Environment and Climate Change Canada | Environnement et Changement climatique Canada

Canada

The Northern Climate Data Working Group (NCDWG)

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and

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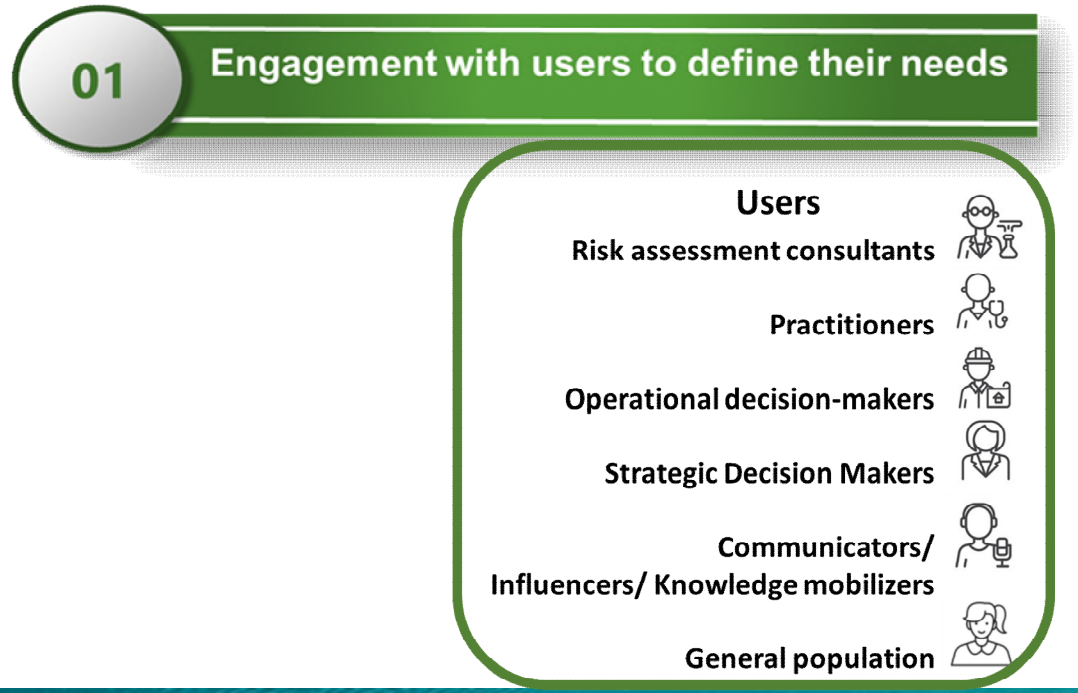
CANADIAN CENTRE FOR CLIMATE SERVICES | CENTRE CANADIEN DES SERVICES CLIMATIQUES

