



**Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department**

Press: Dated: 09th May, 2023

Subject: Climate Summary for the month of April 2023

1. Monthly Rainfall Scenario (01 to 30 April, 2023)

The country as a whole for the month of April 2023 recorded 41.4 mm of rainfall, which is 5% more than its Long Period Average (LPA) of 39.3 mm based on data of 1971-2020. Rainfall over homogeneous region of central India (30.0 mm) was 4th highest since 1901 after the years 1909 (52.8 mm), 1937 (44.7 mm) and 1907(40.6mm).Among the four homogeneous region, east & northeast India received 63.8 mm of rainfall which is 5th lowest since 1901. Prior lowest rainfall years were 1960 (36.9 mm), 2014(41.1 mm), 1940 (47.3 mm) and 1903 (53.0 mm).

Daily variation of the rainfall over the country as a whole during the month of April 2023 with normal based on 1971-2020 and All India rainfall percentage departure from normal for April during 1901-2023 are shown in the figure 1(a) and 1(b) respectively.

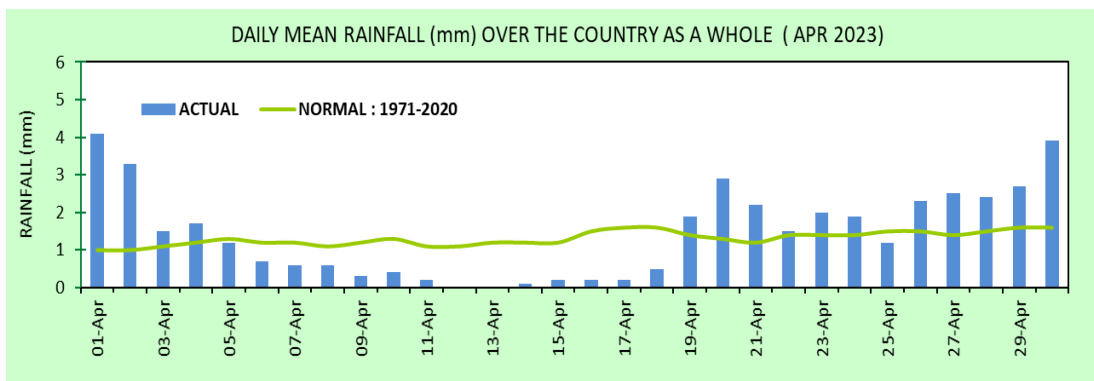


Fig.1 (a): Daily variation of rainfall over the country as a whole during April 2023.

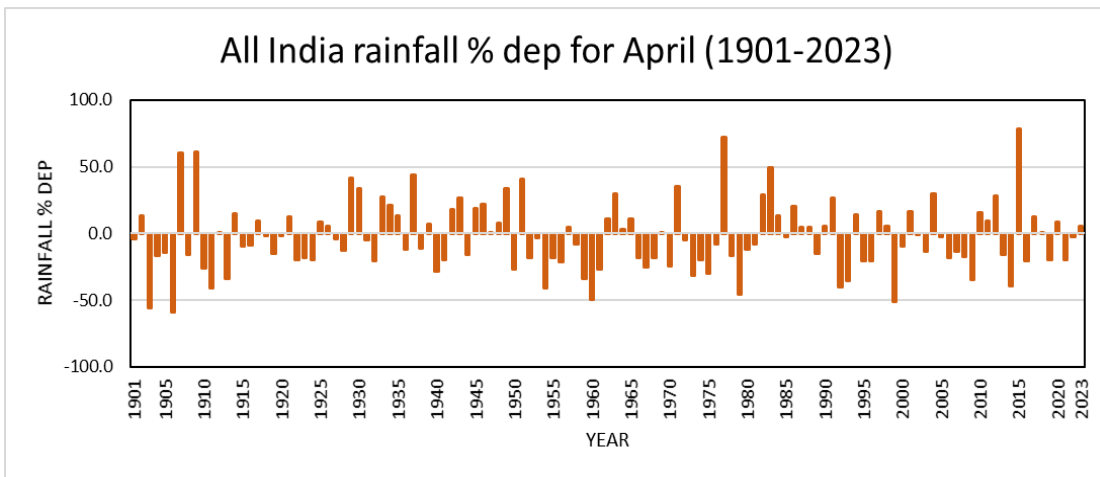


Fig 1(b). All India monthly rainfall percentage departure from normal based on 1971-2020 during April from 1901-2023.

