



Differentiation of flood driving mechanisms between large and small floods for a flood event data set in Germany

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Floods are controlled by a mixture of several processes. Flood driving mechanisms differ depending on the specific event and catchment characteristics. In terms of flood hazard, it is of particular interest to understand how large floods differ from small floods.

In this study, floods are described in terms of three flood indicators, namely peak, volume and duration. Large and small floods are distinguished separately for each flood indicator. We use a large discharge data set in Germany and based on this, flood events and their characteristics were derived in order to identify flood driving mechanisms and their spatial distribution.

First, we use quantile-based correlations between flood indicators and event characteristics. In this way, we show how the flood driving mechanisms change with increasing flood magnitude. Next, the most relevant event characteristic for each flood indicator is derived using regression trees. By constructing regression trees separately for all flood events and only for the large floods, it is shown how the most relevant flood driving mechanisms differ between small and large floods. Based on this analysis, a more profound understanding is achieved of how large and small floods differ in terms of their driving mechanisms.