



Simulation of the water balance in the Elbe River basin using weather forecast data – A comparison of the hydrological models SWIM and HBV

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The ecohydrological model SWIM (Soil and Water Integrated Model) is applied to the German part of the Elbe River basin since 2012 on a semi-operational basis. In this context, semi-operational means that soil water balance, plant growth and runoff is simulated continuously on different spatial scales, using measured meteorological data of the previous day. In order to extend the prediction range and to include the Czech part of the river basin, we implement weather forecast data from the Global Forecast System (GFS), which is available for the years 2012–2014. At the same time we conduct simulations with the hydrological model HBV using the same input data. The consistency of the data allows a comparison of the results, which fosters the evaluation of the models and helps to improve their deficits. Initially, the calibration of both models is carried out with weather data of the last decade from the German weather service (DWD). Different parameter sets are tested and compared; uncertainties of the simulations can be shown. The validity of the results indicates the strength and weaknesses of each model and therefore determines its predictive capacity. A successful calibration and validation of the models is the basis for simulations with GFS-data of the previous two years and the prospective use of the model system for short (day)- to medium-term (week) predictions of high- and low water, of the soil water balance and of the agricultural plant growth in the Elbe river basin.