

Friday, December 20, 2024
Time of Issue: 0800 hours IST
(MORNING)

ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

Significant Weather Features:

Weather Systems:

- ❖ The **well marked low pressure** area over southwest & adjoining westcentral Bay of Bengal has moved nearly northwards and lay over westcentral & adjoining southwest Bay of Bengal at 0530 hours IST of today, the 20th December 2024. The associated upper cyclonic circulation extends upto 5.8 km above mean sea level. The system is likely to continue to move nearly northwards and concentrate into a depression over westcentral Bay of Bengal during next 12 hours. Thereafter, it is likely to move north-northeastwards maintaining the intensity of depression for subsequent 24 hours.
- ❖ A **Western disturbance** seen as a trough in lower & middle tropospheric westerlies runs roughly along Long. 70°E to the north of Lat. 25°N with an induced cyclonic circulation in the lower levels over northwest Rajasthan and neighbourhood.
- ❖ A fresh and active Western Disturbance is likely to affect Western Himalayan region & adjoining plains from 27th December 2024.

Forecast & Warnings (upto 7 days)

- ❖ Light to moderate rainfall very likely at a few places with **heavy rainfall** at isolated places over Coastal Andhra Pradesh on 20th December.
- ❖ **Light to moderate rainfall** very likely at a few places over North Tamil Nadu, Puducherry and Rayalaseema on 20th December.
- ❖ **Light to moderate rainfall** very likely at a few places over coastal Odisha and coastal Gangetic west Bengal on 20th & 21st, over Assam & Meghalaya during 21st - 23rd, Nagaland, Manipur, Mizoram & Tripura during 20th - 24th 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; 1-5°C over Himachal Pradesh;

3-6°C over major parts of Uttarakhand, Punjab, Haryana, Chandigarh, Delhi, West Rajasthan;

6-12°C over most parts of Uttar Pradesh, Bihar, Jharkhand & Central India.

Today, the **lowest minimum temperature** of **2.6°C** is reported at **Adampur IAF (Punjab)** over the plains of the country.

Minimum temperatures have fallen by 1-2°C over some parts of Jammu-Kashmir & risen by 2-3°C over many parts of East Madhya Pradesh, Chhattisgarh, Marathwada.

Forecast of temperature:

- ❖ No significant change in minimum temperatures likely over Northwest India during next 3 days and gradual rise by about 2°C thereafter.
- ❖ No significant change in minimum temperatures likely over East India during next 4 days and gradual fall by 2-3°C thereafter.
- ❖ Rise in minimum temperatures by 2-3°C likely over Maharashtra & Central India during next 5 days.
- ❖ No significant change in minimum temperatures likely over Gujarat State during next 5 days.

Cold Wave Warnings:

- ❖ **Cold wave to severe cold wave** conditions very likely to prevail in some parts of Himachal Pradesh during 20th -23rd; in isolated pockets over West Rajasthan on 20th & 21st December.
- ❖ **Cold wave** conditions very likely in some parts of Punjab on 20th; in isolated pockets over Punjab on 21st & 22nd, Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad during 20th-25th, Haryana-Chandigarh on 20th & 21st, West Rajasthan on 22nd & 23rd, Himachal Pradesh on 24th & 25th December.

Dense Fog Warnings:

- ❖ **Dense fog conditions** very likely to prevail during late night/early morning hours in isolated pockets of Punjab, Haryana on 20th & during 22nd-24th, Uttar Pradesh till 20th, East Rajasthan & Jharkhand during 20th-22nd, West Bengal & Sikkim & Bihar on 21st & 22nd December.

Ground Frost Warnings:

- ❖ **Ground Frost** conditions very likely in isolated pockets of Himachal Pradesh during 20th-23rd December.

iii. Weather forecast over Delhi/NCR during 20th to 22nd Dec. 2024

20.12.2024: Mainly clear sky. The predominant surface wind is likely to be from east direction with 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 less than 08 kmph from east direction during afternoon. It will decrease thereafter becoming less than 04 kmph from north 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 northwest direction with speed less than 04 kmph during morning hours. Smog/moderate to dense fog is likely in the morning hours. The wind speed will gradually increase becoming 06-08 kmph from northwest direction during afternoon. It will decrease thereafter becoming less than 04 kmph from northwest direction during evening and night. Smog/shallow fog is likely in the evening/night.

