



JAMS - a software platform for modular hydrological modelling

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Current challenges of understanding and assessing the impacts of climate and land use changes on environmental systems demand for an ever-increasing integration of data and process knowledge in corresponding simulation models. Software frameworks that allow for a seamless creation of integrated models based on less complex components (domain models, process simulation routines) have therefore gained increasing attention during the last decade.

JAMS is an Open-Source software framework that has been especially designed to cope with the challenges of eco-hydrological modelling. This is reflected by (i) its flexible approach for representing time and space, (ii) a strong separation of process simulation components from the declarative description of more complex models using domain specific XML, (iii) powerful analysis and visualization functions for spatial and temporal input and output data, and (iv) parameter optimization and uncertainty analysis functions commonly used in environmental modelling. Based on JAMS, different hydrological and nutrient-transport simulation models were implemented and successfully applied during the last years.

We will present the JAMS core concepts and give an overview of models, simulation components and support tools available for that framework. Sample applications will be used to underline the advantages of component-based model designs and to show how JAMS can be used to address the challenges of integrated hydrological modelling.