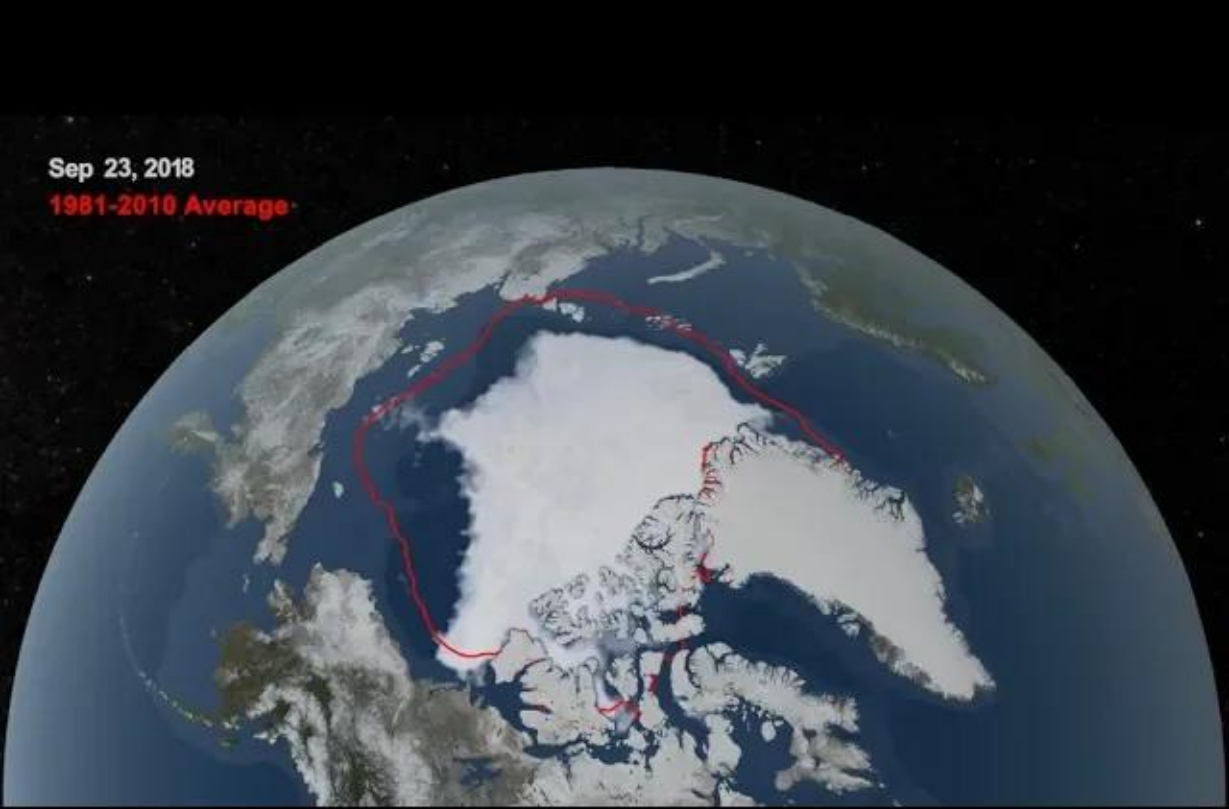
Sep 23, 2018
1981-2010 Average

1
00:00:00,120 --> 00:00:04,250
Arctic sea ice reached its annual minimum

2
00:00:04,250 --> 00:00:08,450
extent September 19, and again on September 23, 2018.

3
00:00:08,450 --> 00:00:12,640
NASA works with the National Snow and Ice Data Center to track sea ice in the Arctic.

4
00:00:12,640 --> 00:00:16,840
Each year, it grows to a maximum extent through the winter

5
00:00:16,840 --> 00:00:21,030
and shrinks to its minimum extent at the end of summer.

6
00:00:21,030 --> 00:00:25,350
This year’s minimum sea ice extent reached 1.77 million square miles.

