

NATIONAL INDIGENOUS COMMUNITY BASED CLIMATE MONITORING SYMPOSIUM - SUMMARY

Note: All Symposium materials (e.g., presentations, notes from small group sessions, speaker biographies, graphics, funding guidelines and other resources) are in the Final Report.

Understanding climate change impacts to Indigenous (First Nation, Métis, and Inuit) communities is a priority of the Government of Canada. Through the development of the Pan-Canadian Framework on Clean Growth and Climate Change, National Indigenous Organizations identified two key needs: (1) Indigenous community-based climate monitoring; and, (2) co-application of Indigenous Knowledge with science and decision-making. To help address climate data gaps, Indigenous and Northern Affairs Canada (INAC) has received \$31.4 million over 5 years to implement an Indigenous Community-Based Climate Monitoring Program. The program has two main objectives:

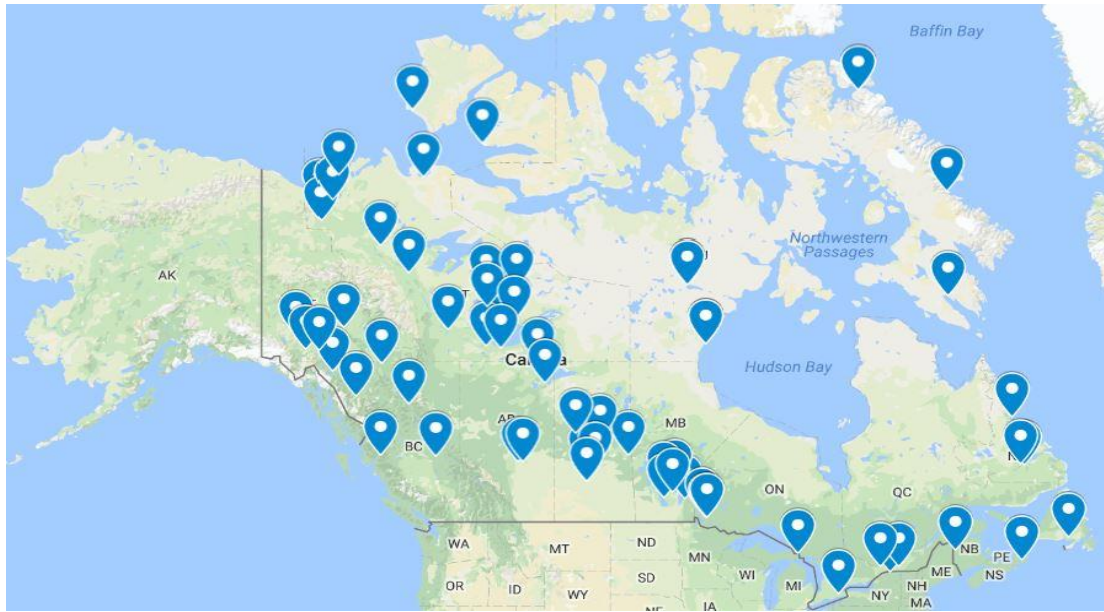
- To support Indigenous communities in monitoring climate change impacts through documenting Indigenous Knowledge and climate information; and,
- To collect and share information to support climate change adaptation and help increase Indigenous communities' understanding of climate change.

On November 7th – 9th, 2017, upon the request and with the financial support of the Indigenous Community-Based Climate Monitoring Program, the Centre for Indigenous Environmental Resources (CIER)¹ hosted the National Indigenous Community-Based Climate Monitoring Symposium that brought together over 130 Indigenous participants (ranging from Elders, youth, community leaders, scientists, environmental technicians, and land managers), as well as government agency representatives working on, or interested in, Indigenous community-based climate monitoring.

SYMPOSIUM OBJECTIVES

- Understand needs, interests and capacities for Indigenous community-based climate monitoring;
- Explore opportunities for and the connection between Indigenous Knowledge and western science climate monitoring data;
- Discuss data management platforms and analysis tools to transform data into useful information for decision-making;
- Provide insight on priority setting and development of the Indigenous Community-Based Climate Monitoring Program; and,
- Support networking opportunities for Indigenous communities to explore potential climate monitoring initiatives with other Indigenous communities, scientists and government agencies.

