

High and low flow catalogues for Europe: regional indicators as tools to characterise spatially-coherent hydrological extremes

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Abstract Historical records of major hydrological extreme events at regional scales can contribute toward improved water management planning and can be used as a “benchmark” against which to compare future changes. This study applies the Regional Deficiency Index (RDI) concept to over 500 daily streamflow records grouped into 24 homogeneous European regions and covering the period 1961–2005 (to 2007 for the UK) to produce a unified set of flood and drought catalogues. The data have been collated to assess the frequency, duration, severity and spatial coherence of hydrological extremes on a regional scale. The high and low flow catalogues presented here for the UK agree with known major flood events and drought episodes of the last 50 years reported in previous literature, which suggests the catalogues have utility for establishing a record of regionally-significant extremes elsewhere in Europe.

Key words high flows; low flows; hydrological extremes; regional indicators; flood catalogue; drought catalogue; natural catchments; Europe; spatial coherence; spatio-temporal characteristics