



Integration of historic flood events in extreme flood estimation in the Mulde catchment (Germany)

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For the estimation of extreme discharges like the 100- or the 1000-year flood information about flood events during the last centuries or even longer periods is desirable. However, measured time series of discharge and water level at gauge stations often cover short time periods of less than 50 years. Therefore, the calculations of extreme discharges are associated with large uncertainties.

To overcome this discrepancy of estimating rare events with only very little knowledge, historical information from chronicles, flood marks and written reports about extreme summer flood events are analyzed, and historic discharge and water level estimates are incorporated into the measured data sets of the Mulde River in south-eastern Germany. This is done by filling the gaps among the measured and known historic data with synthetic data that have similar statistical moments as the measured data.

After the integration of five extreme historic events, flood frequency analyses for three gauges show that the epistemic uncertainty could be reduced at these stations for events with a return period of 100 years by 11% to 61%. Information about smaller historic flood events shall complement the data series and shall be integrated into the analysis.