Regional frequency analysis of extreme rainfalls in the west coast of peninsular Malaysia using partial l-moments

Abstract :

This study was to reinstate the development of regional frequency analysis using L-moments approach. The Partial L-moments (PL-moments) method was employed and a new relationship for homogeneity analysis is developed. For this study, the PL-moments for generalized logistic (GLO), generalized pareto (GPA) and generalized value (GEV) distributions were derived based on the formula defined by Wang (Water Resour Res 32:1767-1771, 1996). The three distributions are used to develop the regional frequency analysis procedures. As a case of study, the Selangor catchment that consists of 30 sites which located on the west coast of Peninsular Malaysia has chosen as sample. Based on L-moment and PL-moment ratio diagrams as well as Z-test statistics, the GEV and GLO were identified as the best distributions to represent the statistical properties of extreme rainfalls in Selangor. Monte Carlo simulation shows that the method of PL-moments would outperform L-moments method for estimation of large returns period event.