Institut de Ciències del Mar

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CALL FOR APPLICATIONS

SEVERO OCHOA "ICM Postdoctoral Fellowships"

The Institute of Marine Research (ICM) of the Spanish National Research Council (CSIC) invites applications for **four Postdoctoral Fellows (2.5 year position)** under the framework of the 'Severo Ochoa Centre of Excellence' accreditation to conduct cutting-edge research leading to understand ocean-related challenges and their impacts on society.

Headquartered in Barcelona, ICM is the most multidisciplinary research center devoted to ocean science in Spain and has shaped its scientific strategy around four interdisciplinary Research Hubs (RH) designed to deliver the ocean knowledge needed for a healthy planet.

The four RHs provide an overarching framework to channel scientific excellence at ICM toward addressing the ocean dimension of some of the planet most pressing crises: climate change, food security, biodiversity loss and the growing range of anthropogenic pressures affecting marine systems, as well as the amplified effects of these intertwined challenges. These are questions that can only be tackled through outstanding science, ambitious vision, and the integration of diverse disciplines. The research focus of these RHs is:

- **Biodiversity discovery and conservation**, to advance on the discovery, study, protection and sustainable use of marine biodiversity.
- **Climate change,** to study the ocean as a climate regulator and receptor of climate change.
- **Seafood sustainability,** to work towards a safe, fair, healthy, and sustainable seafood production for a growing human population.
- **Multiple marine stressors**, to understand and anticipate the response of marine and coastal systems to diverse global-change stressors.

This call aims at attracting **outstanding postdoctoral researchers to lead highly interdisciplinary research connected with one of the RHs**. Each RH features several research topics (see Annex 1), that will be evaluated by four separate panels. One fellowship will be awarded for each RH.

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The Severo Ochoa Postdoctoral Fellowships (SO - PF) will be granted as a 2.5-year "Doctor FC3" [1] employment contract together with a 20,000 € research fund for the full duration of the fellowship. Incorporation is expected no later than 01/10/2026, except in duly justified administrative circumstances, which may be considered on a case-by-case basis. Later incorporations will imply a proportional reduction of the contract period.

The selection process will take place in **two stages**: an **external remote evaluation** of the pre-proposals, followed by an **online interview** in which candidates will present their full proposal. If the number of applications is high, the call may include an internal pre-selection (shortlisting) prior to the external evaluation.

Shortlisted and selected candidates will have access to ICM's training programme, including workshops and support to apply to competitive fellowships such as Marie Skłodowska-Curie Actions, La Caixa Junior Leader, ERC-StG and other international postdoctoral schemes.

The call will be open from **19 March to 12 April 2026 at 23:59h CET.**

1. ELIGIBILITY CRITERIA

To be eligible to apply for a fellowship, candidates must:

1. Hold a **PhD degree** by the call deadline.
2. Be legally entitled to live and work in Barcelona at the starting time of the contract.
3. Fulfill all the **administrative requirements to be hired at CSIC** on the contract start date (degree equivalence/recognition, work and residence permits, etc). ICM will provide guidance and support, but compliance is the applicant's responsibility.
4. Submit a **complete application** as described below. The application documents cannot exceed the page limit. Late submissions will not be accepted.

This call follows the Open, Transparent and Merit-based Recruitment of Researchers principles to ensure equal opportunities in the selection process. In line with ICM's Diversity, Equity and Inclusion strategy, we encourage applications from individuals of all backgrounds and identities.

The CSIC and all its research centres were awarded the "HR Excellence in Research" seal in 2021. This recognition reflects our commitment to continuously improve our human resources

[1] Gross annual salary of roughly 44,000 €, including benefits offered by the Public Spanish Social Security system.

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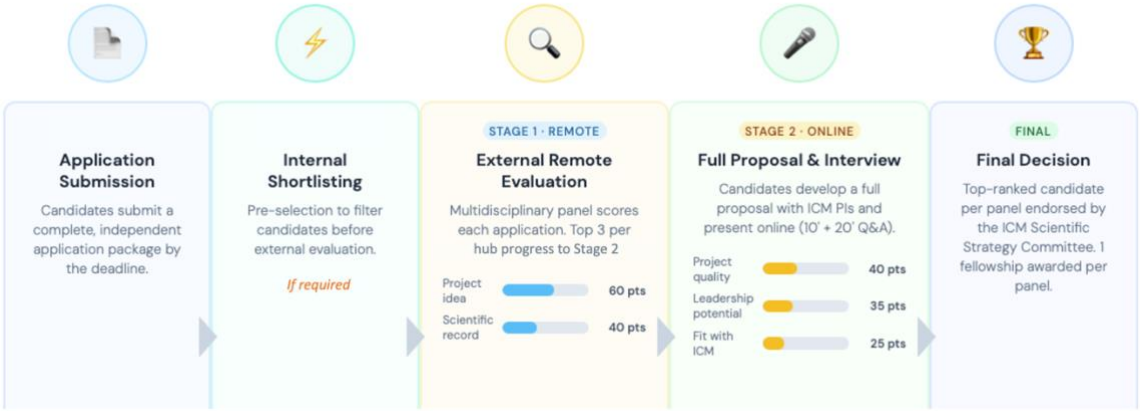
policies in line with the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.