22.12.2024: Mainly clear sky. The predominant surface wind is likely to be from variable direction with wind speed less than 02 kmph during morning hours. Smog/moderate to dense fog is likely in the morning. The wind speed will increase thereafter becoming 04-06 kmph from southeast direction during afternoon. It will gradually decrease becoming less than 04 kmph from southeast direction during evening and night. Smog/shallow is likely in the evening/night.

*** 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

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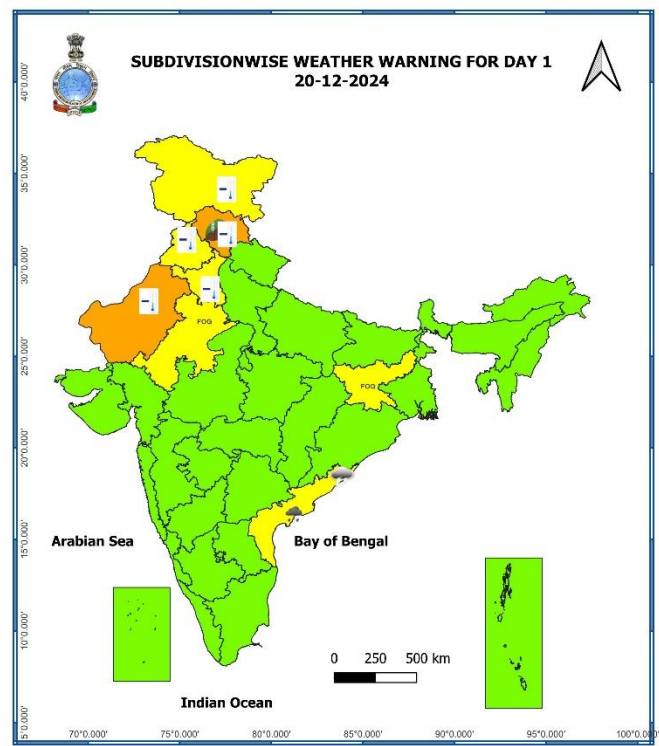
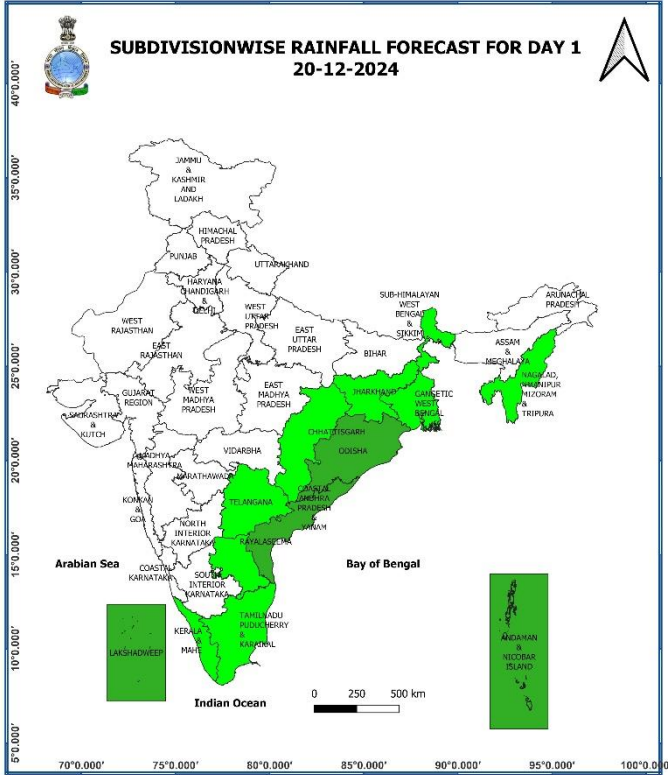
Main Weather Observations:

- ❖ **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, 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): **Nil**.
- ❖ **Shallow to moderate fog** (at 0530 Hours IST of today) reported in isolated pockets of Punjab, Delhi, Uttar Pradesh, Madhya Pradesh, Jharkhand.
- ❖ **Visibility reported** (at 0530 Hours IST of today) (≤ 500 m) (in meter): **Uttar Pradesh: Agra 500**.
- ❖ **Minimum Temperatures Departures (as on 19-12-2024):** Minimum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at a few places over Odisha, Coastal Andhra Pradesh & Yanam, Rayalaseema, Tamil Nadu, Puducherry & Karaikal; at isolated places over Bihar and South Interior Karnataka; **above normal (1.6°C to 3.0°C)** at isolated places over Gangetic West Bengal and Kerala & Mahe. These were **appreciably below normal (-3.1°C to -5.0°C)** at isolated places over West Rajasthan, Madhya Pradesh and Assam & Meghalaya; **below normal (-1.6°C to -3.0°C)** at a few places over Maharashtra and Saurashtra & Kutch; at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Haryana-Chandigarh-Delhi, Uttar Pradesh, Chhattisgarh and near normal over rest parts of the country. Yesterday, **the lowest minimum temperature of 2.6°C** was reported at **Adampur_IAF (Punjab)** over the plains of the country.
- ❖ **Maximum Temperature Departures (as on 19-12-2024):** Maximum temperatures were **Markedly above normal (5.1°C or more)** at isolated places over Chhattisgarh; **appreciably above normal (3.1°C to 5.0°C)** at a few places over East Uttar Pradesh, Bihar, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Tamil Nadu, Puducherry & Karaikal; **above normal (1.6°C to 3.0°C)** at a few places over Vidarbha, Madhya Pradesh, Gangetic West Bengal; at isolated places over Jharkhand, Odisha, Telangana, Madhya Maharashtra. These were **appreciably below normal (-3.1°C to -5.0°C)** at isolated places over West Rajasthan, Saurashtra & Kutch; **below normal (-1.6°C to -3.0°C)** at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, West Rajasthan, Coastal Andhra Pradesh & Yanam 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 0530 hours IST)

