Claudia Alexander

1
00:00:09,910 --> 00:00:07,670
mission to land on a comet presented by

2
00:00:11,990 --> 00:00:09,920
science at nasa

3
00:00:15,749 --> 00:00:12,000
europe's rosetta spacecraft is in route

4
00:00:18,470 --> 00:00:15,759
to intercept a comet and to make history

5
00:00:21,910 --> 00:00:18,480
in 2014 rosetta will enter orbit around

6
00:00:24,470 --> 00:00:21,920
comet 67p cheryumaf gerasimenko and lend

7
00:00:25,830 --> 00:00:24,480
a probe on it two firsts

8
00:00:27,830 --> 00:00:25,840
rosetta's goal is to learn the

9
00:00:30,230 --> 00:00:27,840
primordial story this comet tells as it

10
00:00:32,150 --> 00:00:30,240
comes to life transitioning to its more

11
00:00:34,069 --> 00:00:32,160
active phase

12
00:00:36,549 --> 00:00:34,079
comets are primitive leftovers from our

13
00:00:38,310 --> 00:00:36,559

solar system's construction about 4.5

14
00:00:40,069 --> 00:00:38,320
billion years ago

15
00:00:41,590 --> 00:00:40,079
because they spend much of their time in

16
00:00:44,709 --> 00:00:41,600
the deep freeze of the outer solar

17
00:00:46,470 --> 00:00:44,719
system comets are well preserved a gold

18
00:00:48,150 --> 00:00:46,480
mine for astronomers who want to know

19
00:00:49,750 --> 00:00:48,160
what conditions were like back in the

20
00:00:51,430 --> 00:00:49,760
beginning

21
00:00:52,790 --> 00:00:51,440
as their elongated orbits swing them

22
00:00:54,389 --> 00:00:52,800
closer to the sun

23
00:00:57,029 --> 00:00:54,399
comets transform into the most

24
00:00:58,869 --> 00:00:57,039
breathtaking bodies in the night sky

25
00:01:01,189 --> 00:00:58,879
rosetta will have a front row seat for

26
00:01:03,270 --> 00:01:01,199
the metamorphosis

27
00:01:06,390 --> 00:01:03,280
a european space agency mission launched

28
00:01:07,830 --> 00:01:06,400
in 2004 with us instruments on board

29
00:01:10,710 --> 00:01:07,840
rosetta will perform the most

30
00:01:12,630 --> 00:01:10,720
comprehensive study of a comet ever

31
00:01:14,950 --> 00:01:12,640
what we know of comet so far comes from

32
00:01:16,870 --> 00:01:14,960
a handful of flyby missions

33
00:01:18,870 --> 00:01:16,880
in some ways a flyby is just a

34
00:01:20,789 --> 00:01:18,880
tantalizing glimpse of a comet at one

35
00:01:23,190 --> 00:01:20,799
stage in its evolution says claudia

36
00:01:24,830 --> 00:01:23,200
alexander project scientist for the u.s

37
00:01:27,429 --> 00:01:24,840
rosetta project at

38
00:01:30,630 --> 00:01:27,439

jpl rosetta is different

39
00:01:32,550 --> 00:01:30,640
it will orbit 67p for 17 months

40
00:01:34,469 --> 00:01:32,560
we'll see this comet evolve right before

41
00:01:36,950 --> 00:01:34,479
our eyes as we accompany it toward the

42
00:01:38,550 --> 00:01:36,960
sun and back out again

43
00:01:40,550 --> 00:01:38,560
fierce solar heat will have a profound

44
00:01:42,230 --> 00:01:40,560
effect on rosetta's target

45
00:01:44,230 --> 00:01:42,240
we'll watch the comet start as just a

46
00:01:46,550 --> 00:01:44,240
little nugget in space and then becomes

47
00:01:48,310 --> 00:01:46,560
something poetic and beautiful trailing

48
00:01:50,630 --> 00:01:48,320
a vast tale

49
00:01:53,270 --> 00:01:50,640
at the moment rosetta is resting up for

