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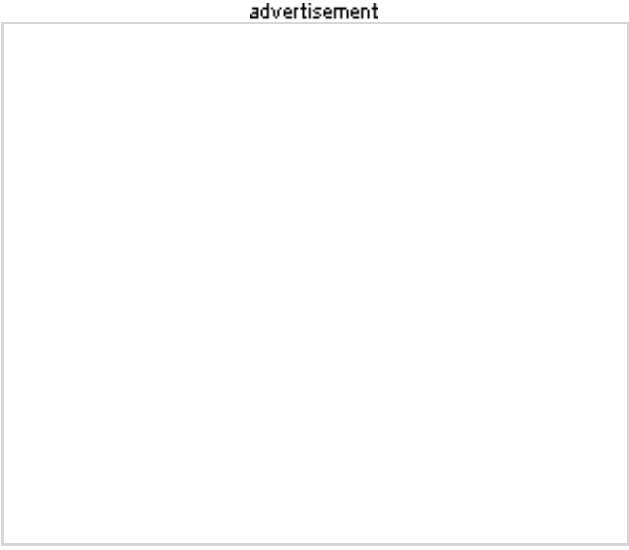
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Antarctic ice sheet is shrinking, but only by a fraction

By Roger Highfield, Science Editor
(Filed: 03/03/2006)

The Antarctic ice sheet, which holds 70 per cent of the world's fresh water, is shrinking at a rate of 36 cubic miles a year, according to a study carried out by satellites.



Previously it was thought that the 6,500ft-thick blanket of ice covering 98 per cent of Antarctica - a continent twice the size of Australia - was gaining more mass than it was losing.

This was predicted to happen as precipitation increased in a warming climate. But now sophisticated new measurements made by two satellites have shown that the ice sheet is melting.

The volume of ice lost is enough to raise the global sea level by 0.4 millimetres a year. Most of the loss is from the West Antarctic ice sheet, which is eight times smaller than the East Antarctic ice sheet.

It is still only a tiny amount of the ice sheet: if the West Antarctic ice sheet were to melt entirely, the level of the oceans would rise by more than 20ft.

The new findings, which are reported today in Science magazine, emerge from gravity measurements made by the two Grace (Gravity Recovery and Climate Experiment) satellites between April 2002 and August 2005.

Variations in the Earth's gravitational field over time can be used to detect alterations in the distribution of its mass. This in turn provides a sensitive way of tracking changes in the mass of the ice sheet.

"Grace has some real advantages over the other methods of looking at ice-sheet mass balance," said Prof David Vaughan of the British Antarctic Survey, Cambridge. "For example, it can 'see' the entire ice sheet."

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However, he said that corrections had to be applied to the signal for this method to work and that the accuracy of the final assessment of ice-sheet mass balance depended on how accurate these corrections were.

The Grace satellites were launched in 2002 by Nasa, the American space agency, and Germany. They orbit the Earth 16 times a day at an altitude of 310 miles, flying exactly 137 miles apart.

The constant gap between the satellites allows them to measure tiny variations in the Earth's gravitational field caused by regional changes in the planet's mass, including such things as ice sheets, oceans, water stored in the soil and in underground aquifers.

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