Analysis of spectral vegetation indices related to soil-Line for mapping mangrove forests using satellite imagery.

ABSTRACT

The study investigates the variation of spectral vegetation indices related to soil-line typically found in mangrove forest. This study carried out in the Kelantan Delta, Peninsular Malaysia by using soil-line based vegetation indices such as Perpendicular Vegetation Index (PVI), Soil-adjusted Vegetation Index (SAVI), Optimized Soil-Adjusted Vegetation Index (OSAVI), Transformed Soil-Adjusted Vegetation Index (TSAVI) and Modified Soil-Adjusted Vegetation Index (MSAVI). Landsat TM image was used to identify/classify mangrove areas within the study area. Soil-line based VI‟s which includes soil slope, intercept and parameter were introduced in mangrove mapping in order to remove the soil background for example humus, root and rock which can alter the vegetation spectral. A total of five mangrove classes were mapped out using unsupervised classification technique namely Avicennia-Sonneratia, Avicennia, Acanthus-Sonneratia, Mixed Acrostichum and Mixed Sonneratia. Avicennia-Sonneratia was the dominant mangrove type found in Kelantan Delta. The accuracy of mapping using five indices was ranges from 70% to 79%, respectively. Results indicate that SAVI was the best indices for mangrove mapping compared to other indices with accuracy of 79% and able to determine four mangrove classes. Based on the results soil influences in partially vegetated cover and SAVI shown the constant and sensitive correspond to spectral in the full range of vegetation covers.

Keyword: Remote sensing; Mangrove; Soil-line based vegetation indices; Kelantan Delta.