

Subarctic lakes are drying up at a rate not seen in 200 years

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Desiccated lakes in Wapusk National Park near Churchill, Manitoba (Canada) are shown. Desiccation of shallow lakes has occurred recently in response to lower-than-average snowmelt runoff. This phenomenon appears unprecedented over the last 200 years. Credit: Hilary White

The decrease in snowfall observed in recent years in Canada's subarctic regions has led to worrisome desiccation of the regions' lakes. This is the

conclusion arrived at by researchers from Université Laval, Wilfrid Laurier University, Brock University and the University of Waterloo in a study published this week on the website of the scientific journal *Geophysical Research Letters*.

Researchers came to this conclusion after studying 70 lakes near Old Crow, Yukon, and Churchill, Manitoba. Most of the lakes studied are less than one metre deep. According to the analysis, more than half of those located on relatively flat terrain and surrounded by scrubby vegetation show signs of desiccation. The problem stems chiefly from a decline in meltwater; for instance, from 2010 to 2012 average winter precipitation in Churchill decreased by 76 mm compared to the averages recorded from 1971 to 2000.

The drying of some lakes, which first became visible to the [naked eye](#) in 2010, was even more pronounced in summer 2013. "With this type of [lake](#), precipitation in the form of snow represents 30% to 50% of the annual water supply," explained the study's lead author, Frédéric Bouchard, a postdoctoral fellow at Université Laval's Department of Geography and the Centre for Northern Studies.

The kind of desiccation seen by the researchers is without precedent in 200 years. Isotopic analyses conducted on the remains of phytoplankton accumulated in lakebed sediment show that the lakes have maintained water balance for 200 years. This stability was abruptly disrupted a few years ago.

If the trend of dry summers and less snowy winters continues, as climate models forecast, many of the subarctic's shallowest lakes could dry out completely. "It's difficult to predict all the repercussions of this habitat loss," admits Bouchard, "but it's certain that the ecological consequences will be significant."

Provided by Laval University

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