



Saturday, April 22, 2023

MORNING

Time of Issue: 0745 hours IST

## ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

### Significant Weather Features

#### Significant Meteorological features:

- ❖ A Western Disturbance seen as a trough in middle tropospheric westerlies roughly along Long 73°E to the north of Lat. 30°N.
- ❖ A trough/wind discontinuity runs from Vidarbha to south Tamil Nadu in lower tropospheric levels.
- ❖ A trough in lower tropospheric westerlies runs roughly along Long 88°E to the north of Lat. 20°N.

#### Maximum Temperatures and Heat Wave observed:

- ❖ Yesterday, Maximum Temperatures were in the range of 36-39°C over some/many parts of Northwest, Central & East India, interior parts of Gujarat & Maharashtra, Coastal Andhra Pradesh & Yanam, Tamil Nadu, Puducherry & Karaikal and Kerala & Mahe; 30-35°C many parts of rest of the country except over Western Himalayan Region (16-25°C). Maximum Temperatures were normal or below normal over most parts of the country except over West Bengal, Tamil Nadu, Puducherry & Karaikal and Kerala & Mahe where these are above normal by 2-4°C.
- ❖ Yesterday, Heat Wave conditions abated from Gangetic West Bengal after 10 days, from Bihar after 7 days and from Odisha after 5 days.

#### Rainfall Forecast and Warnings:

##### Northwest India:

- ❖ No significant weather likely during next 4-5 days.

##### Northeast India:

- ❖ Light/moderate fairly widespread to widespread rainfall with thunderstorm/lightning/gusty winds very likely over the region during next 2 days.
- ❖ **Heavy rainfall** very likely at isolated places over Arunachal Pradesh and Assam & Meghalaya on 22<sup>nd</sup> April, 2023.

##### Central India:

- ❖ Light/moderate isolated rainfall with thunderstorm/lightning/gusty winds very likely over Madhya Pradesh, Vidarbha and Chhattisgarh during next 5 days. Isolated **hailstorm** also likely over Chhattisgarh and Vidarbha on 22<sup>nd</sup> April, 2023.

##### East India:

- ❖ Light isolated to scattered rainfall with thunderstorm/lightning/gusty winds very likely over Bihar, Jharkhand, West Bengal & Sikkim and Odisha during next 5 days. Isolated **hailstorm** also likely over Odisha on 22<sup>nd</sup> & 23<sup>rd</sup> and over Bihar on 24<sup>th</sup> April, 2023.

##### South India:

- ❖ Light isolated to scattered rainfall with thunderstorm/lightning/gusty winds very likely over Coastal Andhra Pradesh, Telangana, Rayalaseema, Interior Karnataka, Tamil Nadu, Puducherry & Karaikal and Kerala & Mahe during next 5 days.

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## Main Weather Observations

- ❖ **Rainfall/thundershowers observed** (from 0830 hours to 1730 hours IST of yesterday): **at many places** over Nagaland, Manipur, Mizoram & Tripura; **at a few places** over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad **and at isolated places** over Himachal Pradesh, Uttarakhand, Gangetic West Bengal, Odisha, Tamilnadu, Puducherry and Karaikal and Andaman & Nicobar Islands;
- ❖ **Significant rainfall recorded** (from 0830 hours IST to 1730 hours IST of yesterday) (in cm): Cherrapunji -6; Nancowry -3; Lingpui -2; Majbat -1; Palayankottai -1.
- ❖ **Thunderstorm observed** (from 0830 hours IST of yesterday to 0530 hours IST of today): at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Uttar Pradesh, Bihar, Jharkhand, Chhattisgarh, Odisha, Assam & Meghalaya, Tripura, Telangana, Rayalaseema, Coastal Andhra Pradesh and North Interior Karnataka.
- ❖ **Minimum Temperature Departures (as on 21-04-2023):** Minimum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at many places over East Uttar Pradesh, Nagaland, Manipur, Mizoram & Tripura, Jharkhand; at a few places over Bihar, West Bengal & Sikkim; ; **above normal (1.6°C to 3.0°C)** at a few places over Kerala & Mahe; at isolated places over East Madhya Pradesh, Odisha, Tamil Nadu, Puducherry & Karaikal, Saurashtra & Kutch. They were **appreciably below normal (-3.1°C to -5.0°C)** at many places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Punjab; at a few places over Himachal Pradesh, Uttarakhand, West Rajasthan, Madhya Maharashtra; at isolated places over Haryana, Chandigarh & Delhi, West Madhya Pradesh, Telangana; **below normal (-1.6°C to -3.0°C)** at a few places over East Rajasthan, Chhattisgarh; at isolated places over Konkan & Goa and **near normal** over rest parts of the country. Yesterday, **the lowest minimum temperature of 15.2°C** was reported at **Amritsar (Punjab)** over plains of the country.
- ❖ **Maximum Temperature Departures (as on 21-04-2023):** Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Gangetic West Bengal and Odisha; **above normal (1.6°C to 3.0°C)** at a few places over Andaman & Nicobar Islands, Sub-Himalayan West Bengal & Sikkim, Kerala & Mahe and Tamil Nadu, Puducherry & Karaikal and at isolated places over Bihar. They were **markedly below normal (-5.1°C or less)** at many places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad and at a few places over Himachal Pradesh; **appreciably below normal (-1.6°C to -3.0°C)** at most places over Chhattisgarh and Vidarbha; at a few places over Punjab, Haryana, Chandigarh & Delhi, East Uttar Pradesh, West Madhya Pradesh and Telangana; at isolated places over West Uttar Pradesh and East Madhya Pradesh; **below normal (-1.6°C to -3.0°C)** at many places over Rajasthan, Gujarat Region, Madhya Maharashtra, Marathwada and Jharkhand and at isolated places over Saurashtra & Kutch and Coastal Andhra Pradesh & Yanam and **near normal** over rest parts of the country. Yesterday, **the highest maximum temperature of 41.0°C** was reported at **Khargone (West Madhya Pradesh), Kurnool (Rayalaseema) & K. Paramathy (Tamilnadu)**.

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### Meteorological Analysis (Based on 0530 hours IST)

- ❖ The **Western Disturbance** as a trough in middle tropospheric levels with its axis at 5.8 km above mean sea level roughly along Long. 73°E to the north of Lat. 30°N persists.
- ❖ The **cyclonic circulation** over central Uttar Pradesh at 0.9 km above mean sea level persists.
- ❖ The **trough/wind discontinuity** from Vidarbha to south Tamil Nadu across Telangana at 0.9 km above mean sea level persists.
- ❖ The **trough** roughly along Long. 88°E to the north of Lat. 20°N at 1.5 km above mean sea level persists.
- ❖ A fresh Western Disturbance is likely to affect Western Himalayan Region from night of 24<sup>th</sup> April, 2023.

### Weather Forecast for next 5 days (Upto 0830 hours IST of 27<sup>th</sup> April, 2023)

- ❖ Meteorological sub-division wise detailed 5 days rainfall forecast is given in Table-1.
- Northwest India:**
- ❖ No significant change in Maximum Temperatures very likely during next 2 days and rise by 2-4°C thereafter.
- Central India:**
- ❖ No significant change in Maximum Temperatures very likely during next 4-5 days.
- West India:**
- ❖ No significant change in Maximum Temperatures very likely during next 24 hours and rise by 2-3°C thereafter.

### Weather Outlook for subsequent 2 days (During 27<sup>th</sup>-29<sup>th</sup> April, 2023)

- ❖ Scattered to Fairly widespread light/moderate rainfall likely over Northeast India and along the west coasts.
- ❖ Isolated to scattered light rainfall likely over parts of Uttarakhand, south Rajasthan, Gujarat state, remaining parts of Peninsular India, Odisha, Central India and islands.
- ❖ Dry weather likely over rest parts of India.

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## Weather Warning during next 5 days

**22 April (Day 1):** ♦ **Heavy rainfall** likely at isolated places over Arunachal Pradesh and Assam & Meghalaya.

♦ **Hailstorm with thunderstorm, lightning & gusty wind (40-50 kmph)** very likely at isolated places over Chhattisgarh; **with thunderstorm, lightning** over Vidarbha and Odisha.

