



Inuvialuit Research Newsletter

**December 2021**

Volume 1 | Issue 3



Inuvialuit Research Newsletter  
December 2021  
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The Inuvialuit Regional Corporation

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# Acknowledgements

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The IRC would like to acknowledge its Innovation, Inuvialuit Science and Climate Change Division for their hard work and dedication to the third edition of the Inuvialuit Research Newsletter. We extend our sincere thanks to our editorial team, who worked tirelessly to review, edit, and format the articles and photographs for this edition. The IRC is especially grateful to the Inuvialuit Communications Division for providing editorial support.

We would like to thank our funding partners and all contributors, for investing their time and knowledge in the creation of the Inuvialuit Research Newsletter. The IRC apologizes in advance for any misspellings of names of people and/or organizations featured in this edition. If any discrepancies are found, please contact the IRC's ISCC Division with your concerns. The IRC's ISCC Division's contact information is on page 68.

# Message from the Chair and CEO

It is with great pleasure that I welcome you back to the third edition of the Inuvialuit Research Newsletter. This publication provides a platform for Inuvialuit to highlight the incredible research taking place in the Inuvialuit Settlement Region (ISR). This issue features new studies and developments across various fields, including climate change, clean energy, wildlife management, environmental monitoring, and cultural preservation.

We recognize the experienced and dedicated researchers and partners who contributed to the vast array of studies conducted in the ISR. The ISR continues to be one of the most researched areas in Canada, and we are committed to advancing research in the region to further the goals of our beneficiaries, community organizations, and governments. The surge in research activity is due to the rapidly changing environment, the Inuvik-Tuktoyaktuk Highway's creation (ITH), new Inuvialuit research programming, and funding related to climate change action and the energy transition. These research projects should be correctly recorded, recognized, and celebrated!

In this edition, we showcase the valuable and innovative research projects undertaken by Inuvialuit organizations and their partners, which are now at the forefront of ISR research. The Inuvialuit-owned, led, and partnered initiatives demonstrate the significant steps we have taken towards greater Inuvialuit self-determination in research, which is vital to the growth and development of our communities.



I am excited to share this newsletter with you and hope that the articles will provide insight into the latest research taking place in the region. I thank all our contributors, partners, and staffs who have worked tirelessly to make this edition possible.

We look forward to your continued support and feedback as we strive to provide you with informative and engaging content in future editions.

Quyanainni! Koana! Quyanaqpak!

A handwritten signature in black ink, appearing to read 'Duane Smith'.

**Duane Ningaqsiq Smith**  
Chair and CEO, Inuvialuit Regional Corporation



# Inuvialuit Regional Corporation Board of Directors



Inuvialuit Regional Corporation's Board of Directors, from left to right: Ryan Yakeleya – Director, Rory Voudrach – Director, Colin Okheena – Director, John Lucas Jr. – Director, Lawrence Ruben – Director, and Duane Smith – Chair and CEO. Photo courtesy of Elizabeth Kolb, Photographer, IRC Communication Division.









# **2021 Research Priorities**



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## 2021 Beaufort Strategic Environmental Assessment Research Priorities

Determined through information gathered from beneficiaries during ISCC community tours (2016-2020)

- Meaningful inclusion of Traditional Knowledge and consultation of knowledge holders
- Invasive species
- Effect of marine traffic on water quality, key fish species, and marine mammals
- Relationship between environmental change and preservation of tradition and culture
- Cumulative effects research in the following areas:
  - Employment rate
  - Social wellness (tradition and culture)
  - Education
  - Harvesting
  - Food security
  - Lack of oil and gas disaster response infrastructure
  - Climate change
  - Water quality

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## 2021 Strategic Research Priorities

Determined through the IRC 42 Directors' Meeting (January 2019)

- Environmental Change
  - Ice, landslides, safety, permafrost, erosion)
- Human – Environment Interactions
  - Tourism and economics, cumulative effects, grey and ballast water, place names)

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## 2021 Community-Identified Research Priorities

Determined ISCC Community Tours (2019-2020)

- Geohazards
- Climate Change
- Marine Safety
- Coastal erosion
- Wellness and Language
- COVID-19
- Inuvialuit Place names
- Energy

# About IRC's Innovation, Science and Climate Change Division

The Innovation, Science and Climate Change (ISCC) Division is a dynamic division established by the Inuvialuit Regional Corporation (IRC) to lead and coordinate research activities and develop policies, while promoting innovation, mentorship, training, and engagement in the Inuvialuit Settlement Region. With a focus on Inuvialuit science, our divisional goals are to 1) communicating research initiatives more effectively 2) ensuring Inuvialuit are meaningfully included in all research policy and processes 3) strengthening capacity to lead research activities 4) ensuring Inuvialuit Knowledge and Western science are equally respected 5) mentoring the next generation of Inuvialuit researchers.

The Innovation, Science, and Climate Change (ISCC) division was created in 2019 and has been growing in staff and size each year since its inception. This unit began with eight employees and twelve projects. Since then, the division has been expanded to fourteen staff, twenty-seven projects, four policies, a K-12 educational program, mentorship program and mobile laboratory infrastructure. The division is organized into three main areas: Data Science & Methodology, Research Programs, Policy & Administration, and Health & Engagement.

## Inuvialuit Regional Corporation

Innovation, Science, and Climate Change Division  
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Inuvik, NT, X0E 0T0  
Tel: (867) 777-7048  
Toll Free: 1 (855) 777-7011  
Email: [research@inuvialuit.com](mailto:research@inuvialuit.com)

## ISCC Division Staff

### ISCC Director

Jenn Parrott (Director, Innovation, Science and Climate Change)

### Cyber Infrastructure/Data

Ryan Mazan, Applied Research Manager  
Calvin Pritchard, Research Data Analyst  
Michael O'Rourke, Inuvialuit Place Names Coordinator  
Lawrence Rogers, Inuvialuit Place Names Assistant  
Matthew Chudek, Inuvialuit Statistician  
Jessica Stewart, Genomes Research Assistant  
Anika Cockney-Goose, Genomes Research Assistant

### Environmental Policy

Shanay Williams, Research Administration and Programs Manager  
Leigh-Ann Williams-Jones, Geoscience Program Coordinator  
Brian Parks, Climate Change Program Coordinator  
Darby Desrosiers, Clean Energy Program Coordinator  
Roxanne Springer, Climate Change Program Coordinator  
Tess Forbes, Marine Program Coordinator  
Tyra Cockney-Goose, Environmental Policy and Climate Change Assistant

### Health/Engagement

Kendra Tingmaik, Inuit Research Advisor  
Pauley Tedoff, Health Research Advisor

# 2021 Innovation, Science and Climate Change Divisional Goals

1

## **Better Communicate Research**

- ▶ Facilitate local participation through opportunities and knowledge mobilization
  - Increased local participation (environmental and wildlife mentors)
  - Increased local engagement (newsletters, flyers, community tours)
- ▶ Make products of research and data available

2

## **Ensure Inuvialuit are meaningfully involved in all research policy and processes in the ISR**

- ▶ Re-evaluate internal research licensing process
- ▶ Develop Inuvialuit focused research policy and associated materials
  - Research agreements
  - Data agreements
  - Standards for engagement and involvement in research conducted by external groups

3

## **Begin developing a research agenda for the ISR**

- ▶ Identify research gaps

4

## **Ensure that both traditional knowledge and western science\ are equally considered in policy/decisions related to the ISR**

- ▶ Foster a culture of innovation and self-determination
- ▶ Develop a robust internal research program which addresses local priorities

5

## **Mentor the next generation of Inuvialuit researchers**

- ▶ Provide youth with employment and opportunities to be directly involved in research
- ▶ Provide youth with training and mentorship activities to build skills while transferring knowledge







# **2021 Inuvialuit Corporate Group Research Priorities**

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Inuvialuit Regional  
Corporation's  
Internal Research  
Projects

# Qanuippitaa? National Inuit Health Survey



## Organization Name

Inuvialuit Regional Corporation in partnership with Inuit Tapiriit Kanatami (ITK) and the other three Local Community Organizations (LCO's)

## Project Lead(s)

Meghan Etter, IRC's Director of Health and Wellness

## Communities Involved

Inuvialuit Settlement Region (all communities)

## Completion Status

Multi-year, On-going

## Project Objective/ Purpose

The overarching objective of the Inuit Health Survey (IHS) is to provide high quality, Inuit-determined and Inuit-owned data to monitor change, identify gaps and inform decision-making, leading to improved health and wellness among Inuit in Canada.

## Project Description

**Qanuippitaa?** National Inuit Health Survey is a collaborative project among all 4 Inuit Regions of Inuit Nunangat and ITK. While each region is responsible for its own data collection, the creation of the core content was designed collectively to ensure data comparability across regions.

Inuvialuit Regional Corporation (IRC) has decided to include a basic clinical component and oral health screening in addition to the survey. Initially, IRC intended to begin data collection in the fall of 2021; however, the influx of COVID-19 created a delay. Instead, data collection is set to begin in January 2022.

In the meantime, IRC successfully recruited and trained a team of local fieldworkers, comprised mostly of Inuvialuit. The field team will assist participants through all aspects of the survey, including informed consent, the survey, and the clinical component.

# Boating Safety in the Inuvialuit Settlement Region



## Organization Name

Inuvialuit Regional Corporation

## Project Lead(s)

Tess Forbes, IRC Marine Program Coordinator

## Communities Involved

Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Ulukhaktok, Sachs Harbour

## Completion Status

Ongoing

## Project Objective/Purpose

The goal of this project is to proactively create safer waterways by increasing awareness and education, encouraging safe boating compliance, and equipping Inuvialuit with the means and tools to respond to waterway emergencies while undertaking their cultural and traditional activities.

## Project Description

Inuvialuit rely on waterways in the Inuvialuit Settlement Region (ISR) for social, cultural, and subsistence purposes. In recent years, however, there has been an increased number of national and international shipping voyages. This increase in shipping also increases the risk of encounters between large vessels and small vessels. This project therefore aims to increase the safety of ISR waterways and, by extension, Inuvialuit residents by creating easy-to-read educational materials outlining best practices for large vessel-small vessel encounters. This program also aims to increase safety by providing boating safety gear and equipment to Inuvialuit in each of the six ISR communities. Equipment will include safety items, such as bailers, flashlights, whistles, electronic flares, and a manual propelling device.





←Photo courtesy of  
Elizabeth Kolb  
(Photographer), IRC  
Communications  
Division



# *Siqinirmin Aullan* — Energy from Our Environment

## SIQINIRMIN AULLAN

*Written by Corrine Bullock  
Illustrated by Tyra Cockney-Goose*



### Organization Name

Inuvialuit Regional Corporation

### Project Lead(s)

Darby Desrosiers, IRC Clean Energy  
Program Coordinator

Tyra Cockney-Goose, IRC Environmental Policy and  
Climate Change Program Assistant

Jenn Parrott, IRC's Director of Innovation, Science, and  
Climate Change

### Communities Involved

Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk,  
and Ulukhaktok

### Completion Status

Complete (2020-2022)

### Project Objective/Purpose

This book was written and illustrated by Inuvialuit beneficiaries to promote energy literacy in the Inuvialuit Settlement Region (ISR). It facilitates cross-generational knowledge transfer between Elders and Youth about local culture, practices, language, and sustainability.



← **View the book**

or visit <https://irc.inuvialuit.com/research/energy-our-environment-childrens-book>



## Project Description

Climate change and energy development have significant impacts on both the social and physical landscapes of the North. This project aims to develop an energy-themed children's book which will be available in all three Inuvialuktun dialects. This storybook teaches children about Inuvialuit tradition, language, and culture while increasing energy literacy. IRC selected the story through an exciting story-writing contest in March 2020. The process of creating the book is an excellent example of the importance of Elder-Youth relationships. The book contains an engaging story and beautiful illustrations written and illustrated by Inuvialuit artists, with terminology generated directly from the IRC's Climate Change and Energy Terminology Workshops. This makes this storybook entirely Inuvialuit-led from start to finish. The children's book presents the winning story in English, Uummarmiutun, Kangiryuarmiutun/Inuinnaqtun, and Sallirmiutun, with accompanying audiobooks.

Principal Activities: Story writing contest, translation and review of the story, the creation of illustrations by a local artist, audiobook recording, publication, and distribution.

The project was successfully completed with community support and great appreciation. IRC has distributed the book to schools, libraries, and community organizations. The book was promoted through community outreach and Elder-led book readings in Inuvialuktun and English at all local schools across the Inuvialuit Settlement Region (ISR). Every student in Junior Kindergarten-Grade 6 received a copy of the physical book with the accompanying audiobook.