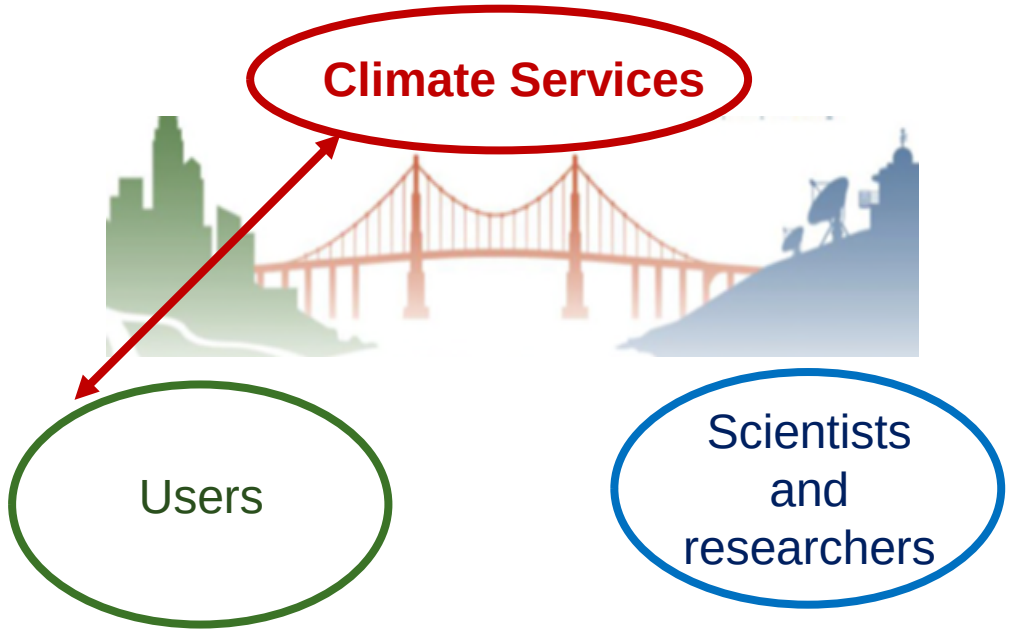
Outline

1. CCCS - Introduction
2. NCDWG
3. Phase I results

Canadian Center for Climate Services

- Officially launched October 2018
- Mandate to provide Canadians with authoritative information and support