



## Assessing the outstanding 2003 fire events in Portugal with a Regional Climate Model

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The heatwave that struck western Iberia in the early days of August 2003 was characterized by record high values of both maximum (47.3°C) and minimum (30.6°C) temperatures in Portugal, associated with extremely low humidity levels and relatively intense wind speed (Trigo et al., 2006). These conditions triggered the most devastating sequence of large fires ever registered in Portugal. The estimated total burnt area was about 450.000 ha, including 280.000 ha of forest (Pereira et al., 2011). The outstanding total burnt area value corresponds to roughly 5% of the Portuguese territory, and represents approximately twice the previous maximum observed in 1998 (~220.000 ha), and about four times the long-term average observed between 1980 and 2004.

Here we characterise this unusual episode using meteorological fields obtained from both observations and a regional climate model. In this work we use the longest (49-years) high-resolution regional climate simulation available driven by reanalysis data spanning from 1959 to 2007 and covering the entire Iberian Peninsula. This long run was obtained using the MM5 model with a spatial resolution of 10 km. Using this high spatial and temporal resolution we have computed the Canadian Fire Weather Index (FWI) System to produce hourly values of fire risk.

The FWI System consists of six components that account for the effects of fuel moisture and wind on fire behaviour (van Wagner, 1987).

We show the temporal evolution of high resolution patterns for several fire related variables during the most important days for triggering new fires (the first week of August 2003). Besides the absolute value of T<sub>max</sub>, T<sub>min</sub>, wind (speed and direction), relative humidity and FWI we also evaluate the corresponding anomalies of these fields, obtained after removing the long-term smoothed daily climatology.

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Van Wagner, C.E., 1987. Development and structure of the Canadian forest fire weather index system. Canadian Forestry Service, Forest Technical Report 35, Ottawa, 37 pp.