Statistical Analysis of Caribbean Rainfall Data: Formulating Linear Models Relating Dependable Rainfall to Mean Monthly Rainfall

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Abstract

Monthly aggregate rainfall for 25 stations in the English-speaking Caribbean region were analysed using the computer software, RAINBOW in order to obtain rainfall values with different levels of probability. Most of the monthly aggregate rainfall data for the stations were homogeneous and log-normally distributed. The method to be used to obtain the rainfall values of different probabilities using the given parameters of the log-normal distribution is described. Simple linear regression models were developed to relate dependable rainfall at 20, 50 and 80% probability levels to mean monthly aggregate rainfall for individual stations as well as for the entire English-speaking Caribbean region. The dependable rainfall of some other 10 Caribbean stations estimated by the derived models were close to the published values. The use of these models is expected to remove the tedium involved in obtaining such rainfall probability data particularly for locations with insufficient recorded data.