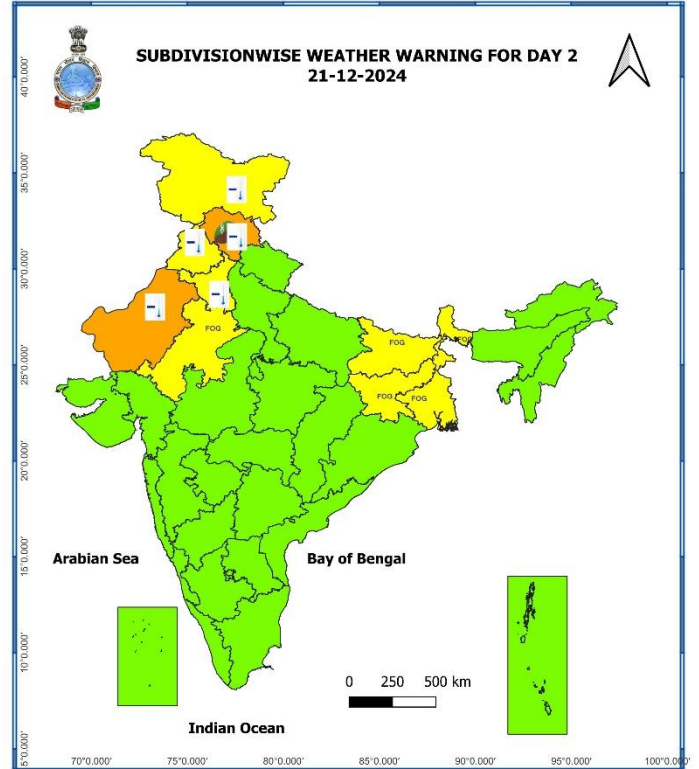
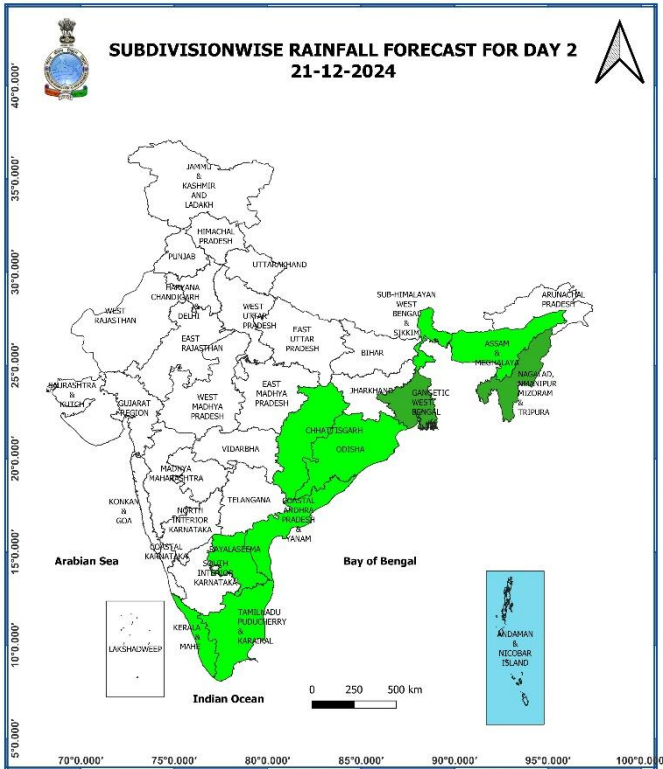
- ❖ The **well marked low pressure** area over southwest & adjoining westcentral Bay of Bengal has moved nearly northwards and lay over westcentral & adjoining southwest Bay of Bengal at 0530 hours IST of today, the 20th December 2024. The associated upper cyclonic circulation extends upto 5.8 km above mean sea level. The system is likely to continue to move nearly northwards and concentrate into a depression over westcentral Bay of Bengal during next 12 hours. Thereafter, it is likely to move north-northeastwards maintaining the intensity of depression for 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. 25°N.
- ❖ The **induced cyclonic circulation** over northwest Rajasthan and neighbourhood at 1.5 km above mean sea level persists.
- ❖ The **upper air cyclonic circulation** over northeast Bangladesh and neighbourhood at 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 prevail over North India.
- ❖ A fresh and active **western disturbance** is likely to affect western Himalayan region & adjoining plains from 27th December 2024.

Weather Forecast & Warnings for next 7 days (Upto 0830 hours IST of 27th December, 2024)



