



Compound impact of anomalous vegetation activity and hot/dry conditions during the 2017 extreme fire season in Portugal

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Fires are a natural part of many ecosystems, constituting nonetheless a serious threat to ecosystems and humans. Portugal is recurrently affected by wildfires, being considered a fire-prone region within the Mediterranean basin. However, during the last twenty years, several fire seasons recorded a large extension of burned areas, and the catastrophic fire season of 2017 stands out by recording more than 450,000 hectares of burned area and causing the death of more than 100 people.

Hot and dry fuel conditions were pinpointed as the main drivers of the widespread propagation of wildfires. Therefore, this work aims to assess the impact of the compound or cascading extreme events on vegetation, and also if there was a selectivity of fires for more stressed vegetation. We analyse the climatological and ecological conditions during the pre-fire season, in order to understand its effects on fire season burned areas through fuel accumulation and dryness.

The study highlights the importance of fuel accumulation during the growing season in fire-prone regions like Portugal. Moreover, anomalous hot and dry conditions during summer, in conjunction with strong fuel accumulation during the months preceding fire season, enabled to clarify why the 2017 fire season were so outstanding. Additionally, under the context of climate change, fire seasons as the one occurred in 2017 in Portugal can be more frequent. Therefore, our results highlight that fuel management can be an effective way to mitigate extreme fire seasons and point to the need of implementation of fire prevention policies, especially regarding biomass accumulation control during pre-fire season.

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