



## A 3-years software engineer position to develop advanced visualisation tools for global greenhouse gas fluxes

**Location:** Laboratoire des Sciences du Climat et de l'Environnement (IPSL-LSCE), France.

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In the context of climate change, there is a crucial need to better quantify and understand the global and regional budgets of greenhouse gases at the surface of the Earth. The Laboratoire des Sciences du Climat et de l'Environnement is opening a three-year position for a software-engineer in the framework of the European FP-7 GEOVIQUA project (QUALity aware VISualisation for the Global Earth Observation System of System ; see more details at <http://www.geoviqua.org/>).

Researchers use different approaches to track the fluxes of greenhouse gases, such as atmospheric concentration measurements, eddy-flux tower observations, instrumented ships and aircrafts, and Earth Observation satellites that provide different data combined within numerical models. The synthesis, comparison, and visualisation of these different greenhouse gas flux maps constitutes a major challenge that will be tackled through the development of a web based international Global Carbon Atlas.

The successful candidate will develop innovative and user-friendly visualisation tools, coupled with a robust user interface, in order to display global maps of greenhouse gas fluxes and pools at the surface of the Earth. The data to be displayed will be contributed by research institutions, agencies, and also include results from initiatives coordinated by the Global Carbon Project (<http://www.globalcarbonproject.org/>).

The main objective of the proposed position is to enhance and further develop an existing greenhouse gas data visualisation platform <http://www.carboscope.eu/> in the context of the GEOVIQUA project. Users, with a specific emphasis on users in scientific and higher-education communities should have access to graphic representations of greenhouse gas flux maps that meet their needs through an attractive and scientifically accurate display.

Specific objectives of the proposed work are i) collecting and helping regularly updates of existing greenhouse gas flux datasets from various institutions, ii) developing, testing and implementing software and processing chains to display these maps in an attractive visual manner, iii) developing quality indices and methods to show uncertainty from multiple data products. The visualisation tools will be developed with the partners of the GEOVIQUA European project, and these tools are expected to become a contribution of a future web-based Global Carbon Atlas led internationally by the Global Carbon Project. **Host institution:**

The Laboratoire des Sciences du Climat et de l'Environnement, (LSCE ; [www.lsce.ipsl.fr](http://www.lsce.ipsl.fr)) part of Institut Pierre Simon Laplace, is a joint research unit of the Commissariat à l'Énergie Atomique (CEA), the Centre National de la Recherche Scientifique (CNRS) and Université de Versailles Saint Quentin-en-Yvelines (UVSQ). The LSCE is located south of Paris in a green area and employs over 250 researchers, engineers and students from 30 different nationalities. Their research mission is to contribute to a better understanding of the interactions between human activities in the Earth System, environment and climate



dynamics at different time scales. LSCE has active collaborations with leading research groups in Europe, US and Asia, and a particular commitment to work for the IPCC.

The successful candidate will join a growing international team of about thirty young researchers, engineers and students working on greenhouse gas data assimilation, and on the quantification and understanding of the natural and anthropogenic fluxes of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O over the globe.

Collaborations required to complete the tasks will involve LSCE and IPSL researchers Philippe Peylin, Frederic Chevallier, Philippe Ciais, in-house software engineers, and external experts. Salary is commensurate with experience, and includes full social and health benefits.

### **Qualifications**

Master's degree or equivalent with a strong computer science or environmental science component is required. The candidate should have a strong expertise in computer science and data processing, in particular graphic software in geosciences. Knowledge/interest in Web-site design and a broad interest in natural sciences more specifically biogeochemistry are desirable. The candidate should be comfortable with using graphic software to process data-streams such as IDL, or FERRET and the UNIX system. Of special relevance is proven ability to be dynamic, open and work collaboratively with a team of scientists.

### **Applications:**

Applications including CV, letter of motivation and the names of two reference persons should be sent to Philippe Peylin ([peylin@lsce.ipsl.fr](mailto:peylin@lsce.ipsl.fr)).