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Title: A critique of soil erosion modelling at a catchment scale using GIS

Abstract

In South Africa, where more than 1,5 million households are directly dependant on agriculture, soil erosion needs to be quantified and prevented. Soil loss modelling thus forms an integral part of the planning projects of governmental as well as private agricultural organisations. As land degradation becomes more evident with increasing changes in land use, it is becoming increasingly necessary to map and quantify soil erosion more extensively, covering entire catchments, with the aim of providing a tool for planning soil conservation strategies at a regional level. Geographic Information Systems (GIS) allows soil loss estimation, previously limited to erosion plot studies, to be extrapolated from this erosion-plot scale, to a catchment scale; from data-rich to data-poor areas. The temptation lies however, in using the increasing technological advances in GIS erosion modelling software to the benefit of decision-makers without correctly identifying the theoretical and practical GIS problems related to modelling such a dynamic, spatial and complex process as soil erosion. The concern lies in accepting GIS-related erosion study results, particularly at a catchment-scale, as truth.