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A Contribution determining Design Floods

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In hydraulic engineering the determination of design floods with a high return period is required to design hydraulic structures such as spillways for corresponding flood events. Considering the length of reliable data measurements, longest time series extend to about 100 years but often are much shorter and therefore the extrapolation with statistical procedures is inexact. Depending on the distribution functions chosen the results may vary significantly.

This paper is a contribution to determine design floods for hydraulic structures with the help of long term simulations. With adequate mathematical models time series of precipitation and temperature are generated with the same statistical properties as the measured ones. The precipitation-runoff model of the project area is charged with these 1000 year long time series. The calculated discharge is mathematically evaluated and the extreme floods with 100, 200, 500 years of recurrence are determined. These design floods are compared to the design floods which were appointed from nowadays guidelines.