¹ CIER opened in 1994 and remains the first and only First Nation-directed, national, environmental non-profit organization with charitable status in Canada. CIER's mandate is to work with First Nations across Canada to educate, conduct research and build skills to help them take action to solve the environmental problems that affect their lands and waters (<https://yourcier.org/>).



Map Representing Participants' Communities



WHAT DOES INDIGENOUS COMMUNITY BASED CLIMATE MONITORING MEAN TO YOU?

Key overarching messages heard during the symposium about what ICBCM means to the participants

- Being our own guardians and controlling our own destiny;
- Being in the driver's seat and building CBM initiatives at the community level;
- Development of an ICBCM is guided by a community decision-making process for data collection and sharing;
- ICBCM It is a form of self-governance;
- Collaboration is important when implementing ICBCM initiatives;
- Youth are our future leaders and should be closely involved in the process; and,
- ICBCM gives a voice to the fish/wildlife/environment.



What does Indigenous Community-Based Climate Monitoring Mean to You?

Questions about ICBCM that were raised by participants

- How does climate change affect our environment, our wildlife, traditional lifestyles and harvesting activities?
- What is permafrost melt and can it kill the animals/fish?
- Is the use of vehicles and people in the north affecting the environment?
- How is climate change impacting the caribou and muskox populations?
- How much carbon is tied up in grasslands?
- How do we get long-term climate predictions?
- How can First Nations help existing monitoring systems?
- What can be done now to deal with future impacts?
- How do we standardize?
- Why is industry not paying?
- How to translate hunter knowledge into programs/databases?

WHAT ARE INDIGENOUS COMMUNITIES WORKING ON RELATED TO COMMUNITY-BASED CLIMATE MONITORING?



Day 1 Graphic Illustration of Panelist Presentations



Day 2 Graphic Illustration of Panelist Presentations

ICBCM FROM THE PERSPECTIVE OF YOUTH, TECHNICAL STAFF AND ELDERS

KEY DISCUSSION POINTS	
YOUTH	<ul style="list-style-type: none"> ▪ Need more opportunities for hands-on/outdoor involvement ▪ Job shadowing/ mentorship ▪ Integrate cultural teachings, language, and spirituality ▪ Bridge gap between youth and elders
TECHNICAL	<p>Key Principles of ICBCM</p> <ul style="list-style-type: none"> ▪ Follow key principles of OCAP (Ownership, Control, Access, Possession) ▪ Address concerns about proprietary information to ensure community buy-in ▪ Always involve youth and Elders to encourage unity within communities ▪ Establish fluid communication and information sharing at all scales (local, regional, national, international) ▪ Recognize Indigenous Knowledge and Western science have equal value ▪ Communicate data in accessible ways (newsletters, social media, meetings, etc.) ▪ Community engagement should inform the direction and priorities of CBCM projects
	<p>Data Collection and Storage of Data and Guidelines/Protocols</p> <ul style="list-style-type: none"> ▪ Data must be shared openly with community members ▪ Establish mechanisms to safeguard data ▪ Develop a data validation process ▪ There are many existing programs across the nation (e.g., Department of Fisheries and Oceans Community Aquatic Monitoring Program; Canadian Aquatic Biomonitoring Network; Junior Ranger Programs) and tools (e.g., Survey123, ESRI, Cybertracker, SIKU, RAID-10, Lidar, drones)
	<p>Recommendations on Data Management</p> <ul style="list-style-type: none"> ▪ Establishing an Indigenous Circle of Experts for data interpretation/review ▪ Establish a Tri-Council review process of Elders, women, and youth to coordinate regional data systems at a national scale ▪ Coordinate a national workshop on data management ▪ Develop a set of protocols for regional data sharing and address intellectual property rights ▪ Develop a national Indigenous app for guardians programs ▪ Create culturally appropriate ways of sharing information (story-telling, videos, etc.)
	<p>Challenges with Developing and Implementing ICBCM</p> <ul style="list-style-type: none"> ▪ Lack of capacity (training, sustainable funding, equipment, in-house expertise, etc.) ▪ Data collection issues – lack of baseline data, developing a consistent methodology, protocols and standardization for ICBCM, availability of easy-to-use monitoring tools ▪ Issues with data management analysis – poor communication and collaboration (researchers, government, industry) and how existing data is being used, stored, and level of accessibility. In addition, existing data is often misrepresented or misinterpreted ▪ It would be difficult to bring ICBCM to a national level to affect policy
ELDERS	<ul style="list-style-type: none"> ▪ The spirit of the language is lost in translation to English ▪ Climate change is urgent – past the point of monitoring ▪ Inuit and Elders have observed environmental changes (e.g., in salt water (less salt), causing salt-water species to migrate and fresh-water species to appear; tree species becoming less viable) ▪ Science is important but holistic approach should be taken ▪ Teach the youth, get them on the land ▪ Create employment opportunities with CBCM

