Advances in soil erosion modelling based on remote sensing data availability

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Under the European Union's Thematic Strategy for Soil Protection, the European Commission's Directorate-General for the Environment (DG Environment) has identified the mitigation of soil losses by erosion as a priority area. Policy makers call for an overall assessment of soil erosion in their geographical area of interest. They have asked that risk areas for soil erosion be mapped under present land use and climate conditions, and that appropriate measures be taken to control erosion within the legal and social context of natural resource management. Remote sensing data help to better assessment of factors that control erosion, such as vegetation coverage, slope length and slope angle. In this context, the data availability of remote sensing data during the past decade facilitates the more precise estimation of soil erosion risk.Following the principles of the Universal Soil Loss Equation (USLE), various options to calculate vegetative cover management (C-factor) have been investigated. The use of the CORINE Land Cover dataset in combination with lookup table values taken from the literature is presented as an option that has the advantage of a coherent input dataset but with the drawback of static input. Recent developments in the Copernicus programme have made detailed datasets available on land cover, leaf area index and base soil characteristics. These dynamic datasets allow for seasonal estimates of vegetation coverage, and their application in the G2 soil erosion model which represents a recent approach to the seasonal monitoring of soil erosion. The use of phenological datasets and the LUCAS land use/cover survey are proposed as auxiliary information in the selection of the best methodology.
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