♦ **Thunderstorm with lightning & gusty wind (40-50 kmph)** very likely at isolated places over Coastal Andhra Pradesh & Yanam ; **with lightning & gusty wind (30-40 kmph)** over East Madhya Pradesh, Bihar, Jharkhand, West Bengal & Sikkim, Telangana, Rayalaseema, Kerala & Mahe; **with lightning** at isolated places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Interior Karnataka and Tamil Nadu, Puducherry & Karaikal.

♦ **Squally wind (speed 40-50 kmph)** very likely over north Arabian sea along & off north Gujarat coast. Fishermen are advised not to venture into these areas.

**23 April (Day 2):** ♦ **Hailstorm with thunderstorm, lightning & gusty wind (30-40 kmph)** very likely at isolated places over Odisha.

♦ **Thunderstorm with lightning & gusty wind (40-50 kmph)** very likely at isolated places over Gangetic West Bengal, Coastal Andhra Pradesh & Yanam, Rayalaseema; **with lightning & gusty wind (30-40 kmph)** over East Madhya Pradesh, Vidarbha, Chhattisgarh, Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim, Kerala & Mahe; **with lightning** at isolated places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Telangana, and Tamil Nadu, Puducherry & Karaikal.

**24 April (Day 3):** ♦ **Hailstorm with thunderstorm, lightning & gusty wind (30-40 kmph)** very likely at isolated places over Bihar.

♦ **Thunderstorm with lightning & gusty wind (40-50 kmph)** very likely at isolated places over Chhattisgarh, Coastal Andhra Pradesh & Yanam, Rayalaseema; **with lightning & gusty wind (30-40 kmph)** over East Madhya Pradesh, Vidarbha, Jharkhand, Gangetic West Bengal, Kerala & Mahe; **with lightning** at isolated places over West Madhya Pradesh, Odisha, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Madhya Maharashtra, Marathwada, Telangana, interior Karnataka and Tamil Nadu, Puducherry & Karaikal.

**25 April (Day 4):** ♦ **Thunderstorm with lightning & gusty wind (40-50 kmph)** likely at isolated places over Chhattisgarh, Coastal Andhra Pradesh & Yanam, Rayalaseema; **with lightning & gusty wind (30-40 kmph)** over East Madhya Pradesh, Vidarbha, Jharkhand, Kerala & Mahe; **with lightning** at isolated places over East Uttar Pradesh, West Madhya Pradesh, Odisha, Madhya Maharashtra, Marathwada, Telangana, interior Karnataka and Tamil Nadu, Puducherry & Karaikal.

**26 April (Day 5):** ♦ **Thunderstorm with lightning & gusty wind (30-40 kmph)** likely at isolated places over East Madhya Pradesh, Vidarbha, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe; **with lightning** at isolated places over West Madhya Pradesh, Odisha, Madhya Maharashtra, Marathwada, Telangana, interior Karnataka and Tamil Nadu, Puducherry & Karaikal.

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## 5 Day Rainfall Forecast

S. No.	Subdivision	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr
		Day 1	Day 2	Day 3	Day 4	Day 5
1	ANDAMAN & NICOBAR ISLANDS	ISOL	ISOL	ISOL	ISOL	DRY
2	ARUNACHAL PRADESH	WS	FWS	SCT	SCT	SCT
3	ASSAM & MEGHALAYA	FWS	FWS	SCT	SCT	SCT
4	NAGALAND, MANIPUR, MIZORAM & TRIPURA	FWS	FWS	SCT	ISOL	SCT
5	SUB-HIMALAYAN WEST BENGAL & SIKKIM	FWS	FWS	FWS	FWS	SCT
6	GANGETIC WEST BENGAL	SCT	SCT	SCT	SCT	ISOL
7	ODISHA	SCT	SCT	SCT	SCT	ISOL
8	JHARKHAND	SCT	SCT	SCT	ISOL	ISOL
9	BIHAR	ISOL	ISOL	ISOL	ISOL	DRY
10	WEST UTTAR PRADESH	DRY	DRY	ISOL	ISOL	DRY
11	EAST UTTAR PRADESH	DRY	DRY	DRY	ISOL	DRY
12	UTTARAKHAND	ISOL	ISOL	ISOL	ISOL	ISOL
13	HARYANA CHANDIGARH & DELHI	DRY	DRY	DRY	DRY	DRY
14	PUNJAB	ISOL	DRY	DRY	DRY	DRY
15	HIMACHAL PRADESH	ISOL	ISOL	ISOL	ISOL	ISOL
16	JAMMU & KASHMIR AND LADAKH	ISOL	DRY	DRY	ISOL	ISOL
17	WEST RAJASTHAN	DRY	DRY	DRY	DRY	DRY
18	EAST RAJASTHAN	DRY	DRY	DRY	DRY	DRY
19	WEST MADHYA PRADESH	DRY	DRY	ISOL	ISOL	ISOL
20	EAST MADHYA PRADESH	ISOL	ISOL	ISOL	ISOL	ISOL
21	GUJARAT REGION	DRY	DRY	DRY	DRY	DRY
22	SAURASHTRA & KUTCH	DRY	DRY	DRY	DRY	DRY
23	KONKAN & GOA	DRY	DRY	ISOL	ISOL	ISOL
24	MADHYA MAHARASHTRA	DRY	ISOL	ISOL	ISOL	ISOL
25	MARATHAWADA	ISOL	DRY	ISOL	ISOL	ISOL
26	VIDARBHA	SCT	SCT	SCT	SCT	ISOL
27	CHHATTISGARH	SCT	ISOL	SCT	SCT	ISOL
28	COASTAL ANDHRA PRADESH & YANAM	SCT	SCT	SCT	SCT	ISOL
29	TELANGANA	ISOL	SCT	SCT	SCT	ISOL
30	RAYALASEEMA	ISOL	ISOL	ISOL	SCT	ISOL
31	TAMILNADU PUDUCHERRY & KARAIKAL	SCT	SCT	SCT	SCT	ISOL
32	COASTAL KARNATAKA	ISOL	DRY	ISOL	ISOL	ISOL
33	NORTH INTERIOR KARNATAKA	ISOL	DRY	ISOL	ISOL	SCT
34	SOUTH INTERIOR KARNATAKA	ISOL	ISOL	ISOL	SCT	SCT
35	KERALA & MAHE	SCT	SCT	SCT	SCT	SCT
36	LAKSHADWEEP	DRY	DRY	DRY	SCT	SCT

Legend	Category	% Stations
WS	Widespread/Most Places	76-100
FWS	Fairly Widespread/Many Places	51-75
SCT	Scattered/ A Few Places	26-50
ISOL	Isolated Places	1-25
DRY	No Rain	0