↑ *Siqinirmin Aullan* author, Corrine Bullock, stands with her two daughters and IRC's Chair and CEO and ISCC Staff. Photo courtesy of Elizabeth Kolb (Photographer), IRC Communications Division



# ISR Cruise Ship Management Plan



## Organization Name

Inuvialuit Regional Corporation

## Project Lead(s)

Tess Forbes, IRC Marine Program Coordinator

## Communities Involved

Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, and Ulukhaktok

## Completion Status

Complete

## Project Objective/Purpose

The ISR Cruise Ship Management Plan ("the Management Plan") describes the policy direction IRC is taking to ensure that the IFA is upheld as the marine waterways in the Inuvialuit Settlement Region (ISR) become more accessible. It will ensure that Inuvialuit lands, waters, people, and culture are respected, and that Inuvialuit are involved and contribute at every stage in the management of the ISR waterways.



← View the **ISR Cruise Ship Management Plan**

or visit [https://irc.inuvialuit.com/sites/default/files/ISR\\_Cruise\\_Ship\\_Management.pdf](https://irc.inuvialuit.com/sites/default/files/ISR_Cruise_Ship_Management.pdf)

## Project Description

With steadily milder winters in recent years, the Northwest Passage has become and will continue to become more accessible to travellers who want to experience the Canadian Arctic. With the increasing number of people travelling north to see the “last frontier,” this unique opportunity provides Inuvialuit with the means to proactively manage cruise ships and establish expectations early before any lasting negative impacts occur.

By creating the Management Plan and working together, a balance between economic prosperity, and environmental and cultural protection can be achieved and enjoyed. Inuvialuit identified seven key themes included in the Management Plan: (1) Vessel Management, (2) Marine Environmental Protection, (3) Community Visitation, (4) Shore Visitation, (5) Emergency Response, (6) Health and Safety, and (7) Monitoring and Enforcement.

Within these themes, IRC provides clear expectations for cruise ship operators while transitioning through the ISR. Expectations include timelines for connecting with communities, financial and employment considerations, wildlife interactions, and proper route planning.

After many years of development, IRC launched the Management Plan in February 2022. IRC shared printed copies of the Management Plan with the primary reviewers and electronic copies with relevant stakeholders. IRC is excited at the launch of this excellent policy.



↑ Photo courtesy of Elizabeth Kolb (Photographer), IRC Communications Division

# Powered by Youth



## Organization Name

Inuvialuit Regional Corporation

## Project Lead(s)

Darby Desrosiers, IRC Clean Energy  
Program Coordinator

## Communities Involved

Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk,  
and Ulukhaktok

## Completion Status

Ongoing

## Project Objective/Purpose

IRC created the Powered by Youth discussion group in response to the Climate Change and Energy Tour in March 2020, where community members requested Youth engagement opportunities during their public engagement sessions. This outreach program aims to (1) educate youth and discuss ongoing and future clean energy projects within the ISR and (2) ensure IRC includes the Youth-perspective in the IRC Energy Action Plan for the Inuvialuit Settlement Region (ISR). The participants in this program included Inuvialuit youth ages 15-30 from each of the ISR communities.

## Project Description

IRC is involved in ongoing efforts to engage Inuvialuit youth across the ISR and to include their perspectives in research and policy in the region. The Powered by Youth discussion group was created in September 2020 via Facebook to give youth a platform to provide their input around climate change and energy needs in the ISR. IRC held four consecutive virtual meetings that autumn, followed by an energy engagement survey. The virtual sessions allowed youth to discuss energy security and cleaner energy goals for their communities, while the survey allowed them to expand their ideas after the virtual discussions. The participants knew it would take a multi-pronged approach to achieve energy security in the ISR. However, they would like to see energy retrofits and increased education about energy conservation in the short term. IRC included the results of these discussions in the IRC Energy Action Plan and community outreach and programming.





←Photo courtesy of  
Elizabeth Kolb  
(Photographer), IRC  
Communications  
Division

# Climate Change Action Map



↑ Photo courtesy of Elizabeth Kolb  
(Photographer), IRC Communications Division

## Organization Name

Inuvialuit Regional Corporation

## Project Lead(s)

Brian Parks, IRC Climate Change  
Program Coordinator

## Communities Involved

Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Ulukhaktok,  
Sachs Harbour

## Completion Status

Completed with ongoing status

## Project Objective/Purpose

Support Inuvialuit awareness of and contributions to  
climate change projects in the region.

## Project Description

While the Inuvialuit Settlement Region (ISR) has emerged as a climate change research and action hub, a historical information gap between Inuvialuit stakeholders and project leaders continues to challenge community awareness of the wide range of initiatives that have taken place across the region in recent years. This project aims to raise community awareness by developing an easily accessible, user-friendly, and comprehensive online map that will help users visualize the expanding scope of climate action in the ISR. This map also serves as an engagement tool for encouraging participation in future climate change initiatives within Inuvialuit communities and promoting the region's progress toward sustainability to audiences beyond the ISR.

The development of the ISR Climate Change Action Map was completed in early 2021. Inuvialuit beneficiaries can use the online Action Map to explore climate change related scientific research, frontline projects, and community engagement activities across the region. The Action Map is continually updated as new climate change and clean energy projects are planned and implemented over time.



← Access the Climate  
Change Action Map or  
visit <https://climateactionmap.inuvialuit.com>



# Inuvialuit Settlement Region (ISR) Climate Change Strategy



↑ Photo courtesy of Elizabeth Kolb  
(Photographer), IRC Communications Division

## Organization Name

Inuvialuit Regional Corporation

## Project Lead(s)

Brian Parks, IRC Climate Change Program  
Coordinator

Jenn Parrott, IRC's Director of Innovation, Science,  
and Climate Change

## Communities Involved

Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Ulukhaktok, Sachs  
Harbour

## Completion Status

Complete

## Project Objective/Purpose

The ISR Climate Change strategy describes the policy direction that IRC will take to address climate change impacts in the ISR. It was developed as a comprehensive document detailing Inuvialuit climate change priorities and approaches to action. The six thematic areas for action described in the strategy are (1) Food and wellness, (2) Safety, (3) Housing and infrastructure, (4) Education and awareness, (5) Ecosystem health and diversity, and (6) Energy.



← **View the ISR Climate  
Change Strategy**

or visit [https://irc.inuvialuit.com/sites/default/files/ISR\\_Climate\\_Change\\_Strategy.pdf](https://irc.inuvialuit.com/sites/default/files/ISR_Climate_Change_Strategy.pdf)

→ **Project description on 22**

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## Project Description

The Inuvialuit Regional Corporation (IRC) released the Inuvialuit Settlement Region (ISR) Climate Change Strategy in February 2022. IRC's commitment to bridging Western science with Inuvialuit Traditional Knowledge in developing climate change solutions for the ISR is emphasized throughout the strategy.

Specifically, the strategy summarizes a wide range of climate change impacts that the ISR is facing and provides policy direction toward effective climate action across six thematic areas:

1. Food and wellness (Strengthen ISR food and wellness systems through supports and adaptations that recognize climate change)
2. Safety (Develop mechanisms to ensure travel across ISR lands and waters are safe)
3. Housing and infrastructure (Advance the development of climate change resilient infrastructure)
4. Education and awareness (Advance greater accessibility to climate change information and local knowledge for all communities within the ISR)
5. Ecosystem health and diversity (Protect and conserve our natural heritage for present and future generations)
6. Energy (Promote increased energy security within ISR communities)

The guiding principles, goals and actions for the strategy were collected from engagement activities with Inuvialuit that began in 2016 with the development of the Inuvialuit

on the Frontline of Climate Change Report.

IRC's Innovation, Inuvialuit Science and Climate Change (ISCC) will maintain the strategy and ensure that it reflects the evolving priorities of Inuvialuit communities and the latest climate change projections for the region. Inuvialuit organizations and beneficiaries, including youth and Elders, will continually be engaged in the implementation of the strategy's actions. ISCC will also work with partner organizations and governments, including Inuit Tapiriit Kanatami, Government of Northwest Territories and Government of Canada, to leverage synergies with other existing climate change strategies and plans at the pan-Inuit, territorial and national levels, respectively.

Special acknowledgement goes to the members of Inuvialuit Co-management Committees, Community Corporations, Elders Committees, Hunters and Trappers Committees and the Regional Youth Advisory Group, among others.

The ISR Climate Change Strategy is available for download on the IRC website ([https://irc.inuvialuit.com/sites/default/files/ISR\\_Climate\\_Change\\_Strategy.pdf](https://irc.inuvialuit.com/sites/default/files/ISR_Climate_Change_Strategy.pdf))



# Inuvialuit Settlement Region (ISR) Climate Watch



## Organization Name

Inuvialuit Regional Corporation

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## Project Lead(s)

Brian Parks, IRC Climate Change Program  
Coordinator

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## Communities Involved

Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Ulukhaktok, Sachs  
Harbour

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## Completion Status

Ongoing

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## Project Objective/Purpose

The project aims to develop ISR climate products that consolidate the climate information from various sources for use at local, regional, and circumpolar scales. This project will also provide ISR communities an opportunity to contribute observations of weather and climate changes (Inuvialuit Traditional Knowledge and Local Knowledge) so changes in weather and climate can be documented.

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→ [Project description on 24](#)

## Project Description

This project responds to several concerns expressed by Inuvialuit communities:

1. Several communities throughout the ISR share that they are often curious about the findings of research that has happened in their communities.
2. Community members often recount observed changes in the weather and climate, but this information is seldom documented beyond shared stories.
3. Community-based monitoring programs are relatively new and so there is a limited climate record to understand how measurements deviate from normal. However, there is a wealth of Inuvialuit knowledge in communities that can be used to develop the local climate record.

The Inuvialuit Regional Corporation (IRC) will lead and coordinate this project to gather climate information

from community monitoring programs, community members in the ISR, and Federal government partners. The collected information will then contribute to products that will be used by Inuvialuit communities and inform other relevant stakeholders.

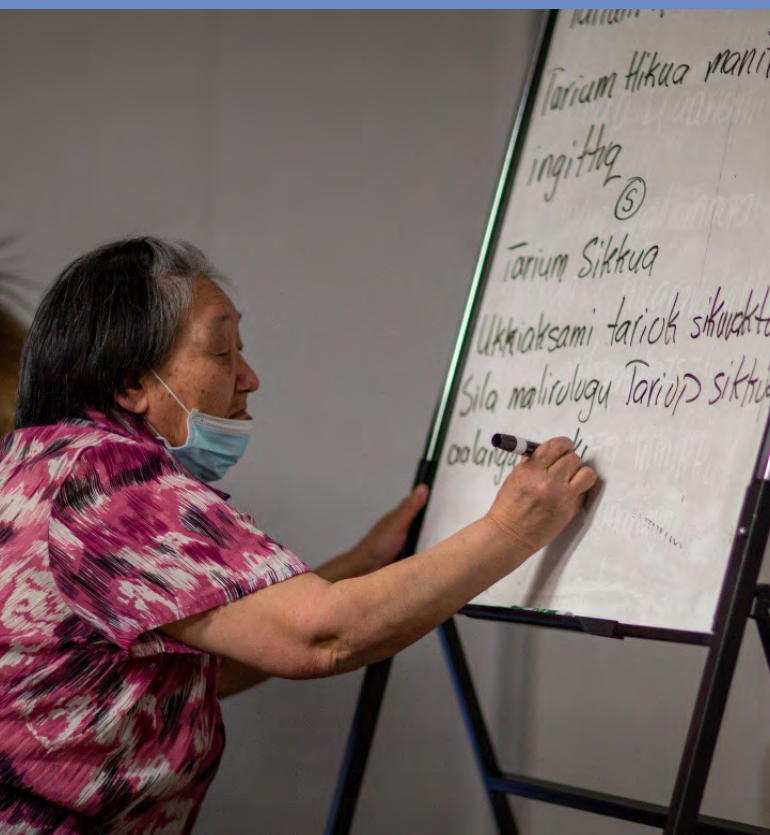
The successful completion of this project will accomplish three main goals:

1. Create a network to ensure knowledge is coming back to ISR communities (priority item for ISR communities).
2. Consolidate climate-related information from various sources in a centralized, curated, Inuvialuit-owned product to improve the visibility of and access to such information by community members.
3. Advance Inuvialuit self-determination in climate change research.



