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Performance Comparison of MEDALUD, MICD and FAO-UNEP Desertification Mapping Models in The Desertification Hotspot of Jarghoyeh Region, Isfahan Province

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Abstract

Desertification is known as a major crisis in arid regions of Isfahan province. This study aimed to assess the performance of three main desertification models including MEDALUS, MICD and FAO-UNEP for mapping desertification severity in the hotspot of Jarghuyeh region, eastern Isfahan. Different desertification indicators and their related indices were chosen based on the characteristics of the region and fieldwork, and spatially mapped in 27 geomorphologic facies. The desertification severity maps were classified based on the classification scheme for each model in ArcGIS 10 environment, and then comparison of the models and selection of the best one were achieved using IDRISI Tiga 16.03 software. The results of all three models showed that more than 95% of the region can be classified as severe desertification but due to the differences in the number of desertification classes and also indicators and indices only 45% of desertification severity was observed to be similar across the models. Results indicated that the MEDALUS model due to its flexibility to accept new indicators and indices, GIS-based characteristics, and use of geometric mean of indicators in desertification mapping seems to be a suitable model for studying desertification severity in the region. According to this model, 85% and 15% of the area are classified as very severe and severe class of desertification, respectively, which indicates that the rate of desertification is very high and immediate management programs are needed to slow down the desertification process in the region.

Keywords: Desertification, MEDALUS, MICD, FAO-UNEP, Isfahan.

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