E1-09 Occurrence percentage and characteristics of different lightning flashes by means of radiation field measurements

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The lightning electromagnetic radiation fields due to cloud flashes picked up by a flat plate antenna were fed to a storage oscilloscope through an ultrafast buffer amplifier *via* a 20 m long 50Ù coaxial cable. The time constant of the measuring setup was 1 ms. Waveforms appearing on the CRO screen were recorded on VHS video tapes using a video camera with macro lens facility.

Measurements were made during October-November, 1995 lightning period for 6 thunderstorms. The cloud flashes observed in Sri Lanka are classified into 8 categories according to their broad band electric field waveform signatures. The cloud flashes generating bipolar type waveforms with negative going first pulse are the most common type amounting to 34% of all cloud flashes. These types of waveforms can be attributed to cloud discharges with raising of negative charge or the lowering of positive charges. The mean zerocrossing time of 59 such bipolar pulses observed is 4.6 ìs with total pulse

duration 8.5 is. (The total pulse duration of negative going bipolar pulses, which were the most common type observed in Florida by LeVine in 1980 was 10-20 is,and those values are

comparable with the values obtained in the present study). The negative to positive peak voltage ratio of these bipolar waveforms is found to be 2.5. The second most common type of waveforms are of single pulse, unipolar shape signature with 19% occurrence percentage. They always begin with a positive going electric field and finally touch the zero voltage level. The average zero crossing time of the unipolar waveforms are 30.5 is.

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