राष्ट्रीय मौसम पूर्वानुमान केन्द्र
भारत मौसम विज्ञान विभाग
पृथ्वी विज्ञान मंत्रालय

National Weather Forecasting Centre
India Meteorological Department
Ministry of Earth Sciences

Saturday, December 28, 2024
Time of Issue: 0830 hours IST
(MORNING)

ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

Significant Weather Features:

Weather Systems, Forecast and warning:

- A **Western disturbance** as a cyclonic circulation over north Pakistan & neighbourhood now lies over North Pakistan and adjoining Jammu & Kashmir between 3.1 & 5.8 km above mean sea level with a trough aloft in upper tropospheric westerlies with its axis at 7.6 km above mean sea level roughly along Long. 72°E to the north of Lat. 19°N.

- An **induced cyclonic circulation** over north Rajasthan and adjoining Haryana and a **trough** runs from north Punjab to northeast Arabian Sea across above induced cyclonic circulation over north Rajasthan and adjoining Haryana, Kutch in lower tropospheric levels.

- In addition, there is a interaction of westerly winds due to Western Disturbance with easterly winds from anti-cyclone over north Chhattisgarh at lower tropospheric levels alongwith high moisture feeding from Arabian Sea as well as Bay of Bengal over northwest & central India mainly during 28th December. Under the influence of these systems:

  - ✓ Fairly widespread to widespread Rainfall/Snowfall accompanied with thunderstorm, lightning is likely over Western Himalayan Region on 28th December with isolated **Heavy Rainfall/Snowfall** likely over Uttarakhand on 28th December.
  - ✓ Isolated to Scattered rainfall accompanied with thunderstorm, lightning & gusty winds (wind speed 30-40 kmph) likely over Punjab, Haryana-Chandigarh-Delhi, West Uttar Pradesh and East Rajasthan on 28th December.
  - ✓ Isolated to Scattered rainfall accompanied with thunderstorm, lightning & gusty winds (wind speed 30-50 kmph) likely over East Uttar Pradesh, West Rajasthan, West Madhya Pradesh, Vidarbha, interior Maharashtra and Gujarat Region on 28th December.
  - ✓ **Thunderstorm accompanied with hailstorms also likely over Madhya Pradesh on 28th December.**

ii. 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 many parts of Jammu, Kashmir & Ladak; **10-15°C** over Northwest, central and east India; **12-18°C** over many parts of Central, West & East India. Today, the lowest minimum temperature of 5.4°C is reported at Churu (West Rajasthan) over the plains of the country.
- There has been a rise by 2-4^{0}C in minimum temperature over many parts of Northwest India adjoining central India during past 24 hours.
- Minimum temperatures are **markedly above normal (5.1°C or more)** at most places over North Interior Karnataka; at many places over Madhya Pradesh, Gujarat Region, East Rajasthan, Madhya Maharashtra, Marathwada, Vidarbha and Telangana; at a few places over Odisha; at isolated places over Haryana-Chandigarh-Delhi, Uttar Pradesh and Chhattisgarh; **appreciably above normal (3.1°C to 5.0°C)** at most places over Punjab, Jharkhand, Coastal Karnataka and Rayalaseema; at a few places over Tamil Nadu, Puducherry & Karaikal; at isolated places over West Rajasthan, Bihar, Gangetic West Bengal and Coastal Andhra Pradesh & Yanam; **above normal (1.6°C to 3.0°C)** at isolated places over Uttarakhand and Assam & Meghalaya. These are below normal (-1.6°C to -3.0°C) at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad and near normal over rest parts of the country.

Forecast of temperature:

- No significant change in minimum temperatures during next 48 hours and fall by 2-4°C likely over Northwest, West, Central and East India during Subsequent 3 days.

Cold Wave Warnings:

Cold wave conditions very likely in some parts of Himachal Pradesh from 29th to 31st December.

Cold Day Warnings:

Cold day to severe cold day conditions very likely in some parts of Himachal Pradesh on 28th December.
Cold Day conditions very likely in isolated pockets of Uttarakhand and Haryana-Chandigarh-Delhi on 28th December.

Dense Fog Warnings:

Dense to Very dense fog conditions very likely to prevail during late night/early morning hours in isolated pockets of Rajasthan on 28th & 29th December;
Dense fog conditions very likely to prevail during late night/early morning hours in isolated pockets of Himachal Pradesh on 29th & 30th; Punjab during 28th-30th; Haryana, Chandigarh during 28th-30th, West Uttar Pradesh 29th & 30th; Jharkhand on 28th;

Main Weather Observations:

- **Rainfall distribution** (from 0830 hours IST to 1730 hours IST of yesterday): **at most places** over Delhi, Punjab; **at many places** over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Andaman & Nicobar Islands; **at a few places** over Haryana, East Rajasthan, Uttarakhand, West Uttar Pradesh, Rayalaseema, Tamil Nadu, Puducherry & Karaikal; **at isolated places** over Madhya Maharashtra, Vidarbha, Coastal Andhra Pradesh & Yanam, South Interior Karnataka.

- **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): **Delhi**: Safdarjung, Palam, Lodhi road, Ridge 3 each, Ayanagar 2; **West Uttar Pradesh**: Hindan_IAF 4, Meerut, Muzaffarnagar 3 each; **Punjab**: Halwara_IAF 2; **East Rajasthan**: Ajmer 2; **Andaman & Nicobar Islands**: Long Island 2.

- **Dense Fog** reported at isolated pockets of Vidarbha, Punjab; Jammu & Kashmir & Rajasthan.

- **Fog observed at 0530 hours IST (≤ 200): Vidarbha:** Nagpur Airport 50; **Punjab:** Amritsar Airort 100, Bhatunda _IAF 200; **Jammu & Kashmir:** Qazi Kund 200; **East Rajasthan:** Ajmer 200; **West Rajasthan:** Bikaner 200.

