

PhD Fellowship in advanced LIDAR exploitation for mapping tree and hedges in agricultural landscapes

Earth and Life Institute - Geomatics, UCLouvain (Louvain-la-Neuve, Belgium)

The Research lab in Geomatics of the Earth and Life Institute (UCLouvain) invites applications for a 4-year fully funded PhD fellowship on the development and the validation of remote sensing methods to exploit a large full waveform lidar dataset covering the whole Wallonia (16,000 km², Southern region of Belgium).

Context

Wallonia acquired a wall-to-wall LIDAR dataset providing six echoes per square meter and the full waveform signal. This unique LIDAR dataset is instrumental to derive the runoff directions in order to prevent soil erosion and flooding events. Furthermore, hedges for instance are critical for water surface management and flooding prevention by limiting the runoff and increasing the water infiltration. Similarly, these landscape elements define the habitat suitability for biodiversity and enhance the functional ecological connectivity.

The outcomes of this research are expected to impact the current runoff modeling and the water flow prediction which are investigated by our project's partner from Université de Liège (GemblouxAgroBiotech). The whole research activity is carried out with the financial support of the Service Public de Wallonie to better manage its territory.

Objective and method

The research aims to develop methods to map and to characterize most of the isolated and linear elements of vegetation like tree alignments, hedges, isolated trees, small forest patches, etc, much present the various agricultural landscapes across the whole Wallonia. The processing outputs will be quantitatively validated by field measurements. These landscape elements play a very significant role in terms of water management and biodiversity.

Required qualification and skills

We welcome applications from junior scientists having a MSc degree in bioengineering, geomatics, agriculture engineering, environmental sciences or related scientific discipline. Successful applicants should be willing to work as part of a multidisciplinary team, and have excellent written and oral communication skills in English and at least a basic understanding of French. LIDAR processing experience, advanced satellite image processing, and Python (or C++) programming are assets.

Interested ?

The application should be sent in one single PDF including a motivation letter, a curriculum vitae and contact information for two referees. **Review of applications will begin from March 20, 2024 and continue until the position is filled.** Applications are accepted through email to Brigitte.Bedoret@uclouvain.be (with cc to Pr. Pierre.Defourny@uclouvain.be) (and indicating 'PhD student HYDRAXES' as subject).

The Institution

The candidate will be hosted in the Geomatics Research Lab of the Earth and Life Institute of UCLouvain (Louvain-la-Neuve, Belgium).

Supervision

The candidate will be co-supervised by

Pr. Pierre Defourny, Earth and Life Institute, Environmental Sciences, Geomatics Research Lab

Dr. Julien Radoux, Earth and Life Institute, Environmental Sciences, Geomatics Research Lab