



Tuesday, April 18, 2023  
MORNING  
Time of Issue: 0815 hours IST

## ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

### Significant Weather Features

#### Significant Meteorological features:

- A Western Disturbance as a trough in middle tropospheric westerlies runs roughly along Long. 60°E to the north of Lat. 25°N.
- A cyclonic circulation lies over southwest Rajasthan & neighbourhood in lower tropospheric levels.
- A trough runs from the above cyclonic circulation over southwest Rajasthan to Himachal Pradesh across Haryana & Punjab in lower tropospheric levels.
- A trough/wind discontinuity runs from North Interior Karnataka to south Tamil Nadu in lower tropospheric levels.

#### Maximum Temperatures and Heat Wave observed:

- Yesterday, Maximum Temperatures were in the range of 40-43°C over many parts of plains of Northwest India, Central & East India, interior parts of Gujarat & Maharashtra, Telangana and Andhra Pradesh and 35-40°C over many parts of rest of the country except over Western Himalayan Region (22-26°C) & Islands (32-34°C). Maximum Temperatures were above normal by 3-5°C over some/many parts of Northwest India & adjoining Madhya Pradesh, East & Northeast India, Coastal Andhra Pradesh, Tamilnadu and Kerala.
- Heat Wave conditions are prevailing in isolated pockets over Gangetic West Bengal since last 6 days; Coastal Andhra Pradesh since last 4 days and Bihar since last 3 days.

#### Heat Wave Warnings:

##### Northwest India:

Heat wave conditions are very likely in isolated pockets over West Uttar Pradesh on 18<sup>th</sup> & over East Uttar Pradesh on 18<sup>th</sup> & 19<sup>th</sup> April and abate thereafter.

##### East India:

Heat wave conditions are very likely in isolated/some pockets over Gangetic West Bengal and Bihar during next 3 days; over Sub-Himalayan West Bengal & Sikkim & Odisha during next 24 hours and over Jharkhand on 18<sup>th</sup> & 19<sup>th</sup> April.

##### South Peninsular India:

Heat wave conditions very likely in isolated pockets over Coastal Andhra Pradesh & Yanam during next 2 days.

#### Rainfall Forecast and Warnings:

##### Northwest India:

- Light/moderate scattered to fairly widespread rainfall with thunderstorm/lightning very likely over Western Himalayan Region during next 5 days.
- **Heavy rainfall** very likely at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad on 18<sup>th</sup>; over Himachal Pradesh on 18<sup>th</sup> & 19<sup>th</sup> and over Uttarakhand on 19<sup>th</sup> April.
- Isolated **Hailstorm** very likely over Himachal Pradesh on 18<sup>th</sup> and over Uttarakhand during 18<sup>th</sup> to 20<sup>th</sup> April.

##### West India:

- Light isolated rainfall with thunderstorm/lightning/gusty winds very likely over parts of Maharashtra next 5 days.

**No significant weather likely over rest parts of the country.**

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## Main Weather Observations

- ❖ **Rainfall/thundershowers observed** (from 0830 hours IST to 1730 hours IST of yesterday) at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura.
- ❖ **Significant rainfall recorded** (from 0830 hours IST to 1730 hours IST of yesterday) (in cm): **Nil**.
- ❖ **Thunderstorm observed** (from 0830 hours IST of yesterday to 0530 hours IST of today): at some places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad and at isolated places over Assam & Meghalaya.
- ❖ **Yesterday, Heat Wave conditions** prevailed in many parts of Gangetic West Bengal and in isolated pockets over Sub-Himalayan West Bengal & Sikkim, Punjab, Bihar, North Haryana & Chandigarh and Coastal Andhra Pradesh.
- ❖ **Minimum Temperature Departures (as on 17-04-2023):** Minimum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at a few places over Punjab, West Rajasthan, Sub-Himalayan West Bengal & Sikkim; at isolated places over East Madhya Pradesh, East Uttar Pradesh, Gangetic West Bengal, Nagaland, Manipur, Mizoram & Tripura; **above normal (1.6°C to 3.0°C)** at most places over Jharkhand; at many places over Bihar, West Rajasthan, Vidarbha; at a few places over West Uttar Pradesh, Himachal Pradesh, Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, East Rajasthan, Odisha, Madhya Maharashtra; at isolated places over Gujarat State, Kerala & Mahe. They were **appreciably below normal (-3.1°C to -5.0°C)** at isolated places over Tamil Nadu, Puducherry & Karaikal; **below normal (-1.6°C to -3.0°C)** at a few places over Rayalaseema and **near normal** over rest parts of the country. Yesterday, **the lowest minimum temperature of 19.0°C** was reported at **Rewa (East Madhya Pradesh)** over plains of the country.
- ❖ **Maximum Temperature Departures (as on 17-04-2023):** Maximum temperatures were **markedly above normal (5.1°C or more)** at most places over Sub-Himalayan West Bengal & Sikkim; at many places over Gangetic West Bengal; at a few places over Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura and Bihar; **appreciably above normal (3.1°C to 5.0°C)** at most places over Punjab; at many places over Uttar Pradesh and Haryana, Chandigarh & Delhi; at a few places over Chhattisgarh and Coastal Andhra Pradesh & Yanam and at isolated places over Madhya Pradesh, Odisha and Kerala & Mahe; **above normal (1.6°C to 3.0°C)** at a few places over Gujarat State, Telangana, Rayalaseema and Tamil Nadu, Puducherry & Karaikal and at isolated place over Rajasthan, Vidarbha and Andaman & Nicobar Islands and **near normal** over rest parts of the country. Yesterday, **the highest maximum temperature of 44.2°C** was reported at **Baripada (Odisha)**.

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## Meteorological Analysis (Based on 0530 hours IST)

- ❖ The **Western Disturbance** as a trough in middle tropospheric westerlies with its axis at 5.8 km above mean sea level now runs roughly along Long. 60°E to the north of Lat. 25°N.
- ❖ The **cyclonic circulation** over southwest Rajasthan & neighbourhood persists and now seen at 0.9 km above mean sea level.
- ❖ A **trough** runs from the above cyclonic circulation over southwest Rajasthan to Himachal Pradesh across Haryana & Punjab between 0.9 km & 3.1 km above mean sea level.
- ❖ The **trough/wind discontinuity** from North Interior Karnataka to south Tamil Nadu at 0.9 km above mean sea level persists.

