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Predictive modelling of soil erosion rate using Adaptive Neuro-Fuzzy Inference System (ANFIS) coupled with Geographic Information System (GIS) of wadi sahel-soummam watershed (Algeria)

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There is a need to develop simple methods for predicting areas of extensive soil erosion using imprecise, but real world, input data at low cost with considerable accuracy. The objectives of this study is to develop fuzzy logic models that predict soil erosion in a relatively large watershed using a limited number of input variables, compare the predictions of soil erosion using ANFIS model with those of the Revised Universal Soil Loss Equation RUSLE. With the incorporation of Geographical Information System (GIS), it is possible to analyse satellite data, which gives required information like land use and cover, slope, distribution of rainfall, flow direction etc. of study watershed. The capabilities of these technologies increase when they are integrated with ANFIS model for erosion prediction. ANFIS model and GIS integrated erosion prediction models do not only estimate soil loss but also provide the spatial distributions of the erosion. Generating accurate erosion risk maps in GIS environment is very important to locate the areas with high erosion risks for prioritization and to develop adequate conservation techniques for a better sustainable management of Wadi Sahel watershed.