



A catalogue of major droughts in Europe - a tool for examining the spatial coherence of drought

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There have been several high-profile international attempts to catalogue major flood events (e.g. the IAHS catalogue of observed maximum floods, the Dartmouth flood observatory) and index their severity and societal impacts. There is no widely-used equivalent catalogue for droughts, which represents a major research gap. A catalogue of historical droughts would, for example, establish a 'benchmark' of drought characteristics, with which to compare future changes in drought occurrence. Any attempt to catalogue European droughts faces the inherent challenge of classifying a phenomenon which exhibits complex spatial and temporal variability; for this reason, an objective methodology is preferable, to allow comparisons to be made between drought events in different regions and over different timescales.

This study presents an objective classification of the severity and duration of hydrological drought episodes in Europe between 1962 and 2004, using a network of over 500 river flow monitoring sites. Hydrological droughts are classified for a number of homogenous regions, using an index which is based on the regional coherence of streamflow deficits. This regional deficit approach is then compared with at-site drought metrics, and a parallel classification of meteorological drought. These sources are synthesised to create a drought catalogue for the European regions, which is also accompanied by contextual information on the impacts of major droughts.

The catalogue has a wide range of potential applications. As a case study, the utility of the catalogue for exploring the spatial coherence of drought episodes is examined, with a view to developing improved tools for drought forecasting on a European scale.