

A model of the distribution of storm depths as resulting from independent storm generating processes

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Abstract. The probability distribution of total storm depth is analyzed under the assumption of deriving from two independent storm generating process. Total annual precipitation has been modeled by considering individual storm depths as gamma distributed and with a storm arrival rate described as a Poisson process. This analysis will consider observed storm depths to be the result of two independent processes. The processes are first considered to have independent distributions of storm depths with the storm arrival rate described by a single Poisson process. Next, the analysis is expanded to consider each process having a separate arrival rate. An attempt is made at implementing the expectation-maximization algorithm to estimate the model parameters given a sample data set. Performing the parameter estimation for the case of a single storm arrival rate is relatively straightforward and the results are presented. The implementation in the case of separate arrival rates was not successful. An examination of the simplified case of estimating model parameters for a known set of arrival rates is presented.