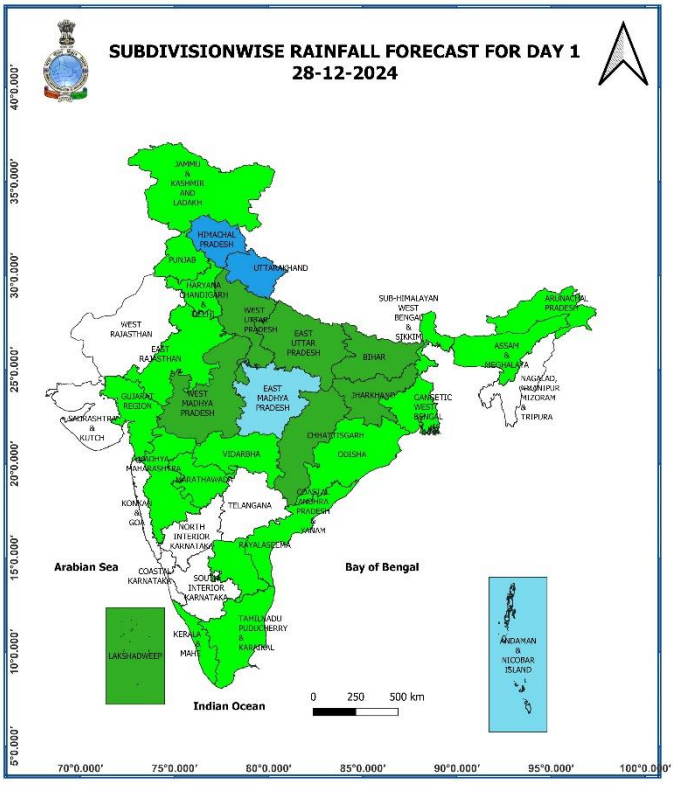
- **Minimum Temperatures Departures (as on 27-12-2024):** Minimum temperatures were **markedly above normal (5.1°C or more)** at most places over North Interior Karnataka; at many places over Madhya Pradesh, Gujarat Region, East Rajasthan, Madhya Maharashtra, Marathwada, Vidarbha and Telangana; at a few places over Odisha; at isolated places over Haryana-Chandigarh-Delhi, Uttar Pradesh and Chhattisgarh; **appreciably above normal (3.1°C to 5.0°C)** at most places over Punjab, Jharkhand, Coastal Karnataka and Rayalaseema; at a few places over Tamil Nadu, Puducherry & Karaikal; at isolated places over West Rajasthan, Bihar, Gangetic West Bengal and Coastal Andhra Pradesh & Yanam; **above normal (1.6°C to 3.0°C)** at isolated places over Uttarakhand and Assam & Meghalaya. These were **below normal (-1.6°C to -3.0°C)** at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad and near normal over rest parts of the country. Yesterday, **the lowest minimum temperature** of **5.4°C** was reported at **Churu (West Rajasthan)** over the plains of the country (Fig. 4).

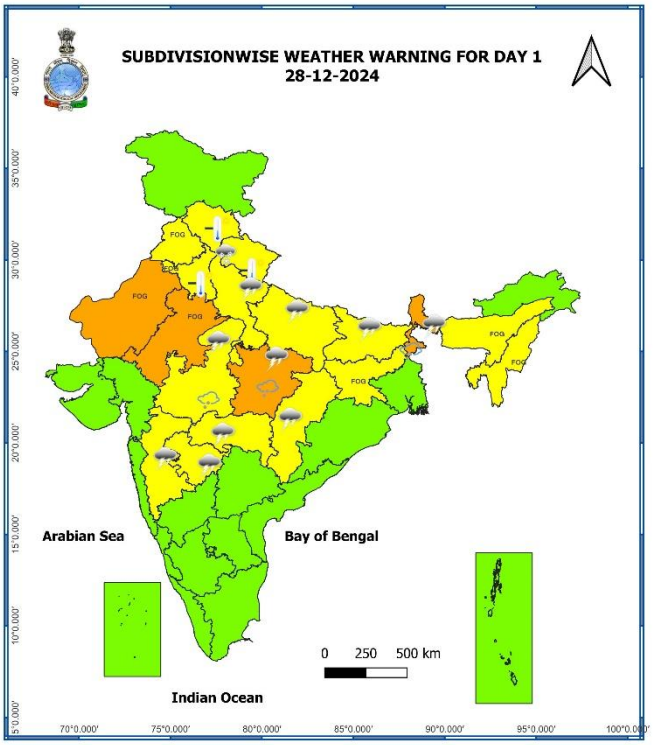
- **Maximum Temperature Departures (as on 27-12-2024):** Maximum temperatures were **markedly above normal (5.1° C or more)** at a few places over East Uttar Pradesh, at isolated places over Bihar, Chhattisgarh, East Madhya Pradesh**; appreciably above normal (3.1°C to 5.0°C)** at isolated places over West Madhya Pradesh, Jharkhand, West Bengal & Sikkim, Assam & Meghalaya; **above normal (1.6°C to 3.0°C)** at isolated places over West Uttar Pradesh, Vidarbha, Odisha, Coastal Andhra Pradesh & Yanam, Tamil Nadu, Puducherry & Karaikal, Nagaland, Manipur, Mizoram & Tripura. These were **markedly below normal (-5.1° C or less)** at many places over Delhi, at isolated places over West Rajasthan; **appreciably below normal (-3.1°C to -5.0°C)** at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Uttarakhand, Punjab, Saurashtra & Kutch, East Rajasthan; **below normal (-1.6°C to -3.0°C)** at a at isolated places over Madhya Maharashtra, North Interior Karnataka, Rayalaseema, Gujarat Region and near normal over rest part of the country . Yesterday, the **highest maximum temperature** of **35.4°C** was reported at **Honavar (Coastal Karnataka)** over the plains of the country (Fig. 2).

Meteorological Analysis (Based on 0530 hours IST)

- The **Western disturbance** as a cyclonic circulation over north Pakistan & neighbourhood now lies over North Pakistan and adjoining Jammu & Kashmir between 3.1 & 5.8 km above mean sea level with a trough aloft in upper tropospheric westerlies with its axis at 7.6 km above mean sea level roughly along Long. 72°E to the north of Lat. 19°N.
- The **induced cyclonic circulation** over central Rajasthan & neighbourhood now lies over north Rajasthan and adjoining Haryana at 1.5 km above mean sea level.
- The **trough** from north Pakistan to eastcentral Arabian Sea now runs from north Punjab to northeast Arabian Sea across above induced cyclonic circulation over north Rajasthan and adjoining Haryana, Kutch at 1.5 km above mean sea level.
- The **upper air cyclonic circulation** over east Bangladesh & neighbourhood at 1.5 km above mean sea level persists.
- The **cyclonic circulation** over southeast Arabian Sea off south Kerala coast at 3.1 km above mean sea level persists.
- **Subtropical westerly Jet Stream** with core winds of the order upto 110 knots at 12.6 km above mean sea level continues to prevail over Northwest India.
- A **fresh western disturbance** is likely to affect western Himalayan region from 01st January, 2025.