## Weather Forecast for next 5 days ( upto 0830 hours IST of 23<sup>rd</sup> April, 2023)

- ❖ Meteorological sub-division wise detailed 5 days rainfall forecast is given in Table-1.
- ❖ **Northwest India:** Maximum Temperatures are very likely to rise by 2-3°C during next 24 hours; fall by 2-4°C thereafter during subsequent 2 days and rise by 2-4°C thereafter.
- ❖ **Central India:** Maximum Temperatures are very likely to rise by 2-3°C during next 2 days and fall by 2-3°C thereafter during subsequent 2-3 days.
- ❖ **Interior Maharashtra:** Maximum Temperatures are very likely to rise by 2-3°C during next 2 days and no significant change thereafter.
- ❖ **South India:** Maximum Temperatures are very likely to rise by about 2°C over Telangana, Rayalaseema and Coastal Andhra Pradesh during next 5 days.
- ❖ **Rest parts of the country:** No significant change in Temperatures very likely during 5 days.

## Weather Outlook for subsequent 2 days ( during 23<sup>rd</sup> -25<sup>th</sup> April, 2023)

- ❖ Scattered to Fairly widespread light/moderate rainfall likely over Northeast India.
- ❖ Isolated to scattered light rainfall likely over parts of Western Himalayan region and Peninsular India.
- ❖ Dry weather likely over rest parts of India.



## Weather Warning during next 5 days

**18 April (Day 1):** ♦ **Heavy rainfall/snowfall** very likely at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad and Himachal Pradesh.

♦ **Hailstorm with thunderstorm & lightning** very likely at isolated places over Punjab, Himachal Pradesh and Uttarakhand.

♦ **Thunderstorm with lightning & gusty wind (40-50 kmph)** very likely at isolated places over Haryana, Chandigarh & Delhi, West Rajasthan; **with lightning & gusty wind (30-40 kmph)** at isolated places over East Rajasthan, Konkan & Goa, Madhya Maharashtra, Marathwada and **with lightning** at isolated places over Odisha, Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad.

♦ **Heat Wave conditions** very likely in some parts over Gangetic West Bengal and in isolated pockets over Sub-Himalayan West Bengal & Sikkim, Odisha, Jharkhand, Bihar, East Uttar Pradesh and Coastal Andhra Pradesh & Yanam.

**19 April (Day 2):** ♦ **Heavy rainfall/snowfall** very likely at isolated places over Himachal Pradesh and Uttarakhand.

♦ **Hailstorm with thunderstorm, lightning & gusty wind (30-40 kmph)** very likely at isolated places over Punjab and **with thunderstorm, lightning** at isolated places over Himachal Pradesh, Uttarakhand.

♦ **Thunderstorm with lightning & gusty wind (30-40 kmph)** very likely at isolated places over Haryana, Chandigarh & Delhi, Rajasthan, Madhya Pradesh, Konkan & Goa and **with lightning** at isolated places over Sub-Himalayan West Bengal & Sikkim, Uttar Pradesh, Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Vidarbha, Telangana.

♦ **Heat Wave conditions** likely in isolated pockets over Gangetic West Bengal, Bihar and Coastal Andhra Pradesh & Yanam.

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

♦ **Thunderstorm with lightning & gusty wind (30-40 kmph)** very likely at isolated places over Punjab, Haryana, Chandigarh & Delhi, Madhya Pradesh, Chhattisgarh, Kerala & Mahe and **with lightning** at isolated places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim, Odisha, Uttar Pradesh, Himachal Pradesh, Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Madhya Maharashtra, Marathwada, Vidarbha, Telangana, Karnataka.

♦ **Heat Wave conditions** very likely in isolated pockets over Gangetic West Bengal.

**21 April (Day 4):** ♦ **Thunderstorm with lightning & gusty wind (30-40 kmph)** likely at isolated places over East Madhya Pradesh, Chhattisgarh, Kerala & Mahe and **with lightning** at isolated places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim, Odisha, Uttarakhand, Punjab, Himachal Pradesh, Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, West Madhya Pradesh, Madhya Maharashtra, Marathwada, Telangana, Coastal Karnataka, North Interior Karnataka.

**22 April (Day 5):** ♦ **Thunderstorm with lightning & gusty wind (30-40 kmph)** likely at isolated places over East Madhya Pradesh, Chhattisgarh, Kerala & Mahe and **with lightning** at isolated places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim, Odisha, Uttarakhand, Punjab, Himachal Pradesh, Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, West Madhya Pradesh, Madhya Maharashtra, Marathwada, Telangana, Coastal Karnataka, North Interior Karnataka.

