

## **Statistical and Trend Analysis of Annual Maximum Daily Rainfall (AMDR) for Kuching City, Sarawak, Malaysia**

### **ABSTRACT**

Kuching city and its surrounding urban areas frequently experience extreme high annual maximum daily rainfall (AMDR), resulting in flash floods. This study aims to carry out statistical and trend analysis of extreme AMDR events for Kuching Airport rainfall station from 1975 to 2017. From the analysis, the AMDR records a high variability with a value of 36.9% while January has the highest occurrence of AMDR with 53.5% of the total data. Findings from the linear regression plot have shown that the AMDR has a slight decreasing trend over the past four decades though the trend was insignificant. Based on the drainage design capacity of Kuching city, AMDR of magnitude 180 mm was identified as a threshold. The frequency analysis results showed that the return period of flooding events with daily rainfall exceeding 180 mm was 2.69 years. The occurrence probability of the flood event at least once in 1, 2, 3, 4 and 5 years was 0.37, 0.60, 0.75, 0.84 and 0.90, respectively. This study contributed to understanding the magnitude and frequency of extreme high AMDR which could lead to flooding events in Kuching city.