

Abstract

Assessment of Post-Fire Vegetation Recovery Using Fire Severity in Sardinia (Oristano—Montiferru) [†]

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Abstract: On 23 and 24 July in the province of Oristano (central western Sardinia) in the massif of Montiferru, an event classified as extreme wildfire (EWE) occurred, with vast-proportion fires at the limit of the so-called control capacity (internationally established as at or exceeding a fire intensity of 10,000 kwm⁻¹, and rate of spread of 3 km/h). The impact of this great fire was mainly on the people who live in the area (houses and farms destroyed) and on the agro-pastoral activities that take place, but, after the event, the most dangerous of the effects of a large-scale fire may occur on soil and hydrogeological and slope stability. From a first mapping, the damaged woods are relatively few; in fact, the forests comprised about 10% of the surface covered by the fire, whereas the remainder is Mediterranean bush (34%), grassland (32%), agricultural areas (23%) and urban areas (1%) (2013 Geolab Unifi elaborations). Therefore, the first aim of this study is to map the event using the Sentinel 2-A data to map burnt areas and to define severity classes. The Normalized Burn Ratio (NBR) was calculated to identify ‘burn scar’ and discriminate the ‘burn severity’ classes. We have also quantified the burnt areas in terms of land-cover categories and types of vegetation damaged by fire to define the postfire restoration measures after fires, both to limit problems of land loss and facilitate the natural return of vegetation. The different strategies to restore burnt areas at different scales (e.g., slope or basin) depend on the level of severity of the fire and are divided into three main groups: (1) support regeneration or rehabilitation, (2) restoration, and (3) emergency stabilization. The secondary study aim is therefore to define specific post-fire intervention strategies concerning the different severity gradients estimated in fire areas.

Keywords: post-fire regeneration; burn severity classes; post-fire; remote sensing



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