
EPISODE EIGHT:
THE LAUNCH

1
00:00:08,380 --> 00:00:06,460
Red Vandenberg Air Force Base are about

2
00:00:10,839 --> 00:00:08,390
20 minutes before the launch of icesat-2

3
00:00:13,390 --> 00:00:10,849
you might see the white light off in the

4
00:00:15,820 --> 00:00:13,400
distance that's the Delta 2 rocket it's

5
00:00:17,710 --> 00:00:15,830
it kind of feels like an idea that we're

6
00:00:20,710 --> 00:00:17,720
just always going to just mean stay an

7
00:00:22,510 --> 00:00:20,720
idea but no it's it's real it's sitting

8
00:00:24,010 --> 00:00:22,520
on top of the rocket you know for me

9
00:00:26,650 --> 00:00:24,020
it's kind of surreal like you say it's

10
00:00:28,779 --> 00:00:26,660
been 10 years it's hard to believe it's

11
00:00:29,410 --> 00:00:28,789
like we're really here this is really

12
00:00:33,060 --> 00:00:29,420
about to happen

13
00:00:33,070 --> 00:00:37,040

[Applause]

14
00:00:40,900 --> 00:00:38,650
[Music]

15
00:00:46,860 --> 00:00:40,910
[Applause]

16
00:00:51,090 --> 00:00:46,870
[Music]