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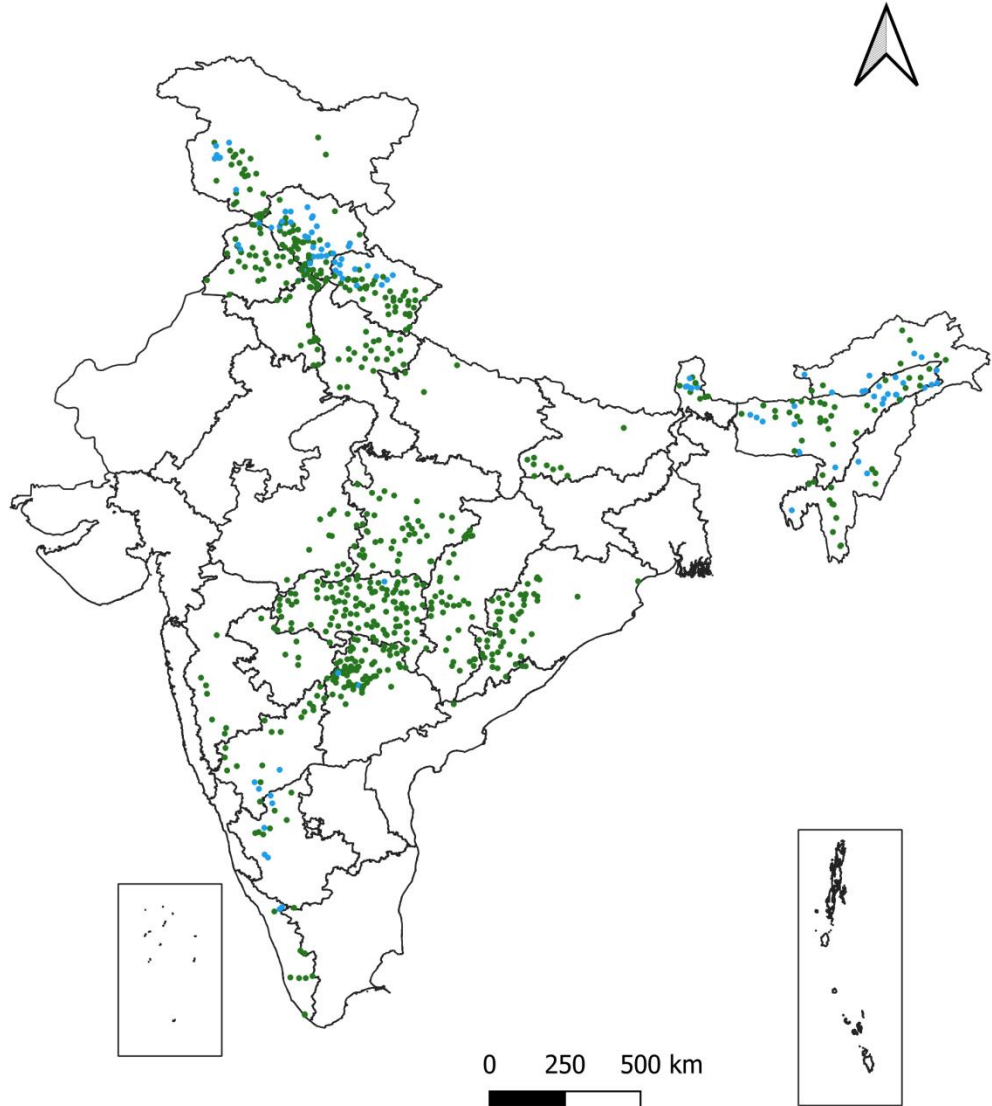
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Fig. 1: Accumulated Rainfall (mm) during past 24 hours



24 Hr cumulative rainfall recorded over different stations during 0830 IST of 20-4-2023 to 0830 IST of 21-4-2023



### Legends

- Very Light to Light Rainfall (0.1 - 15.5 mm)
- Moderate Rainfall (15.6 - 64.4 mm)
- Heavy Rainfall (64.5 - 115.5 mm)
- Very Heavy Rainfall (115.6 - 204.4 mm)
- Extremely Heavy Rainfall ( $\geq 204.5$  mm)

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Fig. 2: Maximum Temperatures Dated 21.04.2023

