C-03: Estimating flood quantiles in the south-western part of Saudi Arabia

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Estimation of flood quantiles was an important requirement in the proper management of water resources in any country. In this study, regional regression analysis was performed for the purpose of estimating flood quantiles in some of the watersheds located in the western and south-western parts of Saudi Arabia. The Generalized Least Square approach as opposed to the widely used Ordinary Least Square approach was used in the regression analysis. The dependent variables of the regression analysis were the quantiles predicted by the Log Person Type III model and the independent variables were the physiographic variables such as area, main channel length, main channel slope and watershed average slope. In contrast to the usual watershed physiographic variables, the watershed response time measured as time-to-peak of the flood stage curve and watershed order number was also used to predict the flood quantiles. Results showed that the watershed response time measured was the watershed time-to-peak and the watershed order number are significant parameters in predicting flood quantiles in Saudi Arabia.