



## Applying Data-mining techniques to study drought periods in Spain

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Data-mining is a technique that it can be used to interact with large databases and to help in the discovery relations between parameters by extracting information from massive and multiple data archives. Drought affects many economic and social sectors, from agricultural to transportation, going through urban water deficit and the development of modern industries. With these problems and drought geographical and temporal distribution it's difficult to find a single definition of drought. Improving the understanding of the knowledge of climatic index is necessary to reduce the impacts of drought and to facilitate quick decisions regarding this problem. The main objective is to analyze drought periods from 1950 to 2009 in Spain. We use several kinds of information, different formats, sources and transmission mode. We use satellite-based Vegetation Index, dryness index for several temporal periods. We use daily and monthly precipitation and temperature data and soil moisture data from numerical weather model. We calculate mainly Standardized Precipitation Index (SPI) that it has been used amply in the bibliography. We use OLAP-Mining techniques to discovery of association rules between remote-sensing, numerical weather model and climatic index. Time series Data- Mining techniques organize data as a sequence of events, with each event having a time of recurrence, to cluster the data into groups of records or cluster with similar characteristics. Prior climatological classification is necessary if we want to study drought periods over all Spain.