

Fig. 1: Land use/cover classification based on Landsat 5 TM data for 2008.

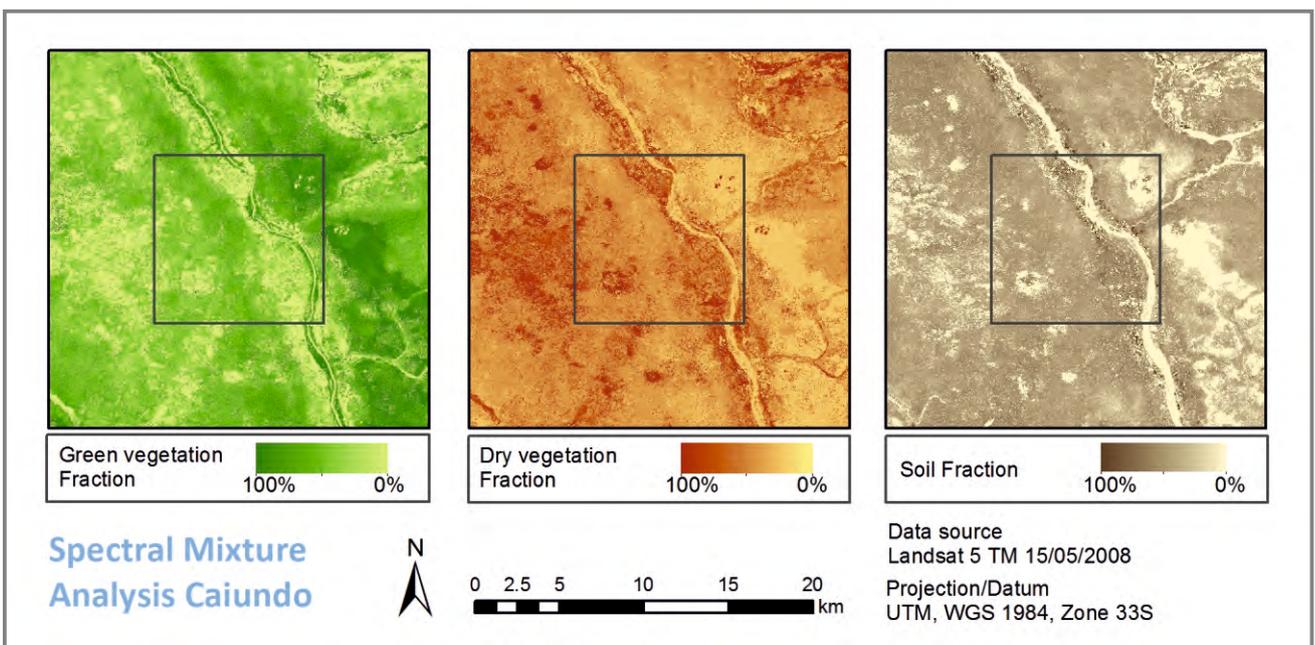


Fig. 2: Spectral unmixing result of Landsat 5 TM data (2008). Displayed are the fractions of the three endmembers "green vegetation" (left), "dry vegetation" (centre) and "soil" (right).

The Caiundo land cover map for the year 2008 is based on a multi-seasonal Landsat 5 TM dataset (path 178, row 71) with images from May, August, September and October 2008 (Fig. 1). The core site is sparsely populated. Settlements and the adjacent fields mainly stretch along the river. However, some fields are also located on the hill tops on the eastern side of the river, where woodland with a very dense shrub layer has been cleared for cultivation. On the western side of the river, the core site is dominated by sparse to medium dense *Baikiaea-Burkea* woodland interspersed by patches of grassland.

In May 2008 green vegetation cover was highest in the dense woodlands stretching along the eastern side of the river valley (Fig. 2). Moreover, the riverine vegetation is very vigorous. The fractions of the three main surface components "green vegetation", "dry vegetation" and "soil" vary strongly within the natural areas. Patches where green vegetation is prevailing are intermingled with areas with high values of dry vegetation fraction, where grasses are already dry.

The EVI time profiles of open and dense woodlands are very similar in their temporal behaviour (Fig. 3). The minimum

EVI values are reached in winter during the dry season, and maximum values in the rainy season are attained. However, the dense woodland shows a higher amplitude in the annual cycle, and much higher maximum EVI values which indicate a denser vegetation cover. The woodlands in the Caiundo region differ strongly in their phenology from the Miombo woodlands in the Cusseque region. In Caiundo, the annual cycle is very distinct compared to the Cusseque woodlands. Moreover, the minimum EVI values are much lower, indicating that the standing biomass in the woodlands of Cusseque is much higher.