to consider climate change in their decisions
- Acts as a bridge between users and producers of climate data:





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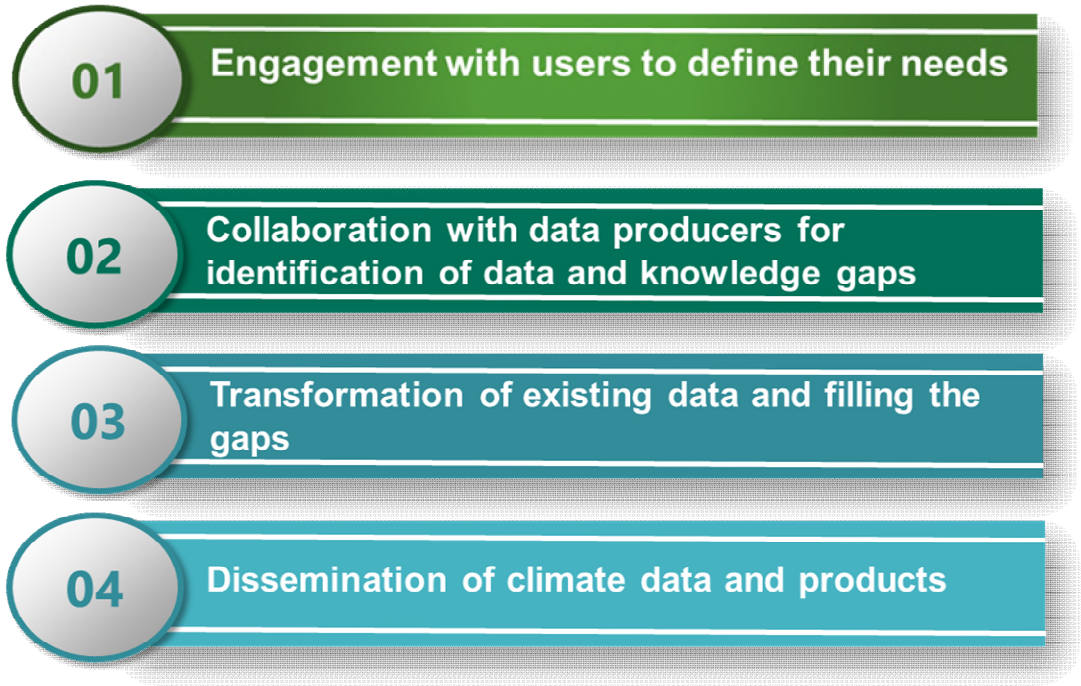
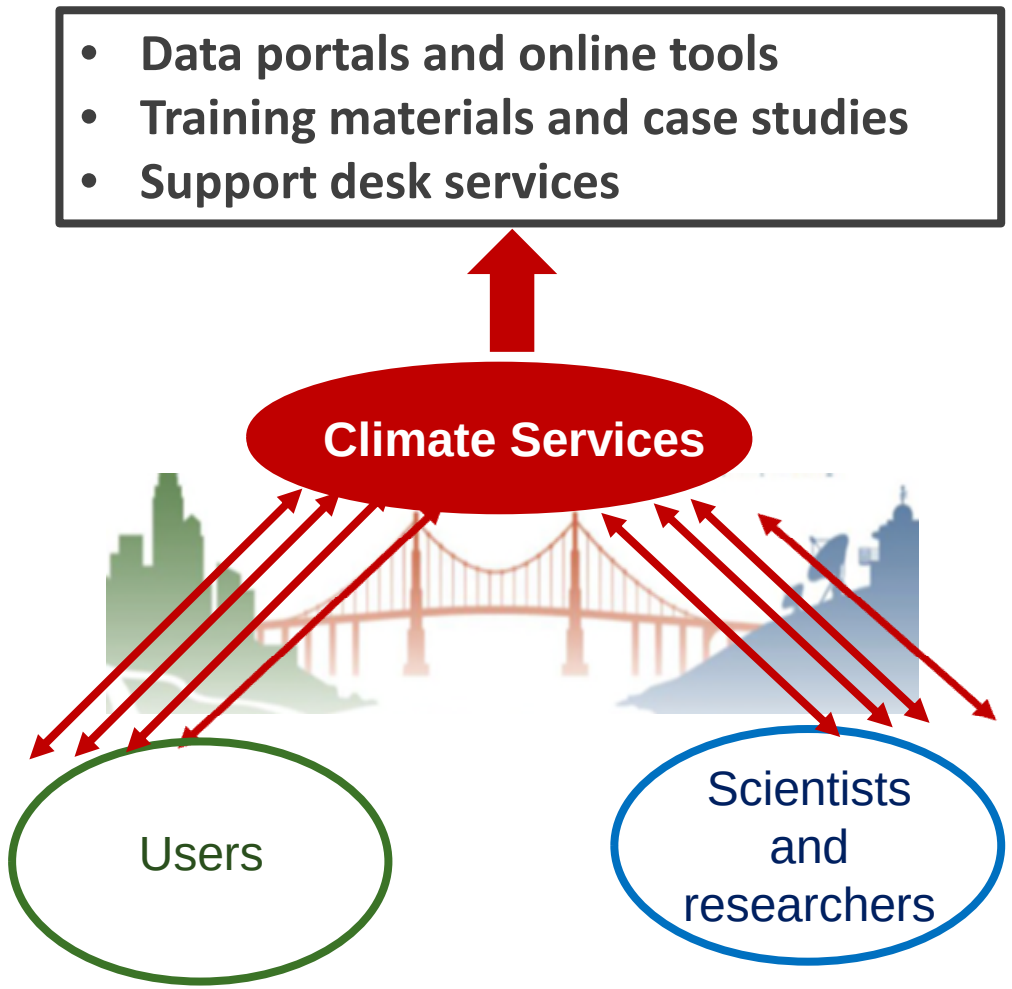


