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INDIA METEOROLOGICAL DEPARTMENT

Press Release  
Date: 16<sup>th</sup> April, 2024

## Sub: Climate Summary for the month of March 2024

### 1. Monthly Rainfall Scenario (01 to 31Mar. 2024)

Rainfall over the country as a whole for the month of March 2024 was 28.5 mm which is 5% less than its Long Period Average (LPA) of 29.9 mm.

Daily variation of the rainfall over the country as a whole during the month of March 2024 with normal based on data of (1971-2020) is presented in **fig. 1 (a)**. The All India rainfall percentage departure from normal for March 2024 during 1901-2024 is presented in the figure 1(b). Rainfall over homogeneous regions of south peninsula was 3.3 mm in the year 1903. It was 2<sup>nd</sup> lowest since 2001 (fig 1 c). However Central India receive excess rainfall (104% of LPA) with actual rainfall of 15.9 mm again is the LPA of 7.8 mm.

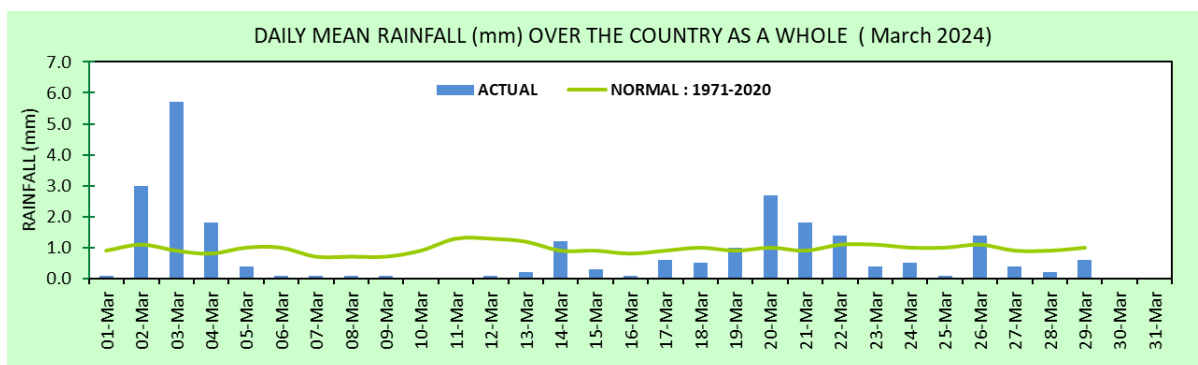
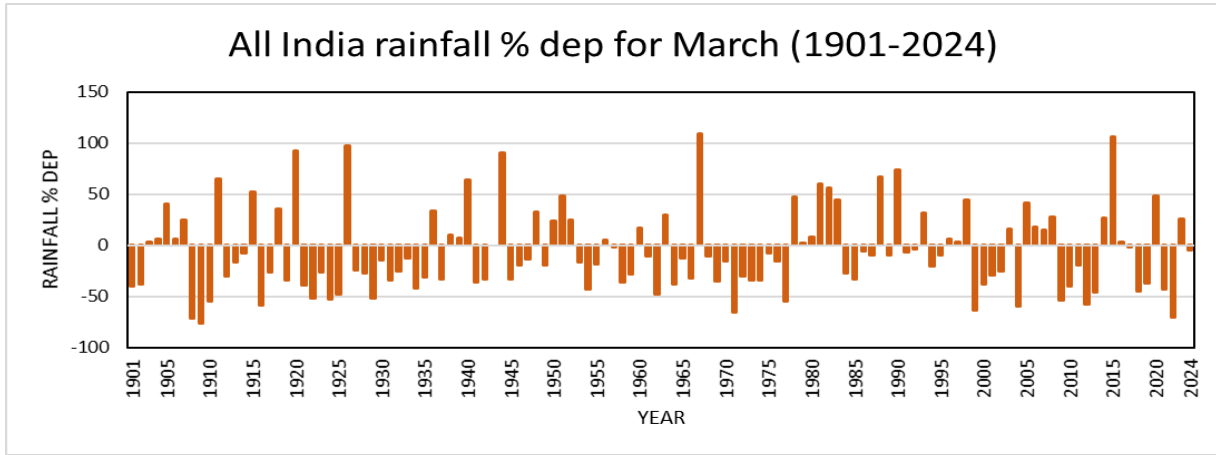
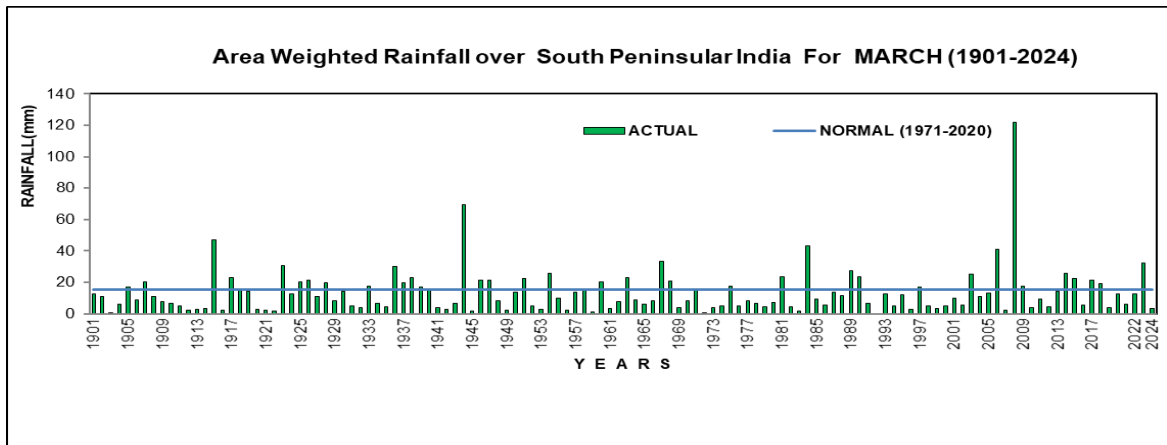


