RESEARCHER/POSTDOC IN HYDROGEOLOGY OFFER (University of Liège)

A position is available in the hydrogeology group of the University of Liège - Belgium (Urban & Environmental Engineering Research Unit) on the topic 'Groundwater modelling linked to the Einstein Telescope (ET) project' in the Euregio Meuse-Rhine. The position is available now and is funded by the Interreg EMR E-TEST Project that will end on 31 December 2023 (https://www.etest-emr.eu).

The Einstein Telescope is an advanced gravitational-wave observatory, currently in the preparation stage. Its infrastructure will be buried 300 meters below the surface to reduce human-, wind- and ground-induced vibrations, movements and gravity noise. The hydrogeology group of the Urban & Environmental Engineering Research Unit (University of Liege, www.uee.uliege.be) is in charge of building a regional groundwater model and local models to find an optimal positioning of the ET with respect to hydrogeological conditions, to calculate groundwater inflow for construction and exploitation phases, and to assess the impact of future ET on local aquifers and to estimate the geothermal potential.

A 3D cross-border regional hydrogeological model has been built in a finite-element framework (Feflow©, see Figure below) based on available data. It has been calibrated using a sensitivity analysis in steady state conditions. This model must be used and developed for simulations of local scenarios involving refinement of the topography, introduction of local features (e.g., faults zones based on geophysical data) with higher or lower K, and introduction of ET infrastructures (e.g., caverns + tunnels). The post-doc research will be carried out within an international consortium of researchers and in close collaboration with the applied geophysics group at the University of Liège. The post-doc objectives are both scientifically challenging (scale issues, 3D complex fractured rocks hydrogeology, complex geometry of the future underground ET infrastructures sensitivity analysis, inverse modeling) and is essential for the Einstein Telescope project.

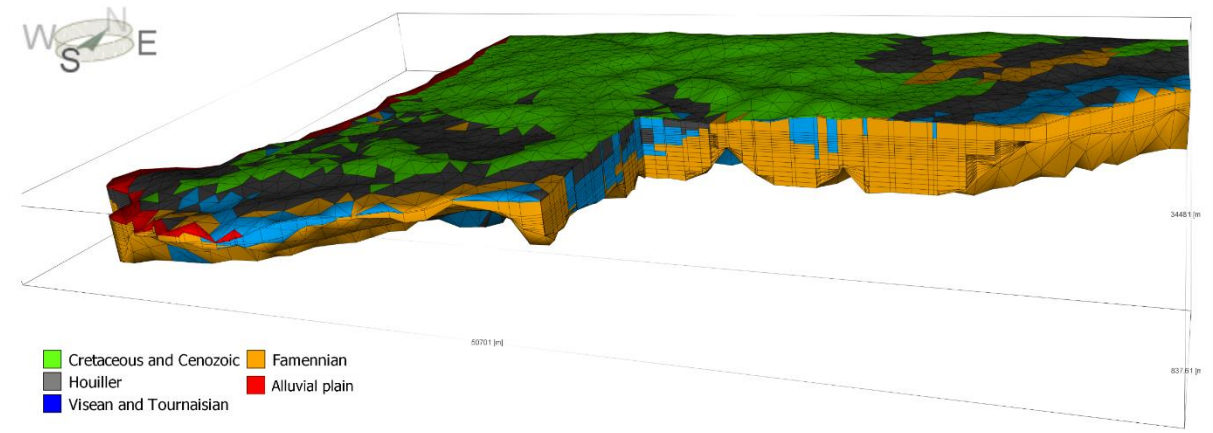

Figure: Finite-element model of the investigated area in the EMR region for the Einstein Telescope.

Required skills

- Groundwater modeling experience in complex 3D geological/hydrogeological conditions
- Experience with Feflow© and a geological modeling software such as Leapfrog© would be an asset

- Programming skills
- Team spirit

Contacts and more information

The E-TEST team at ULiège is composed of

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Frédéric Nguyen f.nguyen@uliege.be

Yannick Forth (PhD candidate in hydrogeophysics)

F. Amann, F. Bonsignorio, T. Bulik, H. J. Bulten, S. Cuccuru, A. Dassargues, R. DeSalvo et al. "Site-selection criteria for the Einstein Telescope." Review of Scientific Instruments, 91 (09 September 2020): 094504. doi:10.1063/5.0018414 https://hdl.handle.net/2268/250779

The candidates should send their CV together with a letter of motivation until the 1st november to alain.dassargues@uliege.be, p.orban@uliege.be and f.nguyen@uliege.be

The position is open from the 1st of october and could start as early as possible.

Applicants must have a PhD degree in hydrogeology or five years of experience in the field of groundwater modeling using Feflow© and a strong scientific background.