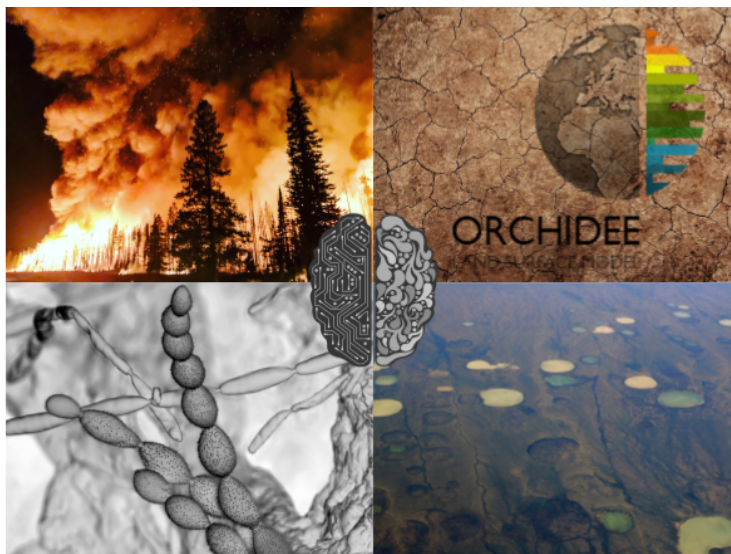# Multiple research positions in modelling key vulnerabilities of terrestrial carbon stocks under climate change

We are seeking seven (7) enthusiastic and highly motivated candidates to work on new representation of carbon loss pathways, leveraging novel observations, theoretical understanding, machine learning tools and integration of processes with land surface models. The topics range from modelling microbial carbon use efficiency, extreme fires, permafrost collapse, and nutrient constraints on tree-based carbon dioxide removal, and near-real time model predictions.

Background

The amount of biological C stored in organic form on Earth is nearly 4,250 GtC. Destabilizing only 10% of this carbon storage would be equivalent to more than 40 years of current anthropogenic CO_2 emissions. Despite this, biological carbon loss and mortality processes are major gaps in our current knowledge of the carbon cycle, which have been ignored or oversimplified in climate models, failing to reproduce the observed complexity of living systems. These issues propagate to assessment of land-based climate mitigation measures like afforestation or biomass plantations, and forecasting of near-real time greenhouse gas fluxes.

The work

The successful candidates will develop & apply the land surface model ORCHIDEE in combination with unique observational dataset and novel machine learning tools within the following international projects CALIPSO funded by Schmidt Futures (starting) and coordinated by LSCE, RESCUE funded by the EU (https://rescue-climate.eu/), and the RECCAP2-NRT project of the European Space Agency (https://www.globalcarbonproject.org/reccap/). Our international collaborators help to facilitate the assimilation of advances in observation, ecological theory and software

engineering. The work will be guided & supported by senior scientists and software engineers at the LSCE.

Requirements:
● PhD degree in environmental sciences, applied mathematics, computer science or equivalent
● Strong interest in numerical modelling and issues related to carbon cycling and global change
● Proficient in written and spoken English
● Experience in programming (python, Fortran, R, etc)

Benefits:
● Exciting and challenging tasks in an open, friendly and multicultural team
● Excellent scientific infrastructure and research network
● Training & support from Cambridge's Institute of Computing for Climate Science (https://iccs.cam.ac.uk/)

The laboratory, salary and duration
LSCE (https://www.lsce.ipsl.fr) is an established, world-class research laboratory, representing a collaboration between CEA, CNRS and the University Paris Saclay (ranking among the best universities worldwide). LSCE hosts approximately 300 researchers, engineers and administrative staff and coordinates the CALIPSO project which gathers researchers from 13 international institutions. The work will provide the employee with the opportunity to work directly on advanced methods with researchers from the LSCE and other institutions world-wide.
Location:Laboratoire des Science du Climat et de l'Environnement (LSCE)
located about 20 km from the heart of Paris in the new research & innovation cluster plateau de Saclay.
Salary: in accordance with national regulations including full social and health benefits
Position duration: 3 years, with extension up to 5 years for some of the positions
Expected start date : starting from Autumn 2023 (open until filled)

How to apply:
Applicants should submit a complete application package by email to
daniel.goll@lsce.ipsl.fr
philippe.ciais@lsce.ipsl.fr
The application package should include (1) a curriculum vitae including most important recent publications, (2) statement of motivation and preferred topic(s), (3) answers to the requirements above (4) names, addresses, phone numbers, and email addresses of at least two references.