



Joint Research Unit (UMR) Ecology of Guianan Forests (EcoFoG)

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Postdoctoral position for the study of greenhouse gas (GHG) emissions in the Amazon Rain Forest

A postdoctoral position is open at the National Research Institute for Agriculture, Food and Environment (INRAE) within the UMR EcoFoG in French Guiana. The position is for three years (from the beginning of 2023) and is part of the Tropical FLUXNET-CH₄ project financed by the Gordon and Betty Moore Foundation (following the grant GBMF5439 “Advancing Understanding of the Global Methane Cycle”; Stanford University). Tropical FLUXNET-CH₄ is an interdisciplinary project conducted by American, Brazilian, African and French ecologists and micro-meteorologists. This project is also part of the Global Carbon Project’s efforts (GCP; <https://www.globalcarbonproject.org/>) and will provide core support for the next Global Methane Budget (GMB; CSIRO/Canberra office). The main aim of the position is to characterize fluxes of greenhouse gases (GHG), including carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), and their drivers, and to compare and validate flux data obtained at different scales in a tropical forest ecosystem. Particular attention will be paid to CH₄ fluxes.

Context

Freshwater wetlands are a substantial source of total atmospheric CH₄ emissions. In the tropics, CH₄ fluxes are typically very high and poorly constrained. However, current representativeness analysis includes global wetland bioclimatic attributes (encompassing energy, moisture, and vegetation-related parameters) from arctic, boreal, and temperate regions but only sparsely from humid tropical regions. It is crucial to coordinate and improve ongoing CH₄ flux measurements throughout these under-represented regions. The Tropical FLUXNET-CH₄ project will gather and quantify CH₄ emissions at sites in South America and Africa. New sites in South America include a tropical rainforest in French Guiana. There, intensive, and prolonged campaigns will use state-of-the-art instrumentation at the well-established Guyaflux site tower and will integrate available CO₂, CH₄ and N₂O flux data.

Your mission

The position will involve examining local CO₂, CH₄ and N₂O emissions in upland (terra firma) and wetland (seasonally flooded) tropical forest areas. The technical implementation will mainly include the GHG flux-tower, automated-chambers and mobile-based measurements.

We are looking for a highly motivated young scientist who will:

- Develop and prepare instrumentation measurement protocols and measurement campaigns starting in 2023;
- Set-up, run and monitor in situ GHG emission measurements at leaf, stem, soil and canopy level;
- Conduct a review of the literature, carry out data analyses, and actively participate in scientific conferences and publications in scientific journals;
- Contribute to establishing a tropical CH₄ flux network by building pantropical workshops with experts on tropical CH₄ (but not only) to synthesize, analyse and publish tropical GHG fluxes across locations and scales.

About the position

Full-time position for three years starting at the beginning of 2023.

The position is based in Kourou, French Guiana, with short-term visits to Stanford University, USA.

INRAE offers a competitive salary (annual maximum: \$44,000) and benefits package, with medical coverage and other insurance.

Your qualifications / skills

- PhD degree in Micrometeorology, Ecosystem Gas Exchange or Earth Sciences, or a related field;
- Expertise in quantitative GHG measurements and related knowledge;
- Deep knowledge of R;
- Strong curiosity and interest in GHG fluxes, their origins and drivers, and GHG emission modelling;
- Experience in micro-meteorological methods for flux measurements would be an advantage;
- Strong writing and oral communication skills;
- Fluent English is mandatory and knowledge of French would be helpful.

Your application

Applicants should send a CV, detailed cover letter highlighting their interest in this position, and the names and contact information for two letters of recommendation to laeti.brechet@gmail.com and damien.bonal@inrae.fr.

INRAE is an equal opportunity employer, minority applicants are strongly encouraged to apply. Applications will be accepted until the position is filled, but we are hoping for a January 2023 starting date.

More information about the associated labs can be found here: <http://www.ecofog.gf/>, here: <https://www.inrae.fr/en> and here: <https://jacksonlab.stanford.edu/>.

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