The time series of area-weighted rainfall since 1901 for central India and east & northeast India are given in Fig. 2(a) and (b) respectively.

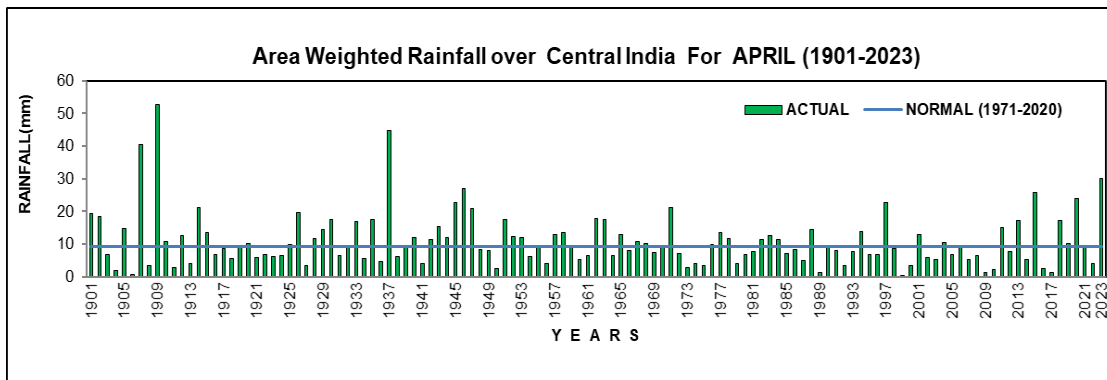


Fig.2 (a): Time series of area weighted rainfall over Central India for April (1901 - 2023)

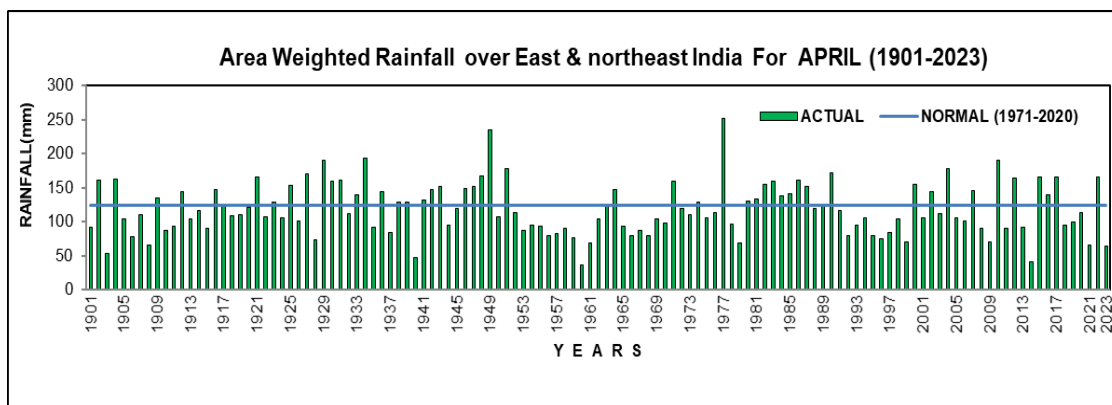


Fig.2 (b): Time series of area weighted rainfall over East & Northeast India for April (1901 - 2023)

The observed spatial pattern of rainfall during April, 2023, normal rainfall based on the data of 1971 to 2020 and rainfall departures from normal for the month of April 2023 are given in Fig.4.

