

Working Problems for BSE 5034 Stochastic Hydrology (2017)

WP-4 Hydrological Frequency Analysis (HFA-II) LMRD-based GOF test

1. Let X be a gamma random variable with scale parameter 100, and shape parameter 1.25.
 - (1) Generate 10,000 random samples of X , each of sample size 50.
 - (2) For each random sample in (1), estimate the scale and shape parameters by using the method of moments, the maximum likelihood method, and the method of L-moments.
 - (3) On the same graph, show estimates of the (scale, shape) parameter-pair by different methods.
2. Annual maximum rainfalls of 24-hr duration for 28 raingauge stations in southern Taiwan are listed in the file AMS_24hr.csv. Consider the log-normal, Gumbel, and Pearson type III, and log-Pearson type III as the null hypothesis, respectively, and conduct an LMRD-based goodness-of-fit test using the R code provided.