



Monday, April 10, 2023

MID-DAY

Time of Issue: 1400 hours IST

ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

Significant Weather Features

Weather Forecast and Warnings:

- ❖ The **trough** in easterlies runs from north Kerala to north Madhya Maharashtra at lower tropospheric levels.
- ❖ A cyclonic circulation lies over northeast Arabian Sea and adjoining south Pakistan at lower tropospheric levels.
- ❖ **Under the influence of these systems, following weather is expected:**

West India:

Light/moderate isolated rainfall with thunderstorm/lightning very likely over Gujarat state, Madhya Maharashtra and Marathwada during next 5 days.

South India:

Light/moderate isolated rainfall with thunderstorm/lightning/gusty winds very likely over South Interior Karnataka and Tamil Nadu on 10th & 11th April and over Kerala during next 5 days.

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

Maximum Temperatures Forecast during next 5 days:

- Maximum Temperatures are very likely to rise gradually by 2-4°C over many parts of the country.
- **No heat wave conditions** likely over any part of the country during the next 5 days.
- **Strong surface winds (20-30 kmph)** very likely over Haryana and Uttar Pradesh during 11th-13th April, 2023.

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

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Main Weather Observations

- ❖ **Rainfall/thundershowers observed** (from 0830 hours IST of yesterday to 0830 hours IST of today): **at many places over** Vidarbha; **at a few places over** Lakshadweep and **at isolated places over** Uttarakhand, Madhya Pradesh, Chhattisgarh, Madhya Maharashtra, Marathwada, Sub-Himalayan West Bengal & Sikkim, Odisha, South Interior Karnataka, Kerala and Tamil Nadu.
- ❖ **Significant amount of rainfall recorded** (from 0830 hours IST of yesterday to 0830 hours IST of today)(in cm): **Kerala:** Pathanamthitta: Enadimangalam-5, Vazhakunnam-3; **Sikkim:** North Sikkim-5; **Marathawada:** Kannad (dist Aurangabad) 3, **Arunachal Pradesh:** Tuting (dist Upper Siang) 3.
- ❖ **Thunderstorm observed** (from 0830 hours IST of yesterday to 0830 hours IST of today): at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Sub-Himalayan West Bengal & Sikkim, Chhattisgarh, East Madhya Pradesh, Madhya Maharashtra, Marathawada, Vidarbha and Kerala & Mahe.
- ❖ **Minimum Temperature Departures (as on 10-04-2023):** Minimum temperatures were **above normal (1.6°C to 3.0°C)** at many places over Gujarat Region; at a few places over Bihar and Gangetic West Bengal and at isolated places over West Rajasthan, Saurashtra & Kutch, Madhya Maharashtra, Odisha and Assam & Meghalaya. They are **appreciably below normal (-3.1°C to -5.0°C)** at a few places over Haryana, Chandigarh & Delhi and Vidarbha and at isolated places over East Rajasthan and Madhya Pradesh; **below normal (-1.6°C to -3.0°C)** at many places over Telangana and Rayalaseema; at a few places over Uttar Pradesh, Tamil Nadu, Puducherry & Karaikal and Nagaland, Manipur, Mizoram & Tripura and at isolated places over Marathwada and Coastal Andhra Pradesh & Yanam and **near normal** over rest parts of the country. Today, **the lowest minimum temperature of 12.3°C** is reported at **Pantnagar (Uttarakhand)** over plains of the country.
- ❖ **Maximum Temperature Departures (as on 09-04-2023):** Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at a few places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura and at isolated places over Konkan & Goa; **above normal (1.6°C to 3.0°C)** at many places over West Bengal & Sikkim; at a few places over Himachal Pradesh and Punjab, Bihar, Coastal Karnataka, coastal Andhra Pradesh & Yanam and Kerala & Mahe; at isolated places over West Rajasthan. They were **appreciably below normal (-3.1°C to -5.0°C)** at many places over Marathawada; at a few places over Vidarbha and at isolated places over West Madhya Pradesh; **below normal (-1.6°C to -3.0°C)** at many places over Rayalaseema; at a few places over East Madhya Pradesh, North Interior Karnataka and Chhattisgarh and at isolated places over Uttar Pradesh East Rajasthan, Telangana, Odisha and Tamilnadu and **near normal** over rest parts of the country. Yesterday, the **highest maximum temperature of 40.2°C** was reported at **Surendarnagar & Ahmadabad (Gujarat State)**.

Meteorological Analysis (Based on 0830 hours IST)

- ❖ A cyclonic circulation lies over northeast Arabian Sea and adjoining south Pakistan between 1.5 & 3.1 km above mean sea level.
- ❖ The cyclonic circulation over Southeast Rajasthan & neighbourhood now lies over south Rajasthan & neighbourhood at 0.9 km above mean sea level.
- ❖ A cyclonic circulation lies over Gangetic West Bengal & neighbourhood at 0.9 km above mean sea level.
- ❖ The cyclonic circulation over Northeast Bangladesh & neighbourhood now lies over east Assam & neighbourhood at 0.9 km above mean sea level.
- ❖ The trough in easterlies from Kerala to Vidarbha now runs from north Kerala to north Madhya Maharashtra across interior Karnataka at 0.9 km above mean sea level.
- ❖ The feeble Western Disturbance as a trough in middle tropospheric level westerlies with its axis at 5.8 km above mean sea level roughly along Long. 66⁰E to the north of Lat. 32⁰N has become less marked.

Weather Forecast for next 5 days * (upto 0830 hours IST of 15th April, 2023)

- ❖ Meteorological sub-division wise detailed 5 days rainfall forecast is given in Table-1.
- ❖ Gradual rise in Maximum Temperatures by 2-4⁰C very likely over many parts of the country during next 5 days.
- ❖ **Strong surface winds (speed 25-35 kmph)** likely to prevail over Haryana and Uttar Pradesh during 11th -13th April.

