Research scientist on greenhouse gas anthropogenic emissions constrained by atmospheric measurements in support of national inventories for the Paris agreement

At Laboratoire des Science du Climat et de l'Environnement

Background

Monitoring baseline mean values and trends of regional emissions and sinks of the tree main greenhouse gases CO_2, CH_4 and N_2O is essential for tracking the effectiveness of mitigation actions for the Paris Agreement on Climate, now more than ever with important green stimulus packages being proposed to restart economies after the COVID pandemics. Progress by the research community allows to produce regularly updated regional budgets of these greenhouse gases, combining inventories and emissions models with atmospheric inversions constrained by satellite and surface measurements. These atmospheric based emissions estimates can be directly compared with national inventories, or they can be transformed into emission factors for different sector, which are also relevant for an independent evaluation of emission factors compiled from very local scale measurements.

In the RECCAP-2 phase-2 project funded by the European Space Agency (ESA) we are looking for a motivated young researcher to analyze atmospheric inversions results for the three greenhouse gases, in particular the inversions recently synthesized by the Global Carbon Project in the CO2 budget, the CH4 budget and forthcoming N2O budget publications. Inversions will be compared with national inventories of developed countries and biennial communications in developing countries. The outcome of the research will the development of new approaches for the separation of natural and anthropogenic emissions in the inversion signals, to deliver policy relevant information on anthropogenic emissions per sector.

This work will be performed with the Global Carbon Project and other projects of the ESA Climate Change Initiative, and will involve a dialogue with national inventory agencies in six different countries, and with a special focus to support the provision of improved estimates of emissions from developing countries. At least one high impact publication is foreseen from this work in the course of the global-stock take of the Paris Agreement, to bring to policy the latest atmospheric research.

Specific aims and working steps
- Analyze the results of satellite or surface stations based atmospheric inversions for CO_2, CH4 and N_2O emissions at national and continental scale for the entire globe over the last 2-3 decades
- Compile, harmonize and analyze national communications and biennial update reports to the UN Climate Convention
- Develop a framework based on geo-statistics and spatial analyses to separate trends and natural variability, if possible for different sectors
- Combine inversion results with other datasets to separate anthropogenic and natural fluxes and calculate emission factors
- Share results and perform analysis with our partner national inventory agencies (six countries)
- Publications, presentations at international scientific conferences and during policy dialogues organized by the European Space Agency (ESA)

Required skills
- Programming skills, preferably in Python or R
- Knowledge of statistics and data analysis
- Communication skills, clear diagrams and interest for science and climate policy

Contacts
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Selection Criteria:
- MSc. Or PhD in atmospheric science or another relevant field
- Demonstrated fieldwork experience working with trace gas or aerosol measurements
- Autonomy, ability to work in a team and time management skills
- Experienced in multidisciplinary team-based activities with the ability to effectively communicate with colleagues and with staff from the partners of a project.

What the LSCE can offer you:
LSCE is a world-class research laboratory established and a collaboration between CEA, CNRS and the University of Versailles Saint-Quentin (UVSQ). It is part of the Institute Pierre Simon Laplace (IPSL). LSCE hosts approximately 300 researchers, engineers and administrative staff including many PhD and master's students. This project will provide the employee with the opportunity to work directly on advanced methods with researchers from the LSCE and other institutions

Location: Laboratoire des Science du Climat et de l'Environnement (https://www.lsce.ipsl.fr) located about 20 km from the heart of Paris in the Orme des Merisiers green area.
Contract duration: Up to 24 months
Starting date: The position is available from Nov 2020 and will remain open until filled.
Salary: Competitive salary with full social and health benefits, commensurate with work experience.
How to apply: Applicants should submit a complete application package by email. The application package should include (1) a curriculum vitae including most important recent publications, (2) statement of motivation (3) answers to the selection criteria above (4) names, addresses, phone numbers, and email addresses of at least two references.