

Young scientist position 1 at LSCE and KAYRROS

Very high resolution forest carbon maps in Europe using Planet Lab Data.

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

Job description

Carbon in European forests is very important to mitigate climate change and to supply wood products. Forest carbon stocks are spatially highly heterogeneous across forest types, and are strongly impacted by tree demography, management, and 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.

The position aims to use the new PlanetScope constellation of microsatellites that provide an image of every place on Earth every day with a spatial resolution of 3 meters and some spectral information, then to train Deep Learning models to reproduce canopy height observed either by airborne Lidar or by GEDI spaceborne measurements, and create new continuous high resolution maps of height, then biomass. Stereoscopic reconstruction methods of the canopy volume can also be applied to the Planet data or higher resolution imagery.

In a second step, change in Planet data will be used to reconstruct height and biomass change, such as loss following disturbances

Prototypes of deep learning models are already developed. The candidate will have to adapt and improve them, and apply them over contrasted forested regions, mainly across continental Europe, and possibly for other regions. High profile scientific publications are foreseen by looking at the impact of recent droughts or insect attacks in Europe.

Kayrros will provide access to computing resources and engineering support for fast processing of satellite images with Deep Learning models. There are good options for continuing in research of being hired at Kayrros after the two-years contract.

Requirements

- Programming skills, preferably in Python.
- 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 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. LSCE will provide the employee with the opportunity to work directly on advanced methods with researchers from the LSCE and other institutions

Location: (<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 work with engineers of the Kayrros Paris team.

Duration: Up to 24 months.

Starting date: The position is available from Nov 2021 and will remain open until filled.

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

Apply: Please submit an application package with (1) 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 of at least two references.

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