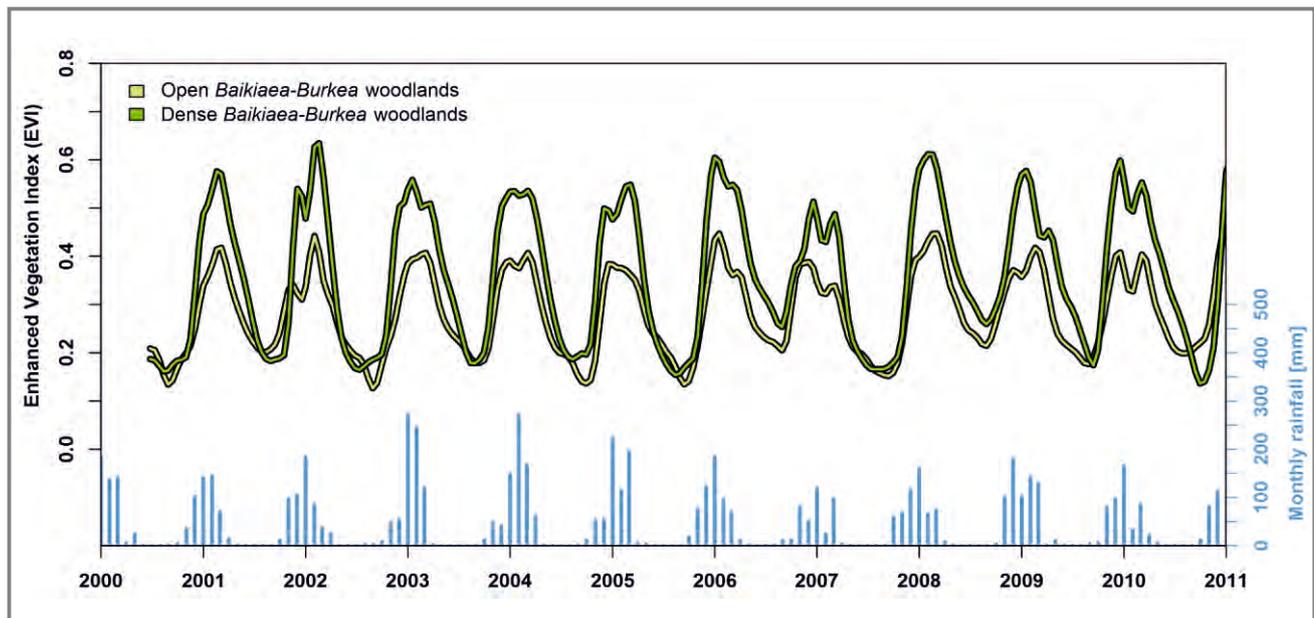


Fig. 3: MODIS EVI profiles for a dense and an open woodland from 2000 to 2010. Also given is the monthly rainfall for this time period.

