

## CALL FOR APPLICATIONS

### POSTDOCTORAL INTERNSHIP (2024-2026) ON THE RECONSTRUCTION OF HOLOCENE SEA-LEVEL CHANGES



#### BACKGROUND

Global change is driving modifications to coastal zones and increasing the vulnerability of coastal populations worldwide to erosion and flooding hazards. As a result of the accelerated rise in global sea levels, arguably one of the most significant consequences of climate change on a global scale, the risk of flooding will become the hazard with the greatest impact on coastal communities over the next century. These observations have led governments and major international organisations to invest in the development of coastal risk assessment methods, to set in motion adaptation strategies and to find sustainable solutions.

The Coastal Geoscience Research Chair and the Laboratoire de dynamique et de gestion intégrée des zones côtières at the Université du Québec à Rimouski ([ldgizc.uqar.ca](http://ldgizc.uqar.ca)) are leading a programme to reconstruct Holocene sea levels in the estuary and Gulf of St. Lawrence in the province of Quebec. As a result of the last glaciation, the Lower Estuary and Gulf of St. Lawrence region shows great spatial variability in vertical variations in the Earth's crust (isostatic variations). The gradient in rates of vertical crustal movements across Quebec contributes to regional changes in relative sea level. In the future, these glacio-isostatic adjustments may induce relative sea level rise rates that are much greater than the eustatic rise in subsiding environments (e.g. Chaleur Bay and the Magdalen Islands), or limit rise rates in environments with strong isostatic rebound (e.g. northern Quebec). It is therefore necessary to determine these glacio-isostatic adjustment rates in order to obtain valid projections of relative sea level rise in the future climate.

#### SUMMARY OF THE POSTDOCTORAL POSITION

The person selected to carry out this postdoctoral internship will help to further develop the project, the main objectives of which are as follows: to develop curves of relative sea-level variations over the last few millennia; and to identify the causes of the changes observed in the rates of sea-level variations on secular and multi-decadal scales. Using these results and climate scenarios, the project also aims to model and produce projections of relative sea level rise on a regional scale. Based on coring of sediments in maritime marshes, the reconstruction of relative sea level variations requires several stages. The selected candidate will lead and participate in: the sampling of surface sediments from modern environments for the development of transfer functions, coring of sediments, laboratory analyses (identification and analysis of plant macrofossil, identification of foraminifera, geochemical and sedimentological analyses, preparation of material for  $^{14}\text{C}$  dating) and the transformation of data into sea level. They will be supported by research assistants and specialised technicians.

## **INTERNSHIP SPECIFICATION**

This two-year postdoctoral fellowship is supported by a CAD\$52,000 per year salary. The person selected to carry out this postdoctoral internship will be provided with an office and a computer workstation, as well as the specialised software needed to achieve the project's objectives. The internship will be supervised by Pascal Bernatchez, professor and holder of the Research Chair in Coastal Geoscience in the Department of Biology, Chemistry and Geography at UQAR.

Expected start date: April 2024.

Place of employment: Université du Québec à Rimouski, Rimouski campus.

## **REQUIREMENTS**

- Hold a Ph.D. in a relevant discipline.
- Expertise in reconstructing sea-level changes.
- Experience in laboratory techniques in this field of research.
- Knowledge of the identification of coastal foraminifera and marsh plant macrofossil and the development of transfer functions for relative sea level reconstructions.
- Excellent oral and written communication skills.
- An excellent track record of scientific publications.
- Experience in modelling would be considered an asset.

## **TO SUBMIT YOUR APPLICATION**

Please assemble the following documents in a single PDF file:

- A cover letter of no more than 2 pages signed by the candidate explaining the reasons for the application.
- A curriculum vitae containing all the information relevant to the assessment of the application.
- The names and full contact details of two reference persons.
- A transcript of marks from bachelor's, master's and doctoral studies.

Please send your application to Pascal Bernatchez by 4 p.m. on 29 March 2024, by e-mail only, to [pascal\\_bernatchez@uqar.ca](mailto:pascal_bernatchez@uqar.ca). Applications that are incomplete or received after the deadline will be declared ineligible.

All applications will be treated confidentially. Only those candidates whose applications are selected will be contacted for an interview.