

POST-DOCTORAL POSITIONS IN LAND SURFACE AND SOIL BIOLOGY MODELING

IPSL, Paris, 23/03/2021

The land-surface modeling group at the IPSL ("Institut Pierre et Simon Laplace", www.ipsl.fr/) is looking for a post-doctoral researcher interested in land surface modeling and soil biology. The position is available for a fixed-term period of 24 months with the possibility of 2 one-year extensions pending on the results.

Knowledge gaps on forest soil processes and lack of a harmonised soil monitoring limit the EU's ability to maintain soil related ecosystem services and to reach climate policy targets. A better understanding of the soil processes and a harmonised approach to integrate data into computational models that are used for decision making is urgently required in order to meet climate and sustainability goals, including the UN's Agenda 2030 SDGs, the Paris Agreement of Climate Convention, the EU Bioeconomy Strategy, the EU's LULUCF Regulation, the EU Forest Strategy (2018), and the European Green Deal.

In this context, the main scientific objectives and the related tasks of the position will be to merge KEYLINK – a model considering the main effects of soil biota on litter and soil organic matter transformations and hydrology through structural modifications – with the land surface model ORCHIDEE describing the flux of water, carbon nitrogen and energy within the soil-plant-atmosphere continuum. Then, with the new ORCHIDEE version some long-term simulations over Europe for present-day and for future will be performed in order to estimate the response of European forest to disturbance with a particular focus on drought.

The post-doctoral researcher will primarily develop the global land surface model ORCHIDEE, including functionalities related to the nitrogen cycle, forest management, and the vertical representation of soils. Depending on the personal situation of the person hired, the activities can be mainly located at LG-ENS (ENS, 24 rue Lhomond, 75005 Paris, France), with some travels to Spain, Netherlands and Belgium or at the VU university (De Boelelaan 1085, 1081 HV Amsterdam) with research visits to Spain, France, and Belgium.

Home institution:

IPSL employs over 300 permanent researchers, 200 technical and administrative staff, and over 450 PhD students and postdoctoral researchers, spanning 30 nationalities. Their research mission is to contribute toward better understanding of the interactions between human activities in the Earth system, and the environment and climate dynamics at different timescales. The IPSL oversees the development of an Earth system model (IPSL-CM) of which ORCHIDEE is the land surface model (LSM). IPSL-CM is one of the ESMs contributing to the IPCC Assessment Reports.

Pierre Simon Laplace Institute (IPSL) is a research cluster of nine institutes involved in climate change research, including Geology Laboratory of ENS (LG-ENS). IPSL coordinates the development of the Earth System model IPSL-CM, used for climate scenarios. Founded in 1880, the Geology Laboratory of the École normale supérieure de Paris is a joint research unit (UMR

8538) with the National Center for Scientific Research (CNRS). With a long tradition in Earth and Environmental Sciences, the research carried out there covers a wide field which makes it a privileged place for exchanges at thematic borders. CNRS is the legal entity that represents the LG-ENS within this project.

Vrije Universiteit Amsterdam (VU) nowadays consists of 15 faculties employing 300 professors, 3,300 academic and non-academic staff and has ~20,000 students. The departments of Earth Sciences & Ecological Sciences—both at the Faculty of Beta Sciences—study the changes and evolution of terrestrial environments and their key biogeochemical cycles (N, C, water). It combines experimental knowledge of biogeochemical and biophysical processes with numerical modelling.

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Qualifications required:

Given the interdisciplinary nature of the research we are seeking highly motivated individuals with a degree (Master or PhD) in for example mathematics, physics, engineering, computer science, meteorology, theoretical ecology or soil biology. A broad interest in natural sciences and more specifically in quantitative terrestrial ecology is essential. Rather than requiring any particular training, we are looking for candidates motivated by science with the ability to develop code (particularly Fortran 90) and to integrate scientific knowledge into numerical schemes. Priority will be given to individuals who have published peer-reviewed papers but it is not a strict requirement.

Required content of the application:

There are no specific application forms. Applications and inquiries should be sent to:

Bertrand Guenet (bertrand.guenet__at__ens.fr)

Sebastiaan Luyssaert (s.luyssaert__at__vu.nl)

Jorge Curiel Yuste (jorge.curiel__at__bc3research.org)

Kim Naudts (k.naudts__at__vu.nl)

Applications should include (1) a curriculum vitae, (2) statement of motivation including a short description (½ page no more than 1 page) of a recent scientific question you answered and (3) names, addresses, phone numbers, and email addresses of at least two references. The position is available from May 1st and will remain open until filled with a review of applications. Salary follows national directives and is adjusted for work experience. A dual position may be explored in case your partner/spouse has a competitive CV and background in line with the research activities at IPSL.