

Postdoc in geomicrobiology modelling: microbial dormancy in Earth's ecosystems and biogeochemistry M/F

Apply: <https://emploi.cnrs.fr/Offres/CDD/UMR7294-SYLJOV-024/Default.aspx?lang=EN>

Application Deadline : 30 September 2025 23:59:00 Paris time

Reference : UMR7294-SYLJOV-024

Workplace : Marseille, France

Contract Period : 24 months

Expected date of employment : 1 February 2026

Missions

We are seeking postdoc (M/F) in modelling of geomicrobiology (PhD-level position) in Marseille, France, to work on the European Research Council funded Starting Grant project 'SIESTA: The Role of Microbial Dormancy as an Ecological and Biogeochemical Regulator on Earth'. The position is under the supervision of Dr. James Bradley (<https://www.jbradleylab.com/>). The recruited person will work with the principal investigator and will participate in theoretical and numerical modelling work, as part of a project team that includes doctoral students and technical staff. The main objective of this postdoc position is (1) to develop theoretical modelling approaches (bioenergetics, thermodynamics, ecological modelling, individual-based modelling) to investigate the activity and dormancy of microbial communities in extreme environments (including the cryosphere), and (2) to link the activity and dormancy of these communities to ecological and biogeochemical processes. This work will feed into wider project goals to understand the role of dormancy as a regulator of biogeochemical cycles, and to link dormancy to the emergence, survival and evolution of microbial populations.

Applicants should hold a Ph.D. in a relevant natural science discipline, have specialist knowledge and demonstrable experience in numerical, bioenergetic, ecosystem and/or habitability modelling, strong mathematical skills and programming experience, and experience with analysis of observational and/or model-derived datasets. The CDD is offered for 2 years and is renewable on an annual basis, contingent on satisfactory performance evaluations. We expect a flexible start date from around February 2026, adjustable based on the candidate's availability and the requirements of the project.

Applicants should submit IN ENGLISH 1) a current curriculum vitae; 2) a cover letter (maximum 2 pages) stating their motivation for applying to this position, research interests, relevant skills, training and experience; 3) contact information for at least two and up to three professional references. Please combine these documents into a single PDF. Important: Please also email Dr. James Bradley (james.bradley@mio.osupytheas.fr) to confirm your intention to apply. Apply as soon as possible. The application window will remain open for three weeks after the date that it is advertised online, and on a rolling basis thereafter (depending on whether or not a

candidate has been selected). Contact Dr James Bradley (james.bradley@mio.osupytheas.fr) with any questions.

Activities

The postdoc (M/F) will contribute to different research aspects on the project:

- Develop, implement and apply ecological modelling tools (bioenergetics, thermodynamics, ecological modelling, individual-based modelling, biogeochemical modelling) to study the activity and dormancy of microorganisms.
- Determine energetic and environmental parameters limiting the activity, dormancy and survival of microbial communities.
- Determine and assess catabolic and anabolic activity as well as plausible rates of energy-generating and energy-requiring reactions for active and dormant microorganisms.
- Connect the physicochemical characteristics of an environment (and the changes it is subject to) with the activity (and dormancy) of its resident microbial population.
- Assess the extent to which activity and dormancy of microorganisms (and transitions between active/dormant states) regulate ecological processes (biomass, diversity, function) and biogeochemistry (geochemical composition and elemental fluxes).
- Publish (as lead and co-author) in leading academic journals, participate in scientific conferences, outreach activities.
- Collate and catalogue data for deposition and archiving in data repositories.

Skills

- PhD (by time of appointment) in a relevant natural science discipline, and a track-record of research productivity, including peer-reviewed publications.
- Specialist knowledge and demonstrable experience in numerical, bioenergetic, ecosystem and/or habitability modelling.
- Strong mathematical skills and programming experience. Experience with analysis of observational and/or model-derived datasets.
- Strong understanding of microbial processes in the context of microbial ecology, habitability, astrobiology and/or extreme environments.
- Write and execute code in R, Python, GitHub etc., high-performance computing.
- Evidence of ability to publish research results in international peer-reviewed journals.
- Ability to organize and prioritize own work, and organize research within the project timetable.
- Strong oral and written communication skills in English.
- Ability to work independently and flexibly.
- Ability to work harmoniously as part of a team.

Work Context

The successful candidate (M/F) will work at the Mediterranean Institute of Oceanology (MIO), in Marseille Luminy. The MIO is an Oceanography research laboratory of the Universities of Aix-Marseille, Toulon, CNRS and IRD. It is integrated into OSU Pythéas. Its objectives are to better understand the ocean system and its evolution in response to global change. It constitutes a center of expertise in biology, ecology, biodiversity, microbiology, fisheries, physics, chemistry, biogeochemistry and marine sedimentology. Its frameworks are the world ocean, its interfaces with the continent, the atmosphere and the sediment. The MIO has more than 250 people, including around a hundred researchers (CNRS, IRD) and teacher-researchers from universities, around sixty engineers and technicians, more than 50 doctoral students and an administrative team serving research. The candidate (M/F) will join the MEB team, working in the ERC project SIESTA led by James Bradley. The successful candidate (M/F) will enjoy a vibrant research group, access to excellent research facilities and platforms at the Mediterranean Institute of Oceanography and Aix-Marseille University, and be embedded in a team committed to high scientific integrity, open and reproducible science, and promoting inclusivity. Marseille is an affordable, vibrant and historic city on the Mediterranean coast, with culinary excellence, diverse cultural experiences, and a large international community. The Mediterranean Institute of Oceanography, on the Luminy campus of Aix-Marseille Université, is surrounded by nature being nestled among the spectacular Calanques National Park.

Constraints and risks

The work will involve travel to scientific meetings for dissemination of results. The work may (depending on project needs and keenness of the candidate) involve travel and fieldwork in remote (glaciated, Arctic) environments for field collection of samples.