

Even Antarctica is now feeling the heat of climate change

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It's official: there is nowhere left to hide from global warming. The notion that Antarctica is the last continent not to be heating up because of climate change is dead, according to a new study.

The results suggest that the southernmost continent is warming roughly as fast as the rest of the planet. They overturn previous suggestions that only the Antarctic peninsula, which stretches points north towards South America, was heating up while the continent's interior cooled.

When the Intergovernmental Panel on Climate Change published its 2007 report, it declared: "it is likely there has been significant anthropogenic warming over the past 50 years averaged over each continent (except Antarctica)".

The exception wasn't made because there was proof that Antarctica was cooling, says Gareth Williams of the British Antarctic Survey, but because there was not sufficient proof that the continent was warming. Since then, data from isolated parts of the seventh continent have confirmed Antarctica is not immune to global warming.

And now, Eric Steig of the University of Washington, Seattle, and colleagues have used satellite data covering the entire continent to show that on average the entire continent warmed by 0.5°C between 1957 and 2006. On average, the planet has warmed 0.6°C in 50 years.

Sparse data

The majority of weather stations on Antarctica sit around the coast, with only two providing an unbroken record from the continent's interior. Steig and colleagues overcame this lack of data by using satellite data and statistical techniques to fill in the gaps.

"Eric has done a very clever analysis with extremely sparse data," says David Vaughan of the British Antarctic Survey, whose scientists were not part of the study.

The results (see map) show that the continent is not warming uniformly. Temperatures on the West Antarctica ice sheet, which includes the Antarctic peninsula and is as large as California, Texas, Alaska and Kansas put together, are rising much faster than in East Antarctica.

Climate model simulations provided clues about the cause of the warming, and point to the decline in regional sea ice cover and atmospheric circulation. "It is almost certain that greenhouse gases are contributing to the warming but from this data it is difficult to say how much," says Steig.

Fragile ice sheets

The west Antarctic ice sheet more likely to collapse, causing global sea levels to

rise, than the east Antarctica ice sheet - in 2002 the Larsen B ice shelf virtually vanished and the Wilkins ice shelf is currently teetering on the edge of collapse. [Movie Camera](#).

However, Vaughan cautions that Steig's results do not mean the ice is even more fragile than previously thought. "If you change surface temperatures from  $-50^{\circ}\text{C}$  to  $-40^{\circ}\text{C}$  it makes no difference to the ice," he says. Antarctic ice shelves are breaking up because of rises in sea surface temperatures, not air temperatures.

Vaughan was speaking from Antarctica where he and his colleagues are monitoring the Wilkins ice sheet. "Frankly, most of us are surprised that it is still here," he told *New Scientist*, "but there was a lot of snow this year". The team have placed a GPS receiver on the ice shelf to track its movements but Vaughan says they expect it to disappear by the end of the austral summer.

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