



# Canada's Report

Presented By:  
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February 2023

# The Pandemic

- Canadian Arctic Research was severely impacted before by the pandemic. Even now, some sites are only accessible after a quarantine.
- But last year the activity has significantly rebounded

	2015-2019 average	2020	2021	2022
Northwest Territories	211	168	109	192
Nunavut	161	85	117	172
Yukon	85	40	60	85
Polar Continent Shelf Program (PCSP)	-	50	135	150

Note: Each organization has different criteria to be not comparable between organisations

During the pandemic some projects were: cancelled, postponed, done remotely, using local people, etc.

*New International Opportunity!*

# CINUK

## Canada-Inuit Nunangat-United Kingdom Arctic Research Programme

On the 11th of May 2022, the CINUK programme partners – Inuit Tapiriit Kanatami (ITK), United Kingdom Research and Innovation (UKRI), Polar Knowledge Canada (POLAR), National Research Council of Canada (NRC), Parks Canada (PARKS), and the Fonds de Recherche du Québec (FRQ) – announced the [13 successful projects](#) funded under the *Canada-Inuit Nunangat-United Kingdom Arctic Research Programme*.

<https://www.cinuk.org/>

### CINUK projects

Our CINUK projects feature strong Inuit involvement and are meaningful for Inuit Nunangat communities covering a wide range of important areas, including shipping, wildlife health, country foods, ecosystem health, safe travel, search and rescue, renewable energy, community health, coastal erosion, plastics and pollution, and much more.

# Examples of CINUK funded projects:

- Inuit Qaujisarnirmut Pilirijjutit on Arctic Shipping Risks in Inuit Nunangat (**University of Ottawa**)
- Carving and Climate Testimony – Inuit Youth, Wellness, and Environmental Stewardship (**University of Saskatchewan**)
- Beaver Range Expansion into the Arctic: understanding interlinked climate, environmental and social impacts and implications for Inuit well-being (**University of Waterloo**)
- Empowering our communities to map rough ice and slush for safer travel in Inuit Nunangat (**Memorial University + SmartICE**)
- Effective mitigation and adaptation to changing ground conditions for resilient coastal futures (**Hamlet of Tuktoyaktuk**)
- Inuksiutit: Food Sovereignty in Nunavut and the coproduction of country food knowledge (**York University**)
- Nunavut Search and Rescue (NSAR) Project: Supporting Inuit health and well-being, food security, economic development, and community resilience by strengthening Nunavut's whole of society SAR capabilities (**St. Francis Xavier University**)



# (Some) New Awards

- **Indigenous and Northern Relationship Development Fund and the Indigenous and Northern Research and Education Engagement fund.**
- **Preserving the *HMS Erebus* and *HMS Terror*: (\$15M)** over three years, to accelerate archeological and conservation work of these artifacts of international importance.
- **Yukon College new science building (\$26M)** ‘will bring together Western science and Indigenous traditional knowledge, and will be a “cornerstone” of what will soon be Yukon University.’
- **National Research Council of Canada (NRC), under its Arctic and Northern Challenge program, (\$5M over 3 years)** In support of key themes connected to housing, water, food and health care for Indigenous and Arctic and Northern peoples and communities.
- **Research icebreaker CCGS Amundsen (\$18M over 6 years)**

# The Future

- Because it is early in the year, many of the 2023 plans have not yet finalized and project approvals are in process.
- Canada's 2023 federal government budget will be "soon" and some announcements are hoped after that.



# Satellites

- Because of our large territory, satellites are important to research

On December 16, 2022, NASA launched the **Surface Water and Ocean Topography (SWOT)** mission, a collaboration with France's space agency Centre national d'études spatiales (CNES) that also includes the Canadian Space Agency (CSA) and the United Kingdom Space Agency.

SWOT will for the first time provide accurate data on the water surface elevation of lakes across the Canadian Arctic. This will significantly improve understanding of all aspects of Canadian Arctic water.

