1
00:00:05,100 --> 00:00:08,940
I'm Ryan Walker. I work here at the Cryospheric Sciences Lab.

2
00:00:10,000 --> 00:00:13,180
I work on computer simulations of the

3
00:00:13,200 --> 00:00:15,930
Antarctic and Greenland ice sheets.

4
00:00:15,950 --> 00:00:18,930
to project how much of the ice is going from

5
00:00:18,950 --> 00:00:21,630
land into the ocean because it's possibly

6
00:00:21,640 --> 00:00:25,340
an important contributor to sea level rise under climate change.

7
00:00:28,040 --> 00:00:29,680
My name is Christine Dow.

8
00:00:29,700 --> 00:00:33,270
I'm researching sub-antarctic lake developments,

9
00:00:33,290 --> 00:00:36,270
so using numerical models to see how water

10
00:00:36,280 --> 00:00:39,420
builds up and depletes underneath the Antarctic ice sheets.

11
00:00:40,500 --> 00:00:44,800
So we went to the new South Korean research station

12
00:00:44,820 --> 00:00:49,730
Jang Bogo at Terra Nova Bay not too far from

13
00:00:49,740 --> 00:00:51,800

the United States McMurdo base.

14
00:00:52,280 --> 00:00:54,440
The Korea Polar Research Institute

15
00:00:54,450 --> 00:00:57,330
fed and housed us for five weeks and

16
00:00:57,350 --> 00:00:59,880
provided helicopters and worked with us.

17
00:00:59,900 --> 00:01:02,720
It was something that we absolutely could not have

18
00:01:02,740 --> 00:01:03,820
done without them.

19
00:01:04,260 --> 00:01:08,200
In this first study, we were looking at how the ocean

20
00:01:08,200 --> 00:01:11,800
tides affect the motion both horizontally and vertically

21
00:01:12,400 --> 00:01:13,880
of the Nansen Ice Shelf.

22
00:01:14,400 --> 00:01:17,860
Examining how the ice shelf responds to tides

23
00:01:18,700 --> 00:01:24,160
helps us get at the dynamics of how the ice flows and

24
00:01:24,160 --> 00:01:27,120
we're hoping will help future computer simulations.

25
00:01:28,740 --> 00:01:33,040
In order to get over to the Nansen Ice Shelf

26
00:01:33,070 --> 00:01:36,820
you fly over extremely dramatic cliffs,

27
00:01:36,840 --> 00:01:39,960
very large areas of ice cravassing.

28
00:01:40,720 --> 00:01:44,080
So it's quite spectacular on the way over.

29
00:01:44,100 --> 00:01:45,810
There was one particular moment, actually,

30
00:01:45,830 --> 00:01:47,650
when we first arrived to our tilt meter site.

31
00:01:47,670 --> 00:01:48,770
There was no wind at all and

32
00:01:48,790 --> 00:01:50,130
there was quite a lot of snow around.

33
00:01:50,150 --> 00:01:55,510
And the most poignant thing I think was the silence.

34
00:01:55,530 --> 00:01:57,530
When the helicopter shut down, nobody was talking.

35
00:01:57,550 --> 00:01:59,550
You could not hear a single thing and that's such

36
00:01:59,570 --> 00:02:01,880
an usual thing to be able to find in the world.

37
00:02:01,900 --> 00:02:05,720
No plane noises, no electricity noises, just absolutely nothing.

38
00:02:06,280 --> 00:02:09,140

And it was one of the most spectacular places I've ever been.

39
00:02:12,800 --> 00:02:15,980
The Antarctic ice sheet is flowing under its own weight

40
00:02:15,990 --> 00:02:19,540
spreading out from the center of the continent out

41
00:02:19,560 --> 00:02:22,560
to the edges and when it reaches the ocean

42
00:02:22,580 --> 00:02:25,080
it goes afloat as ice shelves.

43
00:02:25,100 --> 00:02:28,260
And where you have ice shelves

44
00:02:28,280 --> 00:02:32,990
that are in bays where the ice contact with the rock walls

45
00:02:33,010 --> 00:02:36,680
this friction acts to hold back the ice flow,

46
00:02:36,700 --> 00:02:37,690
so in some sense

47
00:02:37,700 --> 00:02:40,960
these smaller ice shelves are like corks.

48
00:02:41,560 --> 00:02:45,220
So as soon as you remove them, there's nothing preventing

49
00:02:45,240 --> 00:02:47,250
the ice mass from moving quick down.

50
00:02:47,270 --> 00:02:49,370
If these calve off, if these break off

51
00:02:49,390 --> 00:02:52,210
right back to where the ice is resting on land

52
00:02:52,230 --> 00:02:55,180
it can speed up dramatically and it's particular worry

53
00:02:55,200 --> 00:02:57,230
at the moment that the ice shelves around the Antarctic

54
00:02:57,250 --> 00:02:58,930
are going to break up and then we're going to see

55
00:02:58,950 --> 00:03:01,770
an unprecedented speed up in the ice coming out