

- **Project Title**

Multidisciplinary Observatory for Arctic Climate Change and Extreme Events Monitoring (MOACC)

- **Lead Researcher's Name and Affiliation**

Prof. Dr. Alexandre Langlois, Université de Sherbrooke

Prof. Dr. Kimberly Strong, University of Toronto

- **What research questions does the project hope to answer? What are the research objectives and why is the study needed?**

The Multidisciplinary Observatory for Arctic Climate Change and Extreme Events Monitoring (MOACC) proposal is submitted by the Université de Sherbrooke (lead institution-UdeS), University of Toronto (UofT), Western University (WU) and Université de Montréal (UM). The main objective of our project is to develop a permanent multidisciplinary scientific infrastructure that enables long-term observations of Arctic climate change, bringing together experts from a wide range of expertise and institutions. The project is led by Prof. Alexandre Langlois (UdeS) and Prof. Kimberley Strong (UofT) and responds to a consensus on the lack of temporal observations that are crucial to understand feedback processes and to promote model development in the Arctic. The innovative aspect of this proposal resides in its multidisciplinary approach while enabling long-term Arctic measurements spanning several disciplines. The proposed observatory will be located at the Canadian High Arctic Research Station (CHARS) in Cambridge Bay, Nunavut, while enhancing the reach of CHARS with linkages to the Environment and Climate Change Canada supersite in Iqaluit. Our ambition is to establish the site as one of the largest instrumented high Arctic observatories dedicated to the monitoring of key indicators that drive climate change. The site will generate and enhance partnerships, not only with Canadian research centers and organizations, but also with international research partners and networks.

- **Where, when, and for how long will the field research be undertaken?**

The research will take place on the Canadian High Arctic Research Station (CHARS) campus in Cambridge Bay, and North of the Greiner Lake Watershed in an area known as the Intensive Monitoring area. The project is funded by the Canadian Foundation for Innovation (CFI), and an agreement already exists between POLAR Knowledge Canada and project partners, valid for the next 5 years so that research will occur 2022-2027, renewable every 5 years.

- **What methods will be used to conduct fieldwork?**

The methods for fieldwork include: Snow, atmosphere and meteorology measurements; remote sensing measurements and UAVs; permafrost boreholes.

- **What impacts will the research produce impacts to the environment, wildlife, or people?**

No anticipated impact on people and wildlife, minimal impact from the permafrost boreholes in which temperature sensors will be deployed. The drilling operation will be conducted on rubber mats while the active layer is still completely frozen to avoid any surface disturbance such as damage to the vegetation, removal of organics or soil compaction.

- **How will the data generated by the research be stored and managed?**

As stated in the agreement, POLAR shall have the right to sublicense to the Inuit Tapirit Kanatami and the Gwich'in Tribal Council a royalty-free, irrevocable, perpetual, non-exclusive and non-transferable right to use research results for non-commercial internal scientific, research and teaching purposes only, without the right to sublicense. Furthermore, this project is under a memorandum of agreement between POLAR and ITK/Gwich'in Tribal Council for which the details are not provided here given that the agreement document is 40 pages long.

- **How will Nunavut residents be involved in the research?**

Hiring people through the Cambridge Bay Hunters and Trappers Organization will occur to deploy a snow monitoring program starting in 2023. Furthermore, though POLAR and CHARS, the HTO will be approach to participate in the advisory committee as planned in the MOACC governance model.