

# Arctic and Northern

Newsletter 2025 – Issue 3

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## A message from Anne Barker, Program Director

Welcome to the latest update from the Arctic and Northern Challenge program! As we enter our fourth year, we are excited to share the achievements from year 3, running from April 1, 2024, to March 31, 2025. This was our busiest year yet, with many milestones and accomplishments:

- Conclusion of Canada–Inuit Nunangat–United Kingdom Arctic Research Programme projects
- Completion of year 2 of projects from the program’s first call for proposals
- Preparation of full research proposals by recipients of development grants (first round)
- Launch of our second call for development grants, selecting 6 successful applicants
- Launch of our second call for proposals, with letters of intent due by January 2025
- Mid-term program review process

Thank you to the incredible program leadership team for all of their hard work to advance the research partnerships, projects and calls throughout this successful year. The team is a delight to work

with and their enthusiasm for the program is evident in all of their actions. A special thank you also goes to our students, Theo Folster and Ethan Edmonds, for their vital support managing the program last year.

Our mid-term program review process gave us the opportunity to pause and reflect on what we have done to date. I'm pleased to share that the program is on track to achieve its ultimate outcomes: participation of Arctic and Northern peoples in applied research from ideation to dissemination and an increase in Northern research capacity in applied science and engineering.

I hope you enjoy reading about some of these activities in this year's newsletter.

For more information about collaborative research projects, visit [Arctic and Northern Challenge program](#). If you would like to know more or discuss how the National Research Council of Canada's research expertise can be of assistance in collaboratively addressing Arctic and Northern research priorities, send an email to [NRC.Arctic\\_Northern-Arctique\\_Nord.CNRC@nrc-cnrc.gc.ca](mailto:NRC.Arctic_Northern-Arctique_Nord.CNRC@nrc-cnrc.gc.ca).

### **Canada–Inuit Nunangat–United Kingdom Arctic Research Programme (CINUK) concluded**

The Canada–Inuit Nunangat–United Kingdom Arctic Research Programme ([CINUK](#)) has successfully concluded. It has been an amazing learning experience for our program partners and the project teams, who have engaged in new ways of collaborating that support the implementation of the [National Inuit Strategy on Research](#).

On the CINUK website, you can view [short project-specific videos](#). You will also find a [new overview video about the program](#) in English with options for French and Inuktitut subtitles. Thank you to the team at [UK Research and Innovation \(UKRI\)](#) for producing these wonderful outreach materials. The CINUK website will continue to be updated with publications and outreach materials from the projects for the next 2 years. Don't forget to check back!



In December 2024, the project teams met in Ottawa, Canada, for their final annual scientific meeting, hosted by [Inuit Tapiriit Kanatami](#), the non-profit organization that represents more than 65,000 Inuit across Inuit Nunangat and the rest of Canada. Thanks to funding from UKRI, many project team members from across Inuit Nunangat and early career researchers were once again able to attend the meeting in person. Keynote addresses were given by Natan Obed, President of Inuit Tapiriit Kanatami, as well as Dr. Geneviève Tanguay, Vice-Chief Science Advisor of Canada, and Her Excellency the Right Honourable Mary Simon, Governor General of Canada. Inuit Tapiriit Kanatami led a 3-part training event entitled “National Inuit Strategy on Research in Action.” Discussions were held on Inuit data sovereignty, capacity building in Inuit-led research, research to policy and “what we heard.” The training was appreciated by all attending.

During our annual meeting, [Canada’s new Arctic Foreign Policy](#) was announced. The partners were very pleased to see the CINUK program referenced twice in that document, in the context of cooperating “on shared priorities in the Arctic, including on climate change and research through the Canada–Inuit Nunangat–United Kingdom Arctic Research Programme,” and as an example of “equitable research partnerships at the international level between Indigenous and non-Indigenous researchers.”

Many of the CINUK teams already have follow-on funding sources to advance existing research and plans to broadly and effectively share their research results. We are so pleased to see that not only is the science of value, but that the collaborations themselves have proven to be valuable. Later this year, we hope to share a summary document that highlights the impacts the research will have in advancing climate change mitigation and adaptation methods in Inuit Nunangat and elsewhere. We look forward to sharing this with you.