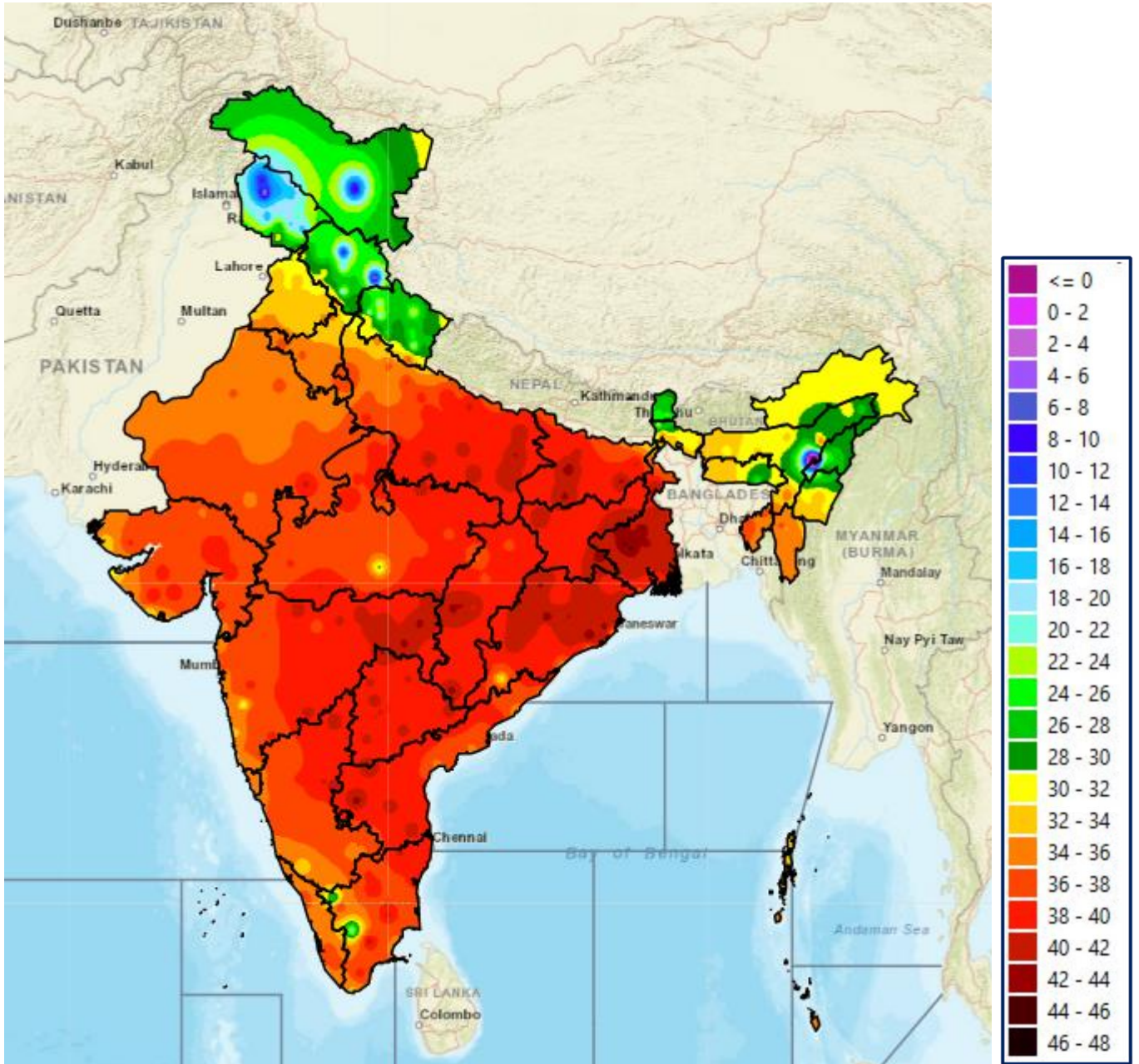


Fig. 3: Minimum Temperatures Dated 21.04.2023

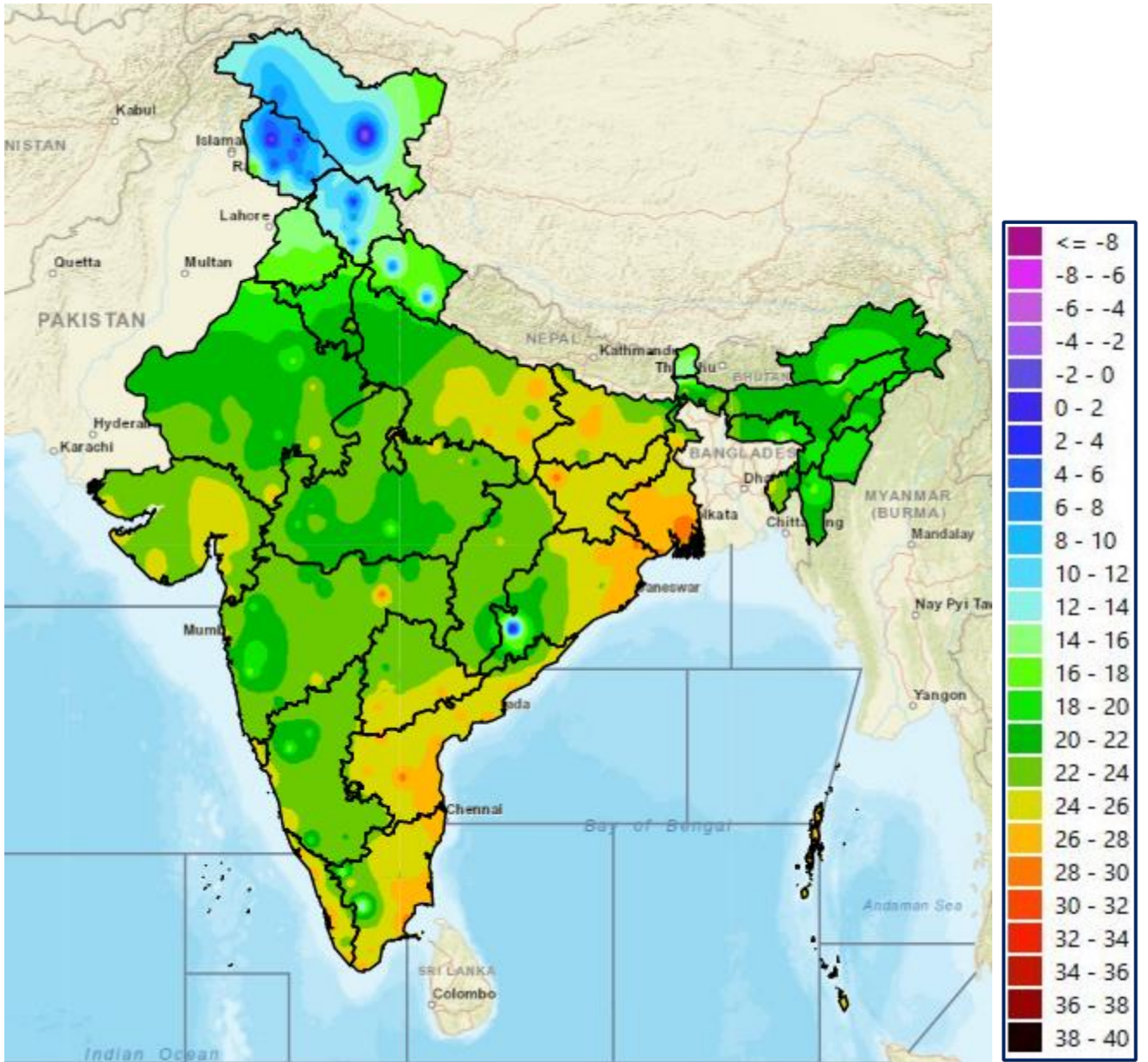


Fig. 4: Departure from Normal of Maximum Temperatures Dated 21.04.2023

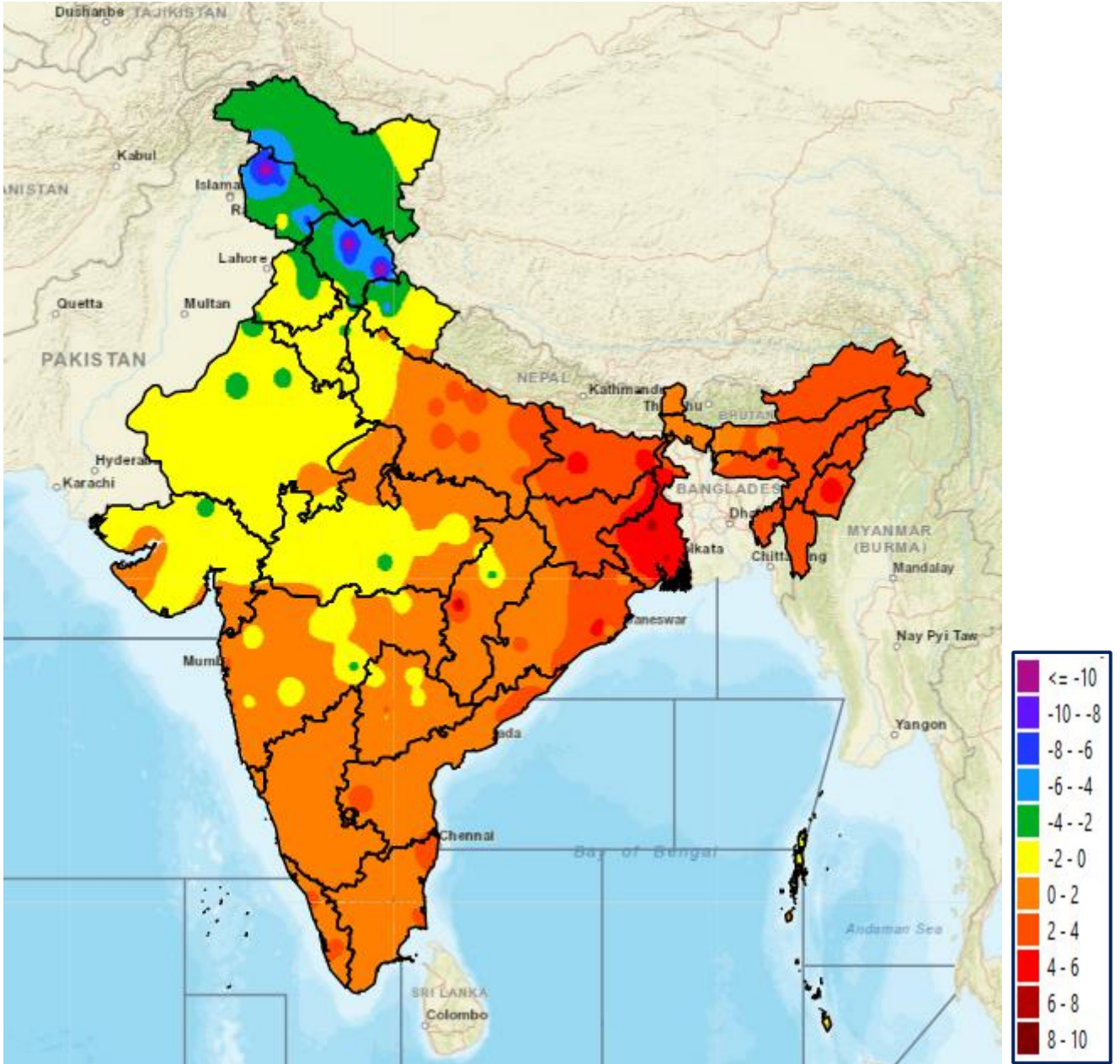
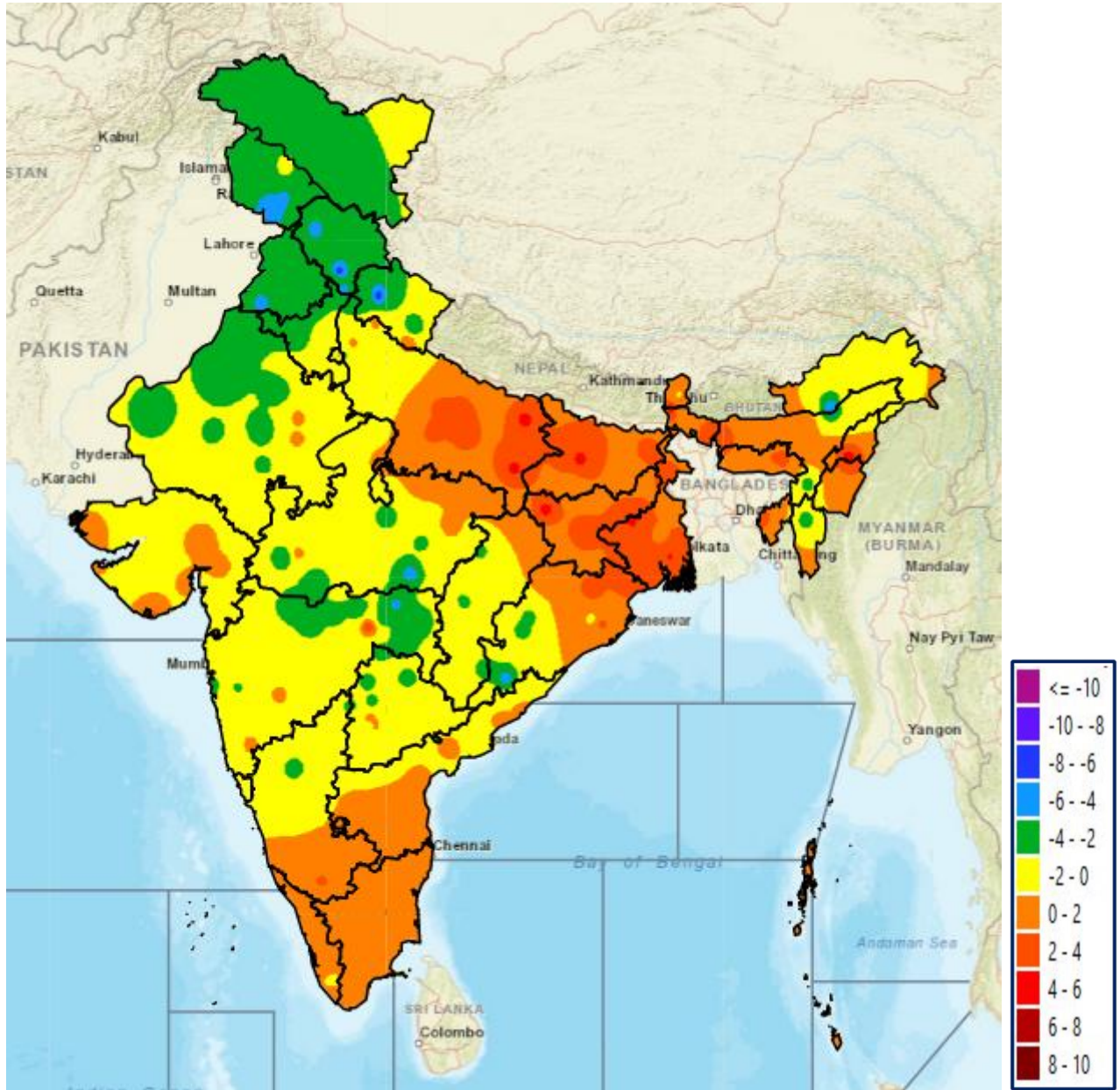
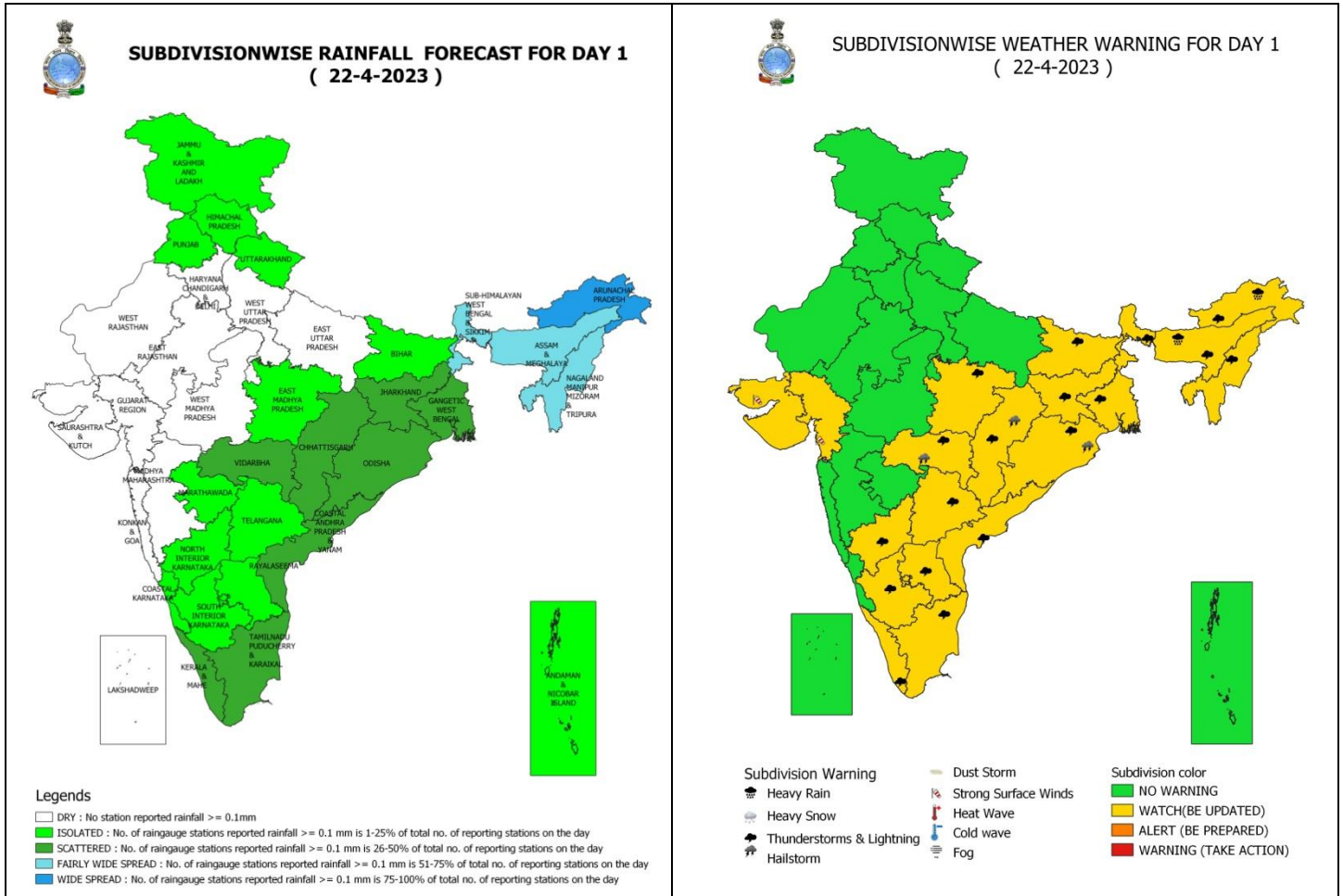


