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Comparison of conversion methods from 60- to 1-min integration time for rainfall in Malaysia

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Abstract

This paper presents some preliminary assessments of the precipitation rate conversion methods from 60-min to 1-min integration time . The conversion methods used in this study are Moupfouma and Khairolanuar et al., and ITU-R P.837. Rainfall rate data of twelve-months duration from January to December 2009 were acquired from Malaysia Meteorological Department (MMD) and exploited for the evaluation. The rainfall data were collected from MMD rain gauge station located at Kuala Lumpur International Airport (KLIA). The investigations comprise of producing annual rainfall rate cumulative distributions of the measured data. The equivalent 1-min annual rainfall rate cumulative distributions using conversion methods as mentioned above. Predicted values of annual 1-min cumulative distribution established by ITU-R P.837 are used as references. The equivalent 1-min equivalent cumulative distribution obtained from Moupfouma's and Khairolanuar et al.'s methods are then compared with that of ITU-R P.837 to validate the applicability and efficiency of each method . According to the results, it can be observed that Khairolanuar et al.'s method capable of generating equivalent 1-min rainfall values with smallest percentage difference as compared to ITU-R P.837 at 0.01% of time exceedance. © Springer International Publishing Switzerland 2016.

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