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A comparison of methods for monitoring multitemporal vegetation change using Thematic Mapper imagery

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Abstract

Forested ecosystems in California are undergoing accelerated change due to natural and anthropogenic disturbances. Change detection is a remote sensing technique used to monitor and map landcover change between two or more time periods and is now an essential tool in forest management activities. We compared the ability of two linear change enhancement techniques, the Multitemporal Kauth Thomas (MKT) and Multitemporal Spectral Mixture Analysis (MSMA), and two classification techniques, maximum likelihood (ML) and decision tree (DT), to accurately identify changes in vegetation cover in a southern California study area between 1990 and 1996. Supervised classification accuracy results were high (>70% correct classification for four vegetation change classes and one no-change class) and showed that (1) the DT classification approach outperformed the ML classification approach by â^¼10%, regardless of the

enhancement technique used, and (2) using DT classification, MSMA change fractions [i.e., green vegetation (GV), nonphotosynthetic vegetation (NPV), shade, and soil] outperformed MKT change features (i.e., change in brightness, greenness, and wetness) by â^¼45%.

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Keywords

Vegetation change; Spectral mixture analysis; Decision tree classification; Remote sensing

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