



## **Statistical modeling of observed precipitation and its application to extreme value statistics in different spatiotemporal scales (Statistische Modellierung von Niederschlagsdaten und ihre Anwendung auf die Extremwertstatistik in verschiedenen räumlichen und zeitlichen Skalen)**

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Natural climate variability and anthropogenic climate change attract many attention in the public. Extreme events, their change in occurrence and intensity are particular interesting, especially because of the related damages and injuries. The central goal of this project is a statistical modeling of observed precipitation sums in matters of occurrence probability as well as probability and intensity of extremes.

Provided are trend estimation for the precipitation amount and occurrence and risk estimation for extreme low or high precipitation events. Therefore generalized time series decomposition is performed and functions of probability of occurrence and probability of exceeding thresholds are made up. Also changes in total sums, extremes and changes in amplitude and phase of cycles are analyzed. Possible correlations with global cycles and climate change indicators like the Northern Atlantic Oscillation or the carbon dioxide equivalent.

The data this is performed on are stations in Europe/Germany, the GPCC-Model of the DWD and the ERA-20C of the ECMWF, whereat the focus is on the daily data and the monthly data and the reanalysis are used just for the purpose of comparison.

Especially in Germany we find, that the effects of inhomogeneous measuring and missing data during the wars are quite similar in size as the effects of climate change. And the detected climate change is more a phase shift in the seasons than a positive or negativ trend during the time series.