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Abstract : Algeria is one of the countries affected by water erosion. This phenomenon removes the top layer and leads to a degraded soil. This study includes an estimation of water erosion in Wadi El Hachem watershed using the Universal Soil Loss Equation (USLE) model combined with geographical information system and remote sensing techniques. The average erosion rate (A) in the watershed is estimated at 19.4 (t.ha⁻¹.year⁻¹), i.e., a total loss of 426,800 (t.year⁻¹). The areas with severe and extremely severe erosion are predominantly located along the different Wadis of the watershed. While very slight and slight erosion are taking place in the depressions and flat lands and in the upstream boundaries of the watershed where mountains are permanently covered by vegetation. The correlation between (A) and the factors of topography (LS), rainfall erosivity (R) and cover management (C) is highly significant ($p < 0.01$) with a coefficient of determination (R^2) of 0.999, 0.988 and 0.980, respectively. The validation of the results by comparing the average soil loss derived from the empirical model of the USLE to the average siltation rate of the Boukourdane's dam gave satisfactory results with difference of 7.6 (t.ha⁻¹.year⁻¹) compared to the measured data. Consequently, the methodology adopted for our study produced results that were close to reality with an acceptable error rate in the context of our study. These outcomes can clearly help to implement conservation plans of water and soil to reduce erosion in Wadi El Hachem watershed. This approach could be extrapolated in other regions with similar biophysical and climatic characteristics of North Africa and the Mediterranean region.

KEYWORDS : Erosion ; Wadi El Hachem ; USLE ; Remote sensing ; GIS

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1-<https://link.springer.com/article/10.1007/s12524-021-01481-9>

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