Two post-doctoral research fellows on modeling wetland greenhouse gas fluxes in Europe

The Laboratoire des Sciences du Climat et de l'Environnement LSCE is part of the WET HORIZONS project funded by the European Commission. We are looking for two post-doctoral fellows for modelling the response of wetlands to climate change as well as to artificial drainage, restoration and other land uses.

Background

Wetlands are key biodiversity hotspots playing a crucial role in the global carbon cycles. They are critical habitats for many endemic species of fauna and flora, being vital for both human well-being and biodiversity. Despite their great ecological and economic importance, wetlands are globally disappearing or are being polluted at an alarming rate, and they are among Europe's most endangered ecosystems. Approximately 10% of the European area are wetlands (marshes, peatlands, floodplains amongst others), of which less than 20% remain in good ecological condition. Restoration of these ecosystems is a powerful tool to counteract and reverse the associated environmental degradation. To reach climate neutrality and environmental goals, safeguarding and restoring European wetlands is key to rebuild not only their urgently required environmental status, but also our societies' resilience.

Overall aim

Develop and improve the ORCHIDEE PEAT[1,2] model version dedicated to the biogeochemistry of peatlands, including their area change and CO_2 and CH_4 fluxes in response to land use[3] and historical and future climate change. The goal is to make a significant step forward in simulation of the past and future greenhouse gas balance of European wetlands, accounting for leaching of dissolved organic carbon and changes in water table. Calibration of wetland processes will be performed at multiple measurement sites with new data collected by the WET-HORIZONS project partners. The candidate(s) will participate to the design and simulations of inter-comparisons with other wetland models, and develop new metrics for quantifying the full climate effect of wetlands, wetland degradation and restoration, accounting for biogeochemical and biophysical feedbacks. The contribution of peatlands and wetlands to EU's climate neutrality targets and trade-offs / co-benefits of restoration practices will be assessed.

Two positions are opened, with flexibility on the choice of research topics related to the aims.

Requirements

- Programming skills, preferably in Python, Fortran

- Understanding of ecosystem models

Selection Criteria:
- PhD in climate modeling, land surface modeling, ecology
- Autonomy, ability to work in a team and time management skills.
- Experienced in multidisciplinary team-based activities with the ability to effectively communicate

What LSCE can offer you:

LSCE https://www.lsce.ipsl.fr
Is a world-class research laboratory established and a collaboration between CEA, CNRS and the University of Versailles Saint-Quentin (UVSQ). 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. The purpose of this joint position between LSCE and ATOS is to develop R&D that becomes sustainable and could lead to a permanent position opening at ATOS during or after the position duration. Location: about 20 km from the heart of Paris, in the Orme des Merisiers green area.

Contract duration: Up to 36 months.

Starting date: The position is available from 14 02 2022 and will remain open until filled. The expected start of the position is late spring / early summer 2022.

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.