



Large-scale patterns of wetness and drought of European streamflow on inter-annual to decadal time scales

Lukas Gudmundsson, Lena M. Tallaksen, and Kerstin Stahl

University of Oslo, Department of Geo Sciences, Oslo, Norway (lukas.gudmundsson@geo.uio.no)

Large scale fluctuations of streamflow are of interest to a wider community. Once identified, they can be directly compared to the corresponding fluctuations of climatic variables and they offer a benchmark for large scale hydrological models. We present a hydroclimatology of Europe, based on a large pan-European data set comprising more than 500 monthly streamflow series covering the period 1962 to 2004. The time series under investigation are low passed filtered by means of Singular System Analysis such that only inter-annual variability is maintained. The relation between the corresponding low frequency components is quantified by means of rotated Principal Component Analysis. Significant components are chosen based on an objective bootstrapping criterion. The identified patterns correspond to regions of high temporal coherence. The corresponding temporal structures are further analyzed with respect to drought and wetness trends as well as their dynamical coupling to patterns of published precipitation anomalies.