2. APPLICATION PROCESS

The selection process will consist of consecutive steps designed to ensure a fair and rigorous evaluation. In Stage 1, candidates submit an open research idea linked to a specific topic (see Annex 1), with emphasis on interdisciplinarity and "big science" thinking. In Stage 2, selected candidates will be invited to attend an interview and defend a full project proposal that can be prepared with prospective ICM PIs, with a focus on feasibility and impact of the research project and candidate's leadership potential.



Only one application will be accepted per candidate. Each application must be framed within a single topic of the list provided in Annex 1.

FIRST STAGE

Researchers applying to these fellowships should submit a complete application package including:

1. A **one-page** motivation letter (Arial, 10.5 p), explaining why the applicant wishes to join the ICM; what would he/she contribute to the selected Research Hub; and highlighting the candidate's **interdisciplinary scientific record** (mention to the five scientific merits selected in the CV), his/her fit to the chosen topic from the list in Annex 1; and contact details of three referee (names, contact details and position).

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2. A **one-page** pre-proposal (Arial, 10.5 p). A **summarized scientific project idea** framed within the chosen topic (of those in Annex I) including a synthetic state of the art, the research objectives, the innovative and interdisciplinary component of the idea, and connection with the topic and the Research Hub.

3. A **CV** aligned with DORA / CoARA principles (max five pages, download template here) combining a brief narrative description of the candidate's main scientific trajectory, contribution and relevance to the proposed topic with a concise list of key outputs. It must also include **five scientific highlights** (not limited to publications), that best demonstrate the candidate's **fit with the topic and project idea**.

All documents must be sent in English as a single ZIP file before **12 April 2026 at 23.59h CET**, to the mailbox: severo-ochoa@icm.csic.es with the subject: Surname_Name_Topic code (see Annex 1 for topic codes included).

To ensure transparency and equal opportunities, candidates must prepare the pre-proposal independently and should not contact PIs/Research groups during Stage 1. Any inquiry related to the selection process or the research topics should be sent to severo-ochoa@icm.csic.es

SECOND STAGE

By the end of May at the latest, candidates selected for the interview will receive an invitation to the second stage. They will then have the opportunity to contact prospective Principal Investigators / Research Groups at ICM to discuss their research idea and develop the full proposal.

Applicants invited to interview will be required to submit a full research proposal including:

1. A **three-page** project proposal (Arial, 10.5 p) in English, including a detailed state-of-the-art, hypothesis, objectives, work plan, contingency plan and brief justification of the budget, and ethics considerations (if any). The full proposal must explicitly elaborate on the project's contributions to the ICM. The project proposal must be feasible to complete in 2.5 years, with a budget of 20.000 € (Eligible costs: consumables, travel, services, publications, registration fees and small equipment. Non-eligible costs: personnel costs, major equipment, non-project-related expenses).
2. **Administrative form** with practical information details.

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Candidates will be required to submit the full project proposal around **the second week of June 2026** to the mailbox: severo-ochoa@icm.csic.es, with the subject: Surname_Name_Research_proposal.

Interviews will take place online around **the fourth week of June 2026**, candidates must ensure their availability (the exact time slot will be notified in the invitation to the second stage). Each interview will consist of a 10-minute presentation of the proposed project and of the candidate's expected contribution and leadership, followed by 20 minutes of questions from the evaluation panel.

Personal data protection will comply the GDPR and Spanish legislation. The personal information submitted will be used exclusively for managing the call. The submission of the applications documents entails the candidate's authorisation for ICM to manage this data.

3. EVALUATION

The evaluation panel will be multidisciplinary, composed of two expert and two non-expert evaluators (cross-disciplinary evaluation). Each panel will be chaired by an ICM researcher, and all members will be screened to ensure that no conflict of interest exists with any candidate.

STAGE 1

In Stage 1 (and in shortlisting, if activated due to a high number of applications), the evaluation will apply a balanced scoring scheme that places strong emphasis on the originality and interdisciplinarity of the project idea, while also considering the candidate's scientific potential to contribute to the selected topic:

- **Project idea (60 points)**: Novelty and innovative potential (20 points); ambition and expected impact and contribution to the RH (20 points); interdisciplinarity (i.e., degree to which the project integrates concepts, approaches, or methodologies from multiple disciplines) (20 points).
- **Candidate scientific record (40 points)**: Relevance of the five scientific highlights and the candidate's contribution to each of them and potential to contribute to the proposed idea (20 points), scientific maturity and independence (10 points), international research experience and collaborations (10 points).