Weather Outlook for subsequent 2 days (during 15th-17th April, 2023)

- ❖ A fresh Western Disturbance is likely to affect Western Himalayan Region from the night of 15th April, 2023.
- ❖ Mainly dry weather likely over most parts of the country except over parts of south Peninsular India, Northeast India and Western Himalayan region where isolated light rainfall is likely.



Weather Warning during next 5 days

10 April (Day 1): ♦ **Thunderstorm accompanied with lightning & gusty wind (30-40 kmph)** very likely at isolated places over Kerala & Mahe and **with lightning** over Uttarakhand, West Rajasthan, Odisha, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Madhya Maharashtra, Marathwada, South Interior Karnataka and Tamilnadu.

11 April (Day 2): ♦ **Thunderstorm accompanied with lightning** very likely at isolated places over West Rajasthan, Madhya Maharashtra, Marathwada and Kerala & Mahe.

12 April (Day 3): ♦ **Thunderstorm accompanied with lightning** very likely at isolated places over Madhya Maharashtra, Marathwada and Kerala & Mahe.

13 April (Day 4): ♦ **Thunderstorm accompanied with lightning** likely at isolated places over Madhya Maharashtra, Marathwada and Kerala & Mahe.

14 April (Day 5): ♦ **Thunderstorm accompanied with lightning & gusty wind (30-40 kmph)** likely at isolated places over Kerala & Mahe and **with lightning** at isolated places over Madhya Maharashtra, Marathwada and Interior Karnataka.

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Table-1

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

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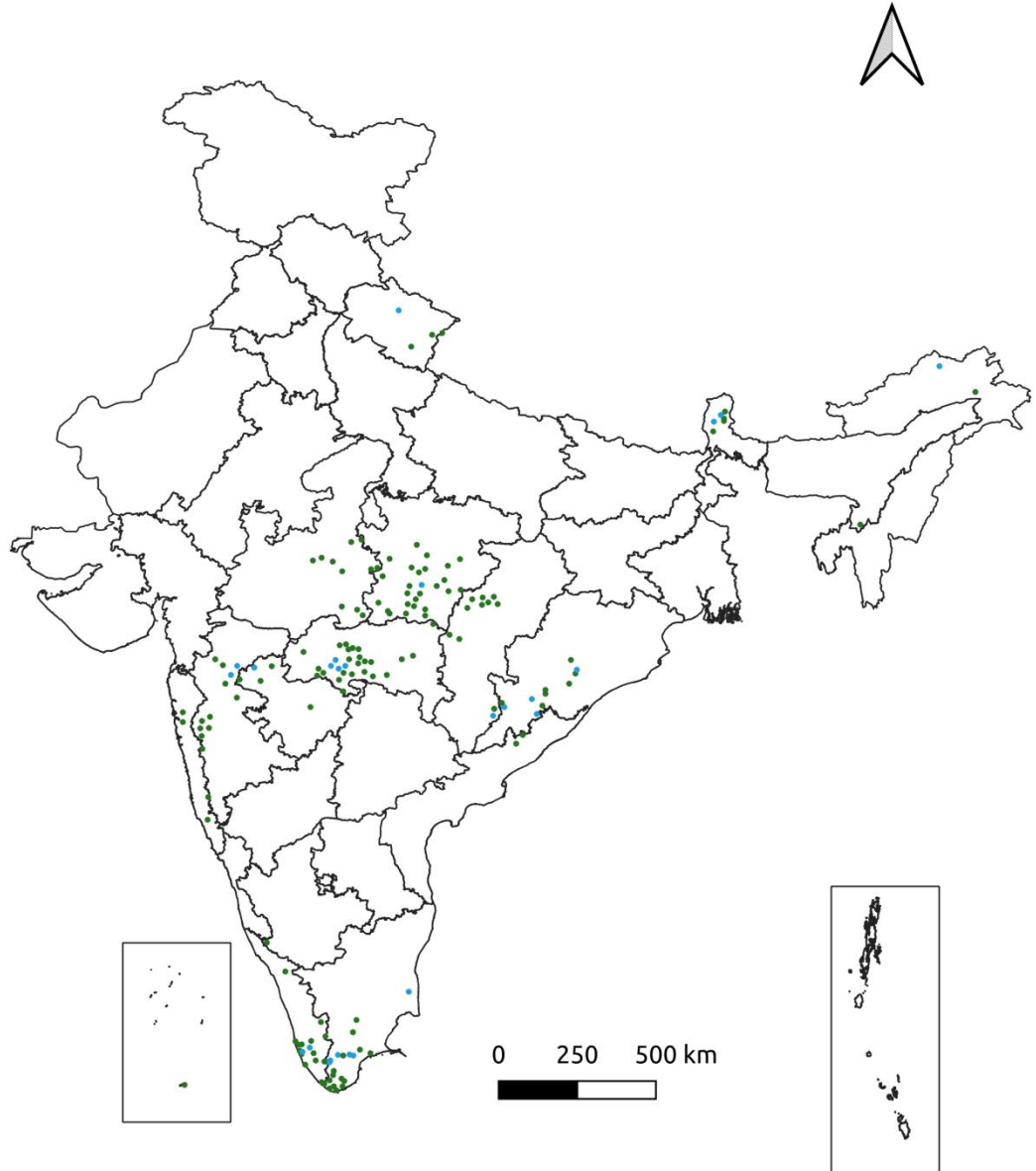
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Fig. 1: Accumulated Rainfall (mm) during past 24 hours



