A multiscale remote sensing approach to analyse the spatial dynamics of savanna in Kruger National Park, South Africa.

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Savanna constitutes the largest biome in southern Africa, occupying 46% of its area, and over one third of the area of South Africa. It is home to South Africa's largest conservation initiative, the Kruger National Park (KNP). Concerns have been raised about the homogenisation of vegetation (e.g., expansion of woody plants) taking place in KNP, partly as a result of management practices like the construction of artificial water resources, the periodic burning of plots of land and the introduction of alien species. These suspected vegetation changes will have long-term effects on the ecological make up of the area and thereby on the rich biotic diversity inherent to KNP. Accurate monitoring of these changes is necessary for the development of effective conservation practices. The spatial and temporal heterogeneity that is characteristic of the savanna landscape means that local scale studies, limited in space and time, cannot adequately explain the processes of change that are in operation. It is essential that information is obtained at regional spatial scales and over longer time periods so as to further our understanding of the nature of change. It is hypothesised that multiscale remote sensing may be an effective means of obtaining this information.Change in the spatial pattern of vegetation in KNP over 30 years (1972-2002) is examined through a time-series of images from Landsat sensors (Multi-Spectral Scanner (MSS), Thematic Mapper (TM), Enhanced Thematic Mapper Plus (ETM+)). Given the structural openness typical of savanna (e.g., compared with the closed-canopy structure of tropical forests), the Soil Adjusted Vegetation Index (SAVI) is used to analyse vegetation dynamics, as well as to aid in the determination of land cover classes for image classification. Heterogeneity is quantified using landscape indices and related to vegetation change. In further research, the Landsat-based imagery will be integrated with finer spatial resolution images (e.g., IKONOS and QuickBird) to increase the spatial detail of the derived heterogeneity information.