Weather Forecast & Warnings for next 7 days (Upto 0830 hours IST of 04th January, 2025)





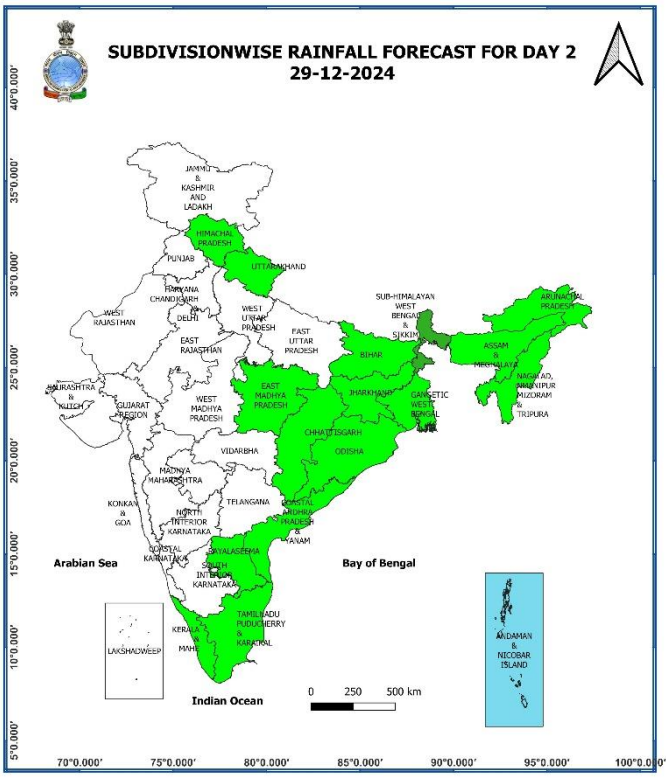
28th December (Day 1):

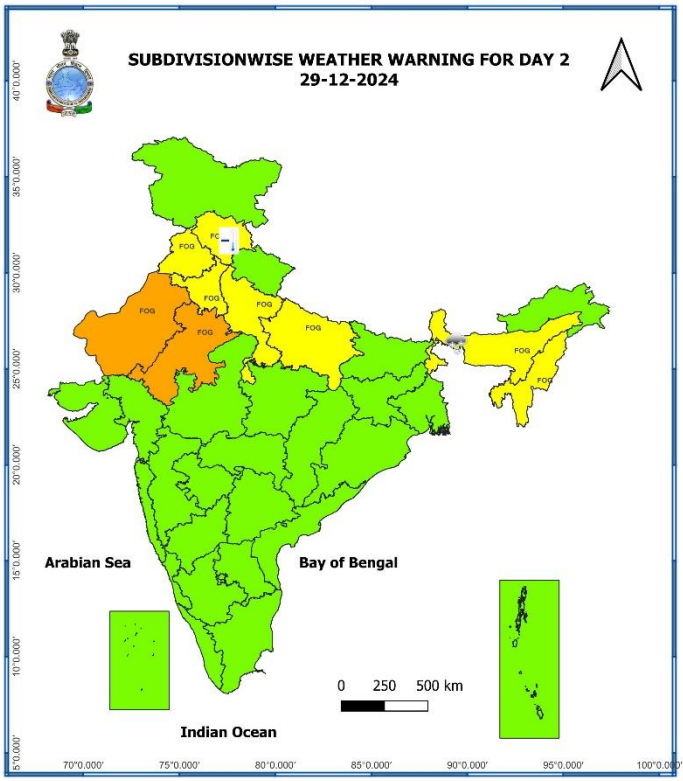
- **Thunderstorm accompanied with hailstorm & lightning** at isolated places over Madhya Pradesh and Sikkim; **with lightning** at isolated places over Uttar Pradesh, Vidarbha, Chhattisgarh, Bihar, Madhya Maharashtra and Marathwada.

- **Dense fog to very dense fog** very likely in isolated pockets of Rajasthan; **Dense fog** in some parts of Punjab; in isolated pockets of Haryana-Chandigarh-Delhi, Jharkhand, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura in night/morning hours.

- **Cold Day to severe cold day conditions** very likely in some parts of Himachal Pradesh; **cold day conditions** in isolated pockets of Uttarakhand and Haryana-Chandigarh-Delhi.

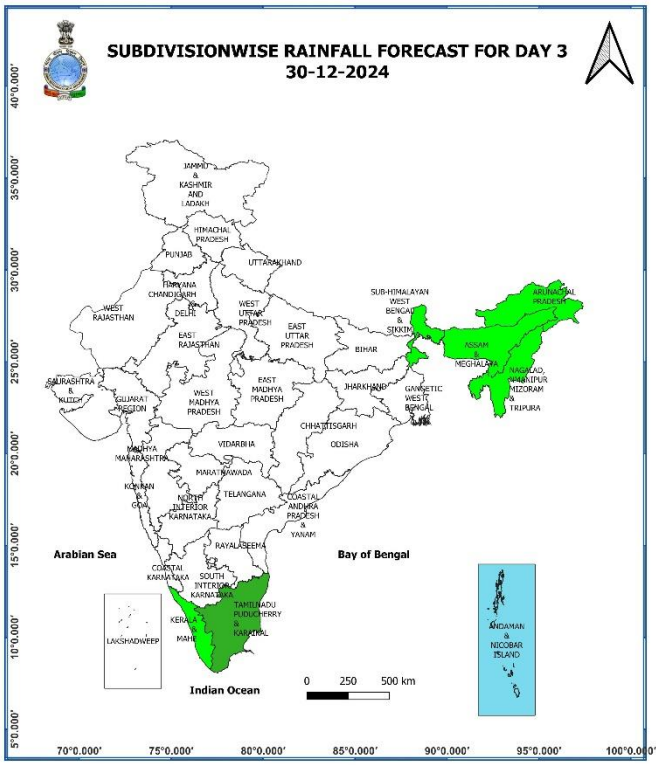
- **Heavy snowfall activity** very likely in isolated pockets of Uttarakhand.