↑ Photo courtesy of Elizabeth Kolb (Photographer), IRC Communications Division

# Improving Communication on Climate Change Terminology for Communities and Researchers in the Inuvialuit Settlement Region (ISR)



## Organization Name

Inuvialuit Regional Corporation

## Project Lead(s)

Darby Desrosiers, IRC Clean Energy Program Coordinator and Jenn Parrott, IRC's Director of Innovation, Science, and Climate Change

## Communities Involved

Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Ulukhaktok, Sachs Harbour

## Completion Status

Ongoing

## Project Objective/Purpose

To identify, develop and promote the use of accurate, standardized climate change terminology in all three Inuvialuktun dialects (Kangiryuarmiutun/Inuinnaqtun, Sallirmiutun, and Uummarmiutun) by creating a climate change Terminology Glossary booklet that will be made available to community members and researchers.

## Project Description

IRC has been involved in an ongoing effort to help close the growing communication gap between Inuvialuit Traditional Knowledge and climate change research and support the use of Inuvialuktun as the working language within the Inuvialuit Settlement Region (ISR). IRC is hosting a series of terminology workshops to develop a standard climate change terminology in all three dialects spoken across the ISR. The workshops involve translators for all three Inuvialuktun dialects and IRC language professionals. The results of these workshops will be contained in a climate change glossary of terms booklet that will be made available to community members and researchers.

This project's results will apply to a wide range of uses. The immediate use of this workshop's results will be to develop the Terminology Glossary. This glossary will be widely available for public use and will be strongly promoted to community members and researchers. The translated terms are currently being used for the IRC children's books: *Energy from Our Environment* and *A Special Day with Anaanaga* and will also be used in future publications for knowledge mobilization and language revitalization.





March 2022 Terminology Workshop. Photo courtesy of Elizabeth Kolb (Photographer), IRC Communications Division

## Improving Communication on Climate Change Terminology for Communities and Researchers in the Inuvialuit Settlement Region (ISR)



# Understanding Patterns of Social Interaction in the Inuvialuit Settlement Region (or Community Connections Survey)



↑ Photo courtesy of Elizabeth Kolb  
(Photographer), IRC Communications Division

## Organization Name

Inuvialuit Regional Corporation

## Project Lead(s)

Matthew Chudek, Statistician and Ryan Mazan, IRC's  
Applied Research Manager

## Communities Involved

Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Ulukhaktok, Sachs  
Harbour

## Completion Status

In progress

## Project Objective/Purpose

The study aims to collect information about daily contacts between Inuvialuit to better understand how infectious diseases (such as COVID-19) spread through communities in the Inuvialuit Settlement Region. This is the first time that data of this nature will be collected in the Arctic. Results can support the development of public health guidelines and other preventative measures of virus transmission.

## Project Description

The Inuit Qaujisarnirmut Piliirijjutit (IQP) program funded the IRC led project to help us better understand virus transmission in the Inuvialuit settlement Region. The project design and Community Connections Survey (CCS) were developed and led by the Innovation, Inuvialuit Science and Climate Change (ISCC) division. The CCS is designed to collect information about interpersonal contact patterns of Inuvialuit adults and households, and general information. The ISCC administered the paper-based CCS in each of the ISR communities with assistance from Community Representatives. Survey operations were carried out in March 2022. A total of 386 surveys were completed by the end of the collection period, yielding a response rate of about 64%. Data processing and analysis will be completed in the next fiscal year.

# The Role of Genomics in Fostering and Supporting Arctic Biodiversity: Implications for Policy and Indigenous Food Security



↑ Photo courtesy of Kayla Arey, Parks Canada.

## Organization Name

Inuvialuit Regional Corporation

## Project Lead(s)

Jenn Parrott, IRC's Director of Innovation, Science, and Climate Change

University of Calgary, Carleton University, Ikaarvik, Athabasca University

## Communities Involved

Aklavik, Inuvik, Paulatuk, Tuktoyaktuk, Sachs Harbour, Ulukhaktok

## Completion Status

Ongoing

## Project Objective/Purpose

The purpose of the Genomics Inventory and Assessment is to improve the knowledge of the applications of genomics to different Arctic species and their associated pathogens.

## Project Description

The Genome Inventory and Assessment project is funded by Genomes Canada. The purpose of the assessment is to improve the knowledge of the applications of genomics to different Arctic species and their associated pathogens. The IRC (ISCC Division) has partnered with the University of Calgary and Carleton University to catalogue genomes related flora and fauna research conducted in the Arctic and to inform organizations about the importance of such research in ensuring biodiversity in the regions. The project provides funds to hire Inuvialuit youth to assist with completing IRC's portion of the project.

# Advancing Arctic Research through Connected Infrastructure



↑ Photo courtesy of Elizabeth Kolb (Photographer), IRC Communications Division

## Organization Name

Inuvialuit Regional Corporation

## Project Lead(s)

Jenn Parrott, IRC's Director of Innovation, Science, and Climate Change

University of Calgary, Carleton University, Laval University, University of Manitoba, University of Waterloo and Simon Fraser University

## Communities Involved

Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, Ulukhaktok

## Completion Status

Ongoing

## Project Objective/Purpose

The Canadian Consortium for Arctic Data Interoperability (CCADI) will help make dataset metadata and/or datasets disseminated by IRC easier to find and reuse with clear licensing. This will increase knowledge transfer and self-determination in research.

## Project Description

The Canadian Consortium for Arctic Data Interoperability (CCADI) is currently composed of Arctic scholars and Arctic data managers at the Inuvialuit Regional Corporation, University of Calgary (Arctic Institute of North America), the University of Waterloo (Canadian Cryospheric Information Network and Polar Data Catalogue), Carleton University (Geomatics and Cartographic Research Centre), the University of Manitoba (Centre for Earth Observation Science), Laval University (Centre for Northern Studies), University of Ottawa (Faculty of Law), Natural Resources Canada, Polar Knowledge Canada, Cybera Inc., Polar View, and Sensor-Up Inc. The CCADI will develop an Arctic Research Data Infrastructure based on a vision to support and grow a research community that fully engages Inuit; that is properly governed to enhance individual, local, regional, national, and international initiatives in data management and research; and that builds capacity across a network of linked data centers with common standards, practices, tools, and expertise. It will facilitate data discovery and description, enabling data to be shared across systems for analysis and visualization. It will support efficient, effective use of data, allowing Canada to better realize the benefits of our decades of investment in Arctic research.



# Inuvialuit Socio-Cultural Economic Indicators



## Organization Name

Inuvialuit Regional Corporation

## Project Lead(s)

Bob Simpson, IRC's Director of Intergovernmental Relations  
Ryan Mazan, IRC's Applied Research Manager

Jenn Parrott, IRC's Director of Innovation, Science, and Climate Change

## Communities Involved

Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, Ulukhaktok

## Completion Status

Ongoing

## Project Objective/Purpose

To support evidence-based decision making in the Inuvialuit Settlement Region by ensuring the best quality social, cultural, and economic data is available to decision makers.



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## Project Description

The long-term goals of Inuvialuit self-governance and self-direction require a foundation of good social, cultural, and economic data. It is easier to govern well with access to reliable information about topics such as housing, health, social needs, and economic preferences.

To support these goals, the Inuvialuit Regional Corporation (IRC)'s Innovation, Science, and Climate Change (ISCC) division is building institutions that will continually acquire, manage, and present regional data on these topics. The work includes forming partnerships with data-holding organizations, developing internal capacity — including policies, systems, and staff training — and cataloguing and making available the data we already have.

Inuvialuit Indicators was launched in 2007 to track the socio-economic well-being of Inuvialuit in the Western Arctic. The timing of its launch coincided with discussions and planning for the proposed Mackenzie Gas Project. IRC determined that this major infrastructure could substantially exacerbate existing social problems in the region. As a result, Inuvialuit Indicators help monitor the impacts of oil and gas development on the region's socio-economic conditions and create a

database to show historical trends in the years to come. There are currently over 150 indicators available on the website which can be downloaded or visualized using the platform. Data has been contributed from the Northwest Territories Bureau of Statistics; Beaufort Delta Education Council; other Government of the Northwest Territories (GNWT) departments, boards, and agencies; Government of Canada; and IRC.

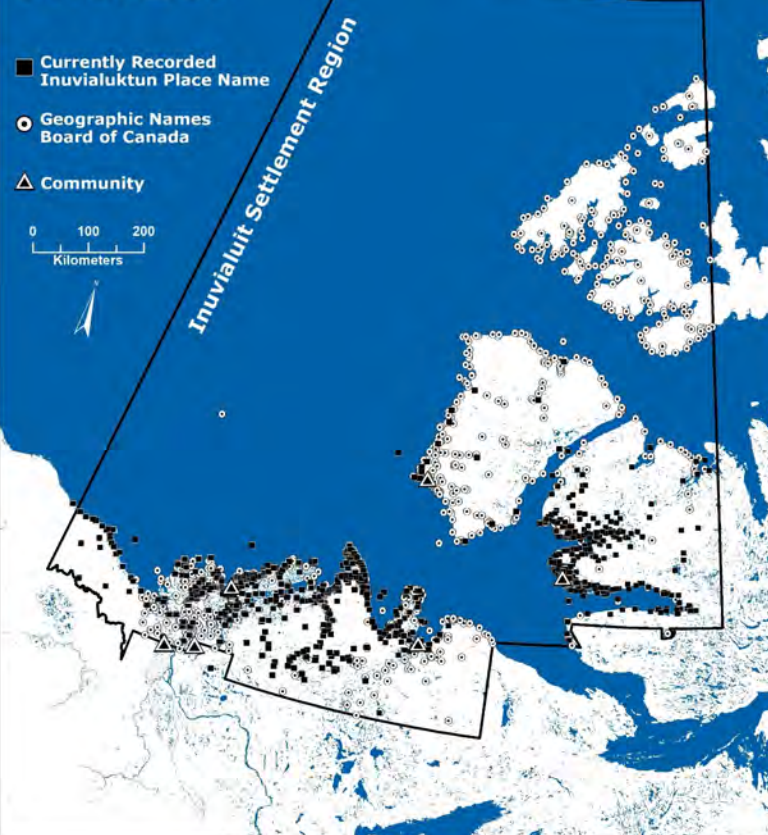
Working with Statistics Canada and the GNWT Statistics Department, we are compiling social, cultural, and economic indicators about life in the ISR.

We are working to ensure these statistics are always available in a consistent format, are available within IRC for staff and directors to use and published online for ISR residents to reference.

Work on an updated indicator dashboard and factbook is underway and should be available sometime in 2023. An old version of the site is available at <https://indicators.inuvialuit.com/>.

# Inuvialuit Place Names (IPN)

## INUVALUIT PLACE NAMES PROJECT



### Organization Name

Inuvialuit Regional Corporation

### Project Lead(s)

Michael O'Rourke, IPNP Coordinator

Jenn Parrott, IRC's Director of Innovation, Science, and Climate Change

### Communities Involved

Aklavik, Inuvik, Paulatuk, Sachs Harbour, Tuktoyaktuk, Ulukhaktok

### Completion Status

Ongoing

### Project Objective/Purpose

The goal of the Inuvialuit Place Names (IPN) project is to establish a centralized, Inuvialuit controlled collection of all previously documented Inuvialuit place names.

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## Project Description

This collection of place name records will be securely maintained by the Inuvialuit Regional Corporation (IRC), with access to project results restricted to IRC agencies and their partners. Such detailed records will position the IRC to work with the Geographic Names Board of Canada to officially include Inuvialuit place names on national maps. The project will also act as a baseline from which additional place name research programs will be developed in the years ahead.

Over the centuries, Inuvialuit and their ancestors have given names to places of cultural significance. These names may reflect the kinds of activities that were carried out there, the kinds of resources an area is known for, or the events/people that are associated with those places, among numerous other commemorative reasons. Place names help to shape and define the cultural landscape and exist as an enduring record of Inuvialuit history and heritage. Knowing place names and their meanings, the resources or landmarks at those locations, and the sequence of those place names as people journeyed along travel routes was one way that Inuvialuit learned to read the land prior to the influence of colonial lifeways. These locations are critically important to identifying key areas of significance within the ISR, and their continued use is an important aspect of Inuvialuit Culture. This initiative aims to identify, collect, overlap, and quality control Inuvialuit place names (both English and Inuvialuktun), which have been compiled from existing research and regulatory documents.

The IPN project has been developed to take place cyclically, conducted over a series of six phases meant to be repeated on a semi-regular basis (see diagram below). The documentation of place name information is intended to be an ongoing process, capable of including new place name details as time passes and new stories about culturally significant locations are shared by Inuvialuit.

The first three phases of the IPN project have been completed (see the Project Cycle Diagram). This has resulted in the compilation of a large volume of place name records sourced from research and regulatory reports. While the Community Vetting Process (Stage 4) has been delayed due to the COVID-19 pandemic, interviews and language reviews have begun again and will continue into 2024.