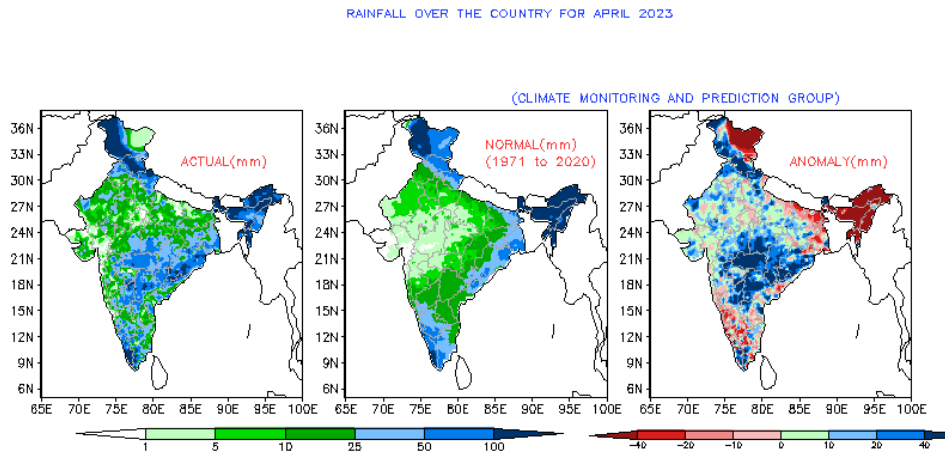


Fig 4: Observed spatial pattern of Rainfall for the month of April 2023 over India and their departure from normal based on 1971 to 2020 period.

2. Frequency of Heavy Rainfall events

The April 2023 witnessed heavy rainfall events (64.5 to 115.5 mm of rainfall) mainly from Telangana, Tamilnadu, Puducherry & Karaikal, Kerala & Mahe, Odisha, Assam & Meghalaya, and very heavy rainfall (115.6 to 204.4 mm of rainfall) mainly from Tamilnadu, Puducherry & Karaikal. The location of occurrences of heavy and very heavy rainfall events is shown in the Figure 5. There were 2 stations which reported very heavy rainfall (115.6 to 204.4 mm) events and 115 stations reported heavy rainfall (64.5 to 115.5 mm of rainfall) events during this month.

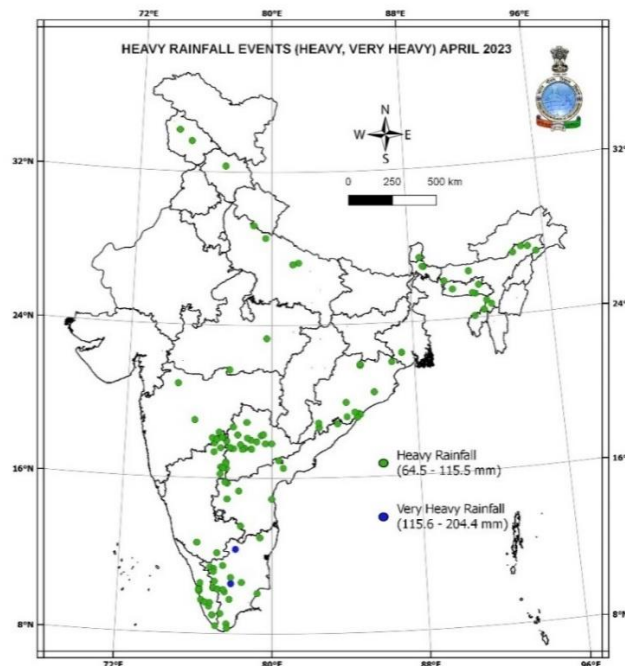


Fig 5: The location of occurrences of heavy rainfall events in the month April 2023.

3. Characteristics of Temperatures for the month of April 2023

The average maximum, average minimum and mean temperature for the country as a whole during April 2023 are 34.19 °C, 22.08 °C and 28.14 °C respectively, against the normal of 33.94 °C, 22.15 °C and 28.04 °C based on the period 1981-2010. Thus, the average maximum temperature is above normal by 0.26 °C while the average minimum temperature and mean temperature are normal by -0.07 °C and 0.10 °C respectively for the country as a whole. The climatological data based on the period of 1981 to 2010 are used to calculate the normal and hence the anomaly (Actual average temperature in 2022 - normal temperature based on data of 1981-2010).

The daily variation of maximum and minimum temperature anomaly over the country as a whole for April 2023 is shown in the figure 6(a) and (b). It shows, both the temperatures over the country as a whole were below normal during 1st week and during 20-30 April 2023.

