1
00:00:00,348 --> 00:00:02,931
(upbeat music)

2
00:00:04,490 --> 00:00:05,323
- Yes.

3
00:00:06,505 --> 00:00:08,080
- Guys, guys, I need
you to be quiet though,

4
00:00:08,080 --> 00:00:09,590
in the other room.

5
00:00:09,590 --> 00:00:10,730
- Okay.

6
00:00:10,730 --> 00:00:11,980
- Okay, got it.

7
00:00:13,516 --> 00:00:15,438
- Okay, we're doing it.

8
00:00:15,438 --> 00:00:18,630
(instrumental music)

9
00:00:18,630 --> 00:00:21,250
- Pretty much anything that
you can observe on the land

10
00:00:21,250 --> 00:00:23,540
and coast and sometimes even in the ocean,

11
00:00:23,540 --> 00:00:25,700
NISAR will have an application.

12
00:00:25,700 --> 00:00:26,920
Very exciting mission,

13
00:00:26,920 --> 00:00:29,130
generating an enormous amount of data

14
00:00:29,130 --> 00:00:31,590
that will keep the science community

15
00:00:31,590 --> 00:00:35,049
and the applications community
busy for a long time.

16
00:00:35,049 --> 00:00:39,140
- NISAR is a partnership
mission between NASA and ISRO,

17
00:00:39,140 --> 00:00:41,380
the Indian Space Research Organization.

18
00:00:41,380 --> 00:00:43,120
It's a collaborative project.

19
00:00:43,120 --> 00:00:44,270
- And we'll be collecting data

20
00:00:44,270 --> 00:00:47,190
for all around the whole earth

21
00:00:47,190 --> 00:00:49,040
for all of the landmasses.

22
00:00:49,040 --> 00:00:52,830
- Looking at volcanoes,
earthquakes, landslides,

23
00:00:52,830 --> 00:00:56,690
other natural hazards that
occur in the crust of the earth.

24
00:00:56,690 --> 00:00:59,680

- And movement of sea
ice, movement of glaciers,

25
00:00:59,680 --> 00:01:03,620
how much forest land is
growing or being reduced.

26
00:01:03,620 --> 00:01:06,350
- Because it can image at
night and through clouds,

27
00:01:06,350 --> 00:01:09,160
It can allow us to see through storms.

28
00:01:09,160 --> 00:01:11,620
- It's really gonna allow
us to see things changing

29
00:01:11,620 --> 00:01:14,704
in areas where we can't
with other satellites.

30
00:01:14,704 --> 00:01:16,530
- NISAR is going to open our eyes

31
00:01:16,530 --> 00:01:20,150
to the potential of this
technique for seeing the ground

32
00:01:20,150 --> 00:01:23,600
in places that otherwise
has been obscured.

33
00:01:23,600 --> 00:01:26,690
- So every 12 days we
will map the landmasses

34
00:01:26,690 --> 00:01:30,250
and then we can take those
mappings and we can compare them.

35
00:01:30,250 --> 00:01:32,330
We can do what we call interferometry.

36
00:01:32,330 --> 00:01:34,827
- Where we can take an
image acquired on one day

37
00:01:34,827 --> 00:01:39,370
and combine it with an image
acquired 12 days later,

38
00:01:39,370 --> 00:01:41,060
from that same vantage point,

39
00:01:41,060 --> 00:01:42,990
looking at the same point on the ground.

40
00:01:42,990 --> 00:01:44,620
And when we do that,

41
00:01:44,620 --> 00:01:47,220
we can see the motion of the ground down

42
00:01:47,220 --> 00:01:49,560
to a fraction of the radar wavelength,

43
00:01:49,560 --> 00:01:53,197
which in this case is on the
order of a few millimeters.

44
00:01:53,197 --> 00:01:55,930
- NISAR has two radars on it.

45
00:01:55,930 --> 00:01:57,956
Two synthetic aperture radars,

46
00:01:57,956 --> 00:02:01,210

one is an L-band and
the other is an S-band.