The IISCC Division has secured project funding from Polar Knowledge Canada (POLAR), which is providing nearly \$450,000 to support efforts on the IPN project.

This funding will ensure that the IPN project can meet its objectives, while providing a means of documenting Inuvialuit perspectives on the lands and waterways of the ISR through future project cycles, as shown in the Project Cycle Diagram below.



# **Inuvialuit Settlement Region Research Projects**

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Inuvialuit Regional  
Corporation's  
Partnered Research  
Projects



# Community Capacity for Climate Change and Food Security



## Organization Name

University of Waterloo, University of Ottawa, Wilfrid Laurier University, Laval University, Tele University (Québec), Inuvialuit Regional Corporation, Paulatuk Community Corporation, Paulatuk Hunters and Trappers Committee, Tuktoyaktuk Community Corporation, Tuktoyaktuk Hunters and Trappers Committee, Inuvialuit Game Council, Government of Northwest Territories

## Project Lead(s)

Kelly Skinner, Sonia Wesche, Tiff-Annie Kenny, Sonja Ostertag, Jullian MacLean

## Communities Involved

Paulatuk, Tuktoyaktuk

## Completion Status

Multi-year, year 3 of 6 (extended due to COVID)

## Project Objective/Purpose

This project works closely with Paulatuk and Tuktoyaktuk, as well as 4 other communities in other NWT regions, and regional and territorial partners. The goal is to work collaboratively with community researchers to strengthen local capacity and identify place-based solutions to respond to food security issues in the face of climate change. The areas of focus are based on priorities identified by each community. Key dimensions include Indigenous Knowledge, governance, youth, and gender.

→ [Project description on 36](#)

## Project Description

Our research team has collaborated with the Inuvialuit Regional Corporation and community partners to conduct research on local and regional food security priorities for several years. This project responds to local and regional priorities identified during a community engagement process in 2018-19 and several consultations with local organizations in Paulatuk and Tuktoyaktuk.

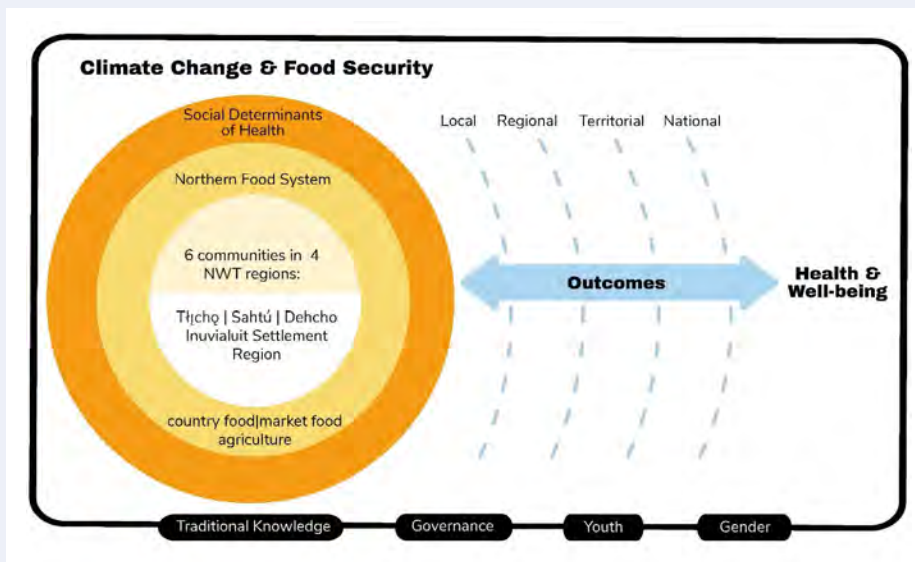
Building on our experience collaborating with community researchers, we began by hiring a Regional Food Security Coordinator based in Paulatuk to be the Community Research Lead for the ISR and to mentor other community research assistants. Despite COVID restrictions, we were able to work virtually with the coordinator and other community researchers to advance the project.

In Paulatuk, we are conducting an evaluation of the Nutrition North Canada (NNC)-funded cooking circle program, to understand both process and outcomes. Through a combined document analysis and series of interviews with NNC cooking circle participants and community representatives, we have learned about program successes, and have assessed the possibility of more consistent incorporation of country foods into the program. Preliminary results indicate that the program plays an important role in participants' food security and wellbeing.

In Tuktoyaktuk, we conducted an economic comparison of market food prices before and after the opening of the Inuvik-Tuktoyaktuk Highway (ITH) to assess the impact of the loss of the NNC subsidy. We used data from both Nutrition North Canada and from an ISR participatory food costing study that we have undertaken since 2015 with the help of community researchers.

To gain an initial understanding of how the ITH has impacted residents of Tuktoyaktuk, we supported an Inuvialuit youth journalist in conducting a series of youth and Elder interviews. Participants shared their experiences about the impacts of the Inuvik-Tuktoyaktuk Highway on food costs and food access, including both market and country food. We are working with local partners to develop a research plan to build on these findings through additional community-based research activities. The aim is to analyze local perspectives on the impacts of the ITH – including key trends connected to food access and affordability, harvesting, travel, and community wellbeing – as well as its impact on the regional food system.

We will continue to work with the communities to identify priorities for new climate change and food security research projects.



←Photo courtesy of Elizabeth Kolb (Photographer), IRC Communications Division

# Country Foods in Community Programming: Supporting Schools, Daycares and Cooking



## Organization Name

University of Waterloo, University of Ottawa, Laval University, Inuvialuit Regional Corporation

## Project Lead(s)

Kelly Skinner, Sonja Ostertag, Sonia Wesche, Tiffanie Kenny, Jullian MacLean

## Communities Involved

Tuktoyaktuk and Paulatuk

## Completion Status

Ongoing, Year 2 of 2

## Project Objective/Purpose

Our objectives are to respond to the following questions:

1. How can we use and/or improve existing infrastructure to support country foods in schools?
2. What is the role of food processing and storage spaces (e.g., trailer facilities; community freezers)?
3. What can we learn from how communities have adapted and succeeded in harvests during COVID-19?
4. What is needed to develop and sustain those pathways to make the system resilient over the longer term?
5. What can we learn from the two communities about incorporating more country food into existing programming, to share with other communities in the ISR?

→ [Project description on 38](#)

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## Project Description

Our research team heard from community partners in Tuktoyaktuk and Paulatuk that there is a keen interest in finding pathways to incorporate more country food into existing food programming, including school food programs, daycares, and cooking circles. While significant food security work is underway in the ISR — including improved capacity for country food processing and storage, and increased youth engagement in community harvests —there exist key opportunities to support and enhance existing initiatives and to build capacity for increased incorporation of country foods into food programming. The main challenge is to better understand: ***What are the challenges, opportunities, needs, and pathways for incorporating more country food into existing food programming in Tuktoyaktuk and Paulatuk, NWT, and how can this system be resilient and sustainable for communities to implement?***

We began by working with our community partners to conduct a scan of existing food programs and relevant community infrastructure, and then by co-creating and developing program goals and implementation plans for incorporating more country food into programs. Pilot projects are integrating more country food into existing programs in each of the schools, daycares, and cooking circles by improving connections and collaborative networks for harvesting, processing, and preserving country foods. Documentation of lessons learned and mechanisms

from the pilot projects will contribute to developing communication materials and resources that will be shared between the communities and more broadly in the region.

This project engages members of all ages in the communities (e.g., preschoolers at daycares, school-aged children, parents, and Elders). Schools and youth are leading the creation of cookbooks that celebrate country food. Through video and photography activities, youth are being engaged using techniques and tools that are of interest to them. This builds their ability to share Inuvialuit knowledge, while putting the tools and skills in the hands of the youth so that they can document the stories in their own way. Youth are involved in harvesting, preparing, and preserving country foods, while providing mentorship and acting as role models for children in the schools.

Increased availability of country foods can allow communities to shift towards greater reliance on the country food system instead of food purchased from stores. This will increase food security and build a more sustainable and resilient food system for communities, households, families, and youth.

In Phase 2 we hope to respond to the challenges and mechanisms identified in Phase 1, expand the pilot





# Inuvialuit Settlement Region Research Projects

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Academic  
Organization's  
Research Projects

# Green Alder Growth and its Impact on the Land



## Organization Name

Wilfrid Laurier University

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## Project Lead(s)

Dr. Jennifer L. Baltzer

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## Communities Involved

Inuvik

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## Completion Status

Complete

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## Project Objective/ Purpose

Gain a better understanding of how green alder interacts with nearby plants and other parts of the ecosystem

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## Project Description

Green alder is a shrubby plant that grows in the southern part of the Inuvialuit Settlement Region (ISR). This shrub and many others, like willow and birch, are getting larger and more common in response to recent warming throughout many parts of the Arctic, including the ISR. Our research group, led by Dr. Jennifer Baltzer, worked out of the Trail Valley Creek Research Station, just north of Inuvik, between 2015 and 2017, studying how green alder shrubs impact the local ecosystem. We have three primary results:

- **Alders grow differently depending on where they are.**
  - The position an alder grows on a hill influences how productive the shrubs are. In general, the tops of hills are harsher environments for alders than channels in terms of soil resources, which may explain why alders tend to be larger in channels. One of the ways we learn this is by installing sensors that can measure how much water an individual alder uses while it grows.
- **Alders change the areas they grow in.**
  - Alder patches tend to have deeper snow, drier soils, thinner seasonally thawed soil layers, and different types of nutrients than the open tundra. We have also found that alder patches transport more water from the soil to the air than alder-free tundra. These environmental differences mean that alder patches also support different types of plant species. There are more evergreen shrubs (like Labrador Tea) and fewer species of plants that usually grow in the tundra above the treeline. The alder patches we studied were unaffected by recent fire, road construction, or other processes that disturb

the soil. There is evidence from research previously done in the region that alder patches arising in response to disturbance grow much differently and have different impacts on the environment.

- **Alder seed does not get everywhere.**
  - It turns out that the places that have the most alder seedlings are the places where the most alder seed can get to, which might mean that there are places with the right environmental conditions (e.g., nutrients and water) to support alder, but that seed does not arrive there so alder doesn't grow there. We learned this by setting out plastic trays to catch seed, counting seedlings, and using computer models to predict where seed should arrive. These results are important because if growing conditions improve with climate change, green alder will not necessarily be able to take advantage of them.
  - Green alder patches make up a relatively small portion of the landscape in the ISR, but they do have a clear impact on the places they grow. Since climate warming is driving their expansion, understanding more about alder helps us better predict future changes to the tundra with ongoing climate warming.

# Developing Local Capacity to Support 'Nested' Arctic Tundra Flux Measurements in the Inuvialuit Settlement Region

## Organization Name

University of Montréal

## Project Lead(s)

Oliver Sonnentag

## Communities Involved

Inuvik

## Completion Status

Ongoing

## Project Objective/ Purpose

The goal of this project is to shed light on how tall shrub encroachment affects vegetation composition, structure, and diversity and associated surface-atmosphere interactions in the Inuvialuit Settlement Region. Leveraging 'nested' Arctic tundra flux measurements and supported by community members, the project quantifies carbon dioxide and methane fluxes across scales and examines the scale-dependency of their abiotic and biotic controls.