50
00:01:55,030 --> 00:01:53,280
the challenges ahead it's hibernating

51
00:01:56,550 --> 00:01:55,040
engaged in its high speed chase while

52
00:01:58,310 --> 00:01:56,560
fast asleep

53
00:02:00,550 --> 00:01:58,320
revelate is at the very beginning of the

54
00:02:02,310 --> 00:02:00,560
new year in 2014 when the spacecraft

55
00:02:03,910 --> 00:02:02,320
begins a months-long program of

56
00:02:06,069 --> 00:02:03,920
self-checkups

57
00:02:07,910 --> 00:02:06,079
if all goes well in august of the same

58
00:02:10,630 --> 00:02:07,920
year rosetta will enter orbit around

59
00:02:12,949 --> 00:02:10,640
67p's nucleus and begin scanning its

60
00:02:14,869 --> 00:02:12,959
surface for a landing site

61
00:02:16,869 --> 00:02:14,879
once a site is chosen the spacecraft

62
00:02:19,030 --> 00:02:16,879
will descend as low as one kilometer to

63
00:02:21,190 --> 00:02:19,040

deploy the lander

64
00:02:23,110 --> 00:02:21,200
the lander's name is filet after an

65
00:02:25,430 --> 00:02:23,120
island in the nile the site of an

66
00:02:27,750 --> 00:02:25,440
obelisk that helped decipher you guessed

67
00:02:29,990 --> 00:02:27,760
it the rosetta stone

68
00:02:31,589 --> 00:02:30,000
touchdown is scheduled for november 2014

69
00:02:34,630 --> 00:02:31,599
when filet will make the first ever

70
00:02:36,790 --> 00:02:34,640
controlled landing on a comet's nucleus

71
00:02:39,190 --> 00:02:36,800
when we land the comet could already be

72
00:02:41,110 --> 00:02:39,200
active says alexander

73
00:02:43,830 --> 00:02:41,120
since a comet has little gravity the

74
00:02:45,270 --> 00:02:43,840
lander will anchor itself with harpoons

75
00:02:47,589 --> 00:02:45,280
the feet may drill into something

76
00:02:49,990 --> 00:02:47,599
crunchy like permafrost or maybe into

77
00:02:51,190 --> 00:02:50,000
something rock solid once it's fastened

78
00:02:53,190 --> 00:02:51,200
the lander will commence an

79
00:02:54,710 --> 00:02:53,200
unprecedented first-hand study of a

80
00:02:56,470 --> 00:02:54,720
comet's nucleus

81
00:02:58,550 --> 00:02:56,480
among other things it will gather

82
00:03:00,790 --> 00:02:58,560
samples for examination by automatic

83
00:03:02,470 --> 00:03:00,800
onboard microscopes and take panoramic

84
00:03:05,830 --> 00:03:02,480
images of the comet's terrain from

85
00:03:08,229 --> 00:03:05,840
ground level meanwhile orbiting overhead

86
00:03:10,070 --> 00:03:08,239
the rosetta spacecraft will be busy too

87
00:03:12,070 --> 00:03:10,080
on-board sensors will map the comet's

88
00:03:13,750 --> 00:03:12,080

surface and magnetic field

89
00:03:16,309 --> 00:03:13,760
monitor the comet's erupting jets and

90
00:03:17,430 --> 00:03:16,319
geysers measure outflow rates and much

91
00:03:19,270 --> 00:03:17,440
more

92
00:03:21,270 --> 00:03:19,280
together the orbiter and lander will

93
00:03:23,270 --> 00:03:21,280
build up the first 3d picture of the

94
00:03:24,309 --> 00:03:23,280
layers and pockets under the surface of

95
00:03:25,910 --> 00:03:24,319
a comet

96
00:03:27,110 --> 00:03:25,920
the results should tell quite a story

97
00:03:28,949 --> 00:03:27,120
indeed

98
00:03:30,949 --> 00:03:28,959
for more news about comets both