



Predicting the Land Use Change Using Markov- Cellular automata Model in Mehran Plain

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Abstract

Assessment of land use changes in the previous years and prediction of these changes in the following years is an essential tool for different planning and management of natural resources. Therefore, the aim of present study is modeling of land use changes in Mehran Plain using Markov- Cellular automata Model in 2028. In order to detect land use changes in the studied area, TM and ETM⁺ satellite images of Landsat were used during three times periods of 1989, 2002, and 2015, and a separate map was prepared for each year. Then according to model, 2015 land use map was provided. Assessment of the match between simulated and actual map of 2015 with kappa index showed that this model is an appropriate model for simulating of land use change. After that, land use map for the year of 2028 was simulated. The results showed that in 1989 to 2015, the area of agricultural lands and the area of very poor range lands have been increased up to 6778 and 5961 hectares, respectively. In contrast, the area of poor range lands has been reduced up to 1534 hectares. The results of prediction showed that during the next 13 years, the area of agricultural lands and bare lands will increase about 1177 and 389 hectares, respectively. Poor range lands will decrease about 1950 hectares.

Keywords: Land Use, Markov- Cellular automata Model, Simulation, Kappa Index, Mehran Plain.

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