

# Using time series of remote sensing images to characterize vegetation behaviour over territories under wildland fire risk

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## Abstract

In a framework of wildland fire prevention, fire danger knowledge is compulsory for decision making. This paper is intended to show the capability of time series of remote sensing images to estimate vegetation fire susceptibility.

The study area is Aude province, in the south of France, covering an area of 6.343 km<sup>2</sup> in Mediterranean region. Time series of remote sensing data consist in MODIS-Terra 16 days synthesis products acquired from 2000 to 2006.

The method is based on the analysis of both spatial and temporal components of the dataset. To characterize vegetation behavior synthetic indicators are derived from time series of vegetation index values. The definition of these synthetic indicators is grounded on the analysis of the annual variations of vegetation index values and the understanding of the phenological cycles by vegetation types. Both seasonal and annual indicators are calculated combining vegetation index values measured at some critical phenological stages. For each indicator reference value is calculated by averaging the results over several available years.

The expected uses of these indicators are:

- the annual vegetation status mapping and the identification of the most sensitive areas to fire risk;
- the analysis of spatial and temporal variations of the vegetation status to strengthen the return on experience at the end of the fire season;
- to propose early warning map to evaluate vegetation sensitivity to fire risk at the beginning of the fire season.

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