 00:00:32,640

titan's atmosphere and a lander that

15

00:00:36,310 --> 00:00:34,719

will splash down on one of the northern

16

00:00:38,150 --> 00:00:36,320

lakes of titan

17

00:00:41,190 --> 00:00:38,160

this mission will actually go into a

18

00:00:42,869 --> 00:00:41,200

lake sample the liquid directly see what

19

00:00:44,630 --> 00:00:42,879

the organic molecules are that are

20

00:00:47,110 --> 00:00:44,640

present

21

00:00:50,549 --> 00:00:47,120

the titan saturn system mission also

22

00:00:52,869 --> 00:00:50,559

will go to enceladus the tinier moon a

23

00:00:55,910 --> 00:00:52,879

thousand times smaller than titan

24

00:00:57,590 --> 00:00:55,920

which has volcanoes geysers essentially

25

00:00:59,910 --> 00:00:57,600

that are spewing material from the

26

00:01:01,830 --> 00:00:59,920

inside of this moon outward and it's a

27

00:01:04,229 --> 00:01:01,840

chance to see whether there might be

28

00:01:05,830 --> 00:01:04,239

molecules that would indicate that life

29

00:01:07,350 --> 00:01:05,840

has actually formed

30

00:01:09,990 --> 00:01:07,360

within the source region of these

31

00:01:11,990 --> 00:01:10,000

geysers these geysers have water ice and

32

00:01:14,230 --> 00:01:12,000

we strongly suspect that there's liquid

33

00:01:15,429 --> 00:01:14,240

water in the region that these geysers

34

00:01:17,350 --> 00:01:15,439

are coming from

35

00:01:18,789 --> 00:01:17,360

we know there are organic molecules

36

00:01:21,510 --> 00:01:18,799

there because they've been measured by

37

00:01:26,550 --> 00:01:23,749

the ability to follow this up quickly is

38

00:01:28,390 --> 00:01:26,560

essential because with cassini huygens

39

00:01:30,710 --> 00:01:28,400

we have now trained a generation of

40

00:01:32,069 --> 00:01:30,720

scientists who are ready to take a new

41

00:01:35,190 --> 00:01:32,079

generation of instruments and

42

00:01:36,789 --> 00:01:35,200

capabilities back to titan and enceladus

43

00:01:39,429 --> 00:01:36,799

and really answer the questions that

44

00:01:42,789 --> 00:01:39,439

cassini-huygens has left for us

45

00:01:44,149 --> 00:01:42,799

and that continuity of knowledge and of

46

00:01:46,469 --> 00:01:44,159

enthusiasm

47

00:01:48,469 --> 00:01:46,479

is essential and very difficult to

48

00:01:51,030 --> 00:01:48,479

maintain in the outer solar system

49

00:01:53,109 --> 00:01:51,040

because trip times are so long

50

00:01:55,670 --> 00:01:53,119

the titan saturn system mission really

51
00:01:57,990 --> 00:01:55,680
is jules verne realized it's a kind of

52
00:01:59,670 --> 00:01:58,000
planetary exploration that we have never

53
00:02:01,910 --> 00:01:59,680
ever done before anywhere else in the

54
00:02:04,550 --> 00:02:01,920
solar system and can only be done on

55
00:02:10,150 --> 00:02:07,590
this mission will touch the human heart

56
00:02:12,790 --> 00:02:10,160
in terms of the way it's exploring this

57
00:02:14,390 --> 00:02:12,800
fascinating world it will be floating on

58
00:02:15,910 --> 00:02:14,400
the surface of a lake

59
00:02:18,309 --> 00:02:15,920
it will be floating through the

60
00:02:20,390 --> 00:02:18,319
atmosphere it will be revealing the

61
00:02:21,670 --> 00:02:20,400
entire surface from orbit at the same

62
00:02:24,309 --> 00:02:21,680
time

63
00:02:27,350 --> 00:02:24,319

as we think of exploration of unveiling