

# **Proposed Spatially distributed Rain gauges to improve Rainfall database in Jaffna District**

\* Thushyathy, M.

Department of Agricultural Engineering, Faculty of Agriculture, University of Jaffna, Sri Lanka.

## **Abstract**

Adequate knowledge of rainfall is important in order to understand the changes and variation in the rainfall of a particular location. Jaffna Peninsula consists of the Peninsula and seven inhabited Islands. First rain gauge station was established in 1870 and gradually all other rain gauge stations were established all over the Peninsula. There were fourteen rainfall data collecting stations during the period of 1960 which were spatially distributed in Thenmarachchi, Delft, Jaffna, Island North, Nallur, Vadamarachchi North, Valikamam East, Valikamam North and Valikamam South. All the instruments in those stations were lost due to the prevailing war in these areas and were not functioning till 2013 except only one station which functioning in Jaffna Meteorological station. The gap on unavailability of spatial rainfall data misleads inappropriate understanding accurate changes in rainfall of the location. Monthly data from 1887 to 2012 of Jaffna meteorological station was used for analysis. The probability of exceedence was also analyzed. The frequency analysis of annual series was carried out to obtain a relationship between the magnitude of each event and its probability of exceedence. Annual rainfall data from 1961 to 1990 and from 2001 to 2010 were considered separately to see the country scale fluctuations. As per the record, only one station which functioning in Jaffna District shows meteorological observations diminished to unrecoverable levels. Time series analysis of 122 years of rainfall data shows normal distribution. Rainfall amount during this period varied between 571.2 mm to 1964.9 mm with the average of 1255 mm and the 75% of probability of rainfall was 1020 mm. During the period of 1961 to 1990, this value was 1010 mm but, the rainfall of 1220 mm was received on the probability plot against 2001 to 2010. This variation in the rainfall in the 75% of probability could be due to the short time series. The Probability plot was used to get return period value. The time series analysis of rainfall amount could be performed well if the rainfall data are spatially distributed all over the Peninsula which subsequently could be used to carry out planning activities successfully.

**Author keywords:** Rainfall, Jaffna, Probability, Frequency

Thushyanthy, M. (2013). Proposed spatially distributed rain gauges to improve database in Jaffna district. Proceedings of the International Symposium on Agriculture and Environment 2013, Faculty of Agriculture, University of Ru guna. Pp. 99 – 102.