

Thursday, September 19, 2024
Time of Issue: 0745 hours IST
(MORNING)

ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

Significant Weather Features:

Weather Systems:

- ✓ The **Low Pressure Area** over central parts of north Madhya Pradesh & neighbourhood has become less marked. However, associated **cyclonic circulation** lay over northwest Madhya Pradesh and neighbourhood and extends upto middle tropospheric levels.
- ✓ The **monsoon trough** is close to its normal position at mean sea level.

Forecast & Warnings (upto 7 days):

Central India:

- ✓ Scattered to Fairly Widespread light to moderate rainfall very likely over Madhya Pradesh, Vidarbha, Chhattisgarh during the week.
- ✓ Isolated **heavy rainfall** very likely over West Madhya Pradesh on 24th & 25th; East Madhya Pradesh during 23rd-25th and over Chhattisgarh during 22nd-25th September.

Northwest India:

- ✓ Isolated to Scattered light rainfall over the region during the week.
- ✓ Isolated **heavy rainfall** very likely over Uttarakhand on 24th & 25th September.

East & Northeast India:

- ✓ Fairly widespread to Widespread light/moderate rainfall very likely over Andaman & Nicobar Islands; Scattered to Fairly widespread light to moderate rainfall very likely over Assam & Meghalaya & Nagaland, Manipur, Mizoram & Tripura; Isolated to scattered light/moderate rainfall very likely over remaining East India & Arunachal Pradesh during the week.
- ✓ Isolated **heavy rainfall** very likely over Odisha on 22nd & 23rd; Assam & Meghalaya on 21st & 22nd; Nagaland, Manipur, Mizoram & Tripura during 21st-25th September.

West & South Peninsular India:

- ✓ Fairly Widespread to Widespread light/moderate rainfall very likely over Konkan & Goa; Isolated to scattered light/moderate rainfall very likely over remaining region during the week.
- ✓ **Hot and Humid Weather** very likely over Tamil Nadu, Puducherry & Karaikal on 19th September.

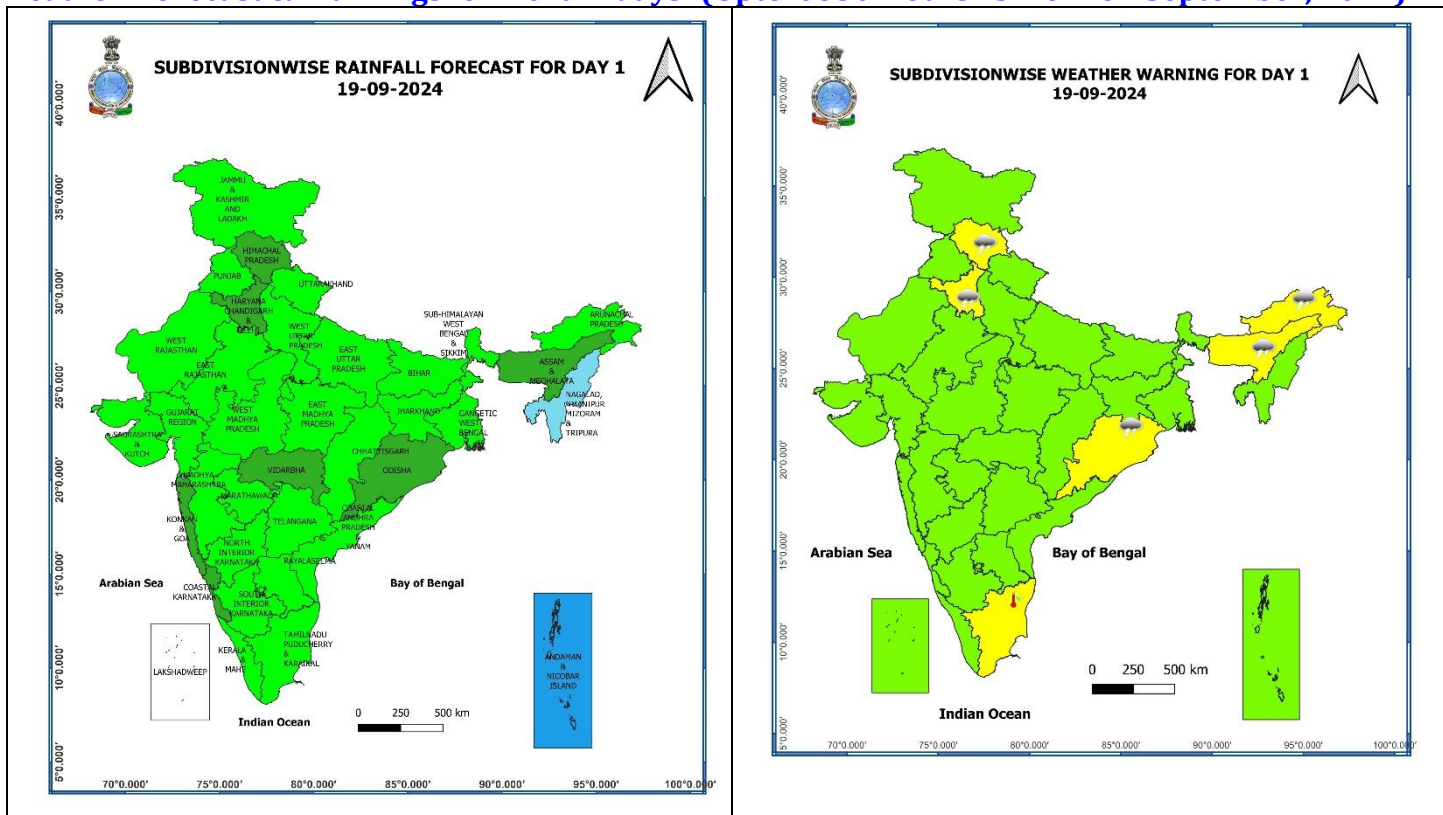
Main Weather Observations:

- ❖ **Rainfall distribution** (from 0830 hours IST to 1730 hours IST of yesterday): **at many places** over Uttarakhand; **at a few places** over Haryana-Chandigarh-Delhi, Uttar Pradesh, Odisha, Kerala & Mahe; **at isolated places** over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, West Rajasthan, Madhya Pradesh, Gujarat Region, Gangetic West Bengal, Nagaland, Manipur, Mizoram & Tripura, Assam & Meghalaya, Chhattisgarh, Coastal Andhra Pradesh & Yanam, Konkan & Goa.
- ❖ **Significant amount of rainfall** (from 0830 hours IST to 1730 hours IST of yesterday) (in cm): **West Madhya Pradesh:** Gwalior 5, Shivpuri 2; **West Uttar Pradesh:** Agra 7, Aligarh 6; **Himachal Pradesh:** Kalpa 2.
- ❖ **Minimum Temperature Departures (as on 18-09-2024):** Minimum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Tamil Nadu, Puducherry & Karaikal, Coastal Andhra Pradesh & Yanam; **above normal (1.6°C to 3.0°C)** at isolated places over Vidarbha East Rajasthan, Rayalaseema, Assam & Meghalaya, Arunachal Pradesh, Punjab, Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad. These were **below normal (-1.6°C to -3.0°C)** at isolated places over Gangetic West Bengal, East Madhya Pradesh and Madhya Maharashtra and **near normal** over rest parts of the country. Yesterday, **the lowest minimum temperature of 18.0°C** was reported at **Rajgarh (West Madhya Pradesh)** over the plains of the country. **(Fig.4)**
- ❖ **Maximum Temperature Departures (as on 18-09-2024):** Maximum temperatures were **markedly above normal (5.1°C or more)** at isolated places over Assam & Meghalaya; **appreciably above normal (3.1°C to 5.0°C)** at a few places over Coastal Andhra Pradesh & Yanam; at isolated places over Jammu division, Konkan & Goa, Telangana and Kerala & Mahe; **above normal (1.6°C to 3.0°C)** at isolated places over Saurashtra & Kutch, West Bengal & Sikkim, Madhya Maharashtra, Marathwada, Chhattisgarh. These were **markedly below normal (-5.1°C or less)** at few places over East Madhya Pradesh and at isolated places over Madhya Pradesh, Haryana-Chandigarh-Delhi; **appreciably below normal (-3.1°C to -5.0°C)** at isolated places over Himachal Pradesh, Uttarakhand; **below normal (-1.6°C to -3.0°C)** at isolated places over Rajasthan, East Uttar Pradesh, Odisha and **near normal** over rest parts of the country. Yesterday, **the highest Maximum Temperature of 40.3°C** was reported at **Madurai (Tamil Nadu)** over the country. **(Fig. 2)**

Meteorological Analysis (Based on 0530 hours IST)

- ❖ The **Low Pressure Area** over central parts of north Madhya Pradesh & neighbourhood has become less marked. However, associated **cyclonic circulation** lay over northwest Madhya Pradesh and neighbourhood and extends upto middle tropospheric levels.
- ❖ The **Monsoon trough** at mean sea level now passes through Bikaner, Gwalior, Daltanganj, Ranchi, Digha and thence southeastwards to eastcentral Bay of Bengal.
- ❖ The **Western Disturbance** as a trough between middle tropospheric westerlies with its axis at 5.8 km above mean sea level roughly along Long. 72°E to the north of Lat. 30°N persists.
- ❖ The **cyclonic circulation** over north Punjab & neighbourhood at 1.5 km above mean sea level persists.

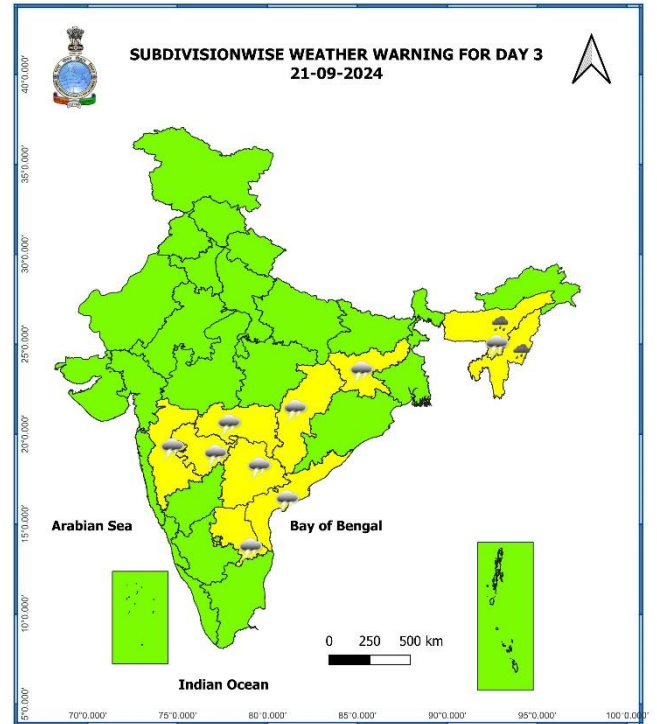
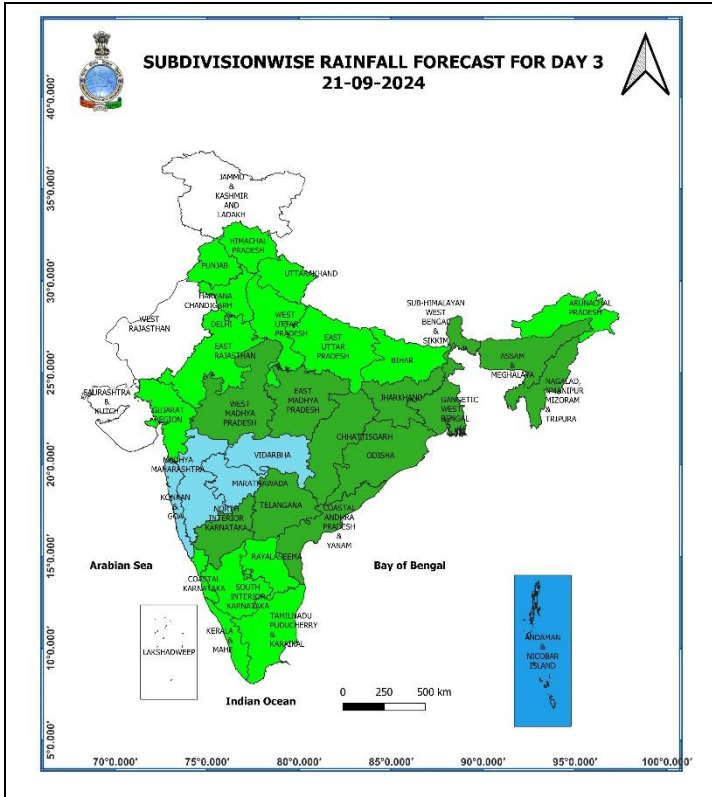
Weather Forecast & Warnings for next 7 days (Upto 0830 hours IST of 26th September, 2024)



