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كل الحقوق محفوظة للمدرسة الوطنية العليا للري.

**Abstract :** Soil erosion is a natural process often accelerated by several anthropogenic disturbances, such as uncontrolled land use, deforestation, and overgrazing. It is one of the most serious environmental problems of northern Algeria. In particular, the soil erosion affects a large part of the land in the north of the country, causing the siltation of dam reservoirs, reducing their storage capacity, and the degradation of cropland soil fertility. Our study aimed to determine the potential soil erosion and sediment yield in the Wadi Isser basin in northwest Algeria by integrating geographic information systems (GIS) and remote sensing (RS) using the Revised Universal Soil Loss Equation (RUSLE) and a sediment delivery ratio (SDR). RUSLE is an empirical, parametric model tested and validated under diverse soil, climate, topographic parameters, management conditions, and a factor that accounts for the effects of soil conservation practices. The SDR represents the level of eroded soil transport in a basin and is an essential indicator for examining the relationship between basin erosion and river sediment yield. We categorized the potential soil erosion into different groups. Our results found that the potential soil erosion ranged from very low to extremely high in different sub-watersheds across the study area. The average annual soil loss in the Wadi Isser basin varied spatially from 0 to 150 t ha<sup>-1</sup> year<sup>-1</sup>, and the average annual soil loss for the entire basin was estimated at 9.4 t ha<sup>-1</sup> year<sup>-1</sup>. Based on the erosion estimates, the basin landscape was grouped into four different classes of erosion intensity: low, moderate, high, and very high. We found that approximately 80% of the area (i.e., 900 km<sup>2</sup>) of the Wadi Isser basin was identified as being affected by moderate to high erosion severity (> 5 t ha<sup>-1</sup> year<sup>-1</sup>), indicating that measures are urgently needed to control soil erosion and sediment losses.

**KEYWORDS :** RUSLE ; Sediment delivery ratio ; GIS ; Remote sensing ; Wadi Isser basin ; Erosion potential

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