राष्ट्रीय मौसम पूर्वानुमान केन्द्र
भारत मौसम विज्ञान विभाग
पृथ्वी विज्ञान मंत्रालय

National Weather Forecasting Centre
India Meteorological Department
Ministry of Earth Sciences

Monday, December 16, 2024
Time of Issue: 1400 hours IST
(MID-DAY)

ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

Significant Weather Features:

Weather Systems:

- A **low-pressure area** has formed over central parts of south Bay of Bengal at 0830 hrs IST of today, the 16th December 2024. Thereafter, it is likely to become more marked and move west-northwestwards towards Tamil Nadu coast during next two days.
- A **Western disturbance** as a trough in middle and upper tropospheric westerlies runs roughly along Long. 62°E to the north of Lat. 28°N.

Forecast & Warnings (upto 7 days):

- **Tamil Nadu:** Isolated **heavy to very heavy rainfall** very likely on 17th & 18th December. Isolated **heavy rainfall** likely on 19th December.
- **Coastal Andhra Pradesh & Rayalaseema:** Isolated **heavy rainfall** very likely during 17th - 19th December.
- Light to moderate rainfall at isolated places accompanied with isolated thunderstorm & lightning likely over Tamil Nadu, Puducherry, Coastal Andhra Pradesh and Rayalaseema during 17th-20th December.

Temperature, Cold Wave and Fog Forecast:

Temperature Conditions during past 24 hours till 0830 hours IST of today:

Minimum temperatures were **below 0°C** over most parts of Jammu, Kashmir & Ladakh and Himachal Pradesh; **0-6°C** over major parts of Punjab, Haryana, north Rajasthan and isolated pockets of Madhya Pradesh; **6-12°C** over remaining parts of Northwest, East, Central and West India.
Minimum temperatures have fallen by 1-2°C over major parts of Western Himalayan region and some parts of Madhya Pradesh, Chhattisgarh and Interior Odisha and rose by 1-2°C over Bihar and Gangetic West Bengal.

Forecast of temperature:

- No significant change in minimum temperatures likely over Northwest India (except East Uttar Pradesh) during next 3 days and gradual rise by 2°C thereafter.
- No significant change in minimum temperatures likely over Central & West India during 24 hours and gradual rise by 3-5°C during subsequent 2-5 days.
- Rise in minimum temperatures by 2-4°C likely over East Uttar Pradesh and East India during next 2-4 days and no significant change thereafter.

Cold Wave Warnings:

Cold wave to severe cold wave conditions very likely to prevail in isolated pockets of West Madhya Pradesh on 16th, Himachal Pradesh during 16th – 20th, Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad during 16th-22th, East Rajasthan during 16th-22nd December.
Cold wave conditions very likely in isolated pockets over Punjab, Haryana-Chandigarh during 16th-20th, Uttar Pradesh, Vidarbha, Chhattisgarh, Madhya Maharashtra, Marathwada and Telangana on 16th, West Rajasthan during 16th-22nd, East Madhya Pradesh on 16th & 17th, West Madhya Pradesh on 17th December.

Cold Day Warnings:

Cold Day conditions very likely in isolated pockets of Madhya Pradesh on 16th December.

Dense Fog Warnings:

Dense fog conditions very likely to prevail during late night/early morning hours in isolated pockets of Punjab, Haryana-Chandigarh, Uttar Pradesh and Odisha till 18th; West Bengal & Sikkim, Bihar, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura till 19th December.

Ground Frost Warnings:

Ground Frost conditions very likely in isolated pockets of East Rajasthan and Madhya Pradesh on 16th December.

Weather Realised (past 24 hours) & forecast (during 16th Dec. to 19th Dec. 2024) over Delhi/NCR

Past Weather:

There has been a slight fall in minimum temperature over Delhi/NCR during past 24hr. The Maximum and Minimum temperature over Delhi is in the range of 20 to 23°C and 04 to 07°C respectively. The minimum temperature was below normal upto 3 to 5°C and maximum temperature was near normal over most places. Shallow fog reported at Palam airport. Palam airport recorded lowest visibility 800 m at 0800 hours IST which improved thereafter becoming 900m at 0830 hours IST. Safdarjung airport recorded lowest visibility 1100m during 0700 hours to 0800 IST which improved thereafter becoming 1500m at 0830 hours IST. Mainly smog/ mist condition with predominant surface wind from west direction with wind speed reaching 06 to 08 kmph prevailed during daytime and calm wind during night time on 15.12.2024. Mainly smog condition with wind speed less than 06 kmph west direction prevailed over the region in the forenoon today.

Weather Forecast:

16.12.2024: Mainly clear sky. The predominant surface wind is likely to be variable direction with wind speed less than 06 kmph till evening. It would decrease thereafter becoming less than 04 kmph from northeast direction during night. Smog/shallow fog is likely in the evening/night.

17.12.2024: Mainly clear sky with cold wave conditions at isolated places. The predominant surface wind is likely to be from southeast direction with speed less than 04 kmph during morning hours. Smog/moderate fog is likely in the morning. The wind speed will increase thereafter becoming less than 06 kmph from northeast direction during afternoon. It will decrease thereafter becoming less than 04 kmph from northeast direction during evening and night. Smog/shallow fog is likely in the evening/night.

18.12.2024: Mainly clear sky with cold wave conditions at isolated places. The predominant surface wind is likely to be from north direction with speed less than 04 kmph during morning hours. Smog/moderate fog is likely in the morning. The wind speed will gradually increase becoming 04-06 kmph from northwest 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.

19.12.2024: Mainly clear sky. The predominant surface wind is likely to be from southeast direction with wind speed less than 04 kmph during morning hours. Smog/moderate fog is likely in the morning. The wind speed will increase thereafter becoming 04-06 kmph from variable direction during afternoon. It will gradually decrease becoming less than 04 kmph from southeast direction during evening and night. Smog/mist is likely in the evening/night.

Main Weather Observations:

- **Rainfall distribution** (from 0830 hours IST of yesterday to 0830 hours IST of today): at most places over Andaman & Nicobar Islands; at **isolated places** over Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe.

- **Heavy rainfall observed** (from 0830 hours IST of yesterday to 0830 hours IST of today): **Heavy to very heavy rainfall** recorded at isolated places over Andaman & Nicobar Islands.

- **Significant amount of rainfall** (from 0830 hours IST of yesterday to 0830 hours IST of today) (in cm): Andaman & Nicobar Islands: Port Blair, Car Nicobar- 2 each.