24 Hr cumulative rainfall recorded over different stations during 0830 IST of 9-4-2023 to 0830 IST of 10-4-2023



Legends

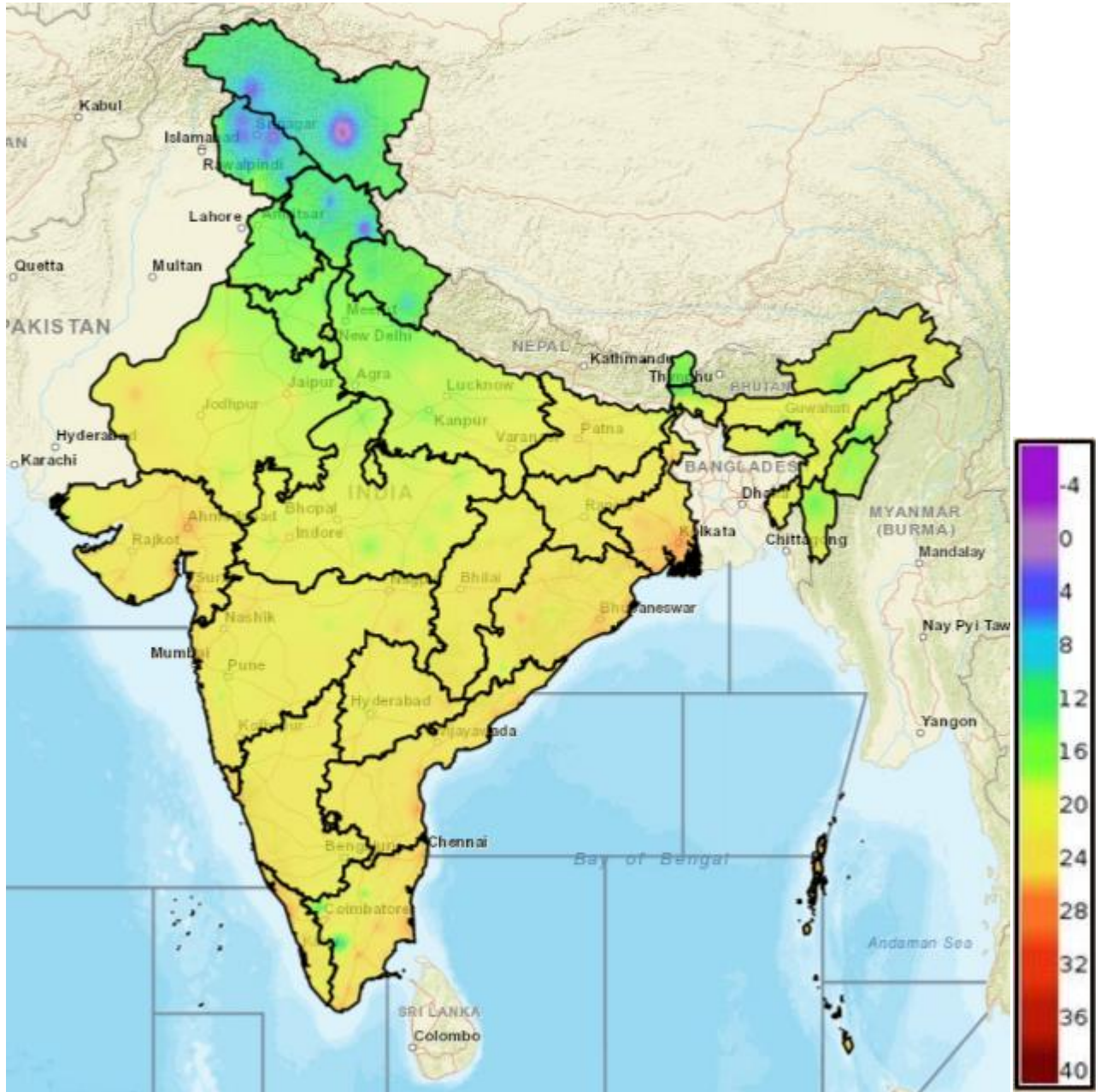
- Very Light to Light Rainfall (0.1 - 15.5 mm)
- Moderate Rainfall (15.6 - 64.4 mm)
- Heavy Rainfall (64.5 - 115.5 mm)
- Very Heavy Rainfall (115.6 - 204.4 mm)
- Extremely Heavy Rainfall (≥ 204.5 mm)

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Fig. 3: Minimum Temperatures Dated 10.04.2023



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Fig. 4: Departure from Normal of Maximum Temperatures Dated 09.04.2023

