

An aerial photograph of a rugged coastline. The ocean is a deep, dark blue-green, with white foam from waves crashing against a rocky shore. The rocks are light-colored and jagged. The sky is dark and overcast.

RISING WATERS

OUR DYNAMIC EARTH

1
00:00:00,000 --> 00:00:01,840

[MUSIC]

2
00:00:01,840 --> 00:00:05,903

Across our planet, sea levels are on the rise.

3
00:00:06,916 --> 00:00:10,275

And while our changing climate is a huge driver,

4
00:00:10,275 --> 00:00:14,951

the movement of land, itself, is also an important factor.

5
00:00:15,997 --> 00:00:21,108

Around 20,000 years ago, ice sheets covered large areas of our planet,

6
00:00:21,650 --> 00:00:25,229

In many places, the weight of these massive ice sheets pressed down

7
00:00:25,229 --> 00:00:29,024

on the planet's crust and the viscous mantle underneath.

8
00:00:29,530 --> 00:00:32,198

This weight caused the surrounding land to rise,

9
00:00:32,198 --> 00:00:36,382

and the sea levels to fall relative to that rising land.

10
00:00:38,240 --> 00:00:40,866

Over time, these ice sheets began to retreat

11
00:00:40,866 --> 00:00:44,650

as part of Earth's natural cycle of glaciation and melt.

12
00:00:44,650 --> 00:00:48,083

and as a result, this land began to rebound.

13
00:00:48,083 --> 00:00:53,470

Land rose up, and previously uplifted land sank, or subsided,

14

00:00:53,470 --> 00:00:57,133

causing the sea level to rise relative to the ground.

15

00:00:57,680 --> 00:01:01,494

This adjustment of the land in many previously glaciated regions

16

00:01:01,494 --> 00:01:03,209

continues to this day,

17

00:01:03,209 --> 00:01:06,863

particularly in areas like the East Coast of the United States.

18

00:01:09,277 --> 00:01:12,473

Today, if we were to travel to a region like Greenland,

19

00:01:12,473 --> 00:01:16,389

where massive ice sheets are now retreating due to a changing climate,

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00:01:16,389 --> 00:01:20,912

we can see the land readjusting in the same way to the lessening load.

21

00:01:21,975 --> 00:01:25,570

This also alters the shape of corresponding ocean basins,

22

00:01:25,570 --> 00:01:30,062

leading to additional subsidence along coastlines.

23

00:01:30,284 --> 00:01:33,568

Subsidence also can result from human activity.

24

00:01:34,182 --> 00:01:40,000

For example, we can see that many coastal cities rely on underground aquifers for fresh water.

25

00:01:40,605 --> 00:01:44,719

However, when water is extracted, it causes sediment to compact

26

00:01:44,719 --> 00:01:46,995

and the ground above to subside.

27

00:01:46,995 --> 00:01:51,373

This leads to additional sea level rise for these communities.

28

00:01:53,608 --> 00:01:57,362

We live on a dynamic planet that is constantly in motion. \h\h