

# REMOTE SENSING FOR DROUGHT ASSESSMENT IN ARID REGIONS (A CASE STUDY OF CENTRAL PART OF IRAN, "SHIRKOOH-YAZD")

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## ABSTRACT:

Rainfall, soil moisture, increasing temperature and changes in vegetation cover are the most important parameters effecting drought. Therefore, analysis of vegetation fraction and soil spectral signature, especially in red and infra red bands, are essential in drought estimation using remote sensing. In this study, Modified Perpendicular Drought Index (MPDI), which uses Vegetation Fraction (VF) and Perpendicular Drought Index (PDI) (computed based on the amount of rainfall and the soil moisture) has been used for monitoring and drought assessment in arid regions in central part of Iran during a time interval of three years (1999-2002). To do so, ETM+ images of LANDSAT 7 for the years 1999 and 2002 and the rainfall statistics of 23 years have been used. Analysis of vegetation cover using NDVI, RVI, SAVI, MSAVI, SAVI2 and PVI indices demonstrated that in arid regions changes in vegetation cover were best mapped using SAVI2 index. Also, in comparison with PDI and VSWI indices, drought severeness was best demonstrated by MPDI index. Further, the results were analyzed and evaluated using Run-test model and metrological data of the existing stations in the region. The results of the study indicated that in the year 2002 although in comparison to year 1999, the amount of rainfall has been increased, vegetation fraction has been decreased and consequently, drought has been increased in the rangelands of the study area. This is due to the existence of a severe drought and decrease in seeding of rangeland vegetations in pervious years (2000, and 2001).

**TOPIC:** Multi-spectral and hyperspectral remote sensing

**ALTERNATIVE TOPIC:** Remote sensing applications