

International Postdoctoral Fellowship Program – Transforming Climate Action: *Circulation Shifts in the Northwest Atlantic: Mechanisms, Variability, and Climate Forcing*

We are looking for candidates interested in applying to the International Postdoctoral Fellowship Program of the Transforming Climate Action – Canada First Research Excellence Fund program, to work on a project titled ***Circulation Shifts in the Northwest Atlantic: Mechanisms, Variability, and Climate Forcing***. The project would be carried in collaboration between three institutions : Frédéric Cyr at Memorial University, Newfoundland; Mathilde Jutras at the Institut des sciences de la mer (ISMER) of the Université du Québec à Rimouski (UQAR) in Quebec; and Svenja Ryan at the Woods Hole Oceanographic Institute in Massachusetts.

Program description:

The International Postdoctoral Fellowship (IPDF) program offers opportunities for early career PhD-holders to conduct innovative, full time, and collaborative research in cooperation with international institutions. Supporting postdoctoral fellows in achieving international exposure through travel and collaboration, while nurturing institutional relationships, are key goals of the IPDF program.

IPDF projects have a transformative approach, with a focus on action, collaboration, and interdisciplinary and/or transdisciplinary research. Community-based research is encouraged. Projects are not only rooted in the discipline of the IPDF, but integrated between disciplines, considering the human aspects of ocean-climate research. IPDF terms are typically two years. International postdoctoral fellows are co-supervised by Canadian and international researchers working on a collaborative project. Fellows travel between their co-supervisors' institutions, within Canada and internationally, at least once per year. The IPDF participates in research life at their home institution, for example, providing presentations of their research in seminars, undergraduate lectures, and/or a public lecture during their research stay; mentoring highly qualified personnel (HQP); participating in institutional research networks and other committees, and assisting with various review processes.

For more information, see <https://www.ofi.ca/opportunities/fellowships/international>

Proposed project description:

The northwest Atlantic is undergoing rapid transformations driven by shifts in the balance between the warm Gulf Stream and the cold Labrador Current. Over the past decades, these changes have led to unprecedented warming and deoxygenation along the north-American coast and in communicating

gulfs and basins, with severe consequences for ecosystems and fisheries. They also led to the freshening of the subpolar North Atlantic, with potential impacts on deep-water formation and the Atlantic Meridional Overturning Circulation (AMOC), a key regulator of the global climate system. However, it currently remains unclear what is driving these changes and what the respective roles of natural climate variability and anthropogenic forcing are.

This project aims to identify the physical mechanisms that control circulation variability in the northwest Atlantic. Using a combination of oceanographic and atmospheric observations, the project will characterize the circulation regimes, describe their variability, and then link the different timescales of variability with driving mechanisms.

Using a combination of oceanographic and atmospheric observations, the project will first characterize the two circulation regimes characterizing the region: a first one in which Labrador Current Waters populate the north-American coast, and another one in which Gulf Stream Waters populate it. Variability in these regimes will be quantified over the past decades using ship-based, float and satellite data. The drivers of this variability at different timescales (interannual, decadal) will then be assessed by linking observed shifts with potential forcing mechanisms, from freshwater input to large-scale circulation, to provide a mechanistic understanding of the processes governing circulation variability in the northwest Atlantic.

Applications to the IPDF program are applicants-driven, allowing the proposed research to be modified according to the applicant's interests and expertise.

If you are interested in preparing an application, please contact Mathilde Jutras (mathilde_jutras@uqar.ca) or Frédéric Cyr (frederic.cyr@mi.mun.ca) as soon as possible. The deadline to submit the full application is Nov. 3rd.