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Greenland's ice sheet is melting faster than ever, data shows



Hannah Devlin

Greenland's ice sheet is melting at an accelerating pace, according to the most detailed observations to date. Until now scientists had been unable to establish whether the loss of the ice sheet had speeded up significantly since the 1990s. Using two independent measurement techniques, the latest study reveals that the melting accelerated rapidly over the period 2000-2008.

If the acceleration of melting continues at the same rate, the sea level from Greenland's ice alone would rise by 40cm by the end of the century. If the melting continues at a steady pace — the best-case scenario according to Met Office predictions — Greenland ice will contribute an 18cm rise in sea level.

The Greenland ice sheet contains enough water to cause a global sea level rise of seven metres.

The study, published in the journal *Science*, used two types of satellite observations to make year-by-year measurements. The ice sheet lost about 1500 gigatons (thousand million tonnes), from 2000 to 2008, which represents a rate of sea level rise of about 0.46mm per year from 2000-2008. The annual rate for the period 2006-2008 was much higher, about 0.75mm.

The figures were calculated by measuring the difference between the total snowfall and the total loss of ice through glacier melting. The results were then confirmed via a second measurement based on detailed observations of changes in the Earth's gravitational field. When ice sheets melt, the local gravitational pull lessens slightly by an amount depending on how much mass is lost. The two methods gave results that were in very close agreement.

Professor Jonathan Bamber, from the University of Bristol and an author of the paper, said the team were surprised by the rate of increase. "It is clear from these results that mass loss from Greenland has been accelerating since the late 1990s.

"The underlying causes suggest this trend is likely to continue in the near future," he said. "We have produced agreement between two totally independent estimates, giving us a lot of confidence in the numbers."

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