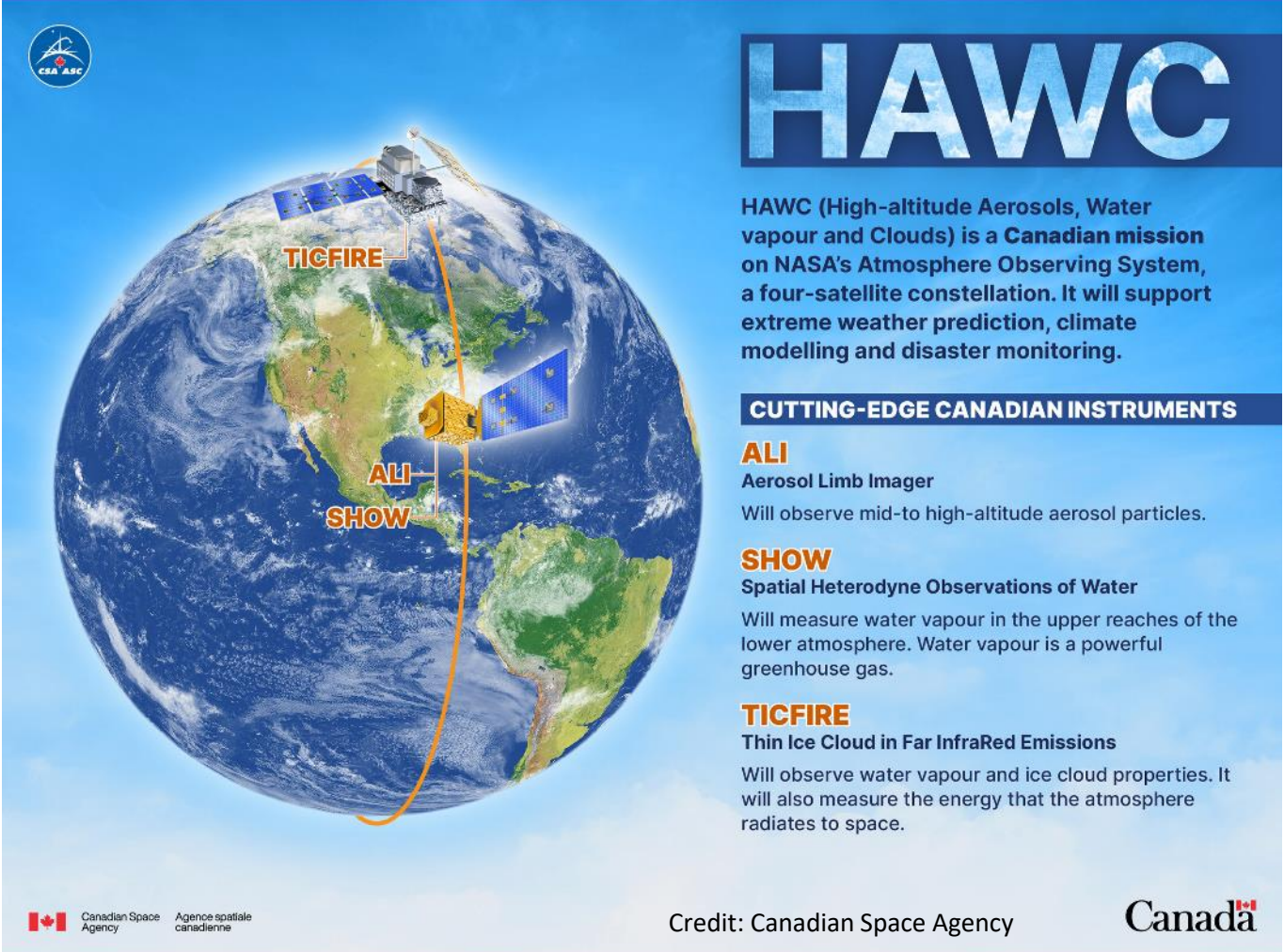


# Satellites

The satellite system which stands for High-altitude, Aerosol, Water vapour and Clouds (HAWC) – is Canada's contribution to NASA's international Atmosphere Observing System (AOS)

- \$200 million announcement.

Currently slated to launch in 2028 and 2031, HAWC will use three innovative sensors to deliver the critical data needed to predict extreme weather, monitor for natural disasters and model climate-change impacts, especially in the Arctic.



**HAWC**

HAWC (High-altitude Aerosols, Water vapour and Clouds) is a Canadian mission on NASA's Atmosphere Observing System, a four-satellite constellation. It will support extreme weather prediction, climate modelling and disaster monitoring.

**CUTTING-EDGE CANADIAN INSTRUMENTS**

**ALI**  
Aerosol Limb Imager  
Will observe mid-to high-altitude aerosol particles.

**SHOW**  
Spatial Heterodyne Observations of Water  
Will measure water vapour in the upper reaches of the lower atmosphere. Water vapour is a powerful greenhouse gas.

**TICFIRE**  
Thin Ice Cloud in Far InfraRed Emissions  
Will observe water vapour and ice cloud properties. It will also measure the energy that the atmosphere radiates to space.

Canadian Space Agency / Agence spatiale canadienne

Credit: Canadian Space Agency

Canada





Based on assessment of current knowledge and evidence, what are the key foundational elements to create an inclusive, collaborative, effective, and world-class Arctic and northern science system in Canada?

Council of Canadian Academies Expert Panel on:

# **The Future of Arctic and Northern Research in Canada**





# Canadian High Arctic Research Station (CHARS)





# International Collaboration at CHARS



During 2022 international researchers accounted for approximately 25% of visiting researchers to CHARS and about 30% of researcher days

POLAR is a member of University of the Arctic and EU-funded INTERACT transnational mobility program

Applications for Research Support accepted in August, November and February:

<https://www.canada.ca/en/polar-knowledge.html>

# Miscellaneous Notes

- There seems to be a shifting of research activities from Russia to Canada because of international tensions
- Both OneWeb and Starlink internet constellations are operating in the Canadian Arctic. At one site that changed OneWeb from a geostationary link, the throughput went up  $\sim 10x$  and costs down to  $\sim 4x$ .
- It is important that national or international researchers working in the Canadian Arctic must have a valid license for the appropriate location. It is important to allow time for the approval of the license before the activity begins.