MODELING OF WEEKLY RAINFALL USING CONFIDENCE INTERVAL APPROACH: A CASE STUDY

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The degree of uncertainty of atmospheric behavior has been increased from time to time. Rainfall is one of the key climatic variable for surviving the diverse set of human and natural systems in the world. Awareness about the pattern of rainfall is essential to mitigate effects derived from climate change which cause to sustainable development of the country. Modeling rainfall percentile is one of the successful technique that can be used to describe the rainfall characteristics and its behavior. The main goal of this study is to model weekly rainfall percentile in the context of confidence intervals by developing probability distribution functions. Daily rainfall data from 1960 to 2015 during the period of Second Inter Monsoon (October to November) in Colombo City were used. Preliminary analysis found that there was no trend in weekly series. Based on the best fitted probability distributions reliable rainfall percentiles and corresponding 95% confidence bands were computed. Three parameter Weibull distribution has been found most probable for many weeks in considered time span while the rest were well fitted with the two parameter Exponential and Largest Extreme Value distributions. Based on the analysis, the beginning of the Second Inter Monsoon showed low shower with a consistent pattern. Also, a similar pattern was identified with the withdrawal of the monsoon. However, it is noted that the Weeks 41-45 (08th October to 11th November) marked heavy rainfall with high variability result which caused high possibility to form extreme rainfall events. Out of the above weeks, the Week 42 (15th -21st October) has a much higher chance to occur extreme rainfall events during this monsoon period. A similar approach was carried out for weekly running totals during Second Inter Monsoon and found consistent result. This information would be very useful for various stakeholders to plan many activities which influence the intensity of rainfall.

Keywords: *Weekly Rainfall, Percentile, Confidence Intervals, Colombo, Distribution*

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