

Thursday, March 14, 2024  
Time of Issue: 0800 hours IST  
(MORNING)

## ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

### Significant Weather Features:

#### Weather Systems and Forecast & Warnings:

- ❖ A Western Disturbance as a cyclonic circulation lies over Punjab & neighbourhood at 3.1 km above mean sea level with a trough in middle tropospheric westerlies runs along Long. 73°E to the north of Lat. 30°N. An induced cyclonic circulation lies over west Rajasthan in lower tropospheric levels. Under the influence of these systems:
  - ✓ Isolated light rainfall/snowfall likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh and Uttarakhand on 14<sup>th</sup> March, 2024 and dry weather thereafter.
- ❖ Isolated light rainfall/snowfall very likely over Sub-Himalayan West Bengal & Sikkim during 14<sup>th</sup>-16<sup>th</sup> and Isolated light rainfall over Gangetic West Bengal & Odisha during 14<sup>th</sup>-20<sup>th</sup>; over Jharkhand, Vidarbha, Chhattisgarh and East Madhya Pradesh during 16<sup>th</sup>-20<sup>th</sup> March, 2024.
- ❖ Isolated **thunderstorms, lightning & gusty winds (30-40 kmph)** very likely over Gangetic West Bengal on 14<sup>th</sup> & 16<sup>th</sup> and over East Madhya Pradesh, Vidarbha, Chhattisgarh and Odisha on 16<sup>th</sup> & 17<sup>th</sup> March, 2024.
- ❖ Isolated to scattered light/moderate rainfall/snowfall very likely over Arunachal Pradesh during 14<sup>th</sup>-19<sup>th</sup> March, 2024. Isolated light rainfall very likely over Assam & Meghalaya during 14<sup>th</sup>-19<sup>th</sup> and Nagaland, Manipur, Mizoram & Tripura during 14<sup>th</sup>-17<sup>th</sup> March, 2024.
- ❖ **Hot and humid weather** very likely to prevail over Kerala & Mahe, Rayalaseema and Tamil Nadu, Puducherry & Karaikal during next 5 days.

## Main Weather Observations:

- ❖ **Rainfall/snowfall distribution** (from 0830 hours IST to 1730 hours IST of yesterday): at many places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh; at isolated places over Arunachal Pradesh.
- ❖ **Rainfall distribution** (from 0830 hours IST to 1730 hours IST of yesterday): at isolated places over West Rajasthan, Jharkhand and Odisha.
- ❖ **Significant amount of rainfall** (from 0830 hours IST to 1730 hours IST of yesterday) (in cm): **Odisha**; Chandbali-3, Balasore and Baripada- 1 each.
- ❖ **Minimum Temperature Departures (as on 13-03-2024)**: Minimum temperatures were **markedly above normal (5.1°C or more)** at isolated places over North Interior Karnataka; **appreciably above normal (3.1°C to 5.0°C)** at a few places over Telangana and Marathwada; at isolated places over Odisha, Konkan & Goa and Rayalaseema; **above normal (1.6°C to 3.0°C)** at most places over Gujarat Region; at many places over Coastal Andhra Pradesh & Yanam and Kerala & Mahe; at a few places over West Rajasthan, East Uttar Pradesh, Bihar, Gangetic West Bengal, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, East Madhya Pradesh, Chhattisgarh and Saurashtra & Kutch; at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Vidarbha, Madhya Maharashtra and Tamil Nadu, Puducherry & Karaikal. They were **below normal (-1.6°C to -3.0°C)** at a few places over West Madhya Pradesh; at isolated places over Haryana-Chandigarh-Delhi and East Rajasthan and **near normal** over rest parts of the country. Yesterday, **the lowest minimum temperature of 11.3°C** was reported at **Karnal (Haryana)** over the plains of the country.
- ❖ **Maximum Temperature Departures (as on 13-03-2024)**: Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Bihar; **above normal (1.6°C to 3.0°C)** at most places over Chhattisgarh, Jharkhand, Rayalaseema and Tamil Nadu, Puducherry & Karaikal; at many places over Delhi, North Interior Karnataka, Telangana and Vidarbha; at a few places over East Madhya Pradesh; at isolated places over Uttar Pradesh, West Bengal & Sikkim, Assam & Meghalaya, Coastal Andhra Pradesh & Yanam and Odisha. They were **appreciably below normal (-3.1°C to -5.0°C)** at isolated places over Himachal Pradesh; **below normal (-1.6°C to -3.0°C)** at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, West Rajasthan, Punjab, Saurashtra & Kutch and Arunachal Pradesh **near normal** over rest parts of the country. Yesterday, **the highest maximum temperature of 41.3°C** was reported at **Anantapur (Rayalaseema)** over the country.

## Meteorological Analysis (Based on 0530 hours IST)

- ❖ The Western Disturbance as a cyclonic circulation over North Pakistan now lies over Punjab & neighbourhood at 3.1 km above mean sea level with a trough aloft in middle tropospheric westerlies with its axis at 5.8 km above mean sea level roughly along Long. 73°E to the north of Lat. 30°N.
- ❖ The induced cyclonic circulation over west Rajasthan & neighbourhood extending upto 1.5 km above mean sea level persists.
- ❖ The trough from interior Odisha to Eastcentral Arabian Sea across south Chhattisgarh, Telangana & Karnataka at 0.9 km above mean sea level persists.
- ❖ The cyclonic circulation over east Assam & neighbourhood at 1.5 km above mean sea level persists.

