

A comparison of satellite hyperspectral and multispectral remote sensing imagery for improved classification and mapping of vegetation

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Abstract

In recent years the use of remote sensing imagery to classify and map vegetation over different spatial scales has gained wide acceptance in the research community. Many national and regional datasets have been derived using remote sensing data. However, much of this research was undertaken using multispectral remote sensing datasets. With advances in remote sensing technologies, the use of hyperspectral sensors which produce data at a higher spectral resolution is being investigated. The aim of this study was to compare the classification of selected vegetation types using both hyperspectral and multispectral satellite remote sensing data. Several statistical classifiers including maximum likelihood, minimum distance, mahalanobis distance, spectral angular mapper and parallelepiped methods of classification were used. Classification using mahalanobis distance and maximum likelihood methods with an optimal set of hyperspectral and multispectral bands produced overall accuracies greater than 80%.

Keywords: hyperspectral, multispectral, satellite data, statistical classifiers, vegetation classification