- **Visibility reported (at 0830 hours IST of today) (≤500 metres): Meghalaya:** Barapani 100; **Tripura:** Agartala 100; **Assam:** Guwahati 150.

- **Fog conditions observed (at 0830 hours IST of today): Dense fog (50-200 m)** reported in isolated pockets of Odisha, Assam and Meghalaya & Tripura.

- **Cold wave to severe cold conditions** observed in isolated pockets over Himachal Pradesh, Punjab, Rajasthan, Haryana, West Madhya Pradesh, Chhattisgarh and **cold wave conditions** in isolated pockets over Uttar Pradesh, Gangetic West Bengal, Bihar, Jharkhand, Odisha, Madhya Maharashtra, Marathwada, East Madhya Pradesh and Vidarbha.

- **Cold Day conditions** observed in isolated pockets of East Madhya Pradesh.

- **Ground frost conditions** recorded in isolated pockets of East Rajasthan and East Madhya Pradesh.

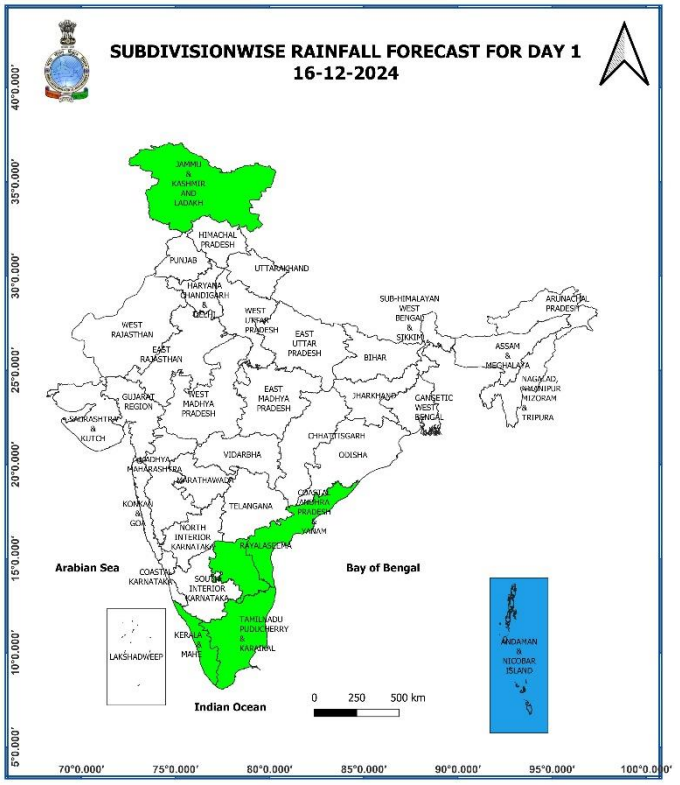
- **Minimum Temperatures Departures (as on 16-12-2024):** Minimum temperatures are **above normal (1.6°C to 3.1°C)** at isolated places over Bihar. These are **markedly below normal (-5.1°C or less)** at isolated places over East Uttar Pradesh, East Madhya Pradesh, Madhya Maharashtra, Marathwada; **appreciably below normal (-3.1°C to -5.0°C)** at a few places over West Madhya Pradesh, Chhattisgarh, Odisha, Vidarbha, Telangana; at isolated places over Himachal Pradesh, Punjab, Haryana-Chandigarh-Delhi, West Uttar Pradesh, Jharkhand, East Rajasthan, Konkan & Goa, Saurashtra & Kutch, North Interior Karnataka; **below normal (-1.6°C to -3.0°C)** at a few places over Gangetic West Bengal; at isolated places over West Rajasthan, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, South Interior Karnataka, Coastal Andhra Pradesh & Yanam, Tamil Nadu, Puducherry & Karaikal and near normal over rest parts of the country. Today, **the lowest minimum temperature** of **0.6°C** is reported at **Hissar (Haryana)** over the plains of the country. **(Fig.4)**

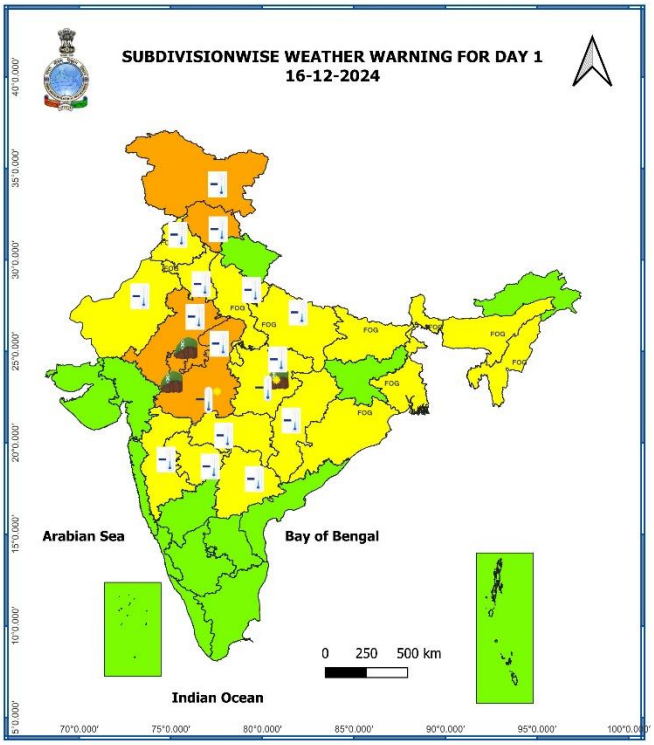
- **Maximum Temperature Departures (as on 15-12-2024):** Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C) at** isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, East Rajasthan; **above normal (1.6°C to 3.0°C)** at isolated places over Assam & Meghalaya, Konkan & Goa, Tamil Nadu, Puducherry & Karaikal. These were **appreciably below normal (-3.1°C to -5.0°C) at** isolated places over Gangetic West Bengal, East Madhya Pradesh; below **normal (-1.6°C to -3.0°C)** at a few places over Odisha, Andaman & Nicobar Islands; at isolated places over Madhya Pradesh, Odisha, Chhattisgarh, Vidarbha, Telangana, Jharkhand, Haryana-Chandigarh-Delhi and near normal over rest parts of the country. Yesterday, **the highest maximum temperature** of **34.8°C** was reported at **Kannur (Kerala)** over the plains of the country. **(Fig. 2)**

