

EGU2020-7435

<https://doi.org/10.5194/egusphere-egu2020-7435>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



## Comparing runoff statistics simulated with a hydrological model utilizing stochastically generated lumped catchment rainfall and multiple point rainfall

**Luisa-Bianca Thiele**, Ross Pidoto, and Uwe Haberlandt

Leibniz University Hanover, Hannover, Germany (thiele@iww.uni-hannover.de)

For derived flood frequency analyses, stochastic rainfall models can be linked with rainfall-runoff models to improve the accuracy of design flood estimations when the length of observed rainfall and runoff data is not sufficient. In the past, when using stochastic rainfall time series for hydrological modelling purposes, catchment rainfall for use in hydrological modelling was calculated from the multiple point rainfall time series. As an alternative to this approach, it will be tested whether catchment rainfall can be modelled directly, negating the drawbacks (and need) encountered in generating spatially consistent time series. An Alternating Renewal rainfall model (ARM) will be used to generate multiple point and lumped catchment rainfall time series in hourly resolution. The generated rainfall time series will be used to drive the rainfall-runoff model HBV-IWW with an hourly time step for mesoscale catchments in Germany. Validation will be performed by comparing modelled runoff regarding runoff and flood statistics using stochastically generated lumped catchment rainfall versus multiple point rainfall. It would be advantageous if the results based on catchment rainfall are comparable to those using multiple point rainfall, so catchment rainfall could be generated directly with the stochastic rainfall models. Extremes at the catchment scale may also be better represented if catchment rainfall is generated directly.