



The impact of different landuse data sets on the results of conceptual hydrological catchment models - a case study from the Uecker catchment in North-East Germany

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The spatial distribution and the types of forests, meadows, arable land, water bodies and settlements in a catchment influence the spatial and temporal dynamics of soil moisture, evapotranspiration and ground water recharge as well as the generation of surface runoff and discharge. Therefore, information about the types and the spatial distribution of the landuse and vegetation cover in a catchment is an essential part of the different digital input data needed for the application of hydrological catchment models. In a regional case study dealing with the Uecker catchment with an area of about 2400 km², four different digital data sets of the landuse distribution were available. This landuse data sets consist of a landuse map obtained from the federal german mapping procedure "Biotoptypenkartierung", the Corine2000-landuse cover, a landuse map obtained from the federal german mapping procedure ATKIS and a landuse cover obtained from multitemporal classifications of five Land-sat-TM scenes from the year 1999 and 2000 of the Uecker catchment. All these data sets showed different arial parts of the main landuse classes forests, meadows, arable land, water bodies and settlements. These differences have to be considered as an uncertainty in the landuse data used for the application of hydrological models. In our case study, we

carried a modelling exercise to analyze how and to which extent these different land-use data sets influence the results of the hydrological catchment model THESEUS such as the spatial distributions of evapotranspiration, soil moisture and ground water recharge including the discharge rates of the catchment were analyzed. Additional data sets for this modelling exercise include the spatial data sets soil map, rivernet, digital elevation model and subbasins. Meteorological time series for the time 1996-2000 were obtained from 5 meteorological stations and 5 additional precipitation stations operated by the German Meteorological Service. Measured daily discharge rates were available for one gauge located near the outlet of the catchment also for 1996-2000.