Environment Centre | Lancaster University

Forest disturbance, tree cover and water provisioning in the 'water towers' of East Africa

Supervisors: Prof. Mariana Rufino, Dr Fernando Espirito-Santo (Lancaster University, UK), Dr Paolo Cerutti (CIFOR, Kenya)

Why is this project interesting?

Montane forest ecosystems deliver valuable ecosystem services including food, feed, fiber, bioenergy and water. These services are necessary for the livelihoods of communities living in neighboring rural areas and urban centers. In Kenya and Uganda these forested mountains are referred to as 'water towers.' The Mau Forest Complex is the main water source for 12 rivers that feed into lakes Victoria, Natron and Turkana. The Mt Elgon forest, shared by Uganda and Kenya, is also an important water catchment, with rivers draining into Lake Turkana and Lake Victoria.

Both water towers face intense anthropogenic pressures: deforestation and conversion to other land uses, charcoal burning, encroachment for settlement and poor land management have undermined the ability of these landscapes to provide critical ecosystem services. Measures aimed at halting deforestation, and restoring tree cover have been instituted in the past decade by a range of stakeholders. However, the effectiveness of these measures in achieving sustainable forest and water management has not yet been evaluated.



This project aims to generate scientific evidence on the state of forest and water resources to be used to identify policy and practice options for improved management. The ultimate goal is to minimize or reverse forest degradation and sustain the delivery of related ecosystem services such as water. **Objective:** To test and implement a citizen science approach as a low-cost strategy for monitoring forest and water resources. Citizen science will be used not only to fill data and information gaps, but also to work collaboratively with communities to generate relevant management-oriented knowledge. This project will study forest disturbance of two tropical forests in Kenya (Western and SW Mau and Mt Elgon), and how this is related to hydrological functioning.

Specifically, the project will address the following aims:
1) To assess different models for citizen science in forest monitoring, 2) to evaluate the effectiveness in citizen science-based monitoring in the Western and SW Mau and in Mt Elgon, to support remote-sensing and field based methods, 3) To use the methods developed to estimate the impact of forest disturbance and tree cover on water provisioning

What's in it for you?

Become an expert in forest monitoring and landscape analysis. You will conduct applied research producing robust scientific evidence urgently needed to support forest policies. You will collect biophysical data that describes forested landscapes in the tropics, and learn how to analyze, interpret, publish and communicate your research to broad audiences. You will become networked with some leading scientists in this discipline, and have the opportunity to interact with policy makers at different levels. You will be exposed to and learn from expertise in social sciences. You will be well-placed to enter the job market at the end of your studies. You will join an exciting

research environment. You will benefit from the research training programmes offered by the Faculty of Science and Technology at Lancaster University, by being part of the large and vibrant multidisciplinary Lancaster Environment Centre, and by becoming a part of the active tropical environmental research conducted at the Centre. You will conduct field work in East Africa, and learn from your supervisor based at the Centre for International Forestry Research (CIFOR) in Kenya.

Who should apply?

We are seeking applications from excellent graduates with a Master's degree. You should have a strong background in the Forestry and Environmental Sciences. You must have demonstrable potential for creative, high-quality PhD research. Ability to link theory to practical work, and statistical knowledge will be important. Knowledge of Remote sensing and GIS are required. Relevant research experience will be beneficial.

The small print

Studentship funding: Full studentship (stipend (£14,296 [tax free]) and tuition fees for 3 years. Excellent candidates from Kenya and Uganda are highly encouraged to apply

Academic Requirements: Master's degree (or equivalent) in Forestry, Earth Environmental Sciences

Deadline for applications: Midnight CET 28 February 2017

Provisional Interview Date: First week of March

Start Date: as soon as possible

For further information or informal discussion about the position, please send your CV and an email to Prof Mariana Rufino (m.rufino1@lancaster.ac.uk) or Dr Fernando Espirito-Santo (f.espirito-santo@lancaster.ac.uk).

Application process: Please upload a completed application form (download from http://www.lancaster.ac.uk/media/lancaster-university/content-assets/documents/lec/pg/LEC_Funded_PhD_Application_Form.docx) outlining your background and suitability for this project and a CV at LEC Postgraduate Research Applications, http://www.lancaster.ac.uk/lec/graduate-school/phd/apply-online/.

You also require two references, please send the reference form (download from http://www.lancaster.ac.uk/media/lancaster-university/content-assets/documents/lec/pg/LEC_Funded_PhD_Reference_Form.docx) to your two referees and ask them to email it to Andy Harrod (lec.pg@lancaster.ac.uk), Postgraduate Research (PGR) Co-ordinator, Lancaster Environment Centre by the deadline.

Due to the limited time between the closing date and the interview date, it is essential that you ensure references are submitted by the closing date or as soon as possible.