Postdoctoral scientist position in oceanography

Job Description

We are seeking a highly motivated postdoctoral scholar to work on development of Monitoring and Verification (MRV) Frameworks for Ocean-based Carbon Dioxide Removal in Canadian Atlantic Waters (Bedford Basin, Canada). This MITACS Elevate-sponsored position provides a unique opportunity to gain experience working closely with a R&D-focused sensor company in addition to the research component of the project.

Desired Qualifications

- PhD in biogeochemistry, oceanography, ocean technology and related disciplines with strong publication record
- Preference will be given to candidates with strong background in carbonate chemistry, ocean observations and/or sensor development
- Excellent verbal and written English
- Strong communication and interpersonal skills
- Sea-going and fieldwork experience

Postdoctoral fellow eligibility (MITACS):

- They are Canadian citizens, permanent residents or international applicants

- Their date of graduation from a PhD program is less than five years to proposed start date of the project, unless:

a) They have had a break in their career due to military service, illness, or family leave which may be considered exceptions and must be approved in advance

b) They have fulfilled all PhD degree requirements (e.g., successful defence, final deposit, and sign-off of the dissertation), meet the postdoctoral fellow eligibility criteria at their home academic institution, hold a postdoctoral fellow status for the entire duration of their Mitacs Elevate fellowship (2 years)

c) They can commit to the two-year Mitacs Elevate fellowship, including the exclusive professional development curriculum.

d) Fellows who have held a Mitacs Accelerate award as a Master's or PhD student are eligible as long as they have not completed more than one year (three internship units equivalent) of Mitacs Accelerate at postdoctoral level. This must be completed before the start of the Mitacs Elevate fellowship

e) Fellows cannot apply to multiple Mitacs programs for the same period of time.

Fellows are ineligible if they have:

a) Been employed for more than six months in an R&D position outside the academic institution after receipt of their doctoral degree

b) Received an offer of employment from the proposed partner organization except an offer of this fellowship or short-term employment of up to six months while awaiting a decision on the Mitacs Elevate fellowship

c) Completed more than one year (three internship units equivalent) of Mitacs Accelerate at the postdoctoral level before the start of the Elevate fellowship; and

d) Previously held a Mitacs Elevate award. Fellows who have completed Mitacs Elevate are also ineligible for Mitacs Accelerate

If the application is not recommended for an award, fellows may not be eligible to apply again if they have accumulated more than six months of industrial or partner organization work. It is recommended that fellows accept a temporary contract only if necessary and that the period is kept as short as possible.

Other requirements

- Physical fitness for the marine medical exam and MED STCW Basic Safety Training
- Knowledge of programming languages (R, Python, C++, Matlab, LabView, etc)

Salary and Duration

Regular, grant-paid, full-time position with a stipend of $70,000 CAD/year and $10,000/year of research support (non-negotiable, grant reliant). Project duration is 24 months.

Location

This project is a collaboration between the Ocean Science and Technology Group (CERC.Ocean, Dalhousie) and Pro-Oceanus Systems, and will be based at Studley Campus of Dalhousie University, Halifax, NS. The fieldwork will be done in the Bedford Basin, which is easily accessible by boat from the Halifax harbour.

Starting Date

As soon as possible.

Interested individuals should send an e-mail with 1) one cover letter, 2) your CV, and 3) names, email addresses, and phone numbers of three references in one single PDF to Douglas Wallace (douglas.wallace@dal.ca), Dariia Atamanchuk (dariia.atamanchuk@dal.ca) and/or Mark Barry (mark@pro-oceanus.com).

Project description

Ocean-based carbon dioxide removal (CDR) approaches such as ocean alkalinity enhancement (OAE) have potential to help sequester atmospheric CO2, safely. However, what is currently missing is the evidence-based assessment of uncertainties of any ecological consequences and, especially, methods to determine the efficiency and permanence of enhanced carbon sequestration, and whether it is a practical approach to provide quantifiable climate benefits.

This project aims to answer some of these key, and challenging questions using a combination of measurement techniques and small-scale field experimentation in the context of ocean modelling. The work will help to develop, test and demonstrate new sensor-based approaches to MRV and act as a catalyst in assessing the effectiveness of OAE. Such approaches will be critical to providing policymakers, industry and the public with the information needed to evaluate the potential for climate interventions that can be implemented as a complement to greenhouse gas emission reduction.

The main goals of this project are three-fold:

1) Development and demonstration of an assessment and verification framework for OAE in the Bedford Basin, Canada, using a combination of field ocean observations, lab- and mesocosm experiments and numerical models.

2) Study of the effectiveness of OAE and development of novel MRV methods and technologies.

3) Assess the scalability of OAE approaches tested in Bedford Basin.

The candidate will work closely with Pro-Oceanus and the CERC.Ocean group to test measurement approaches and technologies that can be used to address the MRV challenge, based on field deployments of novel, high-accuracy sensors in Bedford Basin and in the context of small- and large-scale tracer experiments that will be conducted there. The contribution to the development of verification and monitoring approaches would be to evaluate the performance of in-situ measurement of DIC, TA, pH, and pCO2 using various sensor combinations (including newly-developed sensors) available from Pro-Oceanus and Dalhousie University) deployed on a range of platforms. Review of applications will begin immediately and continue until the position is filled.

Work Environment

The CERC.Ocean Laboratory at the Department of Oceanography, Dalhousie University, is a world-leading research facility developing cutting-edge technology for better understanding of biogeochemical cycling in the global ocean and evaluating ocean-based solutions for the climate crisis.

Pro-Oceanus Systems Incorporated (PSI) is a world leader in building innovative sensors that measure and monitor dissolved gases such as CO2, CH4, and O2 in the ocean and other aquatic ecosystems. Pro-Oceanus has a wealth of expertise, lab facilities, and state-of-the-art observational sensors that can be used to monitor and study aquatic ecosystems.

Dalhousie University commits to achieving inclusive excellence through continually championing equity, diversity, inclusion, and accessibility. The university encourages applications from Indigenous persons (especially Mi'kmaq), persons of Black/African descent (especially African Nova Scotians), and members of other racialized groups, persons with disabilities, women, and persons identifying as

members of 2SLGBTQ+ communities, and all candidates who would contribute to the diversity of our community. For more information, please visit www.dal.ca/hiringfordiversity.