Postdoc offer - 2 years

Identifying evolutionary patterns of soil microbes under climate change using metagenomic data

Job Title: Junior scientist / post-doctoral researcher

Dates (flexible): March 1, 2025 to February 28, 2027

Internship duration: 2 years

Project: European Research Council (ERC) Starting Grant GAMEchange

Supervisor: Elsa Abs (LSCE, https://www.elsaabs.com/)

Advisory board: Philippe Ciais (LSCE, expertise in global terrestrial carbon cycle), Chris Bowler (ENS Ulm, expertise in global meta-omics patterns), Gabin Piton (INRAE, expertise in global meta-omics patterns), Gianna Marschmann and Ulas Karaoz (Berkeley, expertise in microTrait), Alex Chase (South Methodist University, expertise in detecting evolutionary patterns from meta-omics data), Lisa Wingate and Samuel Mondy (INRAE, expertise in SOLCA meta-omics data).

Location: Laboratory for Climate and Environmental Sciences (LSCE), Orme des Merisiers, Bâtiment 714, 91190 Saint-Aubin. Free daily CEA shuttles from Paris and surrounding areas. Two days of remote work per week included, with the possibility for more upon discussion.

Salary: €5,500/month gross salary before employer's and employee's social contributions (equivalent of Marie Curie salary, ~ €3,900/month after employer's and employee's social contributions but before income tax, ~ **€3,500/month** after all taxes).

Application closing date: November 20, 2024

Keywords: Terrestrial carbon cycle, microbial meta-omics data, bioinformatics

Project description

This position is part of the European Research Council (ERC) Starting Grant GAMEchange, with the overarching goal of integrating microbial evolution into land surface models.

Why care about soils? Soils contain more organic carbon than the atmosphere and plants combined. And why care about microbes? First, soil microbes release four times more carbon dioxide than the fossil fuel industry. Second, predictions of global soil carbon are 20% more accurate when microbes are included in models compared to when they are not. Yet, soil microbes and their adaptation to climate change are still not integrated into IPCC models.

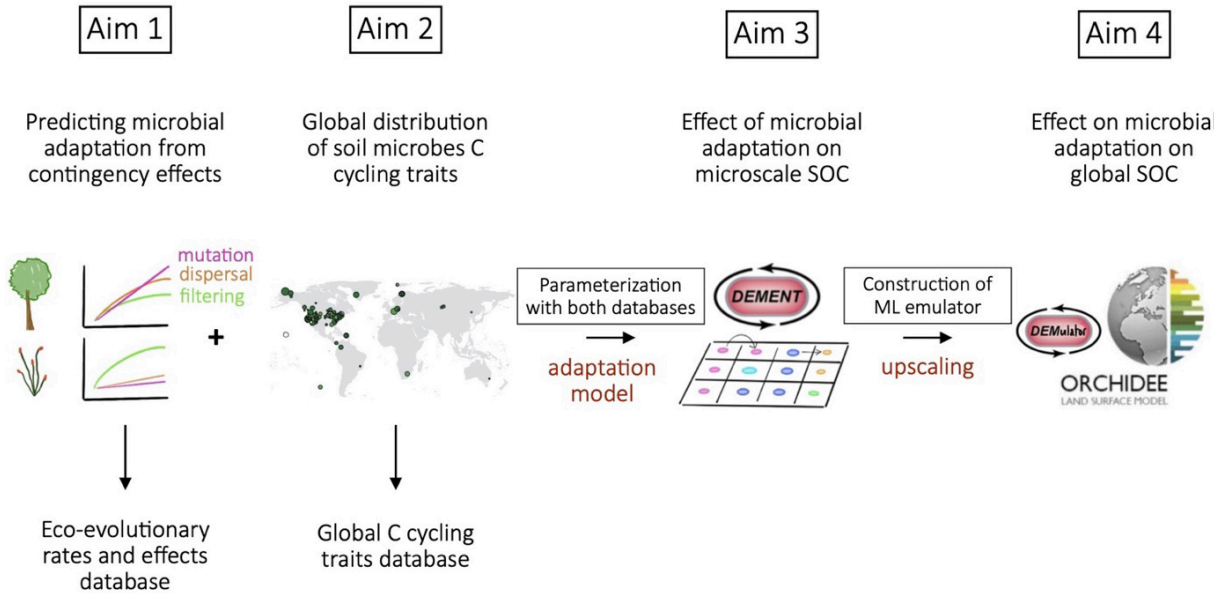

Figure 1: Illustration of the GAMEchange plan. The goal of the Master 2 project will be to focus on Aim 2.

