

Soil Erosion Assessment Using the RUSLE Model, Remote Sensing, and GIS in the Shatt Al-Arab Basin (Iraq-Iran)

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Abstract : Soil erosion is a major concern in the Shatt Al-Arab basin owing to the steepness of its topography as well as the remarkable altitudinal deference between the upstream and downstream parts of the basin. Such conditions resulted in soil vulnerability to erosion; huge amounts of soil are annually transported, creating enormous implications such as land degradation, structure damage, biodiversity loss, productivity decline, etc. Thus, evaluation of soil erosion risk and its spatial distribution is crucial to build a database for efficient control measures. The present study used revised universal soil loss equation (RUSLE) model integrated with Geographic Information System (GIS) for depicting soil erosion hazard zones in the Shatt Al-Arab basin. The RUSLE model incorporated several parameters such as rainfall-runoff erosivity, soil erodibility, slope length and steepness, land cover and management, and conservation support practice for soil erosion zonation. High to medium soil loss of 100 to 20 ton per hectare per year represents around 25% of the basin area, while the areas of low soil loss of less than 20 ton per hectare per year occupied the rest of the total area. The high soil loss rates are linked to areas of high rainfall levels, loamy soil domination, elevated terrains/plateau margins with steep side slope, and high cultivation activities. The findings of the current study can be useful for managers and policy makers in the implementation of a suitable conservation program to reduce soil erosion or to recommend soil conservation acts if development projects are to be continued at regions of high soil erosion risk.

Keywords : geographic information system, revised universal soil loss equation, shatt Al-Arab basin, soil erosion

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