



## **Position Available: Research Associate**

- **Apply to Dr. Gary Stern:** [Gary.Stern@umanitoba.ca](mailto:Gary.Stern@umanitoba.ca)
  - **Start Date:** Winter 2022
  - **Full Time:** \$50,000/yr
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**Clayton H. Riddell Faculty of Environment, Earth** includes the **Centre for Earth Observation Science (CEOS)**, Department of Earth Sciences, Department of Geological Sciences, and the Natural Resources Institute. The Faculty was established nearly 20 years ago to combine the resources of Earth, Environment, and Resources studies, with a strong focus on research. In addition to the environment, climate change, and resource development, the faculty is focused on geography and geological sciences, as well as environmental science and environmental studies.

**The Centre for Earth Observation Science (CEOS)** is one of the largest research centres at the University of Manitoba. The research activities within the Centre are multidisciplinary, with an emphasis on environmental change. One of the main research goals is to contribute to the understanding of the Arctic marine system and ranks amongst the largest and most productive Arctic research centres in the world. The research conducted at CEOS is also central to one of the strategic research themes identified by the university (Arctic System Science and Technology).

### **Genice II - Reimagining monitored natural attenuation as an oil spill response tool in the Arctic**

The GENICE II project will use metagenomics, metabarcoding, mass spectrometry, and high-sensitivity remote sensing techniques to develop a mechanistic understanding of natural attenuation (primarily by microbial biodegradation) in Arctic seawater and sea ice using controlled experiments at the Churchill Marine Observatory (CMO). This project will also take a co-development approach by developing Community-Based Monitoring (CBM) programs with local communities in the Kivalliq region (Nunavut, Hudson Bay) using Inuit Qaujimagatuqangit (IQ, or “what Inuit have always known to be true”) and on-site nanopore DNA sequencing technology. In addition, we will conduct social, policy, and economic research (GE3LS) to further develop the role of Monitored Natural Attenuation (MNA) has to play in strategic responses to Arctic oil spills.

**Churchill Marine Observatory (CMO)** is a unique, highly innovative and multidisciplinary research facility located in Churchill, Manitoba, adjacent to Canada’s only Arctic deep-water port. The CMO is dedicated to studies on the detection, impact and mitigation of spills of oil and related contaminants in sea ice-covered waters, as well as extreme weather, climate change, and freshwater marine coupling studies. **The Ocean-Sea Ice Mesocosm (OSIM) Facility** consists of two outdoor pools (30 feet by 30 feet by 10 feet deep, each) designed to simultaneously accommodate contaminated and controlled experiments on various scenarios for marine and freshwater environments.

### **Duties & Responsibilities:**

- **Lead research on petroleomics in sea ice, working in close collaboration with colleagues from the Universities of Manitoba and McGill, including advising/mentoring students working on petroleomics, extraction, clean-up and instrumental and data analysis of petroleum hydrocarbon**
- **Establish field programs at the Churchill Marine Observatory (CMO), on the CCGS Amundsen Icebreaker, and the William Kennedy coastal research vessel.**
- **Contribute to the mentoring and training of undergraduate and graduate students**
- **Undertake analysis of samples using analytical equipment located at the CEOS Petroleum Environmental Research Laboratory (PETRL) and Churchill Marine Observatory (CMO) Ocean-Sea Ice Mesocosm (OSIM) facilities.**
- **Prepare and publish manuscripts and reports on petroleomics in sea ice and other relevant research.**
- **Present research results at national and international conferences and workshops.**
- **Contribute relevant research for the GENICE II GE3LS\* program (\*Genomics, Ethical, Environmental, Economic, Legal & Social Aspects)**

### **Experience preferred working in Arctic Systems Sciences and using the following instrumentation:**

- **IONICON CHARON-PTR-TOF 4000 with fast GC and SRI capability (CMO)**
- **Agilent 5977A GC/MSD Single Quad (CMO)**
- **Agilent 7010 Triple Quadrupole GC/MS (PETRL)**
- **LECO Pegasus 4D GC x GC HRT (PETRL)**
- **Waters SYNAPT G2-Si HDMS 4K with ion mobility, UPLC 2D, APGC capability (PETRL)**