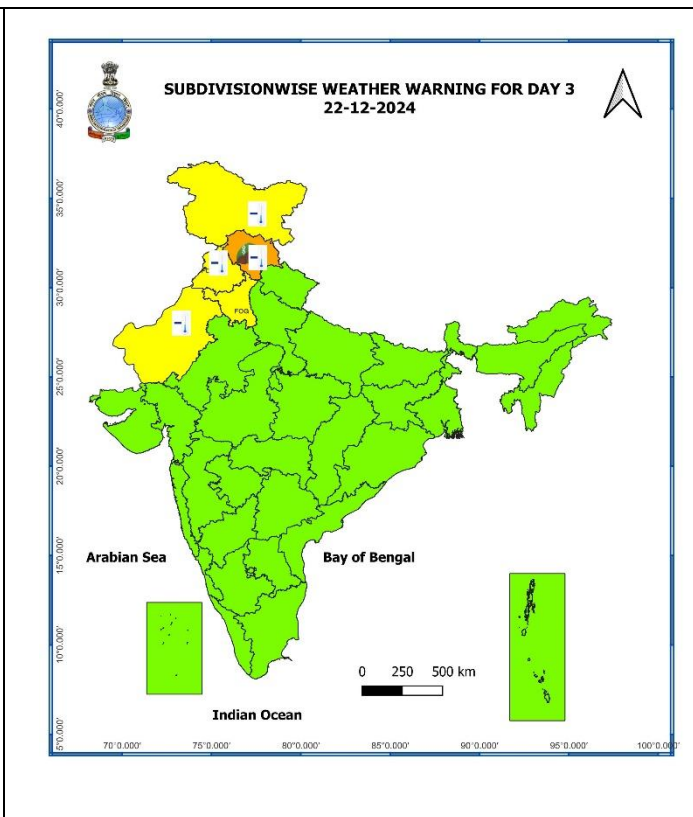
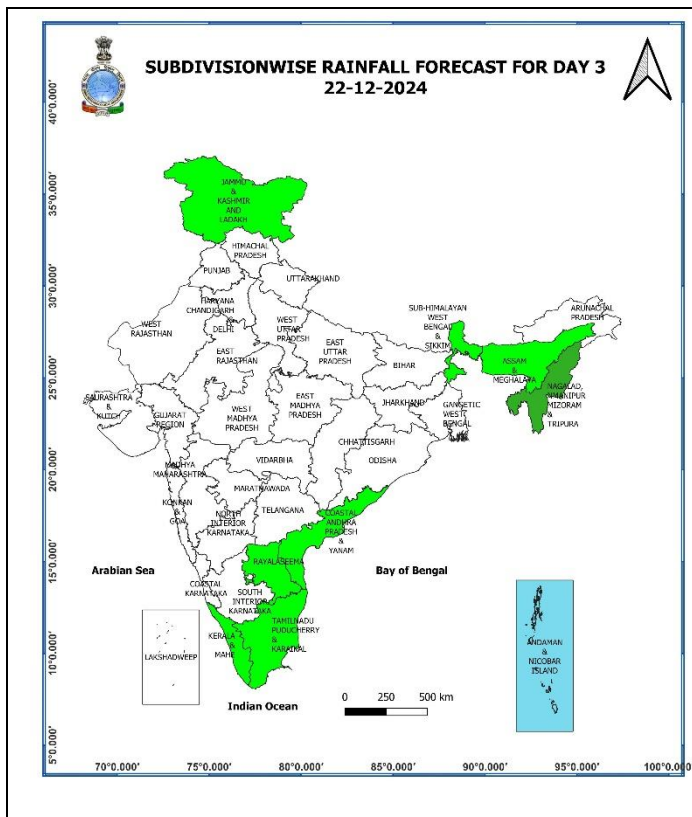
20 December (Day 1):

- ❖ **Heavy rainfall (≥ 7 cm)** very likely at isolated places over Coastal Andhra Pradesh & Yanam.
- ❖ **Thunderstorm accompanied with lightning** very likely at isolated places over Coastal Andhra Pradesh & Yanam.
- ❖ **Dense fog** very likely in isolated pockets of East Rajasthan and Jharkhand in night/morning hours.
- ❖ **Cold Wave to severe cold wave Conditions** very likely at a few places of Himachal Pradesh and in isolated pockets of west Rajasthan; **Cold Wave Conditions** in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Punjab and Haryana-Chandigarh.
- ❖ **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 prevail along and off north Tamilnadu, Andhra Pradesh coasts and many parts of westcentral Bay of Bengal. Fishermen are advised not to venture into these areas.



