1
00:00:09,750 --> 00:00:06,550
a naked eye comet in march 2013

2
00:00:11,589 --> 00:00:09,760
presented by science at nasa

3
00:00:13,749 --> 00:00:11,599
far beyond the orbits of neptune and

4
00:00:16,230 --> 00:00:13,759
pluto where the sun is a pinprick of

5
00:00:18,710 --> 00:00:16,240
light not much brighter than other stars

6
00:00:20,470 --> 00:00:18,720
a vast swarm of icy bodies circles the

7
00:00:22,630 --> 00:00:20,480
solar system

8
00:00:24,390 --> 00:00:22,640
astronomers call it the oort cloud and

9
00:00:25,990 --> 00:00:24,400
it is the source of some of history's

10
00:00:30,230 --> 00:00:26,000
finest comets

11
00:00:32,150 --> 00:00:30,240
one of them is heading our way now

12
00:00:34,470 --> 00:00:32,160
pan stars was discovered by the

13
00:00:36,549 --> 00:00:34,480

panoramic survey telescope and rapid

14
00:00:38,389 --> 00:00:36,559
response system atop the haleakala

15
00:00:40,950 --> 00:00:38,399
volcano in hawaii

16
00:00:43,190 --> 00:00:40,960
astronomers used the massive 1.8 meter

17
00:00:45,750 --> 00:00:43,200
telescope to scan the heavens for

18
00:00:47,990 --> 00:00:45,760
approaching objects both asteroids and

19
00:00:49,350 --> 00:00:48,000
comets that might pose a danger to our

20
00:00:52,389 --> 00:00:49,360
planet

21
00:00:55,029 --> 00:00:52,399
in june 2011 a comet appeared and it was

22
00:00:57,029 --> 00:00:55,039
named pan stars after the acronym for

23
00:00:59,349 --> 00:00:57,039
the telescope

24
00:01:01,910 --> 00:00:59,359
in early march the comet will pass about

25
00:01:05,109 --> 00:01:01,920
100 million miles from earth as it

26
00:01:07,590 --> 00:01:05,119
briefly dips inside the orbit of mercury

27
00:01:10,149 --> 00:01:07,600
most experts expect it to become a naked

28
00:01:13,670 --> 00:01:10,159
eye object about as bright as the stars

29
00:01:16,149 --> 00:01:13,680
of the big dipper but says carl battams

30
00:01:18,550 --> 00:01:16,159
of the naval research lab prepare to be

31
00:01:21,350 --> 00:01:18,560
surprised a new comet from the oort

32
00:01:24,149 --> 00:01:21,360
cloud is always an unknown quantity

33
00:01:26,550 --> 00:01:24,159
equally capable of spectacular displays

34
00:01:28,469 --> 00:01:26,560
or dismal failures

35
00:01:31,190 --> 00:01:28,479
the oort cloud is named after 20th

36
00:01:33,670 --> 00:01:31,200
century dutch astronomer jan ort who

37
00:01:35,990 --> 00:01:33,680
argued that such a cloud must exist to

38
00:01:38,469 --> 00:01:36,000

account for all the fresh comets that

39
00:01:40,630 --> 00:01:38,479
fall through the inner solar system

40
00:01:42,550 --> 00:01:40,640
unaltered by warmth and sunlight the

41
00:01:45,109 --> 00:01:42,560
distant comets of the work cloud are

42
00:01:47,990 --> 00:01:45,119
like time capsules harboring frozen

43
00:01:50,469 --> 00:01:48,000
gases and primitive dusty material drawn

44
00:01:52,230 --> 00:01:50,479
from the original solar nebula 4.5

45
00:01:54,710 --> 00:01:52,240
billion years ago

46
00:01:56,709 --> 00:01:54,720
gravitational disturbances occasionally

47
00:01:58,709 --> 00:01:56,719
eject comets from the york cloud which

48
00:02:00,950 --> 00:01:58,719
fall toward the sun bringing their

49
00:02:03,270 --> 00:02:00,960
virgin ices with them

50
00:02:05,590 --> 00:02:03,280
because this is comet panstarr's first

51
00:02:07,510 --> 00:02:05,600
visit it has never been tested by the

52
