Greenland's ice loss is accelerating, satellite studies suggest

By Dan Vergano, USA TODAY
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Greenland is shedding ice at an increasing rate, about three times faster than past years, satellite measurements suggest.

The findings, based on more than three years of observations, echo data released earlier this year. Taken with related reports from Antarctica, the study suggests global warming may be accelerating an increase in sea levels.

Greenland's ice sheet holds about 10% of the world's glacial ice, nearly 600,000 cubic miles of it, enough to raise sea levels more than 20 feet worldwide if it all melted.

"We've found an independent technique to confirm accelerated melting at Greenland," says study lead author Jianli Chen of the University of Texas at Austin.

Chen's team used data from NASA's twin Gravity Recovery and Climate Experiment satellites from 2002 to 2005. A drop in Greenland's gravitational pull on the sensitive satellites suggests the Greenland Ice Sheet has been shrinking about 57 cubic miles a year since 2004, a threefold increase in ice-loss rates since 1996.

Basically acting like an immense, melting ice cube, Greenland has less mass now, which means the satellites feel less of a gravitational pull from the island as they pass overhead. The findings, reported in the journal Science, fall close to an estimate made in February from NASA and European radar satellite data.

"At first these results were surprising. Now we have some confirmation," says climate expert Jonathan Overpeck of the University of Arizona in Tucson.

An international climate panel report in 2001 estimated that increasing atmospheric temperatures worldwide might lead to a rise in sea levels of 2 feet or more by 2100. Warmer temperatures raise sea levels by melting glacier ice and causing the thermal expansion of ocean waters.

Overpeck says accelerating ice-sheet melting in Greenland and Antarctica might lead to even higher rates of sea level rise, perhaps 3 feet a century by 2100.
Adding to the concern, another report in *Science* finds that snowfall is not increasing in Antarctica, a projected result of global warming.

One climate expert, Ian Joughin of the University of Washington in Seattle, agreed with the study's detection of increased Greenland melting but was dubious about one finding: of high melting rates in the island's chilly northeastern corner.

"Comparing images over this period, I can see some change, but nothing that large," he said by e-mail.