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Soil erosion risk assessment using interviews, empirical soil erosion modeling (RUSLE) and fallout radionuclides in a volcanic crater lake watershed subjected to land use change, western Uganda

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Population pressure results in conversion of natural vegetation to cropland within the western Ugandan crater lake watersheds. These watersheds however are particularly prone to soil degradation and erosion because of the high rainfall intensity and steep topography. Increased soil erosion losses expose the aquatic ecosystems to excessive nutrient loading. In this study, the Katinda crater lake watershed, which is already heavily impacted by agricultural land use, was selected for an explorative study on its (top)soil characteristics – given the general lack of data on soils within these watersheds – as well as an assessment of soil erosion risks. Using group discussions and structured interviews, the local land users' perceptions on land use, soil quality, soil erosion and lake ecology were compiled. Datasets on rainfall, topsoil characteristics, slope gradient and length, and land use were collected. Subsequently a RUSLE erosion model was run. Results from this empirical erosion modeling approach were validated against soil erosion estimates based on 137Cs measurements.