

Wildfire management monitoring through satellite images: Kraho Indigene Land in Brazil

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Managing landscape is a critical issue in ecosystems found the Brazilian Savanna biome, where litter and standing dead vegetation are accumulated along the dry seasons. There are in the literature several studies indicating the usefulness of fire to preserve those ecosystems by burning litter and standing dead vegetation. Satellite images are being used to quantify the extension of burnt scars all over the world and to identify Savanna physiognomies, specially in Brazil. The population of the Kraho Indigene Land (the reserve), in the Brazilian Central part, has declared the use of fire to preserve Savanna physiognomies within the reserve. To check that managing procedure, a database were organized in a SIG environment. That database include satellite images (ETM+ Landsat) and geo-coded field observations and information obtained through interviews. The satellite image were used to map the vegetation cover before the dry period (May 2002) when the vegetation cover is almost intact, and to map the fire scars (August 2002), when those Amerindians have already burnt the Savanna vegetation. Thus, geometric, radiometric, and atmospheric corrections were used make the May and August images proper to be analyzed. The Savanna physiognomies were classified using NDVI image, segmented according to intervals found in the literature. The fire scars map result from a multispectral statistic classification, segmented in burnt and not burnt. The burnt areas were used to extract the middle infrared spectral response, segmented into recent, old and very old scars classes. Analyzing the August image, it was found that 48% of the reserve area was burned, distributed into: recent (the class with fire in the August image); old (late July to early August); and very old (June to early July). Subtracting the burnt scars classes from vegetation classes it was found that most of the burnt areas are indeed the open Savanna physiognomies.