

Research scientist on the assessment of land-based mitigation measures as part of the CLAND Convergence Institute

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

Context:

The CLAND Institute of Convergence project (www.cland.lsce.ipsl.fr) funded by the French national research agency for ten years gathers the efforts of more than 250 researchers in the Paris Saclay area from key institutions in the field of climate change impacts, sustainable agriculture, ecosystem services, environmental impacts and land use socio-economics. The scientific challenge tackled by CLAND is to integrate research in modeling climate change, food and fiber production, biodiversity dynamics, ecosystem functioning and land-use socio-economics, together with data syntheses to understand key feedbacks and assess risks and sustainable options for integrated management of land ecosystems. CLAND spans the full range of disciplines necessary to make breakthroughs in the integrated assessment of the interplay between climate change and land use and management.

Job description:

Land based mitigation measures (LMM) are mostly studied regarding their capacities to store C or to mitigate GHG emissions but biogeochemical effects of LMM only account for a fraction of their effect on climate. Indeed, ignoring the biophysical effects may lead to overestimate the climate mitigation potential of a given LMM and in some cases it can even offset the biogeochemical benefits. The job holder will implement into the ORCHIDEE model some key LMM involving croplands like cover crops or residue/mulch management. He/she will identify some key biogeochemical and biophysical variables in the model that will be affected by LMM and will evaluate how LMM will impact these variables. The model will be first run at European scale using climate forcing data from reanalyzes, and once the model gives satisfying result a coupling with the LMDZ model, a general circulation model, will be done to test the effect of LMM on climate response.

This work will contribute to the on-going international efforts to characterize and test land-based climate mitigation in global scenarios.

Responsibilities and tasks:

Implement the LMMs considered in the ORCHIDEE model

Calibrate and evaluate the ORCHIDEE model

Run the ORCHIDEE model for different LMM scenarios deployment forced by climate forcing data from reanalyzes

Run the ORCHIDEE model coupled with LMDZ to evaluate the effect of LMM on climate.

Required education, experience and skills:

Applicants should hold a master degree or PhD in environmental sciences and have experience in one or several of the following subjects: mitigation scenarios, agricultural and LULUCF practices, and biophysical modelling.

Furthermore, applicants should have:

- strong knowledge in programming languages (Fortran, python)
- a proven ability to work in a team and network with a range of scientists

Location:

Laboratoire du climat et de l'environnement (LSCE, <https://www.lsce.ipsl.fr>) with regular visits to different teams of the Cland project (<http://cland.lsce.ipsl.fr>) in particular the geosciences department at Ecole Normale Supérieure in Paris for collaboration, seminars and conferences.

Collaborations:

B. Gabrielle, B. Loubet and D. Makowski in Cland. Eric Ceschia (INRAE, CESBIO) and Rémi Cardinael (CIRAD).

Contract duration:

Fixed-term period of 24 months.

How to apply:

Applicants should submit a complete application package by email to Bertrand Guenet (guenet@geologie.ens.fr), Philippe Ciais (philippe.ciais@lsce.ipsl.fr) and Daniel Goll (daniel.goll@lsce.ipsl.fr) and should include (1) a curriculum vitae including most important recent publications, (2) statement of motivation (see above) and (3) names, addresses, phone numbers, and email addresses of at least two references.

The position is available from 01/09/2023 and will remain open until filled with review of applications and interviews. Salary follows national directives including full social and health benefits, and is adjusted for work experience.