Meteorological Analysis (Based on 0830 hours IST)

- Under the influence of the **upper air cyclonic circulation** over southeast Bay of Bengal, a **low pressure area** has formed over central parts of south Bay of Bengal at 0830 hours IST of today, the 16 December 2024. The associated cyclonic circulation extends upto 3.1 km above mean sea level. It is likely to become more marked and move west-northwestwards towards Tamil Nadu coast during next 2 days.
- The **upper air cyclonic circulation** over southeast Arabian Sea and adjoining Lakshadweep area extending upto 3.1 km above mean sea level persists.
- The **Western disturbance** as a trough in middle & upper tropospheric westerlies now runs roughly along Long. 62°E to the north of Lat. 28°N.
- The **upper cyclonic circulation** over central Pakistan adjoining Jammu Division between 1.5 & 3.1 km above mean sea level persists.
- **Subtropical westerly Jet Stream with core winds** of the order upto 130 knots at 12.6 km above mean sea level prevails over Northwest India.
- The **upper cyclonic circulation** over northeast Assam at 3.1 km above mean sea level has become less marked.

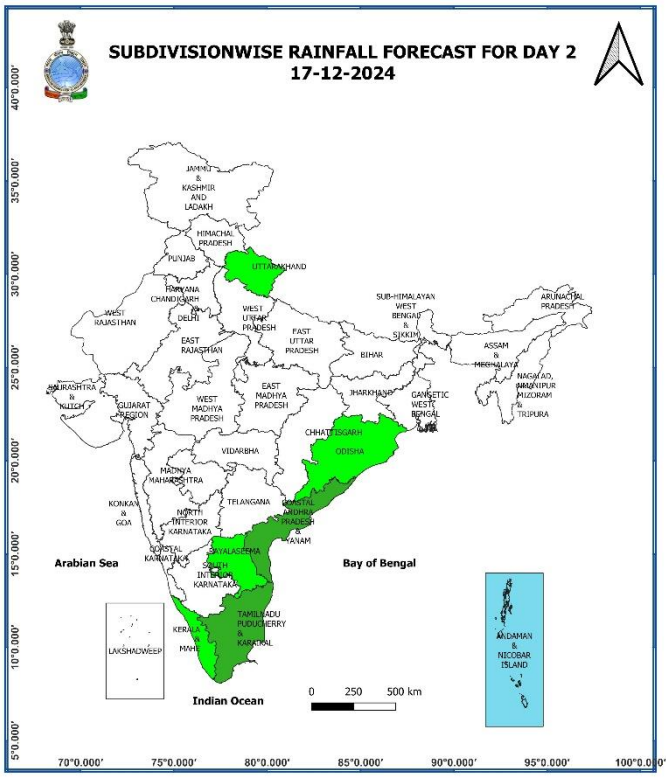
Weather Forecast & Warnings for next 7 days (Upto 0830 hours IST of 22nd December, 2024)

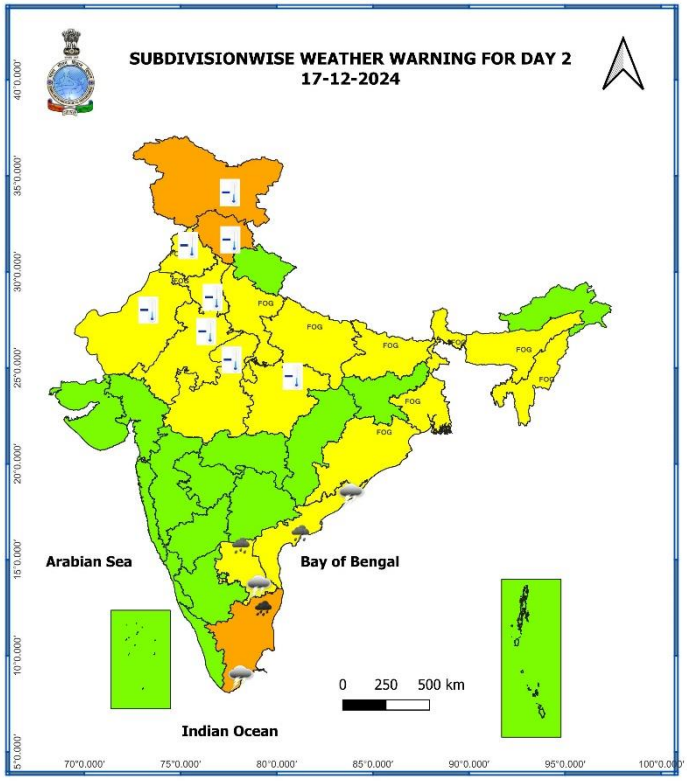




16 December (Day 1):

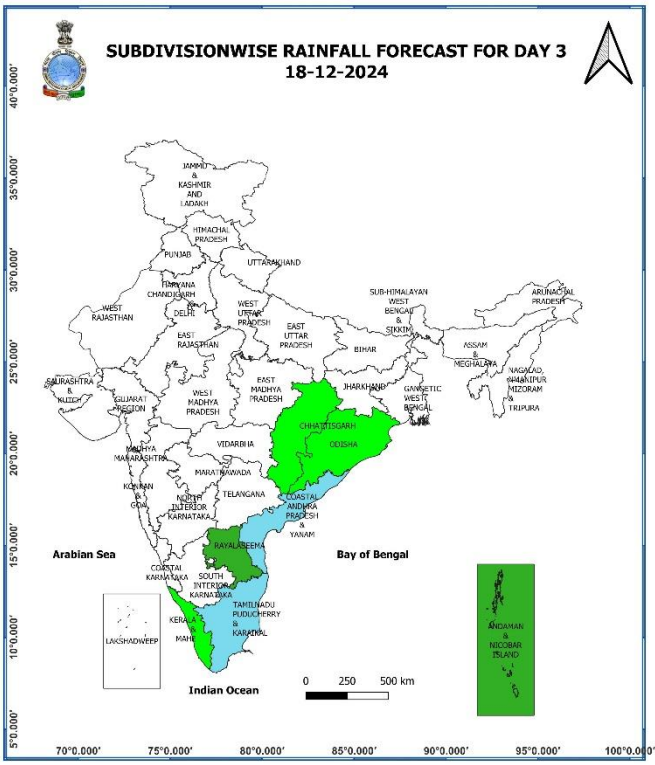
- **Dense fog** very likely in isolated pockets of Punjab, Haryana-Chandigarh, Uttar Pradesh, West Bengal & Sikkim, Bihar, Odisha, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura in night/morning hours.
- **Cold Wave to severe cold wave Conditions** very likely at a few places over East Rajasthan; at isolated places of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, West Madhya Pradesh; **Cold Wave Conditions** very likely in isolated pockets of Punjab, Haryana-Chandigarh, Uttar Pradesh, West Rajasthan, East Madhya Pradesh, Vidarbha, Chhattisgarh, Madhya Maharashtra, Marathwada, Telangana.
- **Cold Day Conditions** very likely in isolated places of Madhya Pradesh.
- **Ground Frost Conditions very likely** at isolated places over East Rajasthan, Madhya Pradesh**.**
- **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevail over parts of southeast Arabian sea, Gulf of Mannar and adjoining Comorin area, over many parts of south Bay of banal, adjoining parts of central Bay of Bengal. **Squally wind with speed 45 kmph to 55 kmph** gusting to 65 kmph is likely to prevail over along and of Somalia coast, adjoining westcentral Arabian sea. Fishermen are advised not to venture into these areas.

