MSc in Water and Sustainable Development
MODULE

Hydrological modelling - Groundwater and surface water systems
Groundwater and surface water flow systems can be modelled in order to get a better insight into their dynamics and interactions, as well as into the impact from abstractions and other human activities. In addition, these tools are very powerful to assess management strategies and scenarios of socio-economic and/or climate change. In this module the following common scientific methods of system simulations are taught: concepts, scales, and model classifications, model calibration, sensitivity analysis, model evaluation, and modelling uncertainties. In the second part of the module, students deepen their knowledge either in an application of a surface water catchment model or a groundwater model. They thereby learn to describe the structure of physically-based hydrological models and the methods used by these models to represent the processes and simulate the behaviour of distinct hydrological phenomena. Students will further learn to translate a given hydrological problem and conceptual model into a numerical model definition using available data and parametrization. Subsequent crucial steps to master in the modelling process are calibration, validation and overall assessment of model performance. The students will ultimately be able to independently carry out a hydrological modelling study and report the results.