19 September (Day 1):

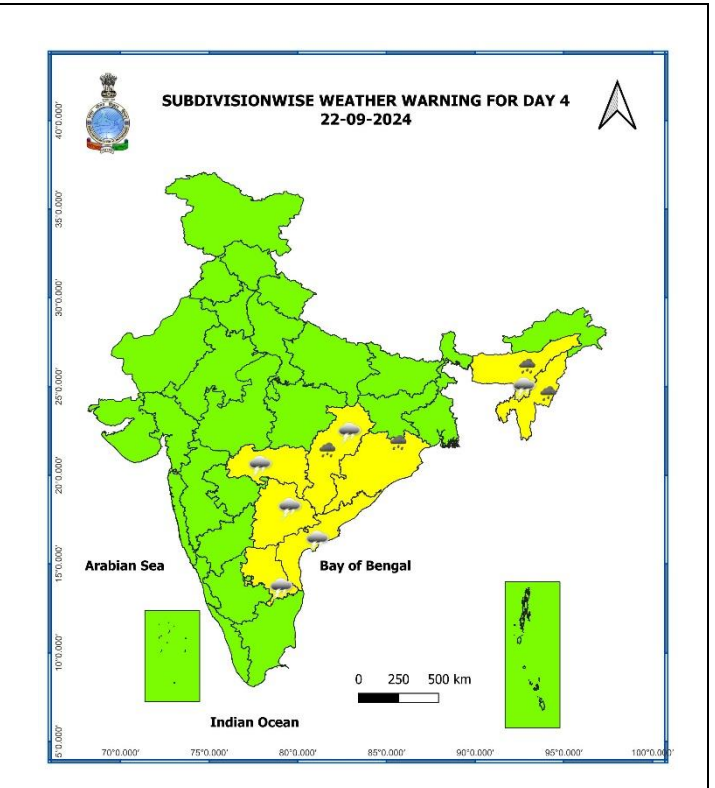
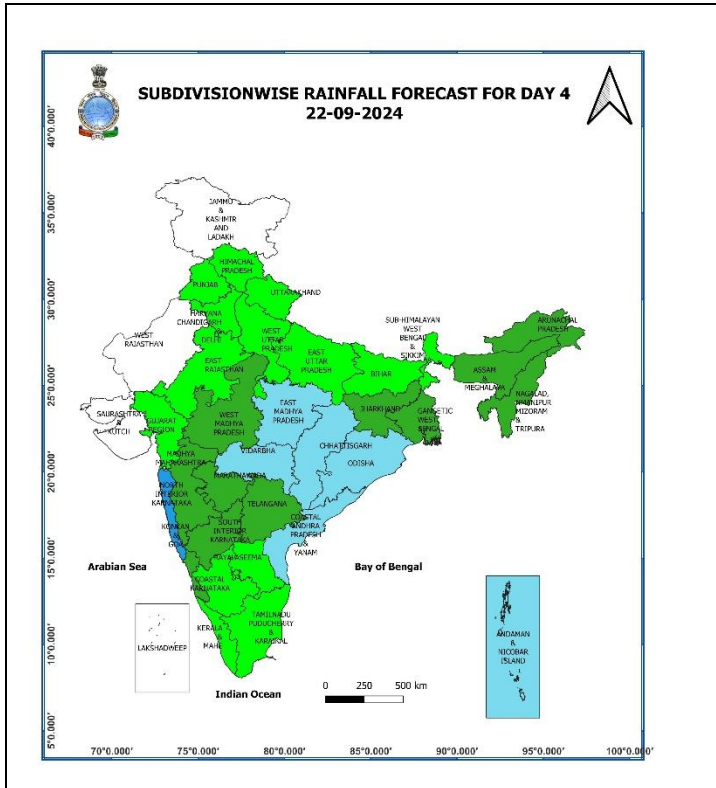
- ❖ **Thunderstorm accompanied with lightning** very likely at isolated places over Himachal Pradesh, Haryana-Chandigarh-Delhi, Odisha, Arunachal Pradesh, Assam & Meghalaya, and Tamil Nadu, Puducherry & Karaikal.
- ❖ **Hot and Humid weather** very likely at isolated places over Tamil Nadu, Puducherry & Karaikal.
- ❖ **Squally weather with wind speed reaching 35 kmph to 45 kmph gusting to 55 kmph** very likely to prevail few parts of westcentral adjoining southwest Arabian sea over gulf of Mannar, off Sri Lanka coast, most parts of south Bay of Bengal. **Squally winds with speed reaching 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest Arabian sea adjoining west central Arabian sea along and off Somalia coast. Fishermen are advised not to venture into these areas.

