

# POST-DOCTORAL POSITIONS IN MANGROVES MODELING

IPSL, Paris, 09/04/2021

The modeling group at the IPSL ("Institut Pierre et Simon Laplace", [www.ipsl.fr/](http://www.ipsl.fr/)) is looking for a post-doctoral researcher interested in land surface and ocean modeling with a particular interest on the mangroves. The position is available for a fixed-term period of 30 months.

Mangroves are part of the blue carbon concept defined as the carbon fixed from the atmosphere by photosynthesis in the ocean but this definition has been then refine to focus only on coastal ecosystems including mangroves. Indeed, despite Mangroves area is relatively small compared to other type of tropical forests their carbon storage rates are very high compared to other tropical forests. As consequences, the carbon stocks of Mangroves are very high with an estimation ranging from 511 to 885 tC ha<sup>-1</sup> in the living biomass and from 272-936 tC ha<sup>-1</sup> in the soil but so far their roles in the carbon/climate feedbacks are well understood and still not integrated in Earth system models used to predict climate dynamics in particular in the climate change context.

In this context, the main scientific objectives and the related tasks of the position will be to developed a new version of the ORCHIDEE land surface model considering the main mechanisms concerning the effects of mangroves on the carbon cycle and on the hydrology of the model with a special focus on belowground processes. After some sites evaluation, the new ORCHIDEE version will be used for some long term simulations at global scale for present-day and for future to estimate the response of Mangrove forest to climate change including sea lever rise.

The post-doctoral researcher will primarily develop the global land surface model ORCHIDEE, including functionalities related to the specific hydrology of the mangroves ecosystems and related to the vertical representation of soils. The activities will be mainly located at geosciences department (ENS, 24 rue Lhomond, 75005 Paris, France) which is part of the IPSL, with some travels to Madagascar and to Florida to potentially help with fieldwork.

## 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.

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 biogeochemistry. A broad interest in natural sciences and more specifically in blue carbon 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)

Laurent Bopp (bopp\_\_at\_\_lmd.ens.fr)

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.