7
00:00:25,350 --> 00:00:29,400
It’s tied with 2008 and 2010 as the sixth lowest

8
00:00:29,400 --> 00:00:33,590
sea ice minimum since consistent satellite records began.

9
00:00:33,590 --> 00:00:37,790
We need every single data point to string together into a really nice time series and that

10
00:00:37,790 --> 00:00:42,000
helps us understand interannual variability and also the long-term trend.

11
00:00:42,000 --> 00:00:46,080
NASA has been observing changes in the polar sea ice covers for over 40 years.

12
00:00:46,080 --> 00:00:50,270
NASA studies the Arctic and Antarctic

13
00:00:50,270 --> 00:00:54,500

sea ice covers in several ways. So NASA's Operation IceBridge,

14
00:00:54,500 --> 00:00:58,590
it's an airborne mission – they fly every spring over the sea ice cover to measure the snow and the sea ice

15
00:00:58,590 --> 00:01:02,830
And another way that we measure sea ice is using passive microwave.

16
00:01:02,830 --> 00:01:06,900
So this is an instrument that can see through clouds essentially and tells us where the ice is.

17
00:01:06,900 --> 00:01:10,980
In addition to the 40-year passive microwave record,

18
00:01:10,980 --> 00:01:15,090
a new NASA satellite called ICESat-2 will provide a new

19
00:01:15,090 --> 00:01:19,280
and important collection of sea ice observations.

20
00:01:19,280 --> 00:01:23,460
ICESat-2 just launched and what it's measuring is really, really exciting.

21
00:01:23,460 --> 00:01:27,680
So I was talking before about passive microwave tells us where the sea ice is.

22
00:01:27,680 --> 00:01:31,890
What ICESat-2 is going to do is to tell us how thick the ice cover is.

23
00:01:31,890 --> 00:01:35,920
It's measuring the freeboard of the ice cover; this is the amount of the ice that floats

24
00:01:35,920 --> 00:01:40,090
above the sea level line, just like an ice cube in a glass of water, and we can use

25
00:01:40,090 --> 00:01:44,210
that to calculate just how thick the underlying ice is.

26
00:01:44,210 --> 00:01:48,290
Thickness is an important measure of sea ice health, and studying it

27
00:01:48,290 --> 00:01:52,510
helps scientists understand how the Arctic is changing.

28
00:01:52,510 --> 00:01:56,700
We’re seeing a decline in sea ice thickness, in sea ice age, meaning that the ice

29
00:01:56,700 --> 00:02:00,880
is no longer perennial, but it’s transitioning more to seasonal type ice,

30
00:02:00,880 --> 00:02:04,990
and also in its extentThere are two types of ice in the Arctic,

31
00:02:04,990 --> 00:02:09,140
there’s old ice and young ice. Perennial ice being the stuff

32
00:02:09,140 --> 00:02:13,330
that lasts years, and then seasonal ice, the stuff that melts back

33
00:02:13,330 --> 00:02:17,510
every summer. So there are some pretty big differences between those two ice types

34
00:02:17,510 --> 00:02:21,690
Starting with the seasonal ice. This is the ice that forms when the

35
00:02:21,690 --> 00:02:25,760
ocean freezes, so it actually has salt in it, it’s very saline, because it’

36
00:02:25,760 --> 00:02:29,860
forming from sea water. This stuff is usually thinner than the older ice

37
00:02:29,860 --> 00:02:34,050
and because it has more salt, it’s usually weaker in its structure,

38
00:02:34,050 --> 00:02:38,090

so it’s easier to break up. For the older ice, this stuff’s

39
00:02:38,090 --> 00:02:42,280
usually a lot thicker, a lot fresher and stronger, so it has more resilience

40
00:02:42,280 --> 00:02:46,410
during the summer melt season than thinner ice.

41
00:02:46,410 --> 00:02:50,590
With the successful launch of ICESat-2, NASA scientists will link the records of sea ice