A PhD or mobility postdoctoral position in the development of a coupled physical-biogeochemical-optical data assimilation modelling system.

A full time PhD or mobility postdoctoral position is available at the Liège University (MAST and GHER groups, Department of Astrophysics, Geophysics and Oceanography) for developing the data assimilation system of an existing tri-dimensional coupled physical-biogeochemical model running in the Black Sea. The PhD is in collaboration with the University of Grenoble Alpes (MEOM group). The physical model is the Nucleus for European Modelling of the Ocean (NEMO), the biogeochemical model is the Biogeochemical AI Model for Hypoxic and Benthic Influenced areas (BAMHBI) and the optical model is a radiative transfer model based on RADTRANS. The coupled system is run in forecasting and reanalysis mode in the frame of the marine Copernicus program (CMEMS).

Research activities
The candidate will have to develop the data assimilation system and, in particular, to:

1) Extend an existing data assimilation system (based on Kalman filtering) to assimilate radiometric quantities (e.g. reflectance) delivered by satellite and BGC Argo.

2) Use the developed coupled model-data assimilation system to a) 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); b) perform Observing System Experiments and Observing System Simulations Experiments to analyse the added value of multispectral (Sentinel 2, Sentinel 3, BGC Argo) and hyperspectral (PRISMA) products on ocean forecasting and reanalysis (back to 25 years).

The position is offered in the frame of the recently funded 4-year Horizon-Europe project NECTON (New Copernicus Capability for Trophic Ocean Networks).

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

- Travel to project and scientific meetings.
- 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. 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.
• 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., Horizon Europe NECCTON, ODESSA, Marine Copernicus international program, H2020 BRIDGE, SEAMLESS projects, JPI Ocean and Climate CE2COAST).
• Enjoyable living and working conditions. The Liège University offers 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. The candidate will also work closely with Dr. Pierre Brasseur (MEOM group, University of Grenoble) for the development of the data assimilation system.

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 Alexander Barth (email: mgregoire@uliege.be; a.barth@uliege.be). Applications will be considered until the position is filled. Short-listed candidates will be invited for an oral (skype) interview. The position will remain open until filled; but the selection will start from January 31st, 2023. Starting date is expected as early as possible in 2023.

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/hr4r). All appointments will be made on merit.