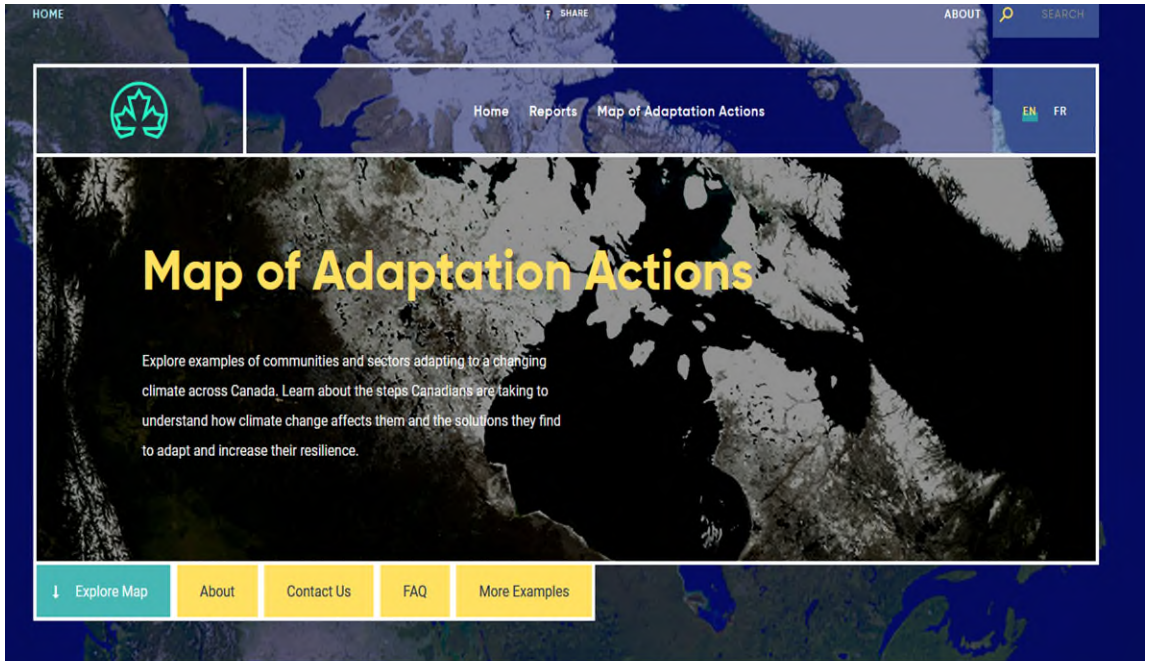


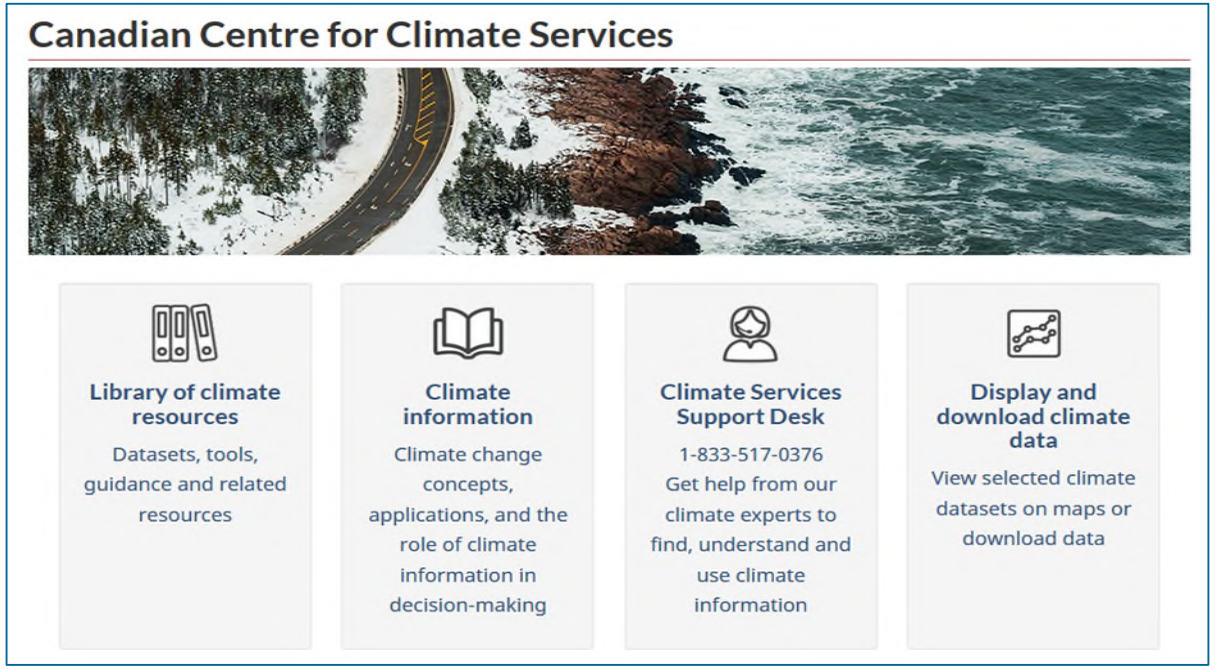
Dissemination of products:

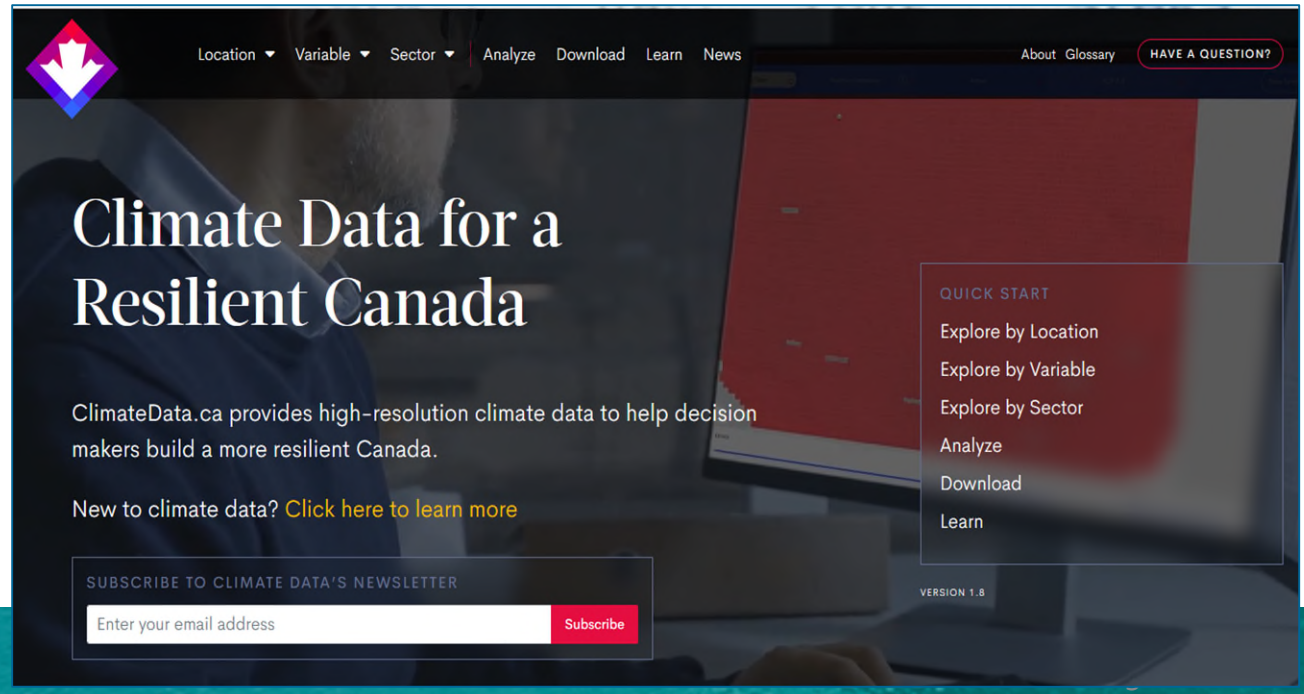
1. CCCS website

2. Products developed in collaboration with regional climate providers

3. Products developed in collaboration with other government departments







On the road to provide Climate Services for Northern Canada

- A challenging road with many gaps and needs
- NCDWG: our first large-scale collaboration with scientists and researchers to identify which climate data exist and how can be used.