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Based on the individual evaluations from Stage 1, each panel will produce a ranked list of proposals during a consensus meeting, and the three highest-ranked candidates in each RH will be invited to the online interview.

STAGE 2

Stage 2 evaluation will focus on the scientific quality, feasibility and coherence of the extended proposal as well as the candidate's ability to lead and deliver it within the ICM's research environment. The following criteria will be applied:

- **Scientific quality of the extended project (40 points):** Clarity and strength of research objectives, hypotheses, and methodology (15 points); Feasibility and robustness of the research plan, including risk assessment (15 points); Integration of interdisciplinary approaches (10 points).
- **Candidate's potential (35 points):** Ability to lead, develop, and justify the proposed research, demonstrating independence, leadership and critical thinking (20 points); Clarity in expressing ideas, ability to communicate complex scientific concepts and problem-solving capacity (15 points). Referees might be contacted at this point.
- **Fit with PIs and ICM environment (25 points):** Scientific synergy and complementary between the candidate and the IPs (15 points); Availability of resources at the ICM and alignment with the research undertaken (10 points).

FINAL DECISION

The first ranked candidates of all RH will be proposed for funding to the ICM Scientific Strategy Committee, which will make the final appointment decision.

Final awardees appointment is subject to fulfilling CSIC administrative requirements to be able to hold a work contract in Spain.

If there are not enough candidacies meeting a minimum threshold of scientific excellence, fellowships can be declared null and void at any stage of the selection process.

The final decision will be notified in July.

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4. OBLIGATIONS OF THE GRANTEES

ADMINISTRATIVE OBLIGATIONS. Selected candidates will have to fulfil the following administrative requirements at the time of formalizing the contract (latest 01/10/2026):

1. Hold the equivalence of foreign degrees of higher education to the academic level of Doctor (to officially recognize the PhD in Spain)[2].
2. Candidates must follow the "CSIC job bank" process to be formally appointed to the postdoctoral fellowship. Once appointed, non-UE candidates must obtain a NIE (Spanish ID number) in order to hold a work contract in Spain.

ICM's staff will provide guidance, but compliance with these administrative obligations is the applicant's sole responsibility. These requirements are necessary to be employed by CSIC. Failure to meet them will prevent the formalisation of the contract and will result in the fellowship being withdrawn.

EXECUTION. Each RH has a research team that the fellows will join to carry out the proposed research. Postdoctoral fellows will also take part in the Research Hub's activities and are expected to contribute and play and active role within them, benefiting from its scientific environment and resources.

Beneficiaries will have to follow all the administrative procedures established at ICM for purchases, travel, conference registration, work safety, etc. Fellows will be duly briefed on these procedures.

The fellows will be encouraged to apply for further fellowships, such as Ramón y Cajal, ERC StG or CoG Grant during the duration of the fellowship, and will receive the support from the Research Support Office to prepare their applications.

REPORTING. The postdoctoral fellows will participate in a continuous monitoring scheme established by the RH coordinators. The Postdoctoral Fellows will need to prepare a final report at the end of their fellowship. If significant deviations are detected, the fellowship may be withdrawn at any time, with no further financial obligations for ICM.

[2] This can be issued by any Spanish University; as an example, you can check the instructions for the administrative procedure at Universitat Politècnica de Catalunya (UPC) or Universitat de Barcelona (UB)

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The fellows will contribute to the generation of the scientific and review reports for the Severo Ochoa whenever needed, both during the fellowship period and after its completion.

ACKNOWLDEGEMENTS. Any output resulting from the grant must acknowledge the funding of the accreditation (Severo Ochoa publications tips available here). This must include, at least, the following statement:

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5. WHAT DO WE OFFER?

- The Postdoctoral Fellowships (PF-SO) will be granted as a 2.5 year “Doctor FC3” contract, with a gross annual salary of roughly 44,000 € and coverage by the Spanish Social Security System.

- A research fund of 20,000 €.

- A yearly family allowance of 5,000 € in case of having a child at the time of the call deadline.

- Desk space and access to the required lab and scientific facilities.

- An individual landing support to all fellows provided by ICM’s talent officers, regarding administrative procedures, life in Barcelona, family relocation and related aspects to the ICM incorporation.

- Access to the ICM Cares program, an institutional landmark commitment focused on guaranteeing a high-quality work environment and continuous attention to people's needs at the core of the Institute's scientific excellence.

- A tailor-made career development plan, support to apply for further fellowships (MSCA, ERC StG, ERC CoG, RyC, etc.) and a training package in gender dimension in research and transferable skills.