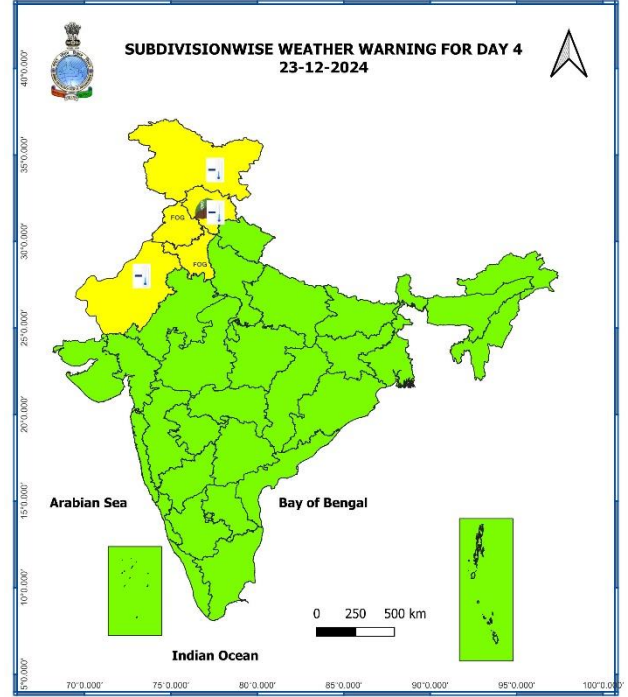
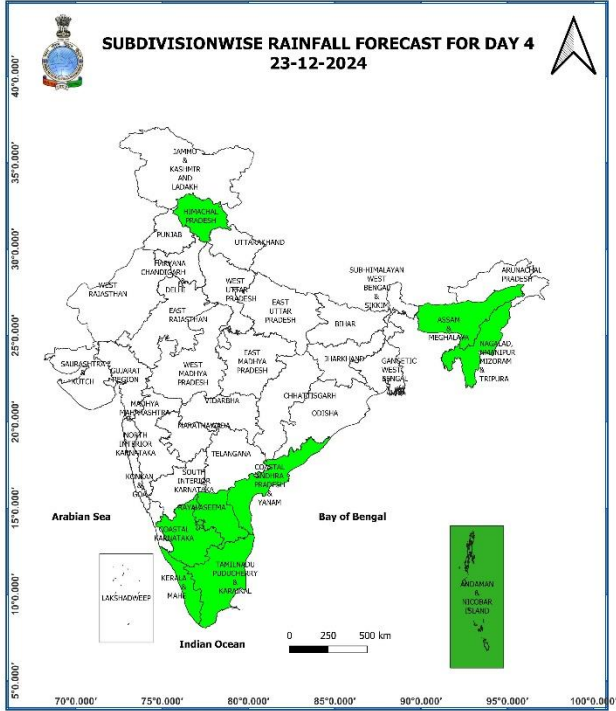
21 December (Day 2):

- ❖ **Dense fog** very likely in isolated pockets of East Rajasthan, West Bengal & Sikkim, Bihar and Jharkhand in night/morning hours.
- ❖ **Cold Wave to severe cold wave Conditions** very likely at a few places of Himachal Pradesh and in isolated pockets of west Rajasthan; **Cold Wave Conditions** in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Punjab and Haryana-Chandigarh.
- ❖ **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 prevail over parts of westcentral Bay of Bengal along and off North Andhra Pradesh coast adjoining south Odisha coasts. Fishermen are advised not to venture into these areas.