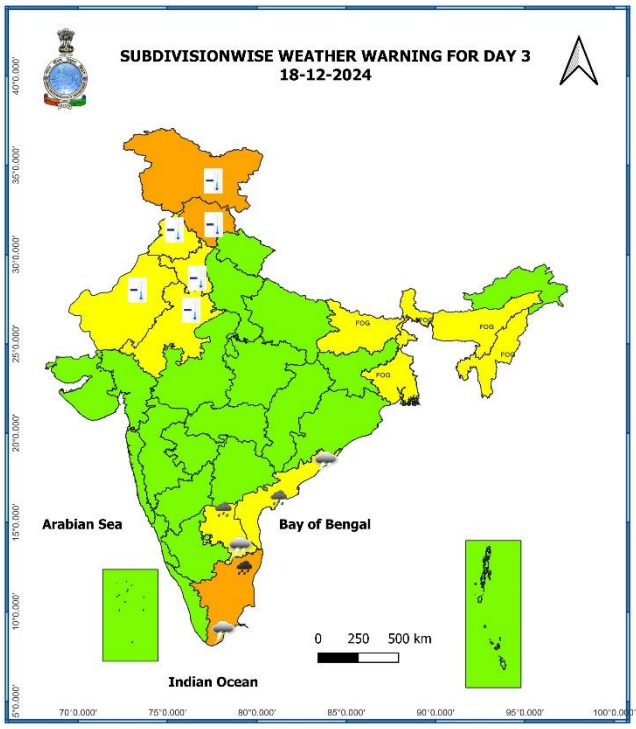




17 December (Day 2):

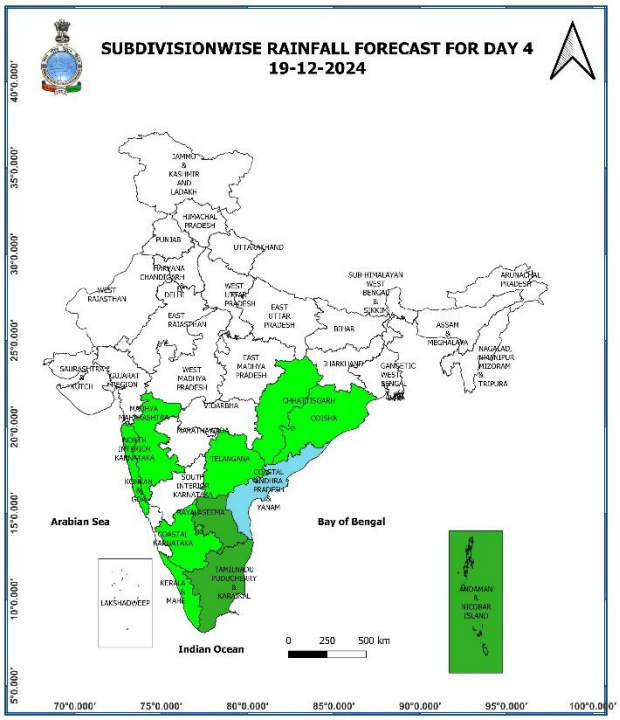
- **Heavy to very heavy rainfall (≥ 12 cm)** very likely at isolated places over Tamil Nadu, Puducherry & Karaikal. **Heavy rainfall (≥7 cm)** at isolated places over Coastal Andhra Pradesh, Rayalaseema.
- **Thunderstorm accompanied with lightning** very likely at isolated places over Coastal Andhra Pradesh & Yanam, Rayalaseema, Tamil Nadu, Puducherry & Karaikal.
- **Dense fog** very likely in isolated pockets of Punjab, Haryana-Chandigarh, Uttar Pradesh, West Bengal & Sikkim, Bihar, Odisha, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura in night/morning hours.
- **Cold Wave to severe cold wave Conditions** very likely at isolated places of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh; **Cold Wave Conditions** very likely in isolated pockets of Punjab, Haryana-Chandigarh, Rajasthan, Madhya Pradesh.
- **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevail over Gulf of Mannar and adjoining Comorin area, most parts of southwest Bay of Bengal and adjoining southeast Bay of Bengal, adjoining westcentral Bay of Bengal, along and off Sri Lanka and Tamil Nadu coasts. **Squally wind with speed 45 kmph to 55 kmph gusting to 65 kmph** is likely to prevail over along and of Somalia coast, adjoining westcentral Arabian sea. Fishermen are advised not to venture into these areas.