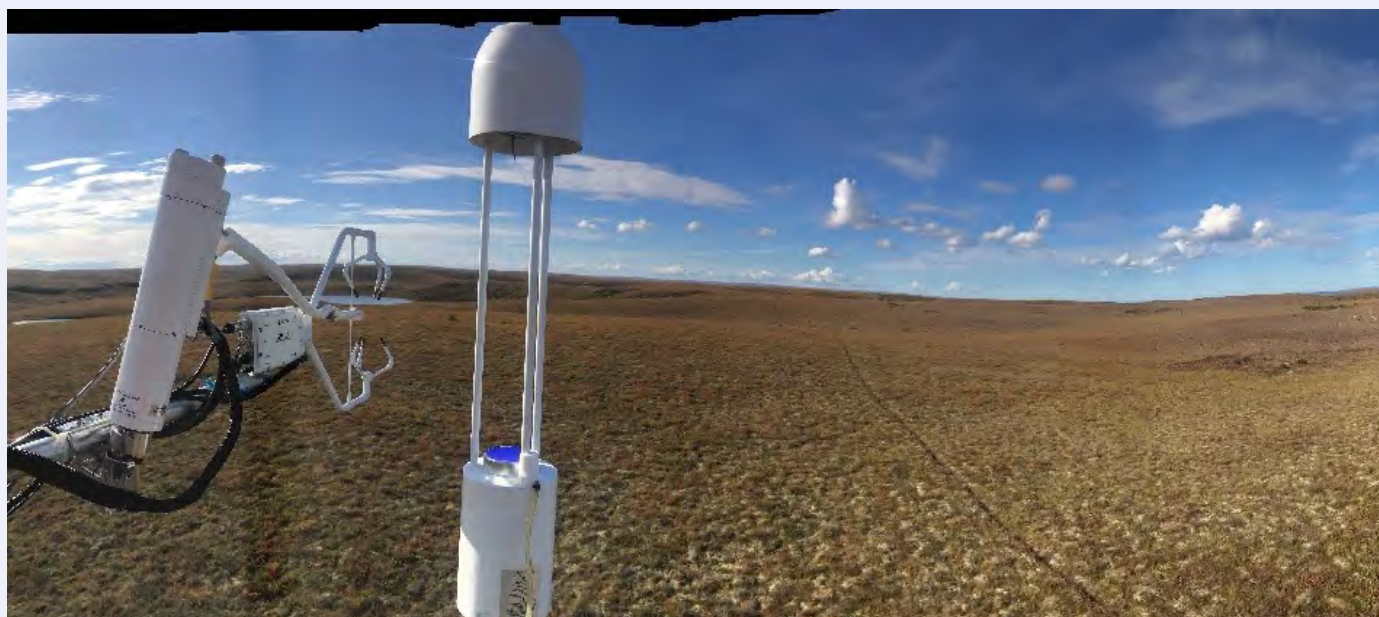


## Project Description

After several years of planning, and delayed by the COVID-19 pandemic, the 'nested' Arctic tundra flux set-up (landscape > ecosystem > plot) at Trail Valley Creek Research Station near Inuvik, NT was completed in 2022. The flux set-up comprises three eddy covariance towers, and automated and manual chamber systems. The 20-m landscape eddy covariance tower measures net carbon dioxide, methane, and latent and sensible heat exchanges between the terrestrial-aquatic landscape (including extensive shrub patches) and the atmosphere. Given prevailing wind characteristics, nested within the landscape flux footprint (i.e., the temporally varying source area) are a 5-m and a 7-m ecosystem eddy covariance towers, one "seeing" fluxes originating from polygonal tundra, or, depending on wind direction, a small lake, and one "seeing" fluxes originating from mineral upland tundra, respectively. Nested within the ecosystem flux footprint (mineral upland tundra) is a custom-made chamber system to measure plot-scale net carbon dioxide and methane exchanges. The chamber system comprises 18 automated chambers (nine 'transparent' and nine 'opaque' chambers), each with three replicates for

three distinct plant communities: dwarf shrub, tussock, and lichen cover. Manual chamber measurements are collected from additional plant communities and land cover types (e.g., polygonal tundra and lakes).

The project engages community members in taking complementary ancillary measurements of air and soil temperature, photosynthetic photon flux density, active layer depth, plant community composition, spectral characteristics, greenness, and soil moisture, temperature, and oxygen. Additional measurements to understand the underlying biogeochemical processes governing the carbon dioxide and methane sink-source behaviour include soil physical-chemical properties and gas profile dynamics, the isotopic signal of  $\delta^{13}\text{C}$  in soil carbon dioxide and methane, soil pore water and lake nutrient concentrations, quality and microbial degradability of aquatic dissolved organic matter and microbial community composition. Building local capacity is a prerequisite for continued ecosystem monitoring to support the people of the Inuvialuit Settlement Region to adapt to climate change impacts occurring on their territory.



# “Can we tell them that people can’t afford to eat, and it’s getting worse and worse?”: Developing Innovative Methods for Participatory Food Environment Research in Northern and Remote Communities



## Organization Name

Laval University, University of Victoria, University of Ottawa, University of Waterloo, University of Montréal, Dalhousie University, Memorial University

## Project Lead(s)

Tiff-Annie Kenny, Matthew Little, Celina Wolki, Jullian MacLean, Sonia Wesche, Sonja Ostertag, Gerald Singh, Malek Batal, Simar Saini, Sylvain Charlebois, Desai Shan

## Communities Involved

The project will be piloted in two to three communities of the ISR (tentatively Inuvik, Paulatuk, and Tuktoyaktuk)

## Completion Status

Ongoing, Year 1 of 2

## Project Objective/Purpose

The aim of this project is to co-develop new community-engaged methods to monitor the retail food environment (including market food cost, availability, and quality) and its impact on Inuvialuit consumers (for example, food affordability, purchasing patterns). Specifically, we will:

1. Test a crowdsourcing approach to collect information about the retail food environment using a smartphone application and consumer till receipts.
2. Assess food quality features (for example, produce freshness and freezer burn on meat) using high-resolution smartphone cameras.
3. Document and integrate community knowledge, experiences, and perceptions of the retail food environment.
4. Develop partnerships with the retail food sector to explore possibilities of using retailer-collected information to monitor nutrition and cost-of-living.

## Project Description

Our research team has collaborated with the Inuvialuit Regional Corporation (former Regional Dietitian Jullian Maclean) and community-based researchers to monitor the cost, availability, and quality, of market food in communities of the ISR for several years.

The project was initially launched in 2014 following a regional food security planning process in Inuvik. During this process, ISR community leaders questioned the effectiveness of measures like the Nutrition North Canada retail subsidy and identified the need to independently monitor the cost and quality of market foods as an important research priority.

During a 14-month period (late 2014 to early 2016), community-based researchers collected community-level information on the cost, quality, and availability of over 100 market foods that were reported to be frequently consumed by Inuvialuit in previous diet and health research (e.g., 2007-2008 Inuit Health Survey). The research found that, on average, nutritious market foods tended to be more expensive than less nutritious options, and that the price differences between more and less nutritious foods may be a barrier to people eating more healthful diets. The cost of feeding a family of four was also found to be over twice as expensive in the region as compared to Ottawa. Data collection for the project continued periodically in select communities when funding was available until 2019.

In 2022, funding was successfully obtained to develop a new phase of the project. This new phase will leverage the strengths of the previous participatory food costing study but will focus on co-developing and piloting (in two or three communities) new methods that will make it easier (i.e., less time consuming and costly) for communities to collect, analyze, and use, this information on a more regular basis. The project will also develop methods to account for variations and extremes in food prices, food affordability (that is, food cost, in relation to income and other major expenses) for different household types (like households with single mothers, elders, and those on income support), as well as collect critical Inuvialuit knowledge, perceptions, and experiences related to the retail food environment.

Community and regional consultations for the project will be conducted in the fall-winter of 2022-23, with an anticipated start in the spring of 2023. A regional results and knowledge sharing workshop will bring together representatives from each ISR community in late 2023. We hope to expand the project to all communities in the ISR interested in participating once additional funding is obtained following this pilot stage.





# Modeling Carbon Emissions from the Tundra in E3SM Land Model (ELM) using Trail Valley Creak Soil and Meteorological Data

## Organization Name

FLUXNET Secondment Program  
University of Montréal  
Ohio State University

## Project Lead(s)

Oliver Sonnentag and Theresia Yazbeck

## Communities Involved

Inuvik

## Completion Status

Ongoing

## Project Objective/ Purpose

Land surface models are a common tool for estimating local and global carbon fluxes from the earth to the atmosphere. Arctic tundra is gaining more attention lately for its increased biogeochemical activity due to rapid global warming, thus resulting in increased methane and carbon fluxes. This project aims to use meteorological data collected at Trail Valley Creek site to parametrize E3SM Land Model (ELM) and improve its estimation of carbon fluxes.





## Project Description

In the last decades, rapid increase of high latitudes temperatures leading to permafrost thawing and frozen microbial activity activation resulted in significant change in the region's vegetation traits and greenhouses gas emissions, namely methane and carbon dioxide. Tundra, a common ecosystem type of the Arctic biome, has undergone several plant functional traits changes due to climate change and is expected to contribute to the majority of soil carbon loss due to warming over the coming century. Thus, understanding tundra response to climate change and its inclusion in earth system models is essential for reducing models' uncertainty and better predicting greenhouse gas emissions.

This project is a collaboration between the Micrometeorology lab at the Ohio State University and ATMOSBIOS lab at the University of Montréal under the FLUXNET Secondment Program. The collaboration consists of using Trail Valley Creek (TVC) meteorological data (soil and chamber measurements and Eddy-Covariance data for CA-TVC site) to improve modeling of Tundra soils in ELM, land surface model used at OSU

Micrometeorology lab. Through that project, Theresia Yazbeck, a student from the Ohio State University, had the chance to take part of the fieldwork led by ATMOSBIOS at TVC. The field trip was preceded by a Safety training at Arctic Response Canada focusing on Fall Protection, Wilderness First Aid, and Wildlife Awareness. The fieldwork consisted of spending one week at TVC assisting ATMOSBIOS lab students setting up the auto-chambers and sampling fluxes from nearby lakes. Current efforts are focusing on modeling TVC site using ELM, where collected data is used to parametrize and validate the simulations.

Ongoing work at Trail Valley Creek Research Station aims at investigating the effect of tall shrub encroachment on vegetation composition, structure, and diversity and associated surface-atmosphere interactions. These studies will help us better understand the changing biogeochemistry of high latitudes, and consequently better represent it in land surface models, which will result in reducing the uncertainty of these models in estimating carbon fluxes from Arctic sites.













# A Glance at the NASA Arctic-Boreal Vulnerability Experiment in the ISR

## Organization Name

University of Montréal

## Project Lead(s)

Léa Cornette, Trevor Kaglik, Bruno Lecavalier, Samuel Raddi

## Communities Involved

Inuvik and Tuktoyaktuk

## Completion Status

Ongoing

## Project Objective/ Purpose

The aim of this field campaign was to gather ground truthing data destined for the calibration and validation of a microwave radiometer (L-band) flown above the Inuvialuit Settlement Region onboard NASA's JSC Gulfstream III.





## Project Description

In late August 2022, a team of two University of Montréal students and two Inuvialuit residents of Inuvik visited sites in the Inuvialuit Settlement Region as part of the NASA Artic-Boreal Vulnerability Experiment (ABoVE). The campaign spanned a total of five days and the team's objective was to shed light on current and future vulnerabilities of the Arctic and boreal biomes of western North America.

The objectives of NASA ABoVE revolve around a central question: 'How vulnerable or resilient are ecosystems and society to environmental change in the Arctic and boreal region of western North America?' A major component of NASA ABoVE is its airborne science initiatives. The ABoVE Airborne Campaign (AAC) aims to link field-based measurements with geospatial data derived from airborne and satellite remote sensing, enabling the study of process-level research questions at very large scales across boreal and Arctic regions. Since 2017, the AAC has carried out yearly flights (excluding 2020 and 2021), featuring a transect over the Mackenzie Valley between Inuvik and Tuktoyaktuk. This route intersects two established research sites that

were visited this year for data collection: Trail Valley Creek, located in the Arctic tundra, and Havikpak Creek, located in the boreal forest.

The microwave radiometer penetrates near-surface soil and is hence able to provide sub-surface information on soil moisture and active layer depth. It also enables the characterization of canopy and vegetation structure above ground. The ecological and climatic gradient along the transition from boreal forest to tundra in the Inuvialuit Settlement Region provides the means to validate these airborne measurements across vastly different ecosystem and land cover types. The field team was notably able to gather data across different permafrost conditions and landforms such as ice-wedge polygons, which are features of critical importance due to their acute vulnerability to climate change. The data on soil properties, active layer depth, and vegetation characterization that was collected will be used to calibrate and validate this instrument to be used in further efforts to study Arctic and boreal vulnerabilities.



# Greenhouse Gas and Water Chemistry Monitoring of Lakes and Permafrost Thaw Slumps Along the Inuvik-Tuktoyaktuk Highway

## Organization Name

University of Montréal

## Project Lead(s)

Kathryn Bennett, Oliver Sonnentag

## Communities Involved

Inuvik

## Completion Status

Ongoing

## Project Objective/ Purpose

The goal of this project is to measure water quality and the amount of greenhouse gases being released from lakes with thawing slope areas and beaver activity in the Inuvialuit Settlement Region (ISR). This information will help us to understand the combined impact of permafrost thaw and beaver activity on water quality and how much lakes contribute to greenhouse gas emissions from the tundra.





## Project Description

Increasing beaver activity and rapid climate change in the Inuvialuit Settlement Region (ISR) have the potential to impact lake functioning and ecosystem health. While we know beaver activity and climate change are impacting the ISR, there is still much to learn about how individual lakes respond to these changes. Thawing permafrost on the edges of lakes releases nutrients into the water that may increase greenhouse gas production within lakes or be transported into streams, rivers, and other lakes. Beaver dams, lodges, and beaver activity can increase water levels and the amount of organic matter and lower the amount of oxygen in lakes. All these impacts have been seen in other parts of North America to increase the amount of greenhouse gases coming out of lakes.