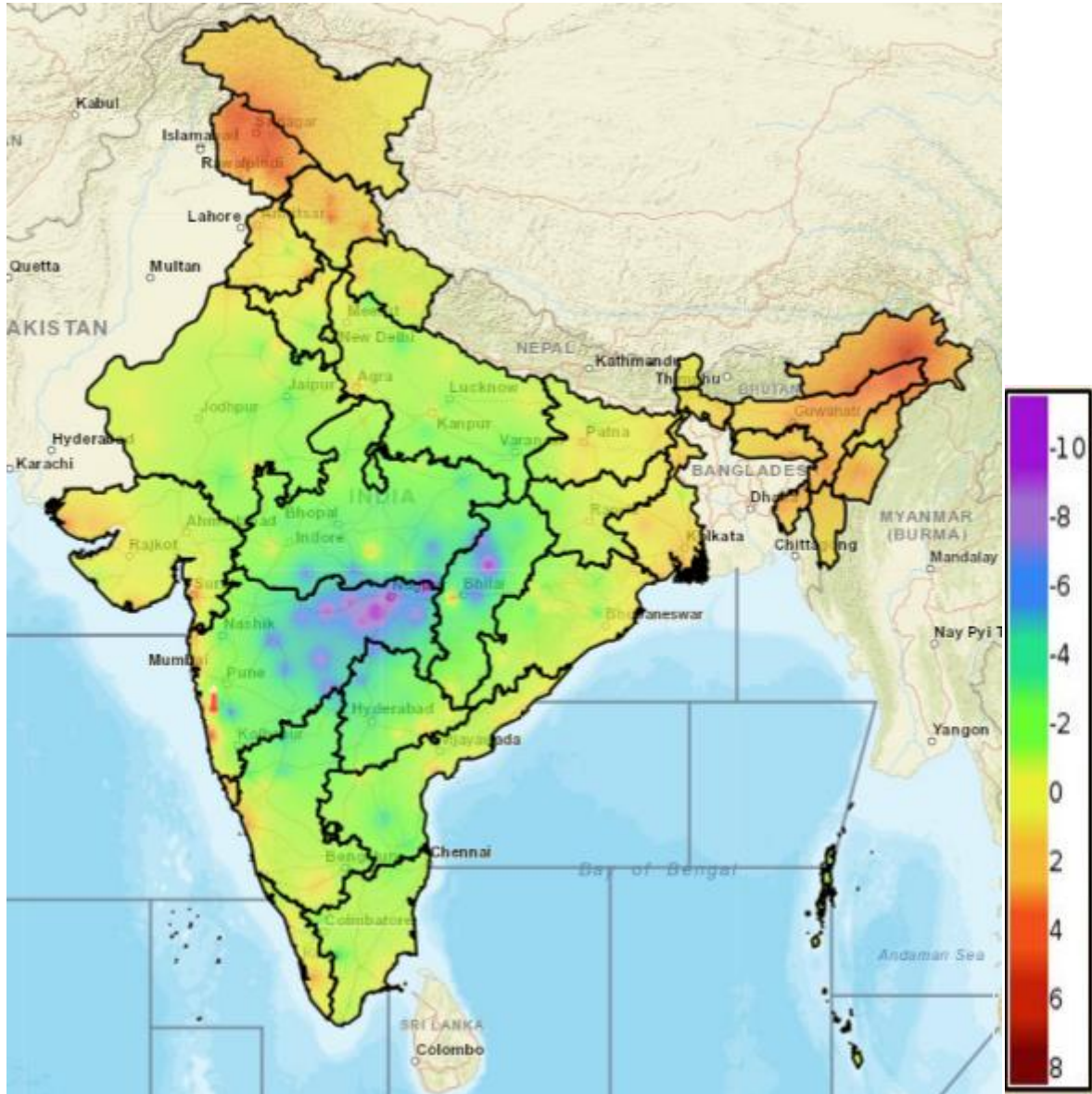
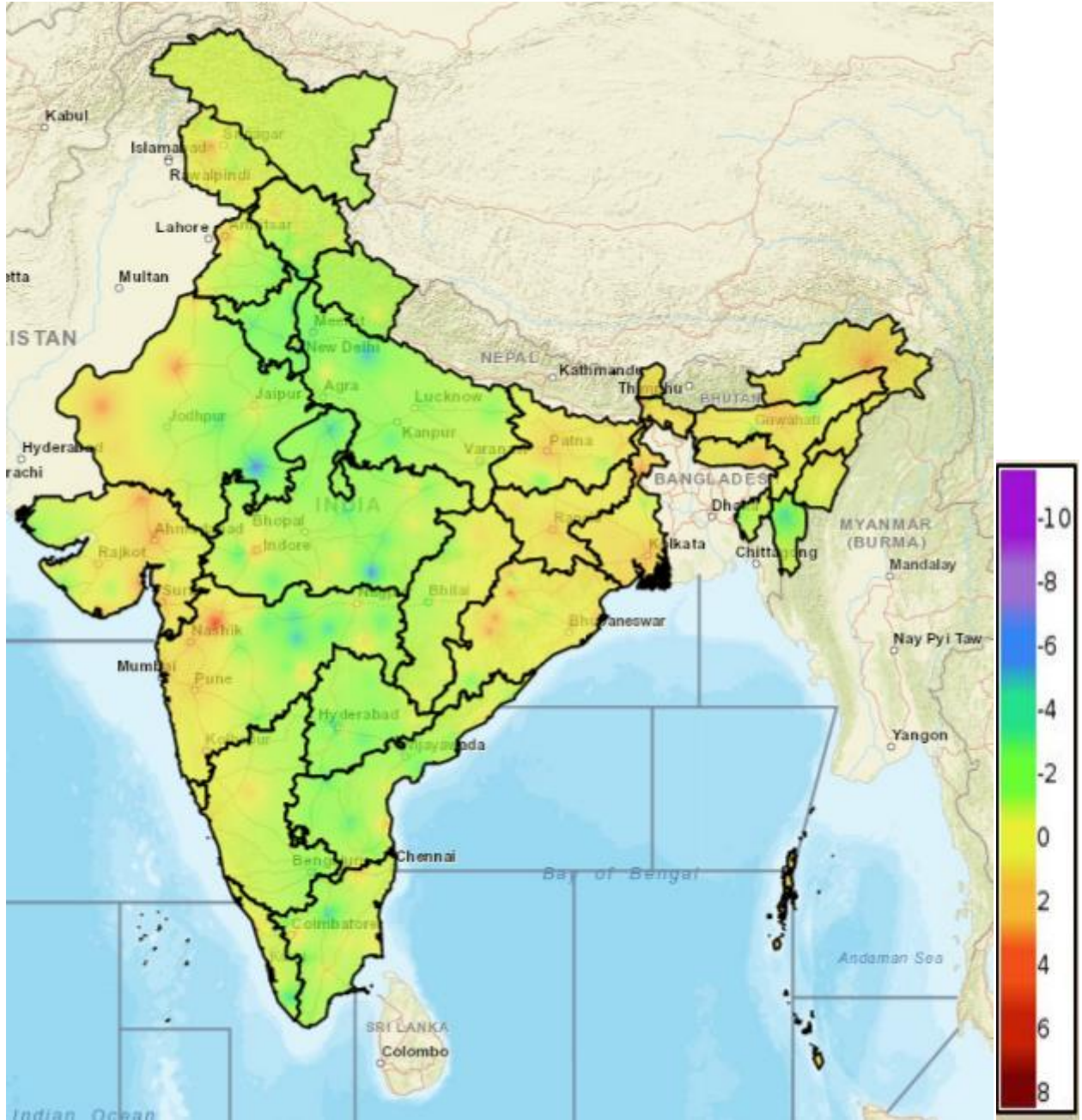