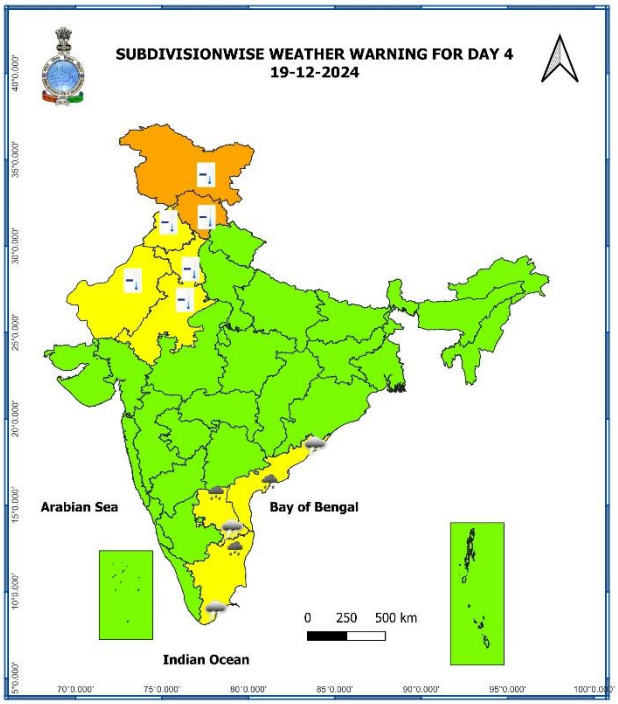




18 December (Day 3):

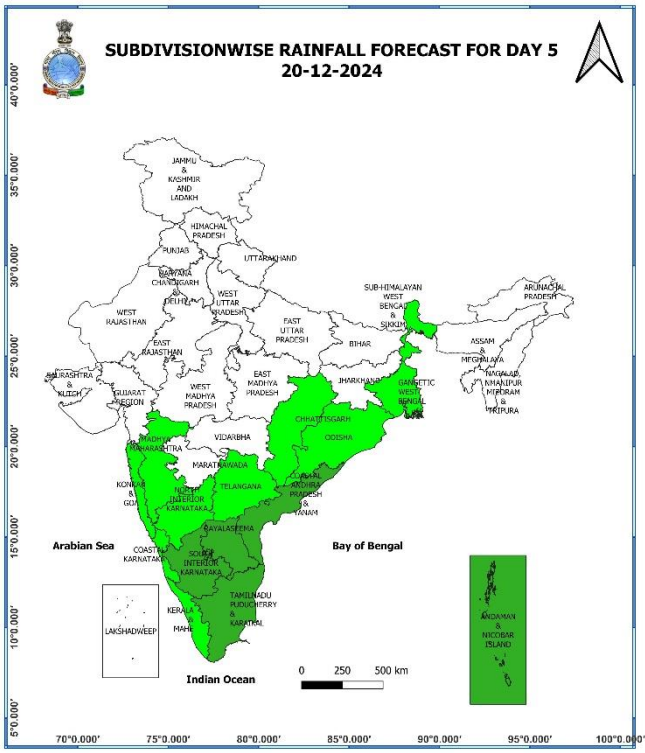
- **Heavy to very heavy rainfall (≥ 12 cm)** very likely at isolated places over Tamil Nadu, Puducherry & Karaikal. **Heavy rainfall (≥7 cm)** at isolated places over Coastal Andhra Pradesh, Rayalaseema.
- **Thunderstorm accompanied with lightning** very likely at isolated places over Coastal Andhra Pradesh & Yanam, Rayalaseema, Tamil Nadu, Puducherry & Karaikal.
- **Dense fog** very likely in isolated pockets of West Bengal & Sikkim, Bihar, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura in night/morning hours.
- **Cold Wave to severe cold wave Conditions** very likely at isolated places of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh; **Cold Wave Conditions** very likely in isolated pockets of Punjab, Haryana-Chandigarh, 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 adjoining westcentral Bay of Bengal, along and off Tamil Nadu, south Andhra Pradesh coasts. Fishermen are advised not to venture into these areas.

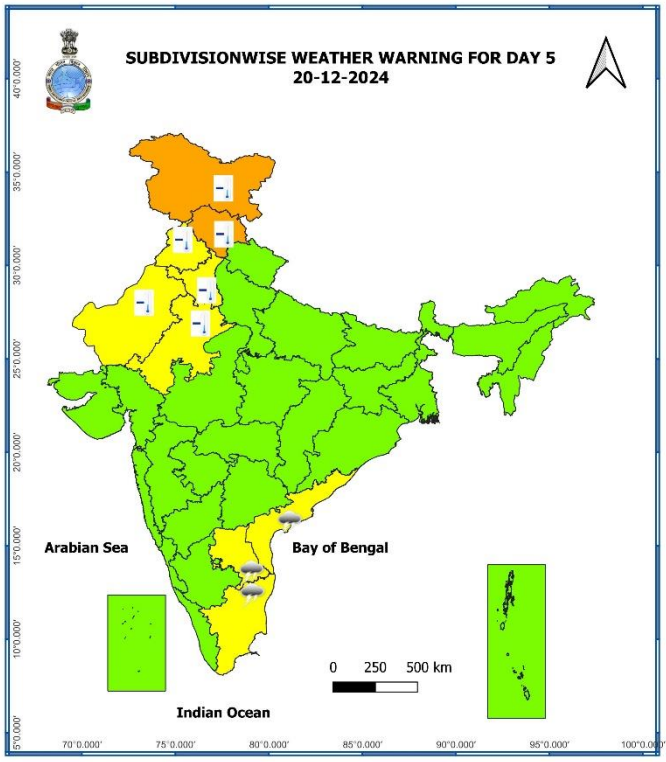




19 December (Day 4):

- **Heavy rainfall (≥7 cm)** at isolated places over Tamil Nadu, Puducherry & Karaikal, Coastal Andhra Pradesh, Rayalaseema.
- **Thunderstorm accompanied with lightning** very likely at isolated places over Coastal Andhra Pradesh & Yanam, Rayalaseema, Tamil Nadu, Puducherry & Karaikal.
- **Cold Wave to severe cold wave Conditions** very likely at isolated places of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh; **Cold Wave Conditions** very likely in isolated pockets of Punjab, Haryana-Chandigarh, Rajasthan.
- **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevail over Gulf of Mannar, along and off Tamil Nadu, south Andhra Pradesh coasts. Fishermen are advised not to venture into these areas.

