

A web platform for integrated surface water - groundwater modeling and data management

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Model-based decision support systems are considered to be reliable and time-efficient tools for resources management in various hydrology related fields. However, searching and acquisition of the required data, preparation of the data sets for simulations as well as post-processing, visualization and publishing of the simulations results often requires significantly more work and time than performing the modeling itself. The purpose of the developed software is to combine data storage facilities, data processing instruments and modeling tools in a single platform which potentially can reduce time required for performing simulations, hence decision making. The system is developed within the INOWAS (Innovative Web Based Decision Support System for Water Sustainability under a Changing Climate) project. The platform integrates spatially distributed catchment scale rainfall – runoff, infiltration and groundwater flow models with data storage, processing and visualization tools. The concept is implemented in a form of a web-GIS application and is build based on free and open source components, including the PostgreSQL database management system, Python programming language for modeling purposes, Mapserver for visualization and publishing the data, Openlayers for building the user interface and others. Configuration of the system allows performing data input, storage, pre- and post-processing and visualization in a single not disturbed workflow. In addition, realization of the decision support system in the form of a web service provides an opportunity to easily retrieve and share data sets as well as results of simulations over the internet, which gives significant advantages for collaborative work on the projects and is able to significantly increase usability of the decision support system.