

Research scientist to monitor the anthropogenic emissions of CO₂ based on satellite data

LSCE : Laboratoire des Science du Climat et de l'Environnement H2020 CoCO2 project: Prototype system for a Copernicus CO₂ service

Context:

Improving the monitoring of the anthropogenic emissions of CO₂ is a strategic objective within the European Green Deal and a key requirement for the application of the Paris agreement on climate change mitigation, adaptation and finance. The European Union supports the development of an operational service for such a monitoring in the frame of **Copernicus**, its earth observation programme. The service will exploit atmospheric and earth observation data from various observation systems, in particular satellite images of CO₂ and co-emitted tracers. It will rely on atmospheric modeling together with data assimilation and atmospheric inversion techniques.

The H2020 **CoCO2** project aims to provide the prototype system for this service. **LSCE** is a key partner of the CoCO2 project, coordinated by ECMWF, and participates in various activity segments. In particular, it develops and benchmarks local to regional scale atmospheric transport modeling and inversion approaches to be operationalized, and it tests them for the quantification of CO₂ emissions from industrial sites, cities, administrative regions and countries. This offer corresponds to these themes.

Job description - Responsibilities:

- Study, implement and test new concepts for the local to regional scale atmospheric inversions
- Apply such inversions for the estimate of city/facility to national scale anthropogenic emissions of CO₂ using satellite data
- Participate to the inter-comparisons with the other local to regional scale inversion approaches developed by the partners in CoCO2
- Interact regularly with LSCE researchers connected to these activities and with the European partners of CoCO2 to ensure that the developments rely on state-of-the-art approaches and stay connected to the needs to converge towards standard approaches for the prototype in CoCO2
- Lead and contribute to the writing of subsequent peer-reviewed publications
- Promote the 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
- Previous involvement in research projects

Education: PhD in climate, environmental or atmospheric sciences.

What the LSCE and CoCO2 can offer you:

The LSCE is a world-class research laboratory established as a collaboration between the Commissariat à l'Énergie Atomique et aux Énergies Alternatives (CEA), the Centre National de la Recherche Scientifique (CNRS) and the University of Versailles Saint-Quentin (UVSQ). LSCE hosts more than 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 gathers nine laboratories (CEREA, GEOPS, LATMOS, a team of LERMA, LISA, LMD, LOCEAN, LSCE and METIS) that conduct research into earth system science.

CoCO2 provides the opportunity to contribute to the development of a critical service for the environment and climate policy in Europe. The research scientist will be in regularly in contact with leading researchers from the LSCE along with a large number of key European research institutes in the domain. It offers integration into a large research community 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: 2.5 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 and frederic.chevallier@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.