

On the probabilistic extremes of thunderstorm frequency over Bangladesh during the pre-monsoon season

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ABSTRACT:

The paper describes the variability of the probabilistic monthly and seasonal thunderstorm frequencies over Bangladesh during the pre-monsoon season. The monthly and seasonal probabilistic frequency of thunderstorms have been computed for three time scales-(i) in 1 year out of 4 years, (ii) in 1 year out of 10 years and (iii) in 1 year out of 20 years - representing relatively frequent events, moderately extreme events and extreme events respectively. From the study, it has been found that the distribution patterns of the probabilistic maximum and minimum frequency of thunderstorms, both monthly and seasonal, are similar to each other. The probabilistic minimum and maximum frequencies of monthly thunderstorms are highest over Sylhet region and lowest over southern and extreme southeastern parts of Bangladesh, Dinajpur-Rajshahi-Bogra region and Rangamati-Maijdi Court-Comilla region. There exist two other regions of probabilistic high frequency of monthly thunderstorms. These are Jessore-Rajshahi-western Faridpur and Chittagong-Cox's Bazar regions. The axis of the area of the highest frequency extends southwestwards from Sylhet region to Dhaka region, having an elongated area extended up to Barisal-Khepupara region. In March, no thunderstorm is likely to occur over southern and extreme southeastern parts of the country in 1 year out of 4 years, and over the whole of Bangladesh in 1 year out of 10 years and 20 years. In April, no thunderstorm is likely to occur over southern and northwestern parts of Bangladesh and Rangamati-Maijdi Court-Comilla region in 1 year out of 10 years, and over southern and northwestern parts of the country in 1 year out of 20 years. In May, the Rangamati-Maijdi Court-Comilla region and the southern part of Bangladesh south of Satkhira-Faridpur-Comilla region together with northwestern Bangladesh are likely to have no thunderstorms in 1 year out of 10 years and 20 years respectively.

Key words: Thunderstorms, nor'westers, probabilistic minimum and probabilistic maximum.