Fig.1 (a): Daily variation of rainfall over the country as a whole during March 2024.



**Fig 1(b). All India monthly rainfall percentage departure from normal (1971-2020) for March from 1901-2024.**

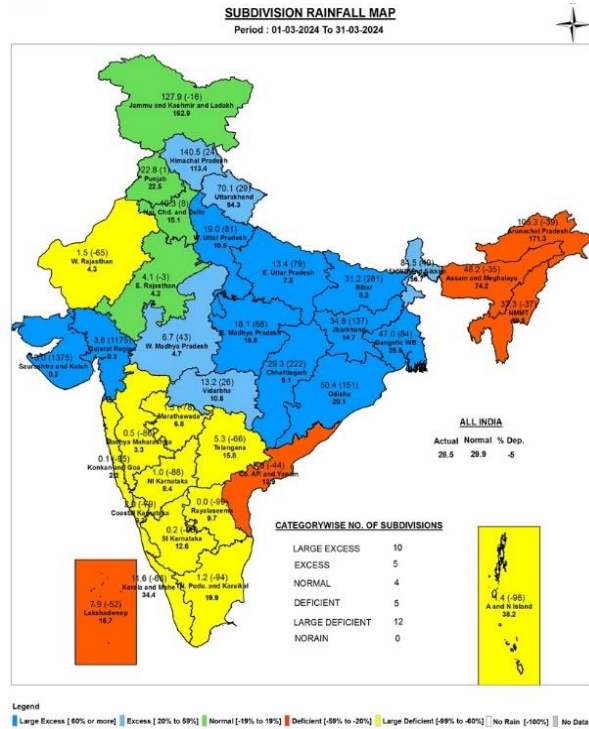


**Fig 1(c). Time series of area weighted rainfall over south peninsular India for March (1901 – 2024)**

The monthly rainfall for **March 2024** is given in the table below:

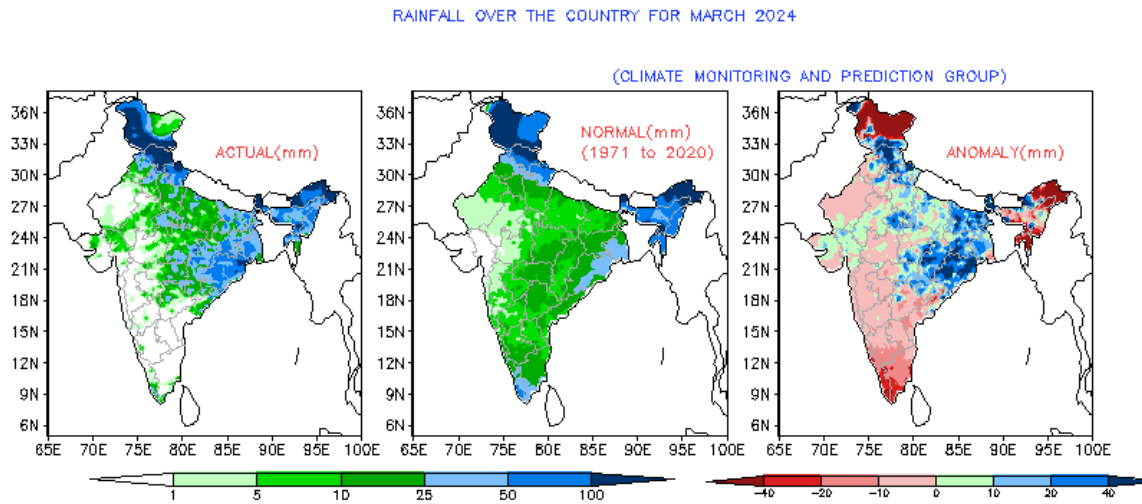
Regions	Actual Rainfall (mm)	Normal Rainfall (mm)	% Departure from LPA
Country as a whole	28.5	29.9	-5.0
Northwest India	45.9	47.9	-4.0
Central India	15.9	7.8	104.0
South Peninsula	3.3	15.5	-79.0
East & northeast India	52.6	59.7	-12.0

During this month, 10 sub-divisions received large excess, 5 received excess, 4 received normal, 5 received deficient and 12 received large deficient rainfall. (Fig 2)



**Fig 2: Subdivision-wise rainfall distribution for March 2024.**

The observed spatial distribution of rainfall during March 2024, normal rainfall based on data of 1971 to 2020 and rainfall departures from normal during March 2024 are shown in Fig.3.