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ANNEX 1: TOPIC LIST BY PANEL

PANEL BDV: Biodiversity discovery and conservation, to advance on the discovery, study, protection and sustainable use of marine biodiversity.

- BDV-1. The microbial dimension of seagrass ecosystems' resilience
- BDV-2. Top predators and microbes: unravelling the hidden microbial links between marine wildlife and ecosystem health
- BDV-3. Marine fungi as indicators of connectivity: coupling hydrology, sediment dynamics and ecosystem function along land–sea and benthic-pelagic interfaces

PANEL CCH: Climate change, to study the ocean as a climate regulator and receptor of climate change.

- CCH-1: Integrated drivers of stratification and mixing as indicators of the AMOC stability
- CCH-2: Linking pelagic ecosystem variability to climate-driven physical and biogeochemical processes in the coastal NW Mediterranean Sea over the last 25 years

PANEL SFS: Seafood sustainability, to work towards a safe, fair, healthy, and sustainable seafood production for a growing human population.

- SFS-1: Welfare biomarkers as cross-sector indicators of sustainability: bridging aquaculture and fisheries through integrated physiological and omics-based assessment
- SFS-2: Improvement of parameters used in fisheries stock assessment models through the lens of epigenetic clocks
- SFS-3: Mechanistic Eco-Evolutionary Models: Integrating Genomic and Epigenetic Variation into Marine Species Distributions
- SFS-4: Socio-ecological scenarios for the future of fisheries and seafood systems in Catalonia: co-production of knowledge, social sustainability and transition towards Blue Food Security

PANEL MMS: Multiple marine stressors, to understand and anticipate the response of marine and coastal systems to diverse global-change stressors.

- MMS-1: Beyond Single Stressors: a revisitable Atlas of cumulative pressures to support marine spatial Planning

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TOPIC BDV-1

TITLE: The microbial dimension of seagrass ecosystems' resilience

SUMMARY

Seagrass meadows have experienced a dramatic global decline over the last century, driven by warming, the decrease in coastal water quality, and other anthropogenic pressures that have eroded the functioning of this unique habitat. As the home of many marine species, seagrass meadows (including those formed by the emblematic *Posidonia oceanica* in the Mediterranean) sustain multiple ecosystem functions and services. Despite decades of research, the role of the seagrass-associated microbiome in mediating plant physiology, ecology, and resilience to environmental stressors remains a critical knowledge gap, with implications for successful conservation and restoration strategies of this foundation species. Framed within the Biodiversity Hub, this line aims to delineate the seagrass microbiome, determining its role in plant metabolism, health, stress tolerance, or distribution, all factors impacting seagrass ecosystems' resilience under environmental changes. We welcome proposals based on field observations, experiments, and/or modelling that deepen understanding of the structure, function, and ecological significance of the hidden microbial dimension of seagrass meadows. Candidates should be prepared to work across disciplines, integrating microbial ecology, plant physiology, ecosystem functioning, and biogeochemistry. Ideally, outcomes should improve knowledge of this emblematic habitat, generate microbiome-informed insights that support innovative conservation and restoration strategies, and contribute to updated, reproducible protocols that ensure long-term usability and the consolidation of a durable research line at ICM.

KEYWORDS: Seagrass microbiome; Mediterranean seagrasses, resilience and adaptation; ecosystem functioning; restoration

CANDIDATE REQUIREMENTS

Knowledge on theoretical ecology, marine conservation, microbial ecology, community ecology, including species interactions, and/or modelling. Experience with microbial and molecular work in the laboratory, and with the use of high-performance computing clusters for bioinformatic analyses (metagenomics, metatranscriptomics, amplicon sequencing), data analysis and visualization software (R or equivalent). Experience in mentoring students, writing proposals, scientific diving, and in field-work and mesocosms or aquaria experimental set-up will be valued.

RESEARCH GROUPS INVOLVED

Ecology of Marine Microbes // Marine Biogeochemistry, Atmosphere and Climate.

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TOPIC BDV-2

TITLE: Top predators and microbes: unravelling the hidden microbial links between marine wildlife and ecosystem health

SUMMARY

Marine ecosystems are shaped by interactions between moving animals and the microbial communities inhabiting both their bodies and the environments they use. Top predators such as seabirds and large marine fishes move across extensive ecological gradients, and their microbiomes can mirror the conditions of the habitats they forage, breed, or rest in, responding rapidly to environmental degradation, contamination, or recovery. However, research on marine biota remains largely compartmentalized by organismal group, often overlooking these links between macro- and microorganisms and their habitats. Framed within the Biodiversity Hub, this line aims i) to determine the extent to which predator-associated microbiomes function as sensitive indicators of ecosystem health and ii) to assess whether wide-ranging predators facilitate microbial connectivity by dispersing beneficial microbes, pathogens, or resistance genes between habitats. We welcome proposals combining field data (such as tagging, movement, and habitat-use information) with environmental microbiome sampling and network analysis to gain insight into the dual role of marine top predators as ecosystem sentinels and agents of microbial dispersal. Candidates should be prepared to work across disciplines, integrating microbial ecology, animal ecology, spatial modelling and molecular approaches. Ideally, outcomes should support the development of microbial indicators for ecosystem health assessment and contribute to reproducible methods that strengthen a durable research line at ICM.

