Geophysical Research Abstracts, Vol. 9, 07207, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-07207
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# Analysis of Terra/MODIS-derived fire-scar and vegetation-re-growth properties for northern Australian savannas

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About 25% of Australia is covered by tropical savannas in the north. Seasonal fires with natural or anthropogenic causes are by far the largest disturbance in this biome of which about 20% is burnt or fire-affected each year. The associated changes of the biosphere immediately after the fire and during the subsequent re-growth period do not only significantly impact e.g. the hydrological processes and the carbon balance but via surface property changes also the surface-atmosphere coupling. There are several active fire products available for northern Australia based e.g. on the NOAA AVHRR or Terra/MODIS satellite sensors. In this study we use spatial and temporal composites of Terra/MODIS surface reflectance data and thermal anomalies products from 2001 to 2005 at 500 km spatial and 8-day temporal resolution covering all of northern Australia obtained from the Land Processes Distributed Active Archive Center of NASA and USGS. On a yearly basis the individual burned areas, the timing of the fire, the length of the regrowth period, the shape of the re-growth function (i.e. how e.g. the leaf area index evolves over time after a fire event) and the intensity of a fire are derived with a few restrictions by an unsupervised processing scheme. The new dataset is validated with in-situ observations and the standard active fire products from the Department of Land Information. These fire/re-growth parameters form the basis of a spatio-temporal investigation of the fire and re-growth properties and regimes in relation to their biomes over very large areas. In addition, the dataset might be used as a regional atmospheric model forcing by modifying land-surface model variables like albedo, leaf area index, roughness length and vegetation coverage to investigate the impact of the land cover changes on atmospheric processes.