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ZEF – Ecology and Development Series No 80

Modeling soil erosion and reservoir sedimentation at hillslope and catchment scale in semi-arid Burkina Faso

Soil erosion is a major factor of land degradation in Sub-Saharan Africa. The loss of nutrient-rich topsoil causes severe agricultural problems and leads to sediment accumulation in dammed reservoirs, which might thus lose their function as essential water storage systems. This study presents a scale-dependent approach to assessing the on-site and off-site impacts of soil erosion in Burkina Faso applying pedo-geomorphological methods (Catena approach), environmental radionuclide techniques (^{137}Cs measurements), empirically and physically-based models (WEPP and WaTEM/SEDEM), bathymetric surveys and sediment core analyses. Results indicate that the magnitude of soil loss is high, and that the half-life of some dams might be reached in about 25 years. The erosion hazard maps that were generated will help policy makers in deciding where action plans for soil and water conservation should be implemented.