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# Sediment reallocations due to erosive rainfall events in the Three Gorges Reservoir Area, Central China

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Soil erosion by water outlines a major threat to the Three Gorges Reservoir Area in China. A detailed assessment of soil conservation measures requires a tool that spatially identifies sediment reallocations due to rainfall–runoff events in catchments. We applied EROSION 3D as a physically based soil erosion and deposition model in a small mountainous catchment. Generally, we aim to provide a methodological frame that facilitates the model parametrization in a data scarce environment and to identify sediment sources and deposits. We used digital soil mapping techniques to generate spatially distributed soil property information for parametrization. For model calibration and validation, we continuously monitored the catchment on rainfall, runoff and sediment yield for a period of 12 months. The model performed well for large events (sediment yield>1 Mg) with an averaged individual model error of 7.5%, while small events showed an average error of 36.2%. We focused on the large events to evaluate reallocation patterns. Erosion occurred in 11.1% of the study area with an average erosion rate of 49.9Mgha 1. Erosion mainly occurred on crop rotation areas with a spatial proportion of 69.2% for ‘corn-rapeseed’ and 69.1% for ‘potato-cabbage’. Deposition occurred on 11.0%. Forested areas (9.7%), infrastructure (41.0%), cropland (corn-rapeseed: 13.6%, potatocabbage: 11.3%) and grassland (18.4%) were affected by deposition. Because the vast majority of annual sediment yields (80.3%) were associated to a few large erosive events, the modelling approach provides a useful tool to spatially assess soil erosion control and conservation measures.