

# Northern Canada feels the heat: Climate change impact on permafrost zones

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Permafrost zones extend over 50% of Canada's land area. Warming or thawing of permafrost due to climate change could significantly impact existing infrastructure and future development in Canada's north.

Researchers Jennifer Throop and Antoni Lewkowicz at the University of Ottawa, along with Sharon Smith with the Geological Survey of Canada, have published a new study, part of an upcoming special issue of the *Canadian Journal of Earth Sciences* (CJES), that provides one of the first summaries of climate and ground temperature relations across northern Canada.

Dr. Christopher Burn, Editor of the CJES special issue on fundamental and applied research on permafrost in Canada, says the study by Throop, Lewkowicz, and Smith is unusual because it presents data on permafrost throughout Canada's three northern territories. Most previous reports have concentrated on restricted regions within the North, but this paper presents conditions at the continental scale. This summary shows the factors that govern the response of permafrost to climate change, and indicates how the emphasis on snow conditions, soil moisture conditions, and surface peat and [moss](#) varies across the North.

"This important research gives strategic assistance in projecting how permafrost may change with the climate, as it pinpoints important characteristics, and demonstrates how these vary from place to place," says Burn. "The response of [permafrost](#) to [climate change](#) is a critical factor [Canadians](#) must anticipate if our northern infrastructure is to be adapted to thawing ground."

**More information:** Throop, J., Lewkowicz, A.G., and Smith, S.L. Climate and ground temperature relations at sites across the continuous and discontinuous permafrost zones, northern Canada *Canadian Journal of Earth Sciences*, 49: 1. [DOI:10.1139/E11-075](https://doi.org/10.1139/E11-075)

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