



Tuesday, November 21, 2023
Time of Issue: 0800 hours IST
(MORNING)

ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

Significant Weather Features

Weather Systems and Forecast & Warnings during next 5 days:

- ❖ A trough in easterly at mean sea level runs from Sri Lanka to Southwest & adjoining Westcentral Bay of Bengal.
- ❖ An upper air Cyclonic Circulation lies over Comorin area and another Cyclonic Circulation lies over Southwest Bay of Bengal off Tamil Nadu coast in the lower tropospheric levels.
- ❖ Under the influence of above meteorological conditions:
 - ✓ Light to moderate rainfall at many places with **isolated heavy rainfall** is very likely over Tamil Nadu and Kerala & Mahe during 21st – 25th; over Coastal Andhra Pradesh on 21st and over South Interior Karnataka during 22nd – 25th November, 2023.
 - ✓ **Isolated very heavy rainfall also likely over Tamil Nadu and Kerala on 22nd & 23rd November, 2023.**

No significant weather likely over rest parts of the country.



Main Weather Observations:

- ❖ **Rainfall distribution** (from 0830 hours IST to 1730 hours IST of yesterday): **at isolated places** over Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Odisha, Coastal Andhra Pradesh & Yanam and Tamil Nadu, Puducherry & Karaikal.
- ❖ **Significant rainfall recorded** (from 0830 hours IST to 1730 hours IST of yesterday) (in cm):
Tamil Nadu: Puzhal & Tiruvallur-2 each, Ennore Port, Vilivakkam & Kanchipuram-1 each;
Coastal Andhra Pradesh: Nellore-2; **Manipur:** Ukhrul-1.
- ❖ **Minimum Temperature Departures (as on 20-11-2023):** Minimum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at many places over Madhya Maharashtra; at a few places over Konkan & Goa; **above normal (1.6°C to 3.0°C)** at most places over Punjab and Coastal Andhra Pradesh & Yanam; at many places over Chhattisgarh, Jharkhand, Bihar and East Uttar Pradesh; at a few places over Himachal Pradesh, Rajasthan, Gujarat state, Madhya Pradesh, Vidarbha, North Interior Karnataka, Telangana, Rayalaseema and Nagaland, Manipur, Mizoram & Tripura and at isolated places over Haryana-Chandigarh-Delhi, Uttarakhand, West Bengal & Sikkim, Assam & Meghalaya and Arunachal Pradesh. They were **below normal (-1.6°C to -3.0°C)** at isolated places over West Uttar Pradesh and **near normal** over rest parts of the country. Yesterday, **the lowest minimum temperature of 10.6°C** was reported at **Meerut (West Uttar Pradesh)** over the plains of the country.
- ❖ **Maximum Temperature Departures (as on 20-11-2023):** Maximum temperatures were **above normal (1.6°C to 3.0°C)** at most places over Arunachal Pradesh and Assam & Meghalaya; at many places over Himachal Pradesh; at a few places over Nagaland, Manipur, Mizoram & Tripura, East Madhya Pradesh, Chhattisgarh and Vidarbha and at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Uttarakhand, East Uttar Pradesh, Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim, Odisha, Marathwada, Gujarat state, Konkan & Goa, Interior Karnataka, Rayalaseema, Kerala & Mahe and Tamil Nadu, Puducherry & Karaikal. They were **below normal (-1.6°C to -3.0°C)** at isolated places over Rajasthan and Haryana-Chandigarh-Delhi and **near normal** over rest parts of the country. Yesterday, the highest **maximum temperature of 36.6°C** was reported at **Dahanu (Konkan & Goa)**.



Meteorological Analysis (Based on 0530 hours IST)

- ❖ The upper air **Cyclonic Circulation** over Comorin area & neighbourhood extending upto 3.1 km above mean sea level persists.
- ❖ The trough in easterly at mean sea level from Sri Lanka to Southwest & adjoining Westcentral Bay of Bengal persists.
- ❖ The upper air **Cyclonic Circulation** over Southwest Bay of Bengal off Tamil Nadu coast extending upto 3.1 km above mean sea level persists.
- ❖ The **Western Disturbance** as a **Cyclonic Circulation** over Central Pakistan at 3.1 km above mean sea level with the trough aloft roughly along Long. 75°E to the north of Lat. 27°N at 5.8 km above mean sea level persists.
- ❖ A fresh feeble Western Disturbance is likely to affect Western Himalayan Region around 23rd November, 2023.

Weather Forecast for next 7 days (Upto 0830 hours IST of 28th November, 2023)

- ❖ Meteorological sub-division wise detailed 7 days rainfall forecast is given in Table-1.
- ❖ No significant change in minimum temperature over most parts of Northwest India.

Weather Outlook for subsequent 2 days

- ❖ Scattered to fairly widespread light to moderate rainfall likely over parts of south peninsular India, along the west coast, Maharashtra and Islands.
- ❖ Isolated rainfall/snowfall likely over Western Himalayan Region.
- ❖ Mainly dry weather likely to prevail over rest parts of the country.



