Land carbon feedbacks in overshoot scenarios

Two young scientist positions

The Laboratoire des Sciences du Climat et de l'Environnement – LSCE - is looking for two postdoctoral scientists to study land carbon feedbacks for overshoot scenarios as part of the PROVIDE European Project

Background

Overshoot warming scenarios in which temperature will reach above a global target before it is stabilized, are a source of concern as they may trigger feedbacks in the carbon cycle such as permafrost thaw, increased drought frequency and severity, and changes in fires regimes, some of these causing irreversibility or strong hysteresis and increased natural CO2 and CH4 emissions. The EU funded PROVIDE project will explore multiple overshoots storylines using impact models and climate emulators, with a special focus on extreme events in the future.

Job description

Applicants are expected to contribute to one of the respective projects. Postdoctoral applicants are expected to take leadership in one of the research fields noted, including the supervision of students. The postdoctoral positions are for two years initially and can be extended subject to performance and availability of funding.

The first position will run the ORCHIDEE land surface model to investigate the impact of droughts on carbon fluxes, permafrost carbon and CH4 emissions, and wildfires for future overshoot scenarios. The model will be forced by the output of climate models and of the MESMER climate model emulator in collaboration with ETH, in order to explore future non-linear and irreversible behavior of the carbon cycle, with a focus on impacts in the mid and high northern latitudes.

The second position will work in collaboration with Thomas Gasser at IIASA, with a one year stay at IIASA, to emulate the output of carbon models, especially ORCHIDEE, in the compact Earth System Model OSCAR. Then OSCAR will be run for a large number of overshoot scenarios, in order to explore interactions between multiple feedbacks and dangerous levels of overshoots that could induce massive natural emissions of greenhouse gases.

Developments of permafrost and boreal fire modules will be performed in collaboration with D. Zhu, S. Peng and W. Li at Beijing University and Tsinghua University.

Requirements

- Programming skills, preferably in Fortran / Python.
- Understanding of carbon cycle and land surface processes.
- Interest and motivation in modeling

Selection Criteria:

- PhD in modeling preferably with land surface or climate models.
- Demonstrated experience working with complex codes.
- Autonomy, ability to work in a team and time management skills.
- Experienced in multidisciplinary team-based activities with the ability to effectively communicate with colleagues and with staff from the partners of a project.

What LSCE can offer you:

LSCE offers a dynamic and inspiring research environment, excellent working conditions, supercomputing infrastructure, and a large degree of freedom for the successful candidates to bring in their own research ideas and experience. LSCE is a world leading institute in the field of research on global and regional carbon cycle and climate interactions. (https://www.lsce.ipsl.fr) located in a green area 20 km from the Paris city.

Contract duration: Up to 36 months**.**

Starting date: The position is available from Oct 2021 and will remain open until filled.

Salary: Competitive salary with full social and health benefits, commensurate with work experience.

How to apply: Applicants should submit a complete application package by email. The application package should include (1) a curriculum vitae including most important recent publications, (2) statement of motivation (3) answers to the selection criteria above (4) names, addresses, phone numbers, and email ad- dresses of at least two references.

Contact

Philippe Ciais philippe.ciais@lsce.ipsl.fr

Thomas Gasser gasser@iiasa.ac.at

Katsu Tanaka katsumasa.tanaka@lsce.ipsl.fr

Daniel Goll daniel.goll@universite-paris-saclay.fr