

# A global map of burnt vegetation at 1km resolution for the year 2000 derived from SPOT VGT data

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Over large regions of the globe, emissions from biomass burning are known to contribute significantly to the injection of “pollutants” into the atmosphere, impacting on the radiation balance and on the acidification of precipitation. For instance, biomass burning contributes up to 40% and 16% of the total emissions of anthropogenic origin for carbon dioxide and methane respectively. Other pollutants from gases such as NO<sub>2</sub>, H<sub>2</sub>SO<sub>4</sub>, HNO<sub>3</sub>, are known to be highly correlated with the level of biomass burning activity. Biomass burning is also an important source of aerosols to the atmosphere, with direct impact on the properties of the atmosphere such as absorbing or reflecting solar radiation. Biomass burning, therefore, has an impact on the radiation balance. Moreover, vegetation fires have a direct impact on the capacity of a given ecosystem to act as a sink of carbon dioxide.

The scientific community dealing with the modelling of atmospheric “pollution” from anthropogenic sources is therefore looking for reliable and quantitative information on the magnitude of biomass burning. It is in this context that the Global Burnt Area – 2000 (GBA2000) initiative has been launched by the JRC of the European Commission, in partnership with a series of institutions around the world, with the following specific objectives. Firstly, to produce a map of the areas burnt globally for the year 2000, using the medium resolution satellite imagery provided by the SPOT-Vegetation system. The basic product being a binary (burnt/not burnt), monthly, non-accumulative, global map, at 1 km resolution with meta-data specifying the geographic location of each burnt area. Secondly, derived from this map, statistics of area burnt per country, per month, and per type of vegetation cover. The format of the statistical information is compatible with the guidelines defined by the Intergovernmental Panel on Climate Change (IPCC).

This paper outlines, in brief, the methodology used to map burnt areas using satellite imagery. In addition to overcoming problems such as poor data quality, persistent cloud cover and unusual fire regimes, the GBA2000 project provides the scientific community with a range of algorithms that can be compared and validated in future experiments and, applied to datasets from other years providing the opportunity to make inter-year comparisons.

The paper describes the seasonality of vegetation burning at a global scale. The paper also illustrates examples of the different levels of information that can be extracted from the map products and how this information can be utilised by a number of scientific user groups. When incorporated into a GIS system containing thematic layers such as vegetation or climatic grids, the burnt area maps can be used to derive relevant and timely information concerning the following research themes:

1. Reporting on emissions from biomass burning (per country and per vegetation type).
2. Modelling of emissions and transport at global level.
3. Management of fire practices in protected areas.
4. Assessing the impact of fire disturbance to forest ecosystems.

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[http://www-gvm.jrc.it/tem/PDF\\_publicis/2002/tansey\\_wengen\\_2002.pdf](http://www-gvm.jrc.it/tem/PDF_publicis/2002/tansey_wengen_2002.pdf)