

Negligent and intentional fires in Portugal: the role of human and biophysical drivers on the spatial distribution

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The European Mediterranean countries, such as Portugal, Spain, France, Italy and Greece, have the higher incidence of fire. Of these countries, Portugal present the highest average number of fires (NF) and one of the highest burnt area (BA), in spite of its relatively smaller land area. The study period is focused in the recent years of 2012 – 2014, when a total of 59 257 fires were recorded and the fire cause is known for more than 50% of the fire records. All fires with known causes were then classified into intentional (40% of the total number of fires) and negligent (60%), leading to a total of 45% of fires related with human factors and activities. Taking into account these values the authors believe it's necessary to better understand the fire regime of this type of fires for a better fire prevention, firefighting and crisis management. Accordingly, the use of statistical analysis and GIS techniques were used to assess the spatial distribution of the human caused fires in each of the NUTS (Nomenclature of Territorial Units for Statistics level I, which divides Portugal in 5 basic economic regions, namely Norte, Centro, Área Metropolitana de Lisboa, Alentejo, and Algarve. The number of fires distribution increases with latitude, making north of Portugal the region with the highest number of fires. The analysis will also aims to assess the role of the most important human and biophysical drivers of the spatial distribution, namely the population density, land use land cover (LULC), distance to communication routes (roads and railways) and topographic variables (altitude, slope). The results show that: a) population density is highly and positively correlated with the agglomeration of fire ignitions, but doesn't imply highest burned area; b) burnt area increase with the distance to roads and altitude; and, c) 58% of the fires occurred on agriculture areas and 33% of fires occurred in forest and scrubs areas.

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