

Research scientist to study concepts of space-borne concentration observations for the monitoring of hotspots of CO₂ and CH₄ emissions

LSCE : Laboratoire des Science du Climat et de l'Environnement

Context:

Comprehensive information about greenhouse gas emissions is essential for decision makers to track the effectiveness of emission control policies in the context of the Paris Agreement on Climate. To answer that need, LSCE has launched a research program known as TRACE (<http://trace.lsce.ipsl.fr>) funded for four years by the French National Research agency and corporate partners THALES ALENIA SPACE, SUEZ and TOTAL. The TRACE program develops new GHG emissions measurement methods, going from the scale of industrial sites up to national and global CO₂ and CH₄ budgets, using satellite-mounted infrared spectrometers instruments and arrays of low-cost sensors deployed in situ, on the surface, around emitting industrial sites.

Job description - Responsibilities and tasks:

- Apply the TRACE high resolution atmospheric inverse modeling system assimilating column CO₂ and CH₄ satellite data to monitor emissions at the scale of populated regions, large cities and large point sources:
 - o for studying the potential of new concepts of space-borne observation for reducing uncertainties in emissions,
 - o to data from current satellite missions observing CO₂ and CH₄
- Work on the coupling of this system with inverse radiative transfer models developed by the Laboratoire de Météorologie Dynamique (LMD) to retrieve atmospheric column CO₂ and CH₄ data from satellite radiance measurements; this should lead to the development of an “end-to-end” simulation platform in support to the design and exploitation of satellite measurements,
- Interact regularly with LSCE researchers, engineers from corporate partners and LMD to ensure that the model developments and experiments are in line with the measurement constraints and exploit their full potential,
- Lead and contribute to the writing of peer-reviewed publications with the results from TRACE,
- Contribute to research projects connected to the objectives of TRACE,
- Promote the project results at international conferences

Required skills/experience:

- Knowledge in atmospheric sciences and/or statistical inversion techniques
- Experience with atmospheric transport, meteorological models and/or data assimilation systems
- Programming (ideally in Fortran and Python)
- Ability to work collaboratively with a team of researchers and engineers
- Previous involvement in research projects

Education: PhD in climate, environmental or atmospheric sciences.

What the LSCE can offer you:

The LSCE is a world-class research laboratory established as a collaboration between the Commissariat à l'Energie Atomique et aux Énergies Alternatives (CEA), the Centre National de la Recherche Scientifique (CNRS) and the University of Versailles Saint-Quentin (UVSQ). LSCE hosts approximately 300 researchers, engineers and administrative staff including many PhD and master's students. It is also part of the Institute Pierre Simon Laplace (IPSL; <https://www.ipsl.fr/>) which is comprised of nine laboratories (CEREA, GEOPS, LATMOS, a team of LERMA, LISA, LMD, LOCEAN, LSCE and METIS) that conduct research into earth system science.



This project will provide the employee with the opportunity to work directly with leading researchers from the LSCE along with other scientific research institutes and industrial partners to develop their skills as a researcher within an intellectually stimulating, friendly environment. It offers integration into a larger research team enabling the employee to expand their professional network and gain insight from a diverse array of scientists specializing in different fields of research.

The LSCE is an equal opportunity and diverse workplace and applications will be reviewed based on qualifications and merit. We therefore encourage all people who believe they meet the essential selection criteria to apply.

Location: Laboratoire des Science du Climat et de l'Environnement (<https://www.lsce.ipsl.fr>), in Gif-sur-Yvette, near Paris (France).

Contract duration: 2 years.

Starting date: The position will start as soon as possible and will remain open until filled.

Salary: Salary includes full social and health benefits, adjusted for work experience.

How to apply: Applicants should submit a complete application package by email to: gregoire.broquet@lsce.ipsl.fr. The application package should include (1) a curriculum vitae, (2) statement of motivation and (3) names, addresses, phone numbers, and email addresses of at least two references.