New Report Shows Effects of Melting Permafrost on Landscape and Hydrology

Vancouver, BC – March 7, 2019 – New research funded by Geoscience BC provides vital information about the impact of thawing permafrost in northern British Columbia and southern Northwest Territories and will help communities and the resource sector to make more informed decisions about water management.

Islands of boreal forest in the region are subsiding, shrinking or disappearing as warmer air temperatures thaw the layer of permafrost beneath. Called *Thaw-induced land-cover change in the southern margin of discontinuous permafrost, northeastern British Columbia and southwestern Northwest Territories*, the new report provides observations and predicts future impacts of thawing permafrost on the landscape. It concludes that water previously trapped in isolated wetlands drains away, impacting the availability and sustainability of freshwater resources.

Geoscience BC funded the Cold Regions Research Centre at Wilfrid Laurier University in Waterloo, Ontario, as part of the Consortium for Permafrost Ecosystems in Transition (CPET), to examine how thawing permafrost – layers of ground just below the surface that remain frozen for more than two years – affects the hydrology and land cover of these sensitive environments.

“Northeastern BC is the front lines of permafrost thaw,” said William L. Quinton, Director of Laurier’s Cold Regions Research Centre. “It is a place where permafrost thaw means permafrost disappears, and the ecosystems that were supported by permafrost change.”

Researchers studied landscape changes and took water measurements at 10 key subarctic boreal sites along a 200 km north-south line proposed by CPET from south of Fort Simpson in the NWT to the far northeast corner of BC.

“Permafrost-induced changes to ecosystems and land-covers bring about changes in the way that water moves and is stored on the landscape,” added Quinton. “We have found that permafrost can impound water like a dam, so when permafrost thaws, the landscape upslope can start to drain and generate runoff which can raise the flow in streams and rivers.”

Geoscience BC Executive Vice President and Chief Scientific Officer, Carlos Salas, said: “Permafrost thaw ultimately results in drying of wetlands in this region. Understanding the water balance in this region of BC is critical to making decisions about water management by communities and industry. This research provides unbiased earth science information to inform responsible natural resource management in this fragile, changing landscape.”

Accessing information

To view the reports and maps, visit the project page or view the information on Geoscience BC's Earth Science Viewer online mapping application.

About Geoscience BC

Geoscience BC is an independent, not for profit organization that generates and distributes public earth science research about British Columbia's minerals, energy and water resources that advances knowledge, informs responsible development, encourages investment and stimulates innovation. Geoscience BC's vision is to be a leading partner and provider of credible and relevant earth science research and data in British Columbia.

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