1
00:00:08,620 --> 00:00:04,450
[Music]

2
00:00:08,640 --> 00:00:12,710
two PistenBullies, four people,

3
00:00:12,730 --> 00:00:16,840
so yeah, 750 kilometers, door to door.

4
00:00:16,860 --> 00:00:21,130
[wind blowing, music]
Brunt: Recently, we just got back from

5
00:00:21,150 --> 00:00:25,330
Antarctica where we completed about a two-week ground traverse

6
00:00:25,350 --> 00:00:29,560
near the South Pole. We were basically driving PistenBullies,

7
00:00:29,580 --> 00:00:33,660
tracked vehicles similar to the ones that groom your ski areas.

8
00:00:33,680 --> 00:00:37,810
Behind those PistenBullies were 60-foot long

9
00:00:37,830 --> 00:00:42,020
plastic sled trains. And ultimately those trains carried things like our sleeping tents,

10
00:00:42,040 --> 00:00:46,150
fully erected and left standing during the day when we were driving.

11
00:00:46,170 --> 00:00:50,300
Kitchen tent, fuel, generators,

12
00:00:50,320 --> 00:00:54,490
all sorts of cargo--
Neumann: Everything we needed for the trip.

13
00:00:54,510 --> 00:00:58,790
Brunt: And from a both science and survival standpoint.

14
00:00:58,810 --> 00:01:02,870
So this entire traverse was in support of ICESat-2, which will launch

15
00:01:02,890 --> 00:01:07,160
later in the year.
Neumann: ICESat-2 is all about elevation, and

16
00:01:07,180 --> 00:01:11,230
the natural question is how you're getting the right answer? This is how we will know. We'll go

17
00:01:11,250 --> 00:01:15,310
out and collect a reference data. We'll be ready to compare and evaluate, see how we're doing.

18
00:01:15,330 --> 00:01:19,470
Radio: 3-1-9 is feeling kind of ready, how you guys doing over there?

19
00:01:19,490 --> 00:01:23,540
Neumann: So the big measurement we were making was to measure the elevation of the ice

20
00:01:23,560 --> 00:01:27,630
sheet surface around our traverse. And we had the two GPS running, one on each vehicle

21
00:01:27,650 --> 00:01:31,810
measuring that elevation. One of the other experiments we were doing is leaving out

22
00:01:31,830 --> 00:01:35,930
what we call corner cube reflectors to get an assessment of the pointing

23
00:01:35,950 --> 00:01:40,090
of ICESat-2. When we make an elevation measurement how are we sure it's in

24
00:01:40,110 --> 00:01:44,200
the right place. So in this picture you can see a bamboo pole with a little

25

00:01:44,220 --> 00:01:48,370
white cap on the end of it. And embedded in that cap, little piece of glass

26
00:01:48,390 --> 00:01:52,560
about as big as your pinky nail and calibrated to return

27
00:01:52,580 --> 00:01:56,760
green laser light from the satellite, bounces off of this thing

28
00:01:56,780 --> 00:02:00,850
and goes right back up to the satellite again. Super reflective. So these things, as

29
00:02:00,870 --> 00:02:04,990
Kelly has demonstrated, show up in data with altimeters

30
00:02:05,010 --> 00:02:09,240
like ICESat-2. When you first get to South Pole, and you're coming from

31
00:02:09,260 --> 00:02:13,310
McMurdo, which is a nice seaside town right at sea level, and South Pole is

32
00:02:13,330 --> 00:02:17,410
what, about 10,000 feet. And yeah, you notice it pretty quickly. The

33
00:02:17,430 --> 00:02:21,520
temperature is a lot colder than in McMurdo. It's probably 30 degrees

34
00:02:21,540 --> 00:02:25,700
40 degrees colder and 10,000 feet higher. Walking from the

35
00:02:25,720 --> 00:02:29,750
camp to where we're putting in an array for example, would be a ten minute walk maybe,

36
00:02:29,770 --> 00:02:33,870
five minutes. A couple of breaks on the way, you know, it's still pretty

37
00:02:33,890 --> 00:02:38,020
high.

Brunt: The plan is to repeat this traverse for the

38
00:02:38,040 --> 00:02:42,210
next three years. So four years of data total, and that

39
00:02:42,230 --> 00:02:46,310
would last the mission lifetime--the mission requirement lifetime--

40
00:02:46,330 --> 00:02:50,440
for ICESat-2.
Neumann: ICESat-2 has 1,387 orbits

41
00:02:50,460 --> 00:02:54,630
and so it's cruising around the world, and it's got these unique tracks that repeat every

42
00:02:54,650 --> 00:02:58,850
91 days. And all those tracks converge at 88-South, and

43
00:02:58,870 --> 00:03:02,970
so our route crossed, what, twenty percent of them. So we can

44
00:03:02,990 --> 00:03:07,190
calibrate data from twenty percent of our tracks with this

45
00:03:07,210 --> 00:03:11,270
stretch that we drove. And by repeating it every year about the same time

46
00:03:11,290 --> 00:03:15,440
of year, we'll overlap it exactly the same time, but we'll also be able

47
00:03:15,460 --> 00:03:19,620
to figure out what's going on in between. Because we'll measure it in 2017,

48
00:03:19,640 --> 00:03:23,820
and then again in 2018, and you can see how it changes from year to year. So that will be pretty

49
00:03:23,840 --> 00:03:28,010
cool, too. It will quickly become the best-surveyed piece of

50
00:03:28,030 --> 00:03:32,080
either of the ice sheets.
[Music]