

Site specific Rainfall Temporal Pattern (RTP) for sustainable development of Kuching City, Sarawak, Malaysia

ABSTRACT

An understanding of rainfall temporal patterns is important for flood estimation and planning for sustainable flood designs and management. However, current published rainfall temporal patterns in design manuals are mostly generalised for a region which covers large areas. This raises doubts regarding its accuracy, especially for sensitive urban areas which are prone to flash floods. In the current study, a site-specific rainfall temporal pattern has been developed for Kuching using the Average Variability Method. The data of 5 minutes interval from year 2010 to 2018 for Kuching Airport rainfall station was used in the current study. Both the normalized and non-normalised rainfall temporal patterns were developed for 10 minutes, 15 minutes, 30 minutes, 60 minutes, 120 minutes, 180 minutes and 360 minutes. The developed rainfall temporal patterns were then compared with the recommendations from two other published design manuals. Results showed that most of the fractions in the published rainfall temporal patterns have more than 20% differences when compared with the current study. The developed rainfall temporal patterns from the current study can be adopted for flood design purposes in the city of Kuching in Sarawak. This fulfils Sustainable Development Goal 11 by reducing the adverse effects of flood in the city.