

## **Abstract**

In this study, remote sensing and GIS are implemented in order to map and assess water erosion using the Universal Soil Loss Equation (USLE) in the Wadi Mina watershed in Algeria. The study area is characterized by a great irregularity in rainfall which is mainly generated during storm events. The region is also known for its steep slopes, a marly lithology and a very low vegetation cover, which makes it more exposed and vulnerable to erosion. The USLE model can be described as the combination of six factors that feature the specific characteristics of the watershed. Data from multi-temporal remote sensing analysis and GIS are used to individually assess and map each factor. The integration of thematic maps for the USLE factors in the GIS is used to identify the impact of each factor on soil loss, as well as to rank the relative importance of the erosion zones, and further to quantify the soil loss for the investigated region. Another method based on the distribution of radio-isotope Cs-137 was used to validate the results obtained by remote sensing and GIS. According to the profiles of Cs-137 activities in two different sites, it was found that these regions exhibit an accumulation of soil. It is because the Cs-137 activity of the latter is higher than that of the reference site. Moreover, making use of Kachanoski's model, it was estimated on average that the rate of accumulation is equal to 0.935 t /ha/year.