



## **Extended Flood Frequency Analysis to reduce Uncertainty in extreme Flood Estimation in the Mulde Catchment (Germany)**

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The estimation of extreme flood events is associated with large uncertainties. Since discharge data often only cover short time periods of less than 50 years, it may be worthwhile to complement the data with historic information when providing discharge estimates for extreme flood events in the framework of risk analyses as well as subsequent mitigation and prevention measures.

The objectives of this study are to understand the governing processes of extreme flood events in a heterogeneous river catchment, to model these events with a hydrologic modelling system and to provide large scale risk maps for extreme floods that have a return period of more than 100 years. The study area is the Mulde catchment in Germany (6171 km<sup>2</sup>), which is part of the Elbe catchment.

Flood frequency analyses are performed at 17 gauge stations with annual discharge series of 70 years. First results indicate that two governing flood regimes might exist: first, one with less extreme but more frequent floods during the winter and snow melting season and second, one during the summer, when floods are less frequent but more extreme as experienced during the flood in August 2002. Therefore, flood frequency analyses are performed for summer and winter maximum discharges separately.

The analyses are complemented by historic flood events beginning in 1573. With the help of the reconstructed historic events, an enlarged flood frequency analysis is possible. The combination of measured data, historic events and model results enables us to reduce the uncertainty of extreme discharge estimates.