It is normal for lakes in the North to release greenhouse gases, especially methane. Lakes are an important part of the global carbon cycle by storing carbon in their sediments and moving carbon between water and the atmosphere. On a large scale, increasing release of greenhouse gas emissions from lakes can combine with human- caused greenhouse gases in the atmosphere and accelerate climate change impacts in the North. We are trying to understand whether changing temperatures, precipitation, and beaver activity are changing the amount of greenhouse gases that are released from lakes and how carbon and other nutrients move through lakes in the region.

This past summer, we worked with members of the Inuvik community to measure greenhouse gas emissions from three thawing permafrost slopes and three lakes around Trail Valley Creek Research Station. The research station is located north of Inuvik along the Inuvik to Tuktoyaktuk Highway. The lakes have varying levels of past and present beaver activity, allowing us to compare the short- and longer-term impacts of beavers on lake water quality and greenhouse gases. We use chambers like the ones pictured to create a “mini atmosphere” and measure how much methane and other greenhouse gases are coming out of the land and the water. These measurements are repeated 1 to 2 times per week during the summer because they are heavily influenced by the weather. In August, we collected water samples that are being tested for nutrients and carbon at our lab in Montreal. Next summer, we will continue the same measurements from June to August.

Answering how specific lakes respond to changes from a warming climate, permafrost thaw, and beaver activity will allow us to better understand how lakes across the region are responding to change. This information is useful for informing local decision makers about how to best protect lakes to minimize changes that may be harmful to water quality and ecosystem health. Our data is also useful for building computer models that help us predict how similar lakes are behaving across the Inuvialuit Settlement Region and how they will react to expected changes in the future.



# Assessment of Possible Regional Climate Changes in Response to Global Climate Warming Induced Vegetation Changes.

## Organization Name

University of Montréal

## Project Lead(s)

Vincent Graveline, University of Montréal

Oliver Sonnentag, University of Montréal

Manuel Helbig, Dalhousie University

## Communities Involved

Inuvik

## Completion Status

Ongoing

## Project Objective/ Purpose

Climate change will change vegetation distribution. For example, taller and denser shrubs have been reported across the Inuvialuit Settlement Region, but at the same time, tree cover seems to be decreasing. By comparing detailed observations of surface – atmosphere interactions at paired research sites near Inuvik, this project aims to shed light on how the absence of trees affects the dynamics of the lower part of the atmosphere and regional climate.





## Project Description

Vegetation composition, structure, function, and distribution are changing in response to climate change. This is especially true at the margins of ecosystems such as along the northern edge of the boreal biome characterized by the forest-tundra ecotone, the world's largest ecological transition zone from boreal forest over sub-Arctic woodlands to Arctic tundra. In some portions of this transition zone, tree cover is expanding into areas currently occupied by tundra. However, in other portions, including the Inuvialuit Settlement Region, tree cover seems to be decreasing. Regardless of the direction of change, the presence or absence of trees determines surface properties (e.g., albedo) and how the region interacts with the atmosphere with consequences for regional climate (e.g., air temperature, atmospheric humidity).

We used late-afternoon observations of air temperature and atmospheric humidity collected

from weather balloons routinely launched near the airport in Inuvik (Havikpak Creek, a sub-Arctic woodland) and launched on a campaign basis at the Trail Valley Creek Research Station (dwarf-shrub tundra) to examine the differences in the state of the lower part of the atmosphere when trees are present or absent. The vertical temperature and humidity profiles were compared with turbulent heat fluxes quasi-continuously measured with micrometeorological techniques at Havikpak Creek and Trail Valley Creek. Next, these heat fluxes were used to run a simple vertical model of the lower part of the atmosphere to quantify the impact of tree presence or absence on the state of the atmosphere at different times of the year.



# How are Fish in Gwich'in and Inuvialuit lakes Responding to Climate Change and New Road Development?



## Organization Name

University of Montréal

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## Project Lead(s)

Wilfrid Laurier University and York University

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## Communities Involved

Alyssa Murdoch (York), Derek Gray (Wilfrid Laurier), Sapna Sharma (York)

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## Completion Status

Complete; link to published paper: <https://nwtdiscoveryportal.enr.gov.nt.ca/geoportal/documents/murdoch%20et%20al%202021.pdf>

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## Project Objective/ Purpose

Our main project goal was to understand how fish in Gwich'in and Inuvialuit lakes are responding to climate change and new road development. The Gwich'in Settlement Area (GSA) and Inuvialuit Settlement Region (ISR) have experienced substantial climate warming as well as new major highway development with the construction of the Inuvik to Tuktoyaktuk Highway (ITH). Together, both climate change and new infrastructure development built on sensitive permafrost have the potential to impact local fish, sometimes in complex ways (**Box 1**).

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## Project Description

### What we did:

To understand how fish were being impacted by climate change and road use, we sampled 50 lakes in the GSA and ISR along the Dempster and ITH corridors over a three-year period (**Figure 1**). At each lake, we collected information about the fish species present, catch-per-unit-effort, lake size, and water quality (e.g., total phosphorus, dissolved organic carbon, dissolved oxygen, Secchi depth, chlorophyll-a). Next, to better understand how warming and road use were influencing lake water quality, we compiled historical water quality data from an additional 153 lakes in the region.

### What we found:

We found that warmer temperatures may have negatively impacted lake fish in the GSA and ISR. However, the negative effect of warming on fish was not straightforward. Although we expected that colder lakes may be preferred by many cold-water fish species (e.g., lake trout, whitefish, cisco), we did not find any clear evidence to support this idea. Instead, lakes that had experienced more warming had poorer water quality for fish, including lower water clarity and higher nutrient and algal levels. These 'murky' lakes supported fewer fish species and lower numbers of fish overall, including less whitefish and northern pike (jackfish).

In addition to understanding climate change effects, we also looked at how highway development may be impacting lake fish in this region. We expected that the highway may influence lake water chemistry due to the potential influence on permafrost stability, changes in runoff, and the impact of road dust entering nearby lakes. We discovered that some lakes located along the ITH appeared to have poorer water quality for fish,

possibly leading to lower numbers of fish. However, it is important to note that more research is needed to understand why some lakes along the highway had poorer water quality for fish.

### Potential conservation and management tools:

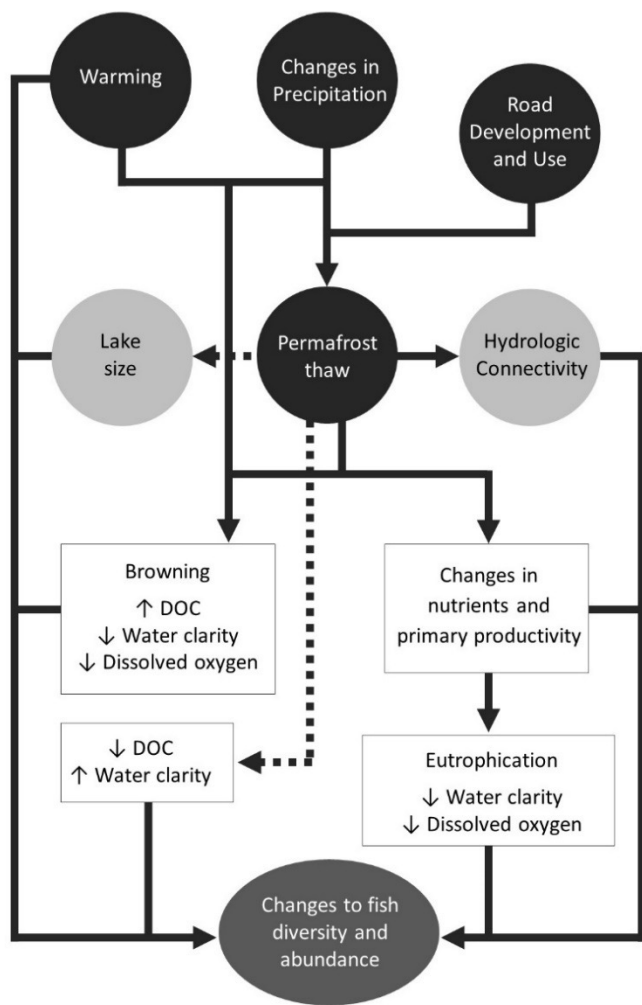
Fish and fish habitat managers may consider prioritizing the protection of larger and well-connected lakes that contain more fish biodiversity when making future land use and fisheries management decisions (**Figure 1**). We also suggest that lakes are sampled before and after new construction to better understand the potential impacts of new infrastructure on these important ecosystems.

### Project limitations and next steps:

Although our results suggested that climate warming and road use were negatively impacting lake fish in this region, it is important to keep in mind that we only looked at a small number of lakes. Climate change may be impacting fish differently across the GSA and ISR depending on where they spend their time. For example, fish that migrate to the delta or out to sea during summers may be benefitting from warming if it means there is more food available for them.

Another thing to consider is that some permafrost thaw common in this region (known as shoreline retrogressive thaw slumps) may actually improve fish habitat by reducing nutrient levels and making the water clearer. Right now, more work is needed to understand the bigger picture for how fish in the GSA and ISR might respond to climate change in the long-term.





### Box 1. Ways that climate change and road development may combine to influence fish in Gwich'in and Inuvialuit lakes

There are many fish species that use lakes in the Gwich'in Settlement Area and Inuvialuit Settlement Region either seasonally or year-round. Some species require cold water temperatures and may be vulnerable to warming waters including lake trout, broad whitefish, lake whitefish (crookedback), inconnu (coney), and cisco (herring).

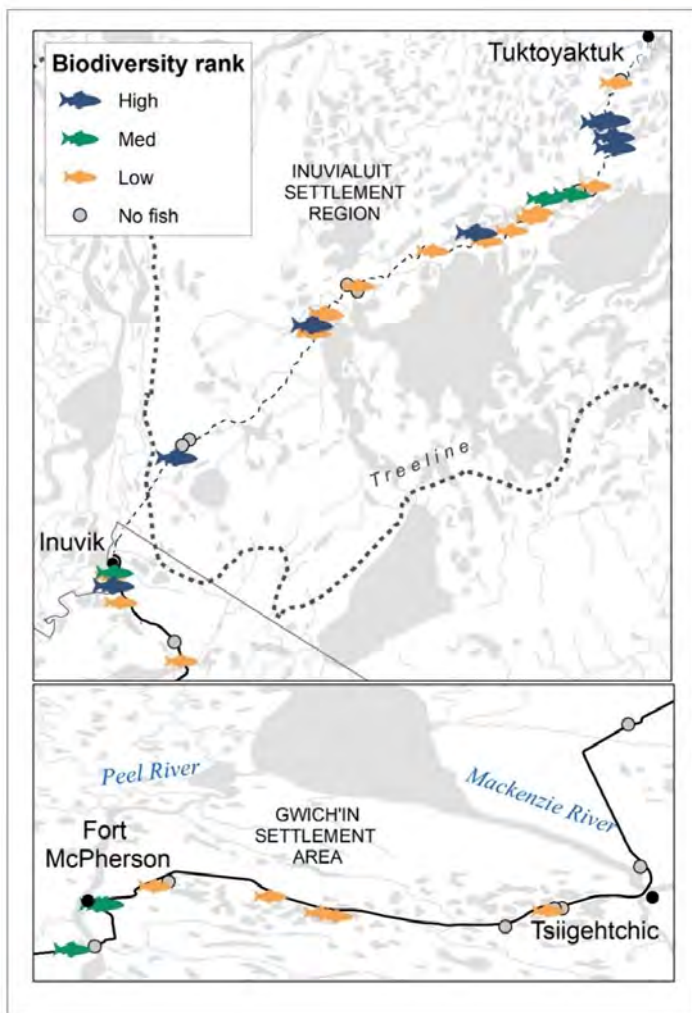
Warming, changes in precipitation, and road development may also combine to impact fish via permafrost thaw and impacts on water quality (white boxes). Thawing earth may lead to an increase in sediment and nutrient delivery to lakes. In turn, these changes can influence how clear the water is, as well as the aquatic plant habitat and food available for fish.

Permafrost thaw can also impact lake and stream levels, influencing lake size and migratory corridors for fish (light grey circles).



**Photo 1.** Clay Steell measuring a northern pike at a study lake along the ITH (August 2018, Credit: Clay Steell).





**Figure 1.** Map of 50 fish sampling lakes ranked according to fish biodiversity value. Biodiversity values were assigned based on the number of species captured, the relative abundances of large-bodied fish more suitable for harvest, the habitat quality, and the relevance of species to local communities.