Table-1

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

* Red color warning does not mean "Red Alert" Red color warning means "Take Action".
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For more details kindly visit <https://mausam.imd.gov.in> or contact: 011-2434-4599
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Fig. 1: Maximum Temperatures

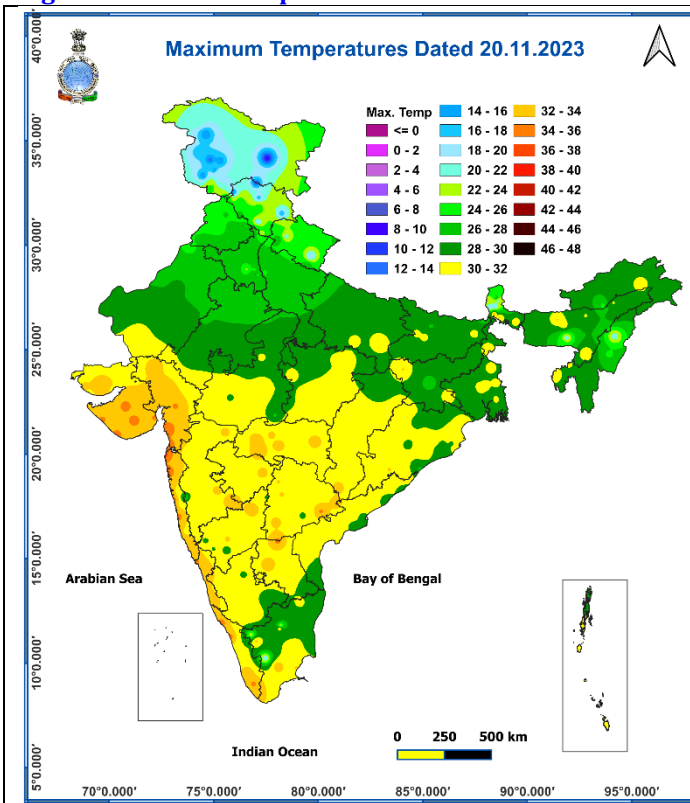


Fig. 2: Departure of Maximum Temperatures

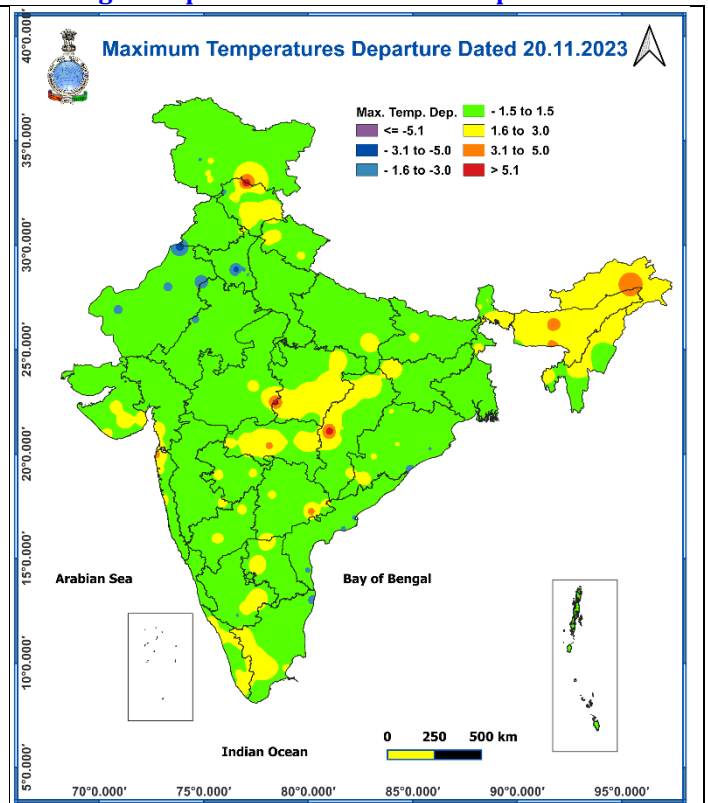


Fig. 3: Minimum Temperatures

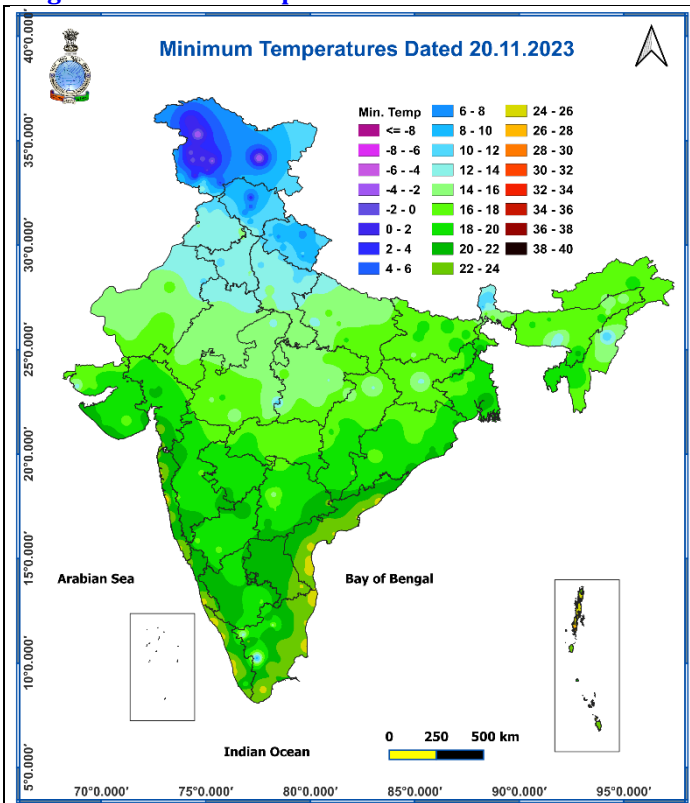


Fig. 4: Departure of Minimum Temperatures

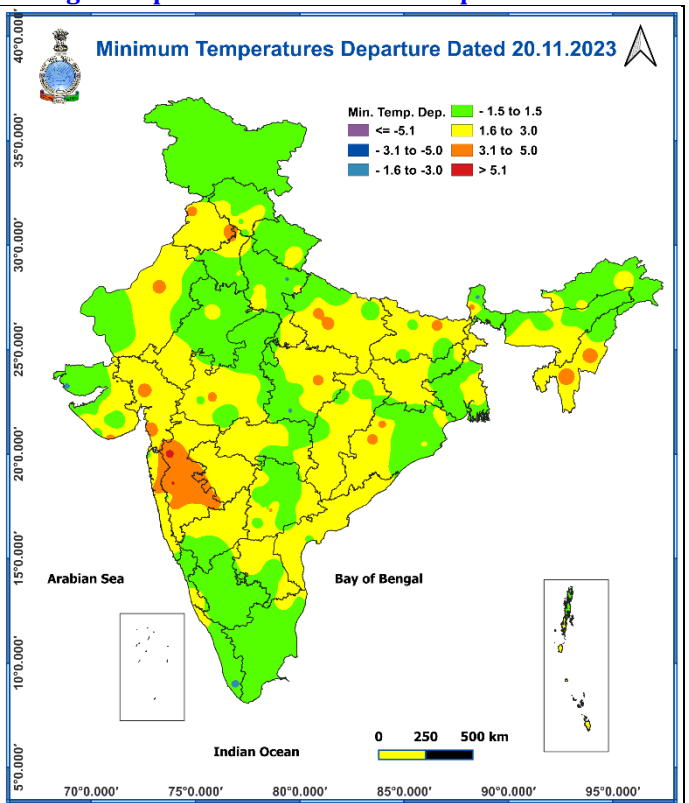
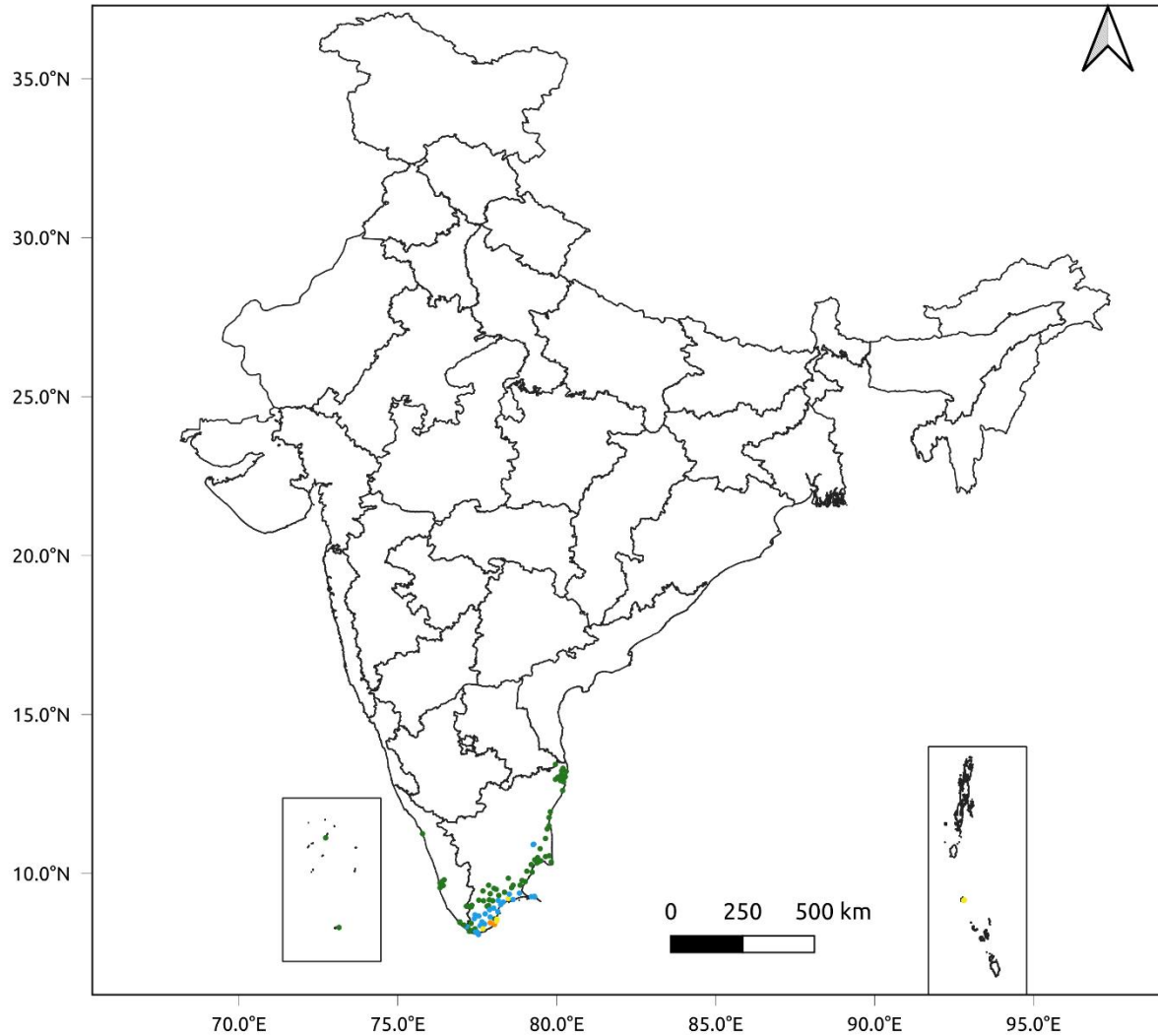