47
00:02:01,210 --> 00:02:04,481
- So it's kind of the Tesla
or the Maserati of radars,

48
00:02:04,481 --> 00:02:07,040
whichever you think is cooler I guess.

49
00:02:07,040 --> 00:02:11,140
- This here's the radar payload,
that is the spacecraft bus,

50
00:02:11,140 --> 00:02:15,414
large 12 meter reflector common
in Tennessee system for both

51
00:02:15,414 --> 00:02:19,468
L-band and S-band to
send out the RF signal

52
00:02:19,468 --> 00:02:22,120
and capture the return signal.

53
00:02:22,120 --> 00:02:23,632
- Good morning (indistinct)

54
00:02:23,632 --> 00:02:25,530
- (indistinct) how are you today?

55
00:02:25,530 --> 00:02:26,661
- I am fine.

56
00:02:26,661 --> 00:02:29,980
- The pandemic is something
that we were not counting on

57
00:02:29,980 --> 00:02:32,495

when we developed this project.

58
00:02:32,495 --> 00:02:34,820
- The NISAR Project was
actually pretty well vast

59
00:02:34,820 --> 00:02:36,720
with this remote operations

60
00:02:36,720 --> 00:02:38,460
because of the Indian engagement.

61
00:02:38,460 --> 00:02:40,890
- It was a little bit of a WebEx fatigue,

62
00:02:40,890 --> 00:02:43,310
but I think we're learning
how to do it better now.

63
00:02:43,310 --> 00:02:44,980
- But yeah, we're all in great spirits

64
00:02:44,980 --> 00:02:49,110
and we will take a little
hit to the schedule,

65
00:02:49,110 --> 00:02:50,960
but we've been waiting a
long time for this mission

66
00:02:50,960 --> 00:02:53,030
and we wanna do it right.

67
00:02:53,030 --> 00:02:54,840
- We want the hardware to work.

68
00:02:54,840 --> 00:02:56,590
And we want the science to be done.

69
00:02:57,517 --> 00:02:59,010
- One of the best things we can do

70
00:02:59,010 --> 00:03:00,930
to increase diversity in the sciences

71
00:03:00,930 --> 00:03:03,880
is to make it easier for
people to enter the sciences.

72
00:03:03,880 --> 00:03:06,230
- For the data is gonna be
freely available to everybody,

73
00:03:06,230 --> 00:03:07,840
We aren't gonna have to
pay for it like we do

74
00:03:07,840 --> 00:03:08,820
with some satellites.

75
00:03:08,820 --> 00:03:10,050
- So making the data free,

76
00:03:10,050 --> 00:03:12,650
having it easy to download
to your own machine,

77
00:03:12,650 --> 00:03:14,760
all of that stuff is critical

78
00:03:14,760 --> 00:03:18,233
if we want to remove those
barriers to entry to the field.

79
00:03:19,140 --> 00:03:22,160
- I'm looking forward to
the sense of discovery

80
00:03:22,160 --> 00:03:23,270
that I think we're going to have

81
00:03:23,270 --> 00:03:25,870
when NISAR data start coming down.

82
00:03:25,870 --> 00:03:28,890
- All science is incredibly
important to understand

83
00:03:28,890 --> 00:03:31,312
what's going on in the
name of what our children

84
00:03:31,312 --> 00:03:34,420
and grandchildren are gonna
have to face in the future.

85
00:03:34,420 --> 00:03:36,290
And all the information we collect now

86
00:03:36,290 --> 00:03:39,410
is only gonna help them
understand that better

87
00:03:39,410 --> 00:03:41,310
and hopefully make their lives better.

88
00:03:42,830 --> 00:03:45,970
- Digital, electronic subsystem cognizant.

89
00:03:45,970 --> 00:03:48,230
There it goes by (indistinct)

90
00:03:48,230 --> 00:03:50,030
- You know, the radar will

91
00:03:50,920 --> 00:03:52,330

- I can't recall