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Comparison of NDVI fields obtained from different remote sensors

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Satellite image data have become an important source of information for monitoring vegetation and mapping land cover at several scales. Beside this, the distribution and phenology of vegetation is largely associated with climate, terrain characteristics and human activity. Various vegetation indices have been developed for qualitative and quantitative assessment of vegetation using remote spectral measurements. In particular, sensors with spectral bands in the red (RED) and near-infrared (NIR) lend themselves well to vegetation monitoring and based on them [(NIR - RED) / (NIR + RED)] Normalized Difference Vegetation Index (NDVI) has been widespread used.

Given that the characteristics of spectral bands in RED and NIR vary distinctly from sensor to sensor, NDVI values based on data from different instruments will not be directly comparable. The spatial resolution also varies significantly between sensors, as well as within a given scene in the case of wide-angle and oblique sensors. As a result, NDVI values will vary according to combinations of the heterogeneity and scale of terrestrial surfaces and pixel footprint sizes. Therefore, the question arises as to the impact of differences in spectral and spatial resolutions on vegetation indices like the NDVI and their interpretation as a drought index.

During 2012 three locations (at Salamanca, Granada and Córdoba) were selected and a periodic pasture monitoring and botanic composition were achieved. Daily precipitation, temperature and monthly soil water content were measurement as well as fresh and dry pasture weight. At the same time, remote sensing images were capture by DEIMOS-1 and MODIS of the chosen places. DEIMOS-1 is based on the concept Microsat-100 from Surrey. It is conceived for obtaining Earth images with a good enough resolution to study the terrestrial vegetation cover (20x20 m), although with a great range of visual field (600 km) in order to obtain those images with high temporal resolution and at a reduced cost. By contranst, MODIS images present a much lower spatial resolution (500x500 m).

The aim of this study is to establish a comparison between two different sensors in their NDVI values at different spatial resolutions.

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