

Postdoctoral position

University of Oregon, Eugene, USA

- Modeling marine microbial/biogeochemical systems -

Lab Principal Investigator

Stilianos Louca, Assistant Professor, University of Oregon
Institute of Ecology and Evolution, Presidential Initiative in Data Science
Lab website: www.loucalab.com

Position

Our lab is looking for a postdoctoral researcher to work on **ocean biogeochemical modeling**. The postdoc will use numerical simulations to examine the influence of hydrodynamic transport processes, microbial population dynamics and microbial diversity on elemental cycles and redox transformations in realistic marine systems, including oxygen minimum zones and marine anoxic sediments. Global circulation models may also be considered. Datasets used will be taken from the literature and from collaborative projects of the PI. The postdoc will also have the possibility to explore their own additional research questions related to ocean microbial ecology and biogeochemistry.

This position is entirely computational. The main responsibility is research and scientific publishing. The postdoc is expected to develop a research plan early on in coordination with the PI. This position allows for fully remote work, however the postdoc must be based in (or relocate to) the US. **The position is fully funded for up to 20 months**, with a mid-term contract renewal conditioned on satisfactory performance. Applicants are encouraged to seek out additional funding (e.g., fellowships).

A starting date around Spring/Summer 2023 is preferred. Salary is based on the number of full years of relevant postdoctoral experience and follows NIH NRSA fellowship guidelines (grants.nih.gov/grants/guide/notice-files/NOT-OD-22-132.html). The position includes a generous package of benefits, including contributions to social and health insurance, as determined by University of Oregon policies.

Skills required

Applicants must have experience in mathematical modeling and computer simulations, ideally in a biological, ecological, biogeochemical, oceanographic or similar context. Decent scientific programming skills (e.g., in MATLAB, python or C++) are essential. Knowledge of any of the following is considered advantageous: Environmental microbiology, geobiology, thermodynamics, chemistry, partial differential equations, physical/chemical oceanography, nutrient cycles, oxygen minimum zones. Applicants must have a proven strong ability to conduct independent quantitative research, to articulate scientific questions and findings, and to publish in respectable scientific journals as first author. Applicants should hold a PhD in an area of computational/mathematical biology, physics, chemistry, applied mathematics, oceanography, engineering or similar.

Resources available

The Louca lab manages a "dry-lab" for computational work and a "wet-lab" for molecular biology and field work. We have multiple high-end Mac Pro workstations, and lab members also have access to a supercomputing cluster managed by the University of Oregon. The Institute of Ecology and Evolution includes experts in ecology, evolution, microbiology and biological oceanography, and offers a variety of opportunities for additional activities, including seminars, journal clubs and social events. Our lab also frequently collaborates with members of the Earth Sciences Department.

Life in Eugene (if you decide to relocate here)

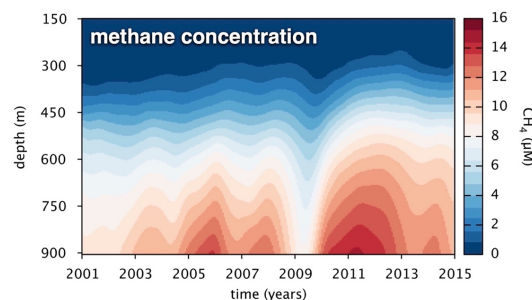
Eugene is a quiet, family-friendly and bike-friendly town, located in one of the most idyllic regions of the US, in beautiful Oregon. Whether it's skiing in the winter, hiking or fishing in the summer, or seeking hidden hot-springs in the forest, Eugene is an ideal starting point for nature enthusiasts. Public transport in Eugene is well developed, and UO is conveniently situated within walking distance of the town center, the beautiful Willamette River and Alton Baker Park.

Equal opportunity

The University of Oregon is an equal opportunity, affirmative action institution committed to cultural diversity and compliance with the ADA. The University encourages all qualified individuals to apply and does not discriminate on the basis of any protected status, including veteran and disability status. The University is committed to providing reasonable accommodations to employees with disabilities. UO prohibits discrimination on the basis of race, color, sex, national or ethnic origin, age, religion, marital status, disability, veteran status, sexual orientation, gender identity, and gender expression in all programs, activities and employment practices as required by Title IX, other applicable laws, and policies.

Application procedure

To initiate the application process, contact PI Stilianos Louca by email (contact details at www.loucalab.com). Please include a detailed CV, a list of publications, contact details for 2 potential referees, a description of research experience and interests (maximum 1 page), and any other materials you wish to share that would help us evaluate your suitability (such as authored computer code, course transcripts and grades, etc.). Please also indicate when you would be able to start this position. Applications are being considered on a rolling basis until a suitable candidate is found.



$$\frac{\partial C_m}{\partial t} = \underbrace{\sum_r S_{mr} R_r}_{\text{metabolic rates}} + \underbrace{\frac{\partial}{\partial z} \left[D_m \cdot \frac{\partial C_m}{\partial z} \right]}_{\text{diffusion}}$$

$$\frac{\partial N_r}{\partial t} = \underbrace{Y_r R_r}_{\text{growth}} - \underbrace{\lambda_r N_r}_{\text{death}} + \underbrace{\frac{\partial}{\partial z} \left[D_r \cdot \frac{\partial N_r}{\partial z} \right]}_{\text{dispersal}}$$

$$\Delta G_r = \Delta G_r^o + RT \cdot \sum_m S_{mr} \ln C_m$$

$$\text{H}_2\text{S} + 2\text{O}_2 \rightarrow \text{SO}_4^{2-} + 2\text{H}^+$$