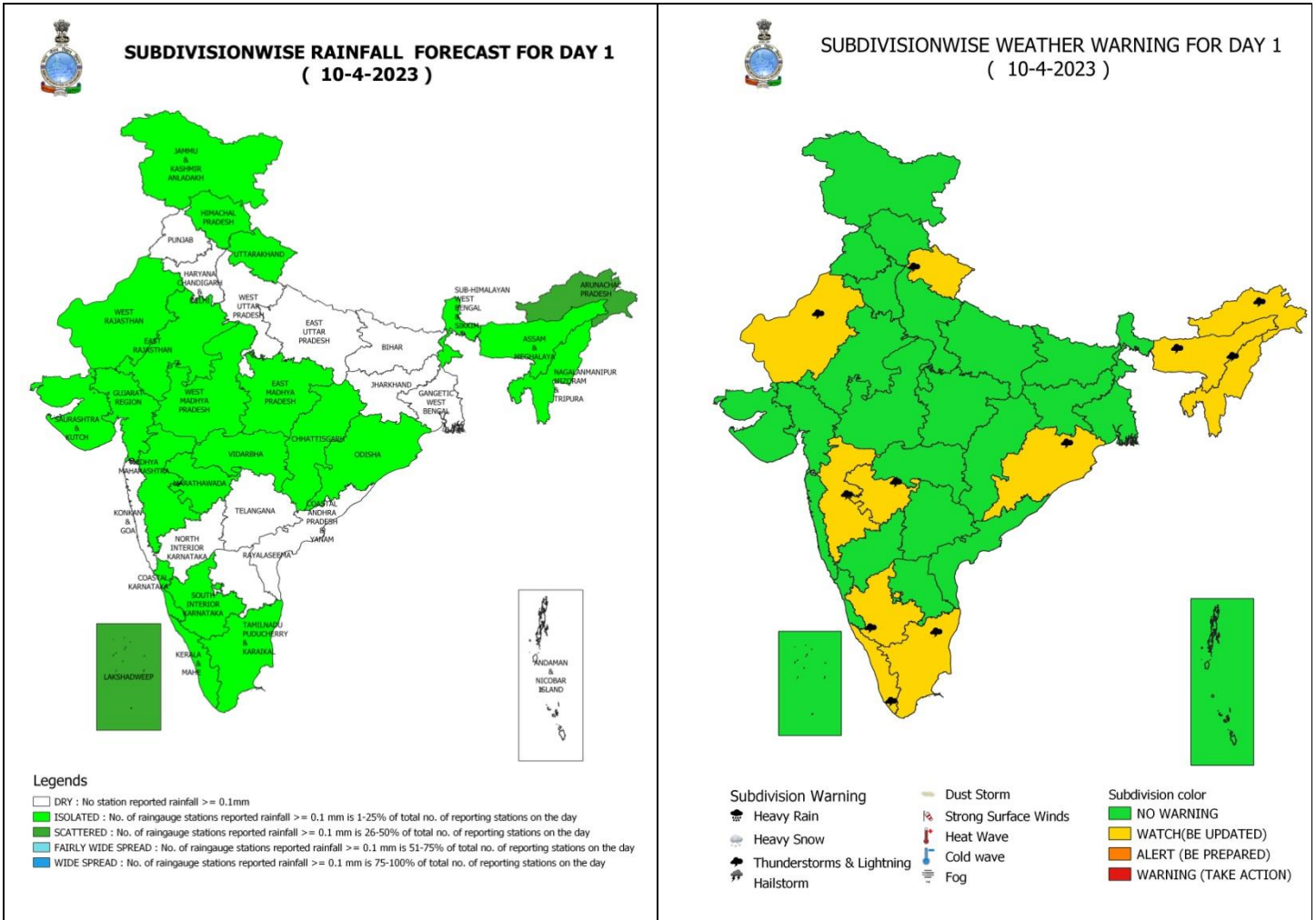
Fig. 5: Departure from Normal of Minimum Temperatures Dated 10.04.2023



