



Research News

Warming at the poles will have global consequences

New study reveals how rapidly the Arctic, Antarctic are warming

NSF-funded researchers have studied the global consequences of polar warming.

[Credit and Larger Version \(/discoveries/disc_images.jsp?cntn_id=299694&org=NSF\)](#)

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With 2019 on pace to be one of the warmest years on record, a new study by an international team of researchers reveals how rapidly the Arctic and Antarctic are warming and examines the global consequences of continued polar warming.

The NSF-funded [study](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1637708&HistoricalAwards=false), led by scientists at the University of California, Davis, and published in the journal *Science Advances* ([/cgi-bin/good-bye?https://advances.sciencemag.org/content/5/12/eaaw9883](https://advances.sciencemag.org/content/5/12/eaaw9883)), reports that the Arctic has warmed by 0.75 degrees Celsius in the last decade alone. By comparison, it took Earth as a whole 137 years to warm by nearly the same amount, 0.8 degrees Celsius. In contrast, Antarctic temperatures have remained relatively stable over the past two decades, although year-to-year and decade-to-decade variation in temperatures have increased.

"The poles are connected to the rest of the Earth, and what happens at the poles has consequences for weather and sea level around the world," said Michael Gooseff, a scientist at the [University of Colorado Boulder](https://www.colorado.edu/today/2019/12/04/warming-poles-will-have-global-consequences) ([/cgi-bin/good-bye?https://www.colorado.edu/today/2019/12/04/warming-poles-will-have-global-consequences](https://www.colorado.edu/today/2019/12/04/warming-poles-will-have-global-consequences)) and co-author of the new study.

Added lead author Eric Post, a UC Davis ecologist, "Many of the changes over the past decade are so dramatic they make you wonder what the next decade of warming will bring. If we haven't already entered a new Arctic, we are certainly on the threshold."

Extensive loss of sea ice in the Arctic will likely accelerate, further threatening oceanic ecosystems and productivity, and amplifying weather extremes at lower latitudes.

"This study highlights the magnitude and scope of potential air, ice, land and ecosystem changes under what, for many, might seem like a relatively small increase in global temperature," says Jennifer Burns, a program director in NSF's Office of Polar Programs. "Studies such as this highlight the need for long-term and multidisciplinary research, as well as international cooperation in the development of scientific, management, and conservation plans for the polar regions."

The research was conducted in part at NSF's [McMurdo Dry Valleys](http://mcm.lternet.edu/) ([/cgi-bin/good-bye?http://mcm.lternet.edu/](http://mcm.lternet.edu/)) Long-Term Ecological Research site in Antarctica, with additional work throughout the Arctic, and in association with NSF's efforts to improve undergraduate STEM education.

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