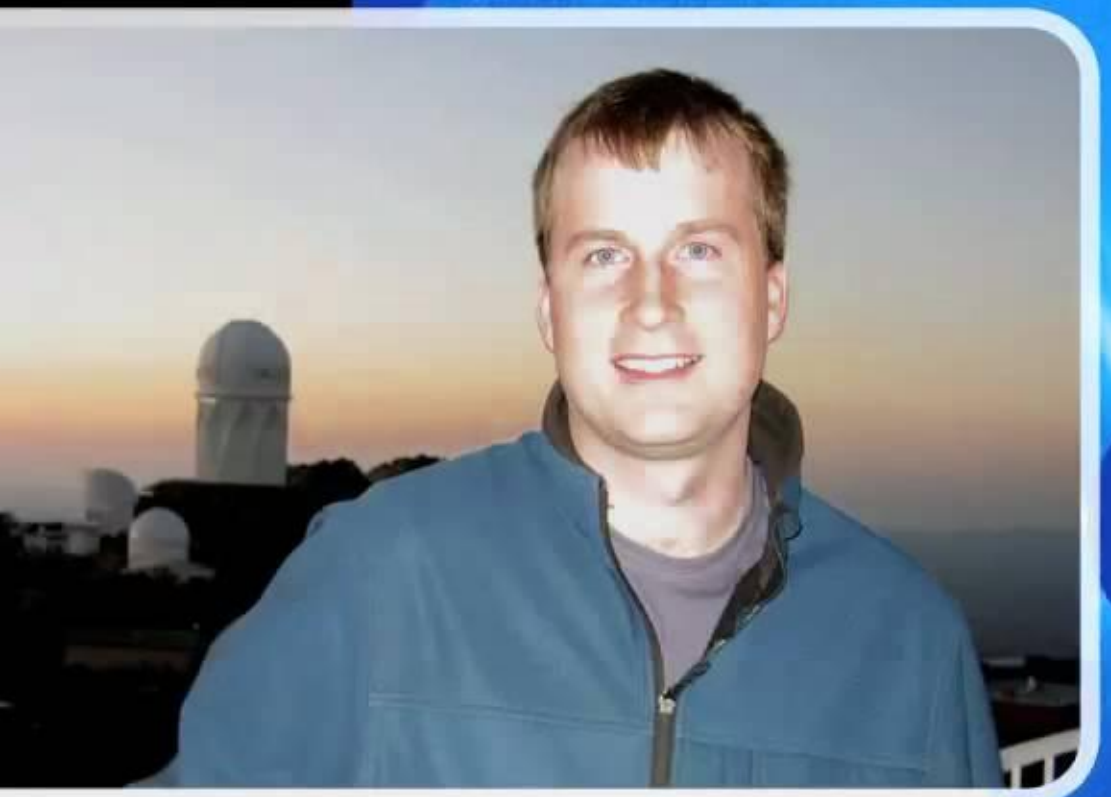

Matthew Knight

1
00:00:10,190 --> 00:00:08,179
some comets like it hot presented by

2
00:00:13,459 --> 00:00:10,200
science at NASA

3
00:00:15,289 --> 00:00:13,469
comets are icy and fragile they spend

4
00:00:17,600 --> 00:00:15,299
most of their time orbiting thru the

5
00:00:19,010 --> 00:00:17,610
dark outskirts of the solar system safe

6
00:00:21,920 --> 00:00:19,020
from the withering depredations of

7
00:00:25,279 --> 00:00:21,930
intense sunlight their natural habitat

8
00:00:27,290 --> 00:00:25,289
is the deepest cold last November

9
00:00:30,109 --> 00:00:27,300
amateur astronomer Terry Lovejoy

10
00:00:32,089 --> 00:00:30,119
discovered a different kind of comet the

11
00:00:34,130 --> 00:00:32,099
icy fuzzball he spotted in the sky over

12
00:00:36,290 --> 00:00:34,140
his backyard Observatory in Australia

13
00:00:39,590 --> 00:00:36,300

was heading almost directly for the Sun

14
00:00:42,020 --> 00:00:39,600
on December 16th less than three weeks

15
00:00:43,910 --> 00:00:42,030
after he found it comet lovejoy would

16
00:00:45,410 --> 00:00:43,920
swoop through the sun's atmosphere only

17
00:00:48,040 --> 00:00:45,420
one hundred and twenty thousand

18
00:00:50,000 --> 00:00:48,050
kilometers above the stellar surface

19
00:00:52,970 --> 00:00:50,010
astronomers would soon realize a

20
00:00:56,360 --> 00:00:52,980
startling fact Comet Lovejoy likes it

21
00:00:58,160 --> 00:00:56,370
hot Terry found a sungrazer says Karl

22
00:01:01,130 --> 00:00:58,170
bottoms of the naval research lab in

23
00:01:03,260 --> 00:01:01,140
Washington DC it appeared to be as wide

24
00:01:06,440 --> 00:01:03,270
as two football fields the biggest such

25
00:01:09,740 --> 00:01:06,450
comet in nearly 40 years sungrazing

26
00:01:10,880 --> 00:01:09,750
comets aren't a new thing in fact the

27
00:01:14,450 --> 00:01:10,890
orbiting solar and heliospheric

28
00:01:16,330 --> 00:01:14,460
observatory soho watches one fall toward

29
00:01:19,190 --> 00:01:16,340
the Sun and evaporate every few days

30
00:01:21,319 --> 00:01:19,200
these frequent kamikaze comets are

31
00:01:23,559 --> 00:01:21,329
thought to be splinters of a giant comet

32
00:01:25,910 --> 00:01:23,569
that broke apart hundreds of years ago

33
00:01:29,330 --> 00:01:25,920
typically they measure about ten meters

34
00:01:32,239 --> 00:01:29,340
across small fragile and easily

35
00:01:34,639 --> 00:01:32,249
vaporized by solar heat based on its

36
00:01:37,309 --> 00:01:34,649
orbit Comet Lovejoy was surely a member

37
00:01:39,910 --> 00:01:37,319
of the same family except it was 200

38
00:01:42,169 --> 00:01:39,920

metres wide instead of the usual ten

39
00:01:44,359 --> 00:01:42,179
astronomers were eager to see the

40
00:01:46,789 --> 00:01:44,369
Whopper disintegrate there was little

41
00:01:48,980 --> 00:01:46,799
doubt that it would be destroyed when

42
00:01:51,679 --> 00:01:48,990
December 16th came however comet lovejoy

43
00:01:55,160 --> 00:01:51,689
Jacques de saucé as badams it survived

44
00:01:57,199 --> 00:01:55,170
and even flourished images from NASA's

45
00:01:59,330 --> 00:01:57,209
Solar Dynamics Observatory showed the

46
00:02:01,399 --> 00:01:59,340
comet vaporizing furiously as it entered

47
00:02:04,219 --> 00:02:01,409
the sun's atmosphere apparently on the

48
00:02:06,260 --> 00:02:04,229
verge of obliteration yet comet lovejoy

49
00:02:08,870 --> 00:02:06,270
was still intact when it emerged on the

50
00:02:11,180 --> 00:02:08,880
other side the comet had lost its tail

51