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Table-1

**5 Day Rainfall Forecast**

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

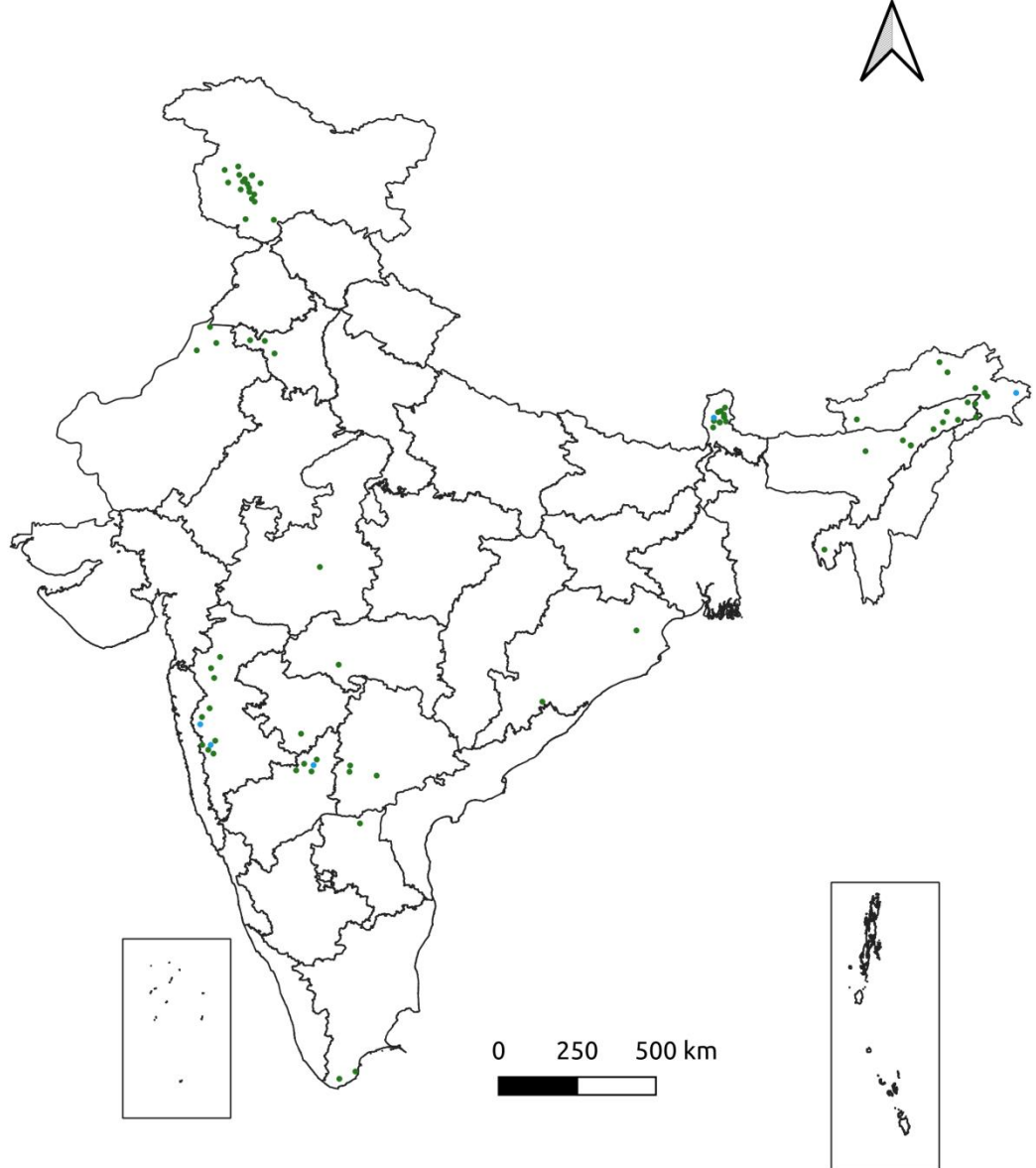
Legend	Category	% Stations
WS	Widespread/Most Places	76-100
FWS	Fairly Widespread/Many Places	51-75
SCT	Scattered/ A Few Places	26-50
ISOL	Isolated Places	1-25
DRY	No Rain	0



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



24 Hr cumulative rainfall recorded over different stations during 0830 IST of 16-4-2023 to 0830 IST of 17-4-2023



### Legends

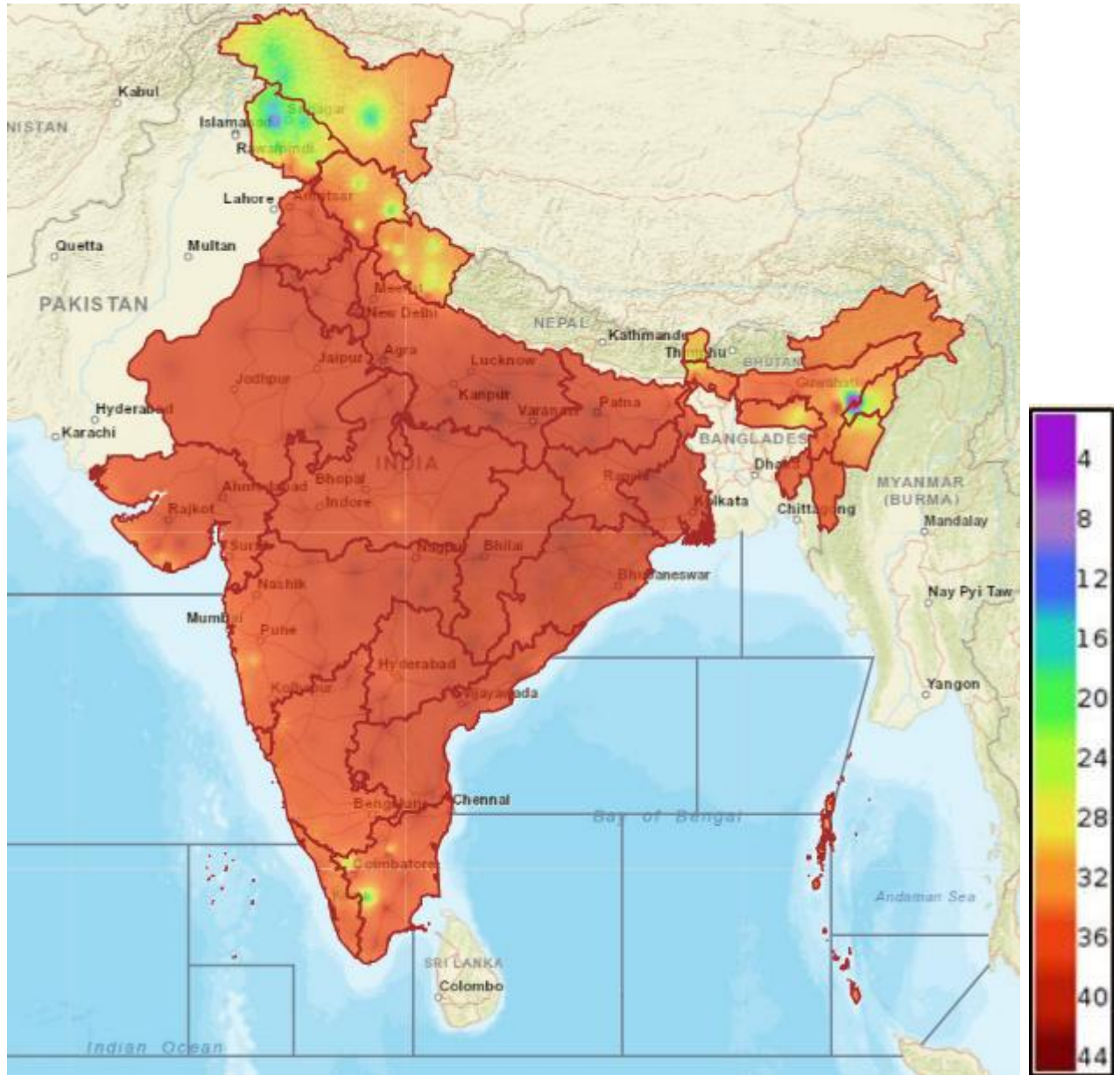
- Very Light to Light Rainfall (0.1 - 15.5 mm)
- Moderate Rainfall (15.6 - 64.4 mm)
- Heavy Rainfall (64.5 - 115.5 mm)
- Very Heavy Rainfall (115.6 - 204.4 mm)
- Extremely Heavy Rainfall ( $\geq 204.5$  mm)

