



Scales of precipitation and the landform, the interaction by discharge generation

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The discharge generation in a catchment area depends on a multiplicity of parameters in the atmosphere and in the ground level, particularly on their temporal and spatial covariabilities. For modelling and predicting of discharge the coupling of atmosphere and horizontal soil transport models is mandatory. For that purpose we coupled the SVAT-Module Terra of the Lokal-Modell in a stand-alone version with a routing scheme. Terra-Stand-Alone describes the vertical exchange of water and energy between atmosphere and soil; the routing scheme calculates horizontal transports of surface runoff and groundwater as a product of the vertical exchange and the hydrological processes in soil. Terra-Stand-Alone is used in the multi-layer-version and allows to make changes in spatial resolution with low costs. We use for Terra a grid-resolution of one kilometer and calculate the discharge for the two river catchments Erft and Sieg, tributaries of the Rhine river. In addition more detailed soil parameter are necessary. The data for the operational soil textures of the Lokal-Modell will be replaced by datasets from Geologisches Landesamt Nordrhein-Westfalen and Rheinland Pfalz leading to more classes of soil textures in the SVAT-Module. For the new one kilometer topography, the NASA-SRTM dataset is implemented. The meteorological forcing is provided by the Lokal-Modell and the precipitation by REGNIE-Data (one kilometer gridded daily rain accumulation). The final goal is a realistic modelling of water transport for the catchment area Erft and Sieg by considering relief, land use and the distribution of soil moisture.