

## **A model-based approach for mapping rangelands covers using Landsat TM image data.**

### **ABSTRACT**

Empirical models are important tools for relating field-measured biophysical variables to remotely sensed data. Regression analysis has been a popular empirical method of linking these two types of data to estimate variables such as biomass, percent vegetation canopy cover, and bare soil. This study was conducted in a semi-arid rangeland ecosystem of Qazvin province, Iran. This paper presents the development of a regression model for predicting rangeland biophysical variables using the original image data of Landsat TM nonthermal bands. The biophysical variables of interest within the rangeland ecosystem were percent vegetation canopy cover, bare soil extent, and stone and gravel which their correlations were analyzed in relation to Landsat TM original data. The results of applying stepwise multiple regression showed that there is a significant correlation between Landsat TM band 2 reflectance values and biophysical variables. The developed models were applied to Landsat TM band 2 and relevant maps were generated. We concluded that such problems as an inexact location of field samples on the image, small size of samples, vegetation heterogeneity may significantly affect the modeling of real rangeland Landsat TM data relationships.

**Keyword:** Biophysical variables; Empirical model; Multiple regression; Rangeland.