राष्ट्रीय मौसम पूर्वानुमान केन्द्र
भारत मौसम विज्ञान विभाग
पृथ्वी विज्ञान मंत्रालय

National Weather Forecasting Centre
India Meteorological Department
Ministry of Earth Sciences

Thursday, December 19, 2024
Time of Issue: 0830 hours IST
(MORNING)

ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

Significant Weather Features:

Weather Systems:

- The **well marked low pressure** area over southwest Bay of Bengal at 0530 hours IST of today, the 19th December, 2024 persists. The associated upper cyclonic circulation extending up to 5.8 km above mean sea level persists. The system is likely to move nearly northwestwards towards north Tamil Nadu and south Andhra Pradesh coast during next 24 hours. Thereafter, it is likely to move nearly northwards along Andhra Pradesh coast in subsequent 24 hours.
- A **Western disturbance** as a trough in lower & middle tropospheric westerlies runs roughly along Long. 70°E to the north of Lat. 28°N with an induced circulation in the lower levels over southwest Rajasthan.

Forecast & Warnings (upto 7 days)

- **Coastal Andhra Pradesh:** Isolated **heavy to very heavy rainfall** very likely on 19th December. Isolated **heavy rainfall** likely on 20th December.
- **Rayalaseema**: Isolated **heavy rainfall** very likely on 19th December.

ii. Temperature, Cold Wave and Fog Forecast:

Temperature Conditions during past 24 hours till 0830 hours IST of yesterday

Minimum temperatures were
below 0°C over most parts of Jammu, Kashmir & Ladakh & Himachal Pradesh;
0-6°C over major parts of Punjab, Haryana, north Rajasthan and isolated pockets of Madhya Pradesh, Uttar Pradesh;
6-12°C over remaining parts of Northwest, East, Central and West India.
Yesterday, **the lowest minimum temperature** of **1.8°C** was reported at **Churu (West Rajasthan)** over the plains of the country.
Minimum temperatures had fallen by 2-4°C over most parts of West Rajasthan & risen by 2-3°C over most parts of Telangana, Odisha, Arunachal Pradesh & some parts of south Chhattisgarh & Jharkhand.

Forecast of temperature:

- Gradual fall in minimum temperatures by 2-3°C likely over Western Himalayan region during next 2-4 days.
- No significant change in minimum temperatures likely over plains of Northwest India during next 24 hours and gradual fall by 2-3°C during the subsequent 3 days.
- Rise in minimum temperatures by 3-4°C likely over Central India & Maharashtra during the next 24 hours & no significant change thereafter.
- No significant change in minimum temperatures likely over Gujarat during next 2 days and rise by 2-3 °C during subsequent 2 days.
- Rise in minimum temperatures by 2-3°C likely over East India during next 24 hours and no significant change thereafter.

Cold Wave Warnings:

Cold wave to severe cold wave conditions very likely to prevail in few places over Himachal Pradesh, Punjab during 19th -22nd; isolated parts of East Rajasthan during 19th -21st; West Rajasthan on 20th & 21st December.
Cold wave conditions very likely in isolated pockets over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad during the next 7 days; West Rajasthan on 19th & 22nd, East Rajasthan on 22nd; Himachal Pradesh on 23rd & 24th; Haryana during 19th -22nd December.

Dense Fog Warnings:

Dense fog conditions very likely to prevail during late night/early morning hours in isolated pockets of Punjab, Haryana, Uttar Pradesh on 19th; East Rajasthan, Jharkhand on 20th & 21st December.

Ground Frost Warnings:

Ground Frost conditions very likely in isolated pockets of Himachal Pradesh & East Rajasthan during 19th-22nd December.

Weather forecast (during 19th Dec. to 21th Dec. 2024) over Delhi/NCR

19.12.2024: Mainly clear sky. The predominant surface wind is likely to be from southeast direction with speed less than 04 kmph during morning hours. Dense fog over most of the places with very dense fog isolated places is likely in the morning hours. The wind speed will increase thereafter becoming less than 06 kmph from southeast direction during afternoon. It will decrease thereafter becoming less than 04 kmph from east direction during evening and night. Smog/shallow fog is likely in the evening/night.

20.12.2024: Mainly clear sky. The predominant surface wind is likely to be from southeast direction with speed less than 04 kmph during morning hours. Dense fog over most of the places with very dense fog isolated places is likely in the morning hours. The wind speed will gradually increase becoming 04-06 kmph from north direction during afternoon. It will decrease thereafter becoming less than 04 kmph from variable direction during evening and night. Smog/shallow fog is likely in the evening/night.

21.12.2024: Mainly clear sky. The predominant surface wind is likely to be from north direction with wind speed less than 04 kmph during morning hours. Smog/moderate to dense fog is likely in the morning. The wind speed will increase thereafter becoming 08-10 kmph from northwest direction during afternoon. It will gradually decrease becoming less than 06 kmph from northwest direction during evening and night. Smog/shallow is likely in the evening/night.

Main Weather Observations:

- **Rainfall distribution** (from 0830 hours IST to 1730 hours IST of yesterday): at a few places over Coastal Andhra Pradesh & Yanam; at isolated places over Tamil Nadu, Puducherry & Karaikal, Andaman & Nicobar Islands, Lakshadweep, Rayalaseema;

- **Heavy rainfall observed** (from 0830 hours IST to 1730 hours IST of yesterday): **NIL.**

- **Significant amount of rainfall** (from 0830 hours IST to 1730 hours IST of yesterday): (in cm): **Andaman & Nicobar Islands:** Carnicobar-4; **Tamil Nadu:** Numgambakkam-4, Chennai/Minambakkam-3.

- **Fog conditions observed** (at 0530 hours IST of today): **Very dense Fog** reported in isolated pockets of Punjab; **Shallow to Moderate Fog** in isolated pockets of Delhi and East Uttar Pradesh and **Shallow Fog** in isolated pockets of Jammu & Kashmir, West Madhya Pradesh, West Uttar Pradesh, Bihar and Tripura.

- **Visibility reported** (at 0530 hours IST of today) (in meter): **Jammu & Kashmir**: Srinagar-500; **Punjab**: Amritsar-0; **Delhi**: Safdarjung-200, Palam-500; **West Madhya Pradesh**: Gwalior-500; **West Uttar Pradesh**: Bareilly-500; **East Uttar Pradesh**: Varanasi-200, Sultanpur & Lucknow-500 each; **Bihar**: Patna, Bhagalpur & Purnia-500 each; **Tripura:** Kailashahar-500.

- Yesterday, **Cold Day conditions** were observed in isolated parts of West Rajasthan.

