JOB OFFER: Predoctoral Researcher (PhD Candidate)

Position: PhD Student in Deep Learning applied to Ocean Climate Modelling

Project: DOMOMED (National Research Project) **Host Institutions:** Instituto Español de Oceanografía (IEO-CSIC) **Location:** Palma, Balearic Islands, Spain (Centre Oceanogràfic de Balears) **Supervisor:** Dr. G. Jordà (IEO)

Project Description & PhD Tasks

The selected candidate will conduct cutting-edge research to bridge the gap between Physical Oceanography and Artificial Intelligence. The core objective of the PhD is to **expand novel hybrid downscaling methods**, specifically developing statistical Ocean Model (OM) emulators.

Main Research Tasks: The student will adapt and apply advanced Deep Learning techniques (e.g., Neural Networks, Sparse Gaussian Processes) to reproduce complex ocean variables. While the starting point is temperature and salinity, the candidate will push the state-of-the-art by modelling high-impact processes such as **ocean circulation, oxygen levels, pH, and primary production**. A critical part of the work involves applying **eXplainable Artificial Intelligence (XAI)** techniques to unravel the "black box" nature of these models, ensuring their physical consistency and robustness for climate projections.

Training & Mobility: This position is vocationally oriented towards training. The student will acquire interdisciplinary skills in statistics, numerical modelling, and machine learning. The plan includes:

- **Three international research stays** (one per year) at prestigious centers such as **MIT** (Cambridge), **CNRS** (Toulouse), **IFCA** (Santander), or **Sorbonne University** (Paris).
- Participation in specialized summer schools (e.g., CROCO, ROMS) and workshops (ICLR, ESA-ECMWF).
- Presentation of results at international forums (MedCLIVAR, CLIVAR-Spain) and publication in high-impact SCI journals.

Requirements

- **Education:** Master's Degree in Physics, Mathematics, Engineering, Data Science, or Marine Sciences (or equivalent).
- **Expertise:** Strong background in or **Physical Oceanography OR in Machine Learning/Deep Learning**. Candidates from Physics/Maths willing to learn oceanography, or Oceanographers with strong coding skills, are encouraged to apply.
- **Skills:** Proficiency in Python or MATLAB. Experience with ocean models or climate data is a plus.

What We Offer

- **Contract:** 3 to 4-year predoctoral contract (FPI or equivalent project-funded).
- **Environment:** You will join a small, highly motivated research team at the Centre Oceanogràfic de Balears (Palma), known for its dynamic atmosphere and strong international connections. The position integration into the PhD program in Physics at UIB.
- **Training Support**: Access to master's courses to complement your background (e.g., in Oceanography, Complex Systems or Intelligent Systems) and technical support from postdoctoral staff.
- **Networking:** Direct collaboration with EU projects (MedCORDEX, EDITO Model Lab, NECCTON) and institutions like CNRM, SOCIB and Mercator Ocean.

How to Apply

Interested candidates should send their CV, academic transcripts, and a motivation letter to gabriel.jorda@ieo.csic.es

Deadline: 15 January 2026