Fig. 5: Accumulated Rainfall (mm) during past 24 hours

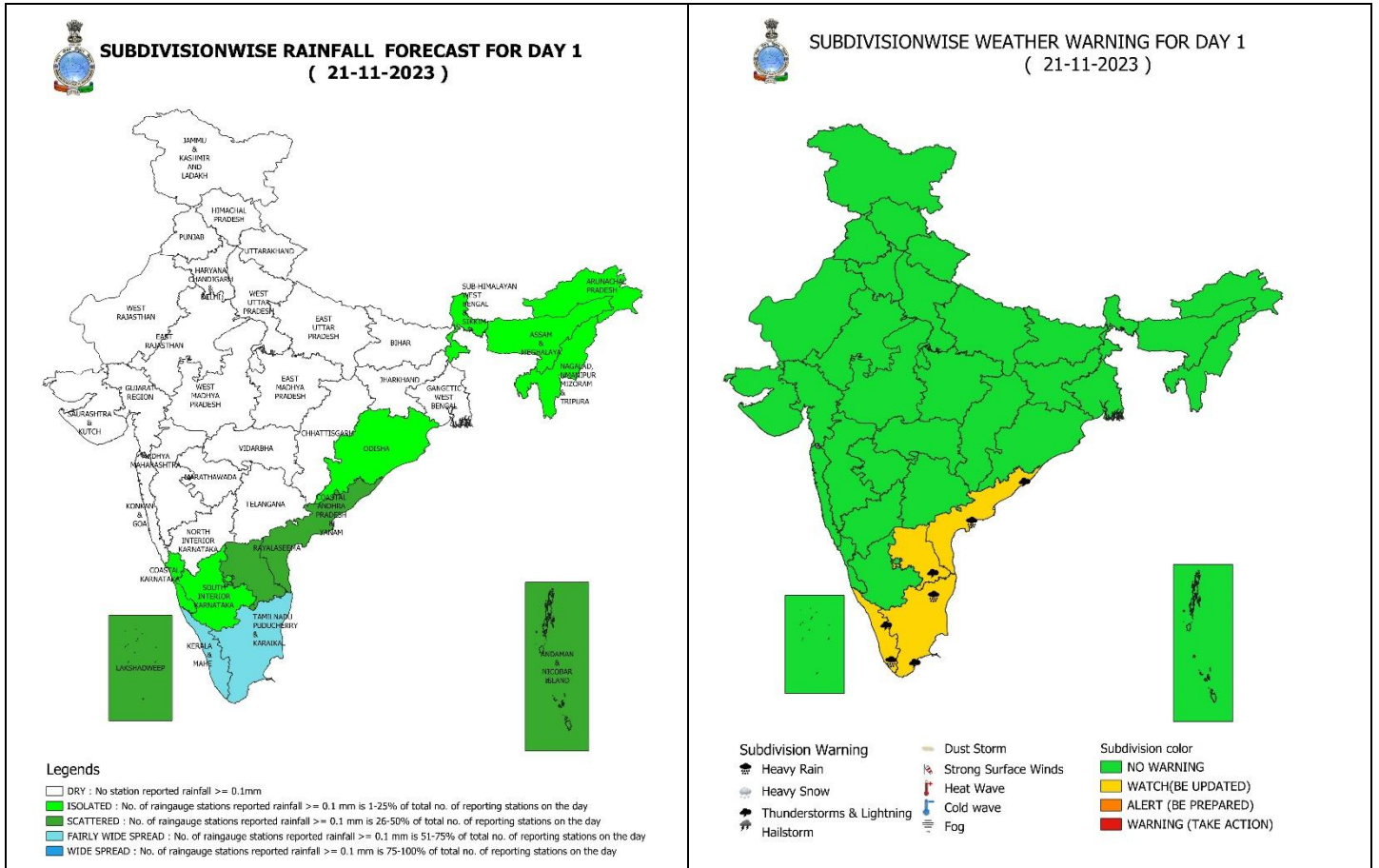


24 Hr cumulative rainfall recorded over different stations during 0830 IST of 19-11-2023 to 0830 IST of 20-11-2023



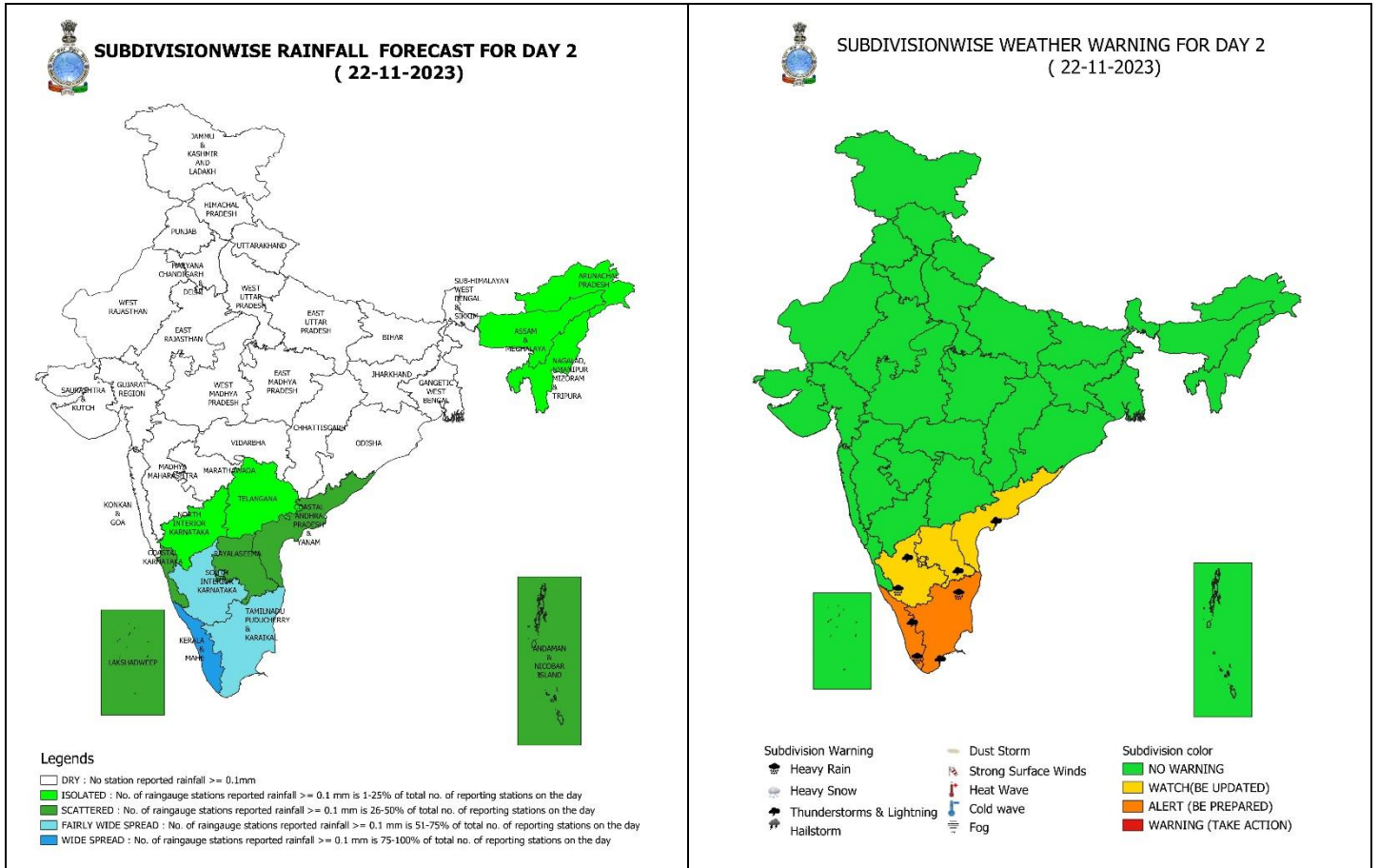
Legends

- 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)