* 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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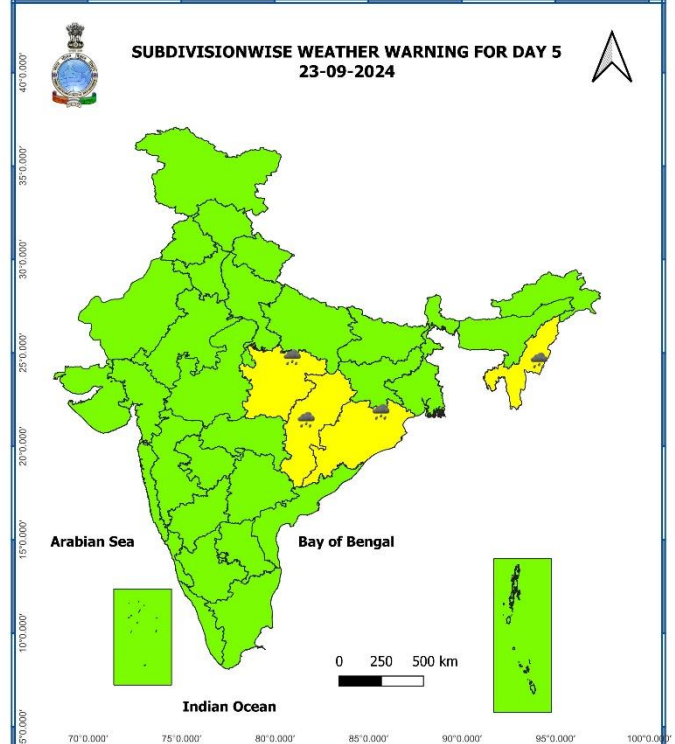
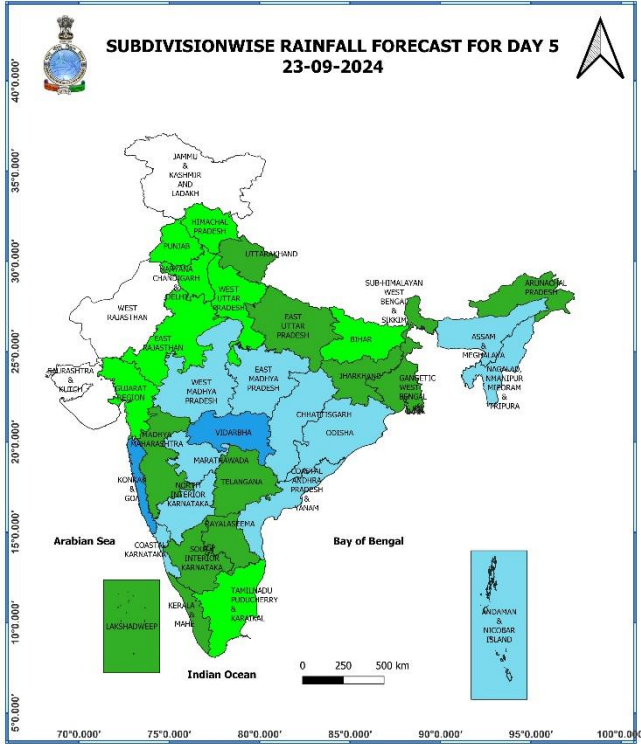
21 September (Day 3):

- ❖ **Heavy rainfall (≥ 7 cm)** very likely at isolated places over Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura.
- ❖ **Thunderstorm accompanied with lighting and gusty winds (speed reaching 30-40 kmph)** very likely at isolated places over Telangana; **Thunderstorm accompanied with lightning** likely at isolated places over Vidarbha, Chhattisgarh, Jharkhand, Madhya Maharashtra, Marathwada, Assam & Meghalaya, Rayalaseema and Coastal Andhra Pradesh & Yanam.
- ❖ **Squally weather with wind speed reaching 35 kmph to 45 kmph gusting to 55 kmph** very likely to prevail over gulf of Mannar, off Sri Lanka coast, many parts of south Bay of Bengal. **Squally winds with speed reaching 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest Arabian sea adjoining west central Arabian sea along and off Somalia coast. Fishermen are advised not to venture into these areas.