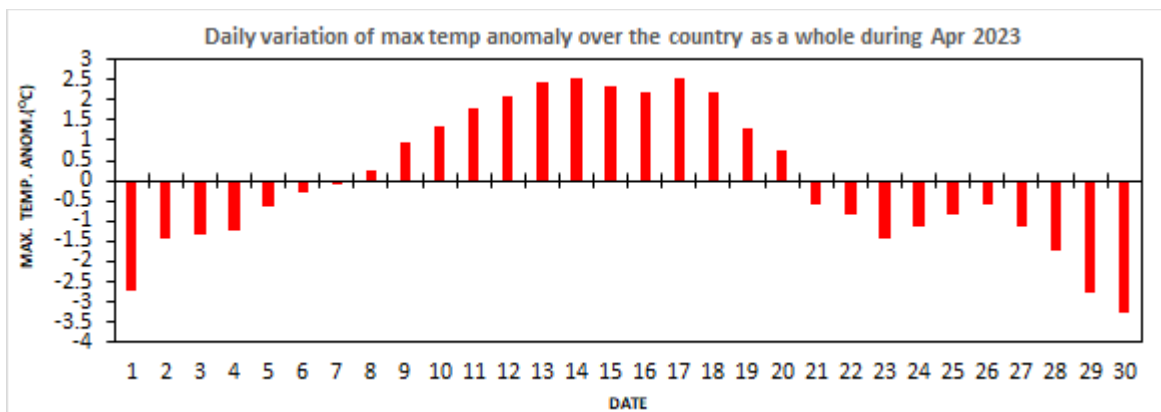


Fig 6 a): Daily variation of maximum temperature anomaly over the country as a whole for April 2023.

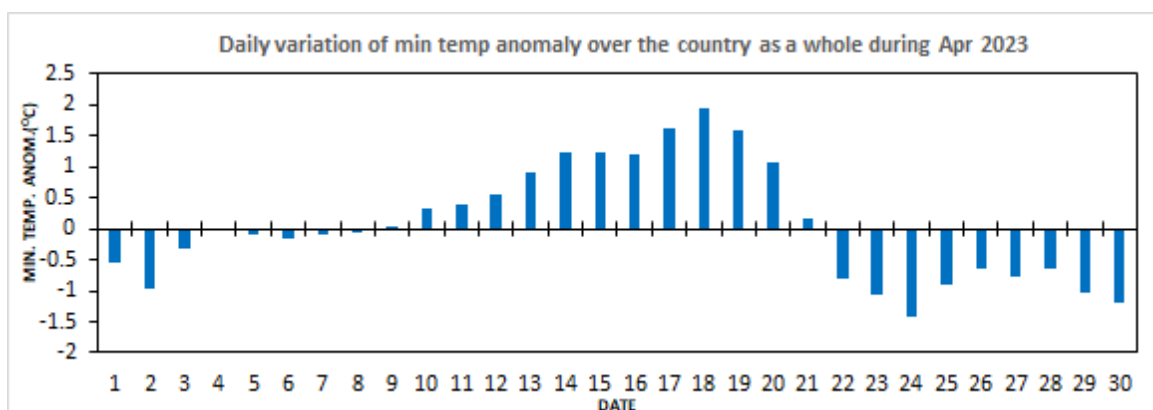


Fig 6(b): Daily variation of minimum temperature anomaly over the country as a whole for April 2023.

Figure 7 shows time series of monthly average maximum temperature over South

Peninsular India from 1901 to 2023. Over South Peninsular India during April, the average maximum temperature is the seventh highest (35.03 °C with an anomaly of 0.77 °C) after the years 2016(35.86 °C), 2010(35.27 °C), 2019(35.25 °C), 2014(35.21 °C), 2017(35.13 °C) and 2013 (35.11 °C) since 1901.

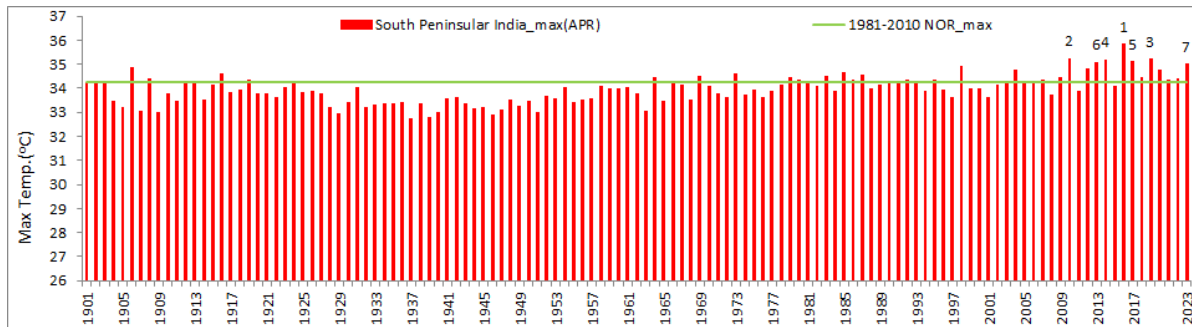


Fig 7: Time series of monthly average maximum temperature over South Peninsular India for the month of April 1901-2023.

