

Post Doctoral and Computer Scientists Positions - ERC Synergy Grant: IMBALANCE-P

A collaborative research team led by Josep Peñuelas (CREAF), Ivan Janssens (UA, Belgium), Philippe Ciais (LSCE, France), and Michael Obersteiner (IIASA, Austria) in a vibrant research environment is offering **postdoctoral and computer scientist positions** to study the effects of phosphorous limitations on Life, Earth system and Society (ERC Synergy grant: IMBALANCE-P).

The aim of IMBALANCE-P is to quantify and understand the responses of Life, Society and the Earth System to current and future P shortages and the N to P stoichiometric imbalance created by widespread N additions and rising atmospheric CO₂, and to identify the options available to improve the management of the P cycle. The P-dependent implications for Life, Society, and the Earth System are tightly interconnected, but have so far mostly been considered in fragmented single-discipline research. IMBALANCE-P will achieve a global closure of the P cycle, and generate a novel integrated knowledge of the impacts of the C:N:P imbalances on natural ecosystems' diversity and function, climate, agriculture, and society.

At LSCE we are looking for **three highly motivated and collaborative post-docs** and **two computer scientists** in the following areas:

Postdoc – Modeling of carbon-climate interactions in the Earth System, including nitrogen and phosphorus limitations and feedbacks. The Earth System used is **IPSL-CM** including a version of the land surface **ORCHIDEE** model being developed for carbon, nitrogen and phosphorus interactions. *Collaborations: P. Cadule, Laurent Li, O. Boucher, Y. Balkanski, S.L. Piao, P. Friedlingstein, D. Hauglustaine, D Goll, B. Guenet, P. Peylin and P. Ciais*

Postdoc – Modeling the stoichiometry of carbon, nitrogen and phosphorus in terrestrial ecosystems and its response to changing climate and CO₂ conditions, using the ORCHIDEE land surface model. Special focus will be given to the incorporation of microbial and fungi decomposition processes, and the competition between soil decomposers and plants for nutrition. *Collaborations: B. Guenet, D Goll, S. Peng, J. Penuelas, I Janssens, N. Vuichard, N Viovy, S.L. Piao and P. Ciais*

Postdoc – Modeling the stoichiometry of carbon, nitrogen and phosphorus in marine ecosystems and its response to changing climate and CO₂ conditions, using the PISCES marine biogeochemical model. Special focus will be given given to the implementation of a ocean quota model in the NEMO-PISCES ocean general circulation model and to the realization of climate change projections using the IPSL-Earth System Model. *Collaborations: L. Bopp, O. Aumont, M. Gehlen, C. Ethe, P. Ciais.*

Computer scientist – Earth system model software / code developments in the IPSL-CM Earth system model. Fast chemistry module and coupling between different models to close the nitrogen, carbon and phosphorus cycle simulation. *Collaborations: P. Cadule, O. Boucher, Laurent Li, F. Maignan, P. Ciais*

Computer scientist – Land ecosystem model (ORCHIDEE) software / code developments and integration. New forcing input data, acceleration of simulations, merge of different versions developed in the project. *Collaborations: F. Maignan, J. Polcher, N Vuichard, P. Ciais*



Ideally, the work begins in Spring 2015 but other starting dates can be discussed. The positions are offered for a duration comprised between 1 year and up to 5 years.

Qualifications: Applicants should be enthusiastic and highly-qualified doctors holding a PhD degree in computer science, Earth System Modeling, geosciences, climate sciences or any related field to the mentioned areas. They should ideally have a strong background in those areas. Interest or experience with process modeling or data analysis with script languages (Fortran, LINUX, Matlab, R, Python) or other programming languages is appreciated. In addition, the applicants should have solid experience in working both independently and in group. Fluency in English (oral and written) is mandatory.

Annual Salary: Approx 27000-30000 Euros

Location: Institut Pierre Simon Laplace (IPSL) and Laboratoire des Sciences du Climat et de l'Environnement (LSCE).

Application Process: We look forward to receiving your application – including a motivation letter, a statement of research interests, a CV, and the names and contact addresses of three academic referees – Please send your application to philippe.ciais@cea.fr , fabienne.maignan@cea.fr and patricia.cadule@lsce.ipsl.fr

The deadline for applications is Dec 1st 2014 (but the deadline may be flexible depending on the project starting dates).

For further information about the position please contact Prof. Philippe Ciais: philippe.ciais@cea.fr