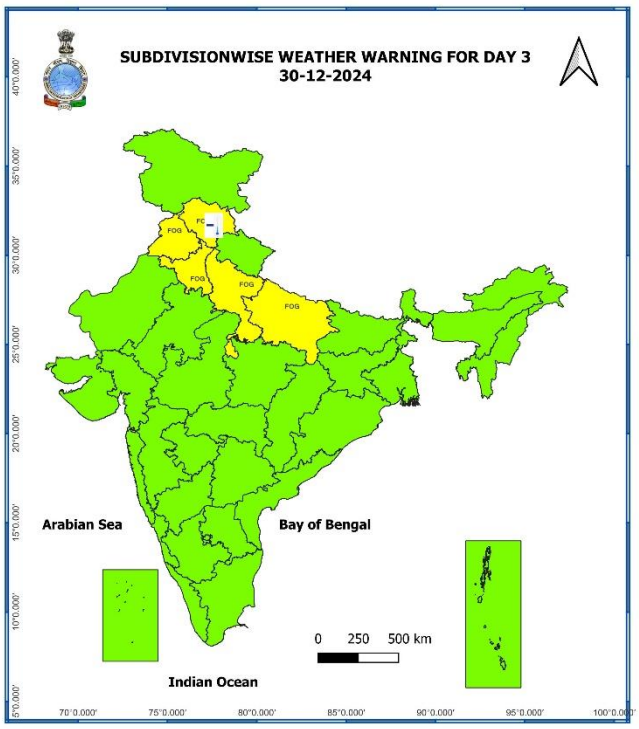




29th December (Day 2):

- **Dense fog to very dense fog** very likely in isolated pockets of Rajasthan; **Dense fog** in isolated pockets of Himachal Pradesh, Punjab, Haryana-Chandigarh-Delhi, Uttar Pradesh, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura in night/morning hours.
- **Cold wave conditions very** likely in isolated pockets of Himachal Pradesh.
- **Heavy snowfall** activity very likely in isolated pockets of Sikkim**.**

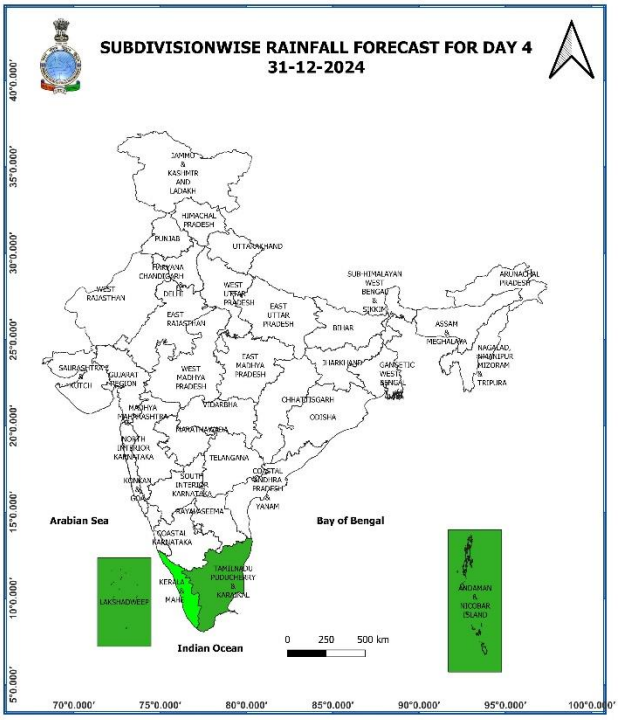


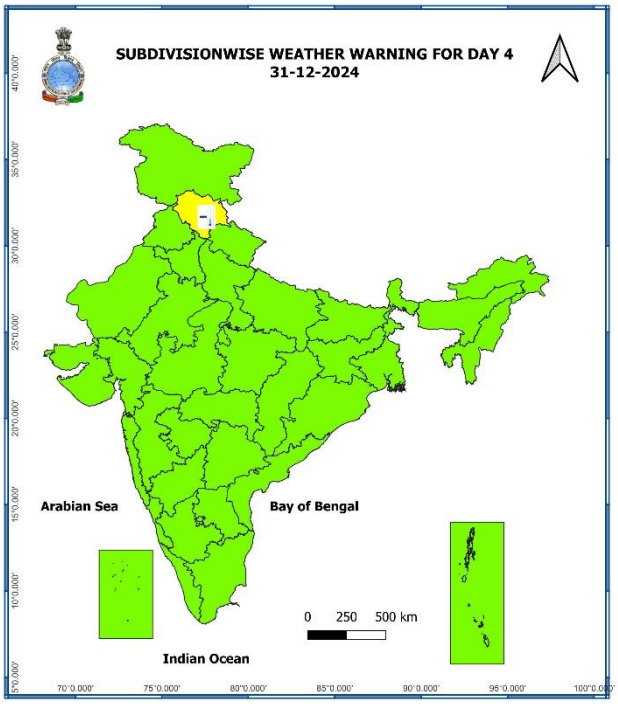


30th December (Day 3):

- **Dense fog** in isolated pockets of Himachal Pradesh, Punjab, Haryana-Chandigarh-Delhi and Uttar Pradesh, in night/morning hours.