KEYWORDS: marine predators; host-associated microbiome; ecosystem health; microbial connectivity, seabirds and fish

CANDIDATE REQUIREMENTS

PhD in Ecology, Biology, Microbial Ecology, Environmental Sciences, or related fields. Experience in movement ecology (including behaviour, habitat use, spatial connectivity, and biologging/tracking tools) and/or background in microbial ecology (ideally microbiome sampling, microbial dispersal, or pathogen/AMR dynamics). Ability to combine field ecology with microbial datasets to assess ecosystem health and microbial connectivity. Strong skills in data analysis and visualization (R, QGIS, or similar).

RESEARCH GROUPS INVOLVED

Ecology of Marine Microbes // Integrated Marine Ecosystem Assessments

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TOPIC BDV-3

TITLE: Marine fungi as indicators of connectivity: coupling hydrology, sediment dynamics and ecosystem function along land–sea and benthic-pelagic interfaces

SUMMARY

Coastal land-to-sea interfaces sustain dynamic exchanges of water, sediments, and chemical solutes that shape the functioning and stability of marine ecosystems. Within these gradients, aquatic fungi remain an overlooked yet promising group for tracing ecological subsidies across land-sea and benthic-pelagic interfaces, as they mediate key energy and nutrient flows and are ubiquitous in terrestrial and marine systems. In turn, coastal hydrodynamics and geomorphology may influence fungal diversity and function, but coastal microbiological research rarely spans land-sea interfaces or considers including hydrology or geology as key drivers. Framed within the Biodiversity Hub, this line aims to characterize fungal diversity, functional traits, and their drivers across connected terrestrial-marine systems, assessing their potential as indicators of ecosystem connectivity, benthic-pelagic coupling, and organic-matter flow pathways. We welcome proposals combining field observations, experiments and modelling that integrate biological, physical, and sedimentological approaches to reveal the role of fungi as mediators of land-sea connectivity. Candidates should be prepared to work across disciplines, integrating microbial ecology, biogeochemistry, physics and geology. Ideally, outcomes will expand knowledge of this understudied taxonomic group, generate standardized and reproducible protocols for joint water-sediment sampling, and strengthen a durable biology–geosciences collaboration line at ICM.

KEYWORDS: marine biodiversity, ecological subsidies, coastal ecosystems, benthic-pelagic coupling, land-sea connectivity

CANDIDATE REQUIREMENTS

Knowledge on aquatic fungi, coastal geomorphology and the capability of processing data using Matlab or Phyton.

RESEARCH GROUPS INVOLVED

Littoral Biological Processes // Ocean and Littoral Sedimentary Processes

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TOPIC CCH-1

TITLE: Integrated drivers of stratification and mixing as indicators of the AMOC stability

SUMMARY

The Atlantic Meridional Overturning Circulation (AMOC) is a critical component of the global climate system, linking high-latitude buoyancy forcing, interior ocean ventilation, and inter-hemispheric transport. Changes in ocean circulation, stratification, and mixing can affect the stability and variability of the AMOC across its interconnected domains, from the Arctic and Subpolar North Atlantic to the Southern Ocean. Identifying observable physical and biogeochemical indicators that reflect changes in water-mass formation, thermocline ventilation, and overturning strength can provide early insight into potential tipping behavior. An integrated approach to understanding these processes across disciplines and timescales should bring together in-situ and satellite observations, reanalysis data, modelling, and climate dynamics. Identifying these interconnections is crucial for detecting early warning signals and anticipating large-scale changes in ocean circulation, heat transport, and biogeochemical property redistribution, and their impact in global climate. Framed within the Climate Change Hub, this research line aims to provide a shared framework that connects physical and biogeochemical perspectives on meridional overturning circulation variability and stability across the Arctic, Atlantic and Southern Ocean system.

KEYWORDS: ocean physics and biogeochemistry; AMOC variability; climate change; tipping points

CANDIDATE REQUIREMENTS

Proven expertise and initiative in large-scale physics and/or biogeochemistry ocean processes, preferably related to AMOC and polar/subpolar regions. Experience in remote sensing, ocean and/or climate modeling, statistical inference. Proficiency with software languages, such as C, Python, Matlab, or equivalent.

