COLLÈGE AURORA COLLEGE

IDENTIFICATION

Department	Position Title	
Aurora College	Senior Researcher	
Position Number	**Community**	**Division/Region**
91-16796	Inuvik	Research / Beaufort Delta

PURPOSE OF THE POSITION

The Senior Researcher is responsible for supporting the development and actual implementation of applied research programs that facilitate the creation of innovative and Northern-focused Space-Based Earth Observation Data (SBEOD) tools to support the design and implementation of climate change adaptation, resilience, and mitigation strategies in Western Arctic Communities.

SCOPE

Located in Inuvik at the Western Arctic Research Centre, the Senior Researcher reports to the Research Chair: Climate Change Adaptation. The Research Chair is responsible for performing participatory action-oriented climate change research, which involves working closely with the Western Arctic community groups to map and monitor the effects of climate-driven changes on the communities, as well as developing and executing climate change adaptation and mitigation strategies. This is normally achieved through community engagement, workshops, community-focused climate change risk assessment, capacity building, interacting with the communities to learn Indigenous ways of climate resilience, and facilitating the integration of Western science with Indigenous Knowledge to solve climate issues.

The Senior Researcher will be responsible for assisting the Research Chair in conducting the above-mentioned activities. This will include the design and implementation of applied research and the development of partnerships with key regional actors to support the design and implementation of SBEOD and climate change applied research programs. The pool of potential research partners and stakeholders is diverse and includes Indigenous governments, federal and territorial government, community groups, research scientists, technicians, the private sector, and non-profit organizations.

This position requires the incumbent to travel 2-4 times per year, to meet with partners.

Travel by road, winter roads or by small aircraft to the three campuses or smaller communities can occur at any time of year.

RESPONSIBILITIES

1. **Develop partnerships to support participatory action-oriented research.**
   - Contribute to the cyclic development of a research partnership strategy for the climate change adaptation team.
   - Support the creation and maintenance of partnerships with research scientists, community-based researchers and stakeholders in support of existing and potential research projects.
   - Work closely with partners and stakeholders to identify Northern climate change-related issues that can be addressed with the support of applied research, in particular, the application of SBEOD tools and methodologies.
   - Contribute to the development of funding proposals to support research projects and research initiatives in collaboration with key partners and stakeholders.
   - Develop techniques to nurture and grow research partnerships across Aurora College.

2. **Support the design and implementation of applied research with respect to the application of SBEOD to climate change adaptation, resilience, and mitigation.**
   - Conduct comprehensive reviews of academic literature, reports, and policies documents related to a) the effects of climate-driven changes on the communities within the Northwest Territories and b) the application of SBEOD to climate change adaptation and mitigation.
   - Produce literature summaries and synthesis documents on the above reviews as required.
   - Design and implement applied research that utilizes artificial intelligence/machine learning to facilitate the automated execution of analytical processes on SBEOD for the following reasons:
     - The identification, mapping and monitoring of earth movements (e.g., landslides and slumps);
     - The interpretation of natural landscape features; and
     - The support of detailed thermokarst mapping.
   - Develop and execute research that utilizes SBEOD and artificial intelligence to support the evaluation of long-term trends (Trend analysis with respect to climate-driven changes).
   - Develop scientifically sound methodologies for analyzing and ground-truthing results from the above research activities.
   - Support the evaluation and selection of the most suitable software for facilitating SBEOD application to climate change mapping and monitoring.
   - Communicate research results through, for example, the production of thematic raster data sets, mosaics, maps, animated models, posters, technical reports, peer-reviewed publications, presentations, workshops, community engagement, and other communication materials that may be required by the communities, partners, stakeholders, and general public.
   - Report research activities to funding bodies, partners, stakeholders, and Aurora College Leadership as required.

- Perform related duties as required to support the Research Chair in the development and implementation of climate change adaptation and mitigation strategies.

3. Implementation of research with community members.

- Work closely with community groups on the implementation of the research, clearly identifying aspects that are designed "to prove" the impact of climate-driven changes and aspects that are designed "to improve" or mitigate against the impact of climate-driven changes on their community.
- Engage and advise community groups on their SBEOD needs with respect to climate change adaptation and mitigation.

4. Contribute to building research capacity in the Northwest Territories.

- Develop, where possible plain language training modules and materials on the application of SBEOD to community-based climate change mapping and monitoring.
- Deliver SBEOD training to community-based researchers, research partners, and stakeholders.
- Mentor research assistants and students.
- Support ARI's outreach team on the delivery of STEM outreach to Western Arctic communities.

WORKING CONDITIONS

Physical Demands

No unusual demands.

Environmental Conditions

Fieldwork may require the incumbent to experience physical hazards through the necessity to travel in isolated northern areas by charter aircraft, boat and snowmobile.

Sensory Demands

No unusual demands

Mental Demands

No unusual demands.

KNOWLEDGE, SKILLS AND ABILITIES

- Knowledge of SBEOD and geomatics principles.
- Knowledge of digital image analysis.
- Knowledge of the application of artificial intelligence/machine learning to image analysis.
- Knowledge of the scientific principles and techniques behind SBEOD and geomatics research in mapping and monitoring, including field-based data acquisition and analysis.
- Knowledge of and/or the ability to acquire knowledge of northern culture and Indigenous Communities.
- Knowledge of and/or the ability to acquire and apply knowledge of federal and territorial research funding programs.

- Skilled in research project management.
- Skilled in developing and writing successful funding proposals, academic publications and research reports.
- Leadership skills and the ability to positively influence, motivate and mentor others.
- Interpersonal, oral and written communication and presentation skills.
- Ability to solve complex application problems in digital image analysis with the aid of artificial intelligence and machine learning
- Ability to work with climate change data.
- Ability to design and carry out complex research projects in an academic environment.
- Ability to partner with multiple stakeholders (including Indigenous communities) on research activities.
- Ability to encourage input, teamwork and cooperation from others.
- Ability to supervise and mentor students.
- Ability to work efficiently and independently to meet deadlines and set priorities for completing projects.
- Ability to commit to upholding and consistently practicing personal diversity, inclusion and cultural awareness, as well as safety and sensitivity approaches in the workplace.

Typically, the above qualifications would be attained by:

Completed PhD in Remote Sensing, Geomatics, computer science or a similar field; and three (3) years of experience in the application of artificial intelligence to image analysis.

Equivalent combinations of education and experience will be considered.

ADDITIONAL REQUIREMENTS

Position Security

☐ No criminal records check required
☒ Position of Trust – criminal records check required
☐ Highly sensitive position – requires verification of identity and a criminal records check

French language (check one if applicable)

☐ French required (must identify required level below)
Level required for this Designated Position is:
ORAL EXPRESSION AND COMPREHENSION
Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
READING COMPREHENSION:
Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
WRITING SKILLS:
Basic (B) ☐ Intermediate (I) ☐ Advanced (A) ☐
☐ French preferred

Indigenous language: Select language

☐ Required
☐ Preferred