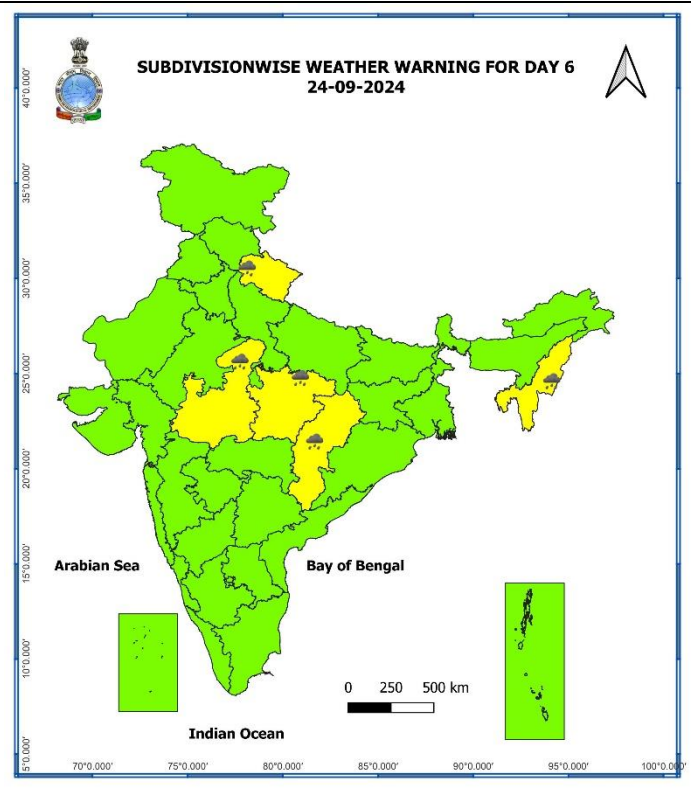
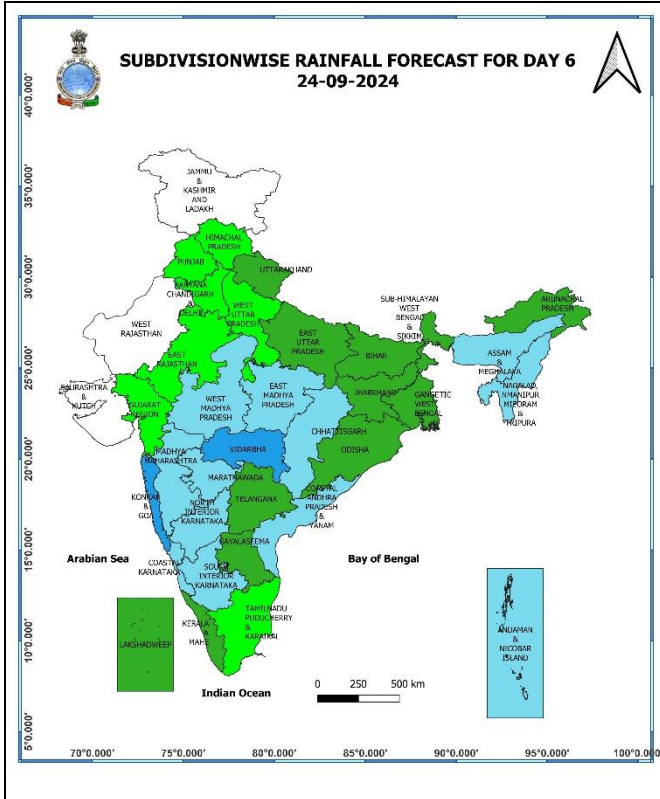
22 September (Day 4):

- ❖ **Heavy rainfall (≥ 7 cm)** at isolated places over Chhattisgarh, Odisha, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura.
- ❖ **Thunderstorm accompanied with lighting and gusty winds (speed reaching 30-40 kmph)** very likely at isolated places over Telangana; **Thunderstorm accompanied with lightning** likely at isolated places over Vidarbha, Chhattisgarh, Assam & Meghalaya, Rayalaseema and Coastal Andhra Pradesh & Yanam.
- ❖ **Squally weather with wind speed reaching 35 kmph to 45 kmph gusting to 55 kmph** likely to prevail over gulf of Mannar, off Sri Lanka coast, many parts of south Bay of Bengal. **Squally winds with speed reaching 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest Arabian sea adjoining west central Arabian sea along and off Somalia coast. Fishermen are advised not to venture into these areas.



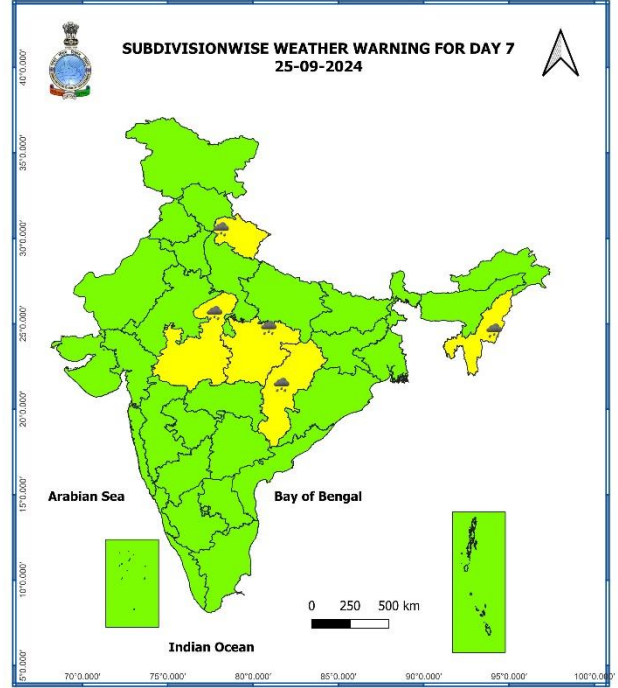
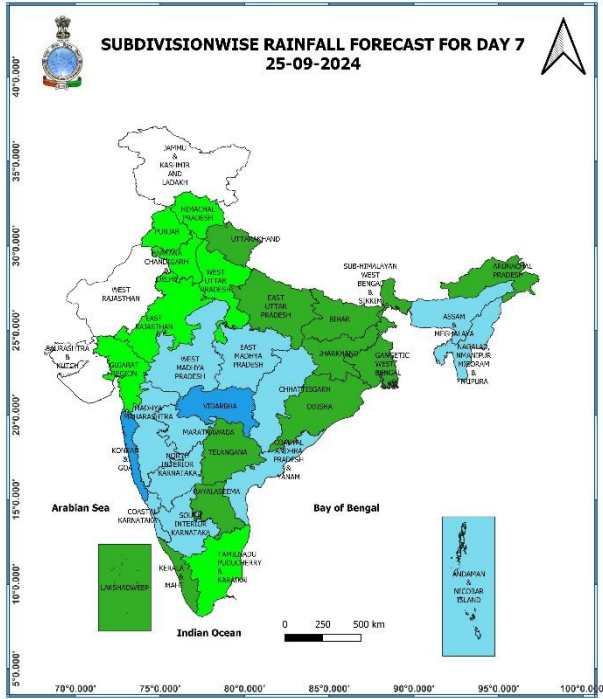
23 September (Day 5):