**Photo 2.** Erika Gervais holding an adult whitefish (August 2018, Credit: A. Murdoch).



# **Inuvialuit Settlement Region Research Projects**

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Federal  
Government's  
Research Projects

# Contaminants in Ringed Seals

## Organization Name

Environment and Climate Change Canada (ECCC)

## Project Lead(s)

Magali Houde (ECCC, Montreal), Derek Muir (ECCC, Burlington) and Steve Ferguson (Fisheries and Oceans, Winnipeg)

## Communities Involved

Sachs Harbour, NWT, Resolute Bay, NU, Arviat, NU and Nain, Nunatsiavut

## Completion Status

On-going Northern Contaminants Program (Government of Canada) core monitoring project

## Project Objective/Purpose

The major questions that this project is addressing are 1) how concentrations of legacy contaminants are changing over time in ringed seals and 2) are trends similar across the Canadian Arctic. Spatial and time trends of new contaminants are also investigated in seals.

→ [Project description on 62](#)





## Project Description

The project currently involves annual ringed seal sampling at Sachs Harbour, Resolute Bay, Arviat, and Nain. All sampling is done by local harvesters and coordinated by the Hunters and Trappers groups in each community as well as the Nunatsiavut government. Blubber and liver of female and juvenile seals are analyzed to determine trends of persistent pollutants and metals, including mercury (also analyzed in meat). The diet of seals is also assessed using stable isotopes and fatty acids that are good indicators of the feeding ecology of the animals. Levels of contaminants vary among locations and age/sex of seals. Most

concentrations of legacy contaminants have been decreasing in seals over time. New contaminants more recently used by industries have been found in seals but at lower levels. Contaminants results are shared annually with the communities and the regional health agencies to help people make informed decisions on their diet. A complementary outreach project has also been created to increase communication, results dissemination and capacity sharing in communities involved in this on-going study. w fish in the GSA and ISR might respond to climate change in the long-term.



# Beluga Health Research and Monitoring in the Tarium Niryutait Marine Protected Area and Inuvialuit Settlement Region

## Organization Name

Fisheries and Oceans Canada (DFO)

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## Project Lead(s)

Lisa Loseto (Research Scientist, Principal Investigator) with support from Shannon MacPhee and Laura Murray (Aquatic Science Biologists)

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## Communities Involved

All communities in the Inuvialuit Settlement Region

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## Completion Status

Ongoing

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## Project Objective/Purpose

The Beluga Health Research and Monitoring program characterizes the baseline health of Eastern Beaufort Sea (EBS) beluga (*Delphinapterus leucas*) by analyzing data and tissue samples from harvested whales. It leverages the long-term FJMC Fish and Marine Mammal Community Monitoring Program ('Beluga Monitoring Program') and enables the collection of various measures of beluga health (e.g., contaminants, diet, diseases). The program aims to understand the impacts of stressors with a focus on climate change, contaminants, and ecosystem shifts, all by using holistic and integrative approaches, and is the most comprehensive long-term beluga health research and monitoring program for a healthy population in the circumpolar North.

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→ [Project description on 64](#)

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## Project Description

The beluga health program characterizes the baseline health of beluga by collecting samples and data from harvested whales, in partnership with the Fisheries Joint Management Committee's (FJMC)'s Fish and Marine Mammal Community Monitoring Program. The program is ongoing and evolving, with health work beginning in 2001, and new research priorities in response to community and science questions (e.g., radionuclide and microplastics).

Beluga Monitors collect samples and data from harvested beluga at camps across the ISR, at present including Shingle Point, East Whitefish, Kendall Island, Hendrickson Island, Paulatuk, and Ulukhaktok. In areas without Monitors or at times when no Monitor is present, hunters are encouraged to collect samples themselves through Harvester Reward kits. There is also more intensive sampling conducted at Hendrickson Island by a DFO Science team.

Together, scientists and community-based monitors collect a suite of biological and health indicators. Contaminants are monitored include mercury, POPs, and PFAS, as are diseases such as *Bartonella sp.*, and *Toxoplasma gondii*. Biotracers (stable isotopes, fatty acids, highly branched isoprenoids) are used understand beluga diet and to study the food web. Traditional Knowledge indicators identified by Inuvialuit harvesters were added to the core monitoring program in 2018. Other newer additions include microplastics, metabolomics, and genomic health measures (transcriptomics, and RNA

sequencing). Also in recent years, contaminant and health endpoints have been compared with other populations (Western Hudson Bay beluga stock and St. Laurence estuary).

In addition to the health data obtained from this program, there is also a focus on building community capacity. Youth positions at various sites provide future leaders with an opportunity to learn about scientific sampling techniques. These positions have unfortunately not happened in the past few years due to COVID concerns but will be in place again in future. A community-based Research Monitor based at Hendrickson Island works alongside DFO scientists. It was a new position created in response to COVID restrictions but has been continued with the person working in tandem with the Science crew.

Information obtained from the beluga health program supports regional management tools such as the Tarniutit Marine Protected Area (TN MPA) and the Anguniaqvia niqiqyuam Marine Protected Area (AN MPA) Monitoring Plans, Beaufort Sea Beluga Management plan, State of the Arctic Ocean reporting, and stock assessment. The program also supports international management such as the Arctic Monitoring and Assessment Program (AMAP) mercury assessment, AMAP microplastic assessment, and the Minamata Convention on Mercury.



# Tarium Niryutait Marine Protected Area Beluga Habitat Program



## Organization Name

Fisheries and Oceans Canada, Natural Resources Canada

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## Project Lead(s)

Lisa Loseto, DFO  
Dustin Whalen, NRCan  
Kevin Scharffenberg, DFO  
Shannon MacPhee, DFO

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## Communities Involved

Inuvik, Aklavik and Tuktoyaktuk

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## Completion Status

Ongoing

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## Project Objective/ Purpose

The purpose of this project is to use passive acoustic (i.e., beluga vocalizations, other environmental and anthropogenic sounds) and environmental monitoring to support Tarium Niryutait Marine Protected Area (TN MPA) conservation objectives. This is accomplished by monitoring the timing of beluga arrival to the TN MPA, investigating the influence of environmental parameters on beluga habitat use, assessing underwater noise/ vessel impacts, and monitoring indicators of change in the area.

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→ [Project description on 66](#)

## Project Description

We have deployed hydrophones in the TN MPA since 2011. In that time, we have gained new knowledge about drivers of beluga habitat use in the TN MPA, in Kittigaryuit, but more recently in Niaqunnaq and Okeevik. Pairing beluga presence/absence (i.e., vocalization activity) with oceanographic variables has allowed us to identify key environmental drivers of beluga whale habitat use in the estuary. We have observed that patterns of habitat use align with previously documented high-use locations, or 'hotspots', but that patterns can vary throughout the summer and are influenced by temperature, salinity, time of day, wind, and vessel presence.

Due to travel restrictions during 2020 and 2021, all work was done without the physical presence of southern-based scientists, whereby mooring assembly and deployment were completed by entirely local field teams. During this time, we managed to grow

our program to include more moorings and extend across all three parcels of the TN MPA. This expansion would not have been possible without the amazing partnerships with Northern community organizations.

2022 marked the return of travel to region, with southern-based scientists able to return to Inuvik to facilitate the field program. Kevin Scharffenberg, with assistance from Dustin Whalen's (NRCan) team, programmed and assembled moorings at the Aurora Research Institute in Inuvik in June. Moorings were once again deployed by locally led field teams with James Keevik, Jordan McLeod, and Jimmy Kalinek leading teams to each of the three parcels of the TN MPA. All moorings will be recovered in mid-late September.





# Bibliographies

## List of Bibliographies

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Boating Safety in the Inuvialuit Settlement Region	Forbes, T.
Siqinirmin Aullan — Energy from Our Environment	Desrosiers, D., Cockney-Goose, T., and Parrott, J.
ISR Cruise Ship Management Plan	Forbes, T.
Powered by Youth	Desrosiers, D.
Climate Change Action Map	Parks, B.
Inuvialuit Settlement Region (ISR) Climate Change Strategy	Parks, B., and Parrott, J.
Inuvialuit Settlement Region (ISR) Climate Watch	Parks, B.
Improving Communication on Climate Change Terminology for Communities and Researchers in the Inuvialuit Settlement Region (ISR)	Desrosiers, D. and Parrott, J.
Understanding Patterns of Social Interaction in the Inuvialuit Settlement Region (or Community Connections Survey)	Mazan, R. and Chudek, M.
The Role of Genomics in Fostering and Supporting Arctic Biodiversity: Implications for Policy and Indigenous Food Security	Parrott, J. and University of Calgary, Carleton University, Ikaavik and Athabasca University
Advancing Arctic Research through Connected Infrastructure	Parrott, J. and University of Calgary, Carleton University, Laval University, University of Manitoba, University of Waterloo, Simon Fraser University
Inuvialuit Socio-Cultural Economic Indicators	Simpson, B., Mazan, R. and Parrott, J.
Inuvialuit Place Names (IPN)	O'Rourke M. and Parrott, J.



## Inuvialuit Regional Corporation's Partnered Research Projects

Project Title	Project Lead(s)
Community Capacity for Climate Change and Food Security (C4FS) Action in the NWT	Skinner, K., Wesche, S. Kenny, T-A., Ostertag, S., and MacLean, J.
Country Foods in Community Programming: Supporting Schools, Daycares and Cooking Circles in Tuktoyaktuk and Paulatuk, NWT	Skinner, K., Ostertag, S., Wesche, S., Kenny, T-A., and MacLean, J.

## Academic Organization's Research Projects

Project Title	Project Lead(s)
Green Alder Growth and its Impact on the Land	Baltzer, J.L.
Developing Local Capacity to Support 'Nested' Arctic Tundra Flux Measurements in the Inuvialuit Settlement Region	Sonnentag, O.
"Can we tell them that people can't afford to eat, and it's getting worse and worse?": Developing Innovative Methods for Participatory Food Environment Research in Northern and Remote Communities	Kenny, T-A., Little, M., Wolki, C., MacLean, J., Wesche, S., Ostertag, S., Singh, G., Batal, M., Saini, S., Charlebois, S., and Shan, D.
Modeling Carbon Emissions from the Tundra in E3SM Land Model (ELM) using Trail Valley Creak Soil and Meteorological Data	Sonnentag, O. and Yazbeck, T.
A Glance at the NASA Arctic-Boreal Vulnerability Experiment in the ISR	Cornette, L., Kaglik, T., Lecavalier, B., and Raddi, S.
Greenhouse Gas and Water Chemistry Monitoring of Lakes and Permafrost Thaw Slumps Along the Inuvik-Tuktoyaktuk Highway	Bennett, K. and Sonnentag, O.
Assessment of Possible Regional Climate Changes in Response to Global Climate Warming Induced Vegetation Changes	Graveline, V., Sonnentag, O., and Helbig, M.
How are Fish in Gwich'in and Inuvialuit lakes Responding to Climate Change and New Road Development?	Murdoch, A., Gray, D., and Sharma, S.

## Federal Government's Research Projects

Project Title	Project Lead(s)
Contaminants in Ringed Seals	Houde, M., Muir, D., and Ferguson, S.
Beluga Health Research and Monitoring in the Tarium Niryutait Marine Protected Area and Inuvialuit Settlement Region	Loseto, L., MacPhee, S., and Murray, L.
Tarium Niryutait Marine Protected Area Beluga Habitat Program	Loseto, L., Whalen, D., Scharffenberg, K. and MacPhee, S.

