UNIVERSIDAD POLITÉCNICA DE MADRID

ESCUELA TÉCNICA SUPERIOR DE INGENIEROS DE MONTES

PROYECTO FIN DE CARRERA

EVALUACIÓN DE LA RESPUESTA DEL ÍNDICE DE VEGETACIÓN NDVI A LAS VARIACIONES DE PRECIPITACIÓN EN LA ESPAÑA PENINSULAR E ISLAS BALEARES EN EL PERIODO 2000-2010

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Title: Evaluating the response of vegetation index NDVI to precipitation variations in mainland Spain and the Balearic Islands in 2000-2010.

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ABSTRACT

The study aims to analyze the impact of annual accumulated precipitation changes in different types of vegetation of mainland Spain and the Balearic Islands, using the Normalized Difference Vegetation Index (NDVI) from September 2000 to August 2010. The NDVI was obtained from the Moderate Resolution Imaging Spectroradiometer (MODIS) with an eight-day time frequency, and precipitation series came from interpolated monthly time series data from the Ministry of Agriculture (MAGRAMA). Annual NDVI and precipitation values have been obtained and anomalies in relation to the average have been calculated. The interannual variation of NDVI anomalies and precipitation and the relationship between them has been analyzed for different combinations of climate and vegetation.

The results show that the evolution of accumulated NDVI throughout the year is characteristic of each type of vegetation and clearly affected by climate. Clear differences appear in the annual accumulated NDVI among different types of vegetation and climate with higher values in temperate climates and lower in dry and cold ones. There is a clear relationship between meteorological drought affected areas and annual accumulated NDVI values. In addition, results show that the effect of moisture deficit is lower in forests than in herbaceous vegetation and in temperate climates than in cold and dry ones. The herbaceous vegetation has a more dynamic response while the forests are less sensitive to changes in precipitation. On the other hand the vegetation in arid climates appears to be more sensitive than in temperate and cold climates.