Performance of intrinsic and soil line-based vegetation indices to mangrove mapping in Malaysia.

ABSTRACT

The use of vegetation indices of remote sensing data in vegetation mapping has been long recognised. However, the accuracy of mapping through the use of vegetation indices model has limitations, and has so far not been investigated. This study analysed the performance of the several intrinsic-based vegetation indices (Normalized Difference Vegetation Index-NDVI and Ratio Vegetation Index- RVI) and soil line-based vegetation indices (Perpendicular Vegetation Index-PVI, Soil-Adjusted Vegetation Index-SAVI and Modified Soil-Adjusted Vegetation Index-MSAVI) for mangrove mapping in Kelantan Delta, Malaysia. Landsat TM was used as a primary data set to derive mangrove vegetation class from five vegetation indices model. A total of five mangrove classes consisting of Avicennia-Sonneratia, Avicennia, Acanthus-Sonneratia, Mixed-Acrostichum and Mixed Sonneratia with accuracy 72.67% were determined from unsupervised classification. Then the models were applied on classified image, resulting in mangrove classes which were mapped into three and four classes, respectively. The performance of each VI's was analysed in accuracy assessment. The accuracy assessment of vegetation indices were ranged from 69.17% to 79.14%. The results revealed that the SAVI was the better performance discriminate mangrove class amongst the four classes compared to others indices with accuracy 79.14%. It might be due to sensitiveness of SAVI model in discriminating the full range of vegetation covers in muddy area. The capability of Landsat TM in mapping mangrove in this study using VI's models showed the better result, However, the performance of VI's need to be further investigated for specific use of mangrove resources. This is important where accurate information on mangrove biodiversity status in all habitat level is needed for conservation and monitoring towards achieving sustainable development to the country.