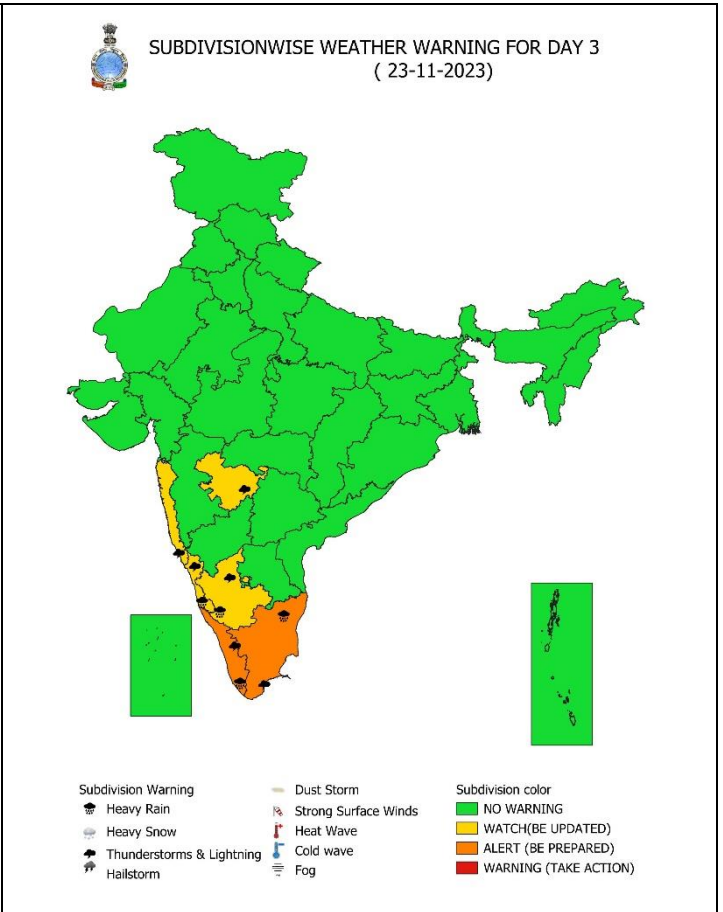
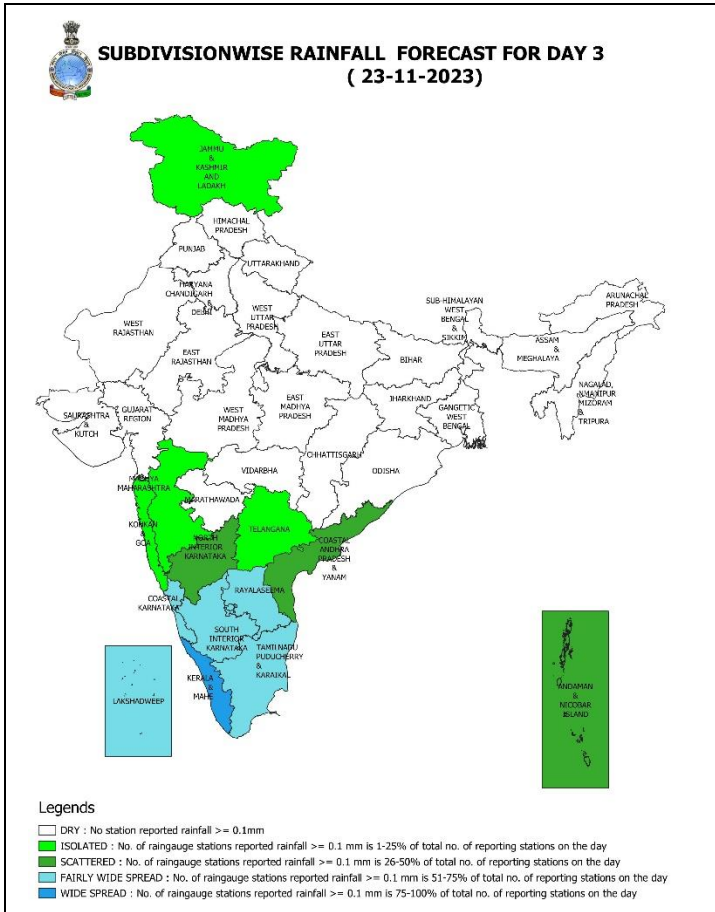
21 November (Day 1):

- ❖ **Heavy rainfall** very likely at isolated places over Coastal Andhra Pradesh, Tamil Nadu, Puducherry & Karaikal and Kerala & Mahe.
- ❖ **Thunderstorm accompanied with lightning & gusty winds (speed 30-40 kmph)** very likely at isolated places over Kerala & Mahe and with **lightning** at isolated places over Coastal Andhra Pradesh & Yanam, Rayalaseema and Tamil Nadu, Puducherry & Karaikal.



