The deadly wildfire in eastern Attica, Greece: observations and modeling of the fire spread

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The present work has been made in the frame of DISARM project (Interreg-Balkanmed) and focuses on the wildfire event which occurred in the eastern part of Attica region (Greece) on 23 July 2018. The event presented an extreme behavior in terms of rate of spread of the fire front which quickly reached a mixed forest and residential area, resulting thus in the death of 100 persons and thus it is listed as the deadliest weather-related natural disaster in Greece, after the major heatwave of July 1987.

The analysis focuses in a) the description of the meteorological conditions that contributed to the rapid spread of the wildfire, b) exploration of the capability of WRF-SFIRE model (coupled to high-resolution operational WRF model) to correctly predict the fire spread. Indeed, the day when the catastrophic event occurred, an intense western flow was blowing over Attica that persisted for at least 10 hours, with wind gusts up to 100-120 km/h over the mountainous areas of Attica, and 70-90 km/h within the city of Athens and the surrounding peri urban areas. This strong western flow interacted with the local topography and acted as katabatic flow over the eastern part of Attica, with temperatures rising up to 39 deg Celcius and relative humidity dropping to 18%, prior to the onset of the fire. These weather elements are widely acknowledged as the major contributing factors that promote extreme fire behavior. The application of the WRF-SFIRE for this specific event, demonstrated the ability of the model to correctly predict the spatio-temporal distribution of the fire spread.