

## **ANALYTICAL RELATIONS BETWEEN MONTHLY RAINFALL AND INTERCEPTION, DERIVED FROM PROPERTIES OF STOCHASTIC MODELS WITH DAILY TIMESTEP**

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To assess the consequences of different planning strategies, usually water resources models with monthly timestep are used. In such models interception is of importance to determine effective rainfall and thus supplementary irrigation needs. In a country like Zimbabwe, on a daily basis interception is usually modelled as the rain caught below a daily threshold, which is dependent on land cover. But the network of raingauges is not sufficiently dense to cover for the large spatial variability of daily rainfall. Because of the dependency on daily variation, interception is usually not computed in models of monthly timestep. Rain occurrence on a point scale agrees with a first order two-state Markov chain. Conditional probabilities of a rainday following a rainday or a dry day, can be described as a power function of monthly rainfall. The probability of exceedence of the amount of rain on raindays agrees reasonably well with an exponential function. Instead of developing stochastic models of daily timestep, these properties are used to derive an analytical equation for the relation between monthly rainfall and interception. With only a few stations with daily data, parameters can be derived that make the equation fit well for any daily interception threshold at any location. (See HSB2.02 for transpiration)