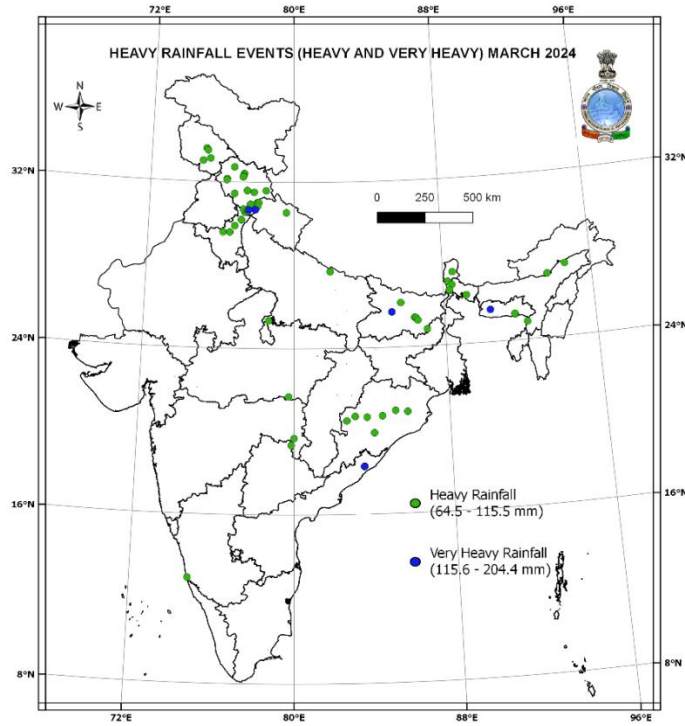
**Fig 3: Observed spatial Rainfall pattern for the month March 2024 over India and their departure from normal (1971 to 2020 period).  
Anomaly: Deviation from normal (Actual rainfall – normal rainfall)**

## 2. Frequency of Heavy Rainfall events, thunderstorms and tornado

March 2024 witnessed very heavy rainfall events (115.6 to 204.4 mm) over Meghalaya, Andhra Pradesh, Bihar and Himachal Pradesh and heavy rainfall events (64.5 – 115.5 mm of rainfall) were observed mainly over Odisha, Jammu &

Kashmir, Sub Himalayan West Bengal, Sikkim, Assam, Haryana, Chandigarh & Delhi and Uttarakhand. The location of occurrences of heavy and very heavy rainfall events is shown in the Figure 4.

Out of total 61 occasions, 6 were very heavy rainfall (115.6 to 204.4 mm) and 55 were heavy rainfall (64.5 to 115.5 mm) categories during this month.



(Only highest category of rainfall event considered for a station)

**Fig 4: The location of occurrences of heavy and very heavy rainfall events in the month March 2024.**

### Thunderstorm/Hailstorm/Squall during the month

S.No.	Region	TS Days	Hail Days	Squall Days	Duststorm Days
1.	South Peninsular India	10	Nil	Nil	Nil
2.	Northwest India	21	5(1,2,3,19,30 March)	Nil	Nil
3.	Northeast India	9	Nil	Nil	Nil
4.	East India	19	3(21,25,31 March)	4(13,15,25,31 March)	Nil
5.	Central India	16	3(17,18, 19 March)	Nil	Nil
6.	West India	5	1(16 March)	Nil	Nil

**Tornado over Jalpaiguri district of West Bengal:** An intense thunderstorm event occurred over the district of Jalpaiguri in the afternoon of 31.03.2024. As per the IMD report, since 2.45 PM approximately thunder was heard continuously and the sky color was becoming deep black. As per the observation, even though lightning was not observed, wind speed was gradually increasing and wind speed reached to

