



1

00:00:00,010 --> 00:00:04,030

Ice caps essentially are small versions of the ice sheets.

2

00:00:04,050 --> 00:00:08,060

Typically they're less than 500,000 square kilometers, although in reality

3

00:00:08,080 --> 00:00:12,100

most of them are much smaller than that -- on the order of several thousand kilometers squared.

4

00:00:12,120 --> 00:00:16,130

And they, like the ice sheets themselves, are the result

5

00:00:16,150 --> 00:00:20,160

of accumulations of snow that have been compacted over many thousands of years.

6

00:00:20,180 --> 00:00:24,170

And they in some cases are the remnants of a larger ice sheet

7

00:00:24,190 --> 00:00:28,190

such as the Laurentide Ice Sheet, which covered all of North America, and in other cases

8

00:00:28,210 --> 00:00:32,200

they simply have grown in the locations that they are

9

00:00:32,220 --> 00:00:36,250

in response to the snowfall that's occurred there.

10

00:00:36,270 --> 00:00:40,280

In particular in the Canadian Arctic, the Arctic has seen the largest

11

00:00:40,300 --> 00:00:44,320

most direct impact of climate change and the

12

00:00:44,340 --> 00:00:48,340

ice caps themselves since they're much much smaller masses than the larger

13

00:00:48,360 --> 00:00:52,370

ice sheets, they respond much more quickly to temperature changes.

14

00:00:52,390 --> 00:00:56,390

NASA has been monitoring these for almost 16 years.

15

00:00:56,410 --> 00:01:00,430

We began with flights with some of our aircraft in

16

00:01:00,450 --> 00:01:04,470

1995, using just a laser altimeter and

17

00:01:04,490 --> 00:01:08,480

Operation IceBridge is adding to that data set, extending it, along with the

18

00:01:08,500 --> 00:01:12,520

ICESat data that had been collected before, and so it's our hope that

19

00:01:12,540 --> 00:01:16,560

we by combining these data sets will have a long-term time series

20

00:01:16,580 --> 00:01:20,600

about what's happening there so we can better understand the dynamics of the ice caps

21

00:01:20,620 --> 00:01:24,650

as well as use them as early warning indicators

22

00:01:24,670 --> 00:01:28,680

of what is happening in our climate.

23

00:01:28,700 --> 00:01:32,700

I would characterise it as, this is the place where we have the most

24

00:01:32,720 --> 00:01:36,720

important feedback mechanism into the climate itself.

25

00:01:36,740 --> 00:01:40,730

The ice in the Arctic is one of the principle reflectors of energy

26

00:01:40,750 --> 00:01:44,740

coming from the sun and the disappearance of that ice means that

27

00:01:44,760 --> 00:01:48,790

not only does the temperature of the Earth change, but it also means