



## Postdoctoral Research position in Physical Oceanography at LOPS – Ifremer

**Title:** Understanding the interplay between mesoscale dynamics and sea ice in the Arctic.

### Description

We seek a physical oceanographer to join the Laboratoire d’Océanographie Physique et Spatiale, Ifremer in Brest (France). The overall goal of the project is to investigate the interplay between ocean mesoscale dynamics and sea ice in the Arctic. The work will be mostly based on model simulations run at very high resolution, in both idealized and realistic setups.

**Location:** Laboratoire d’Océanographie Physique et Spatiale, Ifremer – Brest, France.

**Contract:** The position is initially for one year, with the potential for extension up to 3 years.

**Starting date:** January 2021 (or before)

### How to apply

Application (detailed CV including a list of publications, cover letter explaining how your interests and experiences would make you a suitable candidate, name/email of at least 2 referees) and/or informal enquiries should be sent to Camille Lique ([camille.lique@ifremer.fr](mailto:camille.lique@ifremer.fr))

**Deadline: August 31 2020**

### Who can apply:

A PhD in physical oceanography, meteorology, climate science, or geophysical fluid dynamics is required, with skills in ocean-sea ice numerical model development and analysis of model outputs. Experience in polar research would be an asset. Excellent oral and written communication in English are required.

## **Details on the project**

The Arctic system, as a whole, is in transition. Interactions between mesoscale eddies and sea ice could potentially represent an important mechanism, via which the ocean contributes to the on-going and future sea ice retreat. However, observations taken under sea ice, and results from idealized numerical simulations at very high resolution have pointed out that the energy at (sub-)mesoscale in the Arctic interior is relatively low when compared to characteristic midlatitude open ocean dynamics. This suggests that, at first order, the mesoscale activity could be fundamentally different between ice-covered and ice-free regions.

In this context, the goal of the postdoc is twofold:

1) First, we will try to pin down the important processes for the interplay between sea ice and mesoscale front and eddy features. Here the postdoc will use an idealized set-up (building on for instance the numerical framework of Brannigan et al. (JPO, 2017), to which we will add a sea ice component). We will explore how e.g. the stratification, the large scale circulation and the surface conditions determine the development of (sub-)mesoscale instabilities. We will also consider a variety of sea ice conditions, representing past, present and future states of the Arctic system.

2) Second, the postdoc will investigate the role of the surface condition and in particular the time and space heterogeneity of surface forcing set by the ocean-sea ice interactions for the development of fronts and eddies. This part will be based on the analysis of simulation performed with a realistic pan-Arctic configuration run at a kilometric resolution or below, complemented by the analysis of available observations (such as the ITP dataset) when possible and relevant.

## **Context:**

This postdoc project is part of the projects ImMEDIAT (Interplay between MESoscale Dynamics and sea Ice in the ArcTic) and MEDLEY (MixED Layer hETerogeneity), both funded by the French ANR. The projects involve several scientists and engineers at LOPS, and in other laboratory in France (LOCEAN, IGE) and abroad (Oxford, MIT, NERSC...). The postdoc will be strongly encouraged to develop collaborations within this network and beyond.