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# Environmental Sensitive Areas (ESAs) changes in the Canyoles river watershed in Eastern Spain since the European Common Agriculture Policies (CAP) implementation

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The Enviromental Sensitive Areas (ESAs) approach to study the Land Degradation is a methodology developed by professor Costas Kosmas et al., (1999) to map environmental sensitive areas and then the impact of Land Degradation and desertification on Mediterranean Type Ecosystems (Salvati et al., 2013). This methodology has been applied mainly to the Mediterranean Belt (Lavado Contador et al., 2009), but other authors adapted the methodology to other climatic regions (Izzo et al., 2013).
The ESAs methodology allows mapping changes in the distribution of the sensitive areas to Desertification as a consequence of biophysical or human chances. In the Mediterranean countries of Europe, especially Spain, suffered a dramatic change due to the application of the European Common Agricultural Policies (CAP) after 1992. The objective of the CAP was to implemented policies to improve the environmental conditions of agricultural land. This target is especially relevant in Mediterranean areas of Spain, mainly the South and the East of the country.
An Environmental Sensitive Area (ESAs) model (Kosmas et al., 2009) was implemented using Geographical Information System (GIS) tools, to identify, assess, monitor and map the levels of sensitivity to land degradation in the Canyoles river watershed, which is a representative landscape of the Mediterranean belt in Eastern Spain
The results show that it was found that after the implementation of CAP, the most sensitive areas have expanded. This increase in degraded areas is driven by the expansion of commercial and chemically managed crops that increased the soil erosion (Cerdà et al., 2009) and that few soil conservation strategies were applied (Giménez Morera et al., 2010). Another factor that triggered Desertification processes is the increase in the recurrencesof forest fires as a consequence of land abandonment (Cerdà and Lasanta, 2005; Cerdà and Doerr, 2007). This contributed to an increase of scrubland. Our research show an increase in the rangeland vegetation that is dominated by scrubland, meanwhile the woodlands are reduced. Circa 50 % of the land that was classified as “Critical” to land degradation after 1985 had been previously classified as “Non-affected”. However, not all changes occurred in the Cànyoles watershed are characterized by a negative change; i.e. 82 % of the land has turned from “Critical” values to “Non- sensitive” to land degradation between mid-20th century and recent times. We found this negative trend to be having been caused by the removal of those crops that are most sensitive to land degradation, such as rain-fed crops, and that are mainly located in the west of the studied watershed.
Similar findings were found by Zema et al., (2012) when applying the AnnAGNPS model to the agriculture land in Belgiums, Prokop and Poreba (2012) to the India, Miao e t al., (2012) in China and Haile and Fetene (2012) in Ethiopia: man made changes in the landscape that trigger land degradation processes..

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