

Postdoctoral

Ecole/Institution/Société:

University de Sao Paulo, Brazil / Sao Paulo

Discipline:

Computational Engineering, Engineering Education

Type d'emploi::

Full-time

Date de publication:

2022-04-18

Personne à contacter:

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Post-doctoral Biogeochemical cycles of greenhouse gases in Amazoni

Job Title: Post-doctoral Biogeochemical cycles of greenhouse gases in Amazonia - REF 22PDR163

Department: Institute of Engineering

Institution: University de São Paulo, Sao Paulo,Brazil

Website For Job: <https://www.rcgi.poli.usp.br/opportu>

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Job Categories: Post-Doc

Academic Fields

- Geomatics
- Engineering Physics
- Computer Engineering
- Chemical/Petroleum
- Engineering - Other

Project title:

- Biogeochemical cycles of greenhouse gases in Amazonia

Research theme area:

This research is part of the RCGI project - 64 GHG project - [D.1](#), which has the title: "Greenhouse gas emissions in the Amazon and data analysis system and services". In this project, a multidisciplinary team will build a computer system that integrates data associated with the emission of greenhouse gases in the Amazon, which integrate land use changes, remote sensing of greenhouse gases, meteorological parameters, forest degradation data, internal measures. in situ in soil and in fluxes and concentrations of greenhouse gases in the Amazon.

The project will integrate land use change data from MapBiomass, INPE deforestation and fire detection systems, remote sensing and in-situ measurement of greenhouse gases data in an open

access computational platform using machine learning and artificial intelligence techniques, with web access.

Abstract:

Greenhouse gas fluxes and concentrations in tropical forests are influenced by a number of factors ranging from land-use type to atmospheric conditions. Understanding the biogeochemical gas cycle from processes in the soil, through forest-atmosphere, boundary-layer, and free-atmosphere interactions to evaluate the impacts of land use on greenhouse gas fluxes and concentrations, and assists in the development of parameterizations processes.

A database of historical data on land use, concentrations and fluxes of gases, and environmental parameters such as temperature, precipitation, radiation, among others, will be available for analysis and development of the work. The analyses will be developed considering both land-use changes between categories of different biomes, deforestation, pasture, and agriculture, as well as forest degradation.

Machine learning techniques and physical parameterizations will be employed, and biogeochemical models of the forest-atmosphere interface. Large-eddy simulation models will be used for idealized simulations based on flux towers located in different regions of the Amazon rainforest. In addition, in situ measurements collected during the CAFE-Brazil experiment will be used to explore case studies with a complete dataset describing the chemistry of the free atmosphere, the boundary layer, the physical processes inside the clouds, and the forest-atmosphere interaction.

Description:

The applicant will contribute aligned to the main objectives of the project:

Use of the databases and apply quality control. Integration the environmental databases with land use change patterns and greenhouse gas fluxes. Developing analyses and conceptual models. Using experimental data to explore the theme of this study. Performing high-resolution simulations of models describing biogeochemical cycling for carbon and methane for target areas.

Requirements to fill the position:

This Post Doc fellowship is suitable for a highly motivated researcher with a background in physics, chemistry, engineering, computer science or mathematics. Requires programming skills preferably in Python. Knowledge of data processing techniques, biogeochemical cycles and atmospheric processes is desirable. Proficiency in English is required. Ability to collaborate and develop your work in large teams is required.

The candidate must have obtained a doctorate degree less than seven years ago, priority for candidates who have just completed the Doctorate, within the regular duration, with an excellent academic record in postgraduate studies.

INFORMATION ABOUT FELLOWSHIP:

This Postdoc fellowship is funded by FAPESP. The fellowship will cover a standard maintenance stipend of R\$ 8.479,20 per month.

MORE INFORMATION:

<https://www.rcgi.poli.usp.br/opportunities/>

Position: Post-Doctoral Fellowship REF: 22PDR163

<https://www.rcgi.poli.usp.br/opportunities-application/> AND APPLICATION AT REF 22PDR163 - Post-Doctoral Fellowship

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