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Short communication

Conditional probabilities of wet and dry months at Dharwad

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Southwest monsoon occurring during June to September is the main crop season namely *kharif* in India. Interannual fluctuation of the seasonal total rainfall as well as the monthly rainfall occurs. The monthly distribution of the rainfall within the season varies from year to year. Hosamani and Ratnam (1980) studied the weekly rainfall probabilities, both initial and conditional, at Bijapur. Gore and Thapliyal (2000) analyzed the probabilities of occurrence of dry and wet weeks over Maharashtra and described them in graphs and maps. Basu (2001) described the spatial variation of the coefficient of variation of rainfall in the monsoon months in the meteorological subdivisions of West Bengal with the help of maps. Sinha Ray and Shewale (2001) studied the probabilities of occurrence of drought on annual basis in different meteorological subdivisions of India.

Kar (2002) studied the weekly and monthly rainfall probabilities at selected stations in Orissa. In this paper an attempt has been made to study the conditional probabilities of occurrence of the wet and dry months at Dharwad (15°26'N, 75°07'E, 678m), a semiarid station located in North Katnataka.

The monthly rainfall data for the period June to September in the years from 1971 to 2000 was collected from the Main Research Station, University of Agricultural Sciences, Dharwad. The normal monthly rainfall at Dharwad for the period 1971 to 2000 was 124 mm, 135 mm, 97 mm and 96 mm in June, July, August and September respectively. A month was considered wet if the rainfall of that month in a year exceeded the normal value. A month was considered dry, if the rainfall of that month was below the normal value. The conditional probabilities of occurrence of wet and dry months were computed, based on the rainfall of previous month and the previous two months.

Following are the examples of the computation.

In five years out of 30 years, July was wet when June was wet. The conditional probability of getting July

Table 1 : Conditional probabilities (%) of occurrence of a wet and dry month, based on the preceding month at Dharwad

Preceding month	July		August		September	
	Wet	Dry	Wet	Dry	Wet	Dry
June (W)	16.7	20.0	23.3	10.0	23.3	13.3
June (D)	20.0	43.3	20.0	40.0	26.7	36.7
July (W)			13.3	23.3	16.7	20.0
July (D)			33.3	30.0	33.3	30.0
Aug (W)					20.0	26.7
Aug (D)	-				30.0	23.3

W= Wet D=Dry

Table 2 : Conditional probabilities (%) of occurrence of a wet month, based on the preceding two months at Dharwad

Preceding month	August		September	
	Wet	Dry	Wet	Dry
June (W) July (W)	10.0	6.7	6.7	10.0
June (W) July (D)	10.0	10.0	16.7	3.3
June (D) July (W)	0.0	20.0	10.0	10.0
June (D) July (D)	23.3	20.0	16.7	26.7
July (W) Aug (W)			3.3	10.0
July (W) Aug (D)			13.3	10.0
July (D) Aug (W)			16.7	20.0
July (D) Aug (D)			16.7	13.3
June (W) Aug (W)			13.3	6.7
June (W) Aug (D)			10.0	3.3
June (D) Aug (W)			6.7	16.7
June (D) Aug (D)			20.0	20.0

wet, with June wet was equal to

$$\frac{5 \times 100}{30} = 16.6\%$$

In three out of 30 years, August was wet when both June and July were wet.

The conditional probability of getting August wet, with both June and July wet, was equal to

$$\frac{3 \times 100}{30} = 10.0\%$$

In Table 1 are shown conditional probabilities (CP) of occurrence of a wet and dry month, based on the previous month at Dharwad. In July the maximum CP (20.0%) of wet occurs with June dry. In August the maximum CP (33.3%) of wet occurs with July dry. In September the maximum CP (33.3%) of wet occurs with July dry.

In July the maximum CP (43.3%) of dry occurs with June dry. In August the maximum CP (40.0%) of dry occurs with June dry. In September the maximum CP (36.7%) of dry occurs with June dry.

In Table 2 are shown the CPs of occurrence of a wet and dry month, based on the preceding two months at Dharwad. In August the maximum CP (23.3%) of wet occurs with both June and July dry. In September the maximum CP (20.0%) of wet occurs with both June and August dry.

In August the maximum CP (20.0%) of dry occurs in two cases namely, June dry – July wet and both June and July dry. In September the maximum CP (26.7%) of dry occurs with both June and July dry.

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