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Antarctica Ice Loss Faster Than Ten Years Ago

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for [National Geographic News](#)

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The western part of [Antarctica](#) is shedding ice much faster today than it was just ten years ago, according to new satellite measurements.

The measurements, which surveyed the coasts of nearly the entire continent, suggest that climate models underestimate how quickly Antarctica responds to ongoing [global warming](#), said study co-author Jonathan Bamber of the University of Bristol in England.

Many past studies have tried to estimate how much ice Antarctica is losing.

(Related: ["Hundreds of Glaciers Melting Faster in Antarctica"](#) [June 6, 2007].)

But the new study is the first to show that this loss is accelerating, at least in western Antarctica and the Antarctic Peninsula, the researchers say.

"In all the ice sheet models we have at present for Antarctica, things happen very slowly," Bamber said.

"[But] we're seeing things happen rather quickly."

They found that for Antarctica overall, the ice loss increased about 75 percent over the ten-year period, from 112 gigatons of ice per year in 1996 to 196 gigatons of ice per year in 2006.

As to whether Antarctica will lose or gain ice as global warming proceeds, the measurements disagree with existing climate models that suggest "[the ice sheet] is going to get bigger because of increased snowfall with warming temperatures," Bamber said.

"We don't see that. We see the ice sheet losing mass," he said. "So there's a bit of a paradigm shift in what the ice sheet has done recently and what it could do in the future."

Scientists are concerned the melting ice will contribute to a dangerous sea level rise.

Ice Losses

The rate of glaciers and basins dumping ice into the ocean have increased over the past decade, according to the study published in yesterday's issue of the journal *Nature Geoscience*.

(Related: ["Small Melting Glaciers Will Speed Sea Level Rise, Study Says"](#) [July 19, 2007].)

The researchers used measurements from European, Canadian, and Japanese satellites, which scanned about 85 percent of Antarctica's coasts from 1996 to 2006.

The results showed that most of the ice is being lost through a few fast-flowing glaciers and basins.

"We can pinpoint with a lot of precision exactly where the losses are taking place and the characteristics of those

losses," Bamber said.

The new study also covers a longer period of time than past research efforts.

The research method, called radar interferometry, measured how quickly ice was flowing. It also captured how thick the ice was at the grounding point, which is where the ocean causes ice to lift off the land and start floating.

The "most likely explanation" for the increased ice loss is that warming waters are melting away ice at the grounding point, according to Bamber.

"That's causing the buttressing effect of the ice shelves to be less [effective], and that's allowing the glaciers to flow faster into the ocean," he said.

Eric Rignot of NASA's Jet Propulsion Laboratory in Pasadena, California, is the lead study author.

"The climate models neglected changes in speeds of glaciers," Rignot said. "It turns out that is the main control on the ice mass balance."

"The ice loss we see is going to continue, and it's going to grow" because the oceans around Antarctica are expected to warm, Rignot added.

Uncertain Future

The new study "tells us that the glaciers are losing more mass, which is one part of the total mass change," said Andrew Shepherd of the University of Edinburgh in Scotland.

However Shepherd, who was not involved in the new research, argued that it's not clear whether Antarctica is actually losing more ice now than it did ten years ago, and what the future will hold.

"What we still don't know is the total mass change [over that period], because we don't know how much extra snow has fallen there," Shepherd said.

This snowfall in inland Antarctica is the main unknown in these estimates, Bamber agrees. But they say their method has been able to get a better estimate of the snowfall than earlier studies. (Related: ["Antarctica Snowfall Not Curbing Sea Level Rise, Study Says"](#) [August 11, 2006].)

The problem is that people rarely go to the interior of Antarctica, and measurements of snowfall are sparse.

But an upcoming project will take measurements on the ground and should help settle the matter, Bamber said. Also, improving how climate models treat the dynamic nature of glaciers and ice sheets is crucial, experts say.

The head of the UN Intergovernmental Panel of Climate Change recently called for improvements in estimates of ice loss in Greenland and Antarctica.

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