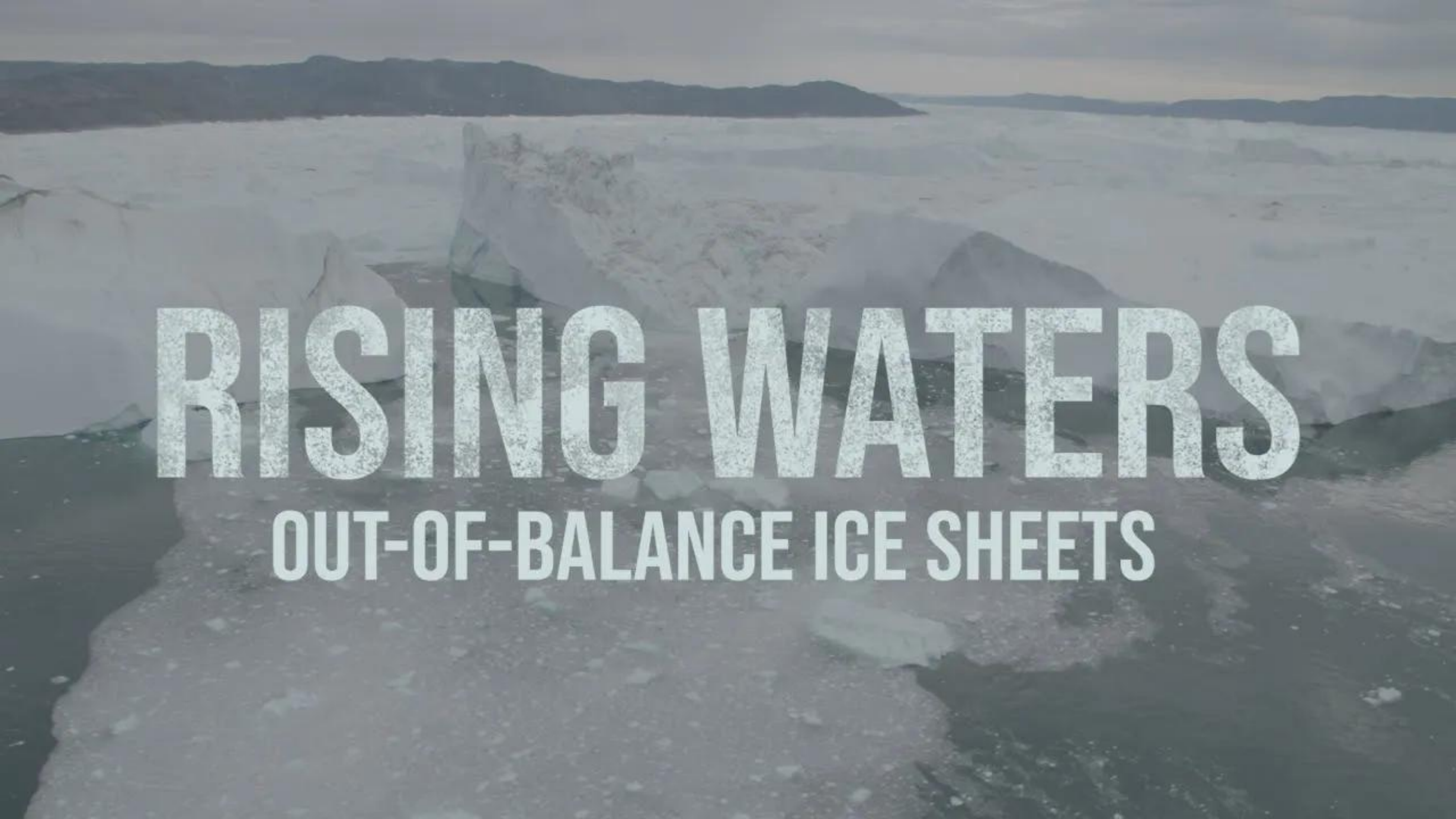
RISING WATERS
OUT-OF-BALANCE ICE SHEETS

1
00:00:00,000 --> 00:00:04,480
Greenland and Antarctica are home to most of the world's glacial ice

2
00:00:04,480 --> 00:00:08,680
that accumulates on land– including its only two ice sheets.