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Fig. 2: Maximum Temperatures Dated 17.04.2023



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Fig. 3: Minimum Temperatures Dated 17.04.2023

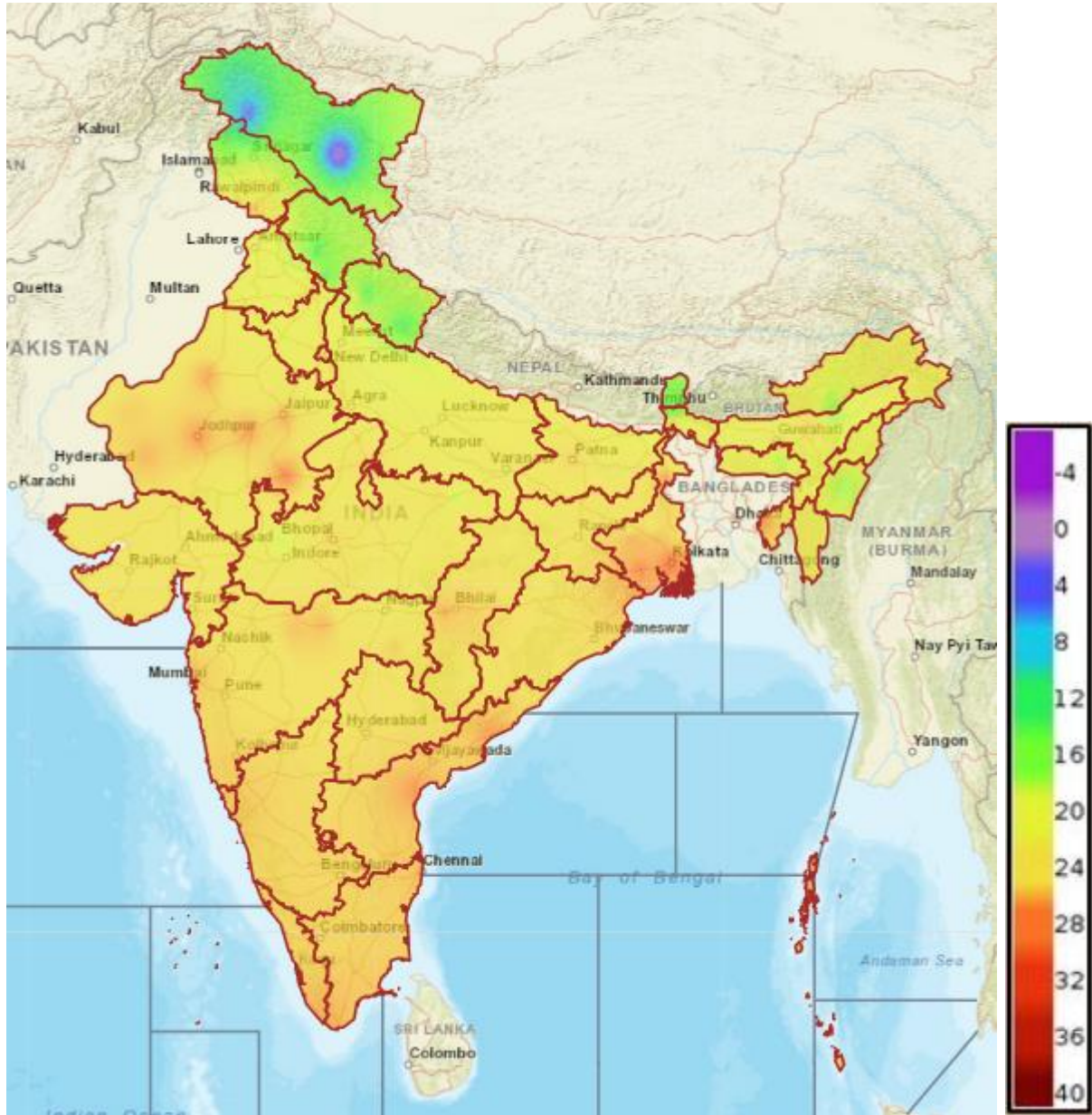
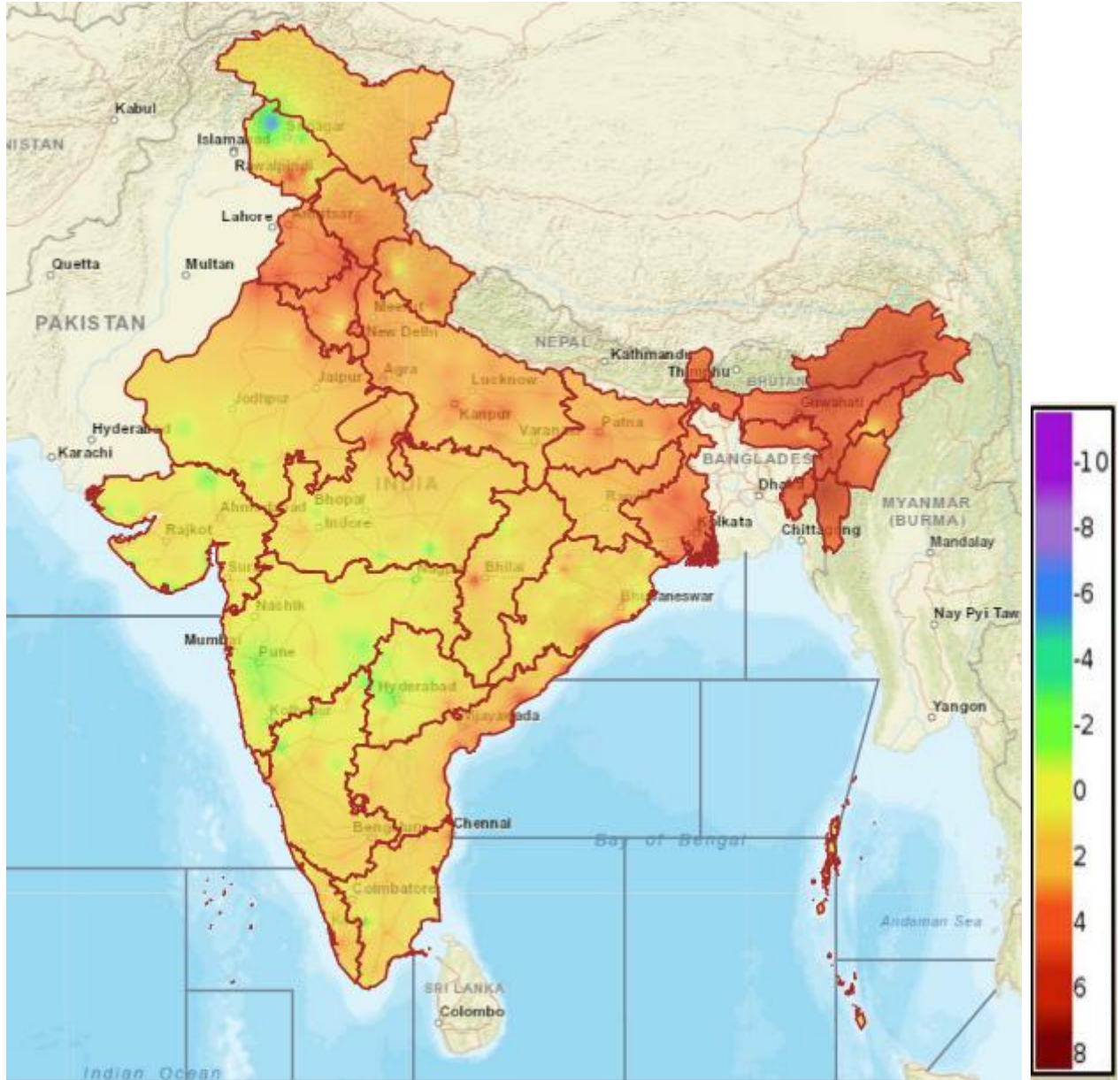