The goal of this project is to characterize the evolution of soil microbes in response to climate change. To achieve this, the appointed postdoctoral researcher will collect Metagenome-Assembled Genomes (MAGs) from global change experiments, extract functional traits with computational approaches, and analyze them to estimate

evolutionary characteristics such as rate and magnitude (Aim 1 in Figure 1). Two global change experiments have already been identified.

This project will provide excellent networking opportunities with LSCE researchers as well as international experts in the field. It will closely interact with an international project called 'Carbon Loss In Plants, Soils, and Oceans' (CALIPSO), which aims to improve predictions of vulnerable carbon in forests, oceans, and soils. The CALIPSO project involves leading researchers, including Philippe Ciais at LSCE, Stefano Manzoni at Stockholm University, and Steve Allison at the University of California, Irvine, in the soil team; Corinne Le Quéré at the University of East Anglia and Laurent Bopp at l'Ecole Normale Supérieure of Paris in the ocean team; and Ana Bastos at Leipzig University and Pierre Friedlingstein at Exeter University in the vegetation biomass team.

Main responsibilities

The appointed postdoctoral researcher will be responsible for:

- Research tasks detailed in the project description
- Attending project meetings, writing result reports, and participating in activities in the projects beyond bioinformatics (data analyses, conceptual developments etc.)

What we can offer

The selected candidate will join a stimulating and supportive environment within a highly diverse and international research center. We are committed to guiding and advising the Postdoc toward an outstanding research career, while also helping them build connections with professionals outside academia if desired. While the Postdoc is expected to primarily focus on their research, we encourage them to engage in other activities (e.g., teaching, science communication, science policy) for up to 10% of their working time, should they wish to do so.

We will provide support in helping them settle into life in the Paris region and adapt to the new research environment, while fostering connections and collaborations within our research networks and beyond. Lastly, the Paris-Saclay area is both a hub for scientific innovation and a region known for its high quality of life.

Qualification requirements

Postdoctoral positions are appointed primarily for purposes of research. Applicants are expected to hold a doctoral degree.

Assessment criteria

We are seeking a highly motivated postdoctoral researcher with expertise in environmental science and/or bioinformatics. Special consideration will be given to candidates with degrees in relevant disciplines (bioinformatics, environmental microbiology, genetics) who have a strong computational, mathematical, or statistical background, proven experience with computer programming (e.g., R, Python, Matlab), and a track record of publishing in top-tier journals in English.

Terms of employment

The position involves full-time employment for two years. Start date 2025-03-01 or as per agreement.

LSCE strives to be a workplace free from discrimination and with equal opportunities for all.

Contact

Further information about the position can be obtained from Elsa Abs elsa.abs@lsce.ipsl.fr.

Application

Apply for the position by sending your application to Elsa Abs, elsa.abs@lsce.ipsl.fr.

It is the responsibility of the applicant to ensure that the application is complete in accordance with the instructions in the job advertisement, and that it is submitted before the deadline.

Please include the following information with your application

- Your contact details and personal data
- Your highest degree
- Your language skills
- Contact details for 2–3 references

And the following documents

- Cover letter
- CV – degrees and other completed courses, work experience and a list of publications
- Project proposal presenting the applicant's view on:

    - state of the art on the project topic described in the advertisement (max half page)
    - knowledge gaps that need to be addressed (max half page)
    - proposed approach to fill the identified gaps and how it is related to the applicant's knowledge/expertise and previous experiences (max one page)
- Copy of PhD diploma or a letter confirming the defense date
- Letters of recommendation (no more than 3 files)
- Publications in support of your application (no more than 3 files).

You are welcome to apply!