

Short communication

Behaviour of rainfall during 20th century at Ludhiana, Punjab

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In this note rainfall pattern of Ludhiana (Latitude 30° 54'N, Longitude 75° 48'E and Altitude 247m) has been analyzed for the period of 100-years (1901-2000) (source: India Meteorological Department and meteorological observatory, PAU Ludhiana). The variability, fluctuation and moving trend of rainfall on monthly, seasonal and annual basis have been studied (Chaurasia and Mavi, 1973; Suresh and Sivaramakrishnan, 1997).

Annual normal rainfall received at Ludhiana is 717 mm (Table 1) out of which 588 mm is received during irrigated *kharif* cropping season (May to October) whereas 129 mm of rainfall is received during irrigated *rabi* cropping season (November to April). In the past century, maximum annual rainfall of 1395 mm was received in 1917 followed by 1336 mm in 1988. The lowest annual rainfall of the century (260

mm) was experienced in 1974. Other years with low amounts of rainfall include 328 mm in 1969, 353 mm in 1938 and 384 mm in 1987.

Out of 100 years, rainfall was equal to the normal value for 4 years (1937, 1940, 1956 and 1971). Deviation of actual rainfall from normal was found to be positive for 42 years and negative for 54 years. A standard deviation of 228, 228 and 67 mm was observed for the annual, *kharif* and *rabi* season rainfall whereas the standard error for the corresponding periods was found to be 23, 23 and 7 mm, respectively. The coefficient of variation was highest (52%) *rabi* followed by *kharif* (39%) and annual (32%) rainfall in decreasing order.

The decadal average rainfall was maximum (811mm) for the period 1991-2000 followed by the period 1981-1990 (794

Table 1: Rainfall (mm) at Ludhiana during 1901-2000

	Annual	<i>Kharif</i>	<i>Rabi</i>
Mean	716.5	587.9	128.7
Standard deviation	±228.2	±227.5	±66.5
Coefficient of variation (%)	31.8	38.7	51.6
Range	260-1395	216-1267	10-362

Table 2 : Decadal average rainfall (mm) at Ludhiana during 1901-2000

Period	Annual	<i>Kharif</i>	<i>Rabi</i>
1901 – 1910	703	541	162
1911 – 1920	703	563	140
1921 – 1930	637	531	106
1931 – 1940	630	507	123
1941 – 1950	728	598	130
1951 – 1960	752	625	127
1961 – 1970	759	655	104
1971 – 1980	649	533	116
1981 – 1990	794	645	149
1991 – 2000	811	682	129

mm) and was minimum (630 mm) for the decade 1931-1940 (Table 2). Similar trend was observed in the decadal average rainfall for *kharif* season, where the highest average rainfall of 682 mm was received during 1991-2000 followed by 645 mm during 1981-1990 and lowest average rainfall of 507 mm was received during 1931-1940 (Table 2). However, the decadal average rainfall during *rabi* season was highest (162 mm) during the period 1901-1910 and lowest (104 mm) during 1961-1970.

REFERENCES

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