

Floating Antarctic ice goes from record high to record lows

July 1 2019, by Seth Borenstein



This January 2017 photo provided by Ted Scambos shows sea ice on the ocean surrounding Antarctica during an expedition to the Ross Sea. Ice in the ocean off the southern continent steadily increased from 1979 and hit a record high in 2014. But three years later, the annual average extent of Antarctic sea ice hit its lowest mark, wiping out three-and-a-half decades of gains, and then some, according to a study in the *Proceedings of the National Academy of Sciences* on

Monday, July 1, 2019. (Ted Scambos/National Snow and Ice Data Center via AP)

The amount of ice circling Antarctica is suddenly plunging from a record high to record lows, baffling scientists.

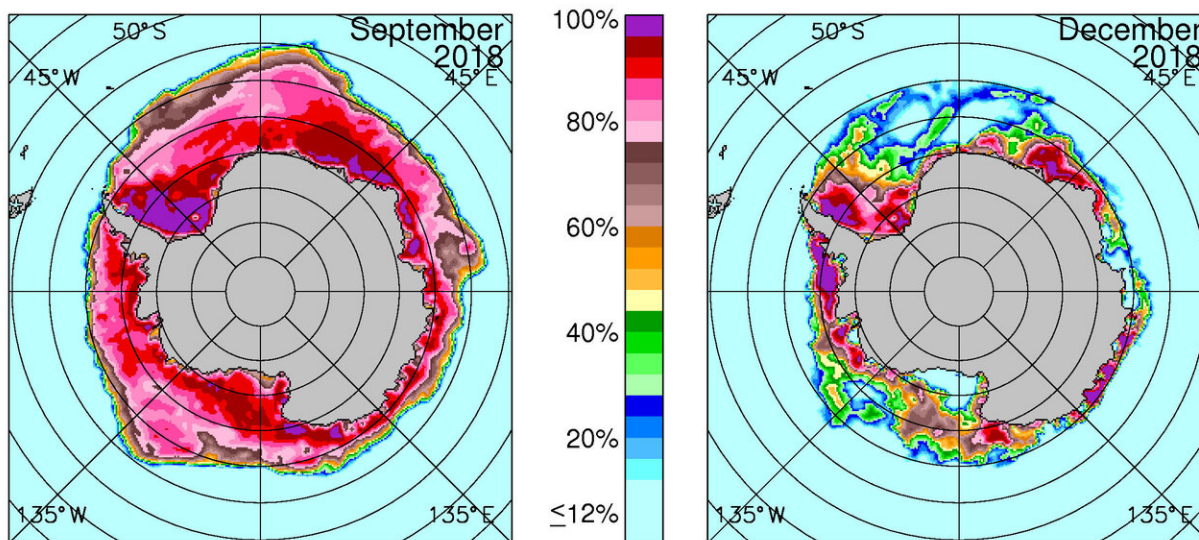
Floating ice off the southern continent steadily increased from 1979 and hit a record high in 2014. But three years later, the annual average extent of Antarctic sea ice hit its lowest mark, wiping out three-and-a-half decades of gains—and then some, a NASA study of satellite data shows.

In recent years, "things have been crazy," said Mark Serreze, director of the National Snow and Ice Data Center. In an email, he called the plummeting ice levels "a white-knuckle ride."

Serreze and other outside experts said they don't know if this is a natural blip that will go away or more long-term global warming that is finally catching up with the South Pole. Antarctica hasn't showed as much consistent warming as its northern Arctic cousin.

"But the fact that a change this big can happen in such a short time should be viewed as an indication that the Earth has the potential for significant and rapid change," University of Colorado ice scientist Waleed Abdalati said in an email.

At the [polar regions](#), ice levels grow during the winter and shrink in the summer. Around Antarctica, sea ice averaged 4.9 million square miles (12.8 million square kilometers) in 2014. By 2017, it was a record low of 4.1 million square miles (10.7 million square kilometers, according to the study in Monday's *Proceedings of the National Academy of Sciences*.



Antarctic sea ice concentrations in September 2018, at the annual maximum monthly ice extent (left), and December 2018, well into the decay season (right). Credit: Claire L. Parkinson and Nick DiGirolamo (NASA Goddard Space Flight Center, Greenbelt, MD).

The difference covers an area bigger than the size of Mexico. Losing that much in just three years "is pretty incredible" and faster than anything scientists have seen before, said study author Claire Parkinson, a NASA climate scientist. Antarctic sea ice increased slightly in 2018, but still was the second lowest since 1979. Even though ice is growing this time of year in Antarctica, levels in May and June this year were the lowest on [record](#), eclipsing 2017, according to the [ice data center](#).

Ice melting on the ocean surface doesn't change sea level. Non-scientists who reject mainstream climate science often had pointed at increasing Antarctic sea ice to deny or downplay the loss of Arctic sea ice.

While the Arctic has shown consistent and generally steady warming and

ice melt—with some slight year to year variation—Antarctica has had more ups and downs while generally trending upward. That is probably in part due to geography, Parkinson and Serreze said.

The Arctic is a floating ice cap on an ocean penned in by continents. Antarctica is just the opposite, with land surrounded by open ocean. That allows the ice to grow much farther out, Parkinson said.

When Antarctic sea ice was steadily rising, scientists pointed to shifts in wind and pressure patterns, ocean circulation changes or natural but regular climate changes like El Nino and its southern cousins. Now, some of those explanations may not quite fit, making what happens next still a mystery, Parkinson said.

More information: A 40-y record reveals gradual Antarctic sea ice increases followed by decreases at rates far exceeding the rates seen in the Arctic, *Proceedings of the National Academy of Sciences* (2019). www.pnas.org/cgi/doi/10.1073/pnas.1906556116

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Citation: Floating Antarctic ice goes from record high to record lows (2019, July 1) retrieved 17 July 2024 from <https://phys.org/news/2019-07-antarctic-ice-high-lows.html>

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