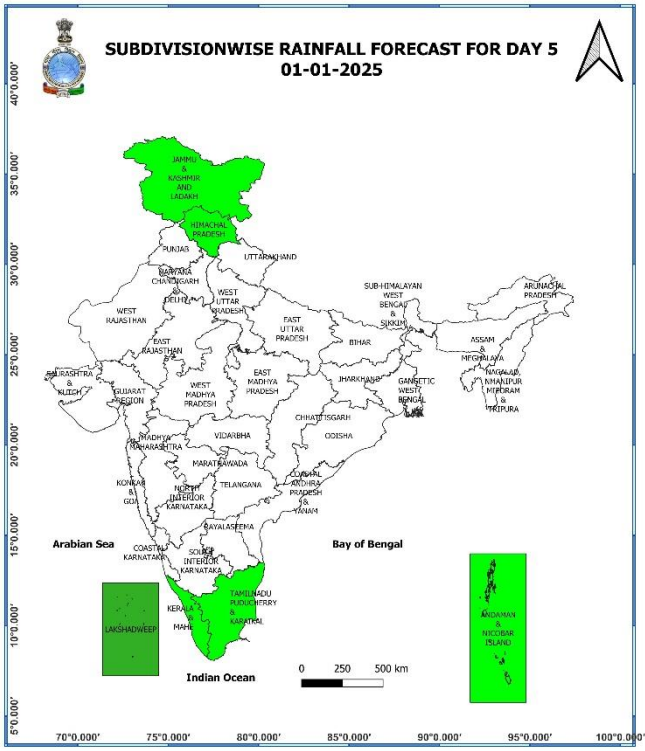
- **Cold wave conditions** likely in isolated pockets of Himachal Pradesh**.**

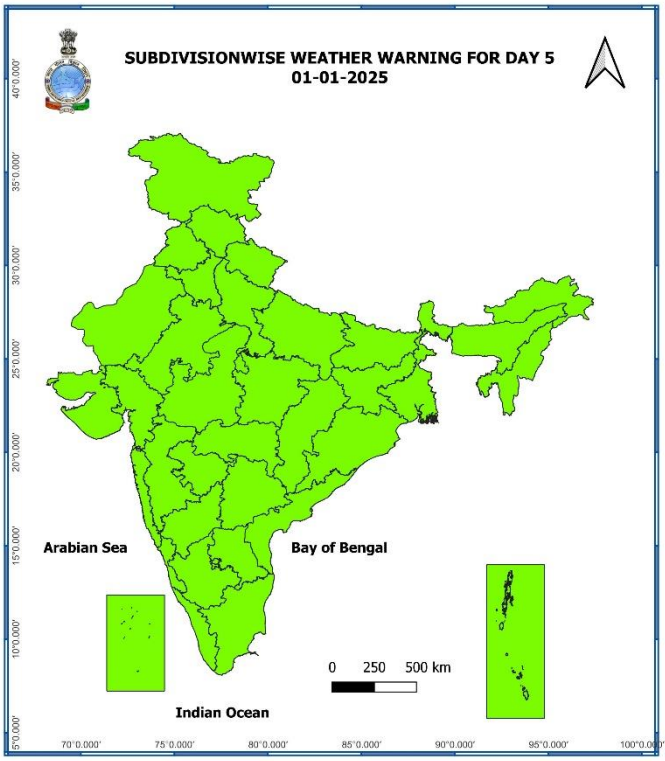




31st December (Day 4):

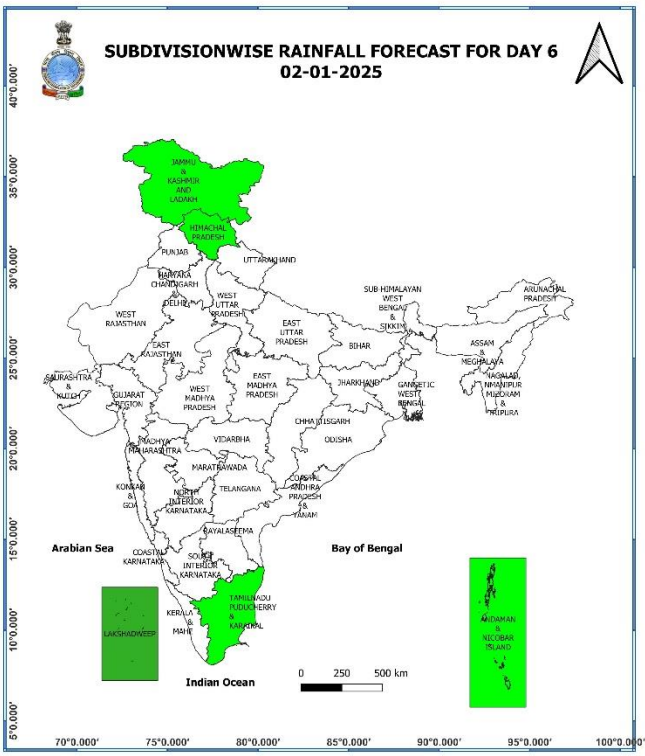
- **Cold wave conditions** likely in isolated pockets of Himachal Pradesh.

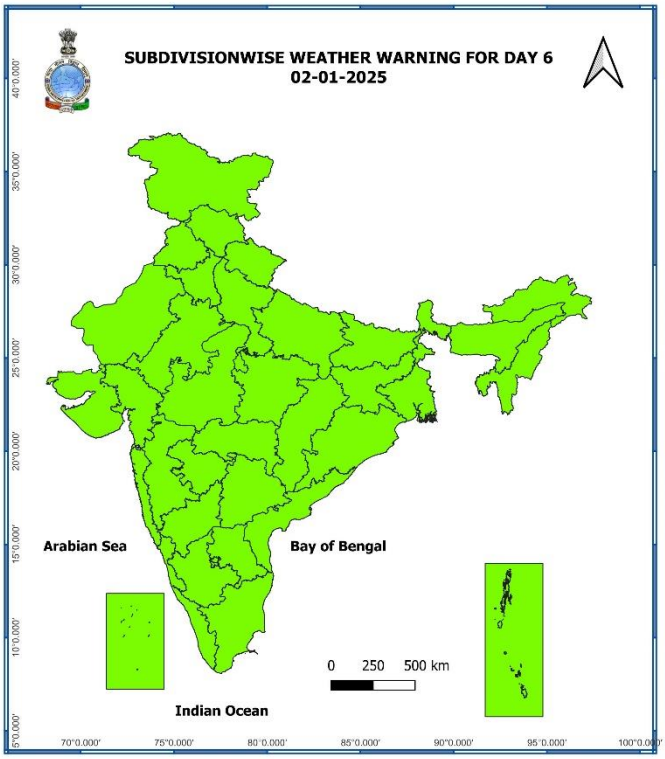




01st January (Day 5):

