

Continuous land cover change detection in Subtropical Thicket ecosystems

The Subtropical Thicket Biome is a unique and highly biodiverse ecosystem in Southern Africa. Estimates indicate that as much as 63% of the biome is already severely degraded, with agricultural expansion the main driver of transformation. While several studies have sought to document and map the long term transformations, there is a lack of information on disturbance events that allow for timely intervention by authorities. Furthermore tools that seek to perform continuous land cover change detection are often developed for forests and thus tend to perform poorly in thicket ecosystems. This study investigates the utility of earth observation data for continuous land cover change detection in subtropical thicket ecosystems. A dataset of dated clearing events was used to train Temporal Neural Networks on time series of Sentinel-2 observations. The model obtained 0.93 accuracy, a recall score of 0.93 and a precision score of 0.91 in detecting Thicket disturbances. This is an improvement in performance compared to previous studies that rely on traditional supervised post-classification change detection. The study demonstrates the potential of continuous land cover change detection in Subtropical Thicket ecosystems.