



Estimating present and future fire risk in Greece: Links with the destructive fires of summer 2007

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Greece is an agricultural country covering approximately 13,200,000 hectares of land surface. About 25% of its total surface is classified as forests characterized by rich biodiversity and 23% as forests of shorter vegetation and lower ecological interest. Since 1955, a total of 1,500,000 hectares of forests and agricultural land have been burnt. In addition, a pronounced increasing trend in total burnt areas within the Greek territory has been observed during the same period. The mean yearly increase was estimated to be about 10,000 hectares/decade. During summer 2007, Greece experienced the worst natural hazard in its modern history. 2007 has been the worst year in the country's fire records. 280,000 hectares (corresponding almost to 2% of Greek land surface) of forests, bush and agricultural areas (including olive groves which provide one of the main Greek exportable products) were destroyed. In addition, 64 human deaths occurred and thousands of people were left homeless as a direct consequence of the fires. This was an unprecedented ecological disaster not only for Greece but for the whole Mediterranean area.

Prolonged rainless and extremely hot conditions combined with strong winds in August 2007 constituted the ideal conditions for the ignition and spread of fires. Summer 2007 was the warmest summer in Greece since observational records began with respect to absolute and mean values. We assess the risk of fire due to these extreme meteorological conditions using the Canadian Fire Weather Index (FWI). The FWI is a numerical rating of fire's intensity and is used to estimate the difficulty of fire control. FWI requires the calculation of daily Maximum Temperature, Relative Humid-

ity, Wind, and Precipitation. Although FWI has been developed for Canadian forests, several studies have shown its suitability for the Mediterranean basin. We estimate whether summer 2007 was indeed an exceptional meteorological summer in terms of fire risk occurrence by comparing FWI 2007 values with FWI values of other less extreme meteorological summers in Greece. Furthermore, using available regional climate model output we provide an estimate of future forest fire risk and we compare future with present and 2007 fire risk to determine the severity of summer 2007 in fire danger.