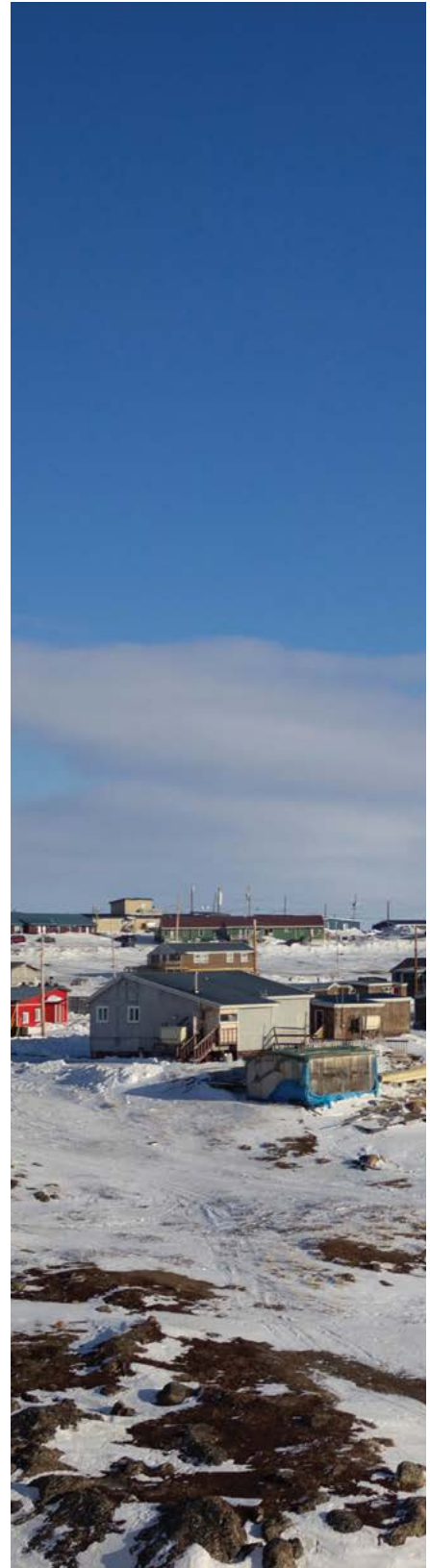


Attendees of the December 2024 CINUK annual scientific meeting pose in Ottawa. Photo credit: L. Gregoire

## Development grants

Last year we reported on the launch of the program's development grants and presented the 5 successful applicants for that call. These small grants provide resources to Northern applicants to conduct eligible activities (such as community-level consultations, literature reviews, travel to neighbouring communities and accommodations, and engaging professional services) and to ensure local support for a project idea in one of the program's 4 research themes: [housing](#), [health](#), [food](#), and [water](#). Upon completion of their activities, successful applicants can build upon the results from their development grant and submit a larger, multi-year proposal together with National Research Council of Canada (NRC) researchers. The successful applicants from our second round of development grants are as follows:

- Néyà Nursery and Seeds is examining sustainable berry use through a feasibility study and engaging Yukon First Nations communities about declining wild berry populations
- Yukon University will be strengthening Northern expertise in hydrogeology and expanding skillsets in groundwater analysis, field techniques and modelling as well as carry out engagement activities to discuss key water resource-related issues faced by Northerners



- The Government of the Northwest Territories is addressing gaps in water quality monitoring by focusing on community engagement to ensure that needs are prioritized based on Indigenous knowledge and cultural practices, and of local Indigenous communities directing scientific goals and outcomes
- The non-profit One Yukon Coalition will consult with Yukon First Nation decision makers and community members to highlight barriers to implement wastewater and environmental monitoring, including infrastructure and capacity, to ensure long-term program sustainability, leading to a plan that focuses on health-related challenges identified by communities
- The Kativik Municipal Public Works Department will assess the viability of the Tinybox Systems' bioreactor toilet, a compact, self-contained wastewater treatment system designed specifically for remote communities such as the ones in Nunavik
- The Sha Shāw Corporation will examine food security and revitalization of historical agricultural practices, which will involve community consultations, archival research and laying the groundwork for future food security initiatives in the Champagne and Aishihik First Nations community



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## Project updates

As promised last year, here are some highlights from 5 more of our collaborative research projects. These projects bring together NRC research and technical staff with Northern and Arctic recipients, other research and academic organizations and industry partners to collaboratively address Northern-driven research priorities.



# 01 Winter trails

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## Radio frequency sensor technology for community monitoring of winter trails

[SmartICE](#), in collaboration with the Tłıchǫ Government, the Community Government of Wekweètì, the Aqiumavvik Society and the NRC's [Ocean, Coastal and River Engineering Research Centre](#), is using radio frequency to improve freshwater ice monitoring for safe travel. This project is developing sensor technology and co-creating a training curriculum for community members to operate the instrumentation and generate ice condition travel maps that will be shared within and between communities.

