



Is SPI able to detect droughts in Tuscany region (Italy)?

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In the last twenty years Italy has experienced many drought events, both in semiarid south regions than in humid northern regions. Tuscany, a region characterized by heterogeneous climate and orography and marked seasonality of precipitation, has been vulnerable to droughts that occurs in last years.

The main aim of this study is the meteorological drought characterization using the Standard Precipitation Index (SPI). The SPI was developed for the purpose of defining and monitoring drought. Positive SPI values indicate greater than median precipitation, and negative values indicate less than median precipitation. Because the SPI is normalized, wetter and drier climates can be compared. Being a standardized index, the SPI is particularly suited to compare drought conditions among different time periods and regions with different climatic conditions. SPI is calculated at different time scales, in order to verify the temporal (occurrence, onset, duration) and the spatial variability of drought in Tuscany. Furthermore, the index is compared with river low flows measurements in main Tuscany river basins and with water supply systems failures occurred in the same period in order to assess the existing correlation. Using observed monthly precipitation data from 230 stations with at least 30 years of registrations, the analysis of the period 1930-2013 is presented.