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RAINSPELL CHARACTERISTICS OVER GORAKHPUR

1. Monthly variation of rainfall and its occurrence in different intensities at a place has great importance from agriculture, horticulture, aviaional and hydrological point of view. Extended spells of rain may affect human activities in many ways. Certain operations in the field of agriculture and horticulture are affected if continuous spells of rain occur. In this context the study of characteristics of rainspells in different months and different parts of the day assumes significance. Sivaramakrishnan (1987) studied the statistical aspects of rainspells for Mohanbari considering 4 years data. An attempt has been made to study rainspells over Gorakhpur.

The statistics of 869 occasions of rainspells of different amount, its diurnal variation and monthwise distribution, analysing self recording raingauge charts for the period 1985-1991 are presented in Tables 1 - 3. Out of 869 occasions of various rainspells only on 5% occasions the rainfall was more than 5 cm and 73% of the rainspells are of the intensity 10 mm or less. In November the number of total rainspells are found minimum. It is maximum in the month of July. Maximum rainspells are also in monsoon season followed by pre-monsoon season whereas minimum in post-monsoon season. There has been no occasion of occurrence of rainspells of more than 20 mm in the month of January and February. November, March, April and May are free from occurrence of rainspells of more than 50 mm amount whereas in October and December it has been found to occur twice and once respectively during the seven year period.

2. Percentage occurrence of rainspells of duration more than one hour has been found to be 54% whereas for the rainspells of duration one hour and less the percentage is 46 (Table 2). The activity is least in November in particular and post-monsoon season, in general, as seen from the Table. Considering all the rainspells of duration less than an hour to more than 6 hours the average per month from January to May and October to December has been found to vary between less than 1 and 5. In the month of June and September it is found approximately 12 and 23 per year whereas in July, August and September the average per year are 37 and 27 each respectively.

3. From Table 3 it is observed that 36% of the rainspells occur during 2100-0400 IST and 31% in the time interval of 1300-2000 IST whereas 32% of the spells occur in the time interval of 0500-1200 IST. During the months of March, July, August and September the maximum frequency of spells of rain is found in the interval of 0100-0400 IST and in the months of May, June, November and December the frequency is maximum in 0500-0800 IST. In January, it is maximum in 0900-1200 IST and in April in 2100-2400 IST. In February the frequency in 0100-0400 IST and 2100-2400 IST are equal whereas in October the frequency in 0100-0400 IST and 0900-1200 IST are equal. The occurrence is maximum in 0100-0400 IST considering the total rainspells.

TABLE 1

Frequency distribution of rainspells of various amounts

	No. of rainspells of total rain					Total
	10 (mm)	11-20 (mm)	21-50 (mm)	51-70 (mm)	70 (mm)	
Jan	17	2	0	0	0	19
Feb	25	2	0	0	0	27
Mar	27	0	0	0	0	27
Apr	17	0	1	0	0	18
May	28	1	5	0	0	34
Jun	60	12	10	4	0	86
Jul	185	37	22	3	11	258
Aug	129	27	20	5	8	189
Sep	109	26	20	4	4	163
Oct	17	3	5	1	1	27
Nov	1	0	0	0	0	1
Dec	16	3	0	1	0	20
Total	631	113	83	18	24	869
Per cent	72.6	13.0	9.5	2.0	2.7	

TABLE 2

	Number of spells of duration					Total
	1 hr	1-2 hr	3-4 hr	5-6 hr	>6-hr	
Jan	9	2	7	1	0	19
Feb	9	7	7	2	2	27
Mar	13	7	6	1	0	27
Apr	9	6	3	0	0	18
May	19	7	4	4	0	34
Jun	38	20	18	6	4	86
Jul	118	55	45	16	24	258
Aug	91	42	21	15	20	189
Sep	72	40	32	10	9	163
Oct	9	5	8	3	2	27
Nov	1	0	0	0	0	1
Dec	9	5	2	2	2	20
Total	397	196	153	60	63	869
Per cent	45.6	22.5	17.6	6.9	7.2	

TABLE 3
Diurnal variation of frequency of spells

	No. of rainspells during						Total
	0100-0400 (IST)	0500-0800 (IST)	0900-1200 (IST)	1300-1600 (IST)	1700-2000 (IST)	2100-2400 (IST)	
Jan	3	3		4	0	2	19
Feb	6	5	4	3	3	6	27
Mar	7	6	5	2	2	5	27
Apr	5	4	1	0	2	6	18
May	7	9	2	2	7	7	34
Jun	16	22	15	16	10	7	86
Jul	64	35	43	43	36	37	258
Aug	43	23	26	40	32	25	189
Sep	38	23	31	28	28	15	163
Oct	6	2	6	5	5	3	27
Nov	0	1	0	0	0	0	1
Dec	3	6	3	1	3	4	20
Total	198	139	143	144	128	117	869
Per cent	22.7	15.9	16.4	16.5	14.7	13.4	

4. Synoptic situations causing different spells of rain have been analysed. It is found that during non-monsoon months clouding and light rain are observed on many occasions following the passage of western disturbances across western Himalayas and the movement of induced cyclonic circulations/troughs in westerlies in lower levels across central parts of Uttar Pradesh. In monsoon months when the monsoon trough moves closer to foothills, rainfall of moderate intensity occurs at the station invariably. During late monsoon season, low pressure areas which form in the monsoon trough and recurve to northeast from southern parts of Uttar Pradesh produce heavy to very heavy rainfall at Gorakhpur on most of the occasions.

Reference

Sivaramakrishnan, T.R., 1987, *Mausam*, 38, 3, pp. 364-366.

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