

Research Software Engineer on modeling greenhouse gas emissions in northern peatlands with an advanced land surface model

The Laboratoire des Sciences du Climat et de l'Environnement (LSCE) is part of the CLIMPEAT ERC Synergy project funded by the European Commission. We are looking for a research software developer to support the modeling efforts, optimize model code and help for systematic model evaluation and calibration

Laboratoire des Sciences du Climat et de l'Environnement (LSCE)

Is a world-class research laboratory established and a collaboration between CEA, CNRS and the University of Versailles Saint-Quentin (UVSQ) https://www.lsce.ipsl.fr. It is part of the Institute Pierre Simon Laplace (IPSL). LSCE hosts approximately 300 researchers, engineers and administrative staff including many PhD and master's students. This project will provide the employee with the opportunity to work directly on advanced methods with researchers from the LSCE and other institutions. We offer a stimulating and friendly environment in a diverse and international institution with research and education at a very high level.

Project description

Northern peatlands store large amounts of carbon and have been projected to shift from a net sink of greenhouse gases to a net source under global warming. As a Postdoctoral Fellow in this project you will work with the ORCHIDEE PEAT land surface model to predict the response of northern peat to climate change including abrupt changes and thermokarst disturbances. The research contributes to the *Northern Peatlands in the face of climate warming and abrupt changes* (CLIMPEAT) ERC Synergy project funded by the European Research Council. You will work in a dynamic international research environment with many possibilities for international collaboration and exchange. The work may include fieldwork in remote permafrost regions.

Main responsibilities

Support and work with the team of researchers working on the ORCHIDEE PEAT[1,2] model developed at LSCE with international partners and dedicated to the biogeochemistry of peatlands, to integrate new developments in a common version, optimize model code and help for systematic model evaluation

and calibration. Includes help for coupling the ORCHIDEE PEAT model to the IPSL earth system model.

Qualification Requirements

In order to qualify for the position, applicants are required to hold a MSc or doctoral degree. The degree must have been completed no later than when the employment decision is made.

Assessment criteria

- Excellent programming skills in Python, Fortran.
- Experience with complex code development and optimization
- Code versioning and development tools (SVN, GitHub)
- Development of scripts for automatizing model evaluation and calibration
- Autonomy, ability to work in a team and time management skills.
- Experienced in multidisciplinary team-based activities with the ability to effectively communicate

Contract duration:

24 months with a possible extension

Starting date:

The position is available until July 10 2026 and will remain open until filled. The expected start of the position is October 2026.

Salary:

Competitive salary, full social & health benefits, commensurate with work experience.

How to apply:

Applicants should submit a complete application package by email to the contacts below. The application package should include (1) a curriculum vitae including e.g. important recent publications / projects, (2) statement of motivation (3) answers to the selection criteria above (4) names, addresses, phone numbers, and email addresses of at least two references.

Contacts

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1. Qiu, C., Zhu, D., Ciais, P., Guenet, B., Krinner, G., Peng, S., Aurela, M., Bernhofer, C., Brümmer, C., Bret-Harte, S., et al. (2018). ORCHIDEE-PEAT (revision 4596), a model for northern peatland CO2, water, and energy fluxes on daily to annual scales. Geosci. Model Dev. *11*, 497–519.
2. Qiu, C., Zhu, D., Ciais, P., Guenet, B., Peng, S., Krinner, G., Tootchi, A., Ducharne, A., and Hastie, A. (2019). Modelling northern peatland area and carbon dynamics since the Holocene with the ORCHIDEE-PEAT land surface model (SVN r5488). Geosci. Model Dev. *12*, 2961–2982.
3. Qiu, C., Ciais, P., Zhu, D., Guenet, B., Peng, S., Petrescu, A.M.R., Lauerwald, R., Makowski, D., Gallego-Sala, A. V., Charman, D.J., et al. (2021). Large historical carbon emissions from cultivated northern peatlands. Sci. Adv. *7*, eabf1332.