



Analysis of drought characteristics from 1900-2012 for improved understanding of a water resource system

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Droughts are a reoccurring feature of the European climate; recent drought events (2004-2006 & 2010-2012) in the UK have highlighted a continued vulnerability to this hazard. The period 2010-2012 was characterised by departures from typical seasonal climatic conditions, resulting in a severe drought which had a severe impact on water resources. This highlighted the need for further understanding of extreme drought events, particularly from a water resource perspective. A number of drought indices are available, which can help to improve our understanding of drought characteristics such as frequency, severity and duration. However, at present little of this is applied to water resource management in the water supply sector. Improved understanding of drought characteristics using indices can inform water resource management plans and enhance future drought resilience. The UK has a rich source of historical rainfall data that has been underutilised in the analysis of drought characteristics at a regional scale. This study applies the standardised precipitation index (SPI) to a series of rainfall records (1900-2012) across the water supply region of a single utility provider. Key multi-year droughts within this period are analysed to develop an understanding of the meteorological characteristics that lead to, exist during and terminate drought events. The results of this analysis highlight how drought severity and duration can vary across a small-scale water supply region, indicating that the spatial coherence of drought events cannot be assumed. Variations in drought duration and severity across a region may have significant implications for water resource management during and after a drought event. A better understanding of regional drought characteristics is achievable by using historical data providing insight for the prediction of future of drought events.