551.547.5 : 551.577

500 MB GEOPOTENTIAL HEIGHT AND ITS RELATIONSHIP WITH RAINFALL

The 500 mb level separates two different circulation regimes of the upper and lower troposphere. It is, therefore, reasonable to assume that the locations of different circulation features at this level are governed by a large number of meteorological parameters and study of the relationship of the geopotential height of this level (in gpm, geopotential metre) with rainfall may be worthwhile. It may be mentioned that a similar parameter, 500 mb mean April sub-tropical ridge position at 0000 GMT along longitude 75° E has been found closely associated with the distribution of rainfall during subsequent monsoon season in India (Raman *et al.* 1976).

In this study, mean monthly value of 500 mb geopotential height (500 mb gph) were determined for all the three stations (Dhaka, Chittagong, Bogra) of Bangladesh for five different years (1974, '76, '79, '80, '81). Since continuous (year to year) data are not available for more than three years (1979-81), the month to month variations of the mean monthly 500 mb gph and the rainfall for the successive months of the same year have been examined.

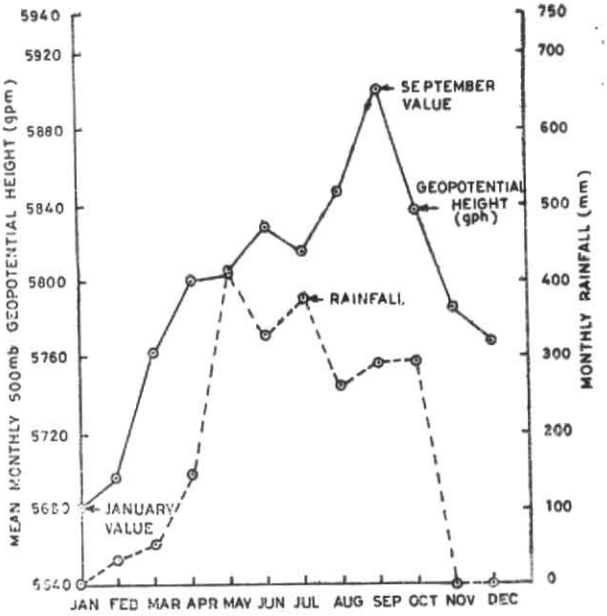

Fig. 1. Month to month variation of mean monthly 500 mb geopotential height and monthly rainfall of Dhaka for 1980

Data for 500 mb gph and the total rainfall (for each month) from all the three stations (Dhaka, Chittagong and Borga) have shown similar trends as shown in Fig. 1 for Dhaka. Since the trend in different years over different stations is same, only one figure for the year

of 1980 is given here. It is seen from the figure that both the parameters increase together at the beginning of the year and also decrease together at the end of the year, *i.e.*, approximately during the drier months. However, during the monsoon period (June to September), the rainfall decreases rapidly with the increase of 500 mb gph. In all the cases 500 mb gph has minimum values in January and maximum values in September.

The purpose of this study is to examine the possibility of 500 mb gph of being a predictor for rainfall forecasting. A long continuous (year to year) data of gph is required for this purpose. At present, because of data length restriction of 500 mb gph, a month to month relationship between the two parameters for the successive months of the same year has been studied.

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