Fig. 5: Departure from Normal of Minimum Temperatures Dated 21.04.2023





**22 April (Day 1):** ♦ Heavy rainfall likely at isolated places over Arunachal Pradesh and Assam & Meghalaya.

♦ Hailstorm with thunderstorm, lightning & gusty wind (40-50 kmph) very likely at isolated places over Chhattisgarh; with thunderstorm, lightning over Vidarbha and Odisha.

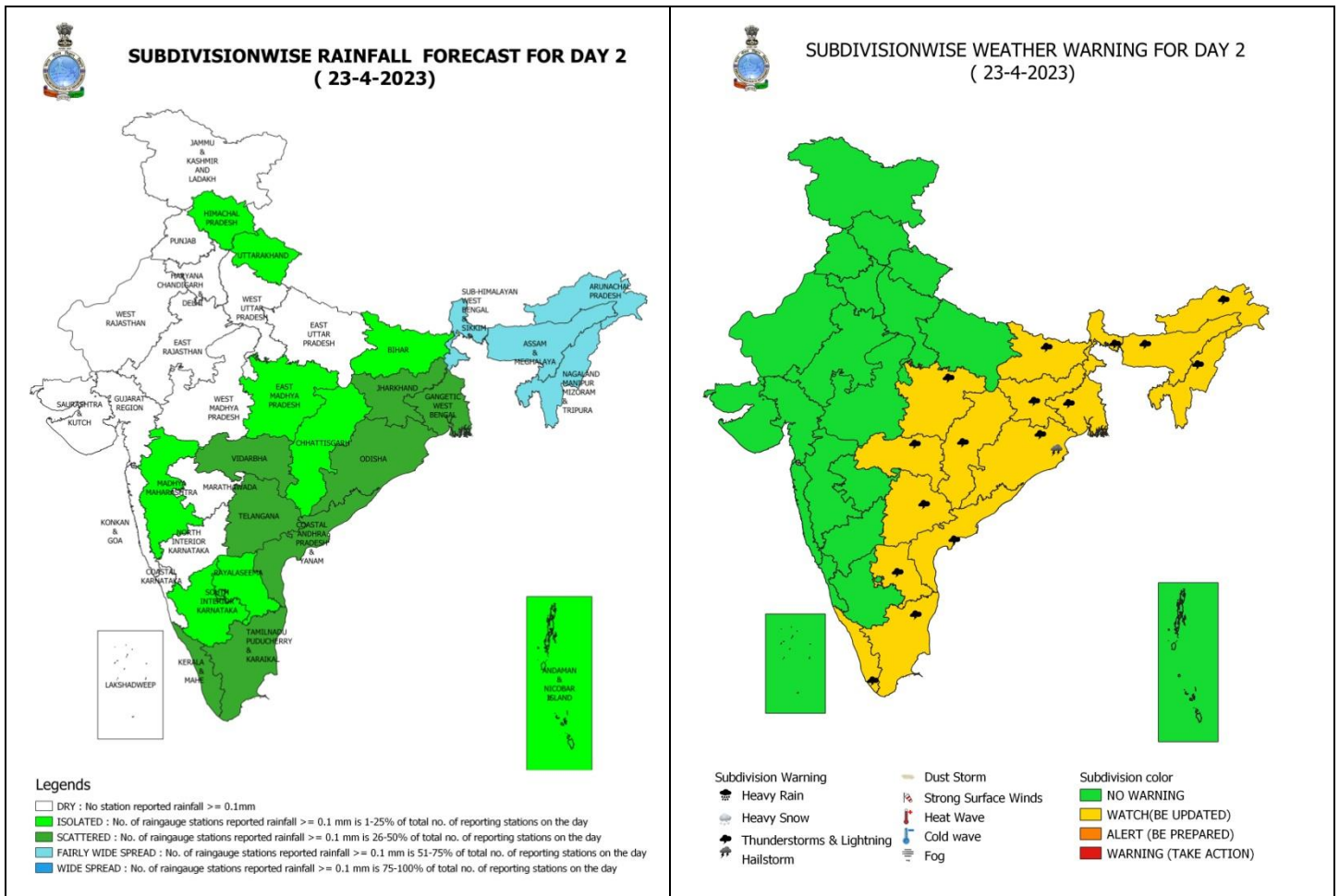
♦ Thunderstorm with lightning & gusty wind (40-50 kmph) very likely at isolated places over Coastal Andhra Pradesh & Yanam ; with lightning & gusty wind (30-40 kmph) over East Madhya Pradesh, Bihar, Jharkhand, West Bengal & Sikkim, Telangana, Rayalaseema, Kerala & Mahe; with lightning at isolated places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Interior Karnataka and Tamil Nadu, Puducherry & Karaikal.

