— 2-year Postoc opportunity —

Investigating Ocean-Sea Ice-Atmosphere Feedbacks in Antarctica to Understand Self-Sustained Changes in Sea Ice

Deadline for application : 25 November 2024

Supervision: Jean-Baptiste Sallée, Aurore Voldoire
Located: CNRM, Météo-France, Toulouse, France

Since 2016, Antarctic sea ice has experienced an abrupt and unprecedented decline, which has puzzled the scientific community and raised questions about the underlying processes driving such rapid changes. Understanding the complex interactions between the ocean, sea ice, and atmosphere in the Antarctic region is essential to uncovering the mechanisms behind this phenomenon and to predicting future sea ice variability in a warming world. This postdoctoral research project will focus on exploring the feedback processes within the ocean-sea ice-atmosphere system that may contribute to self-sustained changes in Antarctic sea ice. The main tool for this investigation will be the CNRM Climate Model, which will be used to perform dedicated simulations and sensitivity studies.

The main objectives of the project (can be adjusted with the successful candidate):

1. Evaluate the CNRM Climate Model in modelling pre-industrial and contemporary Antarctic sea ice extent and seasonal cycle. The first objective is to evaluate and tune the CNRM Climate Model to best represent sea ice (in preparation for this project and for CMIP7).
2. Investigate the probability and drivers of the abrupt decline in antarctic sea ice in Antarctica using preindustrial and historical simulations. Examine the potential role of internal climate variability versus forced change in driving abrupt changes in sea-ice cover, similar as observed in the past decade.
3. Examine the Role of Oceanic Heat Transport and Sea Ice Feedbacks in sustaining a low or a high sea-ice state once an abrupt change is generated.

Required/Desired Skills:

We are seeking a highly motivated candidate with the following background:

- PhD in climate science, physical oceanography, atmospheric science, or a related field.
- Experience in climate modeling and, ideally, in model development
- Strong programming skills (e.g., Python, Fortran, R) for data analysis and simulation handling.
- Knowledge of polar climate systems, oceanography, sea ice dynamics

Research Environment:

The postdoc will be recruited by Sorbonne Université (Paris) and be based at CNRM (Centre National de Recherches Météorologiques), part of Météo-France, in Toulouse, France. CNRM is a leading climate and weather research institute with cutting-edge computational

resources and a vibrant scientific community, offering an excellent environment for collaboration and interdisciplinary research. The successful applicant will join, and active and dynamic group of scientists, and early career scientist working in related fields.

Application:

To apply, please submit:

- A CV
- A brief cover letter outlining your research experience and interests
- Contact information for two academic references

For inquiries, feel free to contact Jean-Baptiste Sallée at jean-baptiste.sallee@locean.ipsl.fr