## Weather Forecast for next 7 days (Upto 0830 hours IST of 21<sup>st</sup> March, 2024)

- ❖ Meteorological sub-division wise detailed 7 days rainfall forecast is given in Table-1.
- ❖ Gradual Rise in maximum temperatures by 2-3°C very likely over East India during next 24 hours and no significant change thereafter.
- ❖ No significant change in maximum temperatures very likely over Central India during next 2 days and fall by 2-3°C thereafter.
- ❖ No significant change in maximum temperatures very likely over rest part of the country during next 5 days.
- ❖ **Thunderstorm accompanied with lightning** likely at isolated places over East Madhya Pradesh, Vidarbha, Chhattisgarh on 16<sup>th</sup> & 17<sup>th</sup> March, 2024.

## weather Outlook for subsequent 3 days (21<sup>st</sup>-23<sup>rd</sup> March, 2024)

- ❖ Isolated light rainfall/snowfall likely over Arunachal Pradesh and Western Himalayan Region.
- ❖ Isolated to scattered light to moderate rainfall likely over East & Northeast India and Andaman & Nicobar Islands.
- ❖ Dry weather likely to prevail over rest parts of the country.

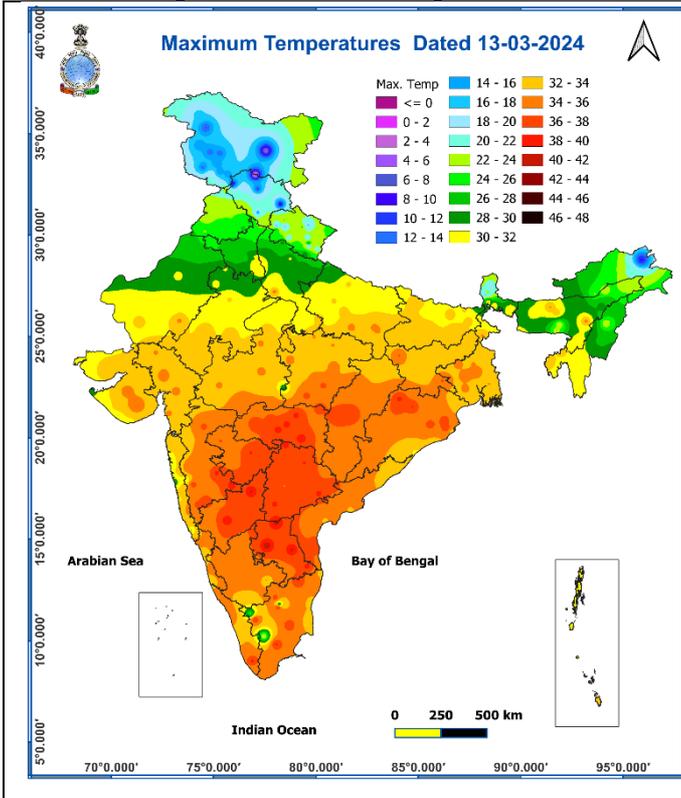
Table-1

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

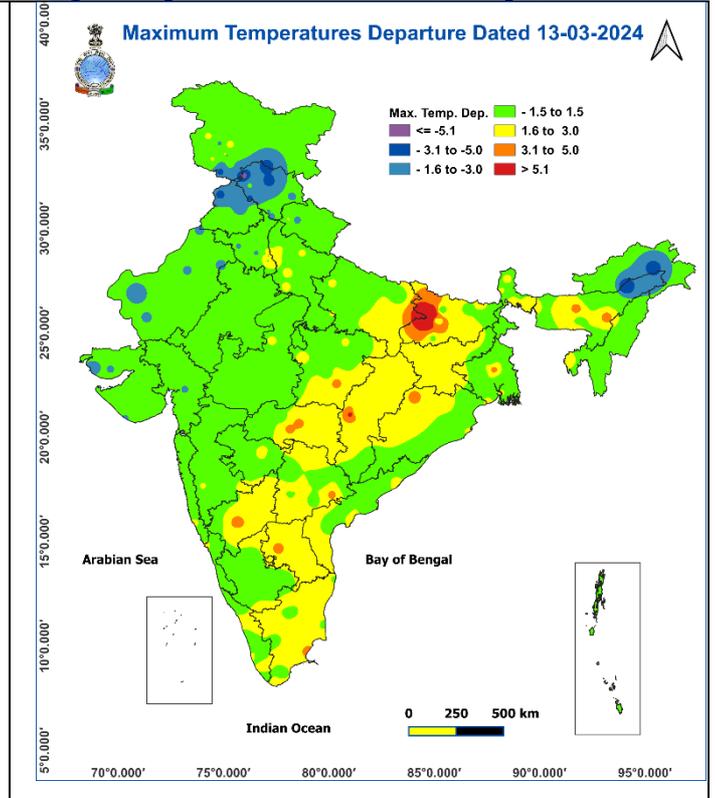
Legend	Category	% Stations
WS	Widespread/Most Places	76-100
FWS	Fairly Widespread/Many Places	51-75
SCT	Scattered/ A Few Places	26-50
ISOL	Isolated Places	1-25
DRY	No Rain	0

\* Red colour warning does not mean "Red Alert", Red colour 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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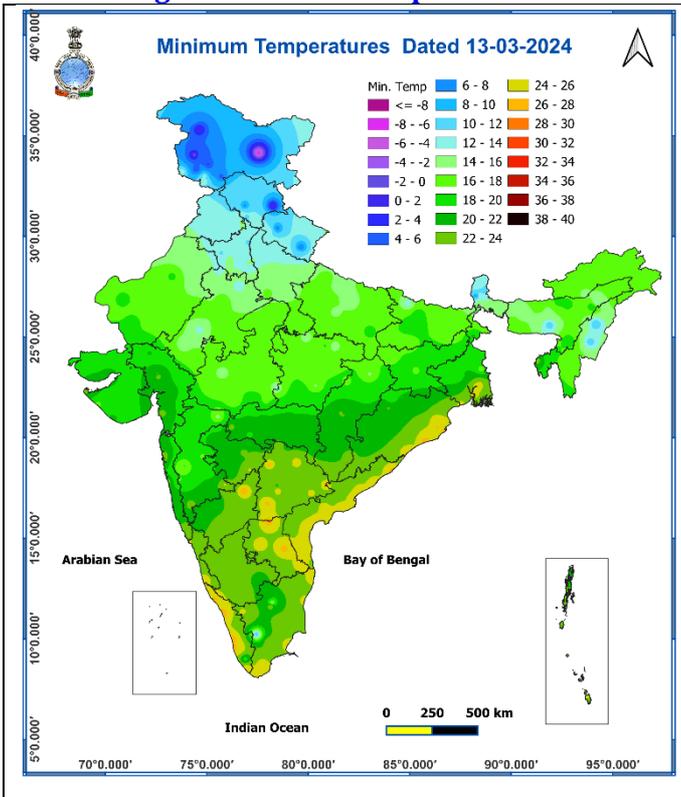
**Fig. 1: Maximum Temperatures**



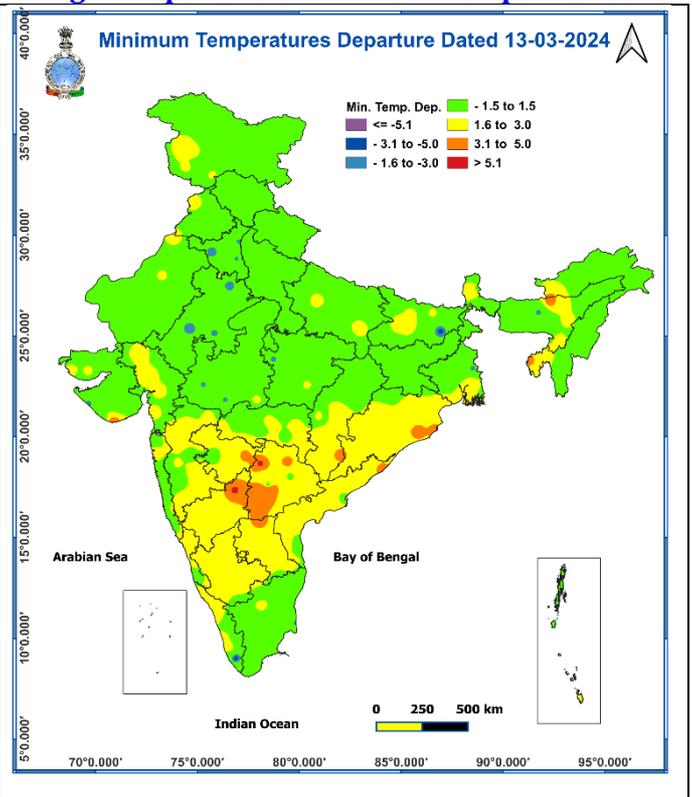
**Fig. 2: Departure of Maximum Temperatures**



**Fig. 3: Minimum Temperatures**



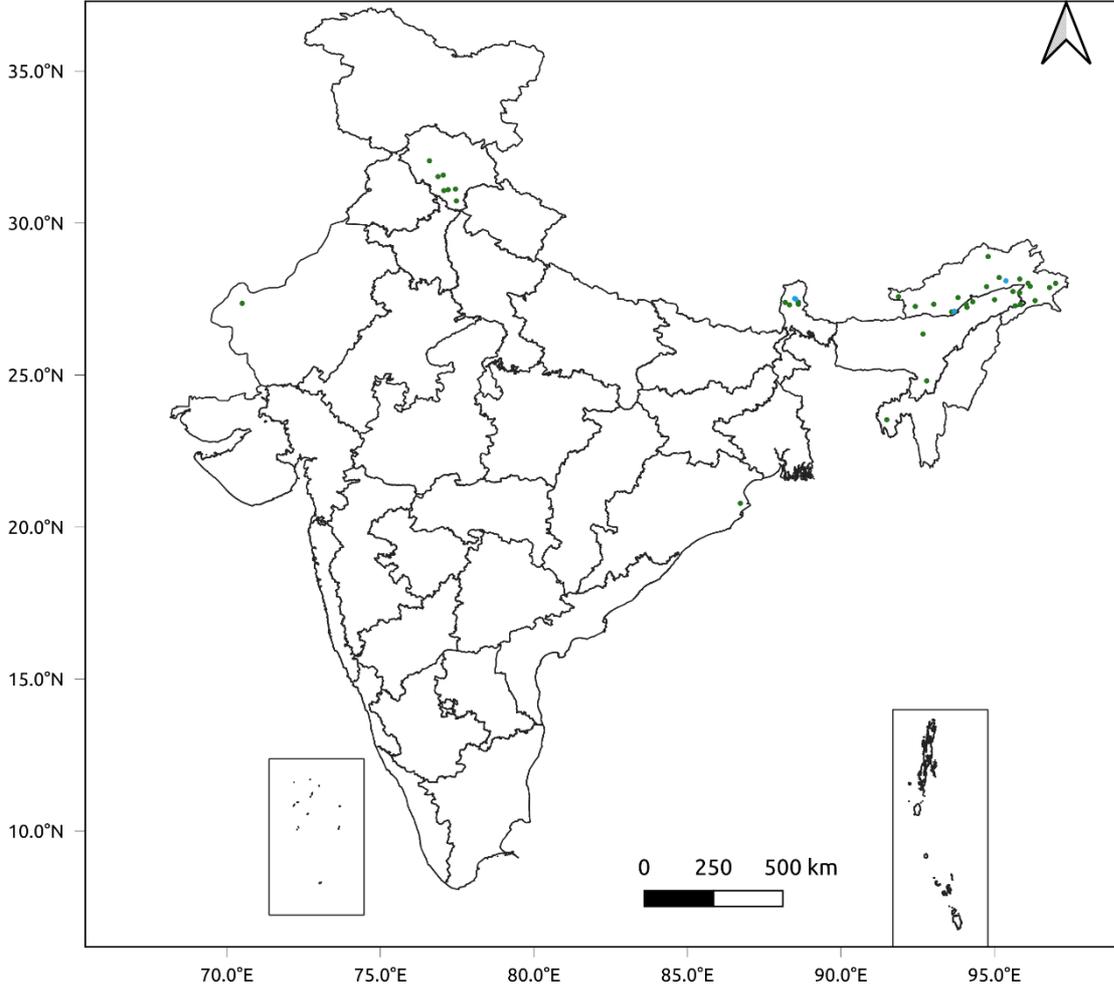
**Fig. 4: Departure of Minimum Temperatures**



**Fig. 5: Accumulated Rainfall (mm) during past 24 hours**

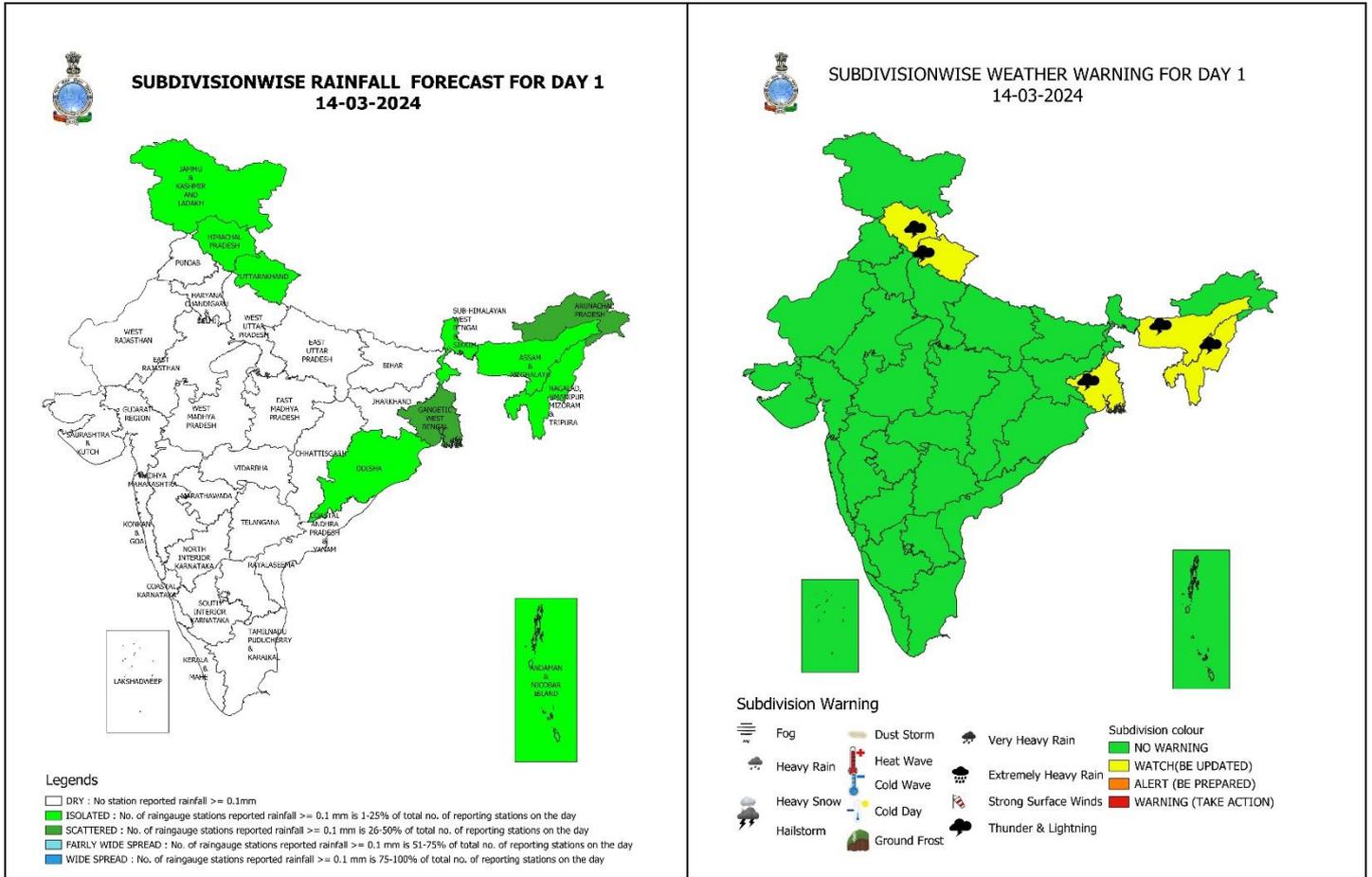


24 Hr cumulative rainfall recorded over different stations during 0830 IST of 12-3-2024 to 0830 IST of 13-3-2024



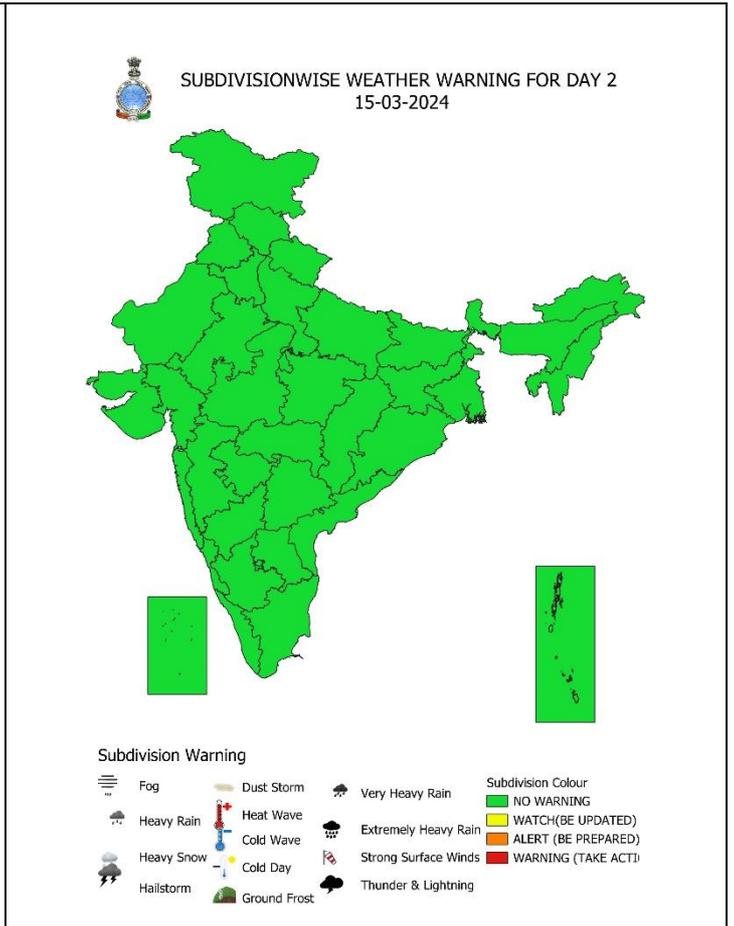
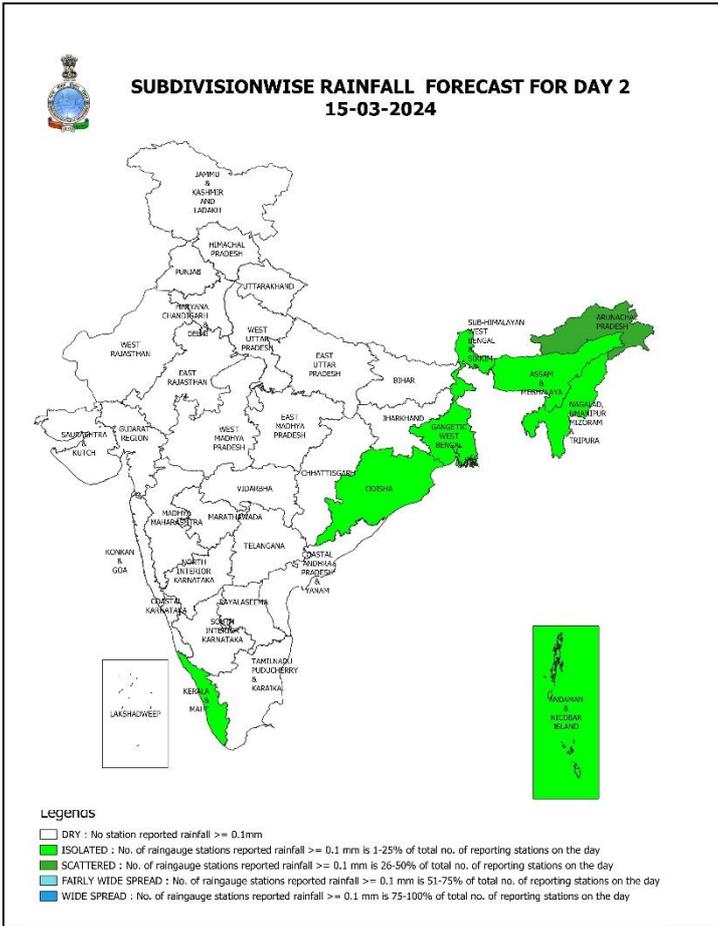
### Legends

- 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)



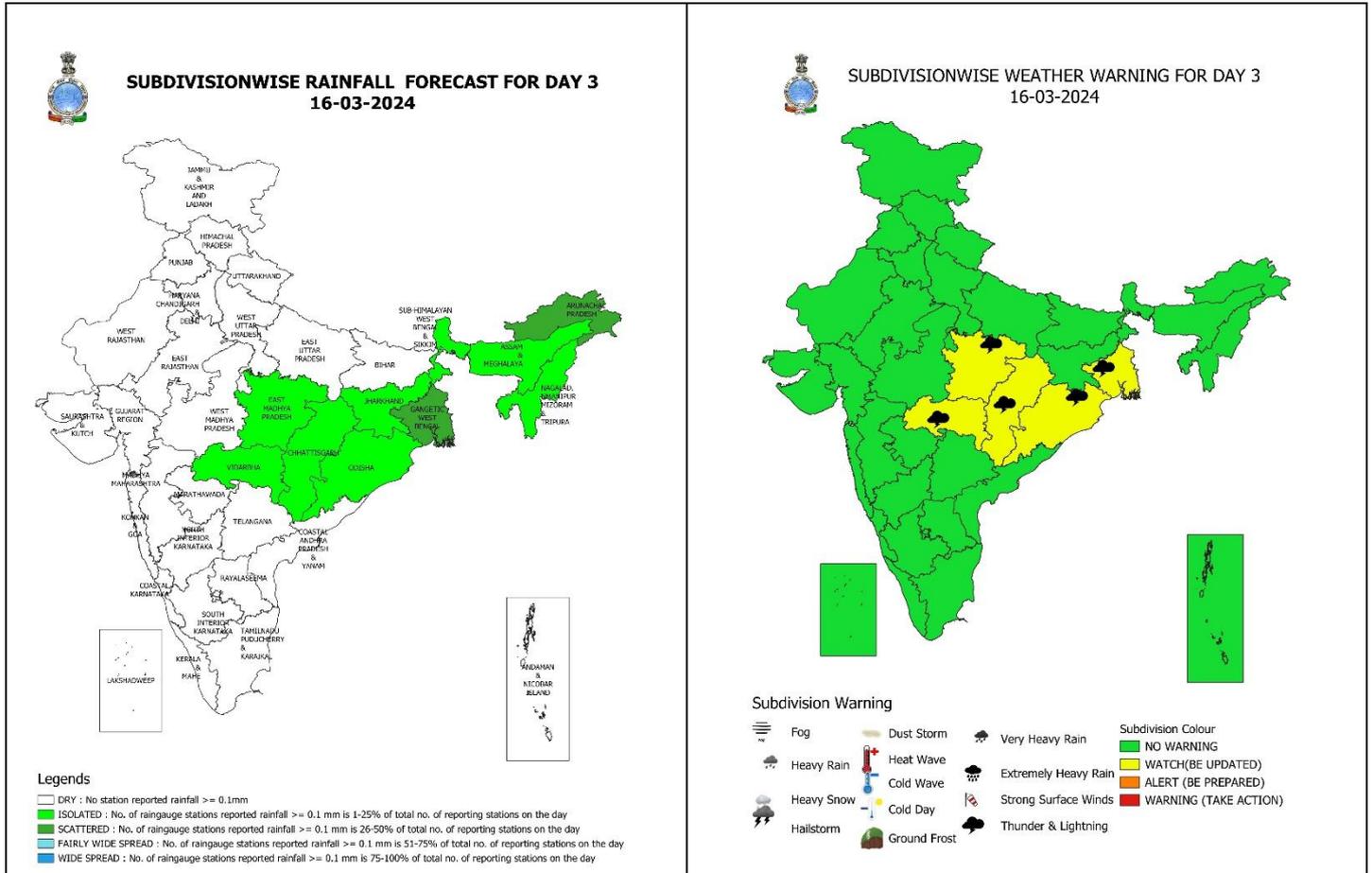
## 14 March (Day 1):

- ❖ **Thunderstorm accompanied with lightning & gusty winds (speed reaching 30-40 kmph) very likely at isolated places over Gangetic West Bengal and with lightning at isolated places over Himachal Pradesh, Uttarakhand, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura.**



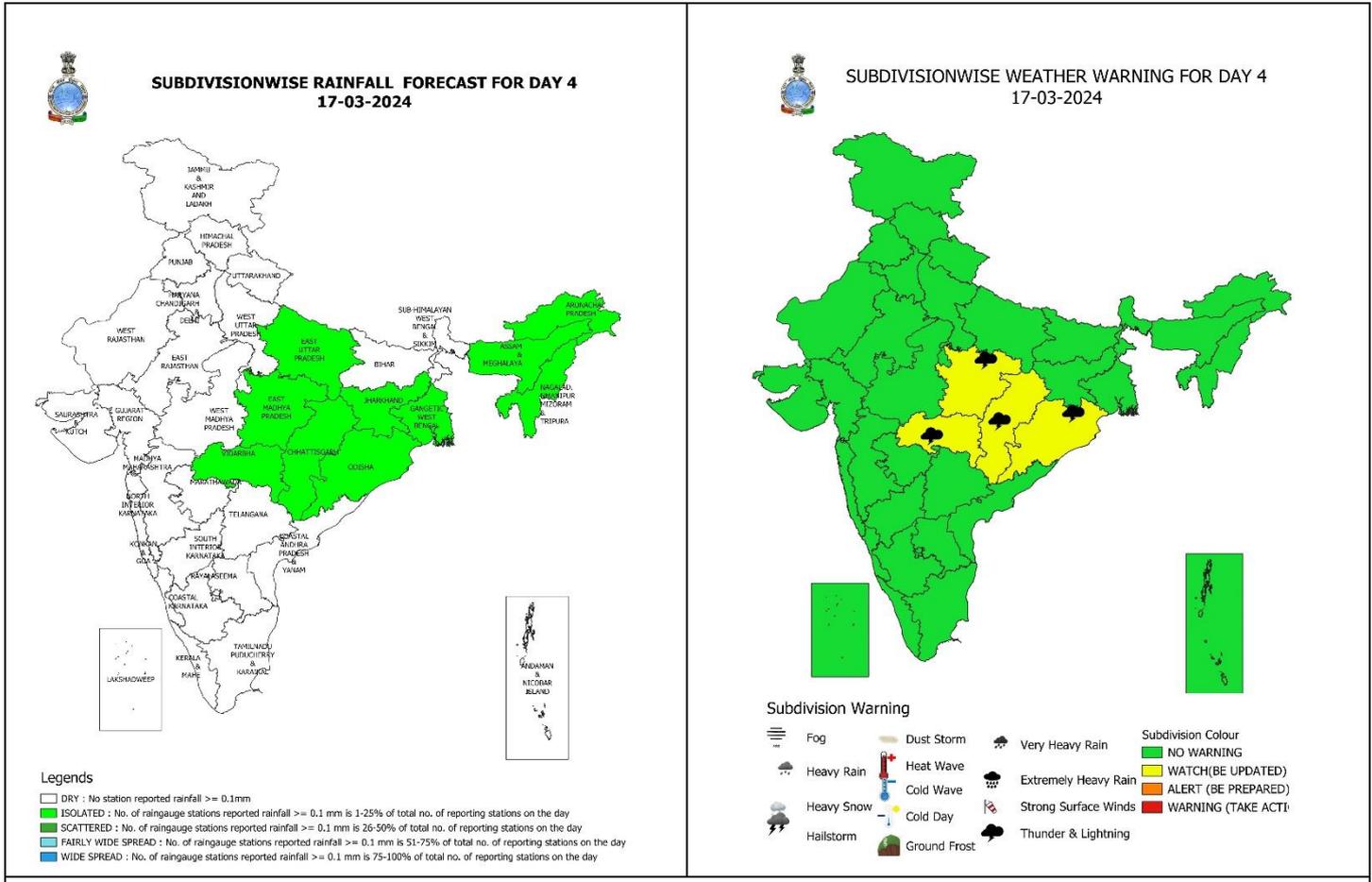
**15 March (Day 2):**

❖ **No Weather Warning.**



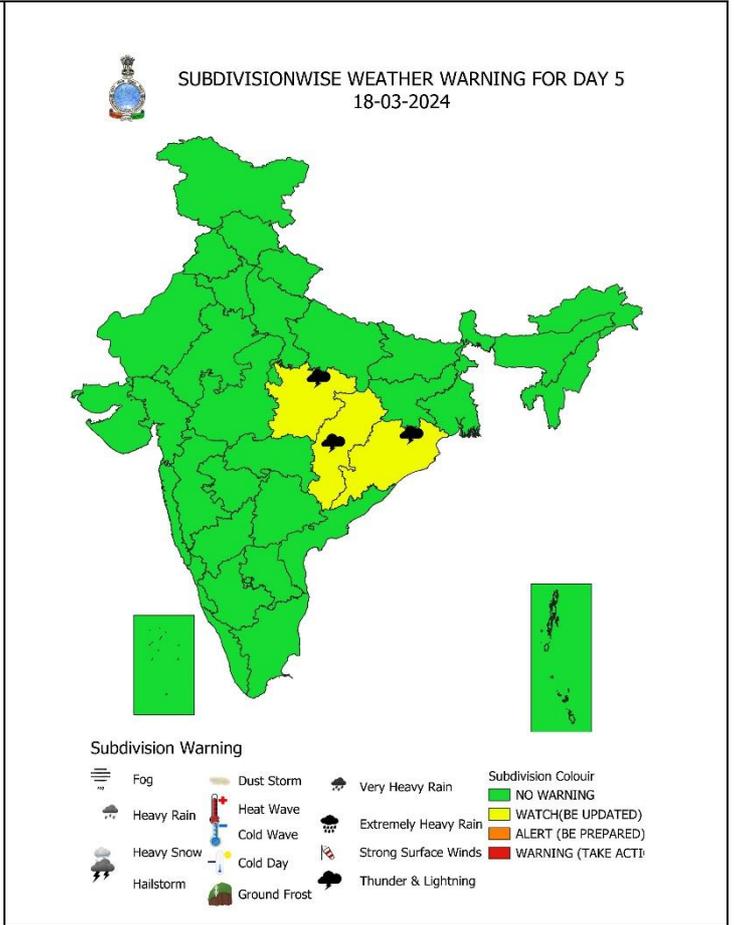
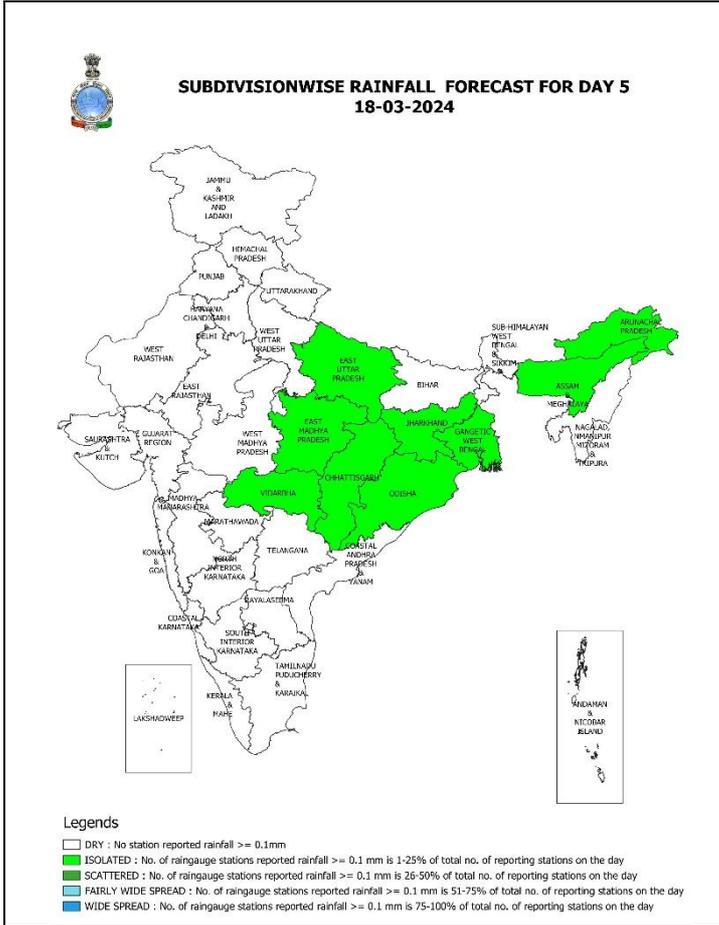
## 16 March (Day 3):

❖ **Thunderstorm accompanied with lightning & gusty winds (speed reaching 30-40 kmph)** likely at isolated places over Gangetic West Bengal and **with lightning** at isolated places over East Madhya Pradesh, Vidarbha, Chhattisgarh and Odisha.



## 17 March (Day 4):

❖ **Thunderstorm accompanied with lightning** likely at isolated places over East Madhya Pradesh, Vidarbha, Chhattisgarh and Odisha.

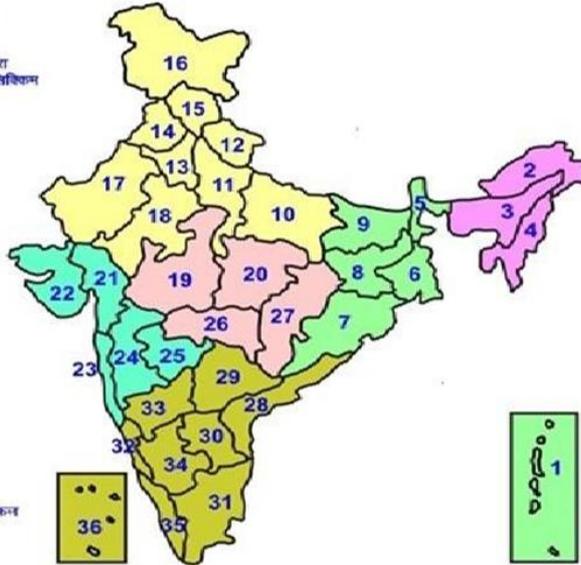


## 18 March (Day 5):

❖ **Thunderstorm accompanied with lightning** likely at isolated places over East Madhya Pradesh, Chhattisgarh and Odisha.

## LEGENDS

- 1 अंडमन और निकोबार द्वीप समूह
- 2 अरुणाचल प्रदेश
- 3 असम और मेघालय
- 4 नागालैंड मणिपुर मीज़ोरम और त्रिपुरा
- 5 उप हिमालय पश्चिम बंगाल एवं सिक्किम
- 6 पश्चिम बंगाल
- 7 ओडिशा
- 8 झारखंड
- 9 बिहार
- 10 पूर्वी उत्तर प्रदेश
- 11 पश्चिम उत्तर प्रदेश
- 12 उत्तराखंड
- 13 हरियाणा चंडीगढ़ एवं दिल्ली
- 14 पंजाब
- 15 हिमाचल प्रदेश
- 16 जम्मू एवं कश्मीर एवंम 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 मराठवाड़ा
- 26 विदर्भ
- 27 उत्तरीसमूह
- 28 तटीय आंध्र प्रदेश एवं यानम
- 29 तेलंगाना
- 30 दख्खिणी
- 31 पश्चिमनाडु, पुदुचेरी एवंम 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. Odisha
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

## LEGENDS

### WARNING

<b>WARNING (TAKE ACTION)</b>
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: 64.5 to 115.5 mm/cm \*  
Very Heavy: 115.6 to 204.4 mm/cm\*  
Extremely Heavy: > 204.4 mm/cm \*

Rain/ Snow \*



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 Strom: Wind speed  $> 220$  kmph ( $> 119$  knots)

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