



Spatio-temporal comparison of Fire Weather Indices in Continental Portugal

Mário Pereira (1,2), Joana Parente (1), and Paulo Fernandes (1)

(1) CITAB, UTAD, Vila Real, Portugal (gpereira@utad.pt), (2) IDL, Faculdade de Ciências da Universidade de Lisboa, Portugal (gpereira@utad.pt)

There are several Fire Weather products available to assess fire weather danger in Portugal, namely: Ceasefire danger, Ceasefire FWI, IPMA FWI, EFFIS, Global ECMWF Fire Forecast. Those products are based on the Canadian Fire Weather Index, FWI, which was developed according to meteorological and fire intensity measurements on a standard fuel type (*Pinus banksiana* and *Pinus contorta* var. *latifolia*). However, it is not clear which of these FWI is more related to fire occurrence and size. Therefore, the main objectives of this study are: (i) analysis of the different existent/available Fire Weather products in Portugal; (ii) identification of which is the most adequate Fire Weather product for the current weather conditions in Portugal and in each of the 5 NUTS II regions. This study benefits from the existence of two official wildfire datasets available for Portugal, namely: (a) the Portuguese Rural Fire Database (PRFD), which comprises the location, date and time of ignition and extinction, the burnt area (BA) for each wildfire event assessed on the ground; and, (b) the National Burned Area Cartography (NMBA), which is based on satellite imagery information and provides the size and shape of individual BA events at the annual scale. The methodology adopted is based in several performance statistics usually used in the validation processes of this type of products. The results include the evaluation of the spatial-time performance of each of the indices under study to estimate the number of ignitions and burnt area in mainland Portugal. The authors strongly believe that these results are a valuable contribution towards a better forest and fire risk management.

Acknowledgements

This work was funded by the R&D Project FIREXTR - Prevent and prepare society for extreme fire events: the challenge of seeing the “forest” and not just the “trees”, with reference POCI-01-0145-FEDER-016702 and PTDC/ATP-GEO/0462/2014, financed by the European Regional Development Fund (ERDF) through COMPETE 2020 - Operational Program for Competitiveness and Internationalization (POCI) and by the Foundation for Science and Technology (FCT). This work was also supported by: (i) project BONFIRE - Global-scale analysis and modelling of fire behaviour potential, PTDC/AAG-MAA/2656/2014; (ii) the INTERACT project – “Integrative Research in Environment, Agro-Chains and Technology”, no. NORTE-01-0145-FEDER-000017, in its line of research entitled BEST, co-financed by the European Regional Development Fund (ERDF) through NORTE 2020 (North Regional Operational Program 2014/2020); and (iii) National Funds by FCT - Portuguese Foundation for Science and Technology, under the project UID/AGR/04033/2019.