

Job Offer

Two Open Research Positions: PhD Candidate and Postdoctoral Researcher AI-Driven Coastal Dynamics

The Institut de Ciències del Mar (ICM) is **the largest marine research centre** of the Spanish National Research Council (CSIC). It is also the first marine science centre to be accredited as a **Severo Ochoa Centre of Excellence**, a recognition to the institution's leadership in the field of marine research in Spain and to its commitment to create social impact.

Our goal is to develop **research of excellence** to inspire a society in harmony with the blue planet, in line with the values of the **United Nations Decade of Ocean Science for Sustainable Development (2021-2030)**. For further information, please visit our [website](http://www.icm.csic.es).

We are opening **two positions**, one **PhD candidate** and one **Postdoctoral researcher**, to join an ambitious research initiative that combines coastal morphodynamics with state-of-the-art artificial intelligence. The selected candidates will work within a dynamic team led by **Gonzalo Simarro** and **Giovanni Coco** to advance the next generation of AI-based coastal prediction systems.

About the role and the team

The appointed researchers will contribute to a strategic effort to integrate physical coastal science with deep-learning approaches, with the aim of developing predictive tools capable of informing real coastal-management decisions related to erosion, storms, infrastructure and long-term adaptation.

The successful candidates will join a growing interdisciplinary team working on coastal morphodynamics, numerical modelling, observational data analysis and machine learning. The project benefits from access to high-quality coastal datasets and a supportive scientific environment at the ICM.

Job description

The appointed PhD candidate and Postdoctoral researcher will contribute to two major research lines

Hybrid AI–Physics Models for Shoreline Prediction

- Development and training of **Physics-Informed Neural Networks (PINNs)** coupled with coastal morphodynamic models.
- Integration of physical constraints and observational data into learning algorithms.
- Evaluation of predictive skill across event-scale, seasonal and long-term shoreline evolution.

Deep-Learning Approaches for Underwater Bathymetry Detection

- Training of **Convolutional Neural Networks (CNNs)** and other deep-learning architectures to predict daily-scale bathymetric evolution.
- Analysis and preprocessing of large coastal datasets.
- Interpretation of model outputs to support coastal-risk and management frameworks.

Additional tasks include:

- Contribution to scientific publications and conference dissemination.
- Collaboration within the research group and interaction with external partners when required.
- Participation in internal research activities, meetings and training opportunities.

The specific balance of responsibilities will differ between the PhD and Postdoc positions, with the latter expected to assume greater autonomy, scientific leadership and methodological innovation.

Expected background and skills

Common requirements (PhD & Postdoc)

- Degree in **coastal/ocean engineering, earth/environmental sciences, applied mathematics, computer science**, or related fields.
- Solid programming skills; **Python is preferred** (or willingness to learn it).
- Strong motivation to work at the interface between coastal processes and machine learning.
- Good communication skills in English; Spanish and Catalan are desirable.

Additional requirements (Postdoctoral position)

- PhD in a relevant discipline.
- Proven research experience in numerical modelling, machine learning, or coastal morphodynamics.
- Evidence of scientific autonomy and publication track record.
- Experience with neural networks, deep learning frameworks, or physics-informed modelling will be highly valued.

Additional requirements (PhD position)

- Master's degree (or equivalent) giving access to doctoral studies.
- Demonstrated interest in computational methods, ocean/coastal science or AI applications.

The offer

Two full-time positions:

- **One PhD position** (42 months duration according to doctoral regulations).
- **One Postdoctoral contract**, initially funded for **20 months**, renewable depending on performance and funding availability.
- Salaries commensurate with qualifications and experience, consistent with CSIC pay scales.
- Flexible working conditions and measures to support work–life balance (flexible schedule, partial remote work when appropriate).
- Highly stimulating research environment with institutional support services for scientific and career development.
- Recruitment at ICM follows principles of openness, transparency and merit-based evaluation.
- The CSIC and all its research centres hold the “**HR Excellence in Research**” distinction, reflecting commitment to high-quality HR practices.

Application procedure

If you would like to join our team and contribute to cutting-edge research in AI-driven coastal science, please send:

- **A motivation letter,**



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- Your CV,
- Contact details of two referees,

to: simarro@icm.csic.es

Applications will be reviewed upon receipt. Shortlisted candidates will be invited for an interview. Recruitment will follow CSIC procedures, including (where applicable) requirements for degree validation or equivalence for applicants with foreign qualifications.

The selected candidate will be managed through the [Bolsa de Trabajo CSIC](#), which requires an equivalence request for degrees obtained abroad.



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