Postdoctoral position in critical zone modelling within the OZCAR, French Critical Zone Observatory network

Title: Modelling of the Critical Zone within the French Critical Zone Observatories network

Duration of the contract: 1 year (renewable to 2 years)

Starting date of the contract: April 2019

Gross salary: 2400-2600€ per month, according to qualification

Location: The supervision of the work will be performed by the leaders of OZCAR WP2 "Data-model interface" and the postdoc will be located either in Paris, either in Lyon, according to the candidate profile.

Context:

The French OZCAR (Critical Zone Observatories- Application and Research) Research Infrastructure gathers observatories monitoring various compartments of the critical zone and encompass disciplines such as hydrology, hydrogeology, cryosphere studies, land-surface-atmosphere exchanges, peatlands. It gathers several hundreds of researchers, engineers and technicians sampling very instrumented sites. Modelling is a suitable tool to check the consistency of the data and to extend the knowledge acquired in the experimental sites to other sites. It also offers a suitable background for interdisciplinary thinking and the coupling of various processes, studied independently by various disciplines. It also allows comparative studies between instrumented sites in different geological and hydro-climatic contexts.

Postdoctoral topic

The research will address the following scientific question: using hydrological modelling and geochemistry and the observations available in the OZCAR observatories, can we identify a signature of climate, geology and/or land use, in the partitioning of water flow into surface, sub-surface and base flow?

Expected tasks of the candidate:

- Select the catchments that will be considered in the study: they will preferably be small catchments that can be considered homogeneous in terms of geology, climate and for which geochemical data are available, in order to assess the relevance of the modelled water flow components;
- Set up the same model on the various catchments. The chosen model should allow the computation of hydrological water balances and the decomposition of water flow in its components (surface, sub-surface, base flow), use a physically-based and distributed representation of hydrological processes. According to the skills of the applicant, the chosen model will be mastered by the applicant or proposed by the supervision team;
- Identification of hydrological signatures and relevant space-time scales to perform an inter-basin comparison;
- Writing of a scientific paper summarizing the main findings.

Required qualification

- PhD degree in hydrology, with knowledge of hydrological processes and their modelling (preferably physically-based models);
- Experience and mastering of one or several hydrological modelling tools, that fulfil the above criteria and that can be deployed on several catchments quite easily;
- Knowledge in data analysis, statistics, computation of balances and model evaluation;
- Preferably some knowledge in geochemistry;
- Communication and listening ability to work in a team;
- Ability to work in an interdisciplinary context;
- Verbal and written English communication skills, and preferably fluent in French.

To apply

Send your CV and a motivation letter by **January 31 2019** to:

Isabelle Braud, isabelle.braud@irstea.fr 04 72 20 87 78

Florence Habets, habets@biotite.ens.fr

Sandrine Anquetin, sandrine.anquetin@univ-grenoble-alpes.fr , 04 56 52 09 41