



1

00:00:04,770 --> 00:00:08,980

In 2018, NASA is dispatching two new satellite missions

2

00:00:09,000 --> 00:00:13,680

whose observations will include Earth's most critically changing regions – the poles.

3

00:00:14,650 --> 00:00:17,550

They're NASA's first new missions in 15 years that will

4

00:00:17,570 --> 00:00:20,920

measure how Earth's massive ice sheets are changing.

5

00:00:30,400 --> 00:00:34,090

Previously thought to be slow-moving and stable, the ice sheets covering

6

00:00:34,110 --> 00:00:39,100

Greenland and Antarctica have rapidly lost ice over the last several decades.

7

00:00:39,120 --> 00:00:42,430

As a result, scientists predict global sea level could be

8

00:00:42,450 --> 00:00:44,890

1 to 4 feet higher by 2100.

9

00:00:46,040 --> 00:00:48,310

This kind of significant change could increase the rate

10

00:00:48,330 --> 00:00:52,640

of warming already in progress and affect global weather patterns.

11

00:00:53,800 --> 00:00:58,350

But ice sheets aren't Earth's only frozen spots experiencing critical change.

12

00:00:58,370 --> 00:01:02,500

Ice sheets, sea ice, glaciers, permafrost, and snow cover

13

00:01:02,520 --> 00:01:05,320

are all showing signs of transformation.

14

00:01:05,340 --> 00:01:07,470

Collectively known as the “cryosphere”,

15

00:01:07,490 --> 00:01:12,260

these frozen zones help sustain stable conditions for life on Earth.

16

00:01:12,280 --> 00:01:14,520

However, rising temperatures worldwide

17

00:01:14,540 --> 00:01:19,870

are resulting in ice loss, global sea level rise, thawing permafrost, and more.

18

00:01:22,000 --> 00:01:26,640

This spring, NASA and the German Research Centre for Geosciences (GFZ)

19

00:01:26,660 --> 00:01:29,890

will launch GRACE-FO, continuing the revolutionary

20

00:01:29,910 --> 00:01:32,980

gravity measurements of its predecessor, GRACE.

21

00:01:33,000 --> 00:01:36,350

Designed to observe global surface mass changes,

22

00:01:36,370 --> 00:01:39,940

including land ice, sea level, and water on land,

23

00:01:39,960 --> 00:01:42,180

GRACE was the first satellite to confirm

24

00:01:42,200 --> 00:01:45,330

the shrinking of the Greenland and Antarctic ice sheets.

25

00:01:46,000 --> 00:01:49,300

In September, ICESat-2 will launch and use its advanced laser

26

00:01:49,320 --> 00:01:54,550

to measure the thickness of sea ice and the changing elevation of glaciers and ice sheets.

27

00:01:54,570 --> 00:01:58,850

The mission will provide scientists with a view of how the height of the ice sheets are changing,

28

00:01:58,870 --> 00:02:01,450

to within less than an inch.

29

00:02:01,470 --> 00:02:05,650

GRACE-FO and ICESat-2 will be NASA's newest "eyes in the sky"

30

00:02:05,670 --> 00:02:09,930

while an extensive field team of researchers collect complementary airborne and

31

00:02:09,950 --> 00:02:16,350

ground data about ice, snow, permafrost and the role the ocean plays in Earth's frozen regions.

32

00:02:16,880 --> 00:02:19,830

Working together, these new missions and campaigns will help