



Modelling of aeolian sediment translocation on the soil surface of a small catchment area using WEPS

T. Maurer (1), H. H. Gerke (2)

(1) Research Center for Landscape Development and Mining Landscapes, Brandenburg University of Technology, Cottbus, Germany (Thomas_Maurer_@gmx.de), (2) Institute of Soil Landscape Research, Centre for Agricultural Landscape Research (ZALF), Müncheberg, Germany (hgerke@zalf.de)

Wind erosion is one of the most important structure-defining processes during the earliest stages of a developing soil-geosystem, when protective features like crusts or vegetation cover have not yet emerged. Early soil surface structures play an important role in soil hydrology and are expected to determine the future development of soil-geosystems. The objective of this study was the estimation of the contribution of aeolian fluxes on structure formation and sediment translocation during the initial development stages of a small artificial catchment area. For the simulation of sediment translocation, a modified version of the Wind Erosion Prediction System (WEPS) was used. Meteorological data from measurement stations on-site provide the driving boundary conditions, namely wind speed and precipitation. The soil surface scheme is built using soil data from laboratory and field measurements. Spectral analysis of aerial photographs of the catchment give additional information on the spatial distribution of surface characteristics. Surface schemes will be built for several early development stages to inspect the mutual influences of the newly formed structures and wind erosion processes. In future stages, the comparison of predicted wind erosion with aerial photographs, and later with laser interferometer measurements of surface structures and direct observations, will help to separate the respective influences of wind and water erosion on surface structure development and sediment translocation.