# Dynamic Forest Carbon Maps from High Resolution Satellite Data.

## Young scientist position

The Laboratoire des Sciences du Climat et de l'Environnement (LSCE) and Kayrros (a Paris based EO startup), are looking for a motivated postdoc / young scientist candidate for a joint project focused on ground-breaking methods to quantify forest biomass and biomass changes using very high resolution satellite imagery and artificial intelligence.

### Background

Carbon in forests is both very important to mitigate climate change and to supply wood resources worldwide. Yet, forest carbon stocks are spatially highly heterogeneous across forest types, and are strongly impacted by trees demography, management, and natural disturbances such as fires, insect outbreaks and droughts causing mortality. The problem is that currently no suitable tool exists for a rapid assessment of forest carbon change down to tree level, to better understand growth and mortality. Such a tool is crucial to inform smart management of carbon sequestration from a myriad of projects with highly diverse forestry practices. New very-high-resolution satellites open a window to track carbon sequestration or losses down to individual trees. The new PlanetScope constellation of micro-satellites take a picture of every tree on Earth every day. These images have a very high spatial resolution of 3 meters. Moreover, the daily coverage of images from PlanetScope allows for the first time to take the pulse of carbon in forests in almost near real time. Other imagers offer an even higher spatial resolution.

### Overall aim

Apply high spatial and temporal resolution PlanetScope satellite data to produce annual forest and carbon stock maps for selected regions in Europe. These data will be combined with plot-scale data from inventories and other satellite information such as forest height measurements using spaceborne Lidars. A science breakthrough is expected from artificial intelligence methods pioneered by Kayrros for 3D image analysis and know-how of LSCE on forest carbon dynamics to provide the first very high-resolution maps of forest carbon in several European countries, including tree density, species types and carbon change rates.

### Requirements

- Programming skills, preferably in Python.
- Basic understanding of satellite images and spatial analyses.
- Knowledge on machine learning and deep learning.

**Selection Criteria:**
- PhD in remote sensing / artificial intelligence.
- Demonstrated experience working with imagery data.
- 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 Kayrros and the LSCE can offer you:**

LSCE 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
Location: Laboratoire des Science du Climat et de l'Environnement (https://www.lsce.ipsl.fr) located about 20 km from the heart of Paris in the Orme des Merisiers green area.

Kayrros is an earth observation startup founded in 2016. It now employs about 150 people between Paris, New York, Houston, Singapore, Bangalore and London. Kayrros' mission is to track carbon using satellite imaging and alternative data sets, following oil & gas production, storage, demand and finally emissions and sequestration. The postdoc will involve constant interactions with the Paris team. Much of the R&D is located in offices on rue Lafayette, in the center of Paris.

**Contract duration:** Up to 24 months.

**Starting date:** The position is available from Nov 2020 and will remain open until filled.

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

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

**Contact**

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