♦ Squally wind (speed 40-50 kmph) very likely over north Arabian sea along & off north Gujarat coast. Fishermen are advised not to venture into these areas.

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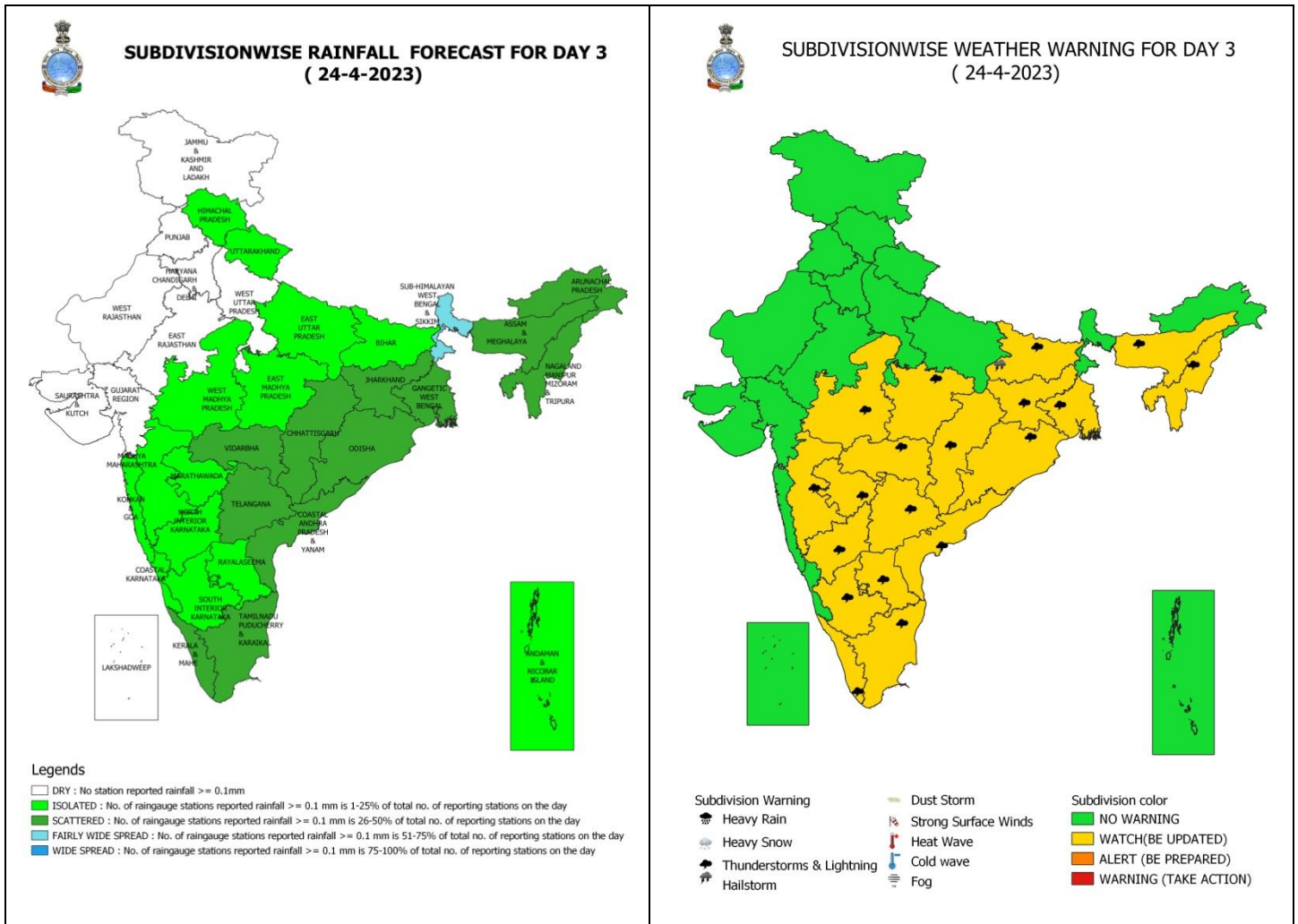
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**♦ Thunderstorm with lightning & gusty wind (40-50 kmph) very likely at isolated places over Gangetic West Bengal, Coastal Andhra Pradesh & Yanam, Rayalaseema; with lightning & gusty wind (30-40 kmph) over East Madhya Pradesh, Vidarbha, Chhattisgarh, Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim, Kerala & Mahe; with lightning at isolated places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Telangana, and Tamil Nadu, Puducherry & Karaikal.**

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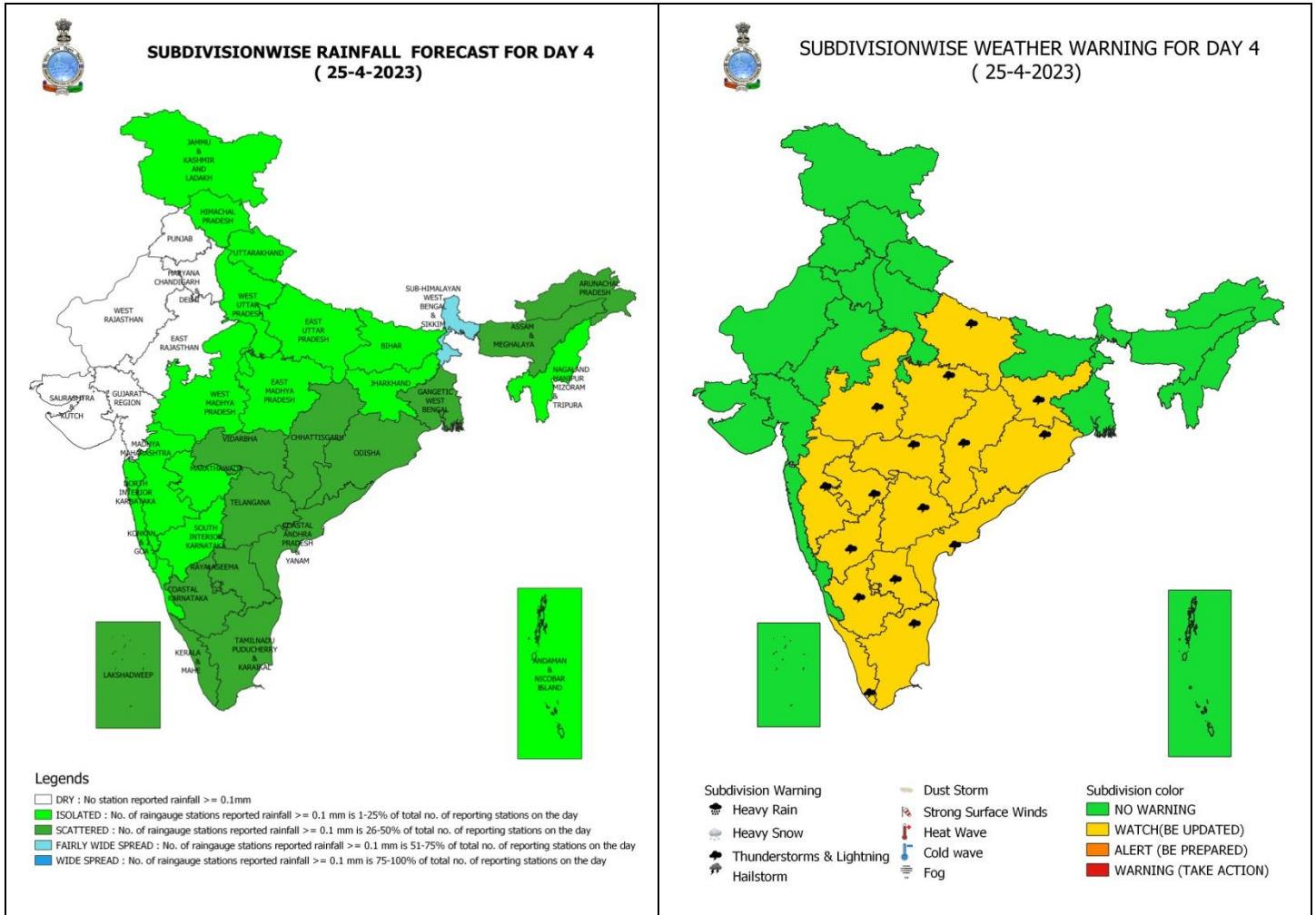
**24 April (Day 3):** ♦ **Hailstorm with thunderstorm, lightning & gusty wind (30-40 kmph)** very likely at isolated places over Bihar.

