



The role of forest fires in land use/land cover changes in Portugal

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In the last decades, Portugal registered substantial land use and land cover changes (LULCC) driven by the abandonment of rural areas, fast urbanization, and expansion of metropolitan areas and costal touristic centers motivated by the significant socio-economic development. These LULCC included the homogenization of the fuel bands, which increased the extension and complexity of fire risk areas. In fact, Portugal was particularly affected by forest fires (FF) with more than 18,000 FF/year and annual burnt area (BA) of 107,000 ha/year since 1980. In addition, the average size of such events has increased from 4 ha to 13 ha in the last 10 years. The main objective of this study assess the LULCC and relate these changes with the FF occurrence in Continental Portugal. The study will cover the 1990 – 2018 period and will focus on: (i) the assessment of global LULCC; (ii) and the assessment of regional differences/similarities in LULCC and fire regime; (iii) the role of FF on LULCC; (iii) a better understanding (identification and characterization) of space-time cluster distribution of FF. The study benefits from the use of (i) land use land cover inventories from CORINE; and, (ii) the National Burned Area Cartography (NMBA), which is an official Portuguese fire dataset, comprising detailed information of the size and shape of the wildfire scars, on the annual time scale. A geospatial methodological approach, based on GIS analyses, was developed to identify LULCC, and to characterize the impact of FFs on these changes; then, cluster analyses were performed to examine patterns in FFs distribution and, finally, to discover how landscape factors control FF clusters. This research provides a quantitative assessment of the relationship between LCC and FFs in Portugal. These results will contribute to (i) characterize the LULCC in Portugal; (ii) assess the relationship between FFs and LULCC; and, (iii) a better landscape management to reduce related losses of life, property and assets.

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