

Comparison the accuracies of different spectral indices for estimation of vegetation cover fraction in sparse vegetated areas

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ABSTRACT: Canopy biophysical parameters are important in different applications such as weather prediction, agriculture crop estimation and ecology studies. In the past researches, different satellite based vegetation indices had been developed. However, due to high reflection properties of soil and sand, the estimation of vegetation cover fraction in sparse vegetated areas is difficult. In this research, the accuracies of 20 different vegetation indices have been assessed for a sparse vegetated area. These indices have been classified to five classes which are: 1- Conventional indices such as Normalized Difference Vegetation Indices (NDVI), 2- Corrected conventional indices such as Corrected NDVI (NDVI_c) and Green NDVI (GNDVI), 3- Soil reflectance adjusted indices such as Soil Adjusted Vegetation Indices (SAVI), 4- Triangulation indices that are based on three different spectral ranges of green, red and infrared such as Transformed Vegetation Index (TVI) and 5- Nonconventional indices such as Canopy Index (CI). The results show that the Difference Vegetation Index (DVI) is the most accurate index and its correlation of coefficient is 0.668. However, after using different indices in a multivariable regression, the correlation of coefficient improve to 0.797.