

## Mapping potential soil erosion in East Africa using the Universal Soil Loss Equation and secondary data

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**Abstract** Soil erosion is a serious threat of increasing dimensions and tends to blunt efforts to counter global population growth with increased and sustainable agricultural production. The tropics are especially vulnerable because of the circumstantial convergence of intense climatic regimes, frequently fragile soils, low levels of fertilizer use and conservation practices and strong dependence on soil quality for livelihoods. In addition, climate change is expected to aggravate the already existing vulnerabilities of the poorest people, who depend on semi-subsistence agriculture for their survival. Tools for assessing spatially explicit erosion patterns would be a great help for planning soil conservation measures, or targeting agricultural technology or policy interventions that mitigate the adverse effects of soil erosion and could help farmers to adapt. Because extensive measurement of soil erosion is expensive and time consuming, erosion models that make use of secondary data available in a Geographic Information System can offer a useful alternative. In this paper, an attempt is made to analyse and map current soil erosion potential on the sub-continental scale. We use principles of the Universal Soil Loss Equation (USLE) and its reformulations to make a qualitative assessment of soil erosion in East Africa. Data on climate, soils, topography, hydrology and land cover are derived from existing secondary data sources that are spatially explicit and have an adequate resolution to be linked, at least as proxies, to important drivers of soil erosion as represented in the USLE. Obvious limitations of methodology and data, as well as the lack of validation possibilities are discussed. The results have value in reflecting broad patterns of soil erosion across East Africa. The methodology also permits the highlighting of hotspots of soil erosion risk where agricultural research can focus efforts of developing or applying soil conservation measures and target agricultural technology, and policy interventions that can mitigate the adverse effects of soil erosion on poor people's livelihoods.

**Key words** USLE; erosion; erosion risk; East Africa

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