



Soil erosion after forest fires in the Valencia region

Óscar González-Pelayo (1), Jan Jacob Keizer (1), and Artemi Cerdà (2)

(1) University of Aveiro, CESAM - Centre for Environmental and Marine Studies, Environment & Planning Campus, Universitário 3810-193 Aveiro Portugal. oscargonzalezpelayo@gmail.com / jjkeizer@ua.pt, (2) SEDER Soil Erosion and Degradation Research Group, Department of Geography, University of Valencia, Valencia, Spain. artemio.cerda@uv.es / www.soilerosion.eu,

Soil erosion after forest fire is triggered by the lack of vegetation cover and the degradation of the physical, biological and chemical properties (Martí et al., 2012; Fernández et al., 2012; Guénon, 2013). Valencia region belongs to the west Mediterranean basin (“Csa”, Köppen climate classification), with drought summer periods that enhance forest fire risk. The characteristics of the climate, lithology and land use history makes this region more vulnerable to soil erosion. In this area, fire recurrence is being increased since late 50s (Pausas, 2004) and post-fire erosion studies became more popular from 80’s until nowadays (Cerdà and Mataix-Solera, 2009). Research in Valencia region has contributed significantly to a better understanding of the effect of spatial and temporal scale on runoff and sediment yield measurements. The main achievements concerns:

a) direct measurement of erosion rates under a wide range of methodologies (natural vs simulated rainfall, open vs closed plots); from micro- to meso-plot and catchment scale in single (Rubio et al., 1994; Cerdà et al., 1995; Cerdà 1998a; 1998b; Llovet et al., 1998; Cerdà, 2001; Calvo-Cases et al., 2003; Andreu et al., 2001; Mayor et al., 2007; Cerdà and Doerr, 2008) and multiples fires (Campo et al., 2006; González-Pelayo et al., 2010a). Changes in soil properties (Sanroque et al., 1985; Rubio et al., 1997; Boix-Fayós, 1997; Gimeno-Garcia et al., 2000; Guerrero et al., 2001; Mataix-Solera et al., 2004; González-Pelayo et al., 2006; Arcenegui et al., 2008; Campo et al., 2008; Bodí et al., 2012), in post-fire vegetation patterns (Gimeno-García et al., 2007) and, studies on mitigation strategies (Bautista et al., 1996; Abad et al., 2000).

b) Progress to understanding post-fire erosion mechanism and sediment movement (Boix-Fayós et al., 2005) by definition of thresholds for sediment losses; fire severity, slope angle, bedrock, rain characteristics, vegetation pattern and ecosystem resilience (Mayor et al., 2007; González-Pelayo et al., 2010b).

The knowledge achieved on post-fire erosion must very valuable for new insights and new strategies for landscape management. This research will review the State-of-the-Art of the contribution of the research on soil erosion as a consequence of forest fires in the Valencia Region. The review will show the contribution of the pioneers in the 80’s when the USLE and mapping was the main too, the use of plots under simulated and natural rainfall, and also the strategies to control the soil erosion.

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