♦ **Thunderstorm with lightning & gusty wind (40-50 kmph)** very likely at isolated places over Chhattisgarh, Coastal Andhra Pradesh & Yanam, Rayalaseema; **with lightning & gusty wind (30-40 kmph)** over East Madhya Pradesh, Vidarbha, Jharkhand, Gangetic West Bengal, Kerala & Mahe; **with lightning** at isolated places over West Madhya Pradesh, Odisha, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Madhya Maharashtra, Marathwada, Telangana, interior Karnataka and Tamil Nadu, Puducherry & Karaikal.

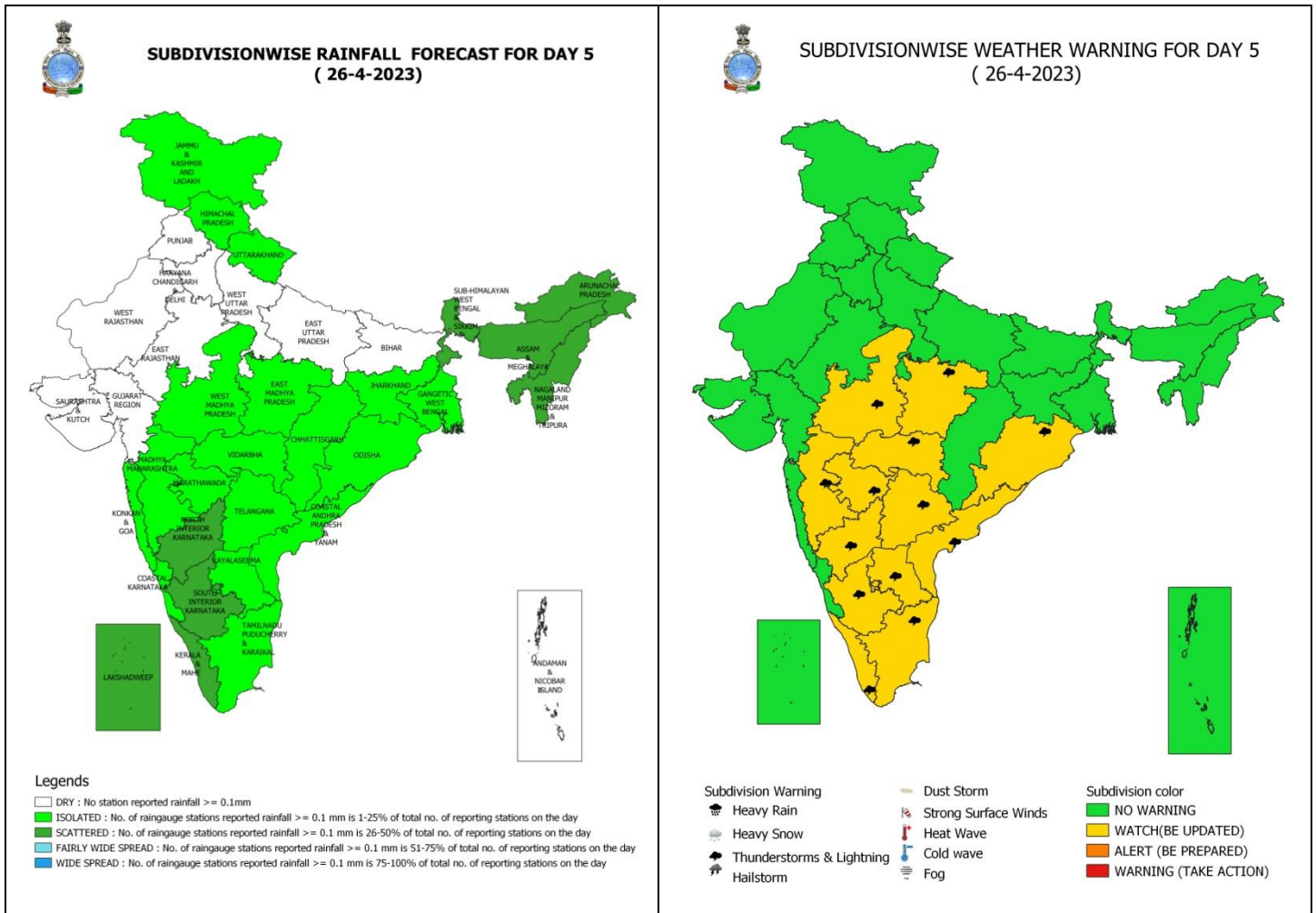
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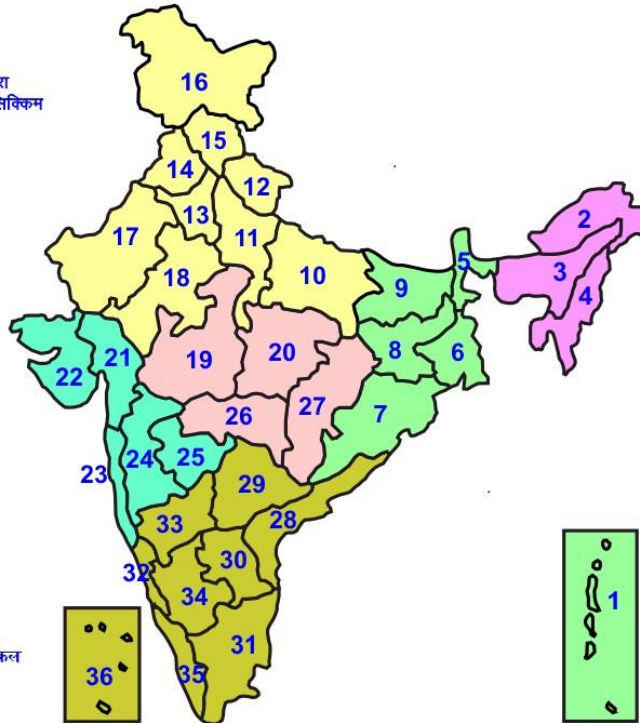
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**26 April (Day 5): ♦ Thunderstorm with lightning & gusty wind (30-40 kmph) likely at isolated places over East Madhya Pradesh, Vidarbha, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe; with lightning at isolated places over West Madhya Pradesh, Odisha, Madhya Maharashtra, Marathwada, Telangana, interior Karnataka and Tamil Nadu, Puducherry & Karaikal.**

