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Wildfires effect on water erosion response of different mediterranean forest soils

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Some of the morphological characteristics of the Mediterranean landscapes are partly due to the incidence of forest fires. Different intensities and different environmental conditions give place to different forms of water erosion responses and ways of ecosystems recovery.
In this work, the effect of fire on the response to erosion processes of different type of soils under different environmental conditions has been studied. Immediately after a wildfire that affected 9478 ha of the Sierra Calderona (Valencia, SPAIN), six monitoring stations to study the evolution of water erosion processes were placed. The stations cover different fire intensities and environmental situations.
Topographical, pedological and vegetation characteristics of each station were studied. The effect of erosive rain events on runoff and sediment production, during a five years period was evaluated.
Erosive patterns in the studied zones were similar, but with slight variations depending on the rainfall distribution on the whole area and the different topographical conditions. The data show that, in general, for all the stations the most important soil losses were produced in the first four months after the fire, and then these losses decrease progressively with time.
Although the data show high heterogeneity, it has been observed that together with the intrinsic characteristics of fire and rain events, soil profile properties can also be determinant factors in the incidence of water erosion and in the recovery of the vegetation cover under similar environmental conditions.

Keywords: Wildfires, Mediterranean soils, water erosion, soil loss, runoff generation, rain aggressiveness.