

Global implications of neglecting soil erosion dynamics for a changing world

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Agricultural production is attenuated by soil degradation which is dominated in its areal extent by soil erosion. Each year about 10 million ha of cropland are lost due to soil degradation, predominantly soil erosion (Lal, 1993), significantly reducing the cropland available for food production. Soil erosion typically exceeds the rate of soil renewal potentially imperilling future human food security and the environment. Soil erosion is therefore one of the most serious environmental and public health problems facing human society today and in the future. I present a judicious review of the literature and examples from national Australian research that describe soil erosion dynamics and its response to land use and management practices and in particular soil conservation policy. I show that despite great awareness and efforts to tackle soil erosion, it is neglected in high level and large scale regional and global modelling e.g., soil organic carbon (SOC) accounting for CO₂ emission, crop models for SOC sequestration and Land Surface Models of future environmental systems all omit soil erosion. I provide some examples of methods to include soil erosion dynamics and demonstrate the global implications of these omissions. I contend that this community should include these high level research foci to ensure a cascade of broader influence for soil conservation in the future.