NATIONAL OVERVIEW OF CBCM INDICATORS

Participants were divided into four regions (north, central, east and west) to discuss identifying and prioritizing CBCM indicators. Most of the groups had a lengthy discussion on prioritizing indicators – talking about what indicators they are using or would want to use to monitor climate change and how they should be prioritized. The following provides a national summary of CBCM indicators based on four key theme areas. Several groups expressed that Indigenous communities should be setting the priorities for the indicators as it will depend on each community's context and needs.

<p style="text-align: center;">AIR/WATER/SOIL</p> <ul style="list-style-type: none"> ▪ Snow depth; and snow pack analysis ▪ Lake depth ▪ Water quality, temperature, volume, flows, depth (channel making) ▪ Aquifer recharge (ground water) ▪ Contamination and chemical levels in sediments ▪ Soil quality and sustainability ▪ Sea level rise ▪ Permafrost depth ▪ Air quality ▪ Slumping (wash outs), erosion, landslides/falls ▪ Salinity (oceans is not as salty which is changing the ecology and diversity of species) ▪ Ice thickness and glaciers 	<p style="text-align: center;">FLORA and FAUNA</p> <ul style="list-style-type: none"> ▪ Quantity and quality of wildlife (health, migration, behaviour) ▪ Wildlife health and contaminants (bone, hair, blood, fat, brain and liver) ▪ Location and counts of mammals and birds ▪ Benthic invertebrates – upstream and downstream ▪ Species at risk ▪ Immigration of new species to the area ▪ Invasive species taking over local species ▪ Trees and culturally significant plants ▪ Birds ▪ Fish and small fish (diversity, quantity, quality, stock surveys, mercury levels) ▪ Berries and medicinal plants ▪ Insects – populations and links to human health issues ▪ Fungi (quantity and timing)
<p style="text-align: center;">WEATHER</p> <ul style="list-style-type: none"> ▪ Severe storms, active weather ▪ Ambient temperature ▪ Precipitation ▪ Length of seasons ▪ Wind and fire 	<p style="text-align: center;">HUMANS</p> <ul style="list-style-type: none"> ▪ Health of people ▪ Food security ▪ Human activity – how have we been adapting? ▪ Community health ▪ Air quality and noise ▪ Trapping activities (changes due to seasonal changes) ▪ Monitoring trails and transportation routes and safety ▪ Shipping and impacts on water quality ▪ Pollution; chemicals being used by humans

SUMMARY OF NETWORKING SESSION DISCUSSIONS

Based on the polling results from the previous day several network sessions were provided on Day 3 for the participants.

YOUTH ENGAGEMENT

- Increase youth involvement by offering job shadowing and/or employment opportunities while attending high school and post-secondary
 - Create more employment opportunities within their communities
- Several Elders joined the youth session to share their support for improved youth-Elder engagement, recognizing the urgency to transfer knowledge across the gap created by the residential school system
- **Recommendations:** include at least one Elder and youth in CBCM; hire youth coordinator/liaison; integrate language, spirituality and teachings into CBCM; coordinate traditional cultural and language camps/hunts, potlucks/potlatch; and, provide opportunities to discuss residential school impacts.

