

Post-doctoral position at Institut Agro (Rennes, France)

Evolution of soil-based ecosystem services in response to changes in climate, land use and land management

Duration: 23 months

Starting: At the earliest convenience and before October 2022

Location: Rennes, France

Employer: Institut Agro Rennes-Angers

Main contacts: Christian Walter, christian.walter@agrocampus-ouest.fr;

UMR SAS: https://www6.rennes.inrae.fr/umrsas_eng/

David Montagne, david.montagne@agroparistech.fr

UMR Ecosys: https://www6.versailles-grignon.inrae.fr/ecosys_eng/

Context: At the interface between lithosphere, hydrosphere, biosphere and atmosphere, soils play a crucial role in the sustainable delivery of a large range of provisioning (food, water, energy, etc.), regulating (water and air quality, detoxification,...) or cultural ecosystem services and ultimately on human well-being. When such linkages are increasingly recognised, the practical implementation of that awareness into strategies to improve soil management for the delivery of multiple ecosystem services is still incomplete for various reasons. First, soil-based ecosystem services are often not recognized, but confused with those provided by land cover resulting in difficulties for translating the management of ecosystem services into soil management. In addition, medium to long-term trajectories in the delivery of soil-based ecosystem services according to climate, land-uses or land-management changes are poorly known particularly when it is not question of individual services but of bundles of services and of their relationships. In this context, the SERENA (Soil Ecosystem seRvices and soil threats modElling aNd mApping) aims at assessing, analysing and mapping soil ecosystem services bundles across European agricultural landscapes, highlighting how soil threats affects the supply of services bundles through adoption of a set of site-specific reference thresholds.

Work description: The post-doc will assess changes in bundles of soil-based ecosystem services according to scenarios of climate, land-use and land-management evolutions in well documented territories. More specifically, changes in bundles of soil-based ecosystem services will be assessed in two contrasted sites, an intensive livestock territory in western France (ORE AgrHys in Naizin, Brittany) as a function of climate and land-management changes and a peri-urban crop farming territory (Plateau of Saclay, Paris) as a function of urban sprawling.

The objective of this post-doc is twofold:

1. Contribute to the development of a harmonized methodology to evaluate bundles of soil-based ecosystem services;
2. Apply the methodology to assess changes in bundles of soil-based ecosystem services according to scenarios including climate, land use and land management changes;

The work will be developed with European research partners of the SERENA project supported by the EJP Soil program (<https://ejpsoil.eu/>)

Skills of candidates: Applicants must hold a PhD in soil science, agronomy, data science or related field and are expected to have experience in statistics and modelling in environmental sciences. They must have a strong interest for spatiotemporal modelling of soils and ecosystems. They must have skills in data handling and scientific programming. Proficiency in spoken/written English is mandatory, knowledge of French would be an advantage.

Conditions: Starting is expected at the earliest convenience and before October 2022. Remuneration will be according to Institut Agro rules, and will depend on the candidate's experience. The monthly salary will range between 2210 and 2310 euros depending on experience. The post-doc will be based in Rennes, with several trips to Paris and conferences.

To apply: Please send an email to Christian Walter (christian.walter@agrocampus-ouest.fr) and David Montagne (david.montagne@agroparistech.fr). Applications should include a CV, a statement of research interests and contact details of academic referees in electronic form.

Application deadline: before May 31th 2022