Study of drought impact assessment on Hashiland wetland

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Abstract
Wetlands are considered one of the most important and most sensitive ecosystems due to their unique features. However, due to their systematic structure any change in the environmental conditions, particularly in climate and land use, changes the wetlands. In the last few decades, wetlands of Iran are being destructed due to the occurrences of droughts and human interference. Hashilan Wetland, which is located in Kermanshah, is a unique wetland and has been cited as a geographical irony in the literature. Its water is supplied by the Karstic aquifers of Khourin Mountains. In this research, raining data, recharge data, topographic maps, were used. This research aims at evaluating the effects of short-term droughts on the Hashilan wetland, and identifying the causation of its high vulnerability to short-term droughts. In this respect, first the 2007 year was chosen acute drought year using SPI, and the Landsat satellite images of years before after the drought year (2006 and 2008) in the period of water shortage were chosen. Visual change detection approach and NDVI in the respected years were used for the estimating the rate of change for the wetland surface due to drought. Results indicate that the extention of wetland has decreased by %47 with respect to previous year. The investigation of the Karst geomorphology of the region and hydrological conditions of the Karstic spring indicated the developed nature of the Karstic aquifers of the region, the low storage dynamic volume, and their short existence. The type of spring water of Sabzali is bicarbonate and has a Karstic origin. The main reason for the high sensitivity of the Hashilan wetland to drought is the developed nature of the Karstic geomorphology and Karstic system of wetlands' feeding aquifers. These Kartic aquifers are sensitive due to the dominant conduit flow, low storage dynamic volume, and short-term existence against the reduced level of raining.

Keyword: Karstic aquifer, Drought, Remote sensing, Hashilan wetland.