Postdoc position - remote sensing and fluvial landscape (18/24 month)

Université Rennes 2 – LETG

Project «Large-Scale indicators of fluvial landscape using multisensor and multitemporal approaches »

While the number of actions to restore river systems is increasing considerably, there is no agreement on the operational tools to measure the success of these measures. Historically, monitoring and evaluation of the response of river systems to management measures have been based on ad hoc in situ approaches and biological indicators. Recently, more systemic monitoring approaches have been developed with indicators based on the characterization of river landscapes. However, in order to become fully operational, these systemic landscape approaches still suffer from certain limitations: developed in a limited number of geographical contexts, fairly poor in information, etc. The objective of this proposal is to develop remote sensing methods allowing the production of more efficient indicators for monitoring and evaluating river systems by focusing on 2 main axes.

Axis 1: Multi-source approach. The main advances in remote sensing applied to river systems have so far been achieved by single-source approaches: aerial images, LiDAR data, etc. As part of this project, it will analyze the contribution of a multi-source approach including very high spatial resolution data acquired in the optical, radar and thermal fields.

Axis 2: Multi-temporal approach. The multiplication of acquisitions and the development of methods for analysing large datasets allow the regular development of multi-temporal approaches and an ever-increasing contribution to the analysis of continental surfaces. This evolution considerably enriches traditional approaches, but requires specific methodological approaches. Within the framework of this project, it will be necessary to develop these approaches to data processing, in particular machine learning approaches.

In order to analyse a maximum diversity of data sources and use the richest possible multi-temporal data sets, the work will focus on study areas already monitored in different scientific programs: the Selune catchment area, which is currently the subject of a vast project to monitor the effects of ecological restoration by removing dams involving many scientific teams (particularly in Rennes), and the Atelier Armorique Zone (CNES Kalideos "Bretagne" site), which has a very relevant rural/urban landscape gradient.

Profile and application

- A PhD with a dual competence in remote sensing and river biogeomorphology. Strong knowledge in image analysis, geomatics and programming is expected. Knowledge and experience in the use of multiple data sources is expected.
- Eligibility condition: having spent at least 18 months outside France since May 1, 2016.
- Duration **:** 18 to 24 months (start early 2020)
- Location : Rennes (https://international.univ-rennes2.fr/about/get-know-rennes)
- Please send your application (CV, letter of interest including a short description of your envisioned research project, list of publications and two names of references) until November 21th 2019 to simon.dufour@univ-rennes2.fr
- A question: contact also simon.dufour@univ-rennes2.fr