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Vegetation changes detection in Tozeur oases using remotely sensed data

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In Tunisia, Oases are facing lots of problems including abandoned plots, poor water management, salinity and hydromorpgy of soils. To deal with this, developing a system for monitoring oases appears essential. The time series of SPOT5 (TAKE 5) data are used to test the implementation of such monitoring system based in the analysis of temporal radiometric signatures, on part of the year from April to September. Main objective is to highlight the spring-summer temporal signatures that characterize oases from a representative sample taken in the same region of southern Tunisia (Djerid: Nefta-Tozeur). Observation and monitoring of vegetation dynamics are sparsely available, and need therefore to be complemented using methods based on remotely sensed data. Research activities are organized in two steps: 1. Unsupervised clustering. This first step assesses the information content and discrimination capabilities of these data, without a priori from a representative sample of oases. For this purpose, we discuss the use of Agglomerative Hierarchical Clustering (AHC), unsupervised classification map resulting from AHC can be considered as spatial models of the distribution of the NDVI content in oases, results showed the presence of seven clusters and high difference between them. 2. Discriminant analysis. This second step is based on the extraction of simple descriptive attributes of temporal dynamics identified in the first step and by means of a discriminant analysis of different types of oasis. This analysis has been done through factor analysis and supervised clustering methods.
These methods are used to develop the necessary processing to make the best use of Sentinel2 images and for monitoring during the year the current state of oases.
Keywords: Oases, NDVI, Tunisia, SPOT 5 (TAKE5)