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Greenland's Melting Ice Sheet May Speed Rise in Sea Level

Study Finds No Boost in Antarctic Snowfall to Mitigate Problem

By Juliet Eilperin
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Two new scientific studies measuring Greenland's rapidly melting ice sheet and the pace of Antarctic snowfall suggest that the sea level may be rising faster than researchers previously assumed.

The papers, both published yesterday in the journal *Science*, provide the latest evidence of how climate change is transforming the global landscape. University of Texas at Austin researchers, using twin satellites, determined that the Greenland ice sheet, Earth's second-largest reservoir of fresh water, is melting at three times the rate at which it had been melting over the previous five years. A separate study by 16 international scientists concluded that Antarctic snowfall accumulation has remained steady over the past 50 years, with no increases that might have mitigated the melting of the ice shelf, as some researchers had assumed would occur.

Taken together, the two reports indicate that global sea level rise may increase more rapidly in the coming years, though the Greenland study is based on only 2 1/2 years of data. The melting of 57 cubic miles a year from Greenland's ice sheet could add 0.6 millimeters alone, which is higher than any previously published measurement for Greenland, according to University of Texas Center for Space Research scientist Jianli Chen.

"It's a very big number," Chen said, noting that for at least a hundred years the sea level has increased an average of 1.8 millimeters annually.

Byron Tapley, one of Chen's co-authors, said the ice loss along the sheet's eastern shoreline is particularly significant because it could help weaken the counterclockwise flow of the North Atlantic Current. The more buoyant fresh water from the ice melt could lower water temperatures and ultimately make Western European winters colder, he said.

"If enough fresh water enters the Norwegian Current and you interrupt return flow, then there could be climate effects in Europe," Tapley said.

But Myron Ebell, director of energy and global warming policy at the libertarian Competitive Enterprise Institute, questioned why scientists are drawing broad conclusions from data covering such a short time span.

"We now have 'the sky is falling down' on the basis of a few years of data," said Ebell, whose group is partly funded by the fossil-fuel industry.

The second paper, written by 16 scientists from seven countries, challenges computer projections that higher temperatures in the southernmost continent will spur greater snowfall accumulation and compensate for the world's melting ice sheets. Using satellite data that looked at both the West and East Antarctic ice sheets, the researchers concluded there has been no real increase in precipitation in the region in the past five decades.

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Andrew J. Monaghan, a meteorologist at Ohio State University's Byrd Polar Research Center, said in an interview that his findings suggest the Intergovernmental Panel on Climate Change's 2001 prediction that Antarctic snowfall would increase 15 to 20 percent by the end of the century may not be borne out. Some researchers had hoped increased snowfall in the region would thicken the Antarctic ice sheets and help counterbalance any future melt.

"It's a much more complex situation than assuming a temperature rise is going to lead to a commensurate increase in precipitation," Monaghan said.

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