Two-year Postdoctoral position in tropical forest ecology and remote sensing

The AMAP lab (Montpellier, France) is seeking to appoint a post-doctoral researcher to work on the spatio-temporal dynamics of Marantaceae forest, a presumably stable state of degraded forest in central Africa.

The postdoc will be based at the main AMAP headquarter in Montpellier, France, but will work in close collaboration with the Forest and Society and ISEM labs, also in Montpellier. He will also participate to fieldwork in the north of the Republic of Congo.

The contract must start on 01/12/2019 at the latest, with a duration of 12 months renewable once. The salary depends on the experience of the postdoctoral researcher (gross monthly salary of 2150 € for juniors (<2 years after phD) and 2500 € for seniors (>2 years after phD)).

####Context

The spatio-temporal dynamics of forest degradation is poorly known in the tropics, despite its importance for understanding global biogeochemical cycles or for the implementation of carbon mitigation strategies. Forest degradation in the tropics has so far been mostly studied from an ecological succession perspective, where successional processes drive the system into a supposedly stable and "mature" state. However, disturbances may also produce deep and lasting modifications of the forest dynamics, pushing the system to bifurcate to an alternative stable state or to an arrested succession.
	Our project focuses on a system that probably corresponds to such a stable degraded forest state in central Africa, the Marantaceae forests. These forests exhibit a very low tree density, almost no tree regeneration, a very low floristic diversity and an impenetrable dense understory composed of giant herbs (> 2 m) mostly belonging to the Marantaceae (arrowroot) and Zingiberaceae (ginger) families. They currently cover very large areas in central Africa where they have been little explored, though representing a critical issue for forest managers. Some previous unpublished works suggest that these forests are extremely stable in time, some likely resulting from anthropogenic disturbances dated from more than 1000 years BP. Besides human disturbances, some Marantaceae forests established following extreme dry events. Thus, under the on-going conjunction of climate change and increasing anthropogenic disturbances, Marantaceae forests are expected to expand at the expense of dense mature forests with important consequences for forest biodiversity, carbon sequestration and other ecosystem services.

####Job description

The main objective of this postdoctoral project is to study the spatio-temporal dynamics of the central African Marantaceae forests in order to assess their long-term stability and dynamics. Our overall approach consists in combining local field experiments, remote sensing analyses and historical ecology approaches. The post-doctoral fellow is intended to conduct an original study from already available data including i) field inventories; ii) old (1950s) aerial photographs; iii) very high resolution satelitte images and; iv) multiple UAV acquisitions with passive images and LiDAR measurements. The main idea is to use time series of remote sensing data and multiple field censuses to test whether Marantaceae forests naturally increase in undisturbed (protected areas) and in disturbed (logged) forests and to assess whether they constitute stable systems (i.e. whether shifts from Marantaceae forests to closed-canopy forests can be observed or not).

The expected results will both bring new insights on the conditions of stability of coexisting forest states, which so far have remained elusive, and have strong implications for forest management and conservation in central Africa.

The team
Our group is composed of c. 10 permanent researchers and PhD students working in tropical forest ecology and having extended field experience in Central African forests (see http://amap.cirad.fr/en/th11.php and http://amap.cirad.fr/en/th9.php). The team also have a strong experience in remote sensing of forest structure, including passive and active sensors. We have our own integrated UAV systems with multispectral cameras and a LiDAR sensor (see e.g. https://www.youtube.com/watch?v=RxGAXC4cefQ).

Qualifications
We are seeking a post-doctoral researcher (PhD required) in ecology, with a background in remote sensing, or a researcher in remote sensing, with a background on forest systems. The postdoc should have strong data analysis skills (particularly in spatial analyses) and must be fluent in an interpreted language (preferentially R). Good writing skills in english and publication records are required. The candidate must be able to work in a collaborative way.

Applications
Applicants should submit their CV with publication list and statement of research interest to both recrutement.dr-occitanie@ird.fr and maxime.rejou@ird.fr before the 1st of October 2019. Questions should be addressed to maxime.rejou@ird.fr. Interviews will be conducted around mid-october and the final decision will be communicated no later than the 20th of October 2019. The targeted starting date is 1st of December 2019.