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Assessment of erosion hazard after recurrence fires with the RUSLE 3D MODEL

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The objective of this work is to calculate if there is more soil erosion after the recurrence of several forest fires on an area. To that end, it has been studied an area of 22 130 ha because has a high frequency of fires. This area is located in the northwest of the Iberian Peninsula. The assessment of erosion hazard was calculated in several times using Geographic Information Systems (GIS).The area have been divided into several plots according to the number of times they have been burnt in the past 15 years. Due to the complexity that has to make a detailed study of a so large field and that there are not information available anually, it is necessary to select the more interesting moments. In august 2012 it happened the most agressive and extensive fire of the area. So the study was focused on the erosion hazard for 2011 and 2014, because they are the date before and after from the fire of 2012 in which there are orthophotos available.
RUSLE3D model (Revised Universal Soil Loss Equation) was used to calculate maps erosion losses. This model improves the traditional USLE (Wischmeier and D., 1965) because it studies the influence of the concavity / convexity (Renard et al., 1997), and improves the estimation of the slope factor LS (Renard et al., 1991). It is also one of the most commonly used models in literatura (Mitasova et al., 1996; Terranova et al., 2009). The tools used are free and accessible, using GIS "gvSIG" (http://www.gvsig.com/es) and the metadata were taken from Spatial Data Infrastructure of Spain webpage (IDEE, 2016).
However the RUSLE model has many critics as some authors who suggest that only serves to carry out comparisons between areas, and not for the calculation of absolute soil loss data. These authors argue that in field measurements the actual recovered eroded soil can suppose about one-third of the values obtained with the model (Šúri et al., 2002).
The study of the area shows that the error detected by the critics could come from the use of inaccurate metadata, since in many cases the downloaded data include scale errors. It was noted that the factors vegetal ground cover and land use were the ones which introduce more error in the model. The low resolution of metadata produces sometimes that into a value zones very heterogeneous were included. Therefore, for this analysis, it has done a very specific and detailed manual labour, qualifying factors of vegetal ground cover and land uses. Also, the slope factor LS has been conducted in great detail. With all of these, the error has been minimized to look for pre- and post-fire differences.
At the oral exposition, the process and difficulties of realization of both maps will be explained and how they were resolved and the results of the comparison of the effects of fire recurrence in the study área.

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