

Anthropologica

Volume 67, Numéro 1, 2025



Canadian Anthropology Society • Société canadienne d'anthropologie

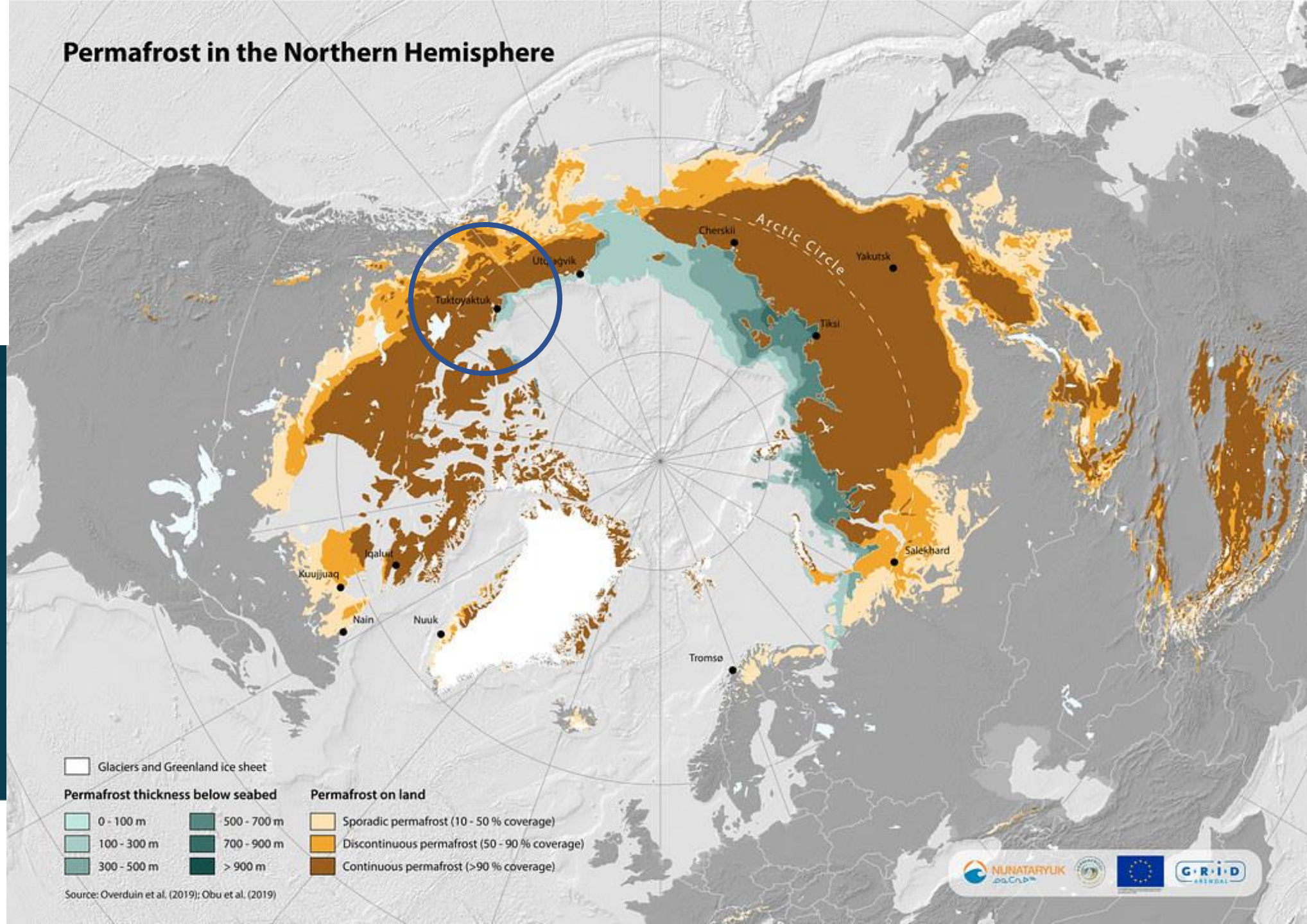
“What does Permafrost mean to you?” Inuvialuit and Gwich'in knowledge holders' perceptions of a thawing relation

Susanna Gartler, University of Vienna, Austrian Polar Research Institute

Susan A. Crate, George Mason University



Permafrost in the Northern Hemisphere



<https://doi.org/10.1038/s43247-024-01883-w>

A transdisciplinary, comparative analysis reveals key risks from Arctic permafrost thaw

