



Implementation of the SWIM model at the meso-scale basin: the Malse case study

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Understanding the role of global changes in a runoff formation enables to take measures against the negative effects on hydrology, agricultural production, vegetation, water quality and water management. Previous research in hydrological modelling focused on climate and land use changes revealed the necessity to use the models including spatial structuring of the basins. The hydrological model SWIM (Soil and Water Integrated Model) is a representative of such a spatial description of the basin. It has been developed with the aim to provide a comprehensive GIS-based tool for hydrological and water quality modeling in the mesoscale and large river basins (in the range from 100 to 10 000 km²). This model can be parametrised using regionally available information and combines a spatial disaggregation of the basin into the subbasin and hydrotops with interpolation of the meteorological time series. The Malse basin in the South Bohemia region was selected as a testing area for an application of the SWIM model. The reason consists in previous implementation of two other different rainfall-runoff models (conceptual lumped Sacramento SAC-SMA and HSPF) at the Malse basin and hence in opportunity to compare the simulation results and sensitivity of the three models. The basin is 490 km² large. It is located on the Czech borders and partly stretches into Austria. The Novohradske Mts. in the upper part of this basin represent very densely forested area with negligible anthropogenic influence.

Acknowledgement: The study was supported by the research grant GA AS CR KJB300600602 and the Institutional Research Plan AV0Z20600510.