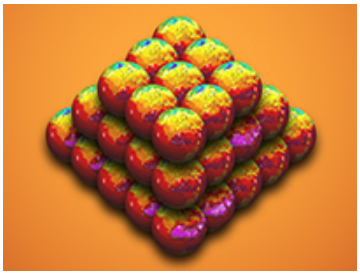

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Probabilistic fire spread prediction: The case of the deadly wildfire in Mati, Greece

Thursday, 6 June 2019 09:30 (30 minutes)

On July 23 2018, Greece experienced the second deadliest natural disaster of its modern history. Early in the afternoon, a wildfire broke up in the region of Ntaou on Penteli Mountain, approximately 20 km northeast of the city of Athens and 5 km off the Eastern Attica coast. Assisted by the prevailing meteorological conditions, characterized by high temperature, very low humidity and locally gale force surface winds, the wildfire spread erratically and within a couple of hours it almost literally wiped out the coastal settlement of Mati. The aftermath of the event included a record-high 101 civilian fatalities and innumerable destroyed properties. Such tragedies urgently call for raising awareness and preparedness for the occurrence of extreme fire weather and behaviour, as was the case of the Mati wildfire. Focusing on the side of preparedness, this work presents the assessment of the potential usefulness of probabilistic fire spread predictions. For that purpose, we use the operational ensemble forecasts of ECMWF's EPS to drive the advanced coupled fire-atmosphere WRF-SFIRE modelling system for retrospectively forecasting fire spread during the Mati wildfire. Two forecast horizons, covering the period of the wildfire, are considered, namely t0+36h (initialized July 22 at 12UTC), t0+24h (initialized July 23 at 00UTC). The set of forecasts used includes the control forecast of the EPS and the 50-member ensemble, all at 16 km spatial resolution. Actual fire perimeter data, provided by Copernicus Emergency Mapping Service, are used for assessing the added-value of the probabilistic fire spread predictions, focusing particularly on the provision of timely and accurate forecast guidance.

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