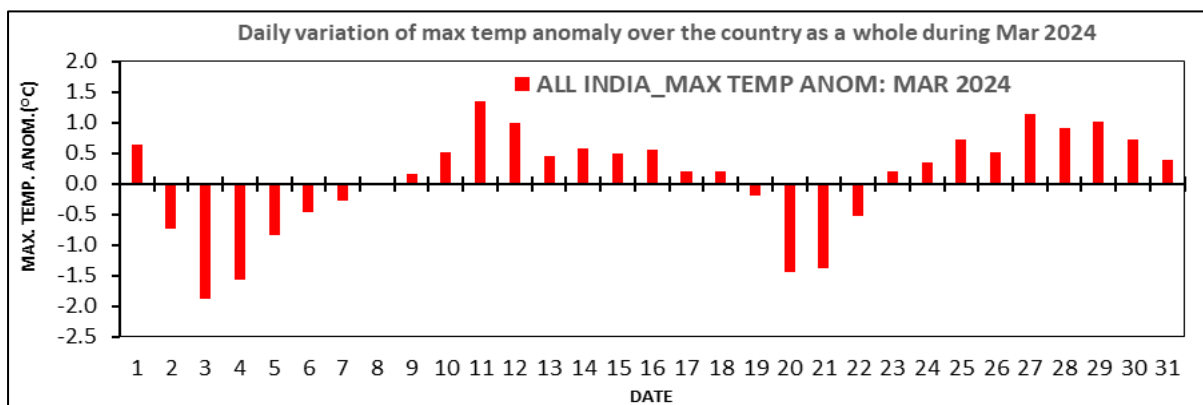
its maximum with 34-40 knots at around between 3.18PM to 3.23PM. This system started decaying from 3.30 PM and moved away rapidly. From various media reports, it appears to be a short lived but intense tornado which affected some parts of Jalpaiguri district in the afternoon of 31.03.2024. Major damages are reported from Mainaguri town of Jalpaiguri district.

### 3. Chief Synoptic weather features observed during March 2024.

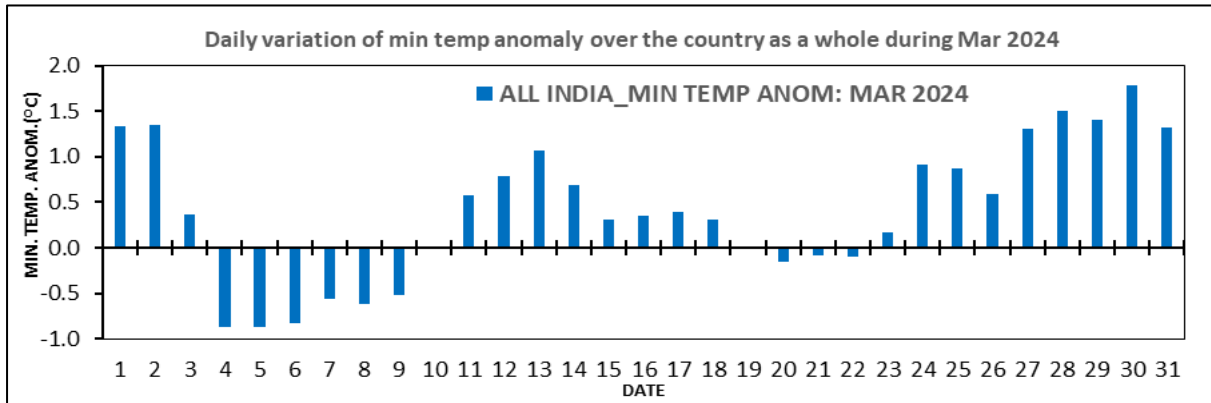
A total of 7 WDs (during 1-3, 5-9, 9-13, 12-15, 18-21, 20-23 and 25-31 March) caused Rain/snowfall over Western Himalayan states and adjoining plains of northwest India. Out of 7 WDs, 5 WDs were active and caused rain/thunderstorm and hail storm over plains of north and central India. East-west trough from Bihar to South Assam and moisture incursion over the region due to anti-cyclone over central and north Bay of Bengal caused wet spell over east and northeast India. There was also no significant spell of heat wave conditions developed over any area in the country except isolated pockets over Madhya Pradesh on 28<sup>th</sup> & 29<sup>th</sup> March and West Rajasthan on 29<sup>th</sup> March.

### 4. Characteristics of Temperatures for the month of March 2024

The average maximum, average minimum and mean temperature for the country as a whole during March 2024 were 31.71°C, 18.14°C and 24.92°C respectively, against the normal of 31.70°C, 17.71°C and 24.71°C based on data of 1991-2020. Thus, for the country as a whole, the average maximum temperature was near normal with departure from normal of 0.01°C while the average minimum temperature and the mean temperature were above normal by 0.43°C and 0.22°C respectively. The daily variation of maximum and minimum temperature departure from normal over the country as a whole for March 2024 is shown in the figure 5(a) and (b) respectively.

