



OGS

National Institute
of Oceanography
and Applied
Geophysics



3 Postdoc positions for marine ecosystem modellers at OGS (Italy)

The ECHO group at the National Institute of Oceanography and Applied Geophysics – OGS (Trieste, Italy; <https://www.inogs.it/en>) offers three positions for marine ecosystem modellers.

POSITION: postdoc (Italian “assegno di ricerca Junior”), Full Time

DURATION: 12 months (+ renewal up to 6 years maximum)

SALARY: EUR 25.000 (EUR 27.000 at the third year renewal)

LOCATION: ECHO group headquarters are based in Trieste

(<https://www.inogs.it/en/content/where-we-are>)

ABOUT THE ROLE:

The proposed research activity consists of development, application and analysis of models for the study of the marine ecosystems. Successful candidates will work in a multidisciplinary team, being actively involved within international research and development programmes such as, for example:

- the EU Copernicus Marine Service for the Mediterranean Sea (<http://marine.copernicus.eu/about-us/about-producers/med-mfc>) and its downstream service for the northern Adriatic (<http://medeaf.inogs.it/>);
- the SHAREMED project (Sharing and enhancing capabilities to address environmental threats in Mediterranean Sea, <https://sharemed.interreg-med.eu/>);
- the FORCOAST project (Earth Observation Services for Fishery, Bivalves Mariculture and Oysterground Restoration along European Coasts, <https://forcoast.eu/>);
- the SEAMLESS project (Services based on Ecosystem data AssiMiLation: Essential Science and Solutions, <https://seamlessproject.org/Home>);
- the ATLANTECO project (Atlantic Ecosystems Assessment, Forecasting & Sustainability, <https://www.atlanteco.eu/>);
- the research activities carried out by the ECHO group in the frame of the Italian contribute to the EU Marine Strategy Framework Directive (MSFD, https://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/marine-strategy-framework-directive/index_en.htm).

The research activities include 3 open positions:

- 1) Development of modelling systems for operational oceanography: application to the Mediterranean Sea, its marginal seas and coastal areas;
- 2) Development and analysis of food web models to support the implementation of Marine Strategy Framework Directive for the Mediterranean, its marginal seas and coastal areas;
- 3) Development of methodologies for high performance computing and 3D scientific visualization.

In detail:

Position 1: The research activity aims to develop, apply and analyze numerical models for the study of marine systems within a multidisciplinary team and in the framework of international projects (e.g., FORCOAST: Earth Observation Services for Fishery, Bivalves Mariculture and Oysterground Restoration along European Coasts; SHAREMED: Sharing and enhancing capabilities to address environmental threats in Mediterranean Sea) or within research activities with similar topics. In particular, the activity will focus on the development and implementation of operational modeling systems at the sub-regional scale, for monitoring and forecasting the physical and biogeochemical properties of the sea. The models will be based on the coupled MITgcm-BFM system and they will be calibrated and validated in each study area. To reduce the uncertainty of the forecasts, the models will be integrated with observational data through data assimilation schemes.

Position 2: The activity will focus on the development of high trophic level models and their implementation in Italian seas case studies at different spatial scales. Objective of the study is the improvement of the skill of such models by including environmental drivers (e.g., offline and potentially online coupling with biogeochemical models), anthropogenic drivers (fisheries pressure from VMS/AIS) and/or climatic induced changes to describe marine ecosystem dynamics. Specifically, the activity includes validation and calibration of models with different sources of observations (e.g., stock assessments, data from monitoring systems and other sources). A further objective is the use of model results to define and test indicators supporting MFSD D4 descriptor.

Position 3: The activity will focus on the development of methods and codes (e.g., Fortran, Python and C) for data analysis and high performance computing for oceanographic models using CPU and GPU parallel computing paradigms, and on the development and implementation of methods and codes for high performance 3D scientific visualization of oceanographic model results.

HOW TO APPLY:

See website <https://www.inogs.it/en/node/1799> and carefully follow all the instructions.

Deadline: 12 December 2021

APPLICANT:

We are looking for proactive young scientists, enthusiastic for the opportunity to acquire new knowledge, interested in following a sharp learning curve, with good planning skills and the ability to work independently. We expect enthusiasm and willingness to exploit her/his own skills in ocean research for the benefits of communities and for pursuing sustainability of human activities. The applicant should see this as an opportunity to develop the career through scientific publications and to actively participate in the R&D activities of collaborative research projects, both at a national and international level. Candidates should aim at becoming a future leader in their field.

We expect that applicants' skills and qualifications will include:

- as a minimum education requirement, a University Degree (MSc or equivalent) in Science, Technology, Engineering and Mathematics (STEM) disciplines: Physics, Mathematics, Environmental Sciences, Engineering, Chemistry, Biology;

- for positions 1 and 2: experience in computational sciences or statistics, with knowledge and proved use of scientific programming languages or advanced software environments (e.g. Fortran, C, Python, Matlab, R);
- for position 3: knowledge and use of the main scientific programming languages, such as Fortran, C and Python, of programming languages for 3D high-performance visualization, such as Paraview and Blender, and knowledge and use of parallel programming for CPUs and GPUs;
- a PhD (or equivalent experience) in Ocean Sciences, Ocean Modelling, Ecosystem Modelling, Mathematics or any topic involving modelling or data analysis approaches to research activities covered by the call will be considered advantageous.

ABOUT US:

ECHO (Ecology and Computational Hydrodynamics in Oceanography) is the marine modelling research group of OGS and focuses on quantitative approaches to biogeochemistry and ecosystem dynamics. ECHO's research activity includes the development, analysis and use of models of varying complexity (physical models, biogeochemical models, food webs, ecological models) with applications at a variety of scales, ranging from local high-resolution applications to basin-wide regional models and climatic projections. Applications include assessment of natural and anthropogenic pressures on marine systems, carbon and nutrient cycling, biodiversity and ecosystem functioning, ecosystem approach to fisheries and aquaculture, operational oceanography and data assimilation, analysis of integrated eco-socio-economic systems, and sustainable development. The ECHO group is currently composed of about 30 people, who are collaborating widely with other groups in Italy and at the international level in various research projects, services, programmes and networks. ECHO offers a lively research environment and excellent infrastructure in terms of laboratories and state-of-the-art equipment. ECHO members have access to all OGS facilities and infrastructures, with good potential for interactions with other groups of the Institute (<https://www.inogs.it/en/content/research>).

The ECHO group is based in Trieste (Italy), where several other scientific institutions are hosted and synergically interact.

At the north-eastern edge of the Adriatic Sea, in the heart of Europe, Trieste is a cosmopolitan town with high quality of life. For more information about Trieste and the surrounding area: <http://www.welcomeoffice.fvg.it/>

The positions highlighted above will have the following ECHO's members as supervisors: Stefano Querin (squerin@inogs.it, position n. 1), Simone Libralato (slibralato@inogs.it, position n. 2), Paolo Lazzari (plazzari@inogs.it, position n. 3).

For general enquiries regarding the positions, please contact the above persons.

For specific (administrative) enquiries about the call, please contact concorsi@inogs.it