RESEARCH GROUPS INVOLVED

Physical and Technological Oceanograph // Marine Biogeochemistry, Atmosphere and Climate // Polar Oceanography and Cryospheric Studies

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TOPIC CCH-2

TITLE: Linking pelagic ecosystem variability to climate-driven physical and biogeochemical processes in the coastal NW Mediterranean Sea over the last 25 years

SUMMARY

Interannual climate variability, both sustained trends (e.g., warming) and extreme events (e.g., heatwaves and storms), drive changes in ocean dynamics, biogeochemical processes and habitat distribution. In the coastal and continental shelf domain, these changes shape pelagic planktonic ecosystems, impact early life stages of commercially exploited marine populations and short-lived pelagic fish, and the development of harmful microalgal blooms. Therefore, robust diagnosis and prediction are crucial for an efficient management of coastal ecosystem services. Current basin-scale research approaches to climate-ecosystem coupling lack the spatial and vertical resolution necessary to resolve coastal dynamics or are geared to hydrodynamics but miss biogeochemistry. Framed within the Climate Change Hub, this research line aims to develop a high-resolution, dedicated, and calibrated coastal model designed to capture the complex interactions between physical forcings, land-to-sea fluxes, and the marine biogeochemical responses at the local scale. Candidates should be prepared to integrate atmosphere, ocean dynamics, river inputs, and marine biogeochemistry variability into multidecadal simulations of high spatial resolution showcasing the evolution of the Catalan Sea over the last 25 years. Within ICM, a coupled dynamic-biogeochemistry configuration of the MITgcm-BFM model has already been implemented with a spatial resolution of 800 m. Additionally, over two decades of observations collected by ICM researchers along the Catalan coast can be used to validate models.

KEYWORDS: High-resolution hydrodynamic modelling; coastal biogeochemistry; pelagic ecosystems; climate change; extreme events

CANDIDATE REQUIREMENTS

Familiarity with compiled languages, such as C, Fortran, or equivalent. Experience with data analysis and visualization software such as Python, Matlab, or equivalent. Experience in working in high performance computing (HPC) environments will be valued.

RESEARCH GROUPS INVOLVED

Physical and Technological Oceanography // Ecology of Marine Microbes // Functioning and Vulnerability of Marine Ecosystems // Plankton Ecology and Ocean Health // Marine Biogeochemistry, Atmosphere and Climate // Laboratory of Seafloor and Subseafloor Processes

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TOPIC SFS-1

TITLE: Welfare biomarkers as cross-sector indicators of sustainability: bridging aquaculture and fisheries through integrated physiological and omics-based assessment

SUMMARY

Coastal food-production systems face rising pressures from climate change, resource constraints, and societal demands for ethical and sustainable seafood. Across fisheries and aquaculture, welfare monitoring remains fragmented, with sector-specific indicators limiting our capacity to evaluate stress, health, and product quality across the continuum from wild capture to farming. Physiological, biochemical, and omics-based markers offer a powerful but underexploited opportunity to unify welfare assessment across production systems and to trace how environmental, operational, and biological drivers shape organismal condition. Within the Seafood Sustainability Hub, this research line aims to develop the first cross-sector Animal-Based Measures (ABM) framework capable of quantifying welfare in both fisheries and aquaculture, integrating field observations, controlled experiments, and high-throughput molecular tools. The line encourages proposals that link biomarker development, capture-related stress assessment, aquaculture physiology, and ecological modelling to establish robust, standardised indicators applicable to Mediterranean and Cantabrian fleets and to Spanish aquaculture farms. Candidates should be prepared to work across disciplines, including physiology, biochemistry, welfare science, ecology, and operations. Expected outcomes include a validated ABM toolkit, harmonised welfare protocols, and interdisciplinary datasets supporting improved harvesting practices, enhanced aquaculture management, and long-term sustainability. This line will consolidate ICM as a reference centre for biomarker-based welfare evaluation and strengthen collaboration across traditionally separated seafood sectors.

KEYWORDS: fish welfare, aquaculture-fisheries integration, biomarkers, stress physiology, sustainability

CANDIDATE REQUIREMENTS

Hold a PhD in Biology, Marine Sciences or related disciplines, with experience in physiology, biochemistry, welfare science or ecology, and familiarity with biomarker or omics-based approaches. Strong analytical skills, the ability to work across sectors (fisheries and aquaculture), and interest in understanding how environmental, operational and biological stressors shape organismal condition are essential. Collaborative mindset, capacity to work in interdisciplinary teams, and good communication skills are highly valued

RESEARCH GROUPS INVOLVED

Functioning and Vulnerability of Marine Ecosystem // Plankton Ecology and Ocean Health

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TOPIC SFS-2

TITLE: Improvement of parameters used in fisheries stock assessment models through the lens of epigenetic clocks