00:02:13,850 --> 00:02:11,190
during the fiery transit a temporary

52
00:02:16,540 --> 00:02:13,860
setback within hours the tail grew back

53
00:02:18,010 --> 00:02:16,550
bigger and brighter than before

54
00:02:20,170 --> 00:02:18,020
it's fair to say we were dumbfounded

55
00:02:21,820 --> 00:02:20,180
says matthew knight of the lowell

56
00:02:24,700 --> 00:02:21,830
observatory and the Johns Hopkins

57
00:02:26,590 --> 00:02:24,710
Applied Physics lab Comet Lovejoy must

58
00:02:29,680 --> 00:02:26,600
have been much bigger and tougher than

59
00:02:31,750 --> 00:02:29,690
we thought only a few days after it left

60
00:02:33,930 --> 00:02:31,760
the Sun the comet showed up in the

61
00:02:37,000 --> 00:02:33,940
morning skies of the southern hemisphere

62
00:02:39,130 --> 00:02:37,010
observers in Australia South America and

63
00:02:42,040 --> 00:02:39,140

New Zealand likened it to a search light

64
00:02:43,840 --> 00:02:42,050
beaming up from the east before dawn the

65
00:02:46,330 --> 00:02:43,850
tail lined up parallel to the Milky Way

66
00:02:48,660 --> 00:02:46,340
and for a few days made it seem that we

67
00:02:50,590 --> 00:02:48,670
lived in a double decker galaxy

68
00:02:53,650 --> 00:02:50,600
astronauts on the International Space

69
00:02:55,750 --> 00:02:53,660
Station also witnessed the comet ISS

70
00:02:58,030 --> 00:02:55,760
commander Dan Burbank who has seen his

71
00:02:59,680 --> 00:02:58,040
share of wonders even once flying

72
00:03:01,840 --> 00:02:59,690
directly through the northern lights on

73
00:03:04,000 --> 00:03:01,850
board the space shuttle declared Comet

74
00:03:06,820 --> 00:03:04,010
Lovejoy the most amazing thing I have

75
00:03:09,430 --> 00:03:06,830
ever seen in space an armada of

76
00:03:13,090 --> 00:03:09,440
spacecraft including Soho the solar

77
00:03:15,460 --> 00:03:13,100
dynamics observatory sdo NASA's twins

78
00:03:19,240 --> 00:03:15,470
Solar terrestrial relations Observatory

79
00:03:21,880 --> 00:03:19,250
probes stereo Japan's hinode spacecraft

80
00:03:24,699 --> 00:03:21,890
and Europe's proba to microsatellite

81
00:03:26,530 --> 00:03:24,709
recorded the historic event we have

82
00:03:28,570 --> 00:03:26,540
collected a mountain of data says night

83
00:03:31,120 --> 00:03:28,580
but there are some things were still

84
00:03:33,460 --> 00:03:31,130
having trouble explaining for instance

85
00:03:35,729 --> 00:03:33,470
what made Lovejoy's tail wiggles so

86
00:03:38,020 --> 00:03:35,739
wildly when it entered the solar corona

87
00:03:40,810 --> 00:03:38,030
perhaps it was in the grip of the sun's

88
00:03:42,760 --> 00:03:40,820

powerful magnetic field what caused

89
00:03:44,770 --> 00:03:42,770
Lovejoy to lose its tail inside the

90
00:03:46,990 --> 00:03:44,780
sun's atmosphere and then regain it

91
00:03:49,900 --> 00:03:47,000
later this is one of the biggest

92
00:03:51,850 --> 00:03:49,910
mysteries to me says badams and then

93
00:03:55,690 --> 00:03:51,860
there is the ultimate existential puzzle

94
00:03:57,670 --> 00:03:55,700
how did comet lovejoy survive at all the

95
00:03:59,920 --> 00:03:57,680
comet that liked it hot is returning to

96
00:04:02,430 --> 00:03:59,930
the outer solar system apparently still

97
00:04:05,350 --> 00:04:02,440
intact leaving many mysteries behind

98
00:04:07,690 --> 00:04:05,360
it'll be back in about 600 years says

99
00:04:09,200 --> 00:04:07,700
night maybe we will have figured them

100
00:04:10,940 --> 00:04:09,210
out by then

101
00:04:13,700 --> 00:04:10,950
to learn more about solar system