### What has been done to date

Over the past year, the project team has refined the training materials using feedback from the training that was given in year 1. A total of 21 community members are now trained in operating the ice profile equipment. The radio frequency technology has been integrated into a system that can be tested on snowmobiles, which has produced promising results. Positive responses to date indicate this technology is a solution to address local capacity for ice monitoring and to ensure safe travel.



Ice-penetrating radar processing software operates on a snowmobile-mounted console. Photo credit: Winter Trails project team

## 02 NunavikWater

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### **Inclusive design of pilot water equipment for innovative water strategies**

In some Northern communities, household water is stored in tanks, which are cleaned annually to maintain water quality. Through this project, Université Laval aims to develop and evaluate water treatment strategies (including operational and monitoring strategies) for water tanks in Northern households. The project team will design, build and set up pilot-scale tanks in universities and then in communities as part of its evaluation.

### **What has been done to date**

An extensive sampling campaign was organized and carried out in collaboration with the regional authorities—Nunavik Regional Board of Health and Social Services, the Kativik Regional Government and the Kativik Municipal Housing Bureau—during the annual cleaning period of household water tanks to test the water quality before and after cleaning. Questionnaires were also sent out to evaluate water access, consumption habits and perception of water quality. The data collected will be used to assess tank design and improve tank cleaning processes, which would be implemented in collaboration with local housing authorities.



A representative of the Inclusive Water project presents details of the project at the ArcticNet conference in Ottawa, in December 2024. Photo credit: Inclusive Water project team



An in-home water tank is sampled during the annual cleaning campaign. Photo credit: Inclusive Water project team

## 03 Cumulative Impacts on the Aquatic Environment

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### **Defining cumulative effects on aquatic organisms for the community of Naujaat using Inuit Qaujimagatuqangit and Western science following the One Voice approach in support of Inuu'tuti**

With support from Defence Research and Development Canada and the Arctic and Northern Challenge program, the Kivalliq Inuit Association and the NRC's [Aquatic and Crop Resource Development](#) and [Construction](#) research centres are collaborating on a new aquatic cumulative effects monitoring program (CEMP).

In association with Kivalliq communities—mainly Naujaat—CEMP will integrate both Western science and Inuit Qaujimagatuqangit—Indigenous knowledge—to address 2 critical questions: Is the water safe to drink? Are the fish safe to eat?

CEMP is a central component of the Inuu'tuti initiative, a new Northern program designed to assess the cumulative impacts on the aquatic environment in the Naujaat watershed. This initiative will involve aquatic biology studies, hydrological assessments and climate scenario modelling.

The primary objective is to implement the Inuu'tuti CEMP as a 3-year integrated monitoring effort focused on key sites of community interest. The program will measure environmental contaminants in water and fish tissue and link these findings to the health of local organisms. An element of the CEMP will be to test the hypothesis that organisms exposed to environmental stressors exhibit elevated levels of certain endogenous chemicals.



An Inuit man fishes from a boat near the village of Inukjuak, Nunavik, on Hudson Bay.

## 04 Assessing Groundwater in the Whitehorse Area (AGWA)

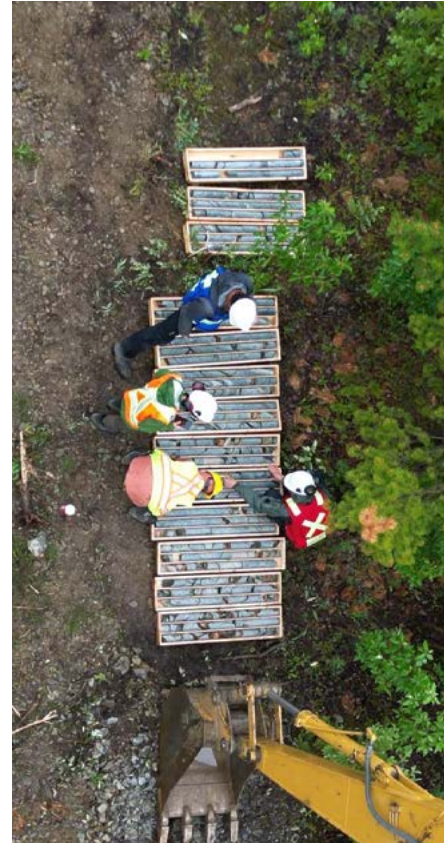
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### Groundwater vulnerability to metal and metalloid contamination in Whitehorse

Groundwater is the main source of drinking water in the greater Whitehorse area. However, preliminary data show a high proportion of local untreated groundwater samples have metal and metalloid concentrations that exceed safe drinking water limits. This project will support training, generate information, translate knowledge and build capacity to improve water security for the area and other subarctic regions susceptible to geogenic metal and metalloid contamination.