- ❖ **Heavy rainfall (≥ 7 cm)** likely at isolated places over East Madhya Pradesh, Chhattisgarh, Odisha, Nagaland, Manipur, Mizoram & Tripura.



24 September (Day 6):

❖ **Heavy rainfall (≥ 7 cm)** likely at isolated places over Uttarakhand, Madhya Pradesh, Chhattisgarh, Nagaland, Manipur, Mizoram & Tripura.



25 September (Day 7):

- ❖ **Heavy rainfall (≥ 7 cm)** likely at isolated places over Uttarakhand, Madhya Pradesh, Chhattisgarh, Nagaland, Manipur, Mizoram & Tripura.

Weather Outlook for subsequent 3 days (During 26th September– 28th September, 2024)

- ❖ Fairly widespread to widespread rainfall likely over most parts of the country except Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Rajasthan, Gujarat state, Punjab, Tamil Nadu, Puducherry & Karaikal where isolated to scattered rainfall likely.

- Action may be taken based on **ORANGE AND RED** COLOUR warnings.
- Vulnerable regions likely urban and hilly areas action may be initiated for heavy rainfall warning.
- As the lead period increases forecast accuracy decreases.

Flash Flood Guidance:

ANNEXURE I

24 hours Outlook for the Flash Flood Risk (FFR)
till 0530 IST of 20-09-2024:

No flash flood risk likely during next 24 hours.



Fig. 1: Maximum Temperatures

Fig. 2: Departure of Maximum Temperatures

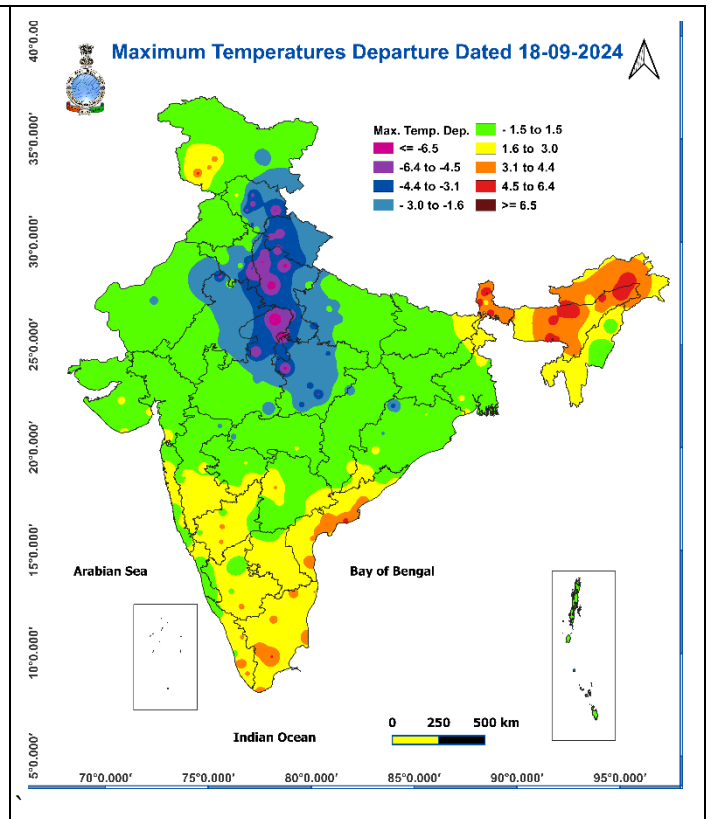
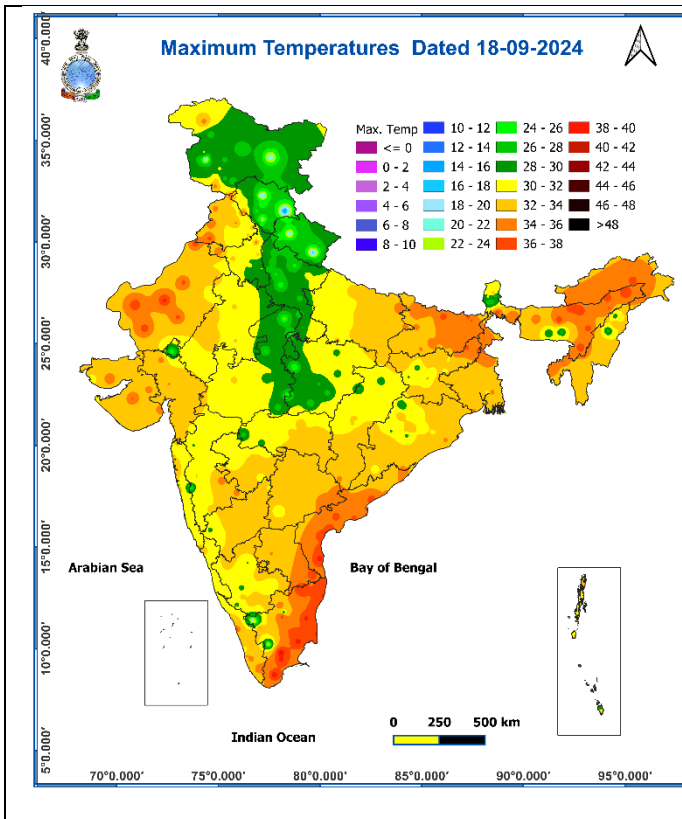


