The objective of this research is to enhance the Fire Weather Index (FWI) produced by the JRC's European Forest Fire Information System (EFFIS) by integrating data from the JRC's European Drought Observatory (EDO). In detail, we statistically analyse the correlations between the multi-timescale drought condition information with the incidence of forest fires. At a European scale, drought conditions are assessed through the Standard Precipitation Index (SPI), which is a spatially invariant and probabilistic year-round index based on precipitation alone. The SPI is derived on a monthly basis by the EDO and its strength is that it serves to monitor water supply conditions on a variety of timescales. To investigate the relationship between forest fire occurrences and drought conditions, we performed a comparative analysis of the SPI frequencies for burnt areas with the respective SPI frequencies for the total study area. The research was carried out in the Iberian Peninsula in the year 2009, using the burnt areas mapped by the EFFIS Rapid Damage Assessment. The SPI data was computed for 1-, 3-, 6-, 12- and 24-month total precipitation timescales, between January and December 2009, using a 30-year monthly precipitation record, from January 1961 to December 1990, as long-term normal conditions. The results clearly show that burnt areas’ frequencies correlate to the regions with low 24-month accumulated precipitation totals. This suggests that long-term lack of water contributes to vegetation dryness and increases fire danger and demonstrates its usefulness in the preparation of the FWI.

Keywords: drought, fire weather index, forest fire danger, multi-disciplinary research