

Land Cover CCI Climate Research Post-Doc

Background

The Land Cover CCI project of the European Space Agency (ESA) Climate Change Initiative (CCI) has completed two phases in which land cover products have been successfully developed in collaboration with the climate modelling community. These products included a global time series of land cover from 1992 to 2015, land cover uncertainty estimates, and land cover condition products. They are all available to view and download at <https://maps.elie.ucl.ac.be/CCI/viewer/>. Having recently started a third phase, the Medium Resolution (MR) Land Cover CCI (LC_CCI) aims to build on this success by refining existing products and establishing the value of these products through peer-reviewed publications. Consequently, this post-doc represents an excellent opportunity to build on existing work and publish research with guidance from experts in the land surface and remote sensing communities.

Job Purpose

The position is to be the focal point for climate-related research on the land cover CCI project. The jobholder will work at LSCE (Paris) and the Met Office (Reading or Exeter, UK) to conduct research, and publish results that make the best use of the Land cover CCI products. The selected candidate will be funded by the CCI project leader. Applications will be reviewed until the position is filled.

Job Responsibilities

The post-doc will work with both the JULES and ORCHIDEE land surface models, and will be required to work with satellite data, derived products and land surface models. We have identified several areas of work that will all lead towards scientific publications, with the post-doc likely to lead on at least two papers. These are:

1. Contributions to a MR LC_CCI paper (led by UCL), showing benefits in the climate modelling community from having improved land cover information
2. Refinement of the existing cross-walking table (CWT) in collaboration with UCLouvain to convert land cover classes to plant functional type (PFT) fractions, as developed in the LC_CCI phase 2 project. We know from previous research that CWT uncertainty has a significant impact on uncertainty in PFT fractions and consequently on the carbon, water and energy fluxes in land surface models. This work would involve reducing uncertainty ranges for PFT fractions in each land cover class.
3. Improving urban land cover information for the JULES land surface model. The impact of climate change on urban areas is a key area of research because more than 50% of the world's population now lives in urban areas. With higher resolution, convection permitting, climate modelling now offering opportunities to understand impacts in greater detail, there is a need to use land cover information to better characterise the urban landscape in such models.
4. Merging LC_CCI dataset with other historical reconstructions to create a continuous record of land cover that is accurate for the present day.

Essential Criteria

- A PhD or equivalent experience in natural sciences
- Strong programming experience in python, Fortran, or similar
- Demonstrable understanding of land surface models and how they are run
- Demonstrable understanding of satellite remote sensing and how it is used to generate derived products
- Strong written and spoken English
- Willingness to travel and live for 6-12 months in the UK, France and Belgium

Desirable Criteria

- Experience of satellite data processing
- Previous work experience with either ORCHIDEE, JULES or a similar land surface model
- Experience of working with both the weather, climate and remote sensing communities

Applicants will be asked to send curriculum *vitae* (CV) and a motivation letter as soon as possible and not later than the 15 September 2019 to celine.lamarche@uclouvain.be with object "Application for the CCI MRLC Climate Research Post-Doc".