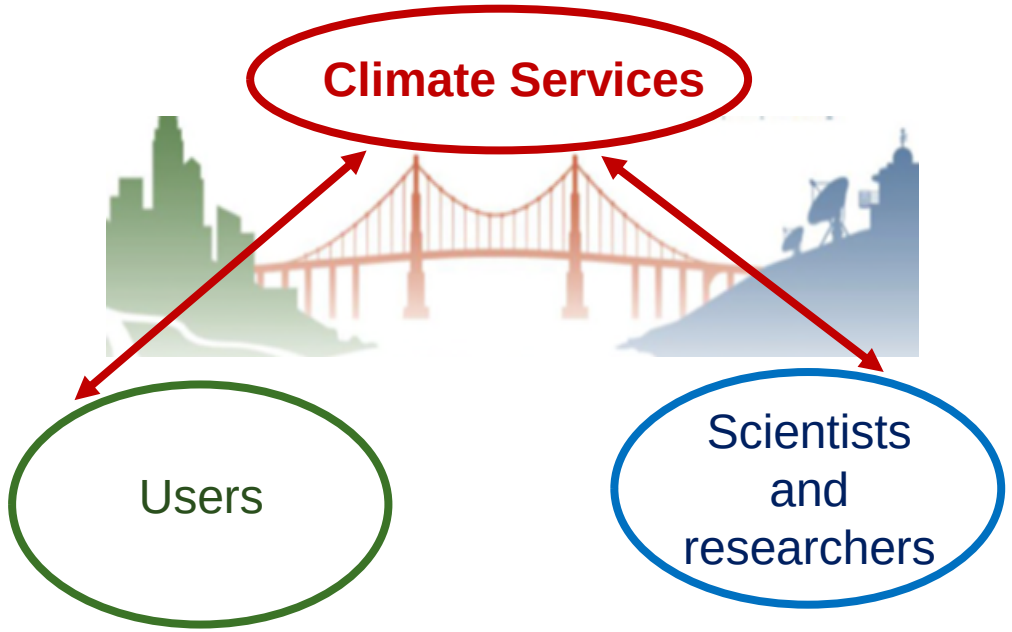
Which data I should use to model how climate change will affect the winter roads?

The network of meteorological stations is sparse in Northern Canada, is there any other data I can use for the historical climate.

Image taken in Kangiqsualujjuaq

I need to better understand the future impacts climate change will have on my community.

How climate change will affect permafrost conditions?



The Northern Climate Data Working Group

In late 2020, CCCS convened a working group of scientists with expertise in climate data in the Canadian North:

- Objective: identify, inventory, and characterize existing and publicly available climate datasets covering the Canadian North.
- An important early step to inform development of future climate products and services to support climate change adaptation decision-making in the Canadian North.

Period: December 2020 – December 2021

Secretariat: Paul Steenhof (CSA Group)

Members and contributors worked on a volunteer base.

