

## A PhD or mobility postdoctoral position in probabilistic marine biogeochemical modelling.

A full time PhD or mobility postdoctoral position is available at the Liège University ([MAST](#) group) under a joint supervision arrangement with the University of Grenoble Alpes ([MEOM](#) group) for developing and implementing a stochastic version of an existing tri-dimensional coupled physical-biogeochemical model running in the Black Sea. The physical model is the Nucleus for European Modelling of the Ocean ([NEMO](#)) while the biogeochemical model is the Biogeochemical Model for Hypoxic and Benthic Influenced areas (BAMHBI, run in forecasting and reanalysis mode in the frame of the marine Copernicus program ([CMEMS](#))).

### Research activities

The candidate will have to:

- (1) Transform the traditional deterministic coupled physical-biogeochemical modelling system into a probabilistic system by including for instance, perturbations on (biogeochemical) parameters, external forcings and sub-grid scale processes;
- (2) Fine-tune an existing data assimilation system (based on Kalman filtering) in order to assimilate radiometric quantities delivered by Satellite and BGC Argo;
- (3) Assess the ability of the new system to represent the Black Sea biogeochemical state and, in particular, indicators related to ocean health (e.g., oxycline dynamics, primary and export production, air-sea exchange).

The coupled model-data assimilation system developed is expected to be used to perform Observing System Experiments and Observing System Simulations Experiments to analyse the added value of Sentinel 3 products and BGC Argo floats on ocean forecasting and reanalysis.

**In addition to the scientific project described here above, the successful candidate will have to:**

- Travel to project and scientific meetings (e.g., AGU, EGU).
- For the PhD candidate, to follow the Doctoral Formation mandatory for obtaining a PhD.

### Requirements for application

- For PhD candidate: Applicants must have completed a master's degree (with minimum cum laude) in a field closely related to physics, engineering or equivalent.
- For post-doc candidate: a PhD in ocean (or eventually weather) numerical modelling obtained no longer than 5 years ago. Candidates must be non-Belgian citizens and should not have lived and/or worked in Belgium for more than 24 months during the past 3 years.
- A capacity and interest to work in different fields of marine science including physics, biogeochemistry, ecological processes, data assimilation techniques.
- Talent for computational scientific work is necessary. The model-data assimilation system will be implemented on HPC tier-1.
- Very good written and verbal English communication skills are required.
- Good communication skills for communicating results to different audience including general public in relation to dissemination activities.

### Our offer

- A 4-year (for the PhD) and 3-year (for the post-doc) full time contract starting as early as possible (earlier starting date October 2021).
- An attractive salary.
- The successful candidate will benefit from a dynamic working environment benefiting from the research projects of the two groups in different fields of ocean physical and biogeochemical modelling connecting modelled predictions with observations and end-users requirements (e.g., Marine Copernicus international program, H2020 BRIDGE, SEAMLESS projects, JPI Ocean and Climate CE2COAST).
- Enjoyable living and working conditions. Both Universities offer comprehensive and innovative training programs, which enable early-career scientists to carry out their research in the best possible conditions, in compliance with the European Charter for Researchers.

**How to Apply:** The candidate should send by e-mail his/her curriculum vitae, full transcripts of Bachelor and Master studies (including notes), a covering letter of motivation, together with two references (name and email address), to **Marilaure Grégoire** and **Pierre Brasseur** (email: [mgregoire@uliege.be](mailto:mgregoire@uliege.be)). Applications will be considered until the position is filled. Short-listed candidates will be invited for an oral (skype) interview. The positions will remain open until filled; but the selection will start from September 15<sup>th</sup>, 2021. Starting date is as soon as possible.

ULiege is strongly committed to promoting equality and diversity, and is labelled HRS<sub>4</sub>R for Human Resources 'Excellence in Research Award' for institutions (<https://euraxess.ec.europa.eu/jobs/hrs4r>). All appointments will be made on merit.