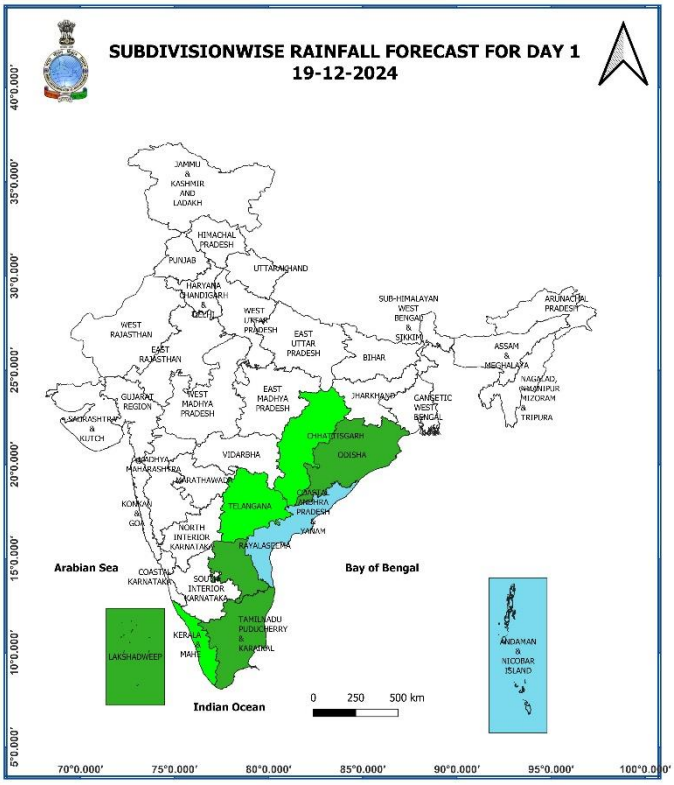
- **Minimum Temperatures Departures (as on 18-12-2024):** Minimum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Rayalaseema Nagaland, Manipur, Mizoram & Tripura; **above normal (1.6°C to 3.1°C)** at isolated places over Bihar, Assam & Meghalaya, Coastal Andhra Pradesh & Yanam, Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe. These were **markedly below normal (-5°C or less)** at isolated places over East Madhya Pradesh, Saurashtra & Kutch, Telangana; **appreciably below normal (-3°C to -5°C)** at a few places over West Rajasthan; at isolated places over Haryana, East Rajasthan, West Madhya Pradesh, North Interior Karnataka, Chhattisgarh; **below normal (-1°C to -3°C)** at a few places over Vidarbha; at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Punjab, Uttar Pradesh, Konkan & Goa, Madhya Maharashtra, Marathwada and near normal over rest parts of the country. Yesterday, **the lowest minimum temperature** of **1.8°C** was reported at **Churu (West Rajasthan)** over the plains of the country.

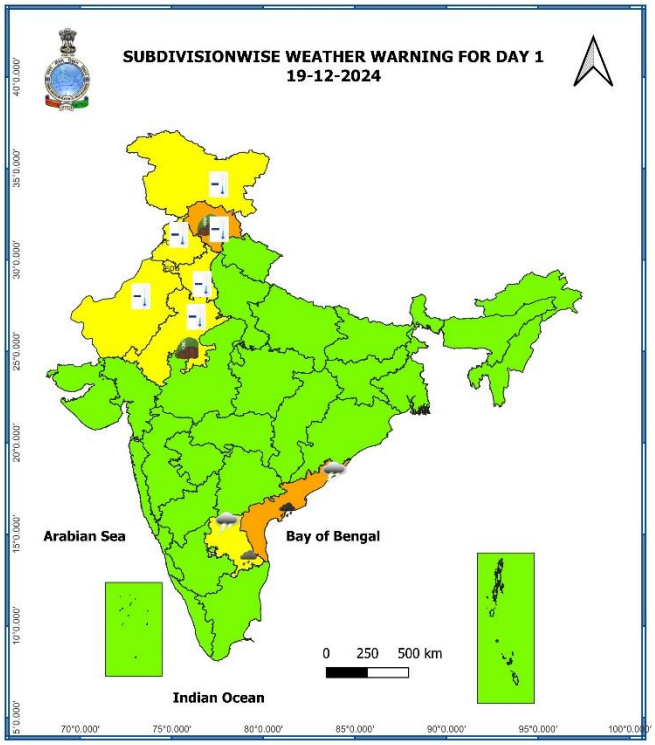
- **Maximum Temperature Departures (as on 18-12-2024):** Maximum temperatures were **above normal (1.6°C to 3.0°C)** at many places over Uttarakhand, East Uttar Pradesh, Bihar; at a few places over Himachal Pradesh; at isolated places over Punjab, Haryana, Odisha, Chhattisgarh, Jharkhand, Gangetic West Bengal, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Vidarbha, Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Sub-Himalayan West Bengal & Sikkim. These were **appreciably below normal (-5.0°C to -3.1°C)** at isolated places over Coastal Andhra Pradesh & Yanam, Rayalaseema, Gujarat state, Rajasthan, Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad and near normal over rest parts of the country. Yesterday, **the highest maximum temperature** of **35.0°C** was reported at **Madurai & Erode (Tamil Nadu)** over the plains of the country. **(Fig. 2)**

Meteorological Analysis (Based on 0530 hours IST)

- The **well marked low pressure area** over southwest Bay of Bengal at 0530 hours IST of today, the 19th December 2024 persists. The associated upper cyclonic circulation extending up to 5.8 km above mean sea level persists. The system is likely to move nearly northwestwards towards north Tamil Nadu and south Andhra Pradesh coast during next 24 hours. Thereafter, it is likely to move nearly northwards along Andhra Pradesh coast in subsequent 24 hours.
- The **Western disturbance** as a trough in lower & middle tropospheric westerlies with its axis at 5.8 km above mean sea level now runs roughly along Long. 70°E to the north of Lat. 28°N.
- The **induced cyclonic circulation** over southwest Rajasthan extending upto 1.5 km above mean sea level persists.
- The **upper air cyclonic circulation** over Bangladesh and neighbourhood extending upto 1.5 km above mean sea level persists.
- **Subtropical westerly Jet Stream with core winds** of the order upto 125 knots at 12.6 km above mean sea level continue to prevails over North India.

