Laboratoire des Sciences du Climat et de l'Environnement (LSCE)

91191 Gif-sur-Yvette, France

Postdoctoral researcher in greenhouse gas total column measurements and time series analysis in the tropics

Context

The ICOS-RAMCES team, based at the Laboratoire des Sciences du Climat et de l'Environnement (LSCE) in Saclay (France), is responsible for coordinating the French National Observation Service for greenhouse gas measurements. This network aims at characterising the atmospheric footprint of CO2, CH4 and CO emitted by human activities and ecosystems. Thus, high-precision instruments are deployed in France, Europe and the tropics to continuously monitor atmospheric levels of these gases.

In the framework of the French Obs4Clim project, we have recently deployed a network of remote sensing EM27/SUN spectrometers for total column measurements of CO2, CH4, CO and H2O in the tropics. This network aims at long-term observations and satellite validation (TROPOMI, OCO-2/3, GOSAT, MicroCarb). The five chosen stations (Bolivia, French Guiana, Morocco, Ivory Coast and Amsterdam Island) are also part of the surface monitoring network and benefits from the in-situ measurements. To increase the robustness of this tropical network, instruments are placed into an automatic enclosure system allowing to increase drastically the daily observations and data availability. In addition, an automatic data treatment chain, developed at LSCE, allows to retrieve daily raw spectra in near real time (NUBICOS project).

Responsibilities and tasks

The successful candidate will join the ICOS-RAMCES team and be in charge of the remote sensing network including the hardware, data workflow and data analysis.
The primary tasks will be, in collaboration with the team researchers and engineers :

- Ensure the total column data availability from the 5 tropical stations
- Supervise a comparison program with a travelling instrument and evaluate the data quality
- Analysis of the time series
- Collaborate with modellers at LSCE to combine surface and total column measurement in atmospheric inversions focusing on the CO2 and CH4 budget in Africa and South America
- develop new tools for automatic satellite comparison and validation in collaboration with the space agencies
- Present its work at national and international conferences, and in peer reviewed papers

Field campaigns are expected

Core competencies and knowledges
Data analysis and interpretation in atmospheric sciences
Instrumentation and data treatment
Programming skills: R, Python
Communication skills : redaction and oral

Location: LSCE, CEA - Orme des Merisiers, 91191 Gif-sur-Yvette.

Contract length: 24 months

Salary: according to CEA salary scale and experience

Starting date: from April 2025

To apply: send a CV and cover letter to M. Lopez : morgan.lopez@lsce.ipsl.fr and M.Ramonet : michel.ramonet@lsce.ipsl.fr