SUMMARY
Sustainable fisheries management relies on accurate estimates of age, growth, and mortality, yet traditional methods such as otolith reading remain slow, lethal, and highly uncertain, particularly for species with complex or regionally variable life histories. As Mediterranean ecosystems undergo rapid environmental change, fixed biological parameters used in current stock assessment models increasingly fail to capture spatial and temporal variability in growth, recruitment, and survival. Emerging molecular tools, such as epigenetic clocks, offer a transformative, non-lethal approach to estimating chronological age with unprecedented precision, enabling multispecies applications and facilitating the integration of environmental drivers. Within the Hub, this research line aims to develop and implement molecular-ecological approaches to improve age estimation and incorporate environmental variability into stock-assessment parameters for key Mediterranean and Atlantic species. Proposals that combine environmental epigenetics, growth modelling, environmental datasets, and stock assessment frameworks are encouraged, with an emphasis on quantifying how temperature, productivity, and oxygen influence life-history dynamics from early stages to adulthood. Candidates should be prepared to work across disciplines spanning fisheries biology, epigenetics, oceanography, and quantitative modelling. Expected outcomes include a multispecies epigenetic clock, environmentally sensitive growth and mortality parameters, and enhanced assessment models aligned with ecosystem-based management. The line will strengthen ICM's role in science-to-policy transfer and establish long-lasting methodological innovations adoptable by EU advisory bodies.

KEYWORDS: epigenetic clocks, stock assessment, growth and mortality, environmental variability, fisheries management

CANDIDATE REQUIREMENTS
Hold a PhD in Fisheries Biology, Marine Sciences, Molecular Ecology, or a related discipline, with experience in at least one of the following areas: environmental epigenetics, ageing biomarkers, population or growth modelling, or quantitative assessment methods. Strong analytical skills and familiarity with integrating biological and environmental datasets (e.g., temperature, productivity, oxygen) into ecological or stock assessment frameworks are essential. Experience working across disciplines such as oceanography, fisheries science, and molecular biology, as well as the ability to collaborate within multi-group research environments, will be highly valued. A proactive attitude, good communication skills, and interest in developing innovative, non-lethal tools to improve fisheries management are desirable.

RESEARCH GROUPS INVOLVED
Biology of Reproduction and Environmental Epigenetics // Functioning and Vulnerability of Marine Ecosystems

Grant CEX2024-001494-S funded by AEI 10.13039/501100011033

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TOPIC SFS-3

TITLE: Mechanistic Eco-Evolutionary Models: Integrating Genomic and Epigenetic Variation into Marine Species Distributions

SUMMARY
Marine species inhabit highly heterogeneous seascapes in which temperature, productivity, and hydrodynamics shape population structure, adaptive potential, and short-term plastic responses. Yet current species distribution models remain largely correlative and overlook the evolutionary and epigenetic mechanisms that mediate organism/environment interactions, limiting their ability to predict spatial dynamics under rapid climate change. Population-level adaptive variation and environmentally responsive epigenetic modifications offer powerful but underused indicators of eco-evolutionary capacity across seascapes. Embedded within the Hub framework, this research line aims to develop next-generation, mechanistic SDMs that explicitly incorporate genomic structure, adaptive trait variation, and environmentally induced epigenetic plasticity. By integrating population genomics, environmental epigenetics, and modelling, the work will reveal how evolutionary potential and phenotypic flexibility shape present and future distributions of ecologically and commercially important species. We encourage proposals combining genomic surveys, experimental assays, and spatial modelling to evaluate population vulnerability, identify climate refugia, and support ecosystem-based fisheries governance. Candidates should be prepared to work across disciplines spanning evolutionary biology, molecular ecology, oceanography, and fisheries science. Expected outcomes include climate-robust predictive tools, standardised workflows for integrating molecular and environmental datasets, and a durable cross-departmental line linking modelling, genomics, and fisheries management at ICM.

KEYWORDS: species distribution models, adaptive capacity, environmental epigenetics, eco-evolutionary dynamics, climate change

CANDIDATE REQUIREMENTS
The candidate should hold a PhD in Evolutionary Biology, Molecular Ecology, Marine Sciences or related fields, with experience in at least one of the following areas: population genomics, environmental epigenetics, bioinformatics, or species distribution modelling. Strong quantitative and analytical skills are essential, including familiarity with handling molecular and environmental datasets and implementing spatial or ecological models. Experience working across disciplines such as oceanography, fisheries science, or eco-evolutionary dynamics will be highly valued. Candidates are expected to demonstrate the ability to integrate complex datasets, an interest in understanding organism-environment interactions under climate change, and a collaborative attitude suited for cross-research environments. Excellent communication and scientific writing skills are desirable.

