ISSN: 1391-8796
Abstracts of Presentations
1st Ruhuna International Science & Technology Conference
University of Ruhuna, Matara, Sri Lanka
January 22-23, 2014

Fitting distribution to the extreme rainfall in Galle, Sri Lanka

S.H. Shajitha[1]* and K. Perera[2]

[1]*Department of mathematical Sciences, Faculty of Applied Sciences, South Eastern University of Sri Lanka*
[2]*Department of Engineering Mathematics, Faculty of Engineering, University of Peradeniya, Peradeniya, Sri Lanka*

The occurrence of high magnitude rainfall results in primary natural hazards in Galle, Sri Lanka. Therefore, a study on the estimation of extreme rainfall for various return periods is important form the point of view of risk management. This paper presents a good fitting distribution to daily rainfall occurred during years 1951-2012 in Galle region. Two approaches, Annual Maxima (AM) approach for the annual maximum rainfall, and Peak Over Threshold (POT) approach for the entire rainfall and the seasonal rainfall; North-East, First inter monsoon, South-East and Second inter monsoon periods have been considered for the analysis. The families of Generalized Extreme Value (GEV) and Generalized Pareto distributions (GPD) were used to perform the Extreme Value analysis and Maximum Likelihood Estimation (MLE) method was used to estimate parameters. It has been shown that the Gumbel distribution fits well with the Annual Maximum rainfall. For the entire rainfall and the seasonal rainfall, different threshold values were identified as 64, 22, 27, 50 and 38, respectively. Exponential distribution fits well with the rainfall over the specified different threshold values for the entire data and seasonal data. This study also predicts the return level and their confidence band for 2, 5, 10, 20, 50, 100 and 200 years using the identified distributions.

Key words: Annual maximum, Generalized Extreme Value distribution, maximum Likelihood Estimation, Pareto distribution, threshold value

*shajithash@gmail.com