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Assessment of the relationship between pre-fire fuel estimates and Fire Radiative Power in Portugal

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Forest fires are recurrent in Portugal, either due to climate conditions, to land use change, or to a combination of both. Wet and mild winters, together with dry and warm summers, favour the growth of vegetation and its subsequent low moisture content, increasing fuel availability. The assessment and management of fuel loads is essential to understand and minimize fire risk. The structural risk depends on the type of available fuel and on the age of vegetation. Therefore, reducing fuel loads is often required to mitigate fire severity.

Active fire observations of fire radiative power (FRP) have been shown to be correlated to rates of biomass combustion. The Meteosat FRP-PIXEL product is delivered in near real-time by the EUMETSAT Land Surface Analysis Satellite Applications Facility (LSA SAF), since 2004 with 15-min temporal resolution. We propose to do the first assessment, for Portugal, of the relationship between Fire Radiative Energy (FRE) per fire and pre-fire fuel load estimates, as obtained from Dry Matter Productivity (DMP), disseminated by Copernicus Global Land Service (CGLS) at 1km spatial resolution since 1999. The analysis is performed for the main land cover types in Portugal that show high sensitivity to wildfires. The severest wildfire events in Portugal since 2004 are also analysed with detail, namely the fires of 2005, 2012 and 2017 and the obtained results related with soil moisture, fuel type and fire size.

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