



Temporal and spatial stability of decadal flood changes in Germany and implications for flood estimation

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The variability of flood magnitude in Germany is studied. The analyses are based on time series of annual maximum streamflow from gauges with observation periods longer than 70 years. The gauges are distributed all over Germany and cover different flood regimes. By applying different time series analysis methods, fluctuations in flood magnitude are identified and their significance is tested. For the longest German streamflow time series available, we analyse whether these fluctuations are stable in time. Frequently, there are shifts in the significant frequencies. For a larger set of gauges and a common time period of 70 years, the stability in space is analysed. There is some tendency for coherent fluctuations. This coherence is also seen for catchments with different flood regimes. For instance, higher-flood periods for catchments which are dominated by summer floods coincide with higher-flood periods for catchments where floods occur preferably in winter. We discuss the implications of these fluctuations for flood estimation.