Satellite atmospheric composition measurements and ground-based activity data to quantify regional CO_2 emission budgets

Young scientist position

The Laboratoire des Sciences du Climat et de l'Environnement (LSCE) and ATOS are looking for a motivated postdoc / engineer young scientist candidate for a joint project focused on methods to quantify regional budgets of anthropogenic CO_2 emissions using activity data and satellite observations of atmospheric CO_2 and co-emitted combustion tracers. If the research finds sustainable development applications, a permanent position will be considered by ATOS.

Background

Regional CO_2 emissions from the combustion of fossil fuels are the main cause of climate change and must be reduced to achieve the objective of the Paris Agreement. Current inventories lack information about temporal variations of emissions, and often have a low latency. Attempts have been proposed by the research community to develop new national scale near real time emission products. Near real time emissions downscaled into emission maps can be coupled to a global atmospheric tracer transport model to assimilate satellite observations of column CO_2 and co-emitted combustion tracers such as carbon monoxide (CO) and constrain emission budgets at the scale of emitting regions, in support of emission reduction policies and targets.

Overall aim

Apply a regionally zoomed version of the global atmospheric CO_2 flux inversion system developed by LSCE to constrain fossil fuel and land ecosystem CO_2 emission budgets using satellite based atmospheric composition measurements and information on near real time CO_2 emissions at national scale, further downscaled using spatial patterns of emissions activity. The target of the study will be a country or a region of the world where high quality CO_2 inventories are lacking or cannot be updated frequently enough. The main challenge will be to apply a global inversion model with a zoom over a region of interest where the patterns of atmospheric transport and emissions can be resolved with a higher precision.

Requirements

- Programming skills, preferably in Python, Fortran, including for high performance computing
- Understanding of atmospheric sciences and statistics

Selection Criteria:

- MSc. (or equivalent engineering diploma) or PhD
- 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 ATOS and the LSCE can offer you:

LSCE https://www.lsce.ipsl.fr
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. The purpose of this joint position between LSCE and ATOS is to develop R&D that becomes sustainable and could lead to a permanent position opening at ATOS during or after the position duration. Location: about 20 km from the heart of Paris, in the Orme des Merisiers green area.

ATOS www.atos.net
Is a global leader in digital transformation with 105,000 employees and annual revenue of over € 11 billion. European number one in cybersecurity, cloud and high-performance computing, the Group provides tailored end-to-end solutions for all industries in 71 countries. A pioneer in decarbonization services and products, Atos is committed to a secure and decarbonized digital for its clients. The purpose of Atos is to help design the future of the information space. Its expertise and services support the development of knowledge, education and research in a multicultural approach and contribute to the development of scientific and technological excellence. Across the world, the Group enables its customers and employees, and members of societies at large to live, work and develop sustainably, in a safe and secure information space.

Contract duration: Up to 24 months, If the research finds sustainable development applications, a permanent position will be considered by ATOS.

Starting date: The position will remain open until filled.

Salary: Competitive salary, full social and health benefits, commensurate with work experience.

How to apply: Applicants should submit a complete application package by email to the contacts below. The application package should include (1) a curriculum vitae including e.g. recent publications / projects, (2) statement of motivation (3) answers to the selection criteria above (4) names, addresses, phone numbers, and email addresses of at least two references.

Contacts
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