

Science News

Melting Sea Ice Major Cause of Warming in Arctic, New Study Reveals

ScienceDaily (Apr. 28, 2010) — Melting sea ice has been shown to be a major cause of warming in the Arctic according to a University of Melbourne, Australia study.



New research has found that melting sea ice is a major cause of warming in the Arctic. (Credit: iStockphoto/Robert Becker)

Findings published in *Nature* reveal the rapid melting of sea ice has dramatically increased the levels of warming in the region in the last two decades.

Lead author Dr James Screen of the School of Earth Sciences at the University of Melbourne says the increased Arctic warming was due to a positive feedback between sea ice melting and atmospheric warming.

"The sea ice acts like a shiny lid on the Arctic Ocean. When it is heated, it reflects most of the incoming sunlight back into space. When the sea ice melts, more heat is absorbed by the water. The warmer water then heats the atmosphere above it. "

"What we found is this feedback system has warmed the atmosphere at a faster rate than it would otherwise," he says.

Using the latest observational data from the European Centre for Medium-Range Weather Forecasting, Dr Screen was able to uncover a distinctive pattern of warming, highly consistent with the loss of sea ice.

"In the study, we investigated at what level in the atmosphere the warming was occurring. What stood out was how highly concentrated the warming was in the lower atmosphere than anywhere else. I was then able to make the link between the warming pattern and the melting of the sea ice."

The findings question previous thought that warmer air transported from lower latitudes toward the pole, or changes in cloud cover, are the primary causes of enhanced Arctic warming.

Dr Screen says prior to this latest data set being available there was a lot of contrasting information and inconclusive data.

"This current data has provided a fuller picture of what is happening in the region," he says.

Over the past 20 years the Arctic has experienced the fastest warming of any region on the planet. Researchers around the globe have been trying to find out why.

Researchers say warming has been partly caused by increasing human greenhouse gas emissions. At the same time, the Arctic sea ice has been declining dramatically. In summer

2007 the Arctic had the lowest sea ice cover on record. Since then levels have recovered a little but the long-term trend is still one of decreasing ice.

Professor Ian Simmonds, of the University's School of Earth Sciences and coauthor on the paper says the findings are significant.

"It was previously thought that loss of sea ice could cause further warming. Now we have confirmation this is already happening."

Story Source:

Adapted from materials provided by [University of Melbourne](#), via [EurekAlert!](#), a service of AAAS.

Journal Reference:

1. James A. Screen, Ian Simmonds. **The central role of diminishing sea ice in recent Arctic temperature amplification.** *Nature*, 2010; 464 (7293): 1334 DOI: [10.1038/nature09051](https://doi.org/10.1038/nature09051)