

2 March 2006 19:44

Melting Antarctic raising sea levels

By Steve Connor, Science Editor

Published: 03 March 2006

More evidence has emerged indicating the Antarctic ice sheet is melting so fast it is contributing to a rise in global sea levels.

The first satellite study of the continent's ice inventory has revealed that Antarctica is releasing around 35 cubic miles of water into the sea each year.

This is equivalent to an increase in global sea level of about 0.4mm a year. This would account for between 20 and 50 per cent of the average rise seen each year for the past century.

The findings suggest that the Intergovernmental Panel on Climate Change, which in its 2001 assessment assumed that Antarctica was not contributing to sea level rise, will have to review its position.

"This is the first study to indicate the total mass balance of the Antarctic ice sheet is in significant decline," said Isabella Velicogna of the University of Colorado at Boulder.

"The overall balance of the Antarctic ice is dependent on regional changes in the interior and those in the coastal areas. The changes we are seeing are probably a good indicator of the changing climatic conditions there," she said.

The study, published in the journal *Science*, results from a new way of investigating Antarctica's ice sheet by measuring changes in the gravitational pull of the continent - which corresponds to the total mass of its ice sheet - on a pair of orbiting satellites.

Until now satellites have concentrated on making accurate measurements of changes to the height of the ice sheet, or by taking images of the surface area of the ice shelves and floating sea ice fringing the continent's coast.

Scientists involved in the latest gravity recovery and climate experiment (Grace) used two satellites, launched in 2002, to measure small perturbations in gravity and hence variations in the total mass of the ice sheet.

The satellites orbit the poles at a distance of 137 miles from one another. A change in gravity due to a change in thickness of the ice sheet below is detected by small changes in the distance between the satellites. Scientists said that they can detect changes in distance between the Grace satellites equivalent to one fiftieth of the diameter of a human hair.