Job offer – Research Engineer in ocean modeling

Context

Founded on a strong desire for collaborative action and community approach, CROCO (Coastal and Regional Ocean COmmunity model www.croco-ocean.org) research group was created in 2016. It aims at structuring the coastal and regional oceanographic community and to operate a rapid integration of digital, methodological, algorithmic, and software developments. CROCO refers to as the oceanic component of an Earth system comprising many components: atmosphere, waves, sedimentary and morphodynamic transport, biogeochemistry and even the End-to-End model concept, important for fisheries research. CROCO particularly targets fine scales with new approaches, e.g., its non-hydrostatic solver and its mesh refinement capabilities which are major assets.

In the frame of the SPC (Pacific Community) – IRD (Institute for Sustainable Research and Development) Climate Flagship project, CROCO will be deployed over many exclusive economic zones (EEZs) of the Pacific Islands Countries and Territories (PICTs).

PICTs are highly vulnerable to climate change and hydro-meteorological hazards (e.g, cyclones, strong waves, marine and atmospheric heat waves, etc). Many of these hazards are projected to increase with climate change. Understanding these and their future fate under climate change is a prerequisite for mitigation and adaptation plans that these countries are in the process of elaborating. The main purpose of this project is to provide a spectrum of fully accessible ocean/atmosphere simulations at the appropriate EEZ and island scales (2-5km), of the future possible local climates for the next 50-70 years, as well as analyses and technical tools for implementing such regional climate simulations in PICTS EEZs.

Missions

Toward that end, we are seeking a young engineer who will first contribute to the development and validation of the CROCO codes for realistic coastal and regional configurations in the PICTs.

He/she will be in charge of developing tools aimed at optimizing, testing and completing the pre and post-processing chains for regional-to-coastal and nearshore configurations. In particular, he/she will contribute to the implementation of tools facilitating its implementation, within the framework of a coupling of the different compartments, essential in an integrated modeling approach of the marine environment. He/she will set up a Python toolbox for the agile manipulation of model input data and their formatting, especially in a context calling for an increased resolution and a representation of much more complex geometries in high resolution configurations. He/she will also set up an automatic test configuration for ocean-atmosphere coupled developments as part of the continuous integration of the code.

Finally, he/she will deploy a configuration on the French Polynesia and Wallis and Futuna territories, and perform simulations of climate change downscaling from CMIP6 models for the next 50-70 years in order to understand the fate of key climate phenomena such as extreme events (e.g marine/atmospheric heat waves, floods, etc).

Requested qualifications

- MS or PhD (preferred) in physics/oceanography/meteorology or data/computing science or other closely related discipline (such as environmental or coastal engineering and marine science) with less than 3 years experience
- Experience in ocean modeling (ideally with CROCO, or possibly with other ocean models)
- Experience in running ocean models on HPC environments
- Experience in analyzing and validating ocean model outputs

- Good programming skills in Fortran, Python and Linux shell scripting
- Good English language skills
- Rigorous, autonomous, creative team worker wishing to contribute to the CROCO community with strong interest for collaborative actions and agile development

Working conditions

- Contract duration is 2 or 3 years (depending on qualifications and location)
- Location: Brest, LOPS (Ifremer, ZI pointe du Diable, Plouzané) or Nouméa (IRD, Nouvelle-Calédonie)
- Employer: IRD
- Remuneration commensurates with qualifications and experience
- The selected candidate will work with smart-working practices, having good flexibility for schedule and remote-working conditions. Work meetings and collaboration with the Pacific is submitted to a 10h timelag
- Travel may take place in France and abroad, as well as one or several stays of several weeks in PICTs

How to apply

Interested candidates are invited to apply by sending cover letter and C.V. to swen.jullien@ifremer.fr and christophe.menkes@ird.fr

Closing date of the call is November 30th, 2023.