University of Zabol

Graduate school

Department of watershed and management

Thethesis Submitted for the Degree of Master of science in Desert control management

Vegetation Cover Change Monitoring and Assessment in Sahlabad Plain Using Remote Sensing and Fuzzy Logic

Supervisor:

Dr.A. Pahlavanravi

Advisor:

Dr.S. Maleki najaf abadi

By:

S. Nikroo

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Abstract

In recent years many parts of Iran have encountered with drought problems. This issue especially leads to destruction of vegetation range. The investigation of vegetation changes trend is among the most important necessaries of rangeland

ecosystems management in arid and semi_arid regions. Gathering information about incessant vegetation changes by ordinary methods is greatly problematic and expensive. Utilizing remote sensing science and satellite data leads to reduce costs, increase accuracy and speed. also with having the ability of all encompassing and repetitious trend investigation of changes and particular phenomenon's transitions during different courses, it can be used as an entrepreneurial approach.

The purpose of this study is to monitor and evaluate changes of vegetation level by using remote sensing and fuzzy logic in Sahl Abad plain of Nehbandan. In order to conduct this research, Landsat satellite images and field studies in ۲۰۰۰ ,۲۰۰۵ ,۲۰۱۰ and ۲۰۱۸ were used to investigate the vegetation. First of all by using the least area method and the GPS, field sampling and plotting were accomplished and then with radiometric and atmospheric correction, images process were fulfilled .It was determined that the data has geometric correction with appropriate accuracy. To provide the map of the vegetation canopy cover, by means of satellite images in ۲۰۱۸ the map of vegetation indicators :w DVI DVI, TSAV۱ , NDVI, MSAVI۱T, PVI۱_۳ , PVI were prepared , and then by comparing the results of every indicator obtained and field studies with the Regression model, it was determined that among the indicators NDVI has a better description of the region's canopy cover.

Since evaluation of vegetation changes on conventional models is based on defining thresholds and domains , There are no clear and contractual boundaries for the nature of natural ecosystems. In this project in addition to classification method , fuzzy logic has been used to make the vegetation changes clear ,so vague and uncertain boundaries are avoided.

The results of vegetation changes investigation in both methods showed that in recent years the vegetation of the region has been improved. Protective proceedings including desert greening projects, saving the celestial precipitation ,reserving for exclusive use, crescent pond, aerial seeding, planting, transferring lands, agricultural lands have been accomplished, so the vegetation of Sahl Abad region has been meliorated .The results of this research show that management proceedings in order to prevent desert development can be successful to improve natural conditions of destroyed ecosystems.

Keywords: remote sensing, fuzzy logic, drought, vegetation changes process, Sahl Abad plain.