



## **Wildland fire ignition danger spatial modelling using GIS and satellite data**

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Fire is one of the main ecological factors in Mediterranean landscapes. Even if it is considered as a natural element, its current magnitude and recurrence is degrading the structure of the affected ecosystems, threatening its conservation. Spanish case is especially important since wildfires are the main cause of the deforestation in the last decades.

The results of the fire ignition danger component of FIRERISK and FIREMAP projects (founded by the Spanish Government) are presented. The general objective is the development of consistent methods to obtain basic inputs for fire danger assessment through the integrated analysis of risk factors related to both natural environment and human activity. The fire danger estimation takes into account the great variety of elements related with fire ignition and fire propagation. For this reason we combine traditional sources of information (statistics, meteorological data) with new technologies such as remote sensing and GIS.

The fire danger component considers two elements: fuel moisture content and the causal agent (both natural and human causal factors). Methods for Fuel Moisture Content estimation –live and dead FMC- are developed using remote sensing data (NOAA-AVHRR images) and meteorological indices (USA National Fire Danger Rating System). The spatialization of the causal human factor of the ignition danger is specially considered in this paper. In this framework, fire occurrence has been performed by means of kernel density techniques, and different fire predictors have been introduced in a GIS. Then, statistical analysis is applied for the determination of the explanatory variables. Best results are obtained in the framework of the logistic regression.

Finally, obtained maps are combined in order to produce a synthetic model for fire ignition danger assessment in an operational way; for this purpose, GIS technologies are used for improving spatial modeling analysis of fire danger factors.

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