ON THE NATURE OF TROPICAL LIGHTNING OBSERVED IN SRI LANKA - I

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An investigation into the characteristic features of lightning discharges transporting negative charge to ground has been carried out in Colombo. Oscillograph picture of first and subsequent stroke radiation field waveforms were recorded on video tapes. Several hundred flashes from convective and inter-monsoonal type thunderstorms occurring over both sea and land were analysed.

Four different types of first return-stroke waveforms and the most common type of subsequent stroke waveforms observed are presented. A large number of branch components as high as 10 branches per channel were observed at the beginning of the mature stage of many thunderstorms and the number soon reduces to two branches per channel within about 30 minutes. It is suggested that the enhanced point discharge associated with pointed leaves of the coconut vegetation and the electrode effect under thunderstorm conditions are the main causes of extensive branching of negative ground flashes.

Out of the total number of negative flashes to ground, the number of flashes observed with spatially separate channels was 5 and 14 per cent for convective and inter-monsoonal type thunderstorms, respectively. These values are less than those reported in temperate zones and, it accounts for the characteristic long discharge channels in Sri Lanka due to the high cloud base.

This work was supported by IPPS and IFH,
Uppsala University, Sweden.

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