

## **Land degradation and improvement trends over Iberia in the last three decades**

Célia M. Gouveia, Patrícia Páscoa, Ana Russo, and Ricardo Trigo

IDL, Fundação da Faculdade de Ciências Universidade de Lisboa, LISBOA, Portugal (cmgouveia@fc.ul.pt)

Land degradation and desertification are recognised as an important environmental and social problem in arid and semiarid regions, particularly within a climate change context. In the last three decades the entire Mediterranean basin has been affected by more frequent droughts, covering large sectors and often lasting several months. Simultaneously, the stress imposed by land management practices, such as land abandonment and intensification, highlights the need of a continuous monitoring and early detection of degradation.

The Normalized Difference Vegetation Index (NDVI) from GIMMS dataset was used as an indicator of land degradation or improvement over Iberia between 1982 and 2012. The precipitation influence on NDVI was previously removed and the negative/positive trends of the obtained residuals were presumed to indicate land degradation/improvement.

Overall the Iberian Peninsula is dominated by widespread land improvement with only a few hot spots of land degradation located in central and southern sectors and also in east Mediterranean and Atlantic coasts. Less than 20% of the area presenting land degradation is located within regions where land cover changes were observed, being the new land cover types associated with transitional woodland-shrub, permanent and annual crops and permanently irrigated land areas. Although being a very small fraction, the pixels of land degradation are mainly located on a semi-arid region.

The monotonic changes and trend shifts present in the NDVI dataset were also assessed. The major shifts in vegetation trends and the corresponding year of occurrence were associated with the main disturbances observed in Iberia, namely the major wildfires' seasons in Portugal, and also to land abandonment and to new agricultural practices that resulted from the construction of new dams. The results obtained provide a new outlook of the real nature of degradation or improvement of vegetation in Iberia in the last three decades.

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