17
00:00:57,340 --> 00:00:55,420
this is dr. Tom Newman over the years

18
00:01:00,100 --> 00:00:57,350
his work has taken him to some pretty

19
00:01:02,979 --> 00:01:00,110
remote areas to study changes in the ice

20
00:01:05,500 --> 00:01:02,989
regions of our planet and his research

21
00:01:08,170 --> 00:01:05,510
among many others has defined the goals

22
00:01:11,440 --> 00:01:08,180
of the new NASA satellite the ice cloud

23
00:01:15,100 --> 00:01:11,450
and land elevation satellite - or ice at

24
00:01:18,580 --> 00:01:15,110
- the story of ice at - really begins

25
00:01:19,900 --> 00:01:18,590
with ice at one I said told us all kinds

26
00:01:21,850 --> 00:01:19,910
of cool things about the Ice Sheet and

27
00:01:24,550 --> 00:01:21,860
about sea ice that we didn't really know

28
00:01:27,520 --> 00:01:24,560
to ask that data allowed us to measure

29
00:01:28,990 --> 00:01:27,530
elevation change of ice sheets in a way

30
00:01:30,609 --> 00:01:29,000
that we hadn't been able to before and

31
00:01:31,749 --> 00:01:30,619
showed that all the action on the ice

32
00:01:34,170 --> 00:01:31,759
sheets the places that we're really

33
00:01:36,760 --> 00:01:34,180
changing quickly were around the edges

34
00:01:38,170 --> 00:01:36,770
so when we were thinking about what

35
00:01:40,810 --> 00:01:38,180
could we do better next time

36
00:01:42,490 --> 00:01:40,820
we knew that was one key component in

37
00:01:44,800 --> 00:01:42,500
addition to the edges of the ice sheets

38
00:01:47,410 --> 00:01:44,810

icesat-2 needed to measure a dimension

39
00:01:50,230 --> 00:01:47,420
of sea ice that remained elusive its

40
00:01:52,510 --> 00:01:50,240
thickness to figure out how thick sea

41
00:01:55,059 --> 00:01:52,520
ice is you can measure the height of ice

42
00:01:57,400 --> 00:01:55,069
sticking out of the ocean or freeboard

43
00:02:00,540 --> 00:01:57,410
and compare it to the height of water

44
00:02:03,700 --> 00:02:00,550
between the sea ice flows called leads

45
00:02:07,240 --> 00:02:03,710
the problem is sea ice is really dynamic

46
00:02:09,130 --> 00:02:07,250
and those cracks open and close various

47
00:02:11,650 --> 00:02:09,140
places in the ice pack throughout the

48
00:02:14,199 --> 00:02:11,660
day throughout the year and what we need

49
00:02:16,150 --> 00:02:14,209
to do is have measurements of the ocean

50
00:02:18,940 --> 00:02:16,160
whenever it's available wherever it

51
00:02:21,850 --> 00:02:18,950
occurs in the sea ice pack to solve that

52
00:02:24,210 --> 00:02:21,860
problem I said - is designed with a fast

53
00:02:26,770 --> 00:02:24,220
pulsing laser instrument to take precise

54
00:02:29,710 --> 00:02:26,780
near-continuous measurements across its

55
00:02:31,510 --> 00:02:29,720
three pairs of beams for ten years

56
00:02:34,180 --> 00:02:31,520
everything about the mission was

57
00:02:35,949 --> 00:02:34,190
designed to measure rapid changes in the

58
00:02:38,470 --> 00:02:35,959
most rapidly changing part of the

59
00:02:42,370 --> 00:02:38,480
cryosphere but it has to get into space

60
00:02:45,070 --> 00:02:42,380
first but it's a huge huge transition

61
00:02:48,520 --> 00:02:45,080
going from the ground to in space we've

62
00:02:50,100 --> 00:02:48,530
spent better part of ten years thousands

63
00:02:52,330 --> 00:02:50,110

of people have been involved and

64
00:02:53,950 --> 00:02:52,340
actually seeing the rocket they're on

65
00:02:56,230 --> 00:02:53,960
the pad with all of that work kind of

66
00:02:58,990 --> 00:02:56,240
all put together and in one place it's

67
00:03:00,400 --> 00:02:59,000
it's pretty amazing and then getting up

68
00:03:03,100 --> 00:03:00,410
in the middle of the night to go watch

69
00:03:06,610 --> 00:03:03,110
the actual launch it's sort of surreal

70
00:03:09,130 --> 00:03:06,620
in a way because you've put so much time

71
00:03:13,110 --> 00:03:09,140
into it for so long and actually seeing

72
00:03:15,920 --> 00:03:13,120
it over there is like oh you know it's

73
00:03:23,200 --> 00:03:15,930
it's a big deal

74
00:03:23,210 --> 00:03:30,830
[Music]

75
00:03:47,410 --> 00:03:33,270
[Applause]

76
00:03:56,080 --> 00:03:49,820
totally cool they're wet

77
00:04:00,440 --> 00:03:58,790
so Atlas has been turned on over the

78
00:04:02,900 --> 00:04:00,450
course of the first few weeks of the

79
00:04:05,720 --> 00:04:02,910
mission really culminating for us with

80
00:04:08,690 --> 00:04:05,730
with the laser so this is our first look

81
00:04:11,270 --> 00:04:08,700
at sea ice data from I set - and it

82
00:04:13,430 --> 00:04:11,280
looks fantastic the signal levels look

83
00:04:15,920 --> 00:04:13,440
great we've got plenty of photons there

84
00:04:18,560 --> 00:04:15,930
we're capturing ridges we can clearly

85
00:04:20,390 --> 00:04:18,570
see the ocean all sorts of cool stuff in

86
00:04:22,040 --> 00:04:20,400
there and this is just our first data

87
00:04:25,310 --> 00:04:22,050
it's only going to get better from here

88
00:04:27,140 --> 00:04:25,320

on out the data from icesat-2 is well on

89
00:04:29,750 --> 00:04:27,150
its way into digging deeper into the

90
00:04:32,480 --> 00:04:29,760
unknown dimensions of sea ice ice sheets

91
00:04:34,970 --> 00:04:32,490
and glaciers it will shed light on

92
00:04:37,580 --> 00:04:34,980
changes in sea level and global weather

93
00:04:40,240 --> 00:04:37,590
patterns and once again find new things

94
00:04:47,400 --> 00:04:40,250
about ice we didn't know to ask

95
00:04:55,800 --> 00:04:50,460
so my heart is definitely raised I don't

96
00:04:57,930 --> 00:04:55,810
know better you know slight chance the