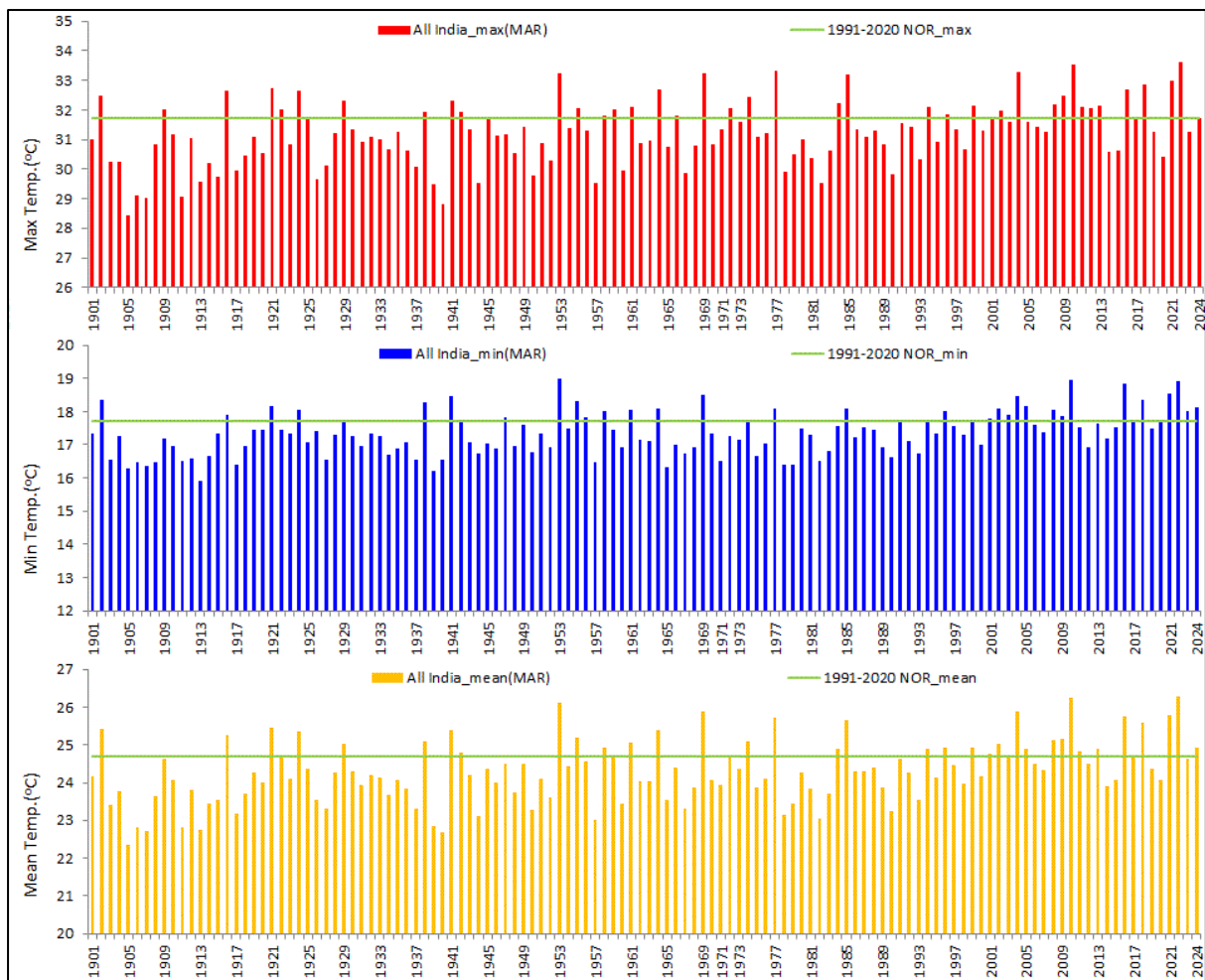


**Fig 5(a): Daily variation of maximum temperature anomaly (departure from normal) over the country as a whole for March 2024.**