3
00:00:08,680 --> 00:00:11,600
That’s why scientists focus their energy here first

4
00:00:11,600 --> 00:00:14,940
when looking for answers about sea level rise.

5
00:00:14,940 --> 00:00:16,850
Here’s a concerning reality:

6
00:00:16,850 --> 00:00:19,990
Combined, the two regions contain enough ice,

7
00:00:19,990 --> 00:00:22,320
that if it were to melt all at once,

8
00:00:22,320 --> 00:00:26,430
sea levels would increase by nearly 215 feet.

9
00:00:29,710 --> 00:00:32,560
Rising Waters: Out-of-Balance Ice Sheets

10
00:00:32,560 --> 00:00:34,940
Now, that isn’t going to happen anytime soon,

11
00:00:34,940 --> 00:00:39,040
but even a few feet of sea level rise (much less 215)

12
00:00:39,040 --> 00:00:42,630
would be disastrous for the planet’s coastal communities.

13
00:00:42,630 --> 00:00:47,320

For most people, these processes are happening so far away

14
00:00:47,320 --> 00:00:51,070
that’s hard to imagine how melting at the poles even occurs.

15
00:00:51,070 --> 00:00:52,750
Let’s lay some groundwork:

16
00:00:52,750 --> 00:00:58,770
A healthy glacier is one that accumulates the same amount of snowfall and it loses.

17
00:00:58,770 --> 00:01:01,100
It’s a system in balance.

18
00:01:01,100 --> 00:01:05,920
Unfortunately, today’s glaciers and ice sheets are not in balance.

19
00:01:05,920 --> 00:01:08,050
Here’s what that actually looks like:

20
00:01:08,050 --> 00:01:12,100
In Greenland, when warm summer air melts the surface of a glacier,

21
00:01:12,100 --> 00:01:15,270
the meltwater drills holes down through the ice.

22
00:01:15,270 --> 00:01:18,080
It makes its way down to the bottom of the glacier

23
00:01:18,080 --> 00:01:20,800
where it runs between the ice and the bedrock,

24
00:01:20,800 --> 00:01:24,290
and eventually shoots out in a plume at the base of the glacier.

25
00:01:24,290 --> 00:01:28,250
The meltwater plume is lighter because it doesn't contain salt

26
00:01:28,250 --> 00:01:30,060
– it’s freshwater.

27
00:01:30,060 --> 00:01:31,890
It rises toward the surface,

28
00:01:31,890 --> 00:01:35,440
mixing warm, salty ocean water upward in the process.

29
00:01:35,440 --> 00:01:38,930
The warm water then rubs up against the bottom of the glacier,

30
00:01:38,930 --> 00:01:41,530
causing even more of the glacier to melt.

31
00:01:41,530 --> 00:01:43,710
This often leads to calving,

32
00:01:43,710 --> 00:01:47,760
where ice cracks and breaks off into large icebergs.

33
00:01:49,470 --> 00:01:53,510
In addition to melting caused by warm air and a warm ocean,

34
00:01:53,510 --> 00:01:57,920
Antarctica faces another challenge: the bedrock itself.

35
00:01:57,920 --> 00:02:03,530
Researches often split Antarctica into two regions: east and west.

36
00:02:03,530 --> 00:02:07,920
Unlike East Antarctica, the bedrock that makes up West Antarctica

37
00:02:07,920 --> 00:02:11,900
is below sea level, which means it’s actually underwater.

38
00:02:11,900 --> 00:02:16,080

Warmer water has an easier time seeping in between the continental shelf

39
00:02:16,080 --> 00:02:18,940
and the ice sheet, melting the ice from below.

40
00:02:18,940 --> 00:02:23,950
This causes the ice shelves to thin and break off into the ocean.

41
00:02:25,540 --> 00:02:30,610
Melting and ice loss have accelerated at both poles in recent years.