RESEARCH GROUPS INVOLVED
Integrated Marine Ecosystem Assessments // Functioning and Vulnerability of Marine Ecosystems

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TOPIC SFS-4

TITLE: Socio-ecological scenarios for the future of fisheries and seafood systems in Catalonia: co-production of knowledge, social sustainability and transition towards Blue Food Security

SUMMARY
Coastal seafood systems sit at the intersection of ecological change, market dynamics, cultural identity and governance, yet their future trajectories remain difficult to anticipate in regions facing rapid environmental and socio-economic transformation. In Catalonia, where artisanal and trawling fleets operate under contrasting regimes and where tourism pressure, climate-driven species shifts, spatial competition, and evolving consumption patterns converge, there is an urgent need for scenario frameworks that integrate ecological processes with social realities. Building on the European Fishers of the Future foresight exercise, this research line aims to co-produce participatory socio-ecological scenarios tailored to Catalonia, translating continental-scale insights into actionable regional pathways. The topic seeks to merge ecological modelling, social sciences, and governance analysis to understand how climate impacts, biodiversity change, labour conditions, gender dynamics, cultural practices, and value-chain structures interact to shape seafood sustainability and Blue Food Security. We welcome proposals employing participatory methods, integrated modelling, and multi-actor engagement to generate transition strategies that reconcile environmental limits with social justice and economic viability. Candidates should be prepared to work across disciplines spanning anthropology, fisheries ecology, economics, climate modelling, and policy studies. Expected outcomes include regionally grounded future scenarios, strengthened multi-stakeholder collaboration, and a durable framework that connects ecological forecasts with governance innovation and social well-being across the Catalan seafood system.
KEYWORDS: socio-ecological systems, seafood sustainability, participatory scenarios, Blue Food Security, governance

CANDIDATE REQUIREMENTS
Hold a PhD in Social or Environmental Sciences, such as Anthropology, Human Geography, Fisheries Ecology, Marine Policy, Environmental Economics, or Climate Sciences, with demonstrated experience in socio-ecological research. Strong skills in qualitative or mixed-methods approaches (e.g., interviews, participatory workshops, ethnographic or stakeholder-engagement methods) and/or quantitative modelling (e.g., integrated socio-ecological models, climate-impact scenarios, or fisheries-related analyses) are essential. Familiarity with participatory or co-production frameworks, as well as the ability to integrate ecological, climatic, and socio-economic data, will be highly valued. The candidate should be comfortable working across disciplines, engaging with diverse actors including fishers, managers, scientists, and civil society organisations, and contributing to scenario development under climate-driven and multi-stressor contexts. Strong communication, facilitation, and collaborative skills are expected.

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TOPIC MMS-1

TITLE: Beyond Single Stressors: a revisitable Atlas of cumulative pressures to support marine spatial Planning

SUMMARY

Marine ecosystems are increasingly shaped by overlapping pressures, including climate-driven extremes, geophysical hazards, intensive fisheries, habitat degradation, pollution, and biological stressors. These drivers vary across space and time and often co-occur, producing amplified and sometimes non-linear ecological responses. Yet stressors are still often assessed in isolation because they are observed at different resolutions, with different uncertainties and sampling designs, complicating integration. Working collaboratively within and beyond the Multiple Marine Stressors Hub, we aim to integrate single-stressor assessments from ICM research groups into a coherent four-dimensional (latitude, longitude, depth, time) framework to (i) identify hotspots and critical periods where multiple stressors co-occur, (ii) quantify how co-occurrence patterns vary over time and across coastal, pelagic, and benthic habitats, and (iii) pinpoint management-relevant leverage points where reducing locally controllable pressures is most likely to strengthen ecosystem resilience under Global Ecological Change. We will translate these analyses into decision-grade products, culminating in a revisitable ICM Atlas of Marine Stressors delivering open-access, georeferenced layers to support research and decision-making. The Atlas will follow transparent, well-documented, interoperable geospatial standards, include explicit uncertainty descriptors and update protocols, and ensure reproducibility, long-term usability, and a durable interface between ICM science, marine spatial planning, and conservation priorities.

KEYWORDS: cumulative impact; Safe Operating Space; management; ecosystem resilience; marine spatial planning; science4policy

CANDIDATE REQUIREMENTS

Experience in spatial data analysis, environmental modelling and marine spatial planning, with solid proficiency in R and GIS tools (QGIS, ArcGIS or equivalent), in cumulative impact assessments and handling large marine spatial datasets, demonstrated capacity for knowledge transfer and effective interaction with stakeholders

RESEARCH GROUPS INVOLVED

Integrated Marine Ecosystem Assessment // Physical and Technological Oceanography // Ecology and Resilience of Benthic Ecosystems in a Changing Ocean // Ocean and Littoral Sedimentary Processes

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