

Detecting deforestation with a spectral change detection approach using multitemporal Landsat data : A case study of Kinabalu Park, Sabah, Malaysia

Abstract

Tropical deforestation is occurring at an alarming rate, threatening the ecological integrity of protected areas. This makes it vital to regularly assess protected areas to confirm the efficacy of measures that protect that area from clearing. Satellite remote sensing offers a systematic and objective means for detecting and monitoring deforestation. This paper examines a spectral change approach to detect deforestation using pattern decomposition (PD) coefficients from multitemporal Landsat data. Our results show that the PD coefficients for soil and vegetation can be used to detect deforestation using change vector analysis (CVA). CVA analysis demonstrates that deforestation in the Kinabalu area, Sabah, Malaysia has significantly slowed from 1.22% in period 1 (1973 and 1991) to 0.1% in period 2 (1991 and 1996). A comparison of deforestation both inside and outside Kinabalu Park has highlighted the effectiveness of the park in protecting the tropical forest against clearing. However, the park is still facing pressure from the area immediately surrounding the park (the 1 km buffer zone) where the deforestation rate has remained unchanged. 2007 Elsevier Ltd. All rights reserved.