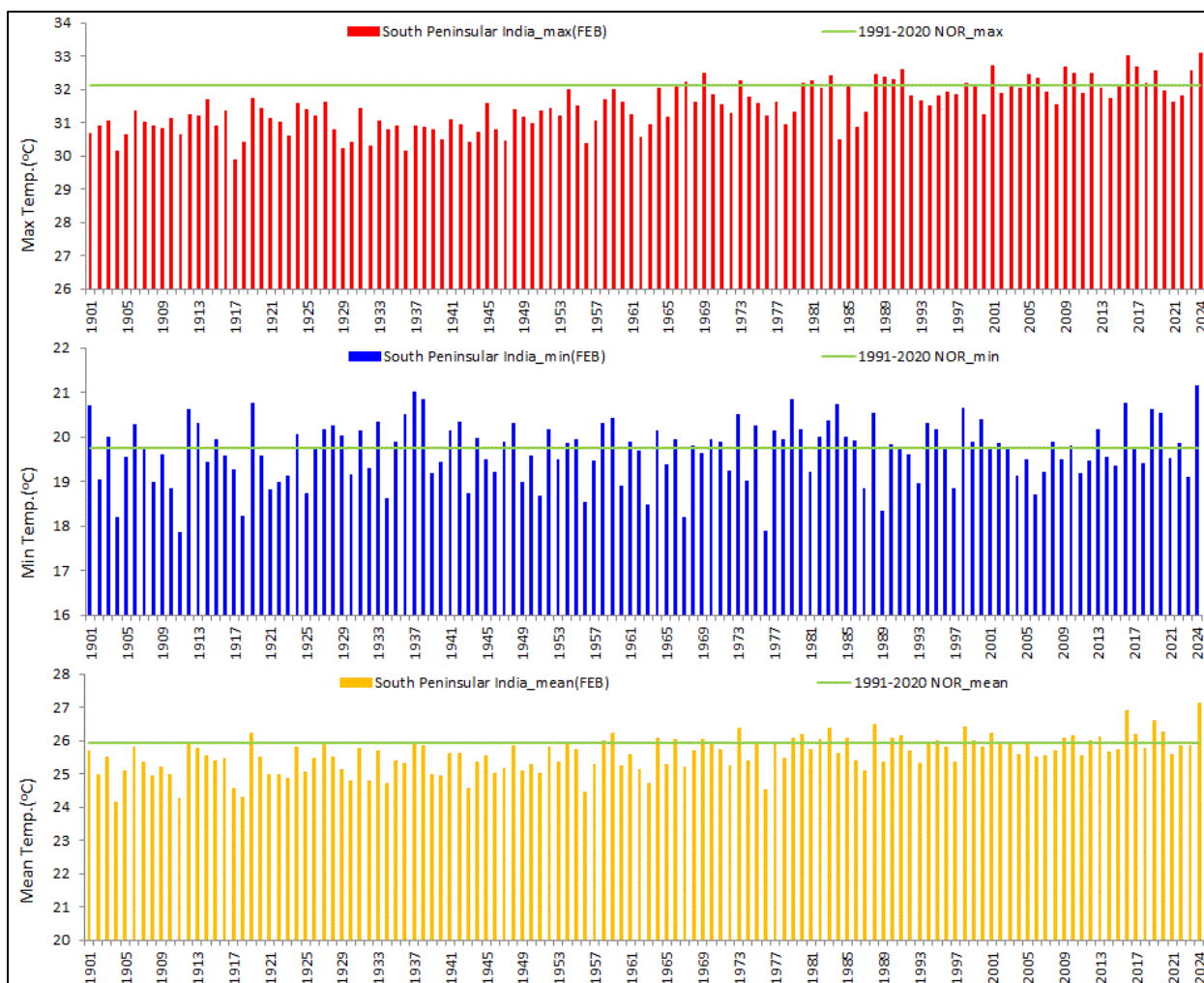
**Fig 5(b): Daily variation of minimum temperature anomaly (departure from normal) over the country as a whole for March 2024.**

Figure 6 shows time series of monthly average maximum, average minimum and mean temperature over the country as a whole for the month of March 1901-2024. Over the country during March 2024, the average maximum temperature was 31.71°C with departure from normal of 0.01°C. The average minimum temperature was 18.14°C with an anomaly of 0.43°C (15<sup>th</sup> highest since 1901). The mean temperature was 24.92°C with an anomaly of 0.22°C.



**Fig 6: Time series of monthly average maximum, average minimum and mean temperature over the country as a whole for the month of March 1901-2024.**

Figure 7 shows time series of average maximum, average minimum and mean temperature over the South Peninsular India for the month of March 1901-2024. Over South Peninsular India during March 2024, the average maximum temperature was 3<sup>rd</sup> highest (35.28°C with a departure from normal of 0.68°C) after the years 2016(35.68°C) and 2010(35.36°C) since 1901. The average minimum temperature was 2<sup>nd</sup> highest (23.33°C with a departure of 1.05°C) after the year 2016(23.61°C) since 1901. The mean temperature was 2<sup>nd</sup> highest (29.31°C with a departure of 0.87°C) after the year 2016(29.65°C) since 1901.



**Fig 7: Time series of monthly average maximum, average minimum and mean temperature over South Peninsular India for the month of March 1901-2024**

The Temperatures during March 2024 for all India and homogeneous regions with its top ranks since 1901 are given below:

MAR 2024		Max Temp (°C)	Min Temp (°C)	Mean Temp (°C)
ALL INDIA	<b>ACTUAL</b>	<b>31.71</b>	<b>18.14</b>	<b>24.92</b>
	NORMAL	31.70	17.71	24.71
	ANOMALY	0.01	0.43	0.22
	<b>Rank since 1901</b>	<b>41</b>	<b>15</b>	<b>26</b>
NORTHWEST INDIA	<b>ACTUAL</b>	<b>27.59</b>	<b>13.26</b>	<b>20.42</b>
	NORMAL	27.64	13.37	20.51
	ANOMALY	-0.06	-0.12	-0.09
	<b>Rank since 1901</b>	<b>47</b>	<b>47</b>	<b>45</b>
EAST & NORTHEAST INDIA	<b>ACTUAL</b>	<b>29.21</b>	<b>17.24</b>	<b>23.23</b>
	NORMAL	29.86	16.94	23.40
	ANOMALY	-0.65	0.30	-0.18
	<b>Rank since 1901</b>	<b>85</b>	<b>25</b>	<b>58</b>
CENTRAL INDIA	<b>ACTUAL</b>	<b>34.68</b>	<b>19.66</b>	<b>27.17</b>
	NORMAL	34.73	19.10	26.92
	ANOMALY	-0.06	0.55	0.25
	<b>Rank since 1901</b>	<b>48</b>	<b>15</b>	<b>28</b>
SOUTH PENINSULAR INDIA	<b>ACTUAL</b>	<b>35.28</b>	<b>23.33</b>	<b>29.31</b>
	NORMAL	34.60	22.27	28.44
	ANOMALY	0.68	1.05	0.87
	<b>Rank since 1901</b>	<b>3</b>	<b>2</b>	<b>2</b>

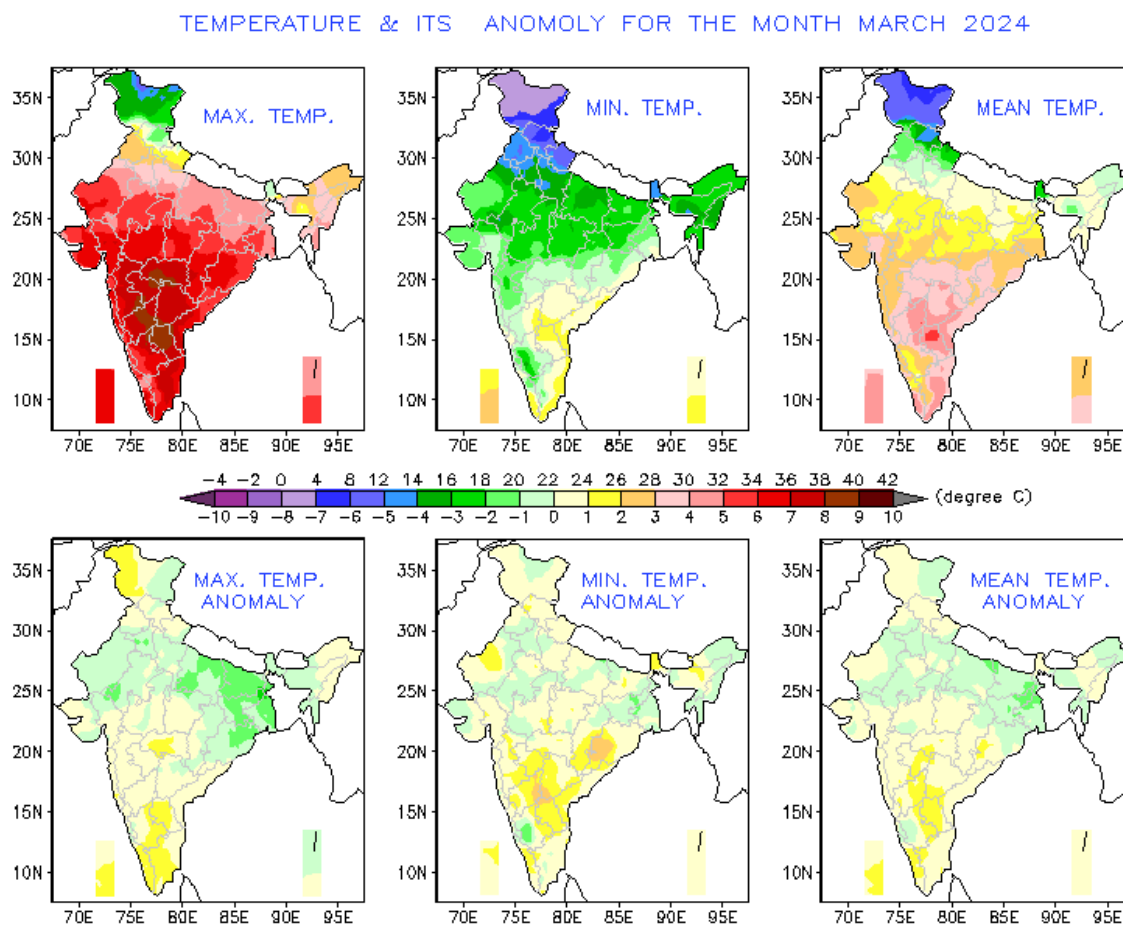
**Note: Values are rounded off to nearest two decimal.**



The five highest temperature records with corresponding ranks since 1901 along with year of occurrence for South Peninsular India (TMax, TMin, TMean) are given in the table below:

South Peninsular India (March 2024)					South Peninsular India (March 2024)					South Peninsular India (March 2024)				
Year	TMax	Normal	Anomaly	Rank	Year	TMin	Normal	Anomaly	Rank	Year	TMean	Normal	Anomaly	Rank
2016	35.68	34.60	1.08	1	2016	23.61	22.27	1.34	1	2016	29.65	28.44	1.21	1
2010	35.36		0.76	2	2024	23.33		1.05	2	2024	29.31		0.87	2
2024	35.28		0.68	3	1927	23.08		0.81	3	2019	29.15		0.71	3
2019	35.27		0.67	4	2019	23.02		0.74	4	2010	29.01		0.57	4
2004	35.16		0.55	5	2020	22.93		0.65	5	1953	28.91		0.47	5

The observed spatial temperature pattern of monthly average maximum, average minimum and mean temperature over India and their departures from normal (1991 to 2020 period) for the month of March 2024 is given in Fig 9.