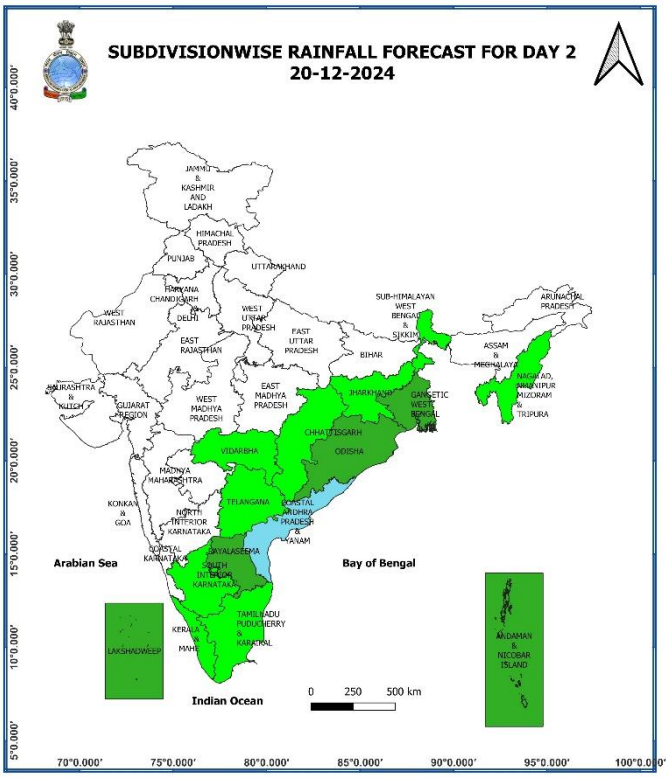
Weather Forecast & Warnings for next 7 days (Upto 0830 hours IST of 26th December, 2024)

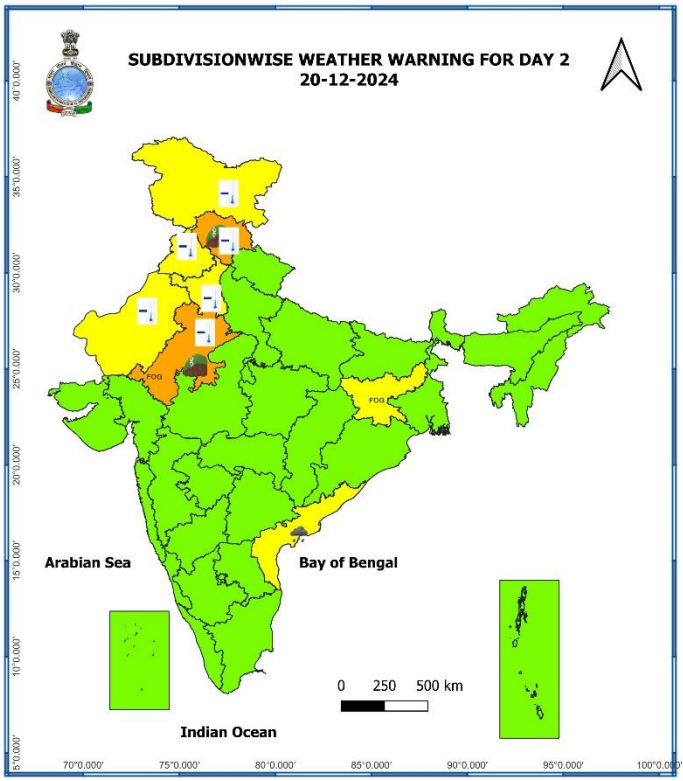




19 December (Day 1):

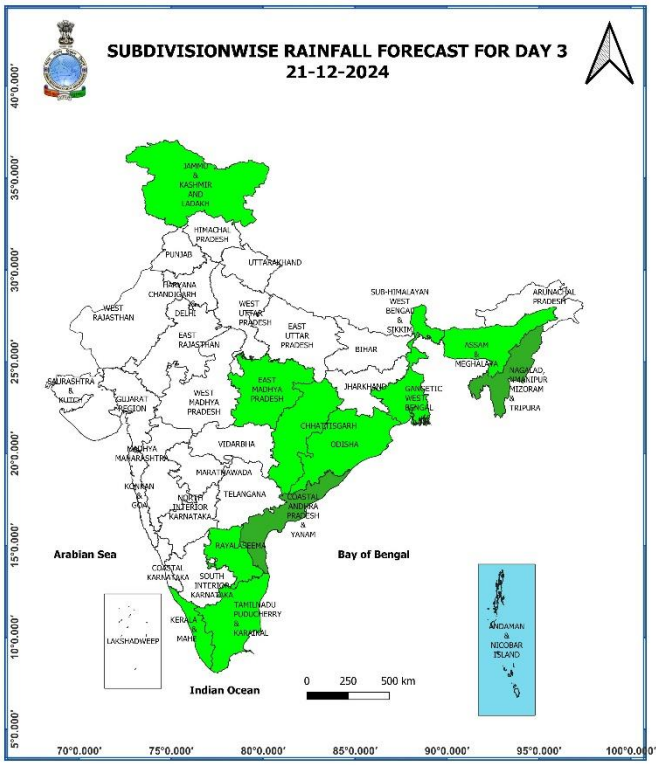
- **Heavy to very heavy rainfall (≥ 12 cm)** very likely at isolated places over Coastal Andhra Pradesh & Yanam**; Heavy rainfall (≥7 cm)** very likely at isolated places over Rayalaseema.
- **Thunderstorm accompanied with lightning** very likely at isolated places over Coastal Andhra Pradesh & Yanam, Rayalaseema.
- **Dense fog** very likely in isolated pockets of Punjab, Haryana-Chandigarh in night/morning hours.
- **Cold Wave to severe cold wave Conditions** likely at isolated places of Himachal Pradesh, Punjab, East Rajasthan; **Cold Wave Conditions** in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Haryana-Chandigarh, West Rajasthan.
- **Ground Frost condition** very likely at isolated places over Himachal Pradesh, East Rajasthan.
- **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevail over Gulf of Mannar, over northern parts of southwest and southern parts of westcentral Bay of Bengal, along and off Tamilnadu, south Andhra Pradesh coasts. Fishermen are advised not to venture into these areas.

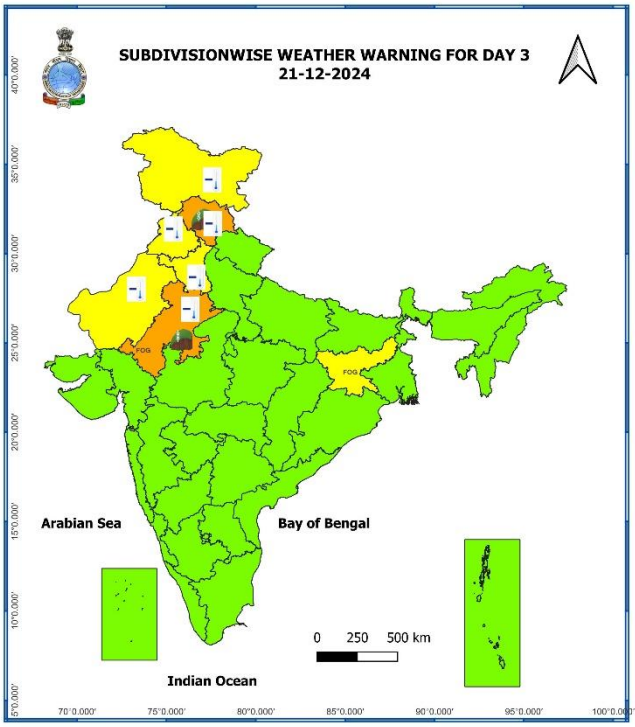




20 December (Day 2):

- **Heavy rainfall (≥7 cm)** very likely at isolated places over Coastal Andhra Pradesh & Yanam.
- **Dense fog** very likely in isolated pockets of East Rajasthan, Jharkhand in night/morning hours.
- **Cold Wave to severe cold wave Conditions** likely at isolated places of Himachal Pradesh, Punjab, Rajasthan; **Cold Wave Conditions** in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Haryana-Chandigarh.
- **Ground Frost condition** very likely at isolated places over Himachal Pradesh, East Rajasthan.
- **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevail along and off north Tamilnadu, Andhra Pradesh coasts and adjoining parts of southwest and westcentral Bay of Bengal. Fishermen are advised not to venture into these areas.