Check for updates

Susanna Gartler^{1,2,3,4}, Johanna Scheer^{1,2,3,4}, Alexandra Meyer^{1,2,3,4}, Khaleel Abass^{1,4}, Annett Bartsch^{1,2,3}, Natalia Dolosio^{1,2}, Jade Falardeau^{1,2}, Gustaf Hugelius^{1,2}, Anna Irrgang^{1,2}, Jón Haukur Ingimundarson^{1,2}, Lenelija Jungsberg^{1,2}, Hugues Lantuit^{1,2,3,4}, Joan Nymand Larsen^{1,2}, Rachele Lodi^{1,2,3,4}, Victoria Sophie Martin^{1,2,3}, Louise Mercer^{1,2}, David Nielsen^{1,2,3,4}, Paul Overduin^{1,2}, Olga Povoroznyuk^{1,2}, Arja Rautio^{1,2}, Peter Schweitzer^{1,2}, Niek Jesse Speetjens^{1,2,3}, Soňa Tomašková^{1,2}, Ulla Timlin^{1,2}, Jean-Paul Vanderlinden^{1,2,3}, Jorien Vonk^{1,2}, Levi Westerveld^{1,2} & Thomas Ingeman-Nielsen¹

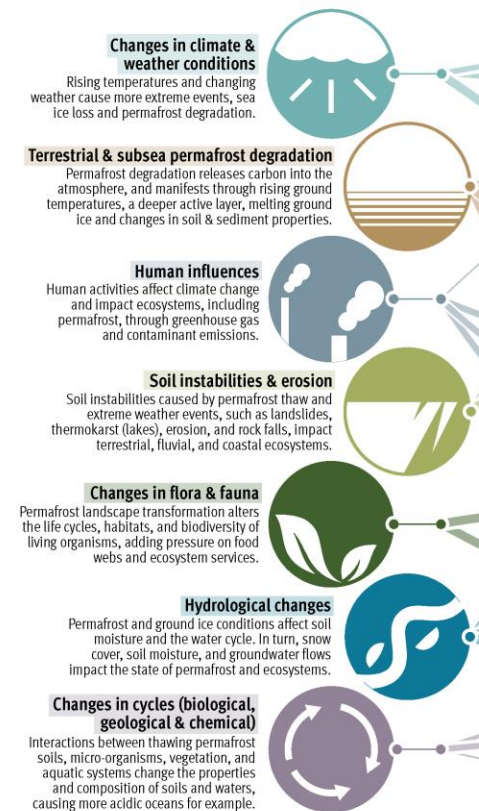
Download ATLAS here: grida.no/publications/998

Gartler, S., Scheer, J., Meyer, A., et al. (2025). A transdisciplinary, comparative analysis reveals key risks from Arctic permafrost thaw. *Communications Earth & Environment*, 6(1), 21–20. <https://doi.org/10.1038/s43247-024-01883-w>



ARCTIC PERMAFROST ATLAS

PHYSICAL PROCESSES



KEY HAZARDS

Infrastructure failure

Permafrost thaw and erosion endanger housing, communication, transport, and energy infrastructures upon which Arctic communities depend.

Disruption of mobility & supplies

Thawing permafrost damages transportation infrastructure, food and water supply facilities. Extreme weather and erosion also disrupt navigation routes, limiting access to resources.

Decrease in water quality

The release of organic carbon, nutrients, sediments, and contaminants into aquatic systems, deteriorates the water quality and affects ecosystems, food security, and access to clean water.

Challenges for food security

Biodiversity loss, habitat destruction, and declining animal populations pose challenges for subsistence activities. Landscape transformations and infrastructure failures can lead to the release of contaminants and disrupted travel routes, compromising food supply and quality.

Exposure to infectious diseases & contaminants

Thawing permafrost and erosion contribute to diffusing mercury, spreading infectious diseases, and triggering the development of harmful algae blooms endangering aquatic life. Unsecured hazardous waste may also release contaminants.

CONSEQUENCES

Culture & language

Permafrost thaw affects livelihoods, subsistence, heritage, and identity. For example, food sources can change and intergenerational knowledge transfer can be interrupted.

Health & Wellbeing

Impacts on health and wellbeing include, for example, a higher risk of accidents and insecurity in terms of safe food consumption.

Costs & Economy

Repairs, new equipment, reliance on store-bought food, and other necessary adaptation measures financially affect communities, families, and individuals.

