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- Recent Papers
- Volumes
- Library Search
- Title and Author Search

RSS Feeds

General Information

Submission

Review

Production

Subscription



▣ Volumes ▣ Contents of Volume 21

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## Comparing model sensitivities of different landscapes using the ecohydrological SWAT model

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**Abstract.** Lowland areas are characterised by specific properties, such as flat topography, low hydraulic gradients, shallow groundwater, and high potential for water retention in peatland and lakes. The investigated mesoscale catchments Stör, Treene and Kielstau are located in Northern Germany within lowland areas. Covering areas from 50 to 517 km<sup>2</sup>, these rural catchments have sandy, loamy and peaty soils and are drained in high fraction by open ditches and tile drainage. Using the river basin model SWAT, sensitivity analyses were carried out through an automatic routine that is based on the Latin-Hypercube (LH) and a One-factor-At-a-Time (OAT) sampling. The objective of this study is to investigate how specific landscape features influence the model behaviour. There are two research questions: a) What are the most sensitive parameters in the studied lowland catchments? b) What differences occur between these landscape features in comparison to mountainous or low mountain range catchments?

The results show that groundwater and soil parameters were found to be most sensitive in the studied lowland catchments and they turned out to be the most influential factors on simulated water discharge. The most sensitive parameter was the threshold water level in shallow aquifer for baseflow (GWQMN). In contrast, many studies of mountainous or low mountain range catchments show that the most sensitive parameters were the surface runoff parameters.

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