Assessment the spatial-temporal variation of soil moisture in the Bibischbach watershed, Grand-duchy of Luxembourg

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Abstract

In the present work, an updated version of the Water and Energy Transfer between Soil, Plants and Atmosphere (WetSpa) model is introduced and the performance of the model is evaluated for simulated discharge and soil moisture content in the experimental Bibeschbach watershed, Grand Duchy of Luxembourg. The model is applied and validated for 1 year hourly data of river flow and soil moisture content. Discharge data at the outlet are used for model calibration and in situ soil moisture data recorded at 11 monitoring sites are used for validation of the model performance. The model predictions agree well with the observations, and it can be concluded that the WetSpa model is able to produce realistic predictions of surface soil moisture over a watershed.

Keywords: WetSpa, surface soil moisture, distributed hydrologic modelling, Bibeschbach