
science @ NASA

1
00:00:09,270 --> 00:00:05,749
sunset comet

2
00:00:11,509 --> 00:00:09,280
presented by science at nasa

3
00:00:12,709 --> 00:00:11,519
for a comet visiting the sun is risky

4
00:00:14,950 --> 00:00:12,719
business

5
00:00:17,029 --> 00:00:14,960
fierce solar radiation vaporizes gases

6
00:00:19,109 --> 00:00:17,039
long frozen in the fragile nucleus

7
00:00:20,790 --> 00:00:19,119
breaking up some comets and completely

8
00:00:22,470 --> 00:00:20,800
destroying others

9
00:00:24,470 --> 00:00:22,480
that's why astronomers weren't sure what

10
00:00:26,550 --> 00:00:24,480
would happen in early march when comet

11
00:00:28,550 --> 00:00:26,560
panstarrs a first-time visitor to the

12
00:00:31,589 --> 00:00:28,560
inner solar system dipped inside the

13
00:00:33,750 --> 00:00:31,599

orbit of mercury on march 10th nasa's

14
00:00:35,670 --> 00:00:33,760
stereo b spacecraft watched as the comet

15
00:00:38,229 --> 00:00:35,680
made its closest approach to the sun

16
00:00:40,310 --> 00:00:38,239
only 28 million miles away

17
00:00:42,549 --> 00:00:40,320
at that distance the sun loomed three

18
00:00:44,470 --> 00:00:42,559
times wider and felt more than 10 times

19
00:00:47,590 --> 00:00:44,480
hotter than it does on earth

20
00:00:49,910 --> 00:00:47,600
this just in the comet survived

21
00:00:51,590 --> 00:00:49,920
still intact comet pan stars is emerging

22
00:00:53,910 --> 00:00:51,600
from the sun's glare into the sunset

23
00:00:55,590 --> 00:00:53,920
skies of the northern hemisphere

24
00:00:58,150 --> 00:00:55,600
solar heating has caused the comet to

25
00:01:00,549 --> 00:00:58,160
glow like a star of second magnitude as

26
00:01:02,869 --> 00:01:00,559
bright as the stars of the big dipper

27
00:01:04,310 --> 00:01:02,879
bright twilight reduces visibility but

28
00:01:06,550 --> 00:01:04,320
it is still an easy target for

29
00:01:08,630 --> 00:01:06,560
binoculars and small telescopes one to

30
00:01:10,950 --> 00:01:08,640
two hours after sunset

31
00:01:12,870 --> 00:01:10,960
discovered in june 2011 by astronomers

32
00:01:15,590 --> 00:01:12,880
using the pan-starr survey telescope

33
00:01:17,510 --> 00:01:15,600
atop the haleakala volcano in hawaii the

34
00:01:19,109 --> 00:01:17,520
comet is paying its first visit to the

35
00:01:20,950 --> 00:01:19,119
inner solar system

36
00:01:23,030 --> 00:01:20,960
it hails from the oort cloud

37
00:01:25,030 --> 00:01:23,040
a deep space reservoir of comets far

38
00:01:27,510 --> 00:01:25,040

beyond the orbit of pluto

39
00:01:29,910 --> 00:01:27,520
because comet pan stars is a newcomer

40
00:01:31,510 --> 00:01:29,920
astronomers didn't know what to expect

41
00:01:33,350 --> 00:01:31,520
now they know

42
00:01:34,870 --> 00:01:33,360
it is a gorgeous comet one of the

43
00:01:37,670 --> 00:01:34,880
brightest in years says astronomer

44
00:01:39,749 --> 00:01:37,680
matthew knight of the lowell observatory

45
00:01:41,590 --> 00:01:39,759
comet specialist emmanuel yahin of the

46
00:01:43,429 --> 00:01:41,600
european southern observatory has been

47
00:01:46,069 --> 00:01:43,439
monitoring comet pan stars using a

48
00:01:48,149 --> 00:01:46,079
remote controlled telescope in chile

49
00:01:50,310 --> 00:01:48,159
based on his data knight concludes that

50
00:01:51,990 --> 00:01:50,320
comet panstar seems to be producing

51
00:01:53,270 --> 00:01:52,000
quite a bit of dust compared to an

52
00:01:55,510 --> 00:01:53,280
average comet

53
00:01:57,350 --> 00:01:55,520
this is very good for its visibility

54
00:01:59,030 --> 00:01:57,360
because the extra dust is reflecting

55
00:02:01,749 --> 00:01:59,040
sunlight and making comet pan stars

56
00:02:03,590 --> 00:02:01,759
appear brighter than it would otherwise

57
00:02:05,590 --> 00:02:03,600
the amount of dust and gas spewing from

58
00:02:07,910 --> 00:02:05,600
the comet implies a nucleus on the order

59
00:02:11,270 --> 00:02:07,920
of one kilometer in diameter in other

60
00:02:14,229 --> 00:02:11,280
words neither unusually large nor small

61
00:02:16,949 --> 00:02:14,239
size-wise it is a fairly typical comet

62
00:02:18,949 --> 00:02:16,959
the comet's tail is anything but typical

63
00:02:20,550 --> 00:02:18,959

stereo b images processed by carl

64
00:02:22,949 --> 00:02:20,560
battams of the naval research lab in

65
00:02:24,949 --> 00:02:22,959
washington dc reveal many wild and

66
00:02:27,510 --> 00:02:24,959
ragged striations in the cloud of dust

67
00:02:30,070 --> 00:02:27,520
trailing behind comet pen stars

68
00:02:32,150 --> 00:02:30,080
wow says badams the fine structure is

69
00:02:33,430 --> 00:02:32,160
breathtaking we're not sure what causes

70
00:02:35,030 --> 00:02:33,440
this

71
00:02:36,869 --> 00:02:35,040
possibilities include irregular

72
00:02:38,949 --> 00:02:36,879
outgassing in the comet's core

73
00:02:41,030 --> 00:02:38,959
fragmentation events and interactions

74
00:02:43,270 --> 00:02:41,040
with the gusty solar wind

75
00:02:45,030 --> 00:02:43,280
the comet is now receding from earth it

76
00:02:46,229 --> 00:02:45,040
will slowly dim as it heads back into

77
00:02:48,229 --> 00:02:46,239
deep space

78
00:02:49,910 --> 00:02:48,239
ironically though its visibility will

79
00:02:52,070 --> 00:02:49,920
improve for a while as it heads into

80
00:02:54,070 --> 00:02:52,080
darker skies away from the sun

81
00:02:56,150 --> 00:02:54,080
it might even become a naked eye object

82
00:02:59,110 --> 00:02:56,160
in the closing weeks of march

83
00:03:00,470 --> 00:02:59,120
step outside after sunset face west and

84
00:03:02,070 --> 00:03:00,480
take a look