

Status of vegetation cover after 25 years since the last wildfire (Río Verde, Spain)

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Climatic conditions play an important role in the post-fire vegetation recovery as well as other factors like topography, soil, and pre and post-fire land use (Shakesby, 2011; Robichaud et al., 2013). This study deals with the characterization of the vegetation cover status in an area affected by a wildfire 25 years ago. Namely, the objectives are to: i) compare the current and previous vegetation cover to wildfire; and ii) evaluate whether the current vegetation has recovered the previous cover to wildfire.

The study area is mainly located in the Rio Verde watershed (Sierra de las Nieves, South of Spain). It corresponds to an area affected by a wildfire in August 8th, 1991. The burned area was equal to 8,156 ha. The burn severity was spatially very high. The main geographic features of the burned area are: mountainous topography (altitudes ranging from 250 m to 1700 m; slope gradient >25%; exposure mainly southfacing); igneous (peridotites), metamorphic (gneiss) and calcareous rocks (limestones); and predominant forest land use (*Pinus pinaster* sp. woodlands, 10%; pinus opened forest + shrubland, 40%; shrubland, 35%; and bare soil + grassland, 15%).

Remote sensing techniques and GIS analysis has been applied to achieve the objectives. Landsat 5 and Landsat 8 images were used: July 13th, 1991 and July 1st, 2013, for the previous wildfire situation and 22-years after, respectively. The 1990 CORINE land cover was also considered to map 1991 land uses prior the wildfire. The Andalucía Regional Government wildfire historic records were used to select the burned area and its geographical limit. 1991 and 2013 land cover maps were obtained by means of object-oriented classifications. Also, NDVI index were calculated and mapped for both years in order to compare the status of vegetation cover.

According to the results, the combination of remote sensing and GIS analysis let map the most recovered areas affected by the wildfire in 1991. The vegetation indexes indicated that the vegetation cover in 2013 was still lower than that mapped just before the 1991 wildfire in most of the burned area after 25-years: 33% of the burned area showed a regression in the vegetation from pine to shrubland or to grassland; 54% showed a similar status than in 1991; and only 11% presented a better vegetation cover nowadays than in 1991.

References

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