

Postdoctoral researcher position in Improvement of surface-atmosphere flux estimation, ULiège (Belgium)

The TERRA Teaching and Research Center of the University of Liège invites applications for a 1.5 to 3-year (see "Eligibility") fully funded postdoctoral fellowship for the investigation on surface-atmosphere flux estimation improvement on eddy-covariance flux-tower stations.

Context

The research will be conducted in the framework of the AGROFLUX project ("Improving the agrosystem GHG budget through data-assimilation of surface fluxes") funded by the Belgian Science Policy as part of the BRAIN2.0 program. This program supports the implementation of Belgian research action through interdisciplinary networks, and is dedicated to Challenges and knowledge of the living and non-living world. AGROFLUX is a partnership between ULiège, micro-meteorologists from the Royal Belgian Meteorological Institute and fluid dynamicists from the Catholic University of Louvain-La-Neuve and Catholic University of Leuven.

AGROFLUX aims at improving the GHG and energy surface flux estimations provided by eddy-covariance systems at local scale, and potentially biased in specific scenarios such as night-time stable or day-time convective atmospheric conditions in heterogeneous landscapes.

To do so, AGROFLUX will combine (i) eddy covariance GHG and energy fluxes at the ecosystem-atmosphere interface (coming from the ICOS station of Lonzeé), (ii) additional tower-based, Wind Doppler LIDAR and Unmanned Aerial Vehicle-based wind, temperature and CO₂/H₂O concentration measurements performed at Lonzeé station (with a particular attention to the observability of the targeted quantities), (iii) Large Eddy Simulations (LES) for the atmospheric boundary layer that covers the scales going from ABL to the above-mentioned instruments which will be combined and (iv) the development of a computationally affordable Eulerian model, using an advection diffusion formulation, with a non-isotropic eddy diffusivity turbulence closure that is trained using experimental and LES data..

The specific tasks of the postdoc within the project are the:

- Collection of eddy-covariance and profile tower-based measurements beyond standard ICOS measurements and facilitation of LIDAR and UAV measurements by project partners during the field campaigns.
- Scientific exploitation of the database produced by the different instruments and by the LES for definition of improved eddy-covariance flux filtering criteria
- Participation to the scientific exploitation of the Eulerian inversion model for verification, validation and application of the flux estimations
- Publication of the results of these scientific exploitations in peer review journals.
- Participation to the project management and communication/dissemination activities

Qualifications and skills

We accept applications from scientists having a PhD degree in atmospheric or natural sciences, with a specific expertise on transport processes at work in the terrestrial surface boundary-layer. Experience with eddy-covariance ecosystem flux research will be an asset. We look for a highly motivated and pro-active researcher with excellent written and oral communication skills in English, an ability with handling of large datasets (e.g. solid experience in scientific programming is mandatory). The candidate must have the capacity to work efficiently in interaction with other team members.

Eligibility

Two kinds of candidature will be considered.

From the applicants that have obtained their PhD at most 10 years before the starting date of the fellowship and not have resided or exercised their main activity (employment, studies, etc.) in Belgium for more than 24 months during the last 3 years immediately preceding the start date of the fellowship. For these applicants, the duration of the fellowship will be 3 years.

For the other PhDs, the duration of the fellowship will only be 1.5 year.

Salary conditions

The net monthly salary is around 3000 €, to be refined depending on the personal status.

The institution and the working environment

The candidate will be hosted at the BIODYNE research axis of ULiège on the Gembloux Agro-Bio Tech Faculty campus located at Gembloux, Belgium, 40 km South of Brussels. Additional information regarding ULiège and GxABT can be found at <https://www.uliege.be> and <https://www.gembloux.uliege.be>. The candidate will work under the supervision of [Prof. Bernard Heinesch](#) and [Prof. Bernard Longdoz](#).

Interested?

The application should be sent in one single PDF file including a motivation letter, a curriculum vitae (mentioning your study grades and publication), and the names and contact details of two referees. Review of applications will begin on **May 15, 2024**. The ideal start date is September 1 (negotiable). Applications or questions should be sent to both bernard.heinesch@uliege.be and bernard.longdoz@uliege.be (and indicating 'Postdoc Fellowship AGROFLUX' as subject).