Assessing Current State of Desertification Based on Water, Climate and Soil Indicators Using IMDPA Model (Case Study: Dashte Abbas)

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Abstract

Desertification is currently a big problem in many countries, especially in developing countries, and includes natural processes and improper human activities. The present study was conducted to evaluate the potential of desertification with an emphasis on water, climate and soil criteria using IMDPA Model in Abbas plain, Ilam province with an area about 18028.8 hectare. Geometric averages for indices including water table fluctuations, EC of water, SAR, irrigation system, annual precipitation, aridity index, drought continuity index, soil texture, soil thickness and Ec of soil were obtained using ArcGIS 9.3 and the status map of each criterion was prepared. The results of climate indicated that 100% of the area is in severe class. The desertification intensity map based on soil criteria demonstrated that over 4843 hectare (28.86 percent of total area) and 13185 hectare (73.13 percent of total area) are in low and moderate classes, respectively. Also, the obtained results from geometric average of water criteria indices showed that 10861.4 hectare (60.2 percent of total area) and 7166.6 hectare (39.75 percent of total area) are in low and moderate classes, respectively. The results also indicated that climate with the value of 2.81 is the most influential criterion in the severity of desertification in the study area. Accordingly, it can be said that the quantitative value of desertification intensity of total area is in moderate class.

Keyword: Desertification; Abbas Plain, Indices; Criteria, IMDPA.

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