



## The drivers of the 2023 Greece exceptional fire season

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The fire season of 2023 was particularly devastating for Greece, with an estimated of around 175 000 ha, the second worst year since 1980 following the all-time record of 2007. More than 80 wildfires occurred in July over Attica region, Corfu, Evia and Rhodes islands, being responsible for 28 casualties and 75 injuries. The season was remarkably severe in the eastern sector of the West Thrace region in the northern continental Greece. A major fire started near the city of Alexandroupolis on 21st August and on 28th the main part of the Dadia forest and surrounding pine forests burnt, recording more than 80,000 ha and stated by EU officials as the largest recorded fire in the EU.

The exceptionality of the 2023 fire activity in Greece will be evaluated, considering the spring drought conditions, summer heatwaves and strong wind patterns observed over the region. ERA5 reanalyses will be used to characterize drought conditions and heat extremes. Active fires from SEVIRI, MODIS and VIIRS programs will allow characterizing fire occurrence and severity. The role of synoptic conditions and weather extremes will be evaluated and related to fire activity and behavior. Moreover, during the hydrological year of 2023, Northeastern Greece was struck by a winter drought and by summer heatwaves. Fire behaviour was linked with strong wind patterns that affected the region. Vegetation dynamics throughout the pre-fire period was analysed over the affected region using the Enhanced Vegetation Index (EVI) and Gross Primary Production (GPP) retrieved from MODIS data. Spatial and temporal characterization of air pollutants over the region is performed, focusing particularly on the emissions of Particulate Matter (PM) and Carbon Monoxide (CM) during wildfire events, using the Copernicus Atmosphere Monitoring (CAMS) data. The study attempts to bring new light to the synergistic effect between fuel availability and weather conditions that created extraordinary conditions for fire propagation.

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