Fig. 4: Departure from Normal of Maximum Temperatures Dated 17.04.2023

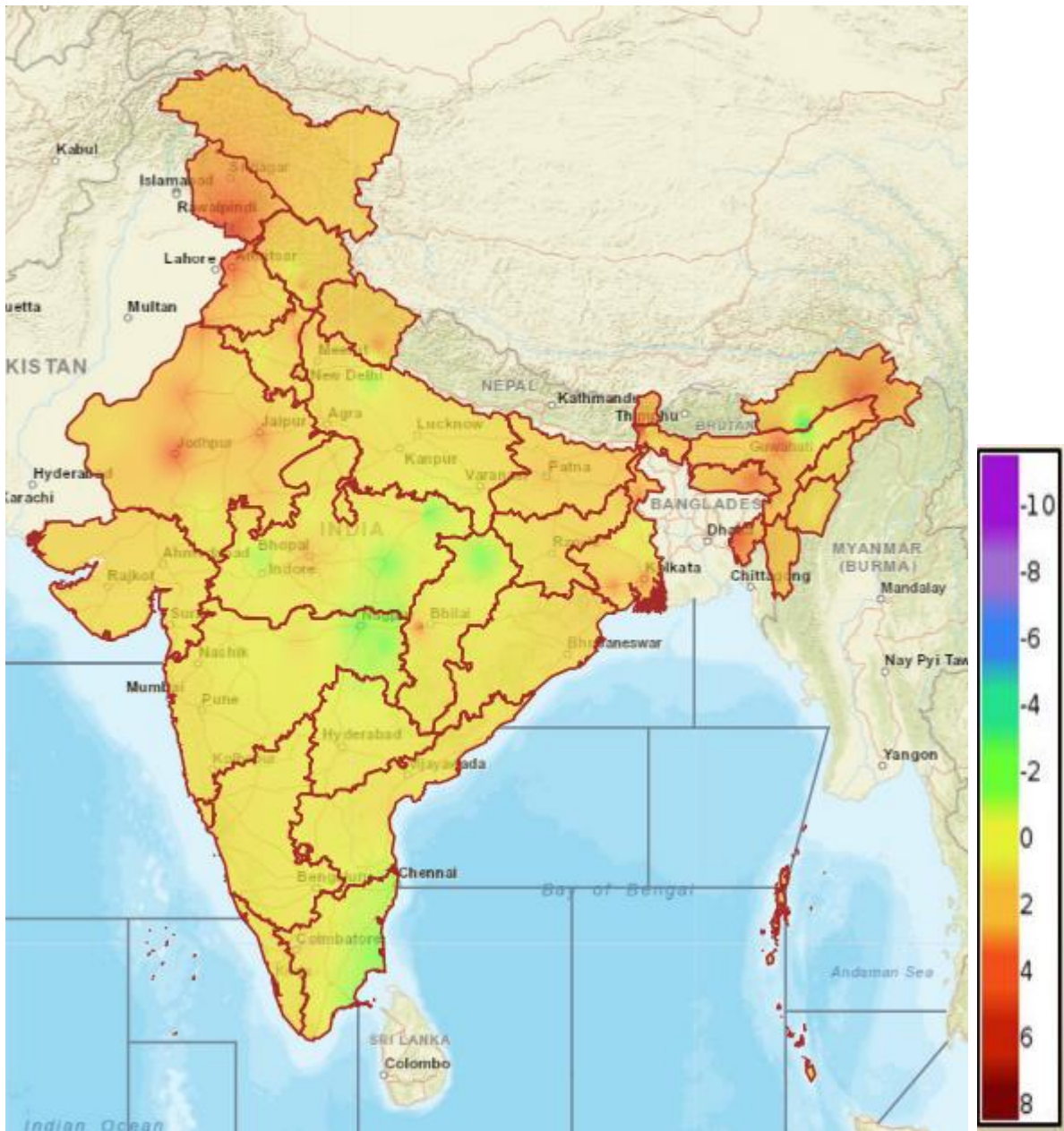


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Fig. 5: Departure from Normal of Minimum Temperatures Dated 17.04.2023

