

## PH.D. POSITION IN HYDROLOGY

The Environmental Sciences department of the Earth and Life Institute is offering a PhD fellowship for a period of up to 4 years to work on the integration of hydrological connectivity functions at the subgrid scale in distributed hydrological models.

**Subject** : “Improving hydrological models by integrating roughness-related functional connectivity functions at the subgrid scale (ConSUM)”

### Research project summary

Depending on its amplitude and orientation, surface roughness (random roughness, rills, gullies, oriented roughness, ditches) may facilitate or impede water transfers at the watershed scale. However, explicit consideration of surface roughness within a hydrological model is virtually impossible because it would require working at very high resolution (cm-dm) which is too costly in terms of memory and computation time. The objective of this project is to develop and implement effective approaches in hydrological models whereby roughness-related hydrological connectivity is taken into account at the subgrid scale but without having to resort to an explicit description of the spatial heterogeneity of the processes ("Subgrid hydrological connectivity modeling"). The work builds upon the works of Antoine et al. (2009, 2011) and Peñuela et al. (2013, 2015, 2016) regarding the relative surface connection function.

### The Institution

The candidate will be hosted in the Environmental Sciences department of the Earth and Life Institute (ELI) of the Université catholique de Louvain in Louvain-la-Neuve, Belgium (<https://uclouvain.be/en/research-institutes/eli>). The Environmental sciences section of ELI offers a dynamic, multi-cultural and multi-disciplinary research environment dealing with various topics related to agriculture and the environment (<https://uclouvain.be/en/research-institutes/eli/eli>). Additional information regarding UCL can be found at <http://www.uclouvain.be>. Collaboration with research groups in France or elsewhere will be encouraged.

### Applications

The successful candidate should hold a M.Sc. degree in hydrology, earth or environmental sciences (or related disciplines). Experience with hydrological modelling and an engineering background will be an advantage.

The candidate will be attributed a renewable fellowship for an initial duration of 15 months. In addition, he/she will benefit from social security coverage.

Candidates should send by **August 20, 2017** – preferably by email - a letter of intent, the name and address of 2 referees, a curriculum vitae and a copy of the diploma and grades obtained for their university degrees to:

Prof. C. Bielders and M. Javaux

ELI / GERU

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