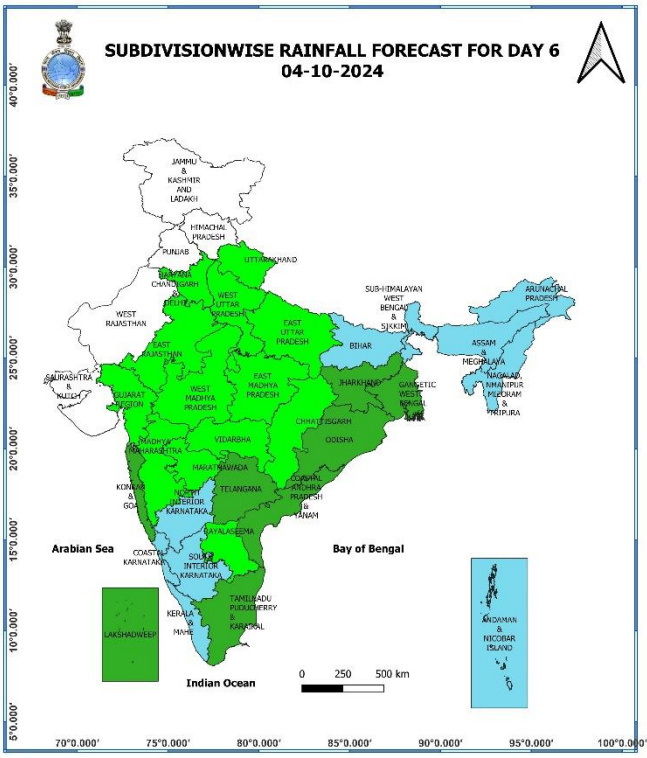


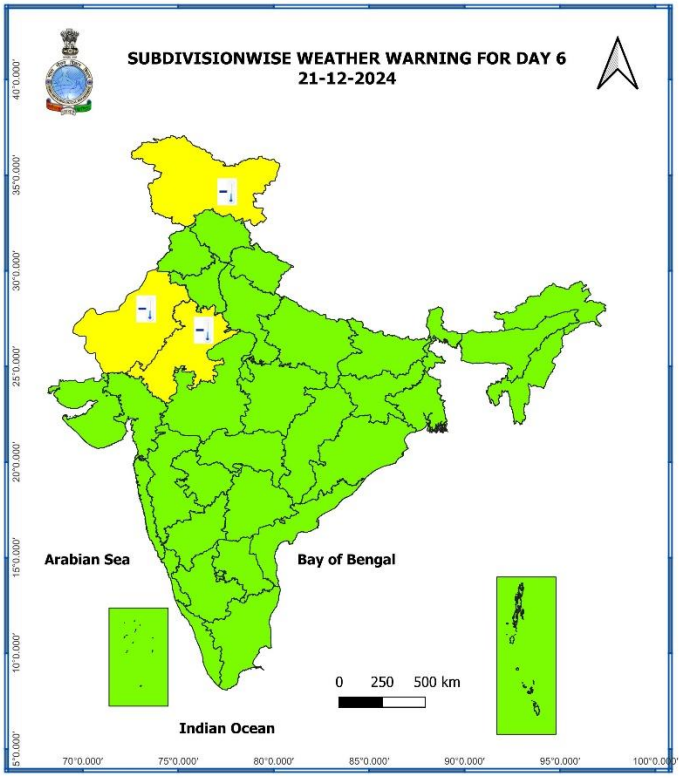


20 December (Day 5):

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

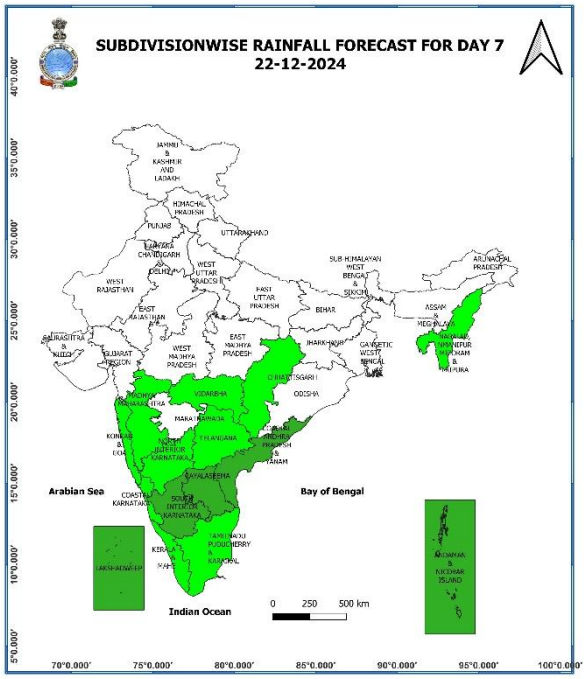
- **Thunderstorm accompanied with lightning** very likely at isolated places over Coastal Andhra Pradesh & Yanam, Rayalaseema, Tamil Nadu, Puducherry & Karaikal.

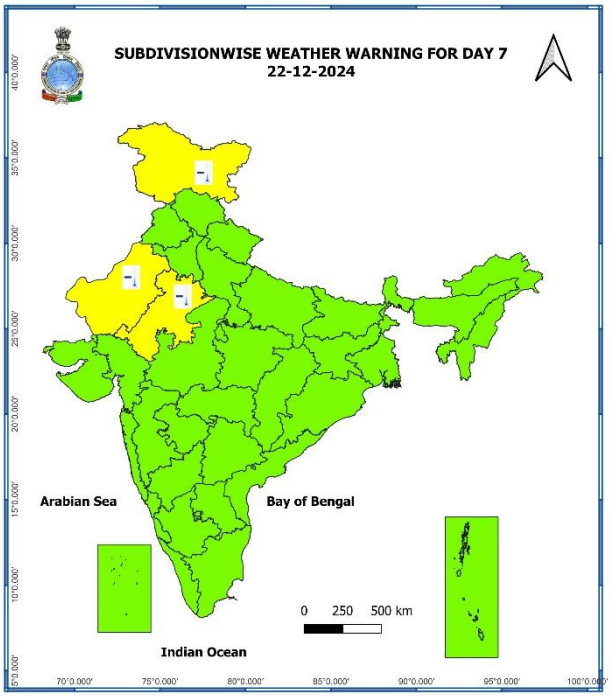




21 December (Day 6):

❖ **Cold Wave to severe cold wave Conditions** very likely at isolated places of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad; **Cold Wave Conditions** very likely in isolated pockets of Rajasthan**.**





22 December (Day 7):

❖ **Cold Wave to severe cold wave Conditions** very likely at isolated places of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad; **Cold Wave Conditions** very likely in isolated pockets of Rajasthan.

