1
00:00:07,050 --> 00:00:05,370
on october sixth 2008 we discovered a

2
00:00:09,000 --> 00:00:07,060
near-earth asteroid about the size of a

3
00:00:12,799 --> 00:00:09,010
Volkswagen and we determined that it

4
00:00:15,780 --> 00:00:12,809
would hit the Earth's atmosphere at 746

5
00:00:19,830 --> 00:00:15,790
pacific daylight time over the northern

6
00:00:23,150 --> 00:00:19,840
sudan region of northern africa and at

7
00:00:25,830 --> 00:00:23,160
that location of course it would be for

8
00:00:29,430 --> 00:00:25,840
46 in the morning in the pre-dawn sky

9
00:00:30,990 --> 00:00:29,440
well it was discovered the way these

10
00:00:34,740 --> 00:00:31,000
near Earth objects are always discovered

11
00:00:37,799 --> 00:00:34,750
we take a CCD image just like you would

12
00:00:40,110 --> 00:00:37,809
with your camera of a certain region of

13
00:00:41,910 --> 00:00:40,120

the sky come back to that region 15

14
00:00:43,470 --> 00:00:41,920
minutes later take another image come

15
00:00:45,360 --> 00:00:43,480
back to that same region 15 minutes

16
00:00:47,790 --> 00:00:45,370
later take a third or fourth image and

17
00:00:50,220 --> 00:00:47,800
then we compare the images to see if any

18
00:00:52,229 --> 00:00:50,230
of the objects in those images have

19
00:00:54,329 --> 00:00:52,239
moved and if they have there almost

20
00:00:58,040 --> 00:00:54,339
certainly near-earth objects these

21
00:01:00,239 --> 00:00:58,050
objects are tiny and they're dark and

22
00:01:02,819 --> 00:01:00,249
because they're tiny and dark they're

23
00:01:04,079 --> 00:01:02,829
very very faint and we can only discover

24
00:01:05,670 --> 00:01:04,089
them when they're fairly close to the

25
00:01:07,740 --> 00:01:05,680
earth when they're not nearly as faint

26
00:01:09,660 --> 00:01:07,750
as they usually are so when they get

27
00:01:11,760 --> 00:01:09,670
close to the earth they're easy as to

28
00:01:14,010 --> 00:01:11,770
discover their motions on the sky our

29
00:01:15,480 --> 00:01:14,020
fastest and so that's the time when we

30
00:01:16,650 --> 00:01:15,490
typically discovered near Earth objects

31
00:01:19,350 --> 00:01:16,660
when they're fairly close to the earth

32
00:01:21,180 --> 00:01:19,360
why are we so confident this object the

33
00:01:22,800 --> 00:01:21,190
size of a Volkswagen is not going to

34
00:01:25,590 --> 00:01:22,810
punch through the atmosphere and hit the

35
00:01:29,070 --> 00:01:25,600
ground well what happens is that most of

36
00:01:31,110 --> 00:01:29,080
these objects are stony objects and what

37
00:01:33,960 --> 00:01:31,120
happens when they reach about 30 miles

38
00:01:35,550 --> 00:01:33,970

into the atmosphere coming down the

39
00:01:36,930 --> 00:01:35,560
pressure on the front side of that stony

40
00:01:38,370 --> 00:01:36,940
object is so much greater than the

41
00:01:41,520 --> 00:01:38,380
pressure on the backside that they

42
00:01:43,530 --> 00:01:41,530
pancake and fragment and dissipate in

43
00:01:45,930 --> 00:01:43,540
the Earth's atmosphere and so what you

44
00:01:48,320 --> 00:01:45,940
what you see is a fireball event or a

45
00:01:51,150 --> 00:01:48,330
bolide event and this this object

46
00:01:53,490 --> 00:01:51,160
fragments into a zillion pieces and then

47
00:01:54,960 --> 00:01:53,500
simply dissipates or burns up in the

48
00:01:56,610 --> 00:01:54,970
Earth's atmosphere without any of the

49
00:01:59,130 --> 00:01:56,620
fragments reaching the ground well this

50
00:02:02,220 --> 00:01:59,140
is a discovery that's big on a number of

51
00:02:04,890 --> 00:02:02,230
points first of all it's a it's a

52
00:02:06,810 --> 00:02:04,900
prediction of a very bright fireball of

53
00:02:08,430 --> 00:02:06,820
men so people can go out there and set

54
00:02:11,009 --> 00:02:08,440
up their equipment and get ready for it

55
00:02:13,649 --> 00:02:11,019
whereas usually a fireball is observed

56
00:02:15,050 --> 00:02:13,659
by people who just serendipitously are

57
00:02:17,089 --> 00:02:15,060
looking up at the right time

58
00:02:19,370 --> 00:02:17,099
so now we have a prediction suggesting

59
00:02:22,610 --> 00:02:19,380
one and this will occur so this suggests

60
00:02:25,550 --> 00:02:22,620
that the telescopic surveys that nASA

61
00:02:27,500 --> 00:02:25,560
has in place the orbit computation and

62
00:02:29,809 --> 00:02:27,510
impact probability calculations that

63
00:02:31,370 --> 00:02:29,819

NASA now has in place are working rather

64
00:02:34,339 --> 00:02:31,380
well because we were able to discover

65
00:02:36,170 --> 00:02:34,349
and predict exactly where this object

66
00:02:38,420 --> 00:02:36,180
would hit in a matter of a couple of

67
00:02:41,809 --> 00:02:38,430
hours and get it out on the web to the

68
00:02:43,850 --> 00:02:41,819
folks who need to know so I'm pleased

69
00:02:47,600 --> 00:02:43,860
that the system is working so well it

70
00:02:50,030 --> 00:02:47,610
just shows that NASA's ability to track

71
00:02:51,140 --> 00:02:50,040
to discover and track these objects is