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## Multivariate Logistic Model to estimate Effective Rainfall for an Event

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Multivariate logistic models are widely used in biological, medical, and social sciences but logistic models are seldom applied to hydrological problems. A logistic function behaves linear in the mid range and tends to be non-linear as it approaches to the extremes, hence it is more flexible than a linear function and capable of dealing with skew-distributed variables. They seem to bear good potential to handle asymmetrically distributed hydrological variables of extreme occurrence. In this study, logistic regression approach is implemented to derive a multivariate logistic function for effective rainfall; in the process runoff coefficient is assumed to be a Bernoulli-distributed dependent variable. A backward stepwise logistic regression procedure was performed to derive the logistic transfer function between runoff coefficient and catchment as well as event variables (e.g. drainage density, soil moisture etc). The investigation was carried out using data base for 244 rainfall-runoff events from 42 mesoscale catchments located in south-west Germany. The performance of the derived logistic transfer function was compared with that of SCS method for estimation of effective rainfall.