00:02:08,949 --> 00:02:07,520
fierce heat and gravitational pull of

53
00:02:10,869 --> 00:02:08,959
the sun

54
00:02:11,910 --> 00:02:10,879
almost anything could happen says

55
00:02:14,309 --> 00:02:11,920
battams

56
00:02:16,309 --> 00:02:14,319
on one hand the comet could fall apart a

57
00:02:18,309 --> 00:02:16,319
fizzling disappointment

58
00:02:20,710 --> 00:02:18,319
on the other hand fresh veins of frozen

59
00:02:23,990 --> 00:02:20,720
material could open up to spew garish

60
00:02:25,670 --> 00:02:24,000
jets of gas and dust into the night sky

61
00:02:28,150 --> 00:02:25,680
because of its small distance from the

62
00:02:30,070 --> 00:02:28,160
sun penn star should be very active

63
00:02:32,229 --> 00:02:30,080

producing a lot of dust and therefore a

64
00:02:34,390 --> 00:02:32,239
nice dust tail predicts matthew knight

65
00:02:36,470 --> 00:02:34,400
of the lowell observatory

66
00:02:38,150 --> 00:02:36,480
however he cautions it could still be

67
00:02:39,670 --> 00:02:38,160
difficult to see

68
00:02:42,390 --> 00:02:39,680
from our point of view on earth the

69
00:02:44,790 --> 00:02:42,400
comet will be very close to the sun

70
00:02:48,949 --> 00:02:44,800
this means that it is only observable in

71
00:02:51,670 --> 00:02:48,959
twilight when the sky is not fully dark

72
00:02:54,949 --> 00:02:51,680
the best dates to look may be march 12th

73
00:02:57,670 --> 00:02:54,959
and 13th when pan stars emerges in the

74
00:02:59,589 --> 00:02:57,680
western sunset sky not far from the

75
00:03:02,550 --> 00:02:59,599
crescent moon

76
00:03:05,589 --> 00:03:02,560
a comet and the moon together framed by

77
00:03:07,589 --> 00:03:05,599
twilight blue as a rare sight

78
00:03:09,750 --> 00:03:07,599
my guess is that the primary feature

79
00:03:11,589 --> 00:03:09,760
visible to the naked eye will be the

80
00:03:13,589 --> 00:03:11,599
gaseous coma around the head of the

81
00:03:15,190 --> 00:03:13,599
comet says knight

82
00:03:18,149 --> 00:03:15,200
the comet's tail might require

83
00:03:20,630 --> 00:03:18,159
binoculars or a small telescope

84
00:03:23,110 --> 00:03:20,640
two other key dates are march 5th when

85
00:03:25,270 --> 00:03:23,120
the comet comes closest to earth about

86
00:03:27,509 --> 00:03:25,280
100 million miles away

87
00:03:30,149 --> 00:03:27,519
and march 10th when the comet comes

88
00:03:32,229 --> 00:03:30,159

closest to the sun

89
00:03:34,470 --> 00:03:32,239
the dose of solar heating it receives

90
00:03:36,470 --> 00:03:34,480
just inside the orbit of mercury could

91
00:03:39,910 --> 00:03:36,480
be just what the comet needs to push it

92
00:03:41,990 --> 00:03:39,920
into the realm of naked eye visibility

93
00:03:44,470 --> 00:03:42,000
comet pen star should not be confused

94
00:03:46,390 --> 00:03:44,480
with another even better comic coming

95
00:03:49,990 --> 00:03:46,400
later this year

96
00:03:52,070 --> 00:03:50,000
in november 2013 comet ison could shine

97
00:03:53,910 --> 00:03:52,080
as brightly as a full moon in broad

98
00:03:56,309 --> 00:03:53,920
daylight when it passes through the

99
00:03:58,789 --> 00:03:56,319
atmosphere of the sun

100
00:04:00,869 --> 00:03:58,799
two bright comets in one year is a rare

101
00:04:02,949 --> 00:04:00,879
treat says badams

102
00:04:05,429 --> 00:04:02,959
this could be good

103
00:04:08,070 --> 00:04:05,439
for updates on comets and other objects