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Abstract

Over the last decades, authorities responsible on forest fire have encouraged research on fire triggering factors, recognizing this as a critical point to achieve a greater understanding of fire occurrence patterns and improve preventive measures. The key objectives of this study are to investigate and analyze spatial-temporal changes in the contribution of wildfire drivers in Spain, and provide deeper insights into the influence of fire features: cause, season and size. We explored several subsets of fire occurrence combining cause (negligence/accident and arson), season (summer-spring and winter-fall) and size (<1Ha, 1-100 Ha and >100Ha). The analysis is carried out fitting Geographically Weighted Logistic Regression models in two separate time periods (1988-1992, soon after Spain joined the European Union; and 2006-2010, after several decades of forest management). Our results suggest that human factors are losing performance with climate factors taking over, which may be ultimately related to the success in recent prevention policies. In addition, we found strong differences in the performance of occurrence models across subsets, thus models based on long-term historical fire records might led to misleading conclusions. Overall, fire management should move towards differential prevention measurements and recommendations due to the observed variability in drivers' behavior over time and space, paying special attention to winter fires.

Keywords: wildfire; driving factors; season; fire size; cause; GWLR

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