Figure 8 shows time series of monthly average maximum, average minimum and mean temperature over the country as a whole for the month of April 1901-2023.

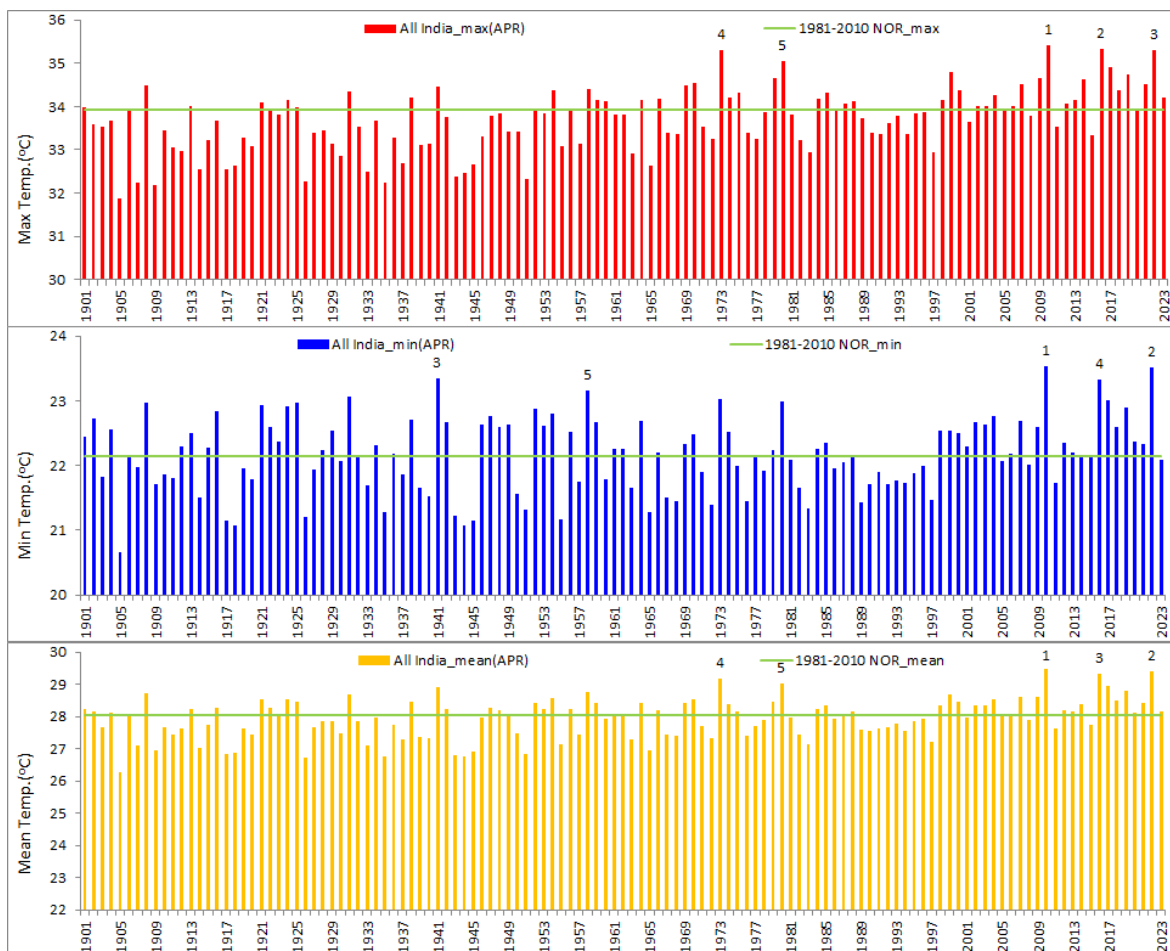


Fig 8: Time series of monthly average maximum, average minimum and mean temperature over the country as a whole for the month of April 1901-2023.

