THE USE OF A CIRCULAR DISTRIBUTION TO MODEL THE STARTING TIMES OF SHOWERS

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Most rainfall models deal with daily rainfall data. Information on rainfall amounts over shorter periods are of interest for some applications. For example in the problem of flood predication, half hourly rainfall was found to be useful (Hosking (1984) and in the study of interference in micro-wave transmission, data from a continuously recording device was used (Upto (1984). In the agricultural context as well the more detailed data has an important role to play. Features such as the starting times, durations and intesity of 'showers' are of particular importance.

In this paper attention is restricted to the starting times of showers. 22 years of data was obtained from a continuously recording rainfall guage at Maha Illuppallama. The starting times are circular in nature and hence the standard 'Linear' distributions are of limited use. A circular von-Mises distribution was used to model the data. The model fitting method is outlined and an illustration of how the seasonal variation can be incorporated is provided.

It was found that the starting times vary systematically through the year and that the von Mises distribution modelled these starting times well. The modelling procedure outlined in this paper provides the first step in developing a composite model for rainfall on a 'shower' by 'shower' basis.

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