



On the predictability of droughts over Europe by means of the Standardized Precipitation Index and the ECMWF monthly forecasts

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Among various drought indices existing in research and application, the Standardized Precipitation Index (SPI) is one of the most common, due to its simplicity to compute and the focus on precipitation anomalies as the main single factor for drought events. The Standardized Precipitation Index allows describing and comparing droughts in different climatic conditions and over different time scales.

The way the SPI is calculated, namely the accumulation of rainfall over time scales of one to several months and its normalization, makes the index time series being rather smooth and auto-correlated, especially for the longer time scales.

In this study two different approaches for drought forecasting using SPI are presented.

The first one is based on a stochastic approach making direct use of the SPI auto-correlation and of indices describing the large scale climatic patterns, such as the El Nino Southern Oscillation (ENSO), the North Atlantic Oscillation (NAO), the East Atlantic/West Russia (EA/WR).

The second approach uses the ECMWF monthly meteorological forecasts. The ECMFW monthly forecasting system has been built as a combination of the medium range and seasonal forecasting system. In our approach, the precipitation forecast for the next month is added to the accumulated observed rainfall, then the SPI is calculated.

The results of the two different forecast approaches have been verified against the SPI derived by observed data for different averaging periods at the European scale.

The preliminary results show that both methods are promising in the view of SPI, hence drought, forecasting in Europe.