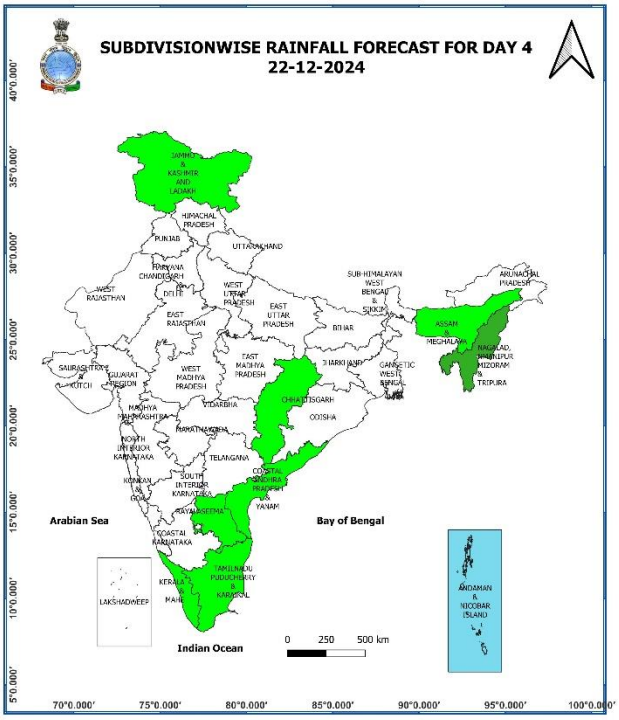
21 December (Day 3):

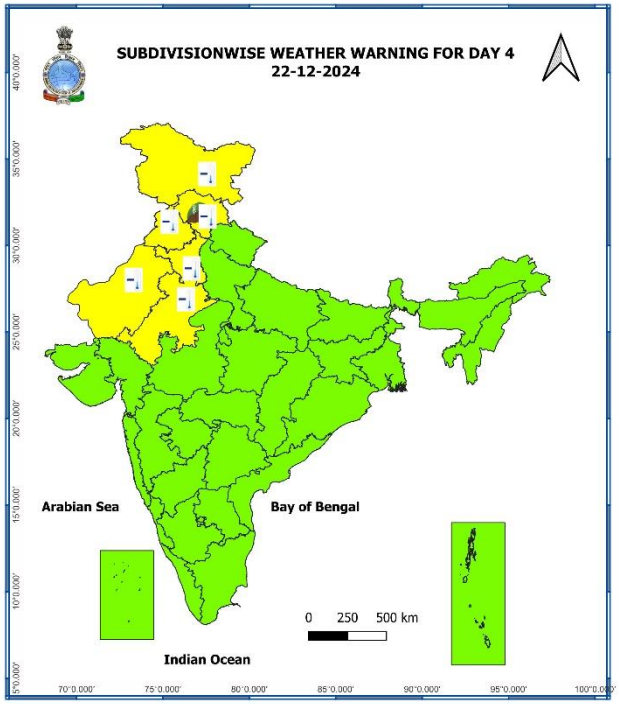
- **Dense fog** very likely in isolated pockets of East Rajasthan, Jharkhand in night/morning hours.

- **Cold Wave to severe cold wave Conditions** likely at isolated places of Himachal Pradesh, Punjab, Rajasthan; **Cold Wave Conditions** in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Haryana-Chandigarh.

- **Ground Frost condition** very likely at isolated places over Himachal Pradesh, East Rajasthan.

- **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevail **over** parts of westcentral Bay of Bengal off North Andhra Pradesh coast. Fishermen are advised not to venture into these areas.



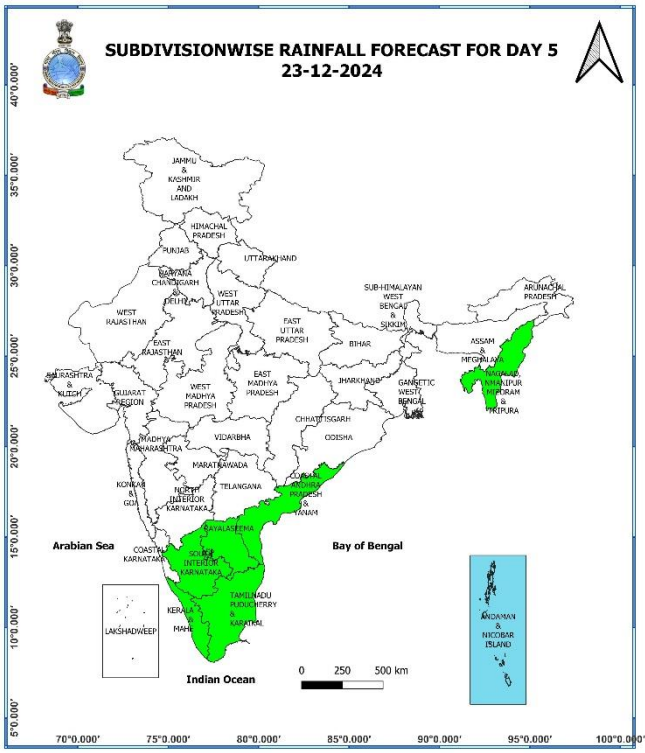


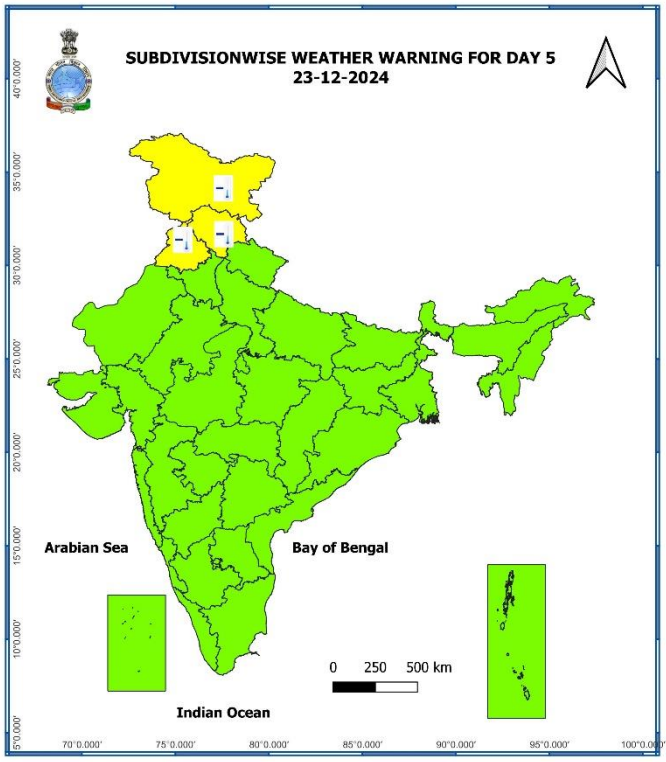
22 December (Day 4):

- **Cold Wave to severe cold wave Conditions** likely at isolated places of Himachal Pradesh, Punjab; **Cold Wave Conditions** in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Haryana-Chandigarh, Rajasthan.