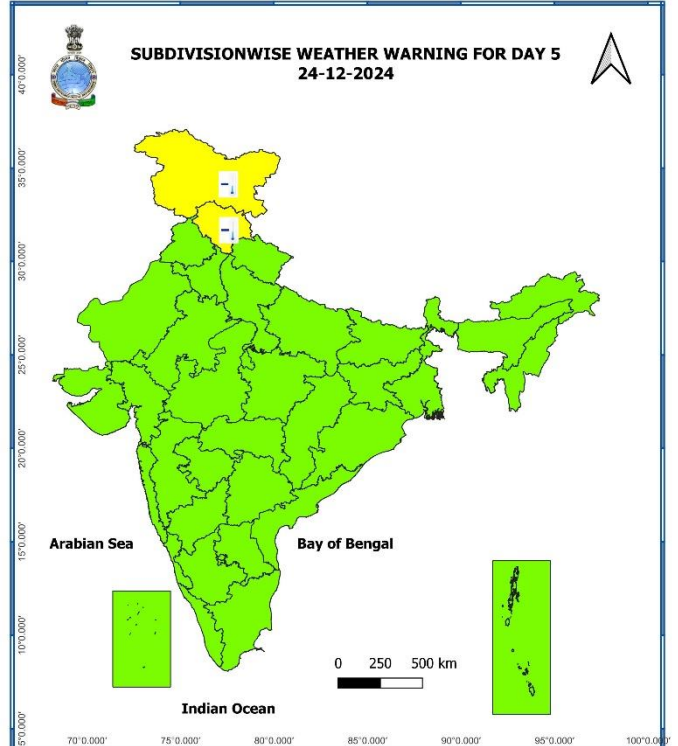
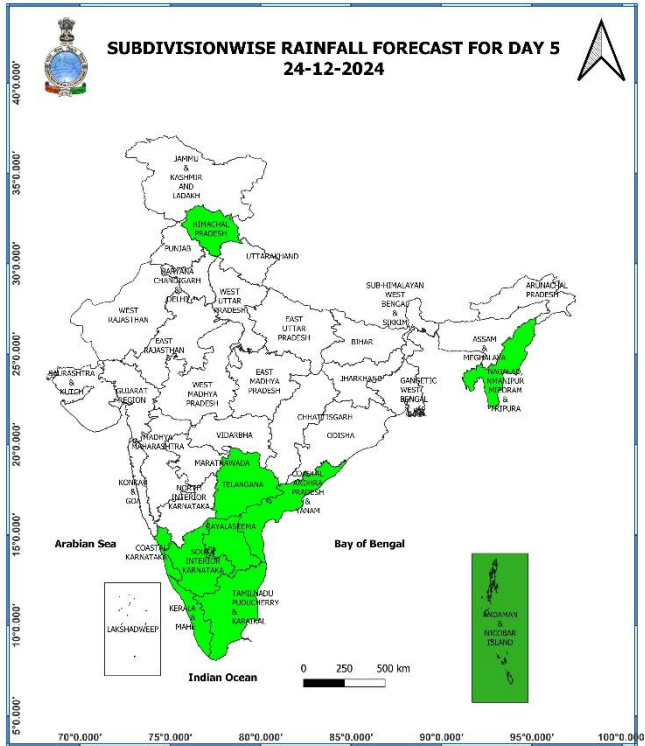
22 December (Day 3):

- ❖ **Dense fog** very likely in isolated pockets of Punjab and Haryana-Chandigarh in night/morning hours.
- ❖ **Cold Wave to severe cold wave Conditions** very likely at a few places of Himachal Pradesh; **Cold Wave Conditions** in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Punjab and West 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 prevail over parts of westcentral Bay of Bengal and parts of northwest Bay of Bengal, off north Andhra Pradesh, Odisha coasts. Fishermen are advised not to venture into these areas.



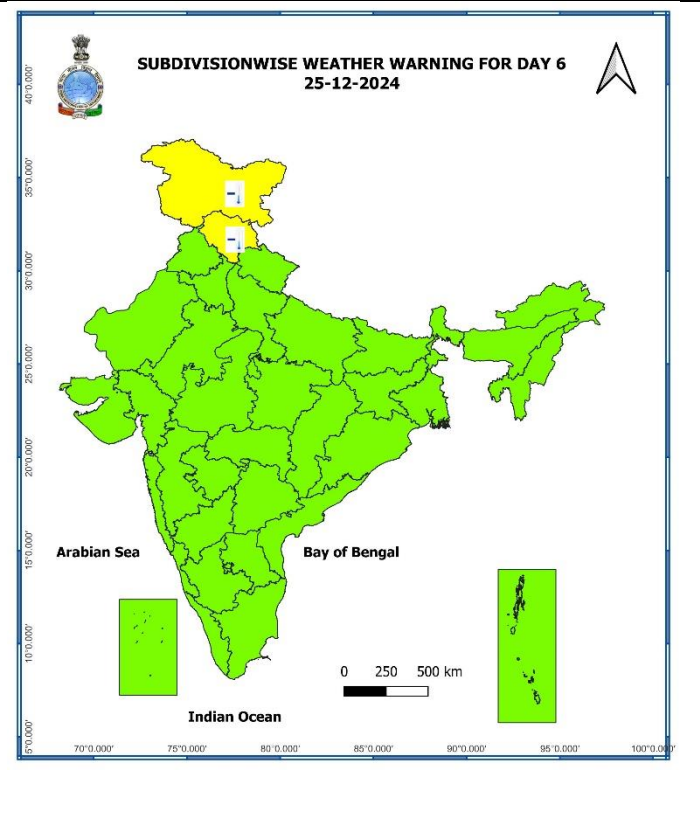