The Temperatures during April 2023 for all India and homogeneous regions with its ranks since 1901 are given below;

APR 2023		Max Temp (°C)	Min Temp (°C)	Mean Temp (°C)
ALL INDIA	ACTUAL	34.19	22.08	28.14
	NORMAL	33.94	22.15	28.04
	ANOMALY	0.26	-0.07	0.10
	Rank from TOP	28	71	51
NORTHWEST INDIA	ACTUAL	31.73	17.20	24.46
	NORMAL	32.54	17.69	25.11
	ANOMALY	-0.82	-0.49	-0.65
	Rank from TOP	69	76	72
EAST & NORTHEAST INDIA	ACTUAL	33.50	20.64	27.07
	NORMAL	31.99	20.13	26.06
	ANOMALY	1.50	0.50	1.00
	Rank from TOP	24	40	26
CENTRAL INDIA	ACTUAL	35.83	22.96	29.39
	NORMAL	36.29	23.32	29.81
	ANOMALY	-0.47	-0.36	-0.41
	Rank from TOP	79	82	83
SOUTH PENNINSULAR INDIA	ACTUAL	35.03	25.28	30.15
	NORMAL	34.26	25.18	29.72
	ANOMALY	0.77	0.094	0.43
	Rank from TOP	7	58	13

Note: Values are rounded off to nearest two decimal

During April 2023, there were no heat wave during 1-10 April and in 21-30 April due to occurrence of thunderstorms and rainfall activities. However, during 12-20 April, heat wave condition was observed over West Bengal, Bihar, Odisha and Coastal Andhra Pradesh and they lasted for 9, 7, 5 and 4 days respectively during the period. For northwest India and west central India, it was highly sub-due. It was only for 1-3 days over Punjab, Haryana, Chandigarh, Delhi and Uttar Pradesh. Konkan & Goa and Jharkhand also experienced 1 day of Heat Wave activity in April 2023. Northeast India also reported higher than normal day temperatures in most dates during 11-22 April 2023. The average Maximum temperature was above normal by 4.5 °C mainly over most parts of East & Northeast India and coastal parts of South Peninsular India. Figure 9 shows the stations with number of days, which had above normal (≥ 4.5 °C) maximum temperatures.

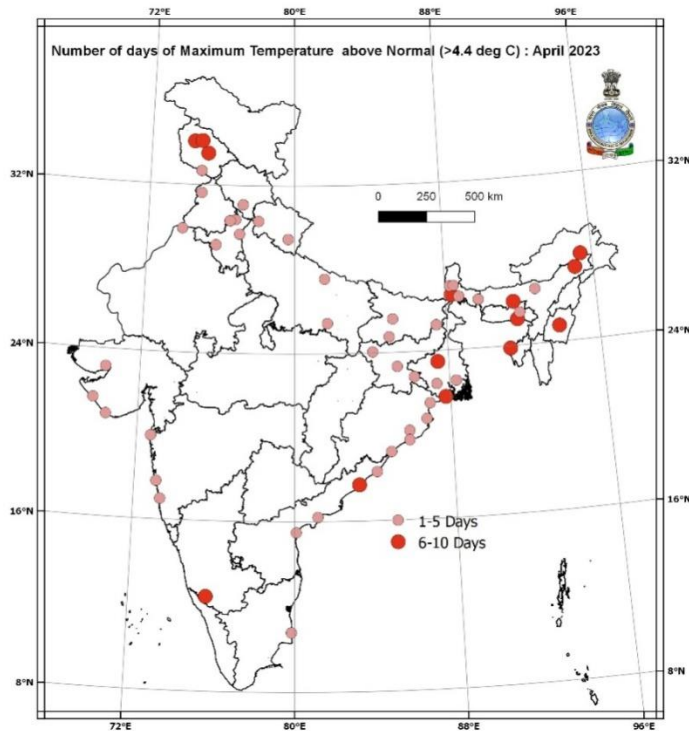


Fig 9: Number of days with maximum temperature above normal ($\geq 4.5^{\circ}\text{C}$) over the country for April 2023.

4. Chief Synoptic weather features observed during April 2023.

During April 2023, there were 5 active Western disturbances (WDs) which impacted northwest and central parts of the country (2-6, 14-19, 21-25 and 25-29 April, 28 April-30 April). Persistence of trough/wind discontinuity was also seen more prominently in the lower levels from extreme southern parts of the Peninsular India to Vidarbha/east central India, mainly during 1-10 and 22-30 April. As a result of these synoptic systems, there were large-scale Thunderstorm activities and rainfall, accompanied with lightning and gusty winds over India, mainly during 1 to 8 April and then during 22 to 30 April. Isolated hail storms also occurred over many areas during the same period. Due to such extensive rain/thunderstorm activities and cloudy conditions over most parts of India, large parts of India had experienced lower than normal day maximum temperature during these periods. There was sub-duded rainfall and thunderstorm activities over northeast India in April 2023 and it was mainly due absence of any favorable synoptic weather systems and absence of southwesterly or southerly wind and moisture convergence from north Bay of Bengal to the region.

