

Analysis of drought characteristics for improved understanding of a water resource system

AMY T. LENNARD, NEIL MACDONALD & JANET HOOKE

School of Environmental Sciences, University of Liverpool, Liverpool L69 7ZT, UK
a.lennard@liv.ac.uk

Abstract Droughts are a reoccurring feature of the UK climate; recent drought events (2004–2006 and 2010–2012) have highlighted the UK’s continued vulnerability to this hazard. There is a need for further understanding of extreme 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. This study applies the standardised precipitation index (SPI) to a series of rainfall records (1962–2012) across the water supply region of a single utility provider. Key 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.

Key words drought; water resource management; standardised precipitation index