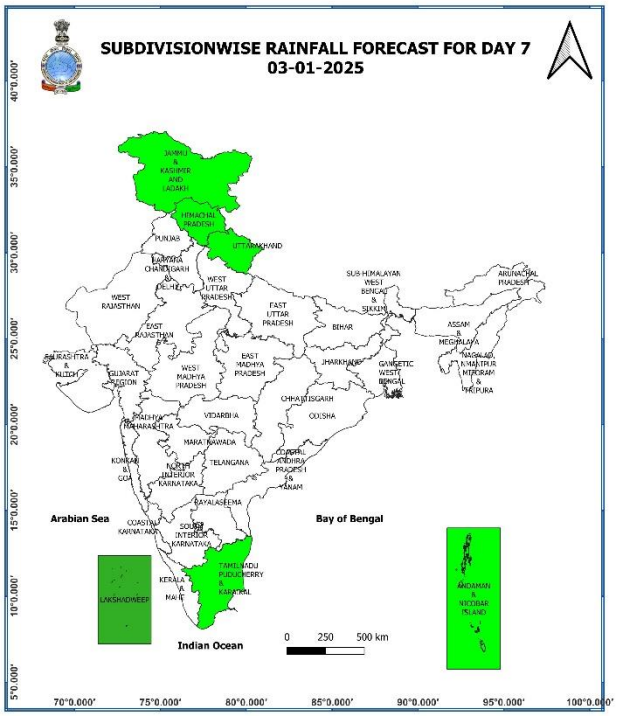
- **No weather warning.**

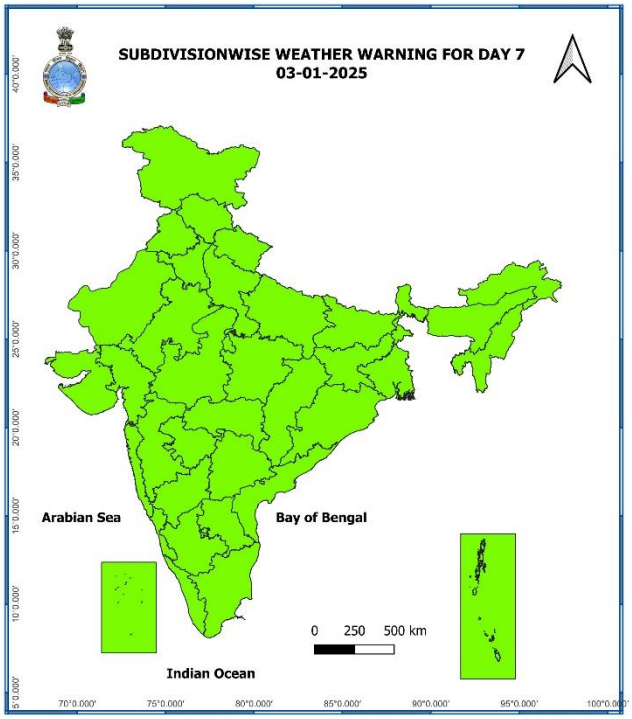




02nd January (Day 6):

- **No weather warning.**





03rd January (Day 7):

❖ **No weather warning.**

Weather Outlook for subsequent 3 days (During 04th January, 2025– 06th January, 2025)

❖ Isolated to scattered light to moderate rainfall over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Andaman & Nicobar Islands.

❖ 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 & Action Suggested due to Snowfall over Uttarakhand on 28th December.

A. 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 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
- ❖ Damage to horticulture and standing crops in some areas due to inundation.
- ❖ It may lead to riverine flooding in some river catchments (for riverine flooding please visit Web page of CWC).

B. Action Suggested

- ❖ 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 and action suggested due to thunderstorm with lightning & Hailstorm over northwest & central India.

Impact expected:

- ❖ Strong wind/hail may damage plantation, horticulture and standing crops.
- ❖ Hail may injure people and cattle at open places.
- ❖ Partial damage to vulnerable structures due to strong winds.
- ❖ Minor damage to kutcha houses/walls and huts.
- ❖ Loose objects may fly.

Action suggested:

- ❖ Stay indoors, close windows & doors and avoid travel if possible.
- ❖ Take safe shelters; do not take shelter under trees.
- ❖ Do not lie on concrete floors and do not lean against concrete walls.
- ❖ Unplug electrical/ electronic appliances.
- ❖ Immediately get out of water bodies.
- ❖ Keep away from all the objects that conduct electricity.

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

❖ 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 over Himachal Pradesh:

- 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/ Ground Frost likely over various parts of the country

- Keep the harvested produce in safer places or cover the produce with tarpaulin sheets in the fields.
- Use hail nets to protect orchards and vegetable plants in **Himachal Pradesh, Uttarakhand, Punjab, Haryana, West Uttar Pradesh, East Rajasthan, Madhya Pradesh, Vidarbha, Madhya Maharashtra, Marathwada** and **Gujrat region**.
- In **Himachal Pradesh** and **Uttarakhand**, in case of heavy snowfall, shake the trees to remove snow immediately from the branches.
- Make necessary arrangements to drain out excess water from standing crop fields and vegetables in **Haryana, West Uttar Pradesh, West Madhya Pradesh, Tamil Nadu**; **Coastal Andhra Pradesh** and **Rayalaseema.**
- Provide mechanical support to horticultural crops and staking to vegetables.
- In **Arunachal Pradesh, Meghalaya, Nagaland** and **Manipur,** apply light and frequent irrigation to the standing crops in the evening to protect them 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/ hailstorms and provide them with balanced feed.
- Store feed and fodder in a safe place to prevent spoilage.
- 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