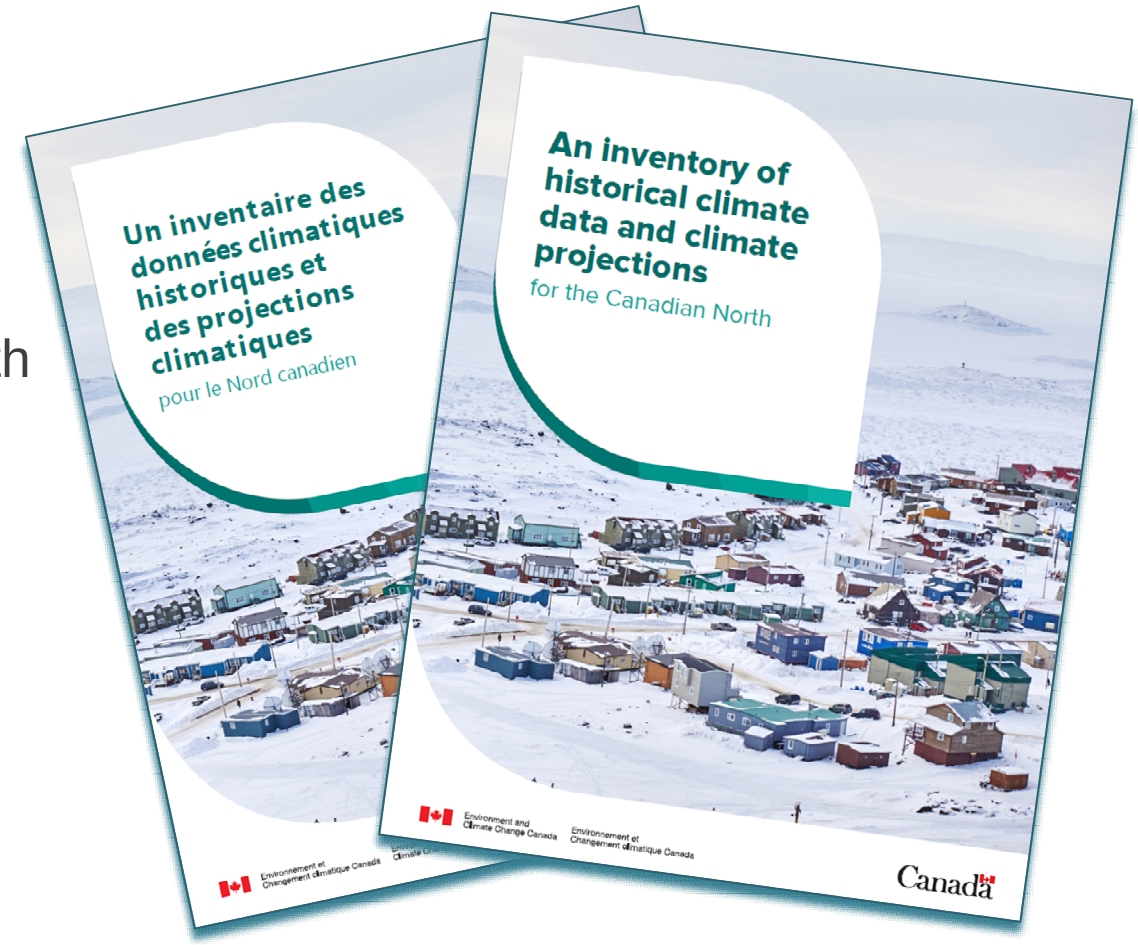
Member Name	Organization
Alex Crawford	University of Manitoba
Brian Horton	Yukon University Research Centre
Brian Sieben	Government of Northwest Territories
Elaine Barrow	CCCS/ECCC
Emilia Diaconescu	CCCS/ECCC
David Atkinson	University of Victoria
Jennifer Lukovich	University of Manitoba
Lawrence Mudryk	Climate Research Division / ECCC
Lindsay Matthews	CCCS/ECCC
Marco Braun	Ouranos Consortium on Regional Climatology and Adaptation to Climate Change
Michael Allchin	University of Calgary
Paul Kushner	University of Toronto
Rajesh Shrestha	WHERD/ECCC
Ryan Hennessey	CCCS/ECCC
Silvie Harder	CCCS/ECCC
Stephan Gruber	Carleton University
Stephen Déry	University of Northern British Columbia
Stephen Howell	Climate Research Division / ECCC

+ many contributors

The Northern Climate Data Working Group

Phase I Report:

- Tables with the inventory of **historical climate data**
- Tables with the inventory of **climate projections**
- Descriptions of data and links to download the data
- Present understanding of available datasets, challenges and limitations of use in the Canadian North
- English and French versions available by email



Types of data:

- Stations' observations
- Gridded observations
- Reanalyses
- Remote sensing data
- Modelled data

The Northern Climate Data Working Group - Phase I report

Historical data

Meteorological data

- Introduction
- 2-m air temperature (29)
- Total Precipitation (36)
- Surface Humidity (19)
- Surface Wind Speed (22)
- Supplementary data (9)

63 Annexes

Snow data

- Introduction
- Snow depth (30)
- Snow water equiv. (27)
- Snow cover (9)
- Appropriate use of snow data

25 Annexes

Hydrology data

- River Discharge (12)

8 Annexes

Sea ice data

- Introduction
- Sea ice concentration (4)
- Sea Ice Thickness (8)
- Sea Ice Drift (4)
- Other Data Portals

Permafrost data

- Introduction
- Ground Temperature (7)
- Subsurface Ice Content (7)
- Permafrost extent (5)
- Landform Inventories (9)
- Ground Subsidence and Active-Layer Thickness

Climate projections

Table with ensembles of models

- 11 ensembles (e.g. CMIP6; CMIP5; CMIP5 1° x 1° gridded data; CORDEX; Bias-adjusted ensembles)

Considerations:

- Meteorological variables
- Snow variables
- Hydrology variables
- Sea ice
- Permafrost

Phase II : the Northern Climate Data Inventory and Report (NCDRI)

