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Regionalisation of Wind Erosion Potential in Sahelian SW-Niger

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Abstract

The sub-saharan Sahel is one of the biggest areas in the world affected by increasing desertification, caused mainly by water runoff in the wet season and especially by processes of wind erosion. The quantification of wind erosion potentials of Sahelian surfaces was up to now carried out mainly in the framework of field experiments during naturally occurring dust storms or as long-term experiments. The comparability of the respectively gained data is difficult due to non-reproducible conditions during the specific storm events. Erosion potentials of different surfaces can nevertheless be compared by establishing standardised and reproducible, quasi-natural wind and flow conditions, thus minimising the variations of meteorological conditions. During the field experiments conducted by the Klimex work group of the IBS, these standardised conditions were created by the means of a mobile wind tunnel. Surfaces of the most representative geomorphological units were chosen as study sites. External factors like anthropogenous disturbance of topsoil structures were incorporated in the measurement program. The measured variables comprise the emitted sediment as a function of height, wind profiles at different flow intensities and specific surface roughness. The respective (top)soils were additionally analysed in the laboratory in order to provide input data for the model and to determine the physico-chemical composition of the eroded sediment.

The next step was the regionalisation of the point-data with the help of classified Landsat satellite scenes and WEPS (Wind Erosion Prediction System) a wind erosion model, which was adapted to Sahelian conditions. First results of model runs / scenarios are presented.

Keywords: Modelling, regionalisation, Sahel, wind erosion, wind tunnel