

Assessment of the Desertification Intensity Based on soil, Vegetation, and Wind Erosion Criteria in the Northwest of Yazd

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Abstract

Desertification is one of the most serious ecological environmental problems in the arid regions. Quantitative assessment of the desertification process is important for the prevention and control of desertification. In this research, the IMDPA model was used to evaluate the quantitative and qualitative desertification situation in the northwest of Yazd. Three criteria of soil, vegetation, and wind erosion were considered in this model. Several indicators were defined for each criterion with a weight of 0 (low) to 4 (very severe). The geometric mean of all three criteria was used to prepare a map of sensitive areas to desertification in ArcGIS. The results indicated that more than 92% of the research area was in the extreme class of desertification, and only the dunes work unit was in a very intense class. Finally, the whole of the research area with a final score of 3.04 was placed in the extreme class of desertification intensity. Also, the soil criterion with the highest weight score of 3.26 has had the greatest impact on the desertification of the northwest region of Yazd. Therefore, it is necessary to implement remedial and revitalization operations in this region according to the expansion of the phenomenon of desertification and the high influence of the soil criteria. The results of the research showed the intensity of desertification, the potential, and the sensitivity of the region to the phenomenon of desertification can be referred to as a departure from the natural functioning of the system.

Keywords: Land degradation, Geographic Information System, IMDPA model, Criteria and indicators, Desertification situation

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