- **Ground Frost condition** very likely at isolated places over Himachal Pradesh.

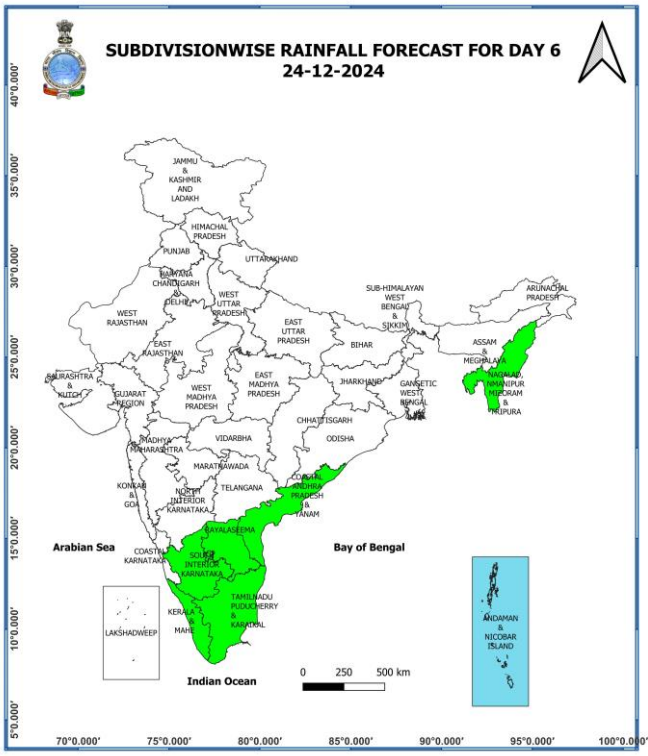
- **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** is likely to parts of westcentral Bay of Bengal and adjoining parts of Northwest Bay of Bengal, off North Andhra Pradesh coast. Fishermen are advised not to venture into these areas.

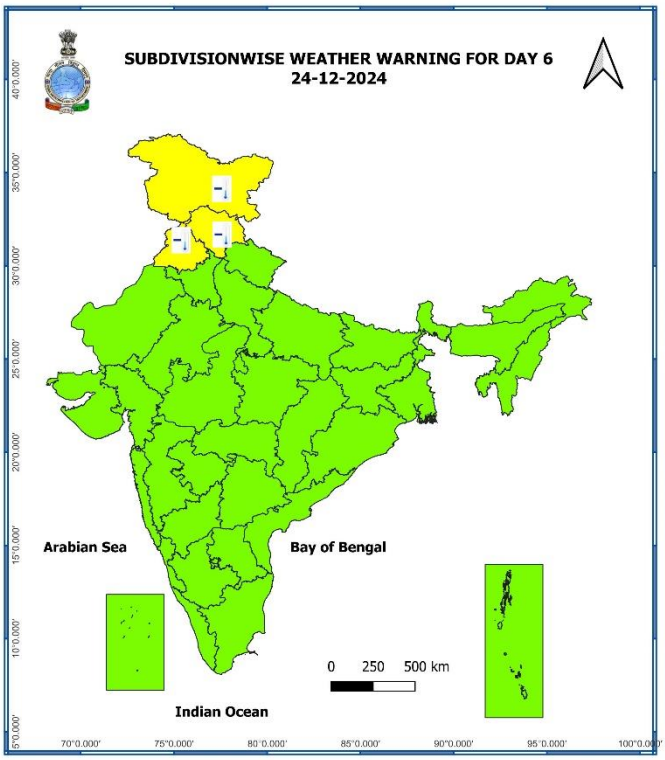




23 December (Day 5):

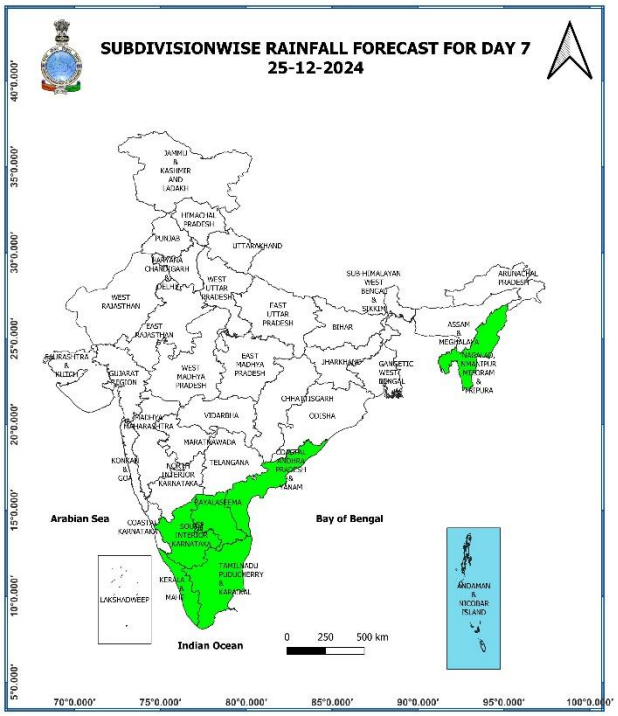
- **Cold Wave Conditions** in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Punjab.

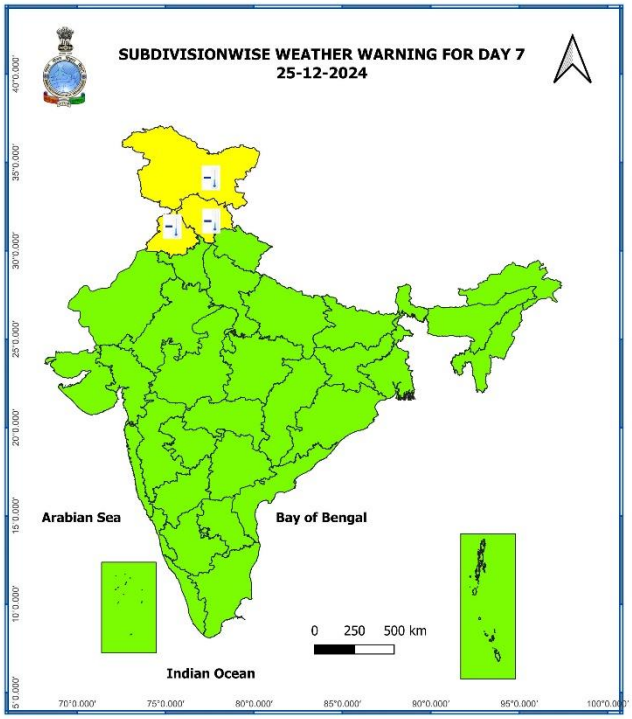




24 December (Day 6):

- **Cold Wave Conditions** in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Punjab.





