



## **Mapping forest fires in Spain using MODIS reflectance and active fire data**

S. Merino-de-Miguel (1), M. Huesca (2) and F. González-Alonso (2)

(1) EUIT Forestal, Universidad Politécnica de Madrid, Spain, (2) Remote Sensing Laboratory, CIFOR-INIA, Spain (silvia.merino@upm.es / Phone: +34 91-3367668)

Forest fires are a major source of concern for both environmental and safety reasons in many parts of the world since they cause casualties as well as important economic, social and environmental losses. Besides, these events play an important role in global warming and global climate change, being responsible for a significant amount of greenhouse gases, particulates and aerosols emissions into the atmosphere. The scientific community dealing with modelling of anthropogenic emissions demands global assessments of the timing and spatial extent of biomass burning, a task that nowadays is only affordable using remote sensing techniques.

Satellite-based strategies for burn mapping may rely on two types of remotely sensed data: post-fire images and active fires detections. The present work uses both in a synergistic way. In particular, burn mapping is carried out using MODIS (MODerate resolution Imaging Spectrometer) post and active fire information from Galicia (North-West Spain) during the 2006 summer season, when hundreds of events took place in a few days, leaving roughly 95,000ha consumed by fire.

Used data involved a MODIS image dated on the 21st of August 2006, MODIS hotspots detected during the first twenty days of August as well as ancillary maps and information. Developed methodology is based on the use of the BAIM (MODIS Burned Area Index) together with hotspot locations. Active fire data were used for both BAIM threshold determination and commissions errors removal. However, since the main difficulty was the establishment of an effective threshold for separating burns because the latter is spatially variable, the present work also analyzes the use of dif-

ferent stratification variables (bioclimatic regions, watersheds, etc.) prior to threshold determination.

Burned area as resulted from this work was compared to official fire statistics from both the Spanish Ministry of Environment and the Galician Forest Service. Results were also tested against burns perimeters as derived from an AWiFS image (21st of August 2006, 56m pixel size, 4 spectral bands in the visible, near- and shortwave-infrared), a work that was previously developed by the authors. Reached results showed that this method would be of great interest at regional to national scales, since it was proved to be quick, accurate and cost-effective.