## Human Health

Project Title	Project Lead(s)	Affiliation(s)
Elevated exposure to long-chain perfluoroalkyl acids (PFAAs) in Nunavimmiut adults: determinants of exposure and harmful effects on the immune system and respiratory health	Mélanie Lemire	Université Laval
Country Foods for Good Health: Promoting foods in the Inuvialuit Settlement Region that reflect Inuvialuit culture, knowledge, and values (Country Foods for Good Health: Phase Two)	Sonja Ostertag	U Waterloo
The roles of culture, health messaging, conservation management, and Inuit knowledge in country food access, preferences, and decision-making (CHOICES)	Matthew Little	U Victoria

## Environmental Monitoring and Research

Project Title	Project Lead(s)	Affiliation(s)
Temporal trends of mercury and selected halogenated organic compounds in three beluga populations landed near Hendrickson Island NT, Sanikiluaq NU and Pangnirtung NU	Lisa Loseto	Fisheries Oceans Canada (DFO)
Temporal trends and spatial variations of mercury in sea-run Arctic char and other fish from Cambridge Bay, Nunavut	Marlene S. Evans	ECCC
Caribou Contaminant Monitoring Program	Mary Gamberg	Gamberg Consulting
Community based seawater monitoring for organic contaminants and mercury in the Canadian Arctic (M-15)	Amila De Silva	ECCC
Northern Contaminants Air Monitoring: Organic Pollutant Measurements	Hayley Hung	ECCC
Air measurements of mercury at Alert, Nunavut and Little Fox Lake, Yukon	Alexandra Steffen	ECCC
Passive Air Sampling Network for Organic Pollutants and Mercury	Hayley Hung	ECCC
Temporal trends of persistent organic pollutants and metals in ringed seals from the Canadian Arctic (M-04)	Magali Houde	ECCC
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Assessing Legacy and Emerging Contaminants in Canadian Arctic Air and Water Bodies as an Entry Point into the Arctic Food Chain	Liisa M. Jantunen	Magali Houde
Monitoring Contaminants in Arctic Seabirds	Jennifer Provencher	Magali Houde
Temporal trends of Persistent Organic Pollutants and Mercury in Land-locked char in the High Arctic	Jane Kirk	ECCC
Spatial and long-term trends in mercury and persistent organic contaminants in lake trout and burbot in Great Slave Lake and mercury in fish in Northwest Territories	Marlene S. Evans	Magali Houde
Temporal trend studies of trace metals and halogenated organic contaminants (HOCs), including new and emerging persistent compounds, in Mackenzie River burbot, Fort Good Hope, NWT	Gary Stern	Magali Houde
Temporal Trends in Contaminants in Yukon Lake Trout	Mary Gamberg	Magali Houde
Alert 2023 – Investigating the impacts of climate and sea ice change on contaminants in Arctic air and water	Alexandra Steffen	Magali Houde

## Community-Based Monitoring and Research

Project Title	Project Lead(s)	Affiliation(s)
Nunalinni kamatsianik palastikkinik igitauKattatunik Nunatsiavumi / Community-Based Monitoring of plastic pollution in Nunatsiavut	Liz Pijogge	Nunatsiavut Government Nunatsiavut Government
NWT Regional Contaminants Committee	Emma Pike	NCP – NWT RCC Secretariat
Nunavut Environmental Contaminants Committee (NECC)	Selma Al-Sowey-dawi	CIRNAC
Nunavik Nutrition And Health Committee (Nnhc): Coordinating, Learning And Communicating On Contaminants Research In Nunavik	Lucy Grey	Nunavik Regional Board of Health and Social Services (NRBHSS)
Northern Contaminants Researcher	Liz Pijogge	Nunatsiavut Government
Coordination, participation and communication: evolving Inuit Research Advisor responsibilities in Nunatsiavut for the benefit of Inuit and their communities.	Carla Pamak	Nunatsiavut Government
Inuit Research Advisor (IRA) for the Inuvialuit Settlement Region (ISR).	Shanay Williams	IRC
Nunavik Inuit Research Advisor: Environmental, Health and Climate Change Research in Nunavik.	Markusi Qisiiq	Kativik Regional Government
Research Advisor for Nunavut	Cheryl Wray	Nunavut Tunngavik Incorporated
Nuna Tariuq Silalu Film Project: Food Security, Global Environmental Changes, and Resilience in the Canadian Arctic, using Participatory Video Method.	Maeva Gauthier	U Victoria

## Indigenous Partnerships and Program Coordination

Project Title	Project Lead(s)	Affiliation(s)
Council of Yukon First Nations (CYFN) Participation in Northern Contaminants Program	Nelly Bouevitch	Council of Yukon First Nations
Dene Nation Participation in the Northern Contaminants Program (NCP)	Trevor Teed	Dene Nation
ITK National Coordination	George MacKay	Inuit Tapiriit Kanatami
Inuit Circumpolar Council (ICC) Canada's Activities under the Northern Contaminants Program (NCP)	Eva Kruemmel	Inuit Circumpolar Council
NCP-AMAP ILS	Harold Malle	ECCC
Polar Data Catalogue	Grey Vey	Uwaterloo
The NCP Publications Database: Making Northern Contaminants Program Publications More Accessible	Shannon Christoffersen	U Calgary
AMAP	Rolf Rovden	AMAP
GAPS	Tom Harner	ECCC





# Research Licensing in the Inuvialuit Settlement Region

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# Index of Organizational Acronyms

<b>AAC</b>	ABoVE Airborne Campaign	<b>IQP</b>	Inuit Qaujisarnimut Pilirijjutit
<b>AN MPA</b>	Anguniaqvia niqiqyuam Marine Protected Area	<b>ITK</b>	Inuit Tapiriit Kanatami
<b>ABoVE</b>	Arctic-Boreal Vulnerability Experiment	<b>IFA</b>	Inuvialuit Final Agreement
<b>AMAP</b>	Arctic Monitoring and Assessment Program	<b>IRC</b>	Inuvialuit Regional Corporation
<b>CCADI</b>	Canadian Consortium for Arctic Data Interoperability	<b>ISR</b>	Inuvialuit Settlement Region
<b>CEO</b>	Chief Executive Officer	<b>ITH</b>	Inuvik-Tuktoyaktuk Highway
<b>DFO</b>	Department of Fisheries and Oceans Canada	<b>JSC</b>	Johnson Space Center
<b>IPN</b>	Inuvialuit Place Names	<b>LCO</b>	Local Community Organization
<b>C4FS</b>	Community Capacity for Climate Change and Food Security	<b>NASA</b>	National Aeronautics and Space Administration
<b>CCS</b>	Community Connections Survey	<b>NRCan</b>	Natural Resources Canada
<b>EBS</b>	Eastern Beaufort Sea	<b>NWT</b>	Northwest Territories
<b>ECCC</b>	Environment and Climate Change Canada	<b>NU</b>	Nunavut
<b>FJMC</b>	Fisheries Joint Management Committee	<b>NNC</b>	Nutrition North Canada
<b>GNWT</b>	Government of the Northwest Territories	<b>PFAS</b>	Perfluoroalkyl and Polyfluoroalkyl Substances
<b>GSA</b>	Gwich'in Settlement Area	<b>POPs</b>	Persistent Organic Pollutants
<b>ISCC</b>	Innovation, Inuvialuit Science and Climate Change	<b>RNA</b>	Ribonucleic Acid
<b>IHS</b>	Inuit Health Survey	<b>TN MPA</b>	Tarium Niryutait Marine Protected Area
		<b>TVC</b>	Trail Valley Creek

# WORD SEARCH

P	A	N	I	R	Y	U	A	R	U	T	A	A	N	I
Y	R	U	H	U	Q	P	L	K	R	H	A	V	H	Y
Q	Q	U	I	A	I	R	S	I	B	C	N	Z	W	H
U	Q	W	L	A	Q	E	H	N	A	U	K	L	H	A
U	Q	H	A	L	U	M	A	I	L	R	U	T	I	T
M	D	R	R	U	M	Q	R	N	A	A	T	O	M	O
A	S	S	Y	J	A	E	S	N	R	T	E	K	A	K
V	D	O	U	D	N	O	O	A	U	H	T	G	Q	L
I	O	I	K	W	I	J	I	Q	Q	Z	T	R	E	G
A	E	I	Y	R	Q	R	I	T	T	E	Y	S	R	F
T	W	U	U	O	I	F	U	U	U	E	R	R	E	I
E	E	F	A	O	Q	R	F	T	C	A	F	W	I	K
A	A	O	Q	U	Q	T	O	E	T	H	H	I	L	A

## Climate Terms – Inuinnaqtun

✓ Words	Definition
Qiqumaniq	When you reach the frozen part
Paniryuarutaani	Very dry period/time
Kininnaqtut	Things that make you wet
Hila	Weather
Imaq	Water
Hilaryukyuaq	Really bad weather
Uumaviat	Every living thing
Halumailrutit	Something that dirties something - things that makes other things dirty

H	O	L	U	L	I	E	M	P	T	I	Q	R	Q
A	I	G	K	G	F	D	I	H	G	M	F	E	I
L	T	L	K	K	J	D	N	T	D	A	S	D	Q
U	O	T	A	F	I	E	I	F	E	Q	A	T	U
M	I	O	P	Q	I	T	Q	D	O	D	O	G	M
A	T	U	I	E	I	F	I	E	W	U	E	H	A
I	O	T	E	I	I	U	U	A	Y	I	J	T	N
R	O	O	D	O	D	O	K	G	E	T	D	Y	I
U	Y	W	U	E	O	E	I	P	R	I	H	U	Q
T	T	Y	I	J	O	E	I	E	A	Y	R	J	F
I	W	E	T	D	I	O	W	I	U	U	E	L	F
T	E	R	I	H	I	L	A	D	S	E	R	I	F
U	U	M	M	A	V	I	A	T	O	O	F	A	Y
W	E	P	A	N	N	A	Q	I	U	K	F	F	q

## Climate Terms – Uummarmiutun

✓ Words	Definition
Qiqumaniq	Water
Paniryuarutaani	Weather
Kininnaqtut	Damp weather
Hila	Every living thing
Imaq	Very dry
Hilaryukyuaq	Things that make other things dirty - something that makes it dirty - all is dirty
Uumaviat	Frozen part
Halumailrutit	Really big, bad weather



# WORD SEARCH

W	S	S	Q	R	T	V	H	Y	K	H	O	H	Q
E	I	M	A	Q	S	I	T	R	Q	F	J	H	I
D	L	O	T	F	A	T	F	A	A	F	H	J	Q
C	A	O	O	N	L	H	G	A	S	T	G	D	U
F	Q	L	X	D	U	U	X	A	H	T	F	D	M
R	I	A	S	G	M	U	U	E	T	J	D	F	A
T	U	A	C	H	A	K	D	H	T	R	X	H	N
G	K	A	W	M	I	N	I	Q	I	U	K	A	I
O	P	V	J	Y	N	T	E	W	I	T	X	T	Q
S	A	R	W	J	N	I	X	A	E	X	G	T	I
G	V	J	P	R	I	Y	E	A	I	E	F	S	K
S	I	L	A	I	Q	P	I	A	U	W	F	O	O
G	A	O	E	V	P	A	N	N	A	Q	I	U	K
G	L	R	W	Y	P	O	Q	W	R	X	H	E	G
U	U	M	M	A	V	I	K	D	G	T	H	J	G
G	K	Y	Y	A	A	Y	Y	A	U	E	U	Y	G

## Climate Terms – Sallirmiutun

✓ Words	Definition
Pannaqluk	Very dry
Silaqlukpavialuk	Big, bad weather (XXL weather, extreme weather)
Sila	Weather
Qiqumaniq	Frozen part - when you reach the frozen part
Imaq	Water
Salumainniq	Bad things/stuff - dirty stuff
Uumaviat	Where everything lives
Miniqluk	Damp weather

E	E	Q	O	T	R	W	E	A	T	H	E	R	P
N	X	W	I	T	R	I	O	A	R	H	U	T	O
V	R	T	U	H	K	K	O	S	F	H	J	U	L
I	R	D	R	O	U	G	H	T	H	J	H	J	L
R	D	O	U	E	S	S	U	A	T	D	O	A	U
O	T	U	E	J	M	X	X	S	Q	D	O	K	T
N	H	I	Q	C	G	E	O	A	S	F	R	G	I
M	Q	O	K	C	B	R	W	D	E	H	A	H	O
E	A	E	E	Y	F	E	A	E	A	A	K	D	N
N	S	D	Q	A	A	S	K	W	A	T	E	R	Q
T	D	Q	M	C	F	G	H	Y	K	T	Q	I	S
R	E	R	P	L	K	J	H	G	D	S	H	P	O
T	E	E	D	U	U	Q	U	I	T	U	R	E	G
P	R	E	C	I	P	I	T	A	T	I	O	N	R

## Climate Terms – English

✓ Words	Definition
Precipitation	Rain, snow, sleet, or hail that falls to the ground.
Pollution	The presence in or introduction into the environment of a substance or thing that has harmful or poisonous effects
Permafrost	A thick subsurface layer of soil that remains frozen throughout the year
Water	A colourless, transparent, odourless liquid that forms the seas, lakes, rivers, and rain and is the basis of the fluids of living organisms
Drought	A prolonged period of abnormally low rainfall, leading to a shortage of water
Weather	The short-term conditions of the lower atmosphere, such as precipitation, temperature, humidity, wind direction, wind speed, and atmospheric pressure.
Extreme Weather	Unexpected, unusual, severe or unseasonal weather
Environment	The natural world, as a whole or in a particular geographical area, especially as affected by human activity

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