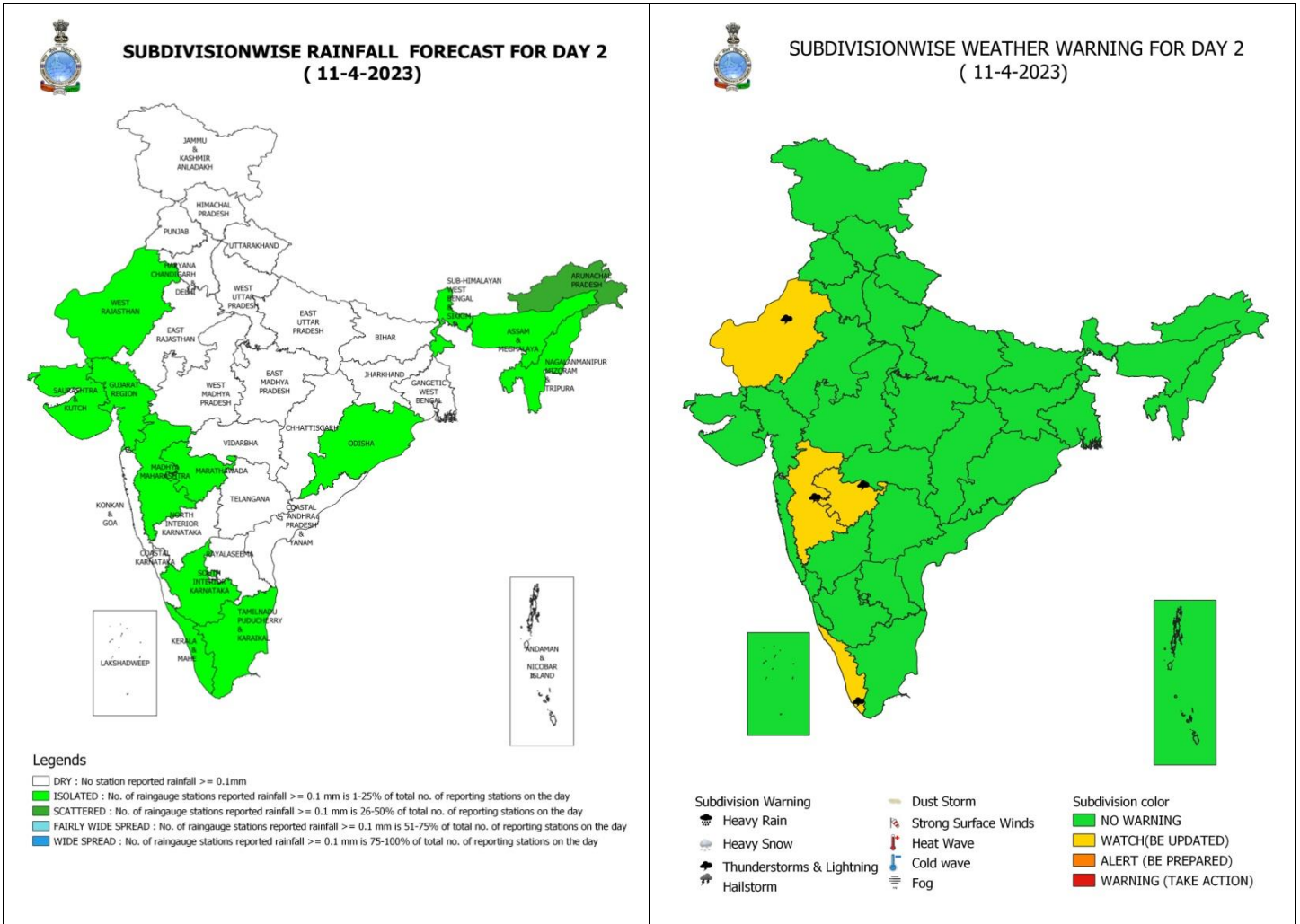
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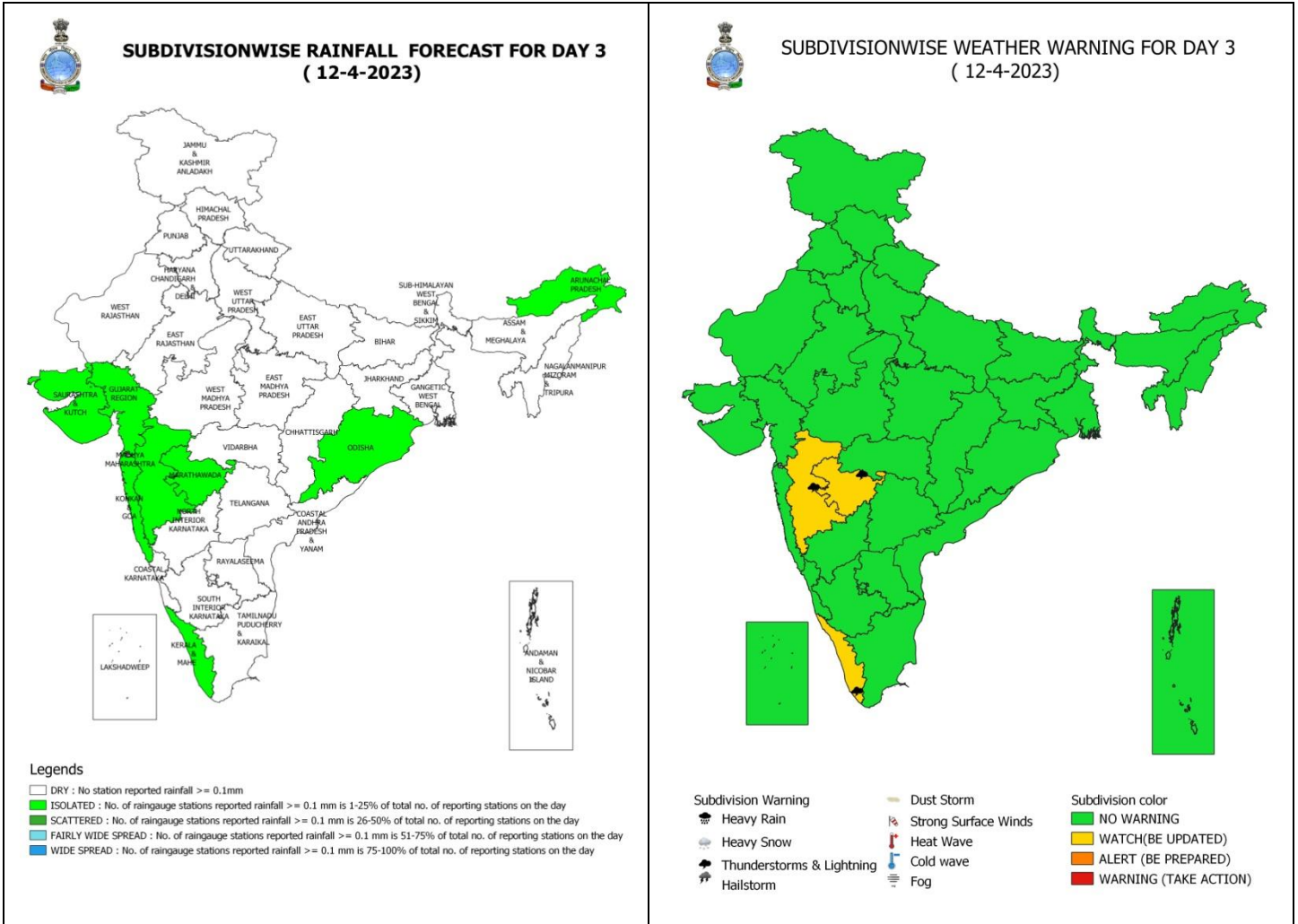
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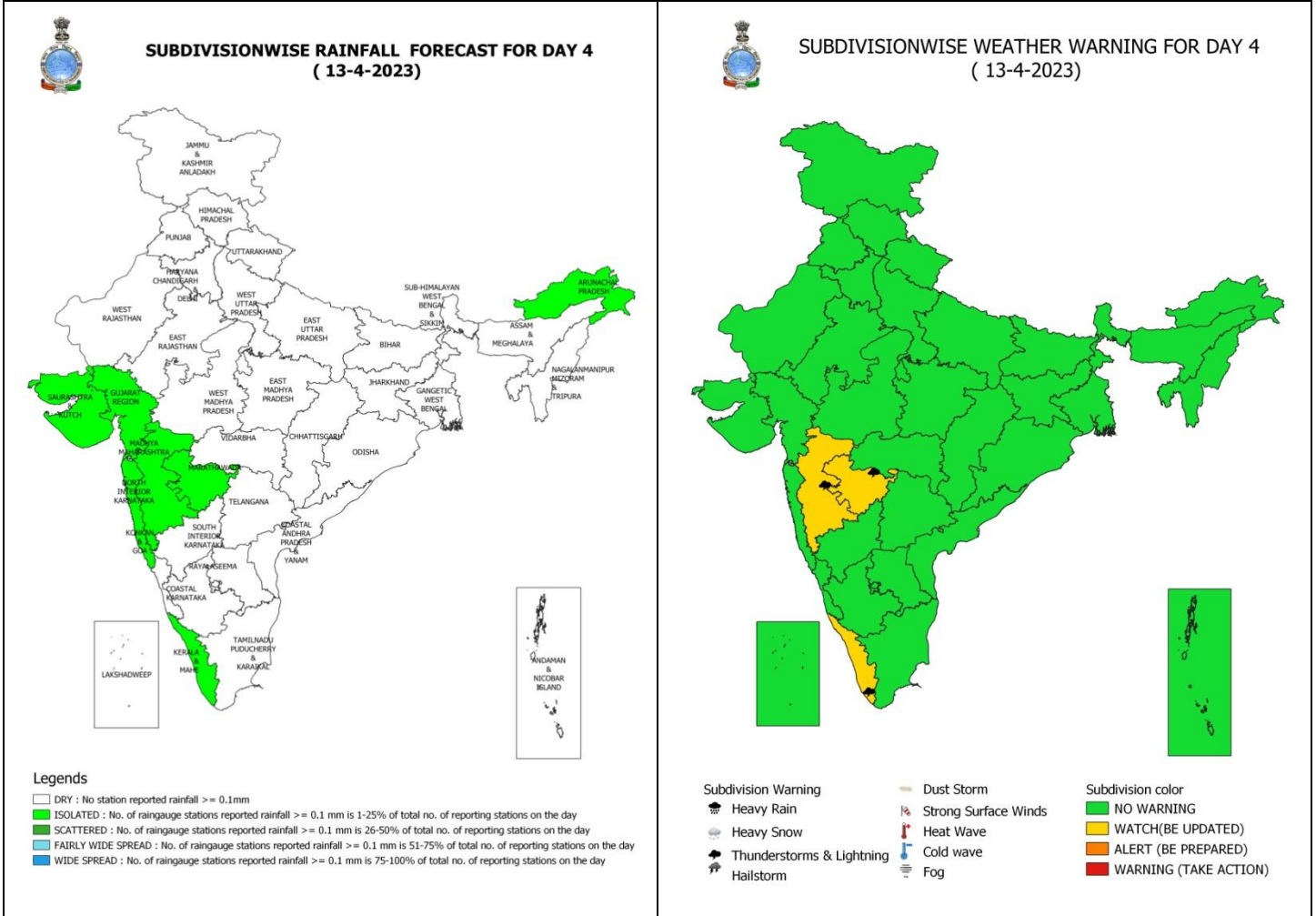
10 April (Day 1): ♦ Thunderstorm accompanied with lightning & gusty wind (30-40 kmph) very likely at isolated places over Kerala & Mahe and with lightning over Uttarakhand, West Rajasthan, Odisha, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Madhya Maharashtra, Marathwada, South Interior Karnataka and Tamilnadu.