25 December (Day 7):

- **Cold Wave Conditions** in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Punjab.

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

- Scattered to Fairly widespread light to moderate rainfall likely over some parts of south peninsular India and Isolated to scattered light to moderate rainfall over Madhya Pradesh and Maharashtra.
- Mainly dry weather will prevail over rest parts of country.

- **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.**

Impact due to very heavy rainfall:

- **Isolated heavy to very heavy rainfall** very likely over Coastal Andhra Pradesh & Yanam on 19th December.

Impact Expected

- Localized Flooding of roads, water logging in low lying areas and closure of underpasses mainly in urban areas of the above region.
- Occasional reduction in visibility due to heavy rainfall.
- Disruption of traffic in major cities and roadways due to water logging in roads leading to increased travel time.
- Minor damage to kutcha roads.
- Possibilities of damage to vulnerable structure.
- Localized Landslides/Mudslides/landslips/mud slips/land sinks/mud sinks.
- Damage to horticulture and standing crops in some areas due to inundation and wind.
- It may lead to riverine flooding in some river catchments (for riverine flooding please visit Web page of CWC).

Action Suggested

- Judicious regulation of surface transports including railways and roadways.
- Check for traffic congestion on your route before leaving for your destination.
- Follow any traffic advisories that are issued in this regard.
- Avoid going to areas that face the water logging problems often.
- Avoid staying in vulnerable structure.

Impact expected due to dense fog in the night /morning hour:

❖ Transport and Aviation:

- May affect some airports, highways and railway routes in the areas of met- sub-division.
- Difficult driving conditions with slower journey times.
- Unless taken precautionary measures, it may lead to some road traffic collisions.

❖ Power Sector:

- Chances of Tripping of Power lines in the very dense fog routes.

❖ Human Health:

- Lung related health impacts: Dense fog contains particulate matter and other pollutants and in case exposed it gets lodged in the lungs, clogging them and decreasing their functional capacity which increases episodes of wheezing, coughing and shortness of breath.
- Impact on people having asthma bronchitis: Long time exposure to dense fog may cause respiratory problem for people having asthma bronchitis and other lung related health problems.
- Eye Irritation: Dense fog contains pollutions of various types and these Pollutants in the air if exposed may tend to irritate the membranes of the eye causing various infections leading to redness or swelling of the eye.

Action suggested:

❖ Transport and Aviation:

- Be careful while driving or outing through any transport.
- Use fog lights during driving.
- Be in touch with airlines, railways and state transport for schedule of your journey.

❖ Power Sector:

- To keep ready Maintenance Team
- Human Health: To avoid outing until unless emergency and to cover the face.

Impact expected due to cold wave/severe cold wave conditions:

- An increased likelihood of various illnesses like flu, running/ stuffy nose or nosebleed, which usually set in or get aggravated due to prolonged exposure to cold.
- Do not ignore shivering. It is the first sign that the body is losing heat. Get Indoors.
- Frostbite can occur due to prolonged exposure to cold. The skin turns pale, hard and numb and eventually black blisters appear on exposed body parts such as fingers, toes, nose and or earlobes. Severe frostbite needs immediate medical attention and treatment.
- Impact on agriculture, crop, livestock, water supply, transport and power sector at some places.

Action suggested:

- Wear several layers of loose fitting, light weight; warm woollen clothing.
- Cover your head, neck, hands and toes adequately as majority of heat loss occurs through these body parts. Wear several layers of loose fitting, light weight; warm woollen clothing rather than one layer of heavy cloth.
- Eat vitamin-C rich fruits & vegetable and drink sufficient fluids preferably warm fluids to maintain adequate immunity.
- Avoid or limit outdoor activities.
- Keep dry, if wet, change cloths immediately to prevent loss of body heat. Wear insulated/waterproof shoes.
- Warm the affected area of the body slowly with lukewarm water; do not rub the skin vigorously.
- If the affected skin area turns black, immediately consult a doctor.
- Maintain ventilation while using Heaters to avoid inhaling toxic fumes.
- Take safety measures while using electrical and gas heating devices.
- Extreme care needed for vulnerable people.
- Seek medical attention as soon as possible for someone suffering from frostbite/ Hypothermia.
- Protect livestock from cold weather.

Agromet advisories for Heavy Rainfall / Cold Wave likely over various parts of the country

- Drain out excess water from rice, sugarcane, cotton, turmeric, vegetables, and other standing crop fields, as well as coconut and banana orchards in north **Tamil Nadu;** from rice nurseries, pigeon pea, green gram, black gram, sesame and other standing crop fields and vegetables in **South Coastal Andhra Pradesh** and **Rayalaseema.**
- Keep the harvested produce in safer places or cover the produce with tarpaulin sheets in the fields.
- Provide mechanical support to horticultural crops and staking to vegetables.
- In **Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana** and **Rajasthan,** apply light and frequent irrigation to the standing crops in the evening to protect the crops from low-temperature stress or cold injuries. Use mulching and cover vegetable nurseries and young fruit plants with straw/polythene sheets to maintain optimum soil temperature.

Livestock and Fishery

- Keep the animals inside the shed during heavy rainfall and provide balanced feed.
- Store the feed and fodder at safer place to avoid spoilage from rainfall.
- Check and disinfect poultry houses to prevent disease outbreaks due to dampness.
- Check the huts and other weaker structures before relocation of the animals.
- Remove excess water from fish ponds to avoid losses of fish (if feasible).
- To protect from cold, keep cattle inside the sheds during night and provide dry bedding. Also keep the chicks warm by providing artificial light in the poultry sheds.

