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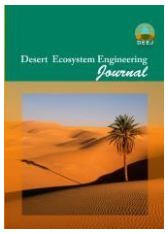

Investigating the performance of NDDI index for dust mapping of arid lands (Khuzestan Province)

Shahbaz Mehrabi*[1], Reza Jafari[2], Saied. Soltani[3]

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Abstract

Detecting the spatial distribution of dust storms in the deposition regions is an essential step for managing this natural and human-induced crisis. This study aimed to investigate the performance of the Normalized Differences Dust Index (NDDI) applied to MODIS data (4/7/2009) for detection of dust storms in the Khuzestan Province. The extracted NDDI map was classified by value pixel in six classes including very severe, severe, medium, low, very low and non-affected and their accuracy were assessed using visibility data recorded at meteorological stations and PM_{10} data at two air pollution stations in Ahvaz town. According to the results 64814 out of 94579 pixels of the study area were between threshold values between -0.8 – 0.9 which covers 68.59 percent of the region. In spite of the good performance of NDDI in the previous studies, results of mapping dust intensity in this study in comparison with visibility and air pollution data indicated that this index underestimates the concentration of dust in the Khuzestan Province. It seems that this low performance of NDDI relates to land use/cover and topographical differences and also chemical characteristics of dust minerals in the study area.

Keyword: Dust storm, Dust mapping, MODIS, NDDI.

1. Student of P.H.D, Department of salt plan, Semnan University, Email: sh.mehrabi2011@gmail.com
2. Assist. Prof, Department of Natural Resources, Isfahan University of Technology
3. Assist. Prof, Department of Natural Resources, Isfahan University of Technology