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Lessons learned from the extreme wildfires of early August 2021 in Greece

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This work focuses on the extreme pyroconvective wildfires that impacted southern Greece in early August 2021. These wildfires were unprecedented in extent, intensity, and impacts. They broke out in Attica, Euboea, Elis, Messenia, and Laconia, on August 03 and 04, 2021, and kept burning for several days. Observational evidence indicates that all wildfires exhibited extreme fire behavior, characterized by erratic fire spread, prolific spotting, and the formation of pyroclouds. The factors that contributed to this outbreak of extreme wildfires are sought in the combination of (1) antecedent meteorological conditions that allowed for the accumulation and extreme dry-out of fuels, and (2) concurrent adverse fire weather that enabled the wildfires to couple with the atmosphere and evolve into extreme pyroconvective events. Both topics serve as the motivation of this work, which presents a preliminary analysis of the extreme early August 2021 wildfires in Greece. The analysis was conducted employing ground-based and spaceborne observations. Results indicate the build-up of large potential for the occurrence of extreme wildfires in the affected regions since at least the beginning of the 2021 fire season. Our overarching goal is to consolidate the need for early detection and warning of elevated potential for extreme pyroconvective events, which are becoming a globally increasing concern due to inter alia climate change. The presented work was conducted in the frame of the CLIMPACT and FLAME (project number: 00559) research projects.