Modeling the distribution of inter-event dry spell for Peninsular Malaysia

Abstract:

The spatio-temporal distribution of rainfall and the corresponding inter-event dry period separating two rainfalls play a major role in the planning and management of water resources of a country. Knowledge of the distribution of inter-event dry period is necessary in storm water management related to designs of best management practices such as detention and retention ponds. In this paper, we aim to explore the characteristics of inter-event dry period for Peninsular Malaysia using long term hourly rainfall data. The data covering a period of 10 to 22 years were collected from 12 stations spread across the peninsular. The data were discretized into individual rainfall events using 2 hour separation time and its statistics were analyzed. Result of inter-event dry period indicates that rainfall frequency ranges between 133 events at Kota-Bahru to 260 events per annum at Kedah. Rainfall occurs over the peninsular, on the average, once in every two days. The distribution of mean inter-event dry period shows that Kota-Bahru and Segamat have the highest mean dry period while Kedah, Penang, Kuala Lumpur and Mersin recorded the lowest. Goodness-of-fit test ranking indicates that all the models selected can be used to describe the hourly inter-event dry period. However, generalized-pareto and Log-normal distributions are found to be the most preferable.