

Permafrost thawing could accelerate global warming, research says

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Permafrost peatbog border. Storflaket, Abisko, Sweden. Credit: Dentren/Wikipedia

A team of researchers lead by Florida State University have found new evidence that permafrost thawing is releasing large quantities of greenhouse gases into the atmosphere via plants, which could accelerate

warming trends.

The research is featured in the newest edition of the *Proceedings of the National Academy of Sciences*.

"We've known for a while now that permafrost is thawing," said Suzanne Hodgkins, the lead author on the paper and a doctoral student in chemical oceanography at Florida State. "But what we've found is that the associated changes in [plant community composition](#) in the [polar regions](#) could lead to way more carbon being released into the atmosphere as [methane](#)."

Permafrost is soil that is frozen year round and is typically located in polar regions. As the world has gotten slightly warmer, that permafrost is thawing and decomposing, which is producing increased amounts of methane.

Relative to [carbon dioxide](#), methane has a disproportionately large global warming potential. Methane is 33 times more effective at warming the Earth on a mass basis and a century time scale relative to carbon dioxide.

As the plants break down, they are releasing carbon into the atmosphere. And if the permafrost melts entirely, there would be five times the amount of carbon in the atmosphere than there is now, said Jeff Chanton, the John Widmer Winchester Professor of Oceanography at Florida State.

"The world is getting warmer, and the additional release of gas would only add to our problems," he said.

Chanton and Hodgkins' work, "Changes in peat chemistry associated with permafrost thaw increase greenhouse gas production," was funded by a three-year, \$400,000 Department of Energy grant. They traveled to

Sweden multiple times to collect soil samples for the study.

The research is a multicontinent effort with researchers from North America, Europe and Australia all contributing to the work.

More information: Changes in peat chemistry associated with permafrost thaw increase greenhouse gas production, *PNAS*, www.pnas.org/cgi/doi/10.1073/pnas.1314641111

Provided by Florida State University

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