- **Phase 2 of the Northern Climate Data Working Group**
- **Led by the University of Toronto with support from the CCCS**

Objective:

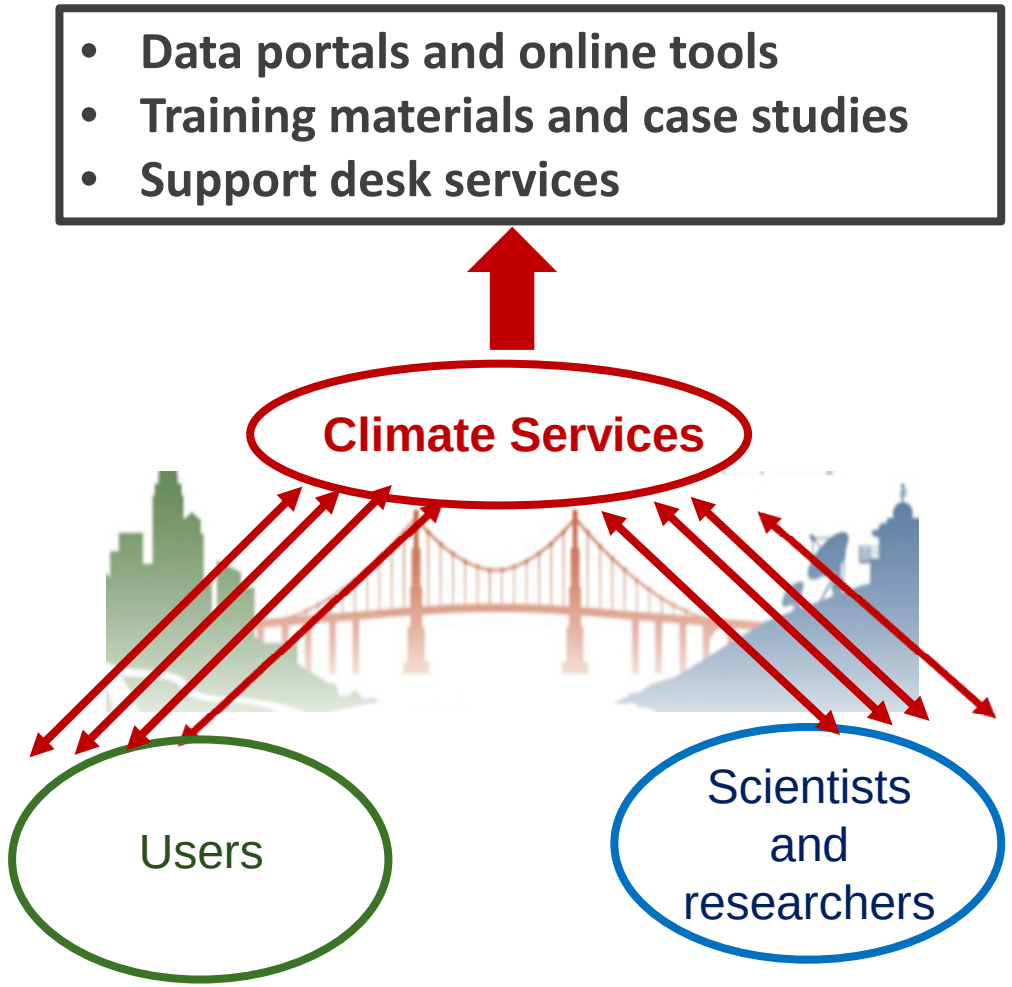
- Transform the Phase I report into a flexible and searchable online database.
- Develop supplementary materials on remote sensing data and description for wind data.

https://nordata.physics.utoronto.ca/en/

What is **available** vs What is **needed?**

- **NCDWG**: our first collaboration with scientists and researchers to identify which data exist and how can be used as "ingredients" for the development of climate products and services.

- What types of climate products and tools *should* be developed?
  - Responding to this question requires many discussions with Northerners, so that those future developments respond to the priorities and the decision-making of northern communities.



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Canada

Thank you!

Website

English:
canada.ca/climate-services

Français:
canada.ca/services-climatiques

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