Fig. 3: Minimum Temperatures

Fig. 4: Departure of Minimum Temperatures

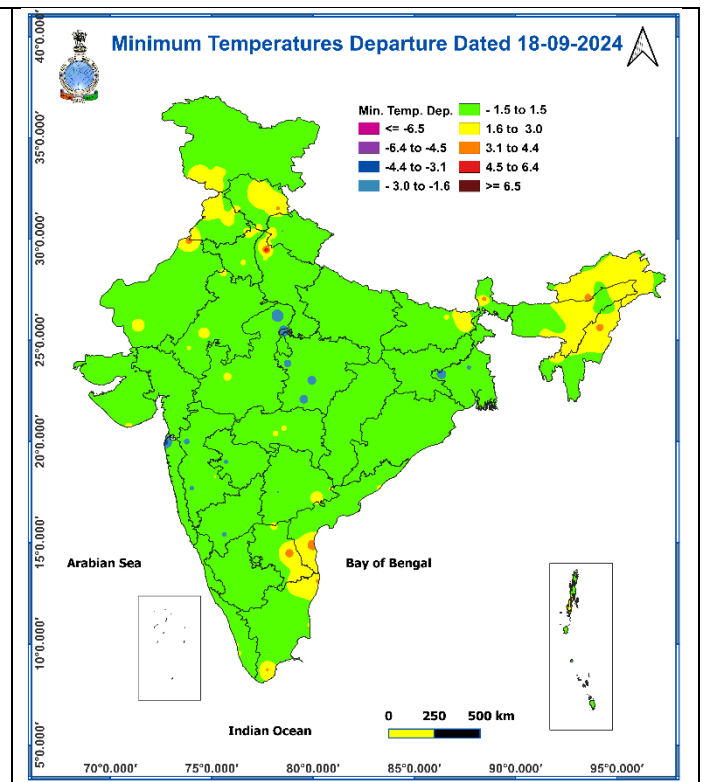
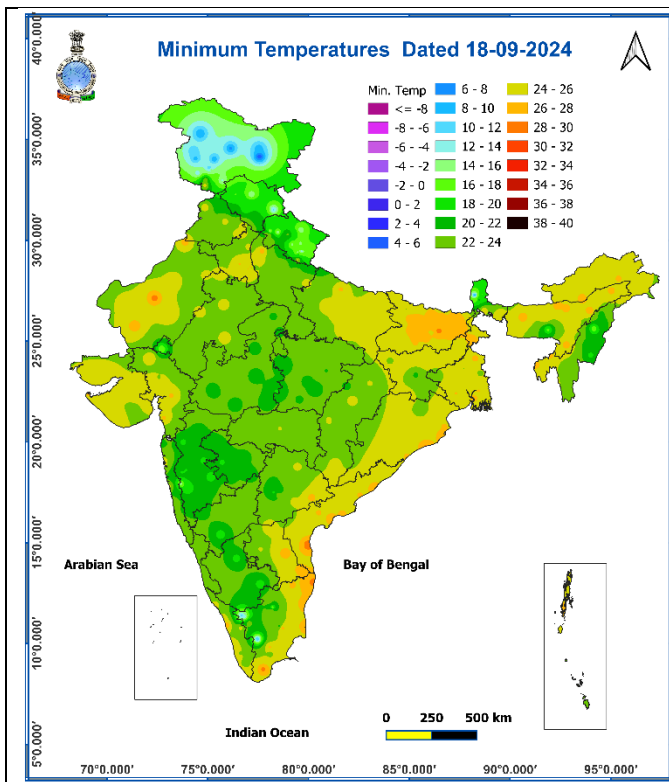
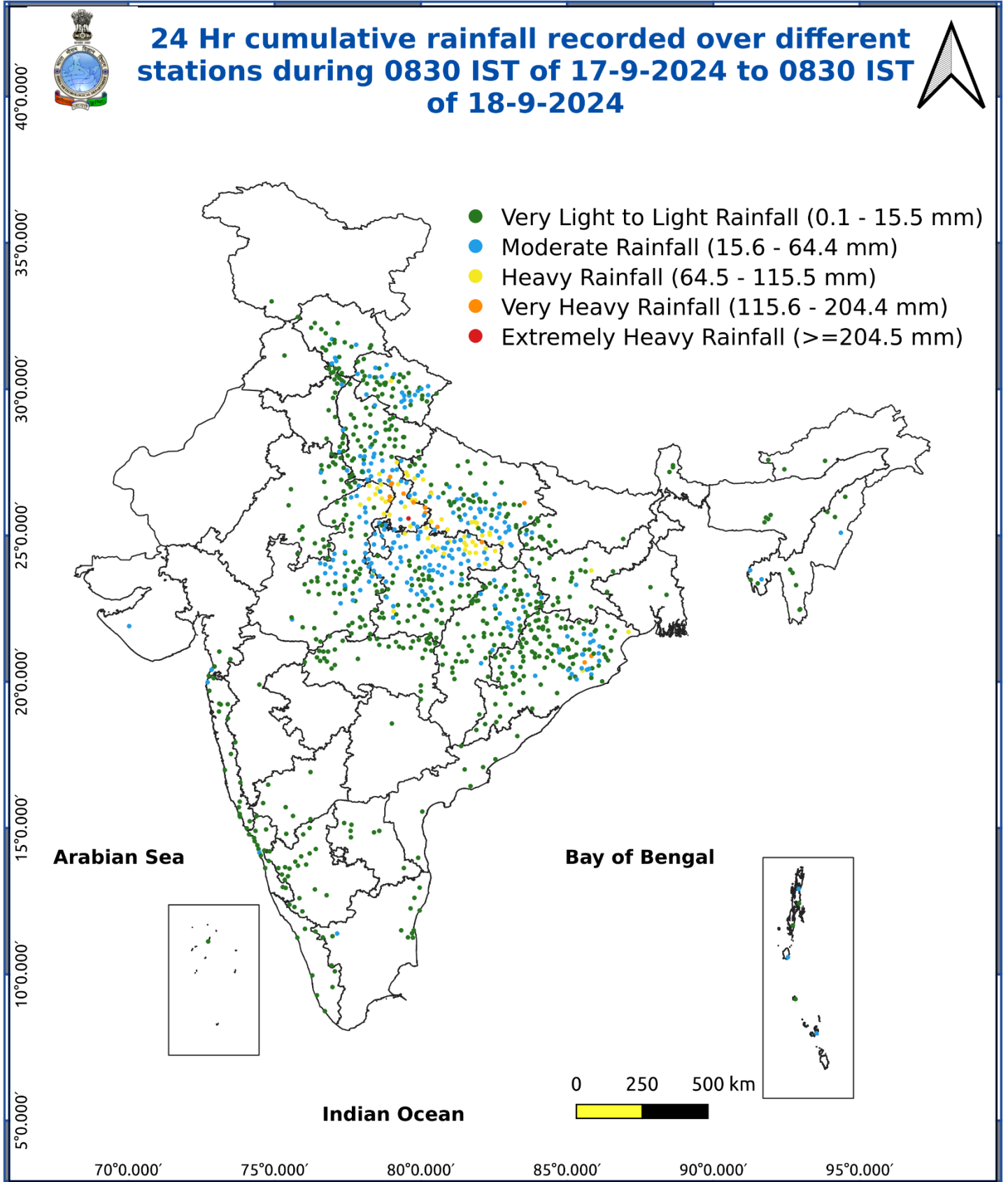


