

New permafrost is forming around shrinking Arctic lakes, but will it last?

June 10 2014, by Katherine Gombay



New permafrost is forming around Twelvemile Lake in Alaska, but researchers have concluded that this permafrost will have disappeared by the end of the century due to continued climate change. Credit: Martin Briggs, US Geological Survey

Researchers from McGill and the U.S. Geological Survey, more used to measuring thawing permafrost than its expansion, have made a

surprising discovery. There is new permafrost forming around Twelvemile Lake in the interior of Alaska. But they have also quickly concluded that, given the current rate of climate change, it won't last beyond the end of this century.

Twelvemile Lake, and many others like it, is disappearing. Over the past thirty years, as a result of [climate change](#) and thawing permafrost, the [lake](#) water has been receding at an alarming rate. It is now 5 metres or 15 feet shallower than it would have been three decades ago. This is a big change in a very short time.

As the lake recedes, bands of willow shrubs have grown up on the newly exposed lake shores over the past twenty years. What Martin Briggs from the U.S. Geological Survey and Prof. Jeffrey McKenzie from McGill's Dept. of Earth and Planetary Science have just discovered is that the extra shade provided by these willow shrubs has both cooled and dried the surrounding soil, allowing new permafrost to expand beneath them.

The researchers were initially very excited by this find. But after analyzing the thickness of the new permafrost and projecting how it will be affected by continued climate change and the expected rise in temperature in the Arctic of 3°C, they arrived at the conclusion that the new permafrost won't last beyond the end of the century.



As Twelvemile Lake recedes willow shrubs have planted themselves, permitting the soil beneath them to develop new permafrost. But researchers believe that this new permafrost will not last beyond the end of this century. Credit: Martin Briggs, US Geological Survey

To read "New [permafrost](#) is forming around shrinking Arctic lakes, but will it last?" by Martin Briggs et al in *Geophysical Research Letters*:
<http://onlinelibrary.wiley.com/enhanced/doi/10.1002/2014GL059251/>

Provided by McGill University

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