### What has been done to date

This project leverages an extensive and multidisciplinary team working to gather and disseminate information. Together, the Yukon Government, Yukon University, University of Saskatchewan, Carleton University, Ta'an Kwäch'än Council and the City of Whitehorse have collected to date a total of over 230 water and 50 rock samples, installed 6 new groundwater monitoring wells, trained 7 individuals, hosted a community outreach and information session and presented at Yukon Geoscience Forum and Trade Show, which led to coverage by the CBC! New collaborators also came on board this year from Health Canada and Queen's University. Results to date have informed groundwater quality management and decision making, groundwater characterization and numerical modelling and mapping to inform groundwater management for Whitehorse.



A project team logs drilling cores at a drill site in Whitehorse area during summer 2024 field season. Photo credit: AGWA project team

## 05 Digital Mental Health

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### **Digital interventions to enhance mental health of Northern communities in Labrador**

This project is using digital tools to reduce the health gap and enhance mental health care for Inuit communities in Labrador. Newfoundland and Labrador Health Services, St. Michael's Hospital in Toronto and the NRC's [Medical Devices Research Centre](#) are working with Inuit community members through the Nunatsiavut Government and other collaborators to improve mental health diagnoses. They are doing this by using learning tools that are expected to help nurses and general practitioners support remote monitoring of patient mental health.

This project explores the effectiveness of digital interventions in reducing the need for patients to see specialists. It will also assist in the early detection of mental illness, remote health monitoring, timely medical training and point-of-care diagnostics as well as serve as a clinical decision support system for communities in Labrador.



Nain, NL as viewed from Mt. Sophie. Photo credit: Chaughten

### **What has been done to date**

Nain, Labrador, was selected to pilot the project, which comprises an initial interview and survey phase followed by an implementation and effectiveness trial. Efforts to date have focused on developing preliminary priorities for digital interventions and the study design for phases 1 and 2, ahead of the upcoming community discussions. The project also obtained approval for the research from the Nunatsiavut Government. In the spring of 2025, the team visited the communities of Happy Valley Goose Bay and Nain to engage with community members and key stakeholders and present the technological tools that will be proposed as part of the research.



Nain, NL as viewed from Mt. Sophie. Photo credit: Chaughten



## **Have you met us yet?**

Over the past year, our leadership team has been busy attending many events, catching up with our research collaborators as well as others that we hope will become collaborators. Here is a sample of some of the community events we attended and locations we visited over the past year.

### **Northwest Territories Association of Communities AGM, Hay River**

This 3-day, territory-wide annual general meeting brought together community representatives, territorial and federal government entities and business partners. We attended briefing sessions, the tradeshow, a “speed dating”-style business event and a local auction, allowing numerous opportunities to promote the Arctic and Northern Challenge program.

### **Association of Yukon Communities annual meeting, Dawson City**

This 3-day annual event gathered local entrepreneurs, Indigenous groups, public service employees and provincial and federal ministers. We attended special business sessions, met with representatives from local government, followed up with program partners and promoted the Arctic and Northern Challenge program.

## **Nunavut Association of Municipalities AGM and conference, Iqaluit**

This 3-day annual event was an opportunity to meet with local government officials and participate in an interactive roundtable discussion.

## **Yukon site visits**

In Whitehorse, we met with project partners from the Yukon government, the City of Whitehorse and the Champagne and Aishihik First Nations. We also visited project sites, connected with local organizations, built new relationships and discussed local needs and opportunities.

## **National conferences attended**

- Assembly of First Nations National Climate Gathering, Calgary
- Nunavut Trade Show & Conference, Iqaluit
- Aqsarniit Trade Show & Conference, Ottawa
- ArcticNet International Arctic Change Conference, Ottawa
- Turtle Island Indigenous Science Conference, Regina
- 18<sup>th</sup> International Congress on Circumpolar Health, Halifax



Shawn Clark, Arctic and Northern Challenge program food theme lead, attends the Nunavut Association of Municipalities Annual Conference.



NRC researchers, the Arctic and Northern Challenge program team and representatives from Earthrise Building Services and Champagne and Aishihik First Nations toured retrofit projects underway.



Program Director Anne Barker, second from left, sits on an expert panel on the research economy in the North at the Aqsarniit Trade Show & Conference. Photo credit: CanNor



## Contact us

If you have any questions or would like to learn more about the Arctic and Northern Challenge program, send an email to [NRC.Arctic\\_Northern-Arctique\\_Nord.CNRC@nrc-cnrc.gc.ca](mailto:NRC.Arctic_Northern-Arctique_Nord.CNRC@nrc-cnrc.gc.ca)

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