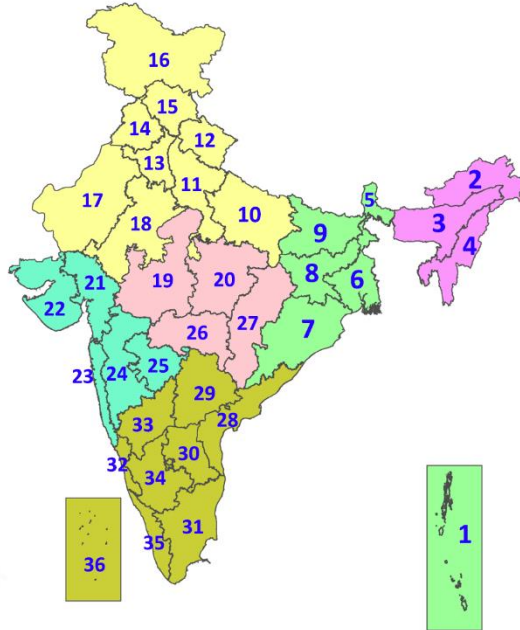
Fig. 5: Accumulated Rainfall (mm) during past 24 hours



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LEGENDS

1. अंडमान और निकोबार द्वीपसमूह
2. अरुणाचल प्रदेश
3. असम और मेघालय
4. नागालैंड, मणिपुर, मिजोरम और त्रिपुरा
5. उप-हिमालयी पश्चिम बंगाल और सिक्किम
6. गंगीय पश्चिम बंगाल
7. ओडिशा
8. झारखंड
9. बिहार
10. पूर्वी उत्तर प्रदेश
11. पश्चिम उत्तर प्रदेश
12. उत्तराखंड
13. हरियाणा, चंडीगढ़ और दिल्ली
14. पंजाब
15. हिमाचल प्रदेश
16. जम्मू और कश्मीर और लद्दाख
17. पश्चिम राजस्थान
18. पूर्वी राजस्थान
19. पश्चिम मध्य प्रदेश
20. पूर्वी मध्य प्रदेश
21. गुजरात
22. सौराष्ट्र
23. कोंकण और गोवा
24. मध्य महाराष्ट्र
25. मराठवाड़ा
26. विदर्भ
27. छत्तीसगढ़
28. तटीय आंध्र प्रदेश और यनम
29. तेलंगाना
30. रायलसीमा
31. तमिलनाडु, पुडुचेरी और कराईकल
32. तटीय कर्नाटक
33. आंतरिक उत्तरी कर्नाटक
34. आंतरिक दक्षिणी कर्नाटक
35. केरल और 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, Chandigarh & 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. Vidarbha
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)

- | | | |
|----------------------|----------------------|--------------|
| Fog | Heavy Snow | Cold Wave |
| Heavy Rain | Dust Storm | Cold Day |
| Very Heavy Rain | Heat Wave | Ground Frost |
| Extremely Heavy Rain | Warm Night | |
| Thunder & Lightning | Hot Day | |
| Hailstorm | Hot & Humid | |
| Dust Raising Winds | Strong Surface Winds | |

COLOUR CODED WARNING

No Warning (No Action)
Watch (Be Aware)
Alert (Be Prepared To Take Action)
Warning (Take Action)

Probabilistic Forecast

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

DEFINITION/CRITERIA

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