



Experiences with groundwater modelling within the framework of an integrated regional model for the basin-wide management of water resources

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The objective of the EU-Research project RIVERTWIN, which is part of the Sixth Framework Programme of the European Union, is the development of the integrated regional model MOSDEW for the strategic planning of water resources in twinned basins. MOSDEW is designed to help decision-makers to assess the impacts of economic and technological development and the effects of global climate and land use changes on the longterm availability and quality of water resources.

By communicating with the potential MOSDEW users in the State of Baden-Württemberg the integrated regional model is first developed and applied in the Neckar Catchment. The evolved strategies for sustainable water management will contribute to the Neckar basin management plan to be developed according to the European Water Framework Directive. Later on the integrated regional model will be transferred to the Ouémé basin in Bénin and the Chirchik basin in Uzbekistan. Those basins cover similar areas in size to the Neckar Catchment, but they have different general conditions.

One component of the integrated regional model is the groundwater model with which the piezometric level is calculated and the baseflow and the amount of sustainably available fresh water are quantified. Due to the existing complex hydrogeology in the Neckar Catchment (layered, fractured aquifers, occurrence of saline and karstic formations) the groundwater system there has to be treated differentially. Hence, the application of a three dimensional distributed groundwater flow model is required. The discretisation of a distributed model on the regional scale is kept rather coarse due to the data density and computing power limits. This results in a significant simplification

of the groundwater system and affects the quality of the results.

This contribution presents the conceptual model of the regional groundwater system in the Neckar Catchment. The problems encountered during the implementation of the complex groundwater system in the coarse mathematical model are discussed. Using the first simulations the quality of the model results is evaluated.