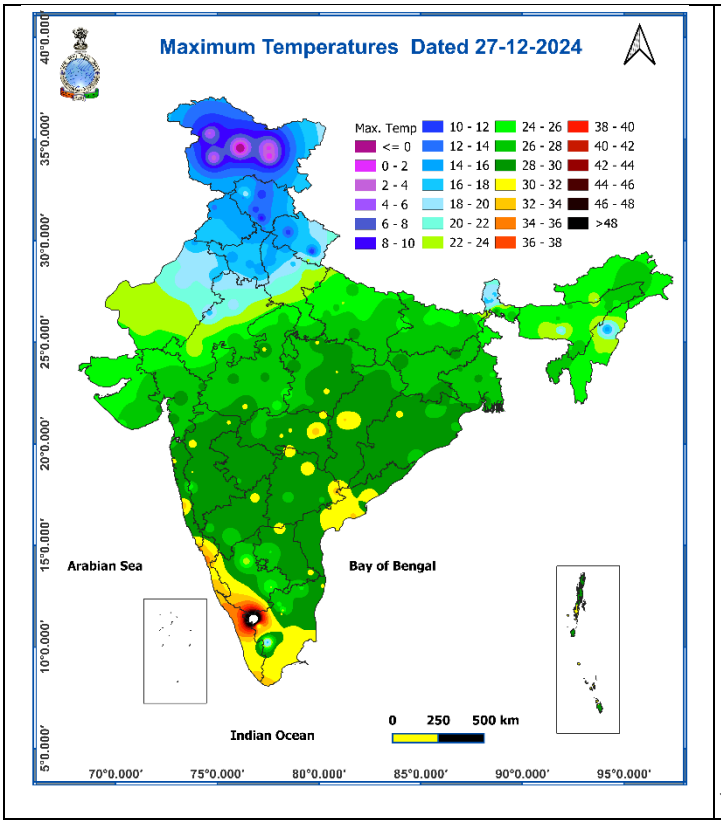


Fig. 2: Departure of Maximum Temperatures

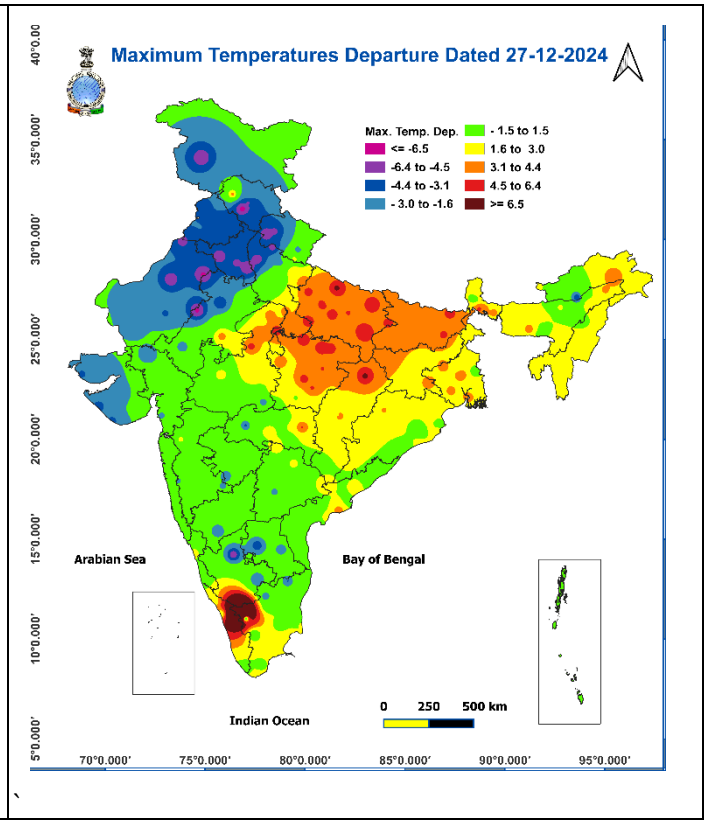


Fig. 3: Minimum Temperatures

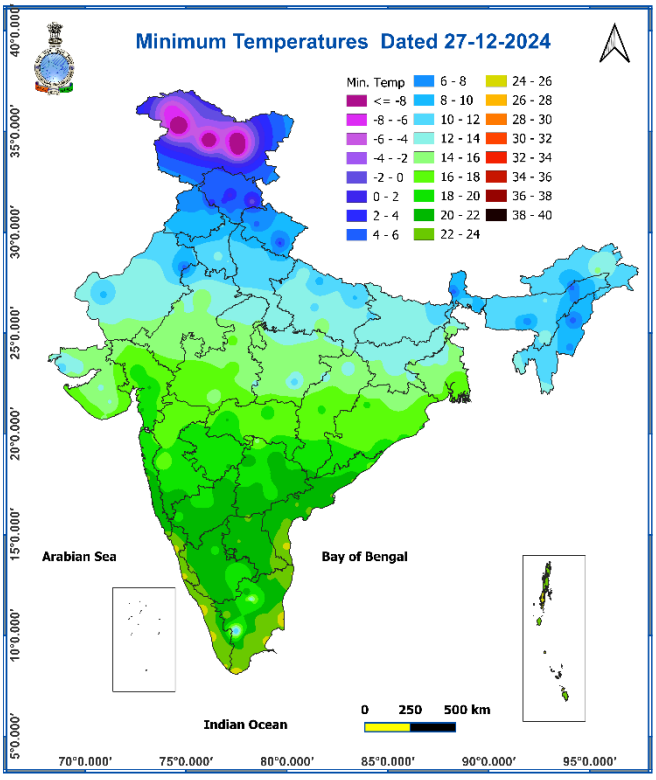
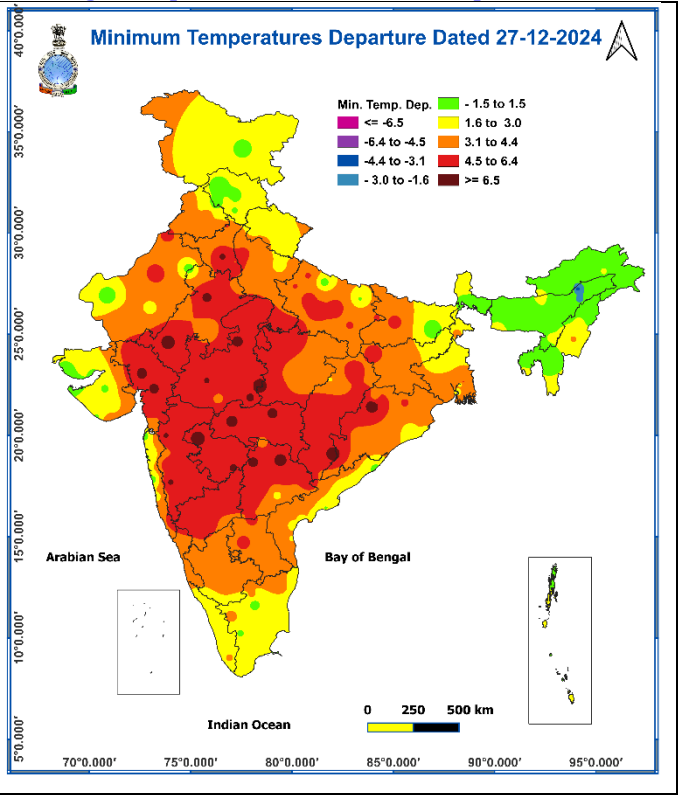
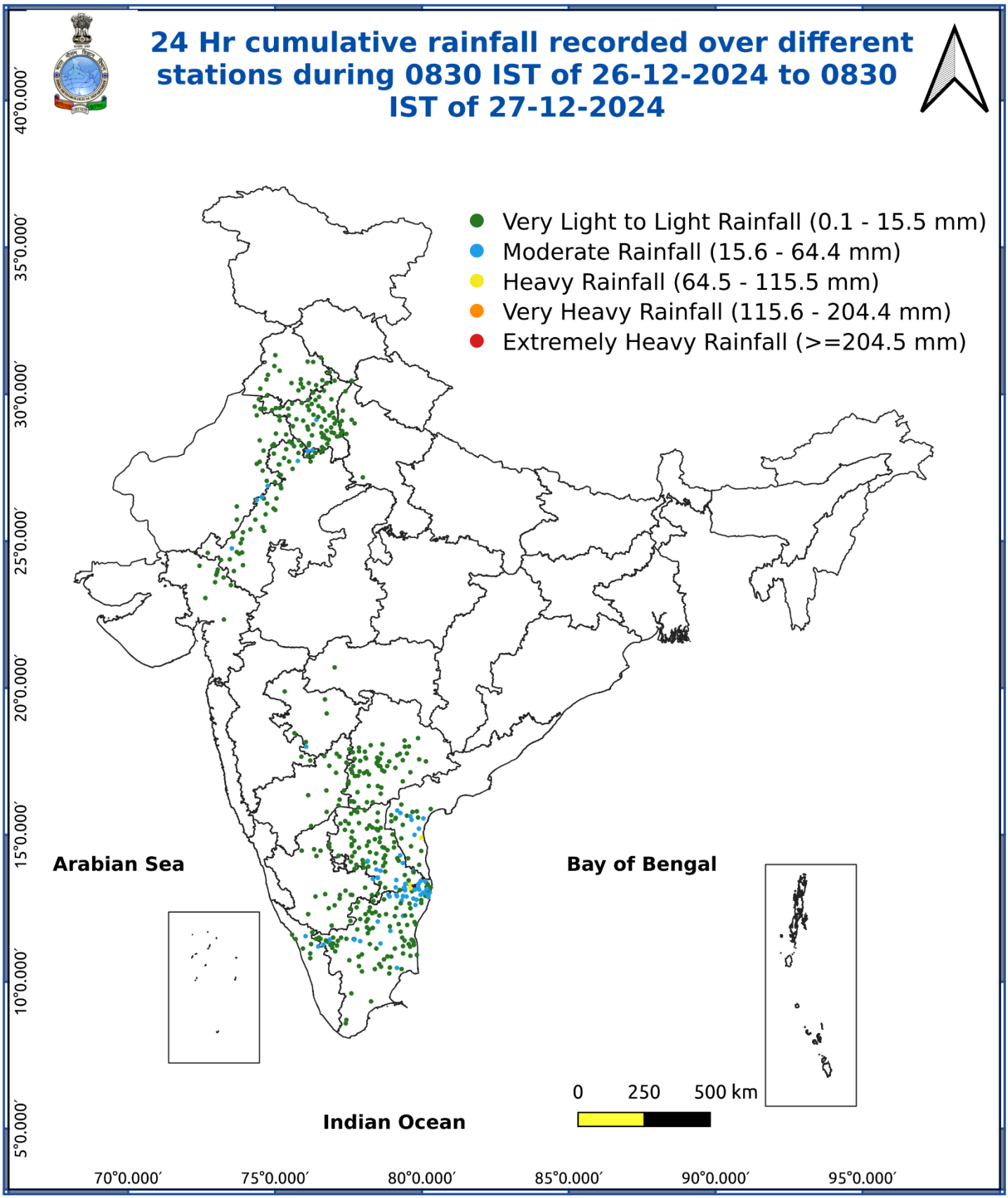


Fig. 4: Departure of Minimum Temperatures



* 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)

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



राष्ट्रीय मौसम पूर्वानुमान केन्द्र
भारत मौसम विज्ञान विभाग
पृथ्वी विज्ञान मंत्रालय

Years of Service to the Nation
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National Weather Forecasting Centre