**Fig 9: Observed spatial temperature pattern of monthly average maximum, average minimum and mean temperature over India (top three from left to right) and their departure from normal (1991 to 2020 period) for March 2024 (lower three from left to right).**

## 5. Significant Weather Events

During March, total 30 persons reportedly died & more than 300 persons were injured. The details of casualties given below are based on real time media reports.

Fig. 10 shows significant weather events during March 2024. (Based on real time media reports.)

**Lightning:** Total 12 persons reportedly died & 3 persons were injured, during March, because of Lightning. The details of the area effected by the events are summarized and given in the table below:

DATE	DEATH	INJURED	DISTRICT (STATE) AFFECTED
1 Mar.	6	3	Dausa, Sawai Madhopur (Rajasthan)
3 Mar.	4		Hardoi, Lakhimpur Kheri, Shahjahanpur, Sitapur (Uttar Pradesh)
31 Mar.	1		Imphal West (Manipur)
31 Mar.	1		Gomati (Tripura)

**Thunderstorm:** Total 6 persons reportedly died & more than 300 persons were injured during March, because of Thunderstorm. The details of the area effected by the events are summarized and given in the table below:

DATE	DEATH	INJURED	DISTRICT (STATE) AFFECTED
31 Mar.	5	More than 300	Jalpaiguri (West Bengal)
29 Mar.	1		Una (Himachal Pradesh)

While, Ludhiana, Sri Muktsar Sahib districts of Punjab affected on 29 & 30 Mar.; Imphal West, Thoubal districts of Manipur, Gomati district of Tripura were affected on 31 Mar. and Alipurduar, Cooch Behar districts of West Bengal were affected on 31 Mar. due to Thunderstorm activity.

**Heavy Rains & Landslide:** Total 12 persons reportedly died & 7 persons were injured during March, because of Heavy Rains & Landslide. The details of the area effected by the events are summarized and given in the table below:

DATE	DEATH	INJURED	DISTRICT (STATE) AFFECTED
4, 5, 25 Mar.	4	7	Solan, Una (Himachal Pradesh)
23 Mar.	4		Dhalai (Tripura)
2 Mar.	4		Reasi (Jammu & Kashmir)

While, Chamba, Kangra, Kinnaur, Kullu, Lahaul & Spiti, Mandi, Shimla, Sirmaur districts of Himachal Pradesh affected on 4 & 5 Mar.; Gomati, Khowai, Sepahijala, South Tripura, Unakoti, West Tripura districts of Tripura affected on 23 Mar. Mathura district of Uttar Pradesh affected on 3 Mar. due to Heavy Rains.

**Hailstorm:** Damage to crops, houses reported in Ashoknagar, Chhatarpur, Datia, Guna, Niwari, Shivpuri, Tikamgarh districts of Madhya Pradesh on 1 Mar, Senapati district of Manipur 26 Mar. due to Hailstorm.

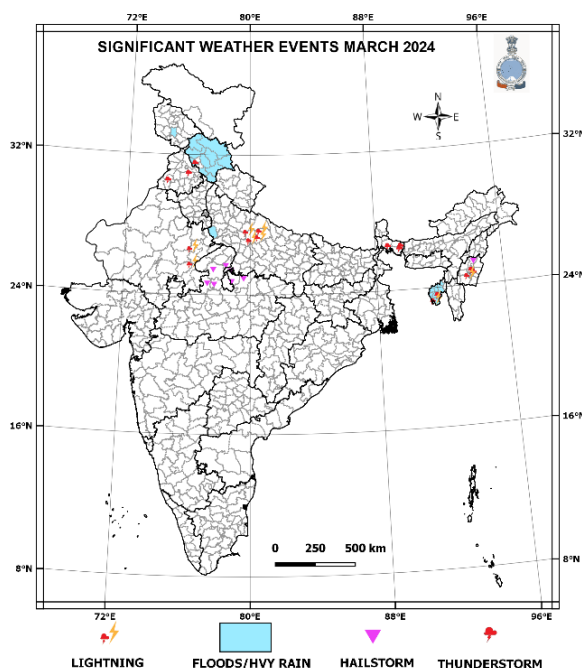


Fig.10: Deaths and damages due to significant weather events during March 2024. (Based on real time media reports.)