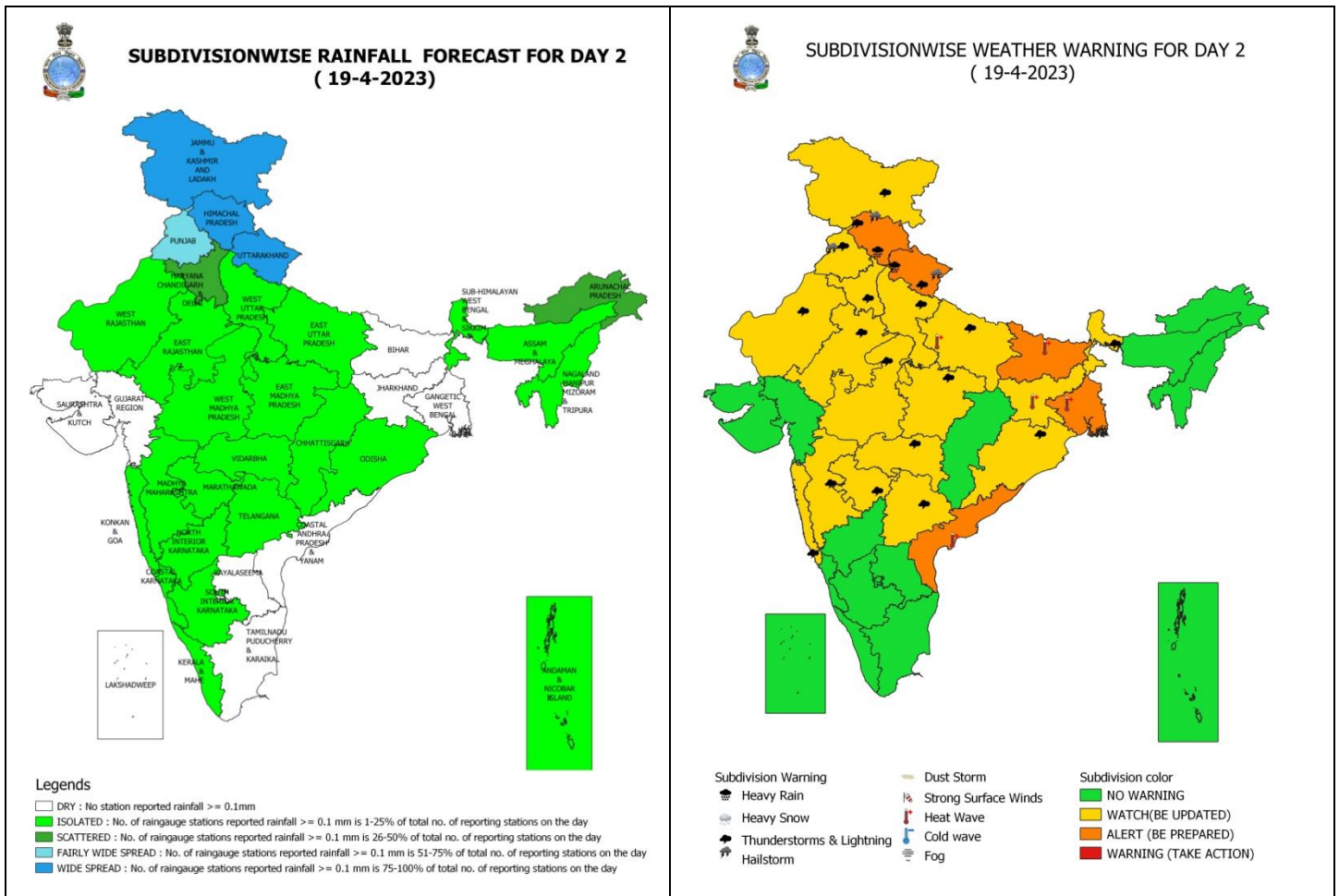


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**19 April (Day 2):** ♦ **Heavy rainfall/snowfall** very likely at isolated places over Himachal Pradesh and Uttarakhand.

♦ **Hailstorm with thunderstorm, lightning & gusty wind (30-40 kmph)** very likely at isolated places over Punjab and **with thunderstorm, lightning** at isolated places over Himachal Pradesh, Uttarakhand.

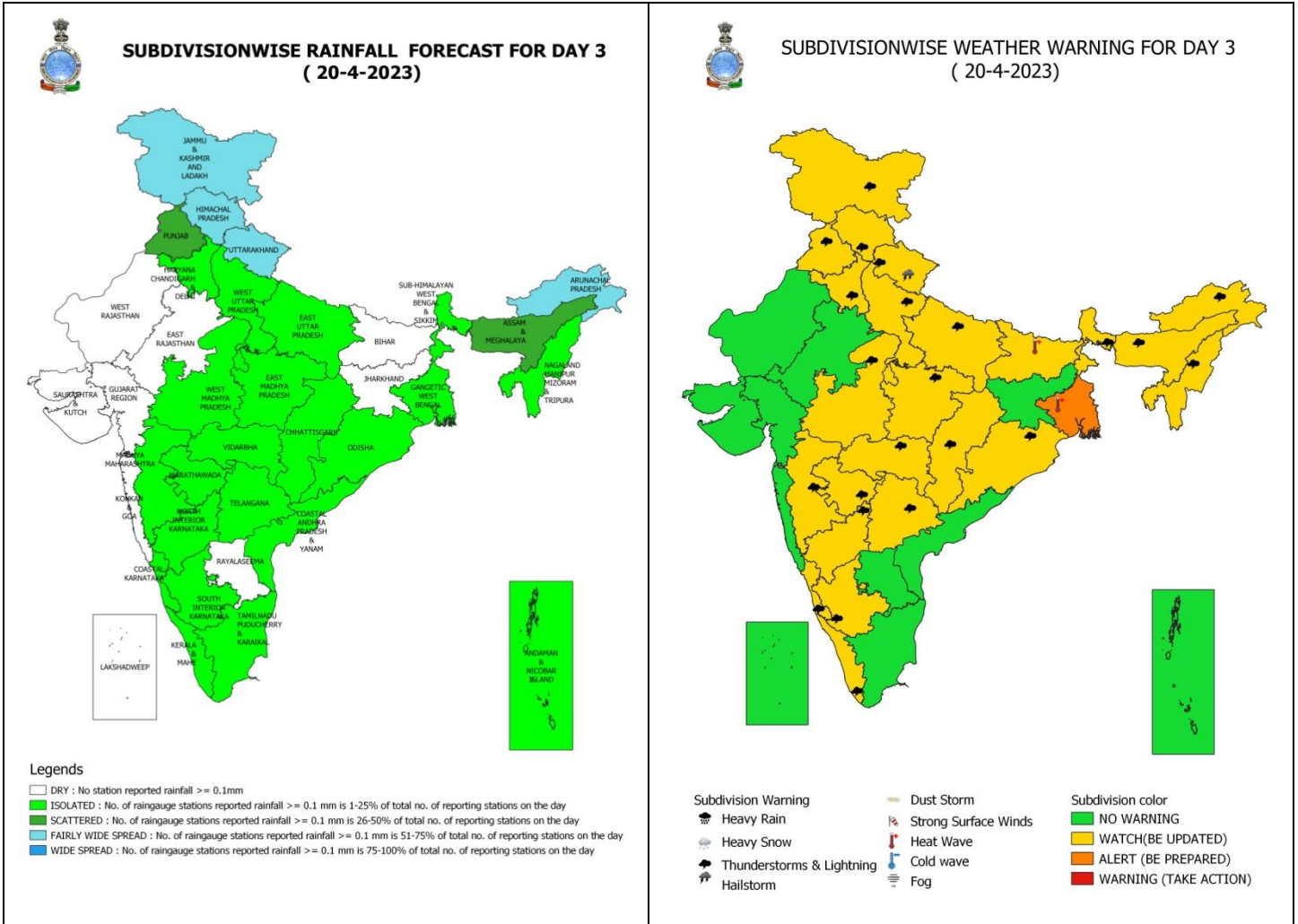
♦ **Thunderstorm with lightning & gusty wind (30-40 kmph)** very likely at isolated places over Haryana, Chandigarh & Delhi, Rajasthan, Madhya Pradesh, Konkan & Goa and **with lightning** at isolated places over Sub-Himalayan West Bengal & Sikkim, Uttar Pradesh, Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Vidarbha, Telangana.

