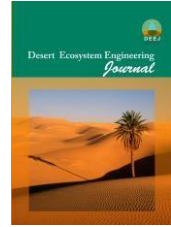




University of Kashan

Desert Ecosystem Engineering Journal

Journal homepage: <http://deej.kashanu.ac.ir>

Determination of The Importance of Hydro-climate Parameters on Drying in Gavkhooni Wetland Using Artificial Neural Network and Remote Sensing Data

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Received: 10/4/2016

Accepted: 31/7/2016

Abstract

Wetlands as one of the most important and most valuable natural ecosystems in the world play an important role in filtering pollutants and reduce dust, creating a favorable microclimate, biodiversity and genetic and organic materials reservoirs. In central part of Iran, climatic and human factors have created significant differences between dry and wet surfaces of Gavkhooni wetland in recent decades and have provided a background to produce more dust in central part of Iran. This research aims to study and assess important factors that influence the process of changes occurring in wetlands and wetland drying up during the last 22 years by using remote sensing and artificial neural networks. To do so, 21 landsat imagery has been used. After that, Normalized Difference Water Index was calculated and the dry and wet surfaces has been separated. The average rainfall, temperature, flow, evaporation and water table depth for the study area was interpolated using Thiessen method and the trend of these parameters was examined using the Mann - Kendall. Finally, to determine the importance of each factor affecting wetlands drying up, various functions of artificial neural networks were compared and the best model was used to determine the importance of each parameter. The results of Mann - Kendall showed a significant decrease in ground water level and input flow to the wetlands in the period of the study. This study showed that the most important factors that influence the level of the Gavkhuni wetland are flow entering the lagoon, evaporation, drop in groundwater level, temperature and rainfall respectively.

Keywords: hydro-climate parameters, Gavkhooni wetland, Remote Sensing Technique, Dried, Ground water Level, Artificial Neural Network.

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