PREDICTION OF RAINFALL AT TALIPARAMBA BY STATISTICAL METHODS

Seasonal agricultural operations in the country still rely heavily on the rainfall pattern of a place. If the amount of rainfall during a period at a place can be predicted with reasonable level of reliability, it would indeed be a great boon to the farmers. This study is aimed at predicting the monthly and annual amounts of rainfall at Taliparamba in Cannanore district, Kerala state during a year using the point estimate, namely the arithmetic mean and quantiles (interval estimates) based on different levels of probability.

Data on rainfall at the District Agricultural Farm, Taliparamba during the period 1955-83 had been utilized for this study. The point estimates, namely, the arithmetic mean of monthly and annual rainfall were worked out. The quantiles used in this study are various percentile values viz., P_{10}, P_{25}, P_{50}, P_{75} and P_{90}. Percentiles divide a frequency into one hundred equal parts. Thus, P denotes the value of variate such that a% of the frequency lies below it and (100–a) % of the frequency lies above it. The (100-2a)% confidence interval is formed by taking P_a and P_{100-a} as the boundaries. In this way, it is possible to work out the 80% and 50% confidence limits for monthly and annual amount of precipitation. Similarly, one can state with confidence of (100-a) % that monthly or annual amount of rainfall for a period will take values below P_{100-a} or above P_a.

Normality of the frequency distribution of annual and monthly precipitation was tested. When the annual rainfall frequencies showed normality, the monthly rainfall frequencies deviated significantly from normal frequency distribution. Similar observations were also made by Thomas (1977) for rainfall data at Pattambi. The methods employed to compute percentiles here were same as that in the above paper. The mean annual precipitation at Taliparamba was 3530.1 mm and the standard deviation 749.8 mm. The frequency distribution of annual amount of rainfall is provided in Table 1.

The percentile values for annual and monthly precipitation are given in Table 2. The rainfall during a period that can be expected with a particular level of probability can be visualised from the table. These figures show that the amount of annual rainfall at Taliparamba can be expected to be within a range of 2570-4490 mm with a confidence of 80% or 3020-4040 mm with a confidence of 50%. Further, it can be seen that a rainfall of not less than 2570 mm will be received at the place with a confidence of 90%. In other words, chances of getting a rainfall less than 2570 mm are as low as 10%. Similarly one can ascertain with 75% confidence that the rainfall will not got below 3020 mm per annum. Further, it can be noted that a rainfall exceeding 4490 mm per annum can occur roughly only once in ten years. Similar predictions can be made also on the pattern of monthly rainfall.

The data on monthly and annual rainfall at Taliparamba were analysed to obtain the arithmetic mean and percentiles on various levels of probability. Results thus obtained could be employed to predict the amount of rainfall during a period at the place.

Table 1
Distribution of annual rainfall

Rainfall (mm)	No. of years
2000-2400	1
2401-2800	3
2801-3200	6
3201-3600	8
3601-4000	A
4001-4400	4
4401-4800	0
4801-5200	2
5201-5600	1

Table 2
Arithmetic mean and percentiles of rainfall

	Percentile (mm)					Mean(mm)
	P_{10}	P_{25}	P_{50}	P_{75}	P_{90}	
January	0.23	0.58	1.16	1.74	10.20	1.61
February	0 21	0.54	1.07	1.61	1.93	2.10
March	0.32	0.81	1.61	3.50	6.73	1.99
April	4 83	16.25	42	79	111	46.87
May	29	78	192	319	505	238.42
June	395	654	838	1047	1305	838.49
July	648	791	1092	1363	1753	1125.04
August	348	463	675	778	1005	656.26
September	36	154	232	346	555	262.48
October	109	152	211	272	405	225.50
November	10.36	28	84	165	353	106.52
December	1.21	3.02	17.5	30	75	21.82
Annual	2570	3020	3530	4040	4490	3530.10

സംഗ്രഹം

തളിപ്പറമ്പിലെ പ്രതിമാസവും വാർഷികവുമായ വർഷണത്തിന്റെ ഒത്തങ്ങളെ ആ ധാരമാക്കി ഇവയ്ക്ക് ആകലന ബിന്ദുവും വിവിധ സംഭാവ്യ തലങ്ങളെ ആസ്പദമാക്കിയു gg അന്താരാളാകലനങ്ങളും പരികലനം ചെയ്തിരിക്കുന്നു. ഇവയുടെ അടിസ്ഥാനത്തിൽ ഈ സ്ഥലത്തെ പ്രതിമാസവും വാർഷികവുമായ വർഷപാത ആളവ് പ്രവചിക്കാവുന്ന താണ്.

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