♦ **Heat Wave conditions** very likely in isolated pockets over Gangetic West Bengal, Bihar and Coastal Andhra Pradesh & Yanam.

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

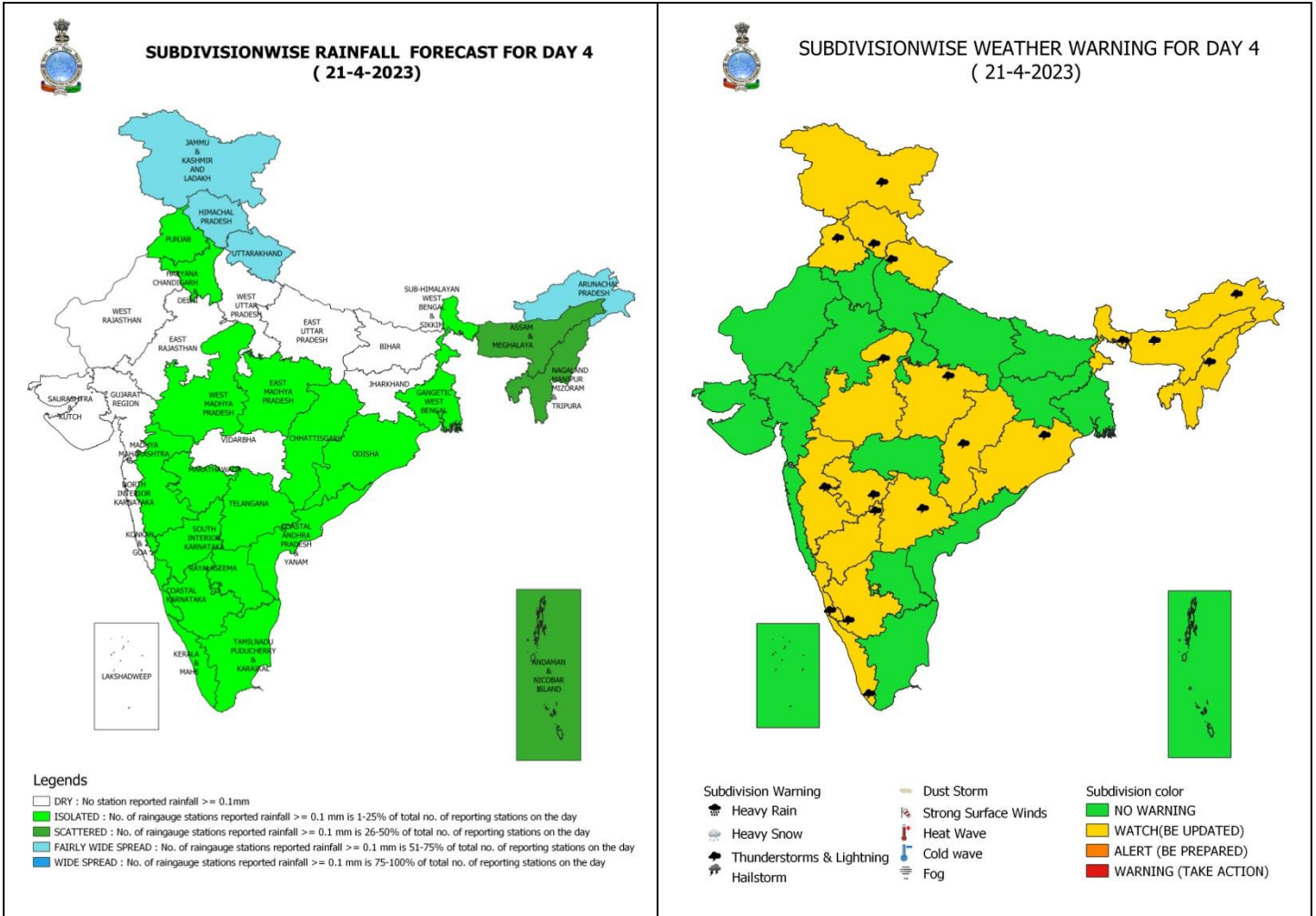
**♦ Thunderstorm with lightning & gusty wind (30-40 kmph) very likely at isolated places over Punjab, Haryana, Chandigarh & Delhi, Madhya Pradesh, Chhattisgarh, Kerala & Mahe and **with lightning** at isolated places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim, Odisha, Uttar Pradesh, Himachal Pradesh, Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Madhya Maharashtra, Marathwada, Vidarbha, Telangana, Karnataka.**

