



Abstract

Establishment of a Risk and Resilience Assessment Center in the Region of East Macedonia and Thrace in Greece: The Wildfire Hazard Module [†]

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The Risk and Resilience Assessment Center (RiskAC) research project is a joint effort of more than 80 researchers from Departments of the Democritus University of Thrace, the Aristotle University and from the Institute of Engineering Seismology and Earthquake Engineering. The aim of the project is to strengthen the risk and resilience decision-making process in the Prefecture of East Macedonia and Thrace in Greece. Considering the magnitude and the frequency of the fire events, as well as the vulnerability of human, technological and environmental assets within the area, the RiskAC gives particular emphasis to the development of the necessary capacity for management and mitigation of wildfire-associated risks.

To do so, an integrated approach has been followed. Following the definition of the appropriate fuel classification scheme, fuel models were developed for the Region of East Macedonia—Thrace by measuring the field fuel parameters in representative natural fuel complexes.

The spatial extent of the different fuel types was extracted through a random forest classification of Sentinel-1, Sentinel-2 and topographic variables. The synergistic use of this data resulted to an overall accuracy of 91.57%.

Subsequently, the Minimum Travel Time (MTT) algorithm was applied as part of the wildfire risk analysis focusing on different spatial elements of significant value (natural, cultural, etc.). As a result of this analysis, Burn Probability (BP), Conditional Flame Length (CFL), Fire Size (FS), and Source–Sink Ratio (SSR) were spatially and explicitly assessed.

The outputs of this analysis will be used for decision-making for short-term predictions of wildfire risk at an operational level, contributing to wildfire suppression and management within the Prefecture of East Macedonia and Thrace. In addition, it will provide the baseline data for setting up workflows and processing pipelines, that will allow information updates and wildfire hazard analysis in future.

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