## Antarctic Glaciers Falling Faster Into the Ocean

**New Scientist** - Fred Pearce - The edges of the Antarctic ice sheets are slipping into the ocean at an unprecedented rate, raising fears of a global surge in sea levels, glaciologists warned on Monday.

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**Antarctic glaciers calving faster into the ocean**
**Fred Pearce**

NewScientist.com news service
18 October 2005

The findings confound predictions made just four years ago, by the UN's Intergovernmental Panel on Climate Change (IPCC), that Antarctica would not contribute significantly to sea level rise in the 21st century.

In one area, around the Amundsen Sea in West Antarctica, glaciers are dumping more than 110 cubic kilometres of ice into the ocean each year, Eric Rignot of NASA's Jet Propulsion Laboratory in California, US, told a meeting at the Royal Society in London, UK. This loss, which is increasing each year, is many times faster than the ice can be replaced by snowfall inland, he says.

The impending ice disaster centres on Pine Island Bay on the shores of the Amundsen Sea, where the Pine Island and Thwaites glaciers enter the sea. These glaciers, like many in West Antarctica, are perched on underwater mountains. The meeting heard that warmer ocean waters are circulating beneath the ice and melting their bases at a rate of 50 metres a year.

As this happens, the glaciers float clear of the submarine mountains and slide into the ocean. According to Andy Shepherd at the University of Cambridge, UK, they are discharging ice three times faster than a decade ago. These glaciers are being dubbed the "plug hole" of the West Antarctic Ice Sheet. If the Pine Island and Thwaites glaciers disappeared, they alone could raise sea levels worldwide by more than a metre, says Rignot.

### Corks from bottles

Antarctic glaciers are much bigger than those in warmer climates. They are up to a kilometre thick, tens of kilometres wide and hundreds of kilometres long. Connected to inland ice tributaries, they drain the continent's ice caps, which are the largest stores of frozen water on the planet. In many places, the glaciologists reported that the recent acceleration in glacier flows has been triggered by the break-up of a series of floating ice shelves at the continent's edge. These shelves acted like a cork in a bottle, holding back the glaciers.

After the Larsen B ice shelf - a 3000 square kilometre floating slab of ice - broke up over three days in 2002, glaciers behind it afterwards accelerated eight-fold. "The ice mass balance of Antarctica is controlled by these ice shelves," says Rignot, who believes Antarctica is now responsible for the majority of global sea level rise.

Researchers also warned that the larger East Antarctic Ice Sheet is not as stable as thought. A recent study suggested that it might be accumulating  snow in its high interior - possibly supporting the IPCC's predictions - but it warned that little was known about events on the coast (Science, vol 308, p 1898).

Rignot revealed that several major coastal glaciers in the east are now known to be accelerating, like their counterparts to the west.

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