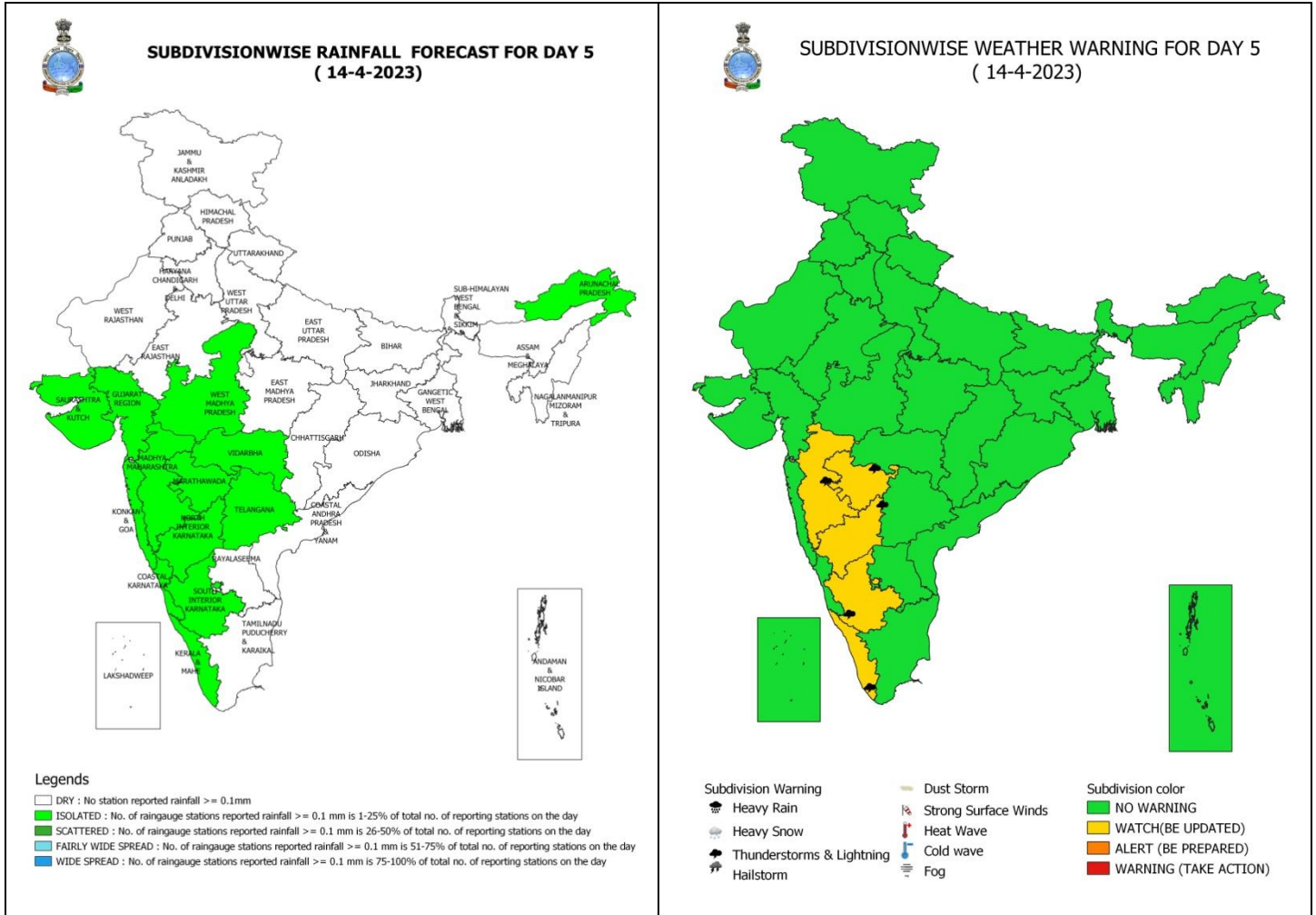
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13 April (Day 4): ♦ Thunderstorm accompanied with lightning likely at isolated places over Madhya Maharashtra, Marathwada and Kerala & Mahe.

