



Validation of the EROSION 3D model on micro-catchment scale in Mato Grosso/Brazil

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Accelerated land use changes in Mato Grosso caused soil degradation and contamination of water resources. Soil erosion models are increasingly being used, in order to simulate the involved physical processes and to predict the effects of soil erosion control measures. In this regard the process based EROSION 3D soil loss simulation model could be applied in the region. A comprehensive application on regional scale demands proofed model qualities on smaller scales. The paper aims on calibration and validation of surface runoff and related sediment losses by water erosion for a gauged cropland micro-catchment, which is representative for study area. Model parameterization was performed by own soil analysis, artificial rainfall simulations and observations. Temporal discrete soil parameter sets were interpolated continuously on the yearly course by applying planting dates, harvesting dates and phenological plant cover changes as fundamentals. Discharge hydrographs were calibrated successfully and verified for several rainfall events. Calculated sediment losses exceed observed results by two orders of magnitude. Since the model was validated on plot scale and erosion-deposition pattern were tested on plausibility, the only acceptable conclusion are insufficiently measured sediment concentrations. Further investigation should focus on water sampling and calibration of turbidity probes under local conditions. However, we assume that our results are sufficient to increase the scale of model application in order to describe status quo scenarios and effects of land use and climate change in the region.