Fig. 1: Maximum Temperatures

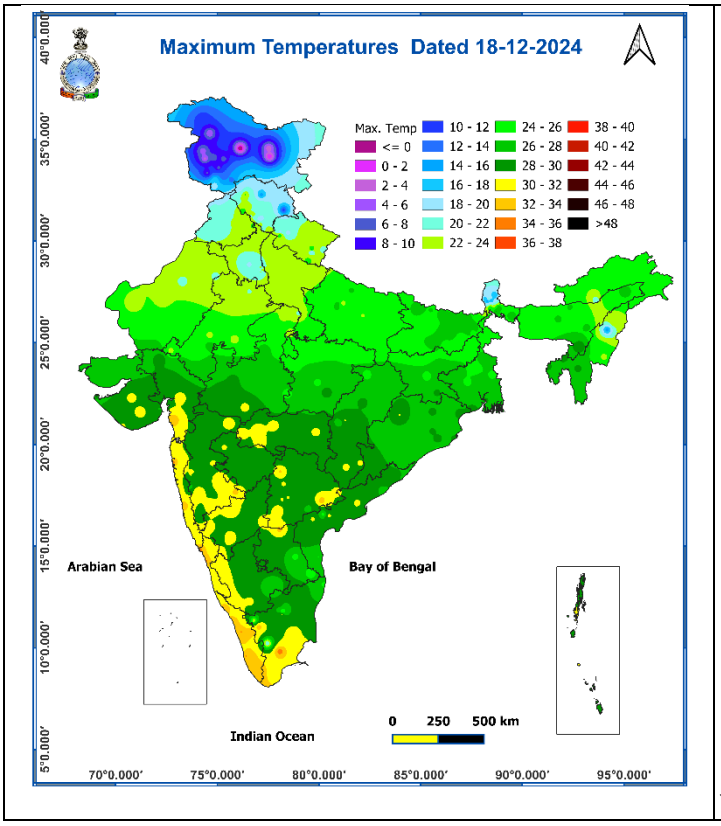


Fig. 2: Departure of Maximum Temperatures

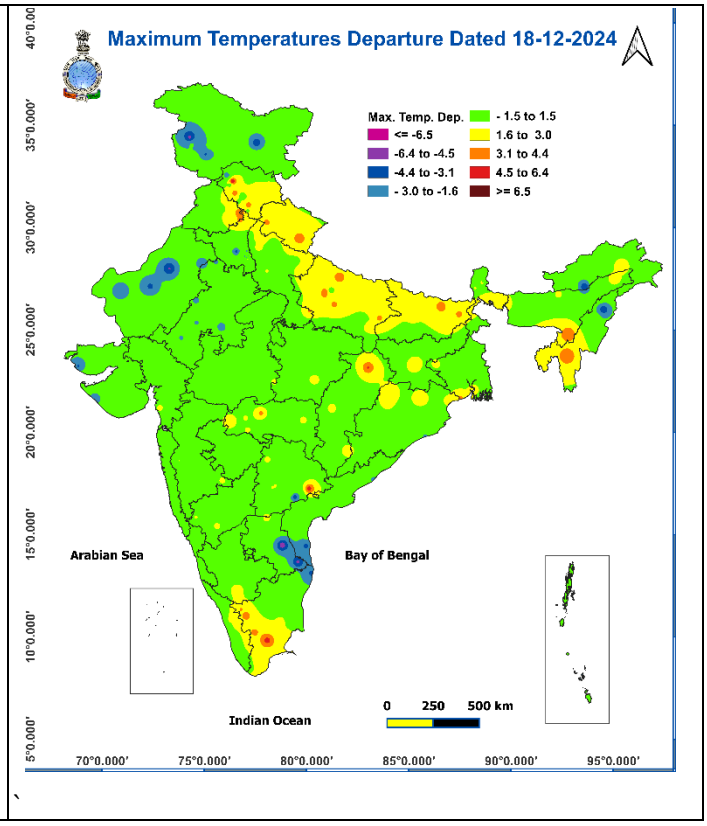


Fig. 3: Minimum Temperatures

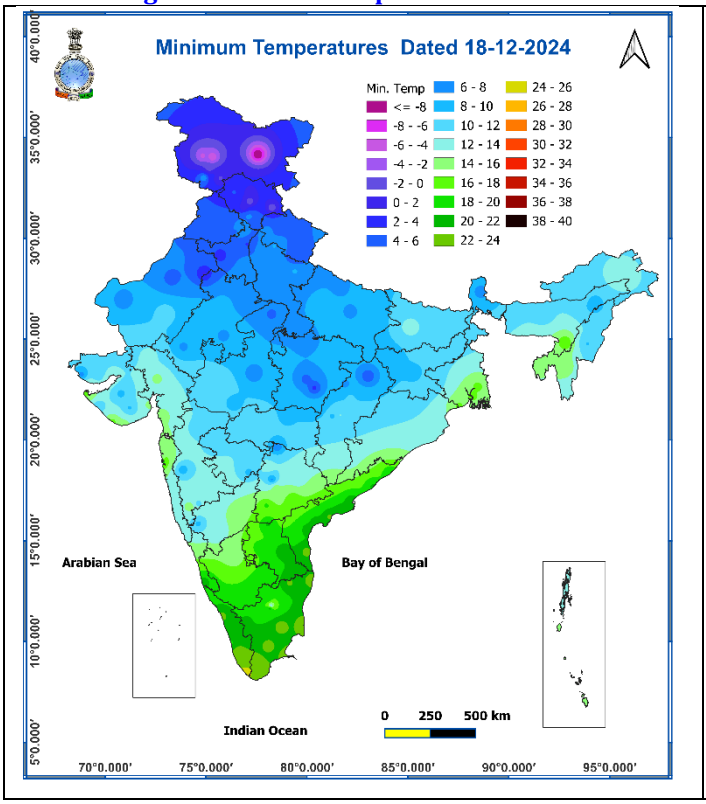


Fig. 4: Departure of Minimum Temperatures

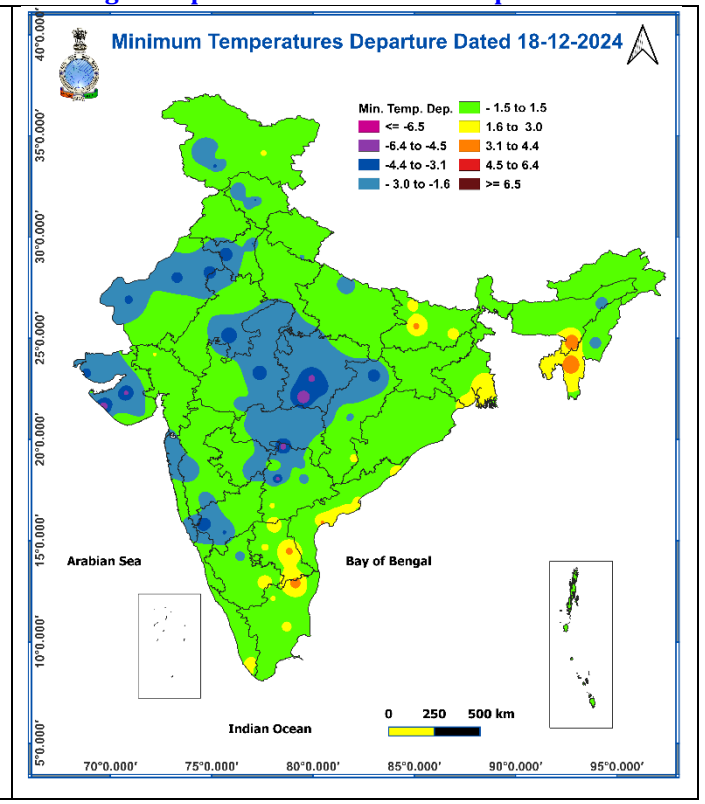
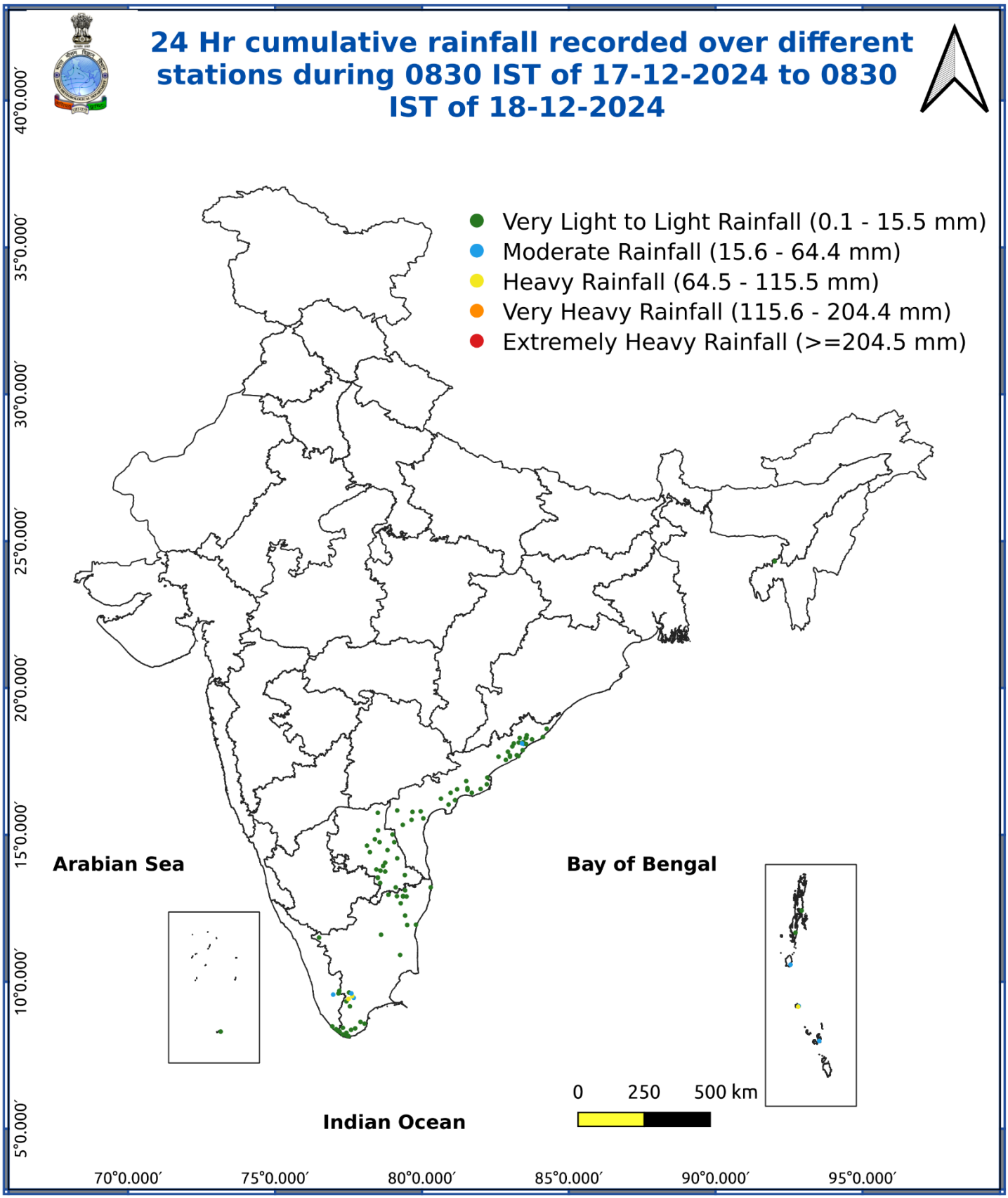
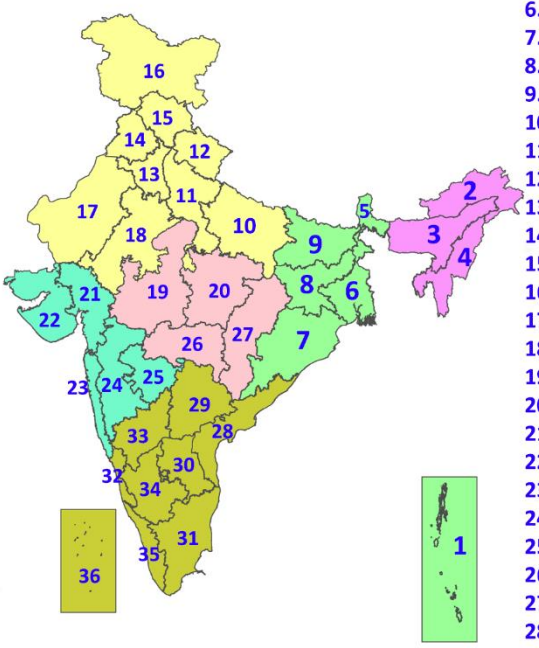


Fig. 5: Accumulated Rainfall (mm) during past 24 hours



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 Rain
Very Heavy Rain
Extremely Heavy Rain
Thunder & Lightning
Hailstorm
Dust Raising Winds

Heavy Snow
Dust Storm
Heat Wave
Warm Night
Hot Day
Hot & Humid
Strong Surface Winds

Cold Wave
Cold Day
Ground Frost

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

* 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.
For more details, kindly visit https://mausam.imd.gov.in or contact: 011-2434-4599
(Service to the Nation since 1875)

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 ≥40° C for plains and ≥30° 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 ≥6.5° C **(b). Based on Actual maximum temperature** **Heat Wave:** When actual maximum temperature ≥45°C. **Severe Heat Wave:** When actual maximum temperature ≥47°C **(c). Criteria for heat wave for coastal stations** When maximum temperature departure is >4.5°C from normal. Heat Wave may be described provided maximum temperature ≥37°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 °C.
Cold Wave	**When minimum temperature of a station ≤10°C for plains and ≤0°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 ≤ -6.5 °C **(b) Based on actual Minimum Temperature (for Plains only)** **Cold Wave :** When Minimum Temperature is ≤ 4.0 °C **Severe Cold Wave:** When Minimum Temperature is ≤ 2.0 °C **(c) For Coastal Stations** When Minimum Temperature departure is ≤-4.5 °C & actual Minimum Temperature is ≤ 15 °C
Cold Day	**When minimum temperature of a station ≤10°C for plains and ≤0°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 ≤ -6.5 °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 ≤4°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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