

## Evaluation of Soil Erosion Risk and Prioritization for Implementation of Management Strategies in Morocco

**Authors :** Lahcen Daoudi, Fatima Zahra Omdi, Abdelali Gourfi

**Abstract :** In Morocco, as in most Mediterranean countries, water scarcity is a common situation because of low and unevenly distributed rainfall. The expansions of irrigated lands, as well as the growth of urban and industrial areas and tourist resorts, contribute to an increase of water demand. Therefore in the 1960s Morocco embarked on an ambitious program to increase the number of dams to boost water retention capacity. However, the decrease in the capacity of these reservoirs caused by sedimentation is a major problem; it is estimated at 75 million m<sup>3</sup>/year. Dams and reservoirs became unusable for their intended purposes due to sedimentation in large rivers that result from soil erosion. Soil erosion presents an important driving force in the process affecting the landscape. It has become one of the most serious environmental problems that raised much interest throughout the world. Monitoring soil erosion risk is an important part of soil conservation practices. The estimation of soil loss risk is the first step for a successful control of water erosion. The aim of this study is to estimate the soil loss risk and its spatial distribution in the different fields of Morocco and to prioritize areas for soil conservation interventions. The approach followed is the Revised Universal Soil Loss Equation (RUSLE) using remote sensing and GIS, which is the most popular empirically based model used globally for erosion prediction and control. This model has been tested in many agricultural watersheds in the world, particularly for large-scale basins due to the simplicity of the model formulation and easy availability of the dataset. The spatial distribution of the annual soil loss was elaborated by the combination of several factors: rainfall erosivity, soil erodability, topography, and land cover. The average annual soil loss estimated in several basins watershed of Morocco varies from 0 to 50t/ha/year. Watersheds characterized by high-erosion-vulnerability are located in the North (Rif Mountains) and more particularly in the Central part of Morocco (High Atlas Mountains). This variation of vulnerability is highly correlated to slope variation which indicates that the topography factor is the main agent of soil erosion within these basin catchments. These results could be helpful for the planning of natural resources management and for implementing sustainable long-term management strategies which are necessary for soil conservation and for increasing over the projected economic life of the dam implemented.

**Keywords :** soil loss, RUSLE, GIS-remote sensing, watershed, Morocco

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