

Change detection of bare areas in the Xolobeni region, South Africa using Landsat NDVI.

Rebekah Gereldene Singh¹, Jeanine Engelbrecht², Jaco Kemp³

¹Council for Geoscience, South Africa, rgrow@geoscience.org.za

²Council for Scientific and Industrial Research, South Africa

³Stellenbosch University, South Africa

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Abstract

Identification and protection of areas that are vulnerable to erosion is essential for the conservation of the sensitive wetlands and estuarine ecosystems along the Xolobeni coastal strip. The forecasting of these erosion susceptible areas requires an understanding of the inter-relationships of the critical factors that have influenced erosion potential over time. Vegetation and bare areas are some of the contributing factors that have influenced erosion at Xolobeni. This study used remote sensing as a tool to provide some information on the inter-relationship between vegetated classes and bare areas. Normalised Difference Vegetation Index (NDVI) data derived from multi-temporal Landsat 5 imagery has formed the baseline information for this study. A density slicing approach was adopted to classify the region into four vegetation structure classes of predominant land cover types. Post classification change detection data has provided an understanding of the relative susceptibility of the different vegetated classes to being degraded to bare areas. The results suggest that poorly vegetated regions were most susceptible to further degradation and an elevated susceptibility to erosion. On the other hand, moderately and densely vegetated regions were less susceptible to land degradation. The information can be used to identify measures to mitigate the effects of land degradation in vulnerable areas.