Weather Outlook for subsequent 3 days (During 23rd December – 25th December, 2024)

❖ Isolated to Scattered to light to moderate rainfall likely over some parts of south peninsular India.
❖ 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 Tamil Nadu, Puducherry & Karaikal on 17th & 18th 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 woolen 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 woolen 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

- In **Jammu & Kashmir, Himachal Pradesh, Punjab, Haryana, East Uttar Pradesh, Rajasthan, Madhya Pradesh, Chhattisgarh, Telangana, Vidarbha, Marathwada** and **north Madhya Maharashtra,** 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

- 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

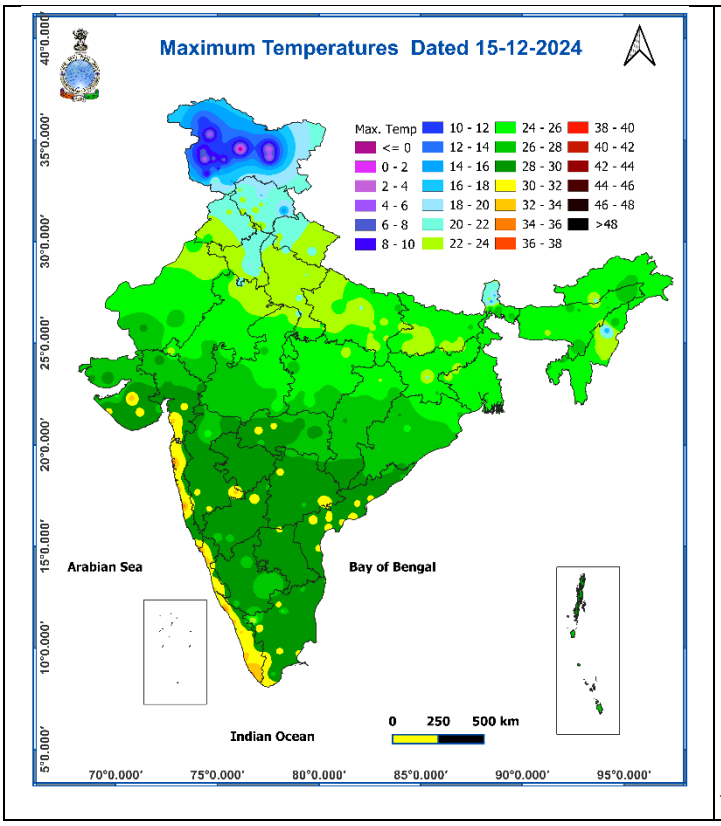


Fig. 2: Departure of Maximum Temperatures

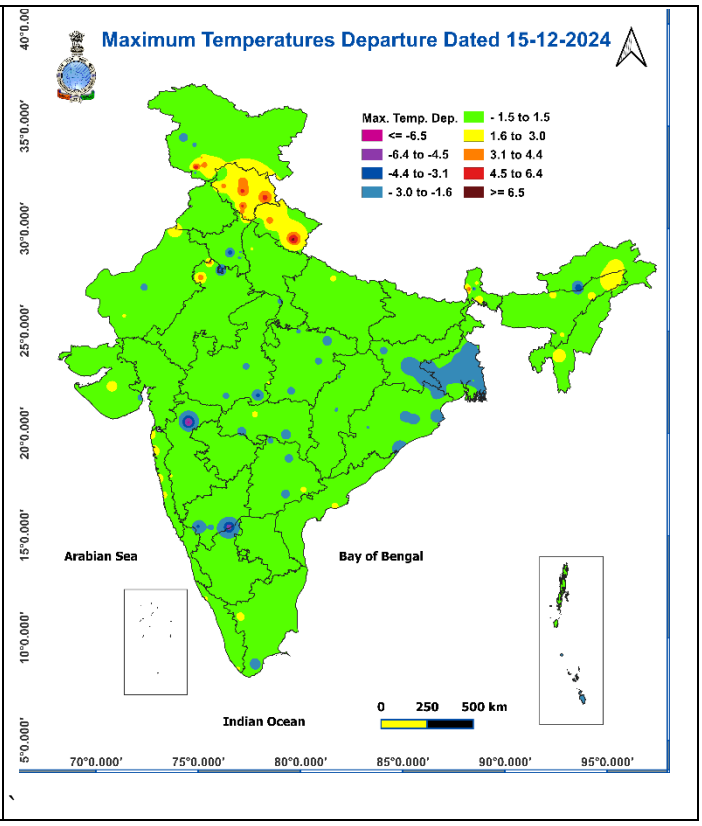


Fig. 3: Minimum Temperatures

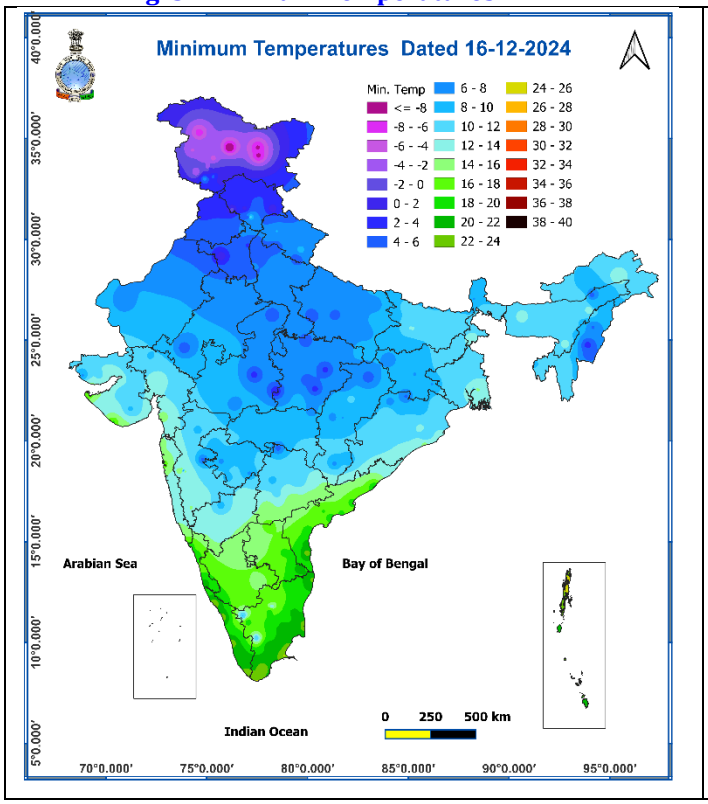


Fig. 4: Departure of Minimum Temperatures

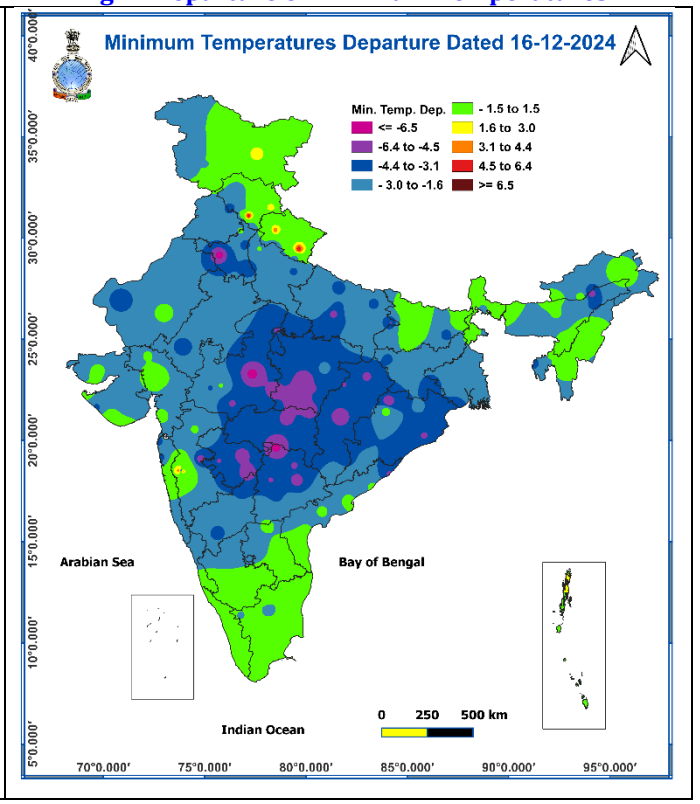


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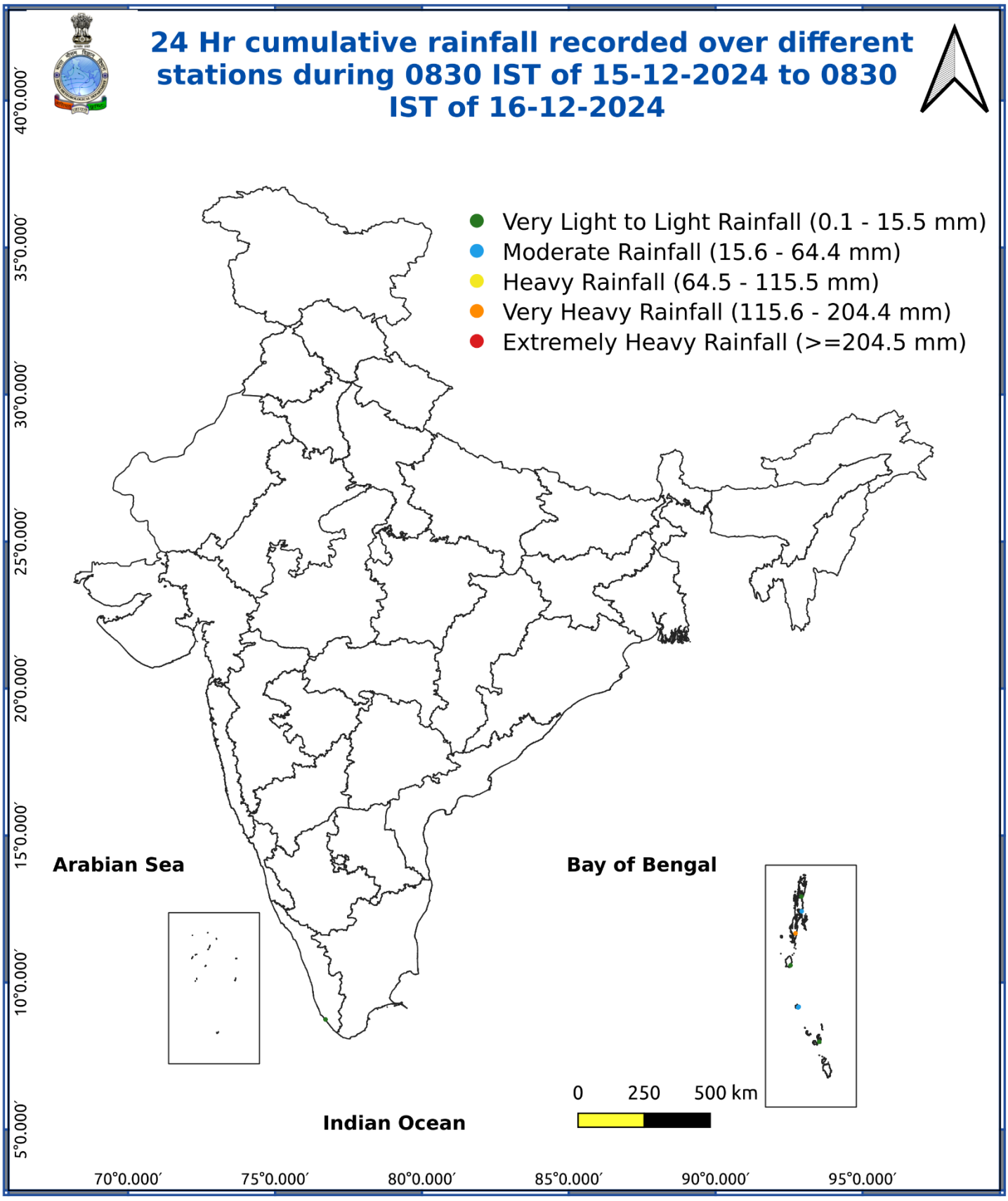
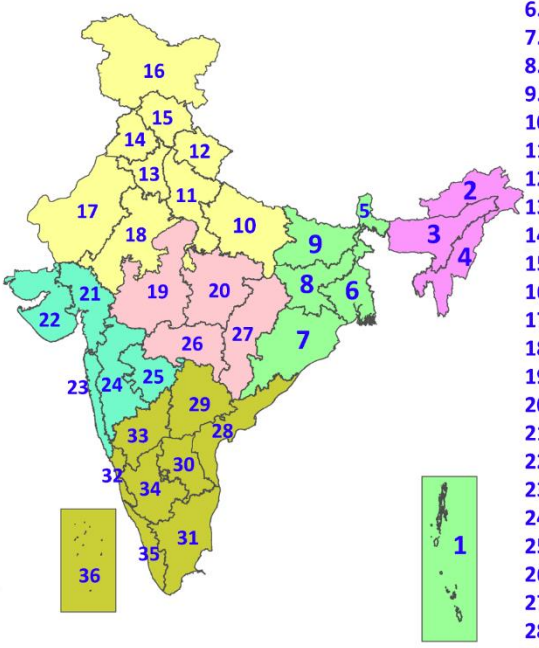
Fig. 5: Accumulated Rainfall (mm) during past 24 hours



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

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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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