



Identification of the most fire susceptible areas in Portugal

Patrícia Páscoa^{1,2,3}, Tiago Ermitão^{1,2}, and Célia M. Gouveia^{1,2}

¹Instituto Português do Mar e da Atmosfera, Lisbon, Portugal

²Instituto Dom Luiz, Faculdade de Ciências da Universidade de Lisboa, Lisbon, Portugal

³Centro de Investigación Mariña, Universidade de Vigo, Environmental Physics Laboratory (EPHysLab), Ourense, Spain

Mediterranean European countries are considered fire-prone regions, being affected by fire events every summer, and Portugal is among these countries. Moreover, Portugal has been recording large burned areas over the last 20 years. Catastrophic fire season occurrence, associated with hot and dry conditions and high fuel availability in forests, has been recurrently destroying several ecosystems. Furthermore, the Mediterranean basin has been stated with high potential to be one of the most disturbed areas due to climate change, which strongly promotes the increase of fire weather conditions and fire risk and, thereby, the occurrence of more extreme fire seasons.

During the last years, Portugal has been implementing new effective policies regarding the prevention of fires during pre-fire season months, improving the investment in combat strategies. In this context, our study contributes to identify the regions with more potential to burn in a specific fire season. Through satellite-based data and reanalysis products, with large temporal extent and moderate to high spatial resolution, we combine a wide range of variables linked, directly or indirectly, with fire, in order to identify the most exposed regions to burn.

The application of Principal Component Analysis (PCA) to our range of climatological, ecological and biophysical parameters allowed to assess six different regions with more susceptibility to fire events. The central and the southernmost regions of the country presented a stronger signal on PCA analysis, indicating a higher exposure to future fire events. Fuel accumulation during several months, in conjunction with topography, land cover and fire weather conditions were the terms that explained the most variability of the first six PCAs. Therefore, with these results, our work addresses the key trigger parameters of fires, and the most susceptible areas to burn in Portugal, contributing to enhancing the effectiveness of fire prevention policies.

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