FEDERAL PROGRAMMING

- Questions on program requirements
 - The need for improved coordination between federal programs
- The need for improved outreach to raise awareness on federal funding opportunities
 - Questions around regional representation at the symposium

MÉTIS

- Challenges with the Federal government and the lack of funding to Métis communities
 - Need for funding and technical staff to develop projects
 - Ensure accountability and transparency
- Increase youth engagement, teach language to youth, develop a youth council, and connect youth to Elders
 - Teach history to Canadians – Métis were relocated and not compensated
- Use existing CBCM initiatives as a starting point (e.g., wildlife management surveys in Manitoba)

INUIT

- Improve networking across the North to facilitate information sharing and joint monitoring
- Development of possible CBCM related initiatives, such as, the development of a user-friendly northern database, ocean mapping, and monitoring projects
- **Recommendations for moving forward with the programming structure:** make available in Indigenous languages; be flexible enough to work with different groups in the communities; align with land claim agreements; have regional coordinators who understand the regions to facilitate program implementation; program should be over a long period of time; and, develop a way to assess program results collaboratively with communities/regions to ensure it meets its targets.

OCEAN MONITORING & CIRCUMPOLAR COLLABORATION

- Different CBCM initiatives that are going on in the circumpolar area (e.g., changing animal ranges for moose and grizzly bears; monitoring mining activities and their efforts on the watershed)
- **Recommendations:** members from Indigenous communities should accompany government monitors in the field to share knowledge and experiences; importance of integrating ITC and western science to help conservation and build trust; explore parasites from permafrost melt; and, engage communities in conferences and scientific conversations.

DATA APPS, COLLECTION & ACCESS

- Different types of apps and tools are available for data collection and mapping (e.g., ArcGIS, ESRI, Global Mapper, eBird)
 - Lack of internet service and connection speed limiting communities' ability to access some of these tools.
- Key issues to consider about sharing data (e.g. traditional maps shouldn't be shared, free data ownership, increasing the number of open source software applications).

CENTRE FOR INDIGENOUS ENVIRONMENTAL RESOURCES

- The group provided the following suggestions for supporting capacity building:
 - CIER should organize a webinar series to support technical staff with proposal writing;
 - Develop a program for communities to provide guidance and support on navigating funding programs; and,
 - Develop a protocol, based on the [First Nation principles of OCAP](#), for universities/researchers/non-governmental organizations that is customizable for establishing contact with Indigenous communities and ensures information/research goes back/stays in the community.

WHAT DID WE HEAR?



Strong Community Engagement:

Communities being in the 'driver's seat' to determine what would be considered an ICBCM initiative



Knowledge Sharing Opportunities:

Various gatherings (e.g. Métis, Inuit, youth and Elders) and platforms to network; explore opportunities to collaborate; expand resources for internal communication; and progress reports



Explore Connections Between

Knowledge Systems: Recognize the different types of indicators – both scientific data and Indigenous Knowledge – as part of developing an ICBCM program



Transform Data into Useful Information for Decision-Making:

We heard from participants about the lack of capacity among communities broadly to establish sustainable monitoring programs – from data collection to analysis and networking



Support CBCM Initiatives More

Holistically: Funding tends to be insufficient; federal funding process should be more streamlined, accessible, and provide equal opportunity regionally; and, funding must be flexible



Advice for Future Workshops:

Improve youth interaction; proportional representation across the nation; consider video recording; circulate materials in advance; more diverse sets of presenters; and, engage Indigenous women and leadership

The Indigenous Community-based Climate Monitoring Program is continuing to dialogue with Indigenous Peoples to better understand and respond to their needs and priorities with respect to ICBCM. In addition, CIER is currently conducting a review and analysis of different CBCM training opportunities and programs and producing a report to share widely with Indigenous communities. CIER will also be developing a map of the initiatives that were shared at the workshop that will be available on the organization's website.

WHAT ARE THE NEXT STEPS?

- Investigating best practices in the collection and use of Indigenous Knowledge in climate monitoring and co-application of Indigenous knowledge and science
- Researching and providing communities with access to tools and resources to support ICBCM
- Conducting a review of available data management systems to support ICBCM
- Seeking out and learning from other initiatives underway to better coordinate data management
- Convening a focused meeting to discuss opportunities to enhance data management systems and approaches to support ICBCM.