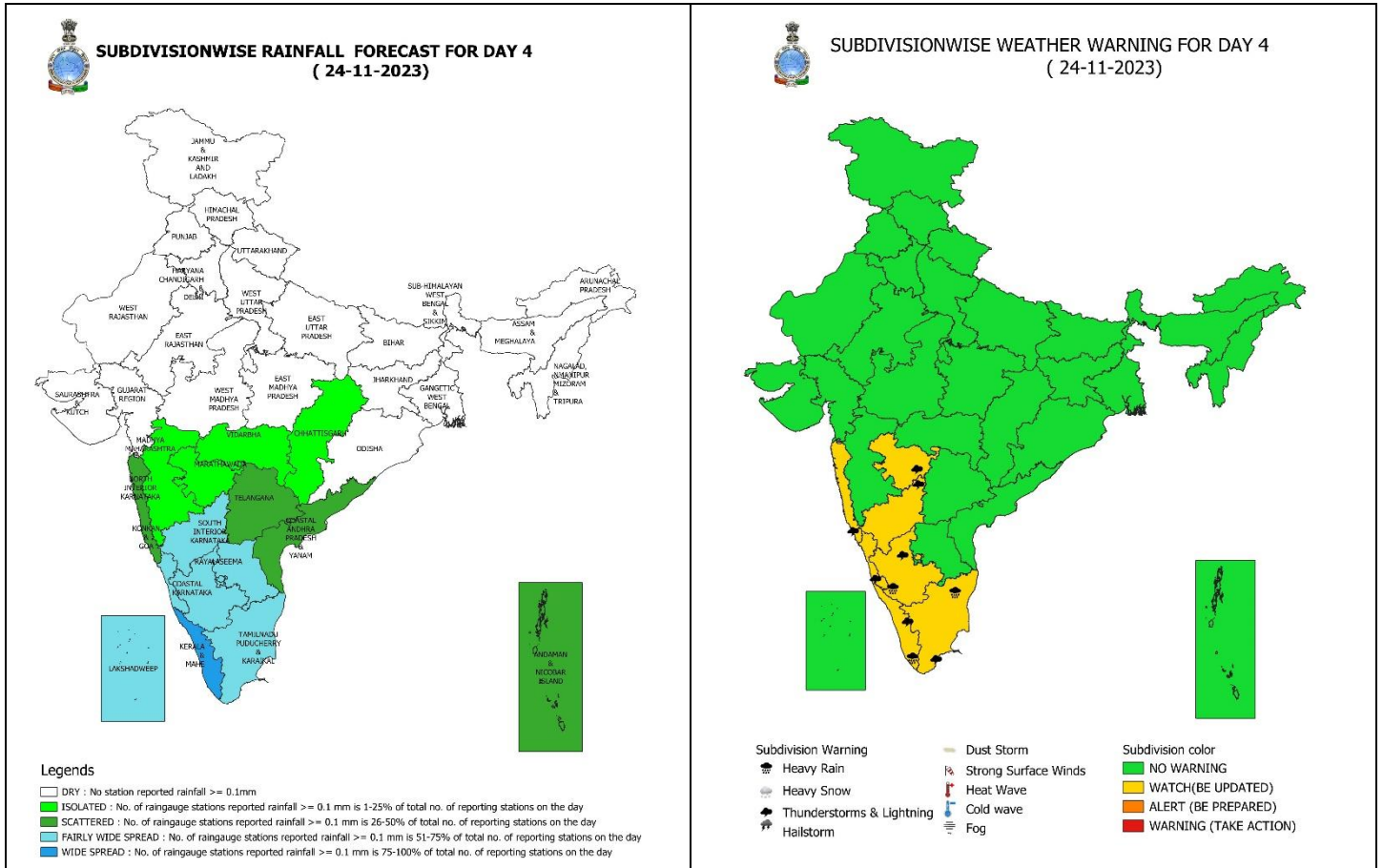
22 November (Day 2):

- ❖ **Heavy to very heavy rainfall** very likely at isolated places over Tamil Nadu, Puducherry & Karaikal and Kerala & Mahe and **heavy rainfall** at isolated places over South Interior Karnataka.