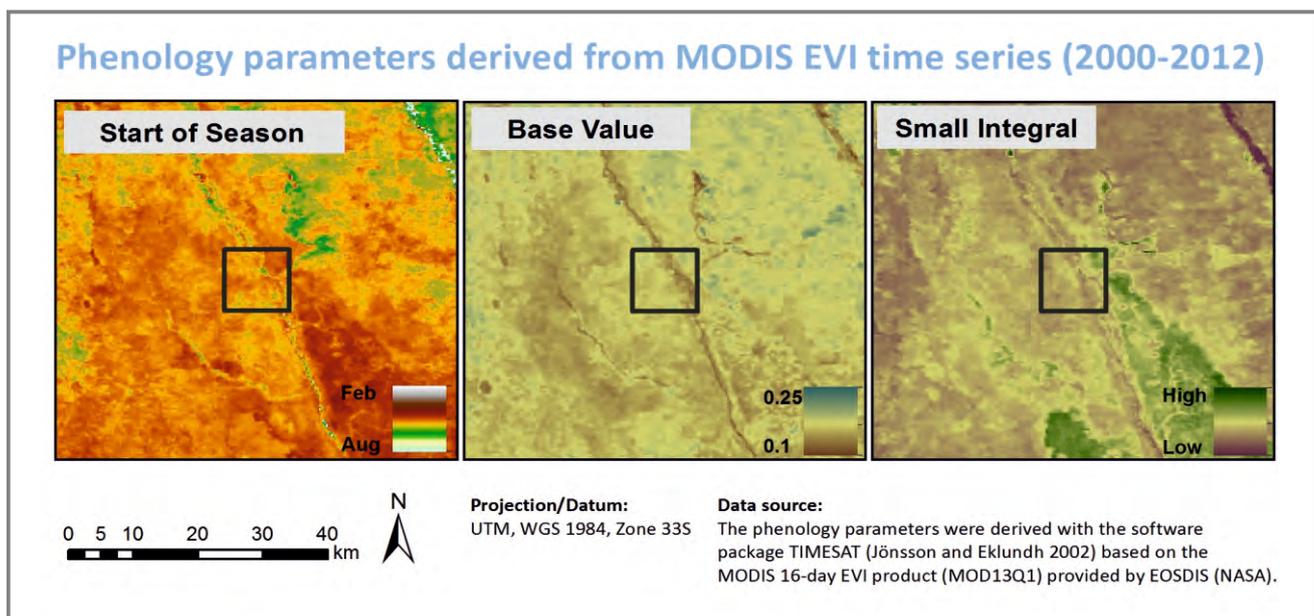
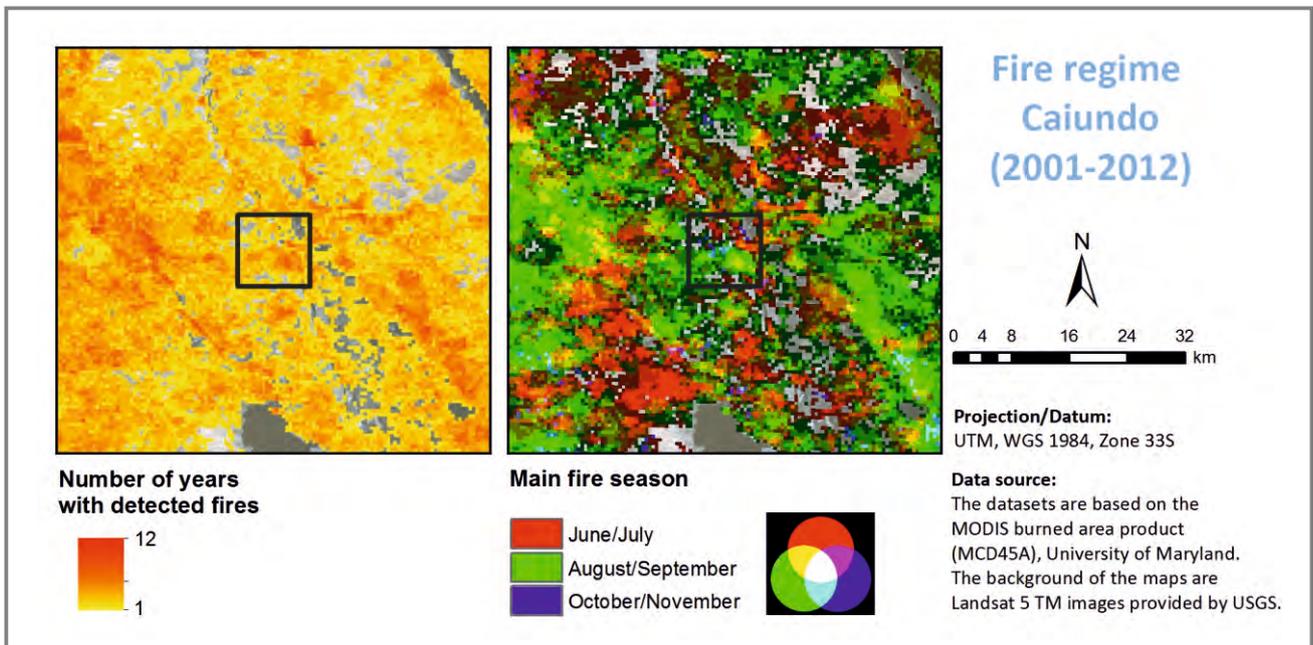


Fig. 4: Phenology parameters derived from MODIS EVI time series with the software package TIMESAT. Displayed are the "start of the season" (left), the "base EVI value" (centre) and the "small integral" (right).



**Fig. 5:** Number of years with detected fires (left) and main fire season (right) derived from the MODIS burned area product within the observation period 2001 to 2012.

The “start of the season”, or greening, corresponds with the start of the rainy season in October/November (Fig. 4). In most parts of the region the base values are low to medium; only few patches are characterized by high base values that indicate a high standing biomass through the year. The “small integral” is also rather low in major parts of the core area. Only the areas that are covered by dense *Baikiaea-Burkea* woodlands show a high “small integral” and therefore, a high annual variability of biomass. Even though the core site and its surroundings

are dominated by open woodlands, the map also shows that dense woodlands form large parts of the landscape to the south of the core area.

The fire maps show that the Caiundo area is very prone to fires and major parts of the core site and its surrounding areas burn almost every year (Fig. 5). Hence, fire is a major factor which has to be considered in assessments of the landscape and its cover. Only a few patches are not affected by fire (e.g. the dense *Baikiaea-Burkea* woodlands). The main fire season in this area is June to

September with only a few fires occurring later in the year.

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