Ecosystem

Both extreme and minor disturbances, alterations to biogeochemical cycles and nutrient dynamics, as well as the (bio-)accumulation of contaminants and outbreaks of disease, can all negatively impact ecosystem functions and services.

Recreation & being in nature

Recreational activities and nature experiences are adversely affected by changes in navigable water paths and ground trails, including more difficult access to camps.

Planning & fate control

Planning and fate control are impacted, for instance, by the possibility of losing connectivity and supply irregularities, calling for new ways of water and food supply.

An aerial photograph of a wetland landscape. In the upper right, a dark blue pond is visible. The surrounding land is covered in dense, low-lying vegetation in shades of green, yellow, and brown. In the lower right, the ground is cracked and textured, indicating permafrost. The text "What does permafrost mean to Inuvialuit and Gwich'in knowledge holders in the Mackenzie Delta of the Western Canadian Arctic?" is overlaid in white.

What does permafrost mean to Inuvialuit and Gwich'in knowledge holders in the Mackenzie Delta of the Western Canadian Arctic?

Permafrost is PERCEIVED through



Enskilment:

Labour/Occupation (for example, construction work, home repairs)

Indigenous Knowledge (Using permafrost and permafrost features, e.g. for building ice cellars etc.)



Photo by Imaryuk Montiros

It's our lifeline here

The ice on top of the land gives us good berries. It feeds the berries

It is preserving the ground from crumbling

It's a big block of ice

I think it's really important, I know where to find it. I have used it many times. I learned from my dad where to look for permafrost

Permafrost, it means stability for our land, our animals, our food, our water, everything

Permafrost is thus seen as the **literal foundation of life**: In the continuous permafrost zone, everything, including homes, roads, and airstrips, is dependent upon it, which makes its stability crucial for infrastructure and life overall.

Ice Houses/cellars

Long time ago before the freezers came? The (ground was) good. You could store away food, but now it just goes falling out in a lake or a river or ocean.

Alimentary infrastructure

Permafrost may quite literally be seen as (part of) infrastructure that is “... life-giving in its design, finance, and effects,” i.e., alimentary infrastructure (LaDuke and Cowen 2020).

Permafrost as critical *infrastructure*?

- Indigenous scholar Anne Spice (2018, pg 41) web of relations between “... human and other-than-human beings that sustain Indigenous life in mutual relation” could be indexed by ‘critical infrastructure’
- permafrost itself can be understood as critical infrastructure in a decolonial sense: an essential system and web of relations vital to societal functioning and to a good life on the land (Watt-Cloutier 2015)



Qikiqtaruk,
<https://www.theguardian.com/environment/2025/feb/10/canada-arctic-yukon-herschel-island-qikiqtaruk-inuvialuit-culture-conservation-dilemma-climate-floods-historic-whaling>



Photo by Angus Alunik



MOBILITY, SUPPLY, TRAVEL, SAFETY

Erosion is happening, and it affects travelling, because now you got to stay focused for the cliff or something that you may fall into.

In a few years, we'll have to go straight out the ocean and come back into the smaller rivers [which] is a lot more dangerous, because of the winds that we've been getting and we're seeing a lot more flooding. It worries me that my boy would have to worry about those changes, and it will be harder for him to access the traditional foods. When I'm travelling, I let them know.

I don't like that the permafrost is melting at some parts of the sections of the highway. I see, because I'm on the highway every day. And that I don't know if it's from the highway being built there. I think about it.



So those things are unpredictable, and that's why you got to worry about the younger generation too.



Uncertainty

Becoming visible

Permafrost becomes increasingly noticeable

1) as it is exposed to rising temperatures and starts thawing more, causing landscape transformations such as softer, wetter tundra, changes in river systems, riverbank and coastal erosion, slumping, ...

2) but also because of the increased attention it receives both from scientific communities and the media.

3) At the same time, permafrost, as well as constant change(s) remains something ordinary, seen as simply part of everyday life, for our Gwich'in and Inuvialuit study participants.

Permafrost? We never really thought about it. Before, when we were out on the land, we never had problems with travelling. But when I think about us going for berries today, sometimes we have to walk quite a distance, and the softer ground is really a disadvantage to us.



Scott Zolkos, University of Alberta/Northwest Territories Geological Survey

It's changing our land, and you know, it's just something that we see almost every day. We don't understand everything about it, like scientifically, but with the changes we see, we understand, and you know, we live it. I mean, that's just life for us.

*Máhsı / Mahsì / Quyanainni / Quana /
Qujannamiik / Merci*

