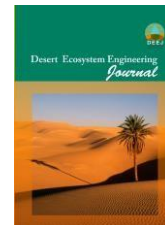




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Drought monitoring by Using of MODIS Satellite Images in Dry land (Case study: YAZD Rangelands)

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Abstract

Drought is a natural and climatic phenomenon that occurs in world wide areas every year and occurrence becomes an inevitable issue. This phenomenon is impaired in ecosystem. Arid rangeland ecosystems are a significant part of our land that is brittle systems that climatic changes are useful to simply unfounded destruction. Therefore, drought identifying and monitoring valid descriptive statistics indicators is the first step toward managing this phenomenon. Drought monitoring by using traditional systems is difficult. Remote sensing technology, coupled with geographic information systems, their ability in data performance has shown that in time of drought. This study was conducted at rangelands of Yazd Province to monitor of drought. In this study has been trying to research this index NDVI, EVI, NMDI, LST and TCI bands of MODIS images extracted from the data and precipitation data from climatology stations to use the range. Regarding the comparison between drought indices and indicators for climate satellite and satellite set performance indicators, to evaluate the climatic index SPI closest climatology stations to the monthly precipitation statistics for the period 2000-2008 types of rangeland in the study was used. To extract the parameters of satellite imagery resolution bands of MODIS images of 500 meters, the eight -day harvest interval for the period 2000 to 2012 and during the months of February through September, before and after it was prepared. Due to the different periods of precipitation data and satellite imagery, Joint Range Index Comparison between 2000 -2007 was considered. Data from other years was used to verify the accuracy of the results. Indices at intervals of three, six, nine, 12, 18 and 24 months showed that the volatility of short-term drought intervals greater than long-term intervals. But enjoying a bit of persistence. So, in short periods of drought month intervals is greater than the other. Regarding the relationship between drought and precipitation, precipitation and meteorological drought index results showed that drought index ranged from three to nine months; with precipitation amounts of one percentage correlations are significant. In other words, changes in the amount of monthly precipitation index SPI is effective in short-term timeframe. Statistical comparison between results of calculation of satellite indicators and meteorological drought index showed that SPI index in short term with heat index and NMDI index has the highest correlation in one percent level.

Keywords: Drought monitoring, MODIS sensor, Rangelands of Yazd Province, Climatic index SPI.

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