## LEGENDS

- 1 अंडमान और निकोबार द्वीप समुह
- 2 अरुणाचल प्रदेश
- 3 असम और मेघालय
- 4 नागालैंड मनीपुर मीजोरम और त्रिपुरा
- 5 उप हिमालय पश्चिम बंगाल एवं सिक्किम
- 6 पश्चिम गॉंगेय बंगाल
- 7 ओडिशा
- 8 झारखंड
- 9 बिहार
- 10 पूर्वी उत्तर प्रदेश
- 11 पश्चिम उत्तर प्रदेश
- 12 उत्तराखंड
- 13 हरियाणा चंडिगढ़ एवं दिल्ली
- 14 पंजाब
- 15 हिमाचल प्रदेश
- 16 जम्मू एवं कश्मीर एवं लद्दाख
- 17 पश्चिम राजस्थान
- 18 पूर्वी राजस्थान
- 19 पश्चिम मध्य प्रदेश
- 20 पूर्वी मध्य प्रदेश
- 21 गुजरात क्षेत्र
- 22 सौराष्ट्र एवं कच्छ
- 23 कोंकण एवं गोवा
- 24 मध्य महाराष्ट्र
- 25 मराठावाडा
- 26 विदर्भ
- 27 छत्तीसगढ़
- 28 तटीय आंध्र प्रदेश एवं यनम
- 29 तेलंगाना
- 30 रायलसेमा
- 31 तमिलनाडु, पुदुचेरी एवं कराईकल
- 32 तटिय कर्नाटक
- 33 आंतरिक उत्तरी कर्नाटक
- 34 आंतरिक दक्षिणी कर्नाटक
- 35 केरल एवंम माहे
- 36 लक्षद्वीप



1. Andaman & Nicobar Islands
2. Arunachal Pradesh
3. Assam & Meghalaya
4. Nagaland, Manipur, Mizoram & Tripura
5. Sub-Himalayan West Bengal & Sikkim
6. Gangetic West Bengal
7. Orissa
8. Jharkhand
9. Bihar
10. East Uttar Pradesh
11. West Uttar Pradesh
12. Uttarakhand
13. Haryana, Chd & Delhi
14. Punjab
15. Himachal Pradesh
16. Jammu & Kashmir and Ladakh
17. West Rajasthan
18. East Rajasthan
19. West Madhya Pradesh
20. East Madhya Pradesh
21. Gujarat
22. Saurashtra
23. Konkan & Goa
24. Madhya Maharashtra
25. Marathawada
26. Vidharbha
27. Chhattisgarh
28. Coastal Andhra Pradesh & Yanam
29. Telangana
30. Rayalaseema
31. Tamilnadu, Puducherry & Karaikal
32. Coastal Karnataka
33. North Interior Karnataka
34. South Interior Karnataka
35. Kerala & Mahe
36. Lakshadweep

## SPATIAL DISTRIBUTION (% of Stations reporting)

% Stations	Category	% Stations	Category
76-100	Widespread (WS/ Most Places)	26-50	Scattered (SCT/ A Few Places)
51-75	Fairly Widespread (FWS/ Many Places)	1-25	Isolated (ISOL)

## WARNING

<b>WARNING (TAKE ACTION)</b>
<b>ALERT ( BE PREPARED)</b>
<b>WATCH (BE UPDATED)</b>
<b>NO WARNING ( NO ACTION)</b>

## Probabilistic Forecast

Terms	Probability of Occurrence (%)
Unlikely	< 25
Likely	25 - 50
Very Likely	50 - 75
Most Likely	> 75



Heavy Rain



Heavy Snow



Thunderstorm



Dust Storm



Strong Winds



Visibility



Cyclone



Squall/ Hail



Frost



Cold Wave



Heat Wave



Sea State

\* Red color warning does not mean "Red Alert" Red color warning means "Take Action".

Forecast and Warning for any day is valid from 0830 hours IST of day till 0830 hours IST of next day

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## LEGENDS

### WARNING

WARNING (TAKE ACTION)
ALERT ( BE PREPARED)
WATCH (BE UPDATED)
NO WARNING ( NO ACTION)

### Probabilistic Forecast

Terms	Probability of Occurrence (%)
Unlikely	< 25
Likely	25 - 50
Very Likely	50 - 75
Most Likely	> 75



Rain/ Snow \*

Heavy: 64.5 to 115.5 mm/cm \*  
Very Heavy: 115.6 to 204.4 mm/cm\*  
Extremely Heavy: > 204.4 mm/cm \*



Heat Wave

When maximum temperature of a station reaches  $\geq 40^{\circ}\text{C}$  for plains and  $\geq 30^{\circ}\text{C}$  for hilly regions

(a) Based on Departure from normal

Heat Wave: Maximum Temperature Departure from normal  $4.5^{\circ}\text{C}$  to  $6.4^{\circ}\text{C}$ .

Severe Heat Wave: Maximum Temperature Departure from normal  $\geq 6.5^{\circ}\text{C}$

(b). Based on Actual maximum temperature

Heat Wave: When actual maximum temperature  $\geq 45^{\circ}\text{C}$ .

Severe Heat Wave: When actual maximum temperature  $\geq 47^{\circ}\text{C}$

( c). Criteria for heat wave for coastal stations

When maximum temperature departure is  $>4.5^{\circ}\text{C}$  from normal. Heat Wave may be described provided maximum temperature  $\geq 37^{\circ}\text{C}$



Warm Night

When maximum temperature remains  $40^{\circ}\text{C}$

Warm Night: When minimum temperature departure  $4.5^{\circ}\text{C}$  to  $6.4^{\circ}\text{C}$ .

Severe Warm Night: When minimum temperature departure  $>6.4^{\circ}\text{C}$ .



Cold Wave

When minimum temperature of a station  $\leq 10^{\circ}\text{C}$  for plains and  $\leq 0^{\circ}\text{C}$  for hilly regions.

(a). Based on departure

Cold Wave: Minimum Temperature Departure from normal  $-4.5^{\circ}\text{C}$  to  $-6.4^{\circ}\text{C}$ .

Severe Cold Wave: Minimum Temperature Departure from normal  $\leq -6.5^{\circ}\text{C}$

(b) Based on actual Minimum Temperature (for Plains only)

Cold Wave : When Minimum Temperature is  $\leq 4.0^{\circ}\text{C}$

Severe Cold Wave: When Minimum Temperature is  $\leq 2.0^{\circ}\text{C}$

( c) For Coastal Stations

When Minimum Temperature departure is  $\leq -4.5^{\circ}\text{C}$  & actual Minimum Temperature is  $\leq 15^{\circ}\text{C}$



Cold Day

When minimum temperature of a station  $\leq 10^{\circ}\text{C}$  for plains and  $\leq 0^{\circ}\text{C}$  for hilly regions

Based on departure

Cold Day: Maximum Temperature Departure from normal  $-4.5^{\circ}\text{C}$  to  $-6.4^{\circ}\text{C}$ .

Severe Cold Day: Maximum Temperature Departure from normal  $\leq -6.5^{\circ}\text{C}$



Fog

Phenomenon of small droplets suspended in air and the horizontal visibility  $< 1\text{km}$

Moderate Fog: When the visibility between 500-200 metres

Dense Fog: when the visibility between 50- 200 metres

Very Dense Fog: when the visibility  $< 50$  metres



Thunderstorm

Sudden electrical discharges manifested by a flash of light (Lightning) and a sharp rumbling sound (thunder)



Dust/Sand Storm

An ensemble of particles of dust or sand energetically lifted to great heights by a strong and turbulent wind.



Frost

Ice deposits on ground

Air temperature  $\leq 4^{\circ}\text{C}$  ( over Plains)



Squall

A strong wind that rises suddenly, lasts for atleast 1 minute.

Moderate: Wind speed 52-61 kmph

Severe: Wind speed 62-87 kmph

Very Severe: Wind speed  $>87$  kmph



Sea State

Effect of various waves in the sea over specific area

Rough to very rough: Wind speed 41-62 kmph (22-33 knots) & Wave height 2.5-6 metre

High to very high: Wind speed 63-117 kmph ( 34-63 knots) & Wave height 6-14 metre

Phenomenal: Wind speed  $>117$  kmph ( $>63$  knots) & Wave height  $>14$  metre



Cyclone

Cyclonic Storm: Wind speed 62-87 kmph (34-47 knots)

Severe Cyclonic Storm: Wind speed 88-117 kmph (48-63 knots)

Very Severe Cyclonic Storm: Wind speed 118-165 kmph (64 - 89 knots)

Extremely Severe Cyclonic Storm: Wind speed 166-220 kmph (90 -119 knots)

Super Cyclone Storm: Wind speed  $>220$  kmph ( $>119$  knots)

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