

**THE INFLUENCE OF THE SPATIAL STRUCTURE OF SOIL
PROPERTIES ON WATER BALANCE MODELLING IN A MICROSCALE
CATCHMENT**

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The scale dependent spatial variation of soil properties has a major impact on hydrologic processes. Distributed hydrological models are very sensitive concerning these soil physical parameters while their uncertainty is high and often unknown.

To investigate the influence of the spatial structure of soil properties in a micro-scale catchment (0.28 km²) a model study with a three-dimensional hydrological model for the water flow in variably-saturated media is carried out. In a first step a space continuous model of soil textural properties and soil depth is created from about 70 point measurements. Parameters of the morphometric structure as covariables support the spatial prediction with a geostatistic approach. Finally pedotransfer functions are used to derive soil physical properties from soil texture.

The analysis of model results allows the quantification of the impact of different methods of spatial aggregation of soil properties. Several types of spatial discretization (homogenous, choropleth map, random, stochastic process) are tested and exhibit the relevance of the spatial structure for water transport.