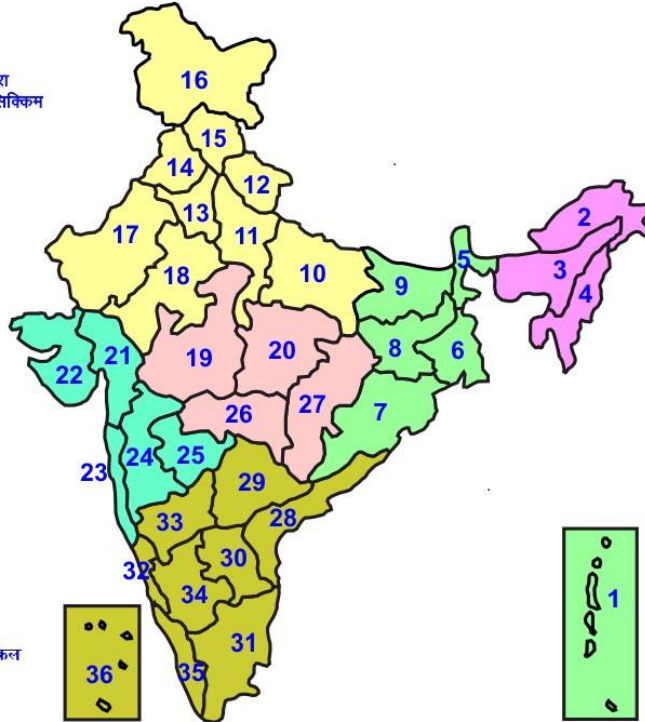


14 April (Day 5): ♦ Thunderstorm accompanied with lightning & gusty wind (30-40 kmph) likely at isolated places over Kerala & Mahe and with lightning at isolated places over Madhya Maharashtra, Marathwada and Interior Karnataka.



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 एंवम 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 एंवम कराईकल
- 32 तटिय कर्नाटक
- 33 आंतरिक उत्तरी कर्नाटक
- 34 आंतरिक दक्षिणी कर्नाटक
- 35 केरल एंवम 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

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



Heavy Rain



Heavy Snow



Thunderstorm



Dust Storm



Strong Winds



Visibility



Cyclone



Squall/ Hail



Frost



Cold Wave



Heat Wave



Sea State

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LEGENDS

WARNING

WARNING (TAKE ACTION)
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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°C to 6.4°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°C

Warm Night: When minimum temperature departure 4.5°C to 6.4°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°C to -6.4°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°C to -6.4°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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