**♦ Heat Wave conditions very likely in isolated pockets over Gangetic West Bengal.**

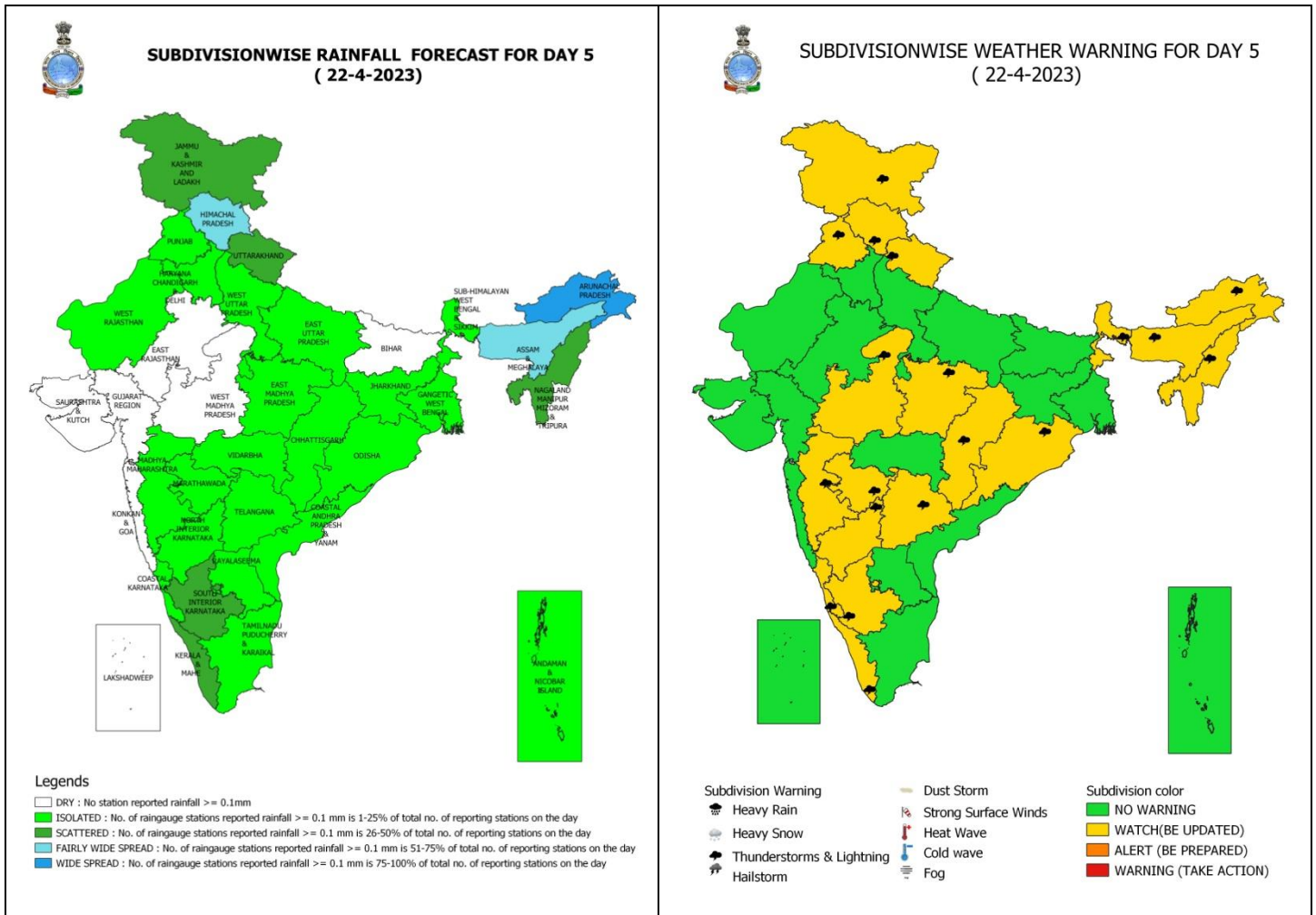
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**21 April (Day 4): ♦ Thunderstorm with lightning & gusty wind (30-40 kmph) likely at isolated places over East Madhya Pradesh, Chhattisgarh, Kerala & Mahe and with lightning at isolated places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim, Odisha, Uttarakhand, Punjab, Himachal Pradesh, Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, West Madhya Pradesh, Madhya Maharashtra, Marathwada, Telangana, Coastal Karnataka, North Interior Karnataka.**



**22 April (Day 5): ♦ Thunderstorm with lightning & gusty wind (30-40 kmph) likely at isolated places over East Madhya Pradesh, Chhattisgarh, Kerala & Mahe and with lightning at isolated places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim, Odisha, Uttarakhand, Punjab, Himachal Pradesh, Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, West Madhya Pradesh, Madhya Maharashtra, Marathwada, Telangana, Coastal Karnataka, North Interior Karnataka.**

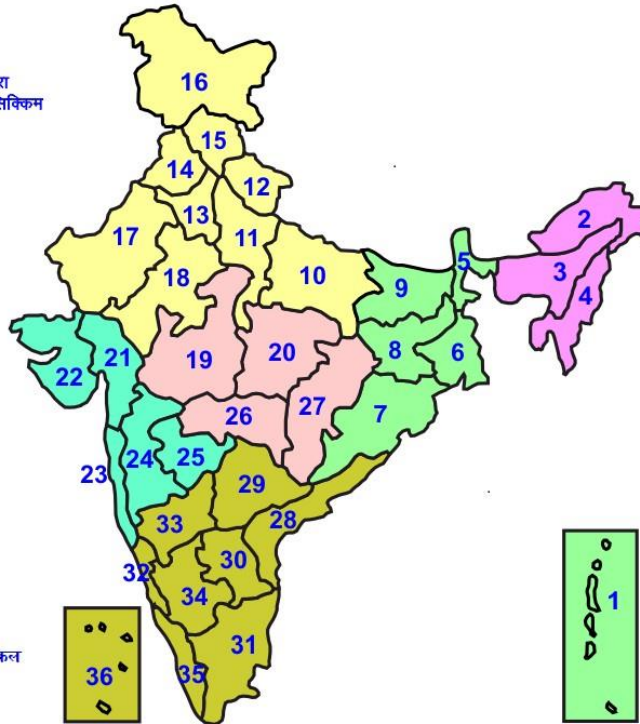
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## LEGENDS

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