India Meteorological Department
Ministry of Earth Sciences

LEGENDS

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5. उप-हिमालयी पश्चिम बंगाल और सिक्किम
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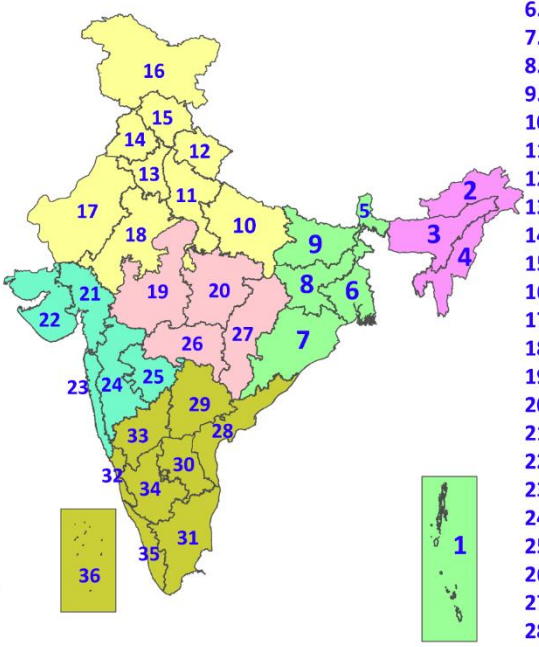
14. पंजाब
15. हिमाचल प्रदेश
16. जम्मू और कश्मीर और लद्दाख
17. पश्चिम राजस्थान
18. पूर्वी राजस्थान
19. पश्चिम मध्य प्रदेश
20. पूर्वी मध्य प्रदेश
21. गुजरात
22. सौराष्ट्र
23. कोंकण और गोवा
24. मध्य महाराष्ट्र
25. मराठवाड़ा
26. विदर्भ
27. छत्तीसगढ़
28. तटीय आंध्र प्रदेश और यनम
29. तेलंगाना
30. रायलसीमा
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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