



## **Complexity of groundwater models in catchment hydrological models**

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In catchment hydrological models, groundwater is usually modeled very simple: it is conceptualized as a linear reservoir that gets the water from the upper unsaturated zone reservoir and releases water to the river system as baseflow. The baseflow is only a minor component of the total river flow and groundwater reservoir parameters are therefore difficult to be inversely estimated by means of river flow data only. In addition, the modelled values of the absolute height of the water filling the groundwater reservoir - in other words the groundwater levels - are of limited meaning due to coarse or no spatial resolution of groundwater and due to the fact that only river flow data are used for the calibration. The talk focuses on the question: Which complexity in terms of model complexity and model resolution is necessary to characterize groundwater processes and groundwater responses adequately in distributed catchment hydrological models?

Starting from a spatially distributed catchment hydrological model with a groundwater compartment that is conceptualized as a linear reservoir we stepwise increase the groundwater model complexity and its spatial resolution to investigate which resolution, which complexity and which data are needed to reproduce baseflow and groundwater level data adequately.