



## **Postfire soil erosion processes are conditioned by aridity**

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In this work we have studied the runoff and rate of erosion in severely burnt Mediterranean shrublands of southern Spain by simulating high intensity rainfall over a period of 5 years. We have also observed temporal changes in soil surface properties (0-10 mm) of two scrub areas in different years. In both cases, surface runoff increased appreciably during the first year after the fire, compared to burning bushes in more rainy areas. Although differences in the rate of infiltration (determined by a mini-disk infiltrometer with ethanol, to avoid the effect of hydrophobicity) were observed, the increase in the rate of runoff was related to the increase of water repellency in the first millimeters of the soil surface, regardless of other physical properties (texture or percentage of rock fragments), chemical (acidity, organic matter content) or fire severity.

Sediment loss was also exceptionally high during the first year. Then, runoff and soil loss rates were progressively approaching the values observed in the control zones. However, most of the physical and chemical properties of the soil after the fire did not change during the post-fire period, suggesting erosion of sediment depletion.

No large differences were observed between the study points along the precipitation gradient, suggesting that, independently of this and other factors, the impact of high severity fires can be long over time. Although other authors have shown that relatively small changes in aridity have great impacts on erosion processes, this does not seem to be valid in the case of high severity fires in Mediterranean areas.