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 in September 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). 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 August 15th, 2021. Starting date is expected in September 2021.

ULiege is strongly committed to promoting equality and diversity, and is labelled HRS4R for Human Resources 'Excellence in Research Award' for institutions (https://euraxess.ec.europa.eu/jobs/hrs4r). All appointments will be made on merit.