5. Significant Weather Events for the month April 2023:

According to media report during this month, 100 persons died, more than 84 persons were injured. 140 livestock perished due to various weather events. The details of casualties are given below, which are based on real time media reports (Fig. 10).

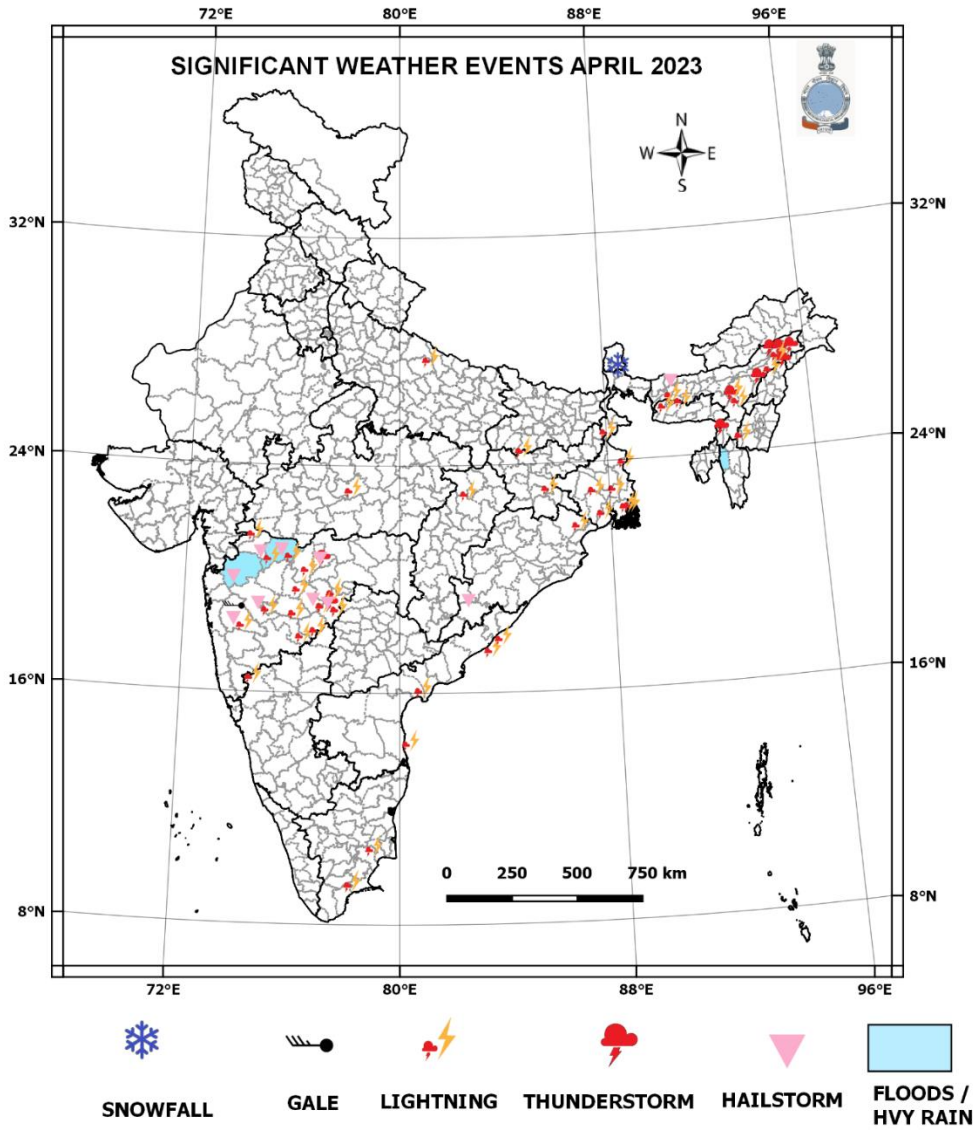


Fig. 10: Significant weather events during April 2023 (Based on real-time media report)