- ❖ **Thunderstorm accompanied with lightning & gusty winds (speed 30-40 kmph)** very likely at isolated places over Kerala & Mahe and with **lightning** at isolated places over Coastal Andhra Pradesh & Yanam, Rayalaseema, South Interior Karnataka and Tamil Nadu, Puducherry & Karaikal.



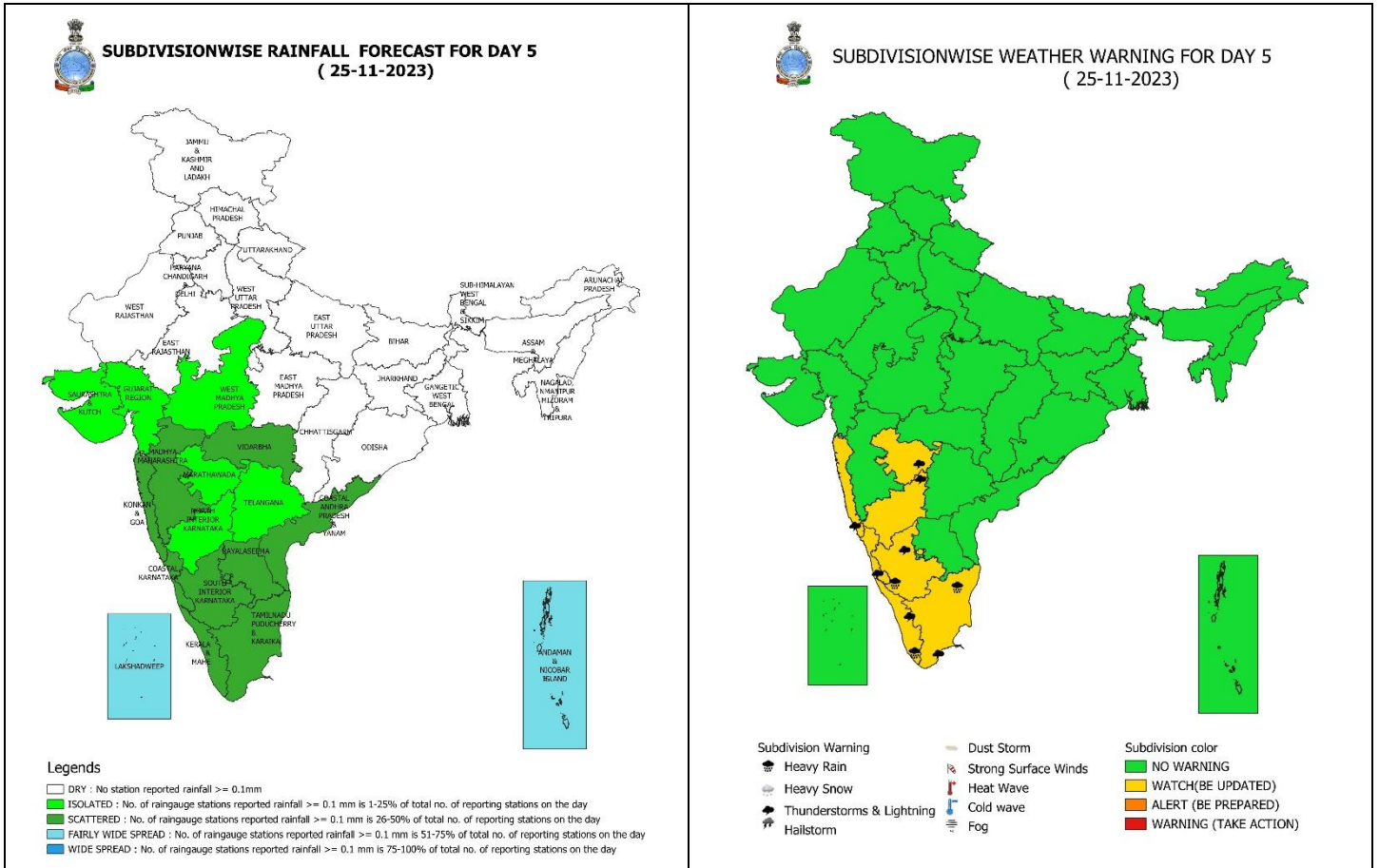
23 November (Day 3):

- ❖ **Heavy to very heavy rainfall** likely at isolated places over Tamil Nadu, Puducherry & Karaikal and Kerala & Mahe and **heavy rainfall** at isolated places over Coastal & South Interior Karnataka.
- ❖ **Thunderstorm accompanied with lightning & gusty winds (speed 30-40 kmph)** likely at isolated places over Kerala & Mahe and with lightning at isolated places over Marathwada, Konkan & Goa, Coastal & South Interior Karnataka and Tamil Nadu, Puducherry & Karaikal.



24 November (Day 4):

- ❖ **Heavy rainfall** likely at isolated places over South Interior Karnataka, Tamil Nadu, Puducherry & Karaikal and Kerala & Mahe.
- ❖ **Thunderstorm accompanied with lightning & gusty winds (speed 30-40 kmph)** likely at isolated places over Kerala & Mahe and with lightning at isolated places over Marathwada, Konkan & Goa, Karnataka and Tamil Nadu, Puducherry & Karaikal.



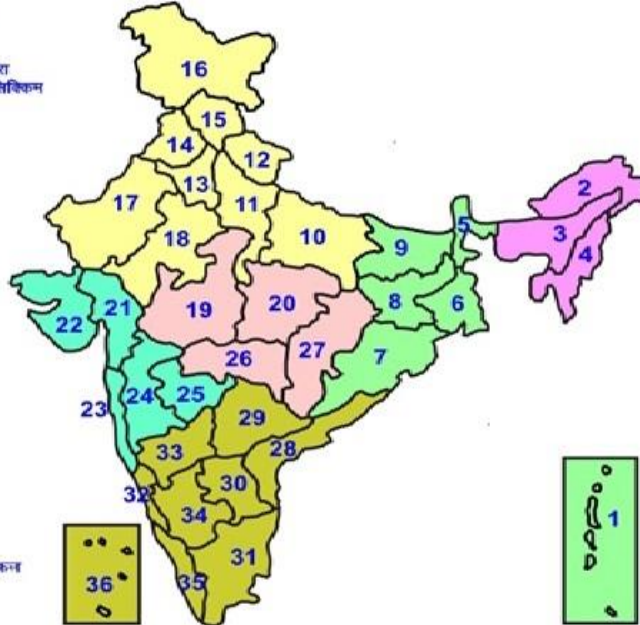
25 November (Day 5):

- ❖ **Heavy rainfall** likely at isolated places over South Interior Karnataka, Tamil Nadu, Puducherry & Karaikal and Kerala & Mahe.
- ❖ **Thunderstorm accompanied with lightning & gusty winds (speed 30-40 kmph)** likely at isolated places over Kerala & Mahe and with lightning at isolated places over Marathwada, Konkan & Goa, Karnataka and Tamil Nadu, Puducherry & Karaikal.



LEGENDS

- 1 अंडमान और निकोबार द्वीप समूह
- 2 अरुणाचल प्रदेश
- 3 असम और मेघालय
- 4 नागालैंड मनीपुर मीजोरम 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 एवं लद्दाख
- 17 पश्चिम राजस्थान
- 18 पूर्वी राजस्थान
- 19 पश्चिम मध्य प्रदेश
- 20 पूर्वी मध्य प्रदेश
- 21 गुजरात
- 22 सौराष्ट्र
- 23 कोंकण
- 24 मध्य महाराष्ट्र
- 25 महाराष्ट्र
- 26 विदर्भ
- 27 छत्तीसगढ़
- 28 तटीय आंध्र प्रदेश एवं यनम
- 29 तेलंगाना
- 30 चण्डीगढ़
- 31 तमिलनाडु, पुदुचेरी एवं कराईकल
- 32 तटिय कर्नाटक
- 33 आंतरिक उत्तरी कर्नाटक
- 34 आंतरिक दक्षिणी कर्नाटक
- 35 केरल एवं 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. Marathwada
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

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°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 < 1km

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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