Using ground-based activity data to quantify and monitor CO_2 emissions at the regional scale

Young Researcher / Data Scientist position

The Laboratoire des Sciences du Climat et de l'Environnement (LSCE) and ATOS are looking for a motivated postdoc / young scientist for a joint project focused on methods to quantify regional budgets of anthropogenic CO_2 emissions using ground based near real time activity data on energy, mobility. 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 keep the objective of the Paris Agreement. Current inventories lack information about the temporal variations of emissions and have a low latency. Inventories are compiled at national scale, but more rarely at regional scale, in spite of climate plans aiming to reduce emissions by regional authorities. Attempts have been proposed by the research community to develop new national scale near real time emission products (Carbon Monitor https://carbonmonitor.org). Near real time emissions downscaled into emission maps can be coupled to global atmospheric tracer transport models 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 climate targets.

Overall aim

Develop methods to provide dynamic near real time estimates at the scale of regions, level 2 administrative level, that is a NUTS2 region in Europe, based on ground-based activity data such as power production, traffic, heating fuel consumption, based on the experience and in collaboration with the international Carbon Monitor Project. These regional emissions time series will be used to produce indicators related to the intensity of sectorial emissions trends, and analyze the impacts of extreme events (socio-economic shocks, climate extremes). Daily regional budgets of emissions will be translated into emission maps used as input of atmospheric CO_2 transport models, possibly and air quality models, to provide an independent evaluation against atmospheric observations.

Requirements

- Programming skills, preferably in Python, Fortran

- Understanding of statistics, big data processing and artificial intelligence

Selection Criteria:

- MSc. (or equivalent engineering diploma) or PhD in data science, or artificial intelligence, or energy related data analysis
- 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 is available from April 26 2021 and will remain open until filled. The expected start of the position is Sep 2021.

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. important 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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