



1
00:00:09,560 --> 00:00:06,050
why is the wide-field Infrared Survey

2
00:00:11,450 --> 00:00:09,570
Explorer wise is going to find hundreds

3
00:00:13,879 --> 00:00:11,460
of millions of objects spread over the

4
00:00:16,250 --> 00:00:13,889
entire sky and for us that's like a

5
00:00:18,290 --> 00:00:16,260
treasure map we think there are about as

6
00:00:19,970 --> 00:00:18,300
many grains of sand on this Beach as

7
00:00:23,090 --> 00:00:19,980
there are stars in the entire universe

8
00:00:24,320 --> 00:00:23,100
so the task of finding rare objects in

9
00:00:26,359 --> 00:00:24,330
the universe that we're interested in

10
00:00:28,700 --> 00:00:26,369
requires the maps that wise is going to

11
00:00:31,009 --> 00:00:28,710
make it's a bit like using this metal

12
00:00:33,430 --> 00:00:31,019
detector here to try to find gold coins

13
00:00:36,080 --> 00:00:33,440

that are buried in all of this sand

14

00:00:38,090 --> 00:00:36,090

wife's consists of a fairly modest sized

15

00:00:40,160 --> 00:00:38,100

telescope about 40 centimeters in

16

00:00:43,340 --> 00:00:40,170

diameter that would sort of fit under

17

00:00:45,799 --> 00:00:43,350

your arm wise is going to survey the

18

00:00:50,150 --> 00:00:45,809

entire sky in four infrared wavelengths

19

00:00:52,040 --> 00:00:50,160

over six months all sky surveys are one

20

00:00:54,110 --> 00:00:52,050

of the basic tools that astronomers use

21

00:00:58,420 --> 00:00:54,120

to find interesting and unusual objects

22

00:01:00,680 --> 00:00:58,430

it's sort of like the GPS of astronomy

23

00:01:01,970 --> 00:01:00,690

one of the most exciting things that you

24

00:01:05,210 --> 00:01:01,980

expect to find with an all-sky survey

25

00:01:07,340 --> 00:01:05,220

likewise is the unexpected we expect

26

00:01:10,330 --> 00:01:07,350

surprises things that we have no idea

27

00:01:14,050 --> 00:01:12,340

one of the projects wise is going to be

28

00:01:16,300 --> 00:01:14,060

doing is studying the population of

29

00:01:18,190 --> 00:01:16,310

near-earth objects these are asteroids

30

00:01:19,630 --> 00:01:18,200

and comets whose orbits get close to

31

00:01:20,740 --> 00:01:19,640

Earth's orbit now this doesn't

32

00:01:22,630 --> 00:01:20,750

necessarily mean that they're going to

33

00:01:24,969 --> 00:01:22,640

hit the earth but we do want to pay some

34

00:01:26,380 --> 00:01:24,979

attention to them with wise will be able

35

00:01:27,999 --> 00:01:26,390

to tell something about how many there

36

00:01:29,980 --> 00:01:28,009

are what their sizes are and what

37

00:01:31,719 --> 00:01:29,990

they're made out of whether they're soft

38

00:01:35,679 --> 00:01:31,729

and crumbly like this ball of sand or

39

00:01:37,480 --> 00:01:35,689

solid rock like this rock right here in

40

00:01:39,160 --> 00:01:37,490

visible light an object that's small and

41

00:01:41,080 --> 00:01:39,170

shiny reflects the same amount of

42

00:01:43,089 --> 00:01:41,090

sunlight as an asteroid that's big and

43

00:01:44,979 --> 00:01:43,099

dark but when we look with an infrared

44

00:01:46,990 --> 00:01:44,989

telescope we're seeing heat that's

45

00:01:48,880 --> 00:01:47,000

emitted from more sides of the asteroid

46

00:01:51,520 --> 00:01:48,890

so we get a much better true measurement

47

00:01:53,109 --> 00:01:51,530

of the object size and this is important

48

00:01:54,279 --> 00:01:53,119

because it allows us to tell whether or

49

00:01:59,160 --> 00:01:54,289

not we're dealing with an object that's

50

00:02:03,339 --> 00:02:01,389

the maps that wise is going to be

51
00:02:05,889 --> 00:02:03,349
generating can be used to find all sorts

52
00:02:07,899 --> 00:02:05,899
of rare and unusual objects one of these

53
00:02:11,140 --> 00:02:07,909
objects is the most luminous galaxies in

54
00:02:13,630 --> 00:02:11,150
the entire universe but finding it is

55
00:02:20,980 --> 00:02:13,640
about like trying to find one particular

56
00:02:24,880 --> 00:02:22,930
one of the other rare types of objects

57
00:02:27,490 --> 00:02:24,890
that wise may find is possibly the

58
00:02:29,020 --> 00:02:27,500
nearest star to our son we think that

59
00:02:30,640 --> 00:02:29,030
there's a good chance that our son

60
00:02:32,260 --> 00:02:30,650
actually does have a closer neighbor

61
00:02:34,270 --> 00:02:32,270
than we already know about and it's

62
00:02:36,760 --> 00:02:34,280
likely to be a very cool type of star

63
00:02:39,400 --> 00:02:36,770

for the ground war the temperature may

64

00:02:52,440 --> 00:02:39,410

be room temperature or even colder pull

65

00:02:56,430 --> 00:02:55,110

with wise we expect the unexpected we're

66

00:02:58,949 --> 00:02:56,440

looking for new surprises and new

67

00:03:00,270 --> 00:02:58,959

discoveries with this exciting survey

68

00:03:02,250 --> 00:03:00,280

we're going to be finding a treasure