EXCERPT FROM...

Climate Change: Global Sea Level

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WHAT'S CAUSING SEA LEVEL TO RISE?

Global warming is causing global mean sea level to rise in two ways. First, glaciers and ice sheets worldwide are melting and adding water to the ocean. Second, the volume of the ocean is expanding as the water warms. A third, much smaller contributor to sea level rise is a decline in the amount of liquid water on land—aquifers, lakes and reservoirs, rivers, soil moisture. This shift of liquid water from land to ocean is largely due to groundwater pumping.

Pedersen Glacier, at Aialik Bay in Alaska's Kenai Mountains, in 1917 (left) and 2005 (right).

In the early 20th century, the glacier met the water and calved icebergs into a marginal lake near the bay. By 2005, the glacier had retreated, and the lake had become a small grassland. Photos courtesy of Louis H. Pedersen (1917) and Bruce F. Molina (2005), obtained from the Glacier Photograph Collection, Boulder, Colorado USA: National Snow and Ice Data Center/World Data Center for Glaciology. **Large images:** 1917 | 2005

From the 1970s up through the last decade or so, melting and heat expansion were contributing roughly equally to observed sea level rise. But the melting of mountain glaciers and ice sheets has accelerated:

The decadal average loss from glaciers in the World Glacier Monitoring Service's reference network quintupled over the past few decades, from the equivalent of 6.7 inches (171 millimeters) of liquid water in the 1980s, to 18 inches (460 millimeters) in the 1990s, to 20 inches (-500 millimeters) in the 2000s, to 33 inches (850 millimeters) for 2010-2018.

Ice loss from the Greenland Ice Sheet increased seven-fold from 34 billion tons per year between 1992-2001 to 247 billion tons per year between 2012 and 2016.

Antarctic ice loss nearly quadrupled from 51 billion tons per year between 1992 and 2001 to 199 billion tons per year from 2012-2016.

As a result, the amount of sea level rise due to melting (with a small addition from groundwater transfer and other water storage shifts) from 2005–2013 was nearly twice the amount of sea level rise due to thermal expansion.

Melt streams on the Greenland Ice Sheet on July 19, 2015. Ice loss from the Greenland and Antarctic Ice Sheets as well as alpine glaciers has accelerated in recent decades. NASA photo by Maria-José Viñas.

Read the entire article at:
https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level