

## RAINSPELL CHARACTERISTICS OVER MOHANBARI

Rainfall is an important parameter both in meteorology and hydrology and affects the day to day life to a great extent. Rainfall is measured on a daily basis. These are summarised weekly or monthly and yearly rainfall figures are worked out. These figures are useful to give only trends in climatic pattern.

However, a rigorous study of rainfall over each location is needed to bring out the direct effects on daily life. That is, the rain occurs at different times in different spells during a day in any season. Some spells may be heavy though short while some others may be light and long. It is a common experience in metropolitan cities like Bombay, heavy to very heavy rain of less than an hour's duration, sometimes, paralyses normal life. Similarly for certain horticultural operation and aviation purposes, prolonged rainspells though of lesser intensity are not good.

To get information on rainfall of direct interest to such agencies the number and characteristics of the rainspells need be studied individually which is possible only from self recording rain gauge charts.

Such a sample study was made for Mohanbari. The SRRG charts of 1982 to 1984 and the months upto August 1985 were scrutinised. During this period a total of 505 spells of rain were obtained and all of them were analysed as to their intensity and duration. Then their times of occurrence were examined.

April to October is the rainy season for Mohanbari though winter rainfall do occur during the other months. Taking the year as a whole, about 79% of the rainspells give rainfall of less than 10 mm only. The period November to February has rainspells when rainfall amount rarely exceeds 10 mm on each occasion. However, during the other months, rainspells of greater intensity occur. Table 1 presents the statistical picture. During the period of study, only on one occasion heavy rainfall of amount exceeding 70 mm had occurred. The occasions of getting a rain amount of 5 cm or more in a spell form only 2% of total occasions.

Rain for more than an hour can affect many human activities. The analysis shows that at Mohanbari incessant rains of more than an hour's duration do occur on considerable number of occasions. In a year on about 20% occasions rain extends for more than 3 hours.

TABLE 1

Frequency distribution of rainspells of various rain amounts

	Total	Number of rainspells of total rain				
		<10 mm	11-20 mm	21-50 mm	51-70 mm	>70 mm
Jan	18	18	0	0	0	0
Feb	5	5	0	0	0	0
Mar	39	35	1	3	0	0
Apr	26	17	4	4	1	0
May	63	58	2	3	0	0
Jun	87	67	9	9	2	0
Jul	94	73	8	12	0	1
Aug	48	36	5	5	2	0
Sep	67	45	11	10	1	0
Oct	35	26	5	3	1	0
Nov	6	6	0	0	0	0
Dec	17	15	1	1	0	0
Total	505	401	46	50	7	1
Per cent		79.4	9.1	9.9	1.4	0.2

TABLE 2

	Total	Number of spells of duration			
		<1 hr	1-2 hr	2-3 hr	>3 hr
Jan	18	17	0	1	0
Feb	5	3	1	1	0
Mar	39	18	8	7	6
Apr	26	10	7	4	5
May	63	32	8	7	16
Jun	87	48	11	6	22
Jul	94	47	23	9	15
Aug	48	23	12	7	6
Sep	67	36	5	8	18
Oct	35	23	5	2	5
Nov	6	5	1	0	0
Dec	17	9	0	3	5
Total	505	271	81	55	98
Per cent		53.7	16	10.9	19.4

Nealy one in every four spells during April, May, June and September has a duration of more than three hours, short spells of rain (less than an hour) occur on a little more than half the number of occasions (54%). Table 2 reveals the full picture.

A survey of synoptic situations suggests that most of the time the rain over this area occurs either due to the extension of trough line or due to the existence of local circulations. There is already an abundance of moisture from *Brahmaputra* and its tributaries. Any moisture incursion from the Bay due to favourable situations enhances the situation. This may, perhaps, be the reason for the extended duration of rainfall irrespective of intensity on a number of occasions.

Table 3 presents the time distribution of the occurrence of spells in various months. The time division, viz., morning, forenoon etc is only arbitrarily chosen. Taking the year as a whole midnight to morning (00-08 a. m.) account for more than 50% of the rainspells.

Late March to May is the nor'wester season over Mohanbari while June to October is considered as monsoon season. Night and early morning are the preferred period for the rains during March. However, during April and May any part of the day and night can get rain of any intensity as well as any duration.

But the picture changes in June. Night time gets generally light rains of extended duration while morning and forenoon may get rainspells of moderate intensity. In July, day time is the main period of precipitation. Both heavy and or extended duration rainspells can occur. August and September have preferred rainfall periods of midnight to noon. If monsoon has an

TABLE 3

Diurnal variation of frequency of spells

	No. of rainspells during						Total
	Morning (4-8 IST)	Forenoon (8-12 IST)	Afternoon (12-16 IST)	Evening (16-20 IST)	Early night (20-24 IST)	Late night (00-04 IST)	
Jan	5	2	3	3	3	2	18
Feb	0	2	0	1	1	1	5
Mar	2	4	3	6	9	15	39
Apr	4	3	2	5	3	9	26
May	14	7	5	8	9	20	63
Jun	14	10	4	12	14	33	87
July	18	8	5	11	16	36	94
Aug	10	8	4	2	8	16	48
Sep	12	11	4	5	9	26	67
Oct	13	5	4	3	3	7	35
Nov	4	0	2	0	0	0	6
Dec	4	2	2	2	1	6	17
Total	100	62	38	58	76	171	505

extended activity in October, morning to forenoon gets the bulk of rainspells. The rest period of the year gets only light rains. However, cloudy weather may prevail on many days during December to February.

Though rainfall over Mohanbari is a localised phenomenon on a considerable number of days, the perceptible synoptic conditions causing rainfall may be classified as :

- (i) Conditions during monsoon,
- (ii) Conditions during winter and
- (iii) Others.

During the 'break monsoon' period, when the seasonal trough axis lies close to the foot of Himalayas, most parts of Brahmaputra valley gets good amount of rains (Ramamurthy 1969). Similarly the movement of monsoon depressions from the head Bay towards the central India facilitates the synoptic situation to send abundant moisture over the region (Srinivasan *et al.* 1972). In addition, upper air cyclonic circulation over upper Assam or sometimes over northeast India also causes precipitation.

During winter, sometimes the extended trough line from the moving western disturbance causes light rain over the area. Otherwise the drizzle occurs mostly

due to local circulation which may not even be discernible in surface weather charts.

The other rain causing agency over this place is the summer thunder activity which is also called nor'wester (Srinivasan *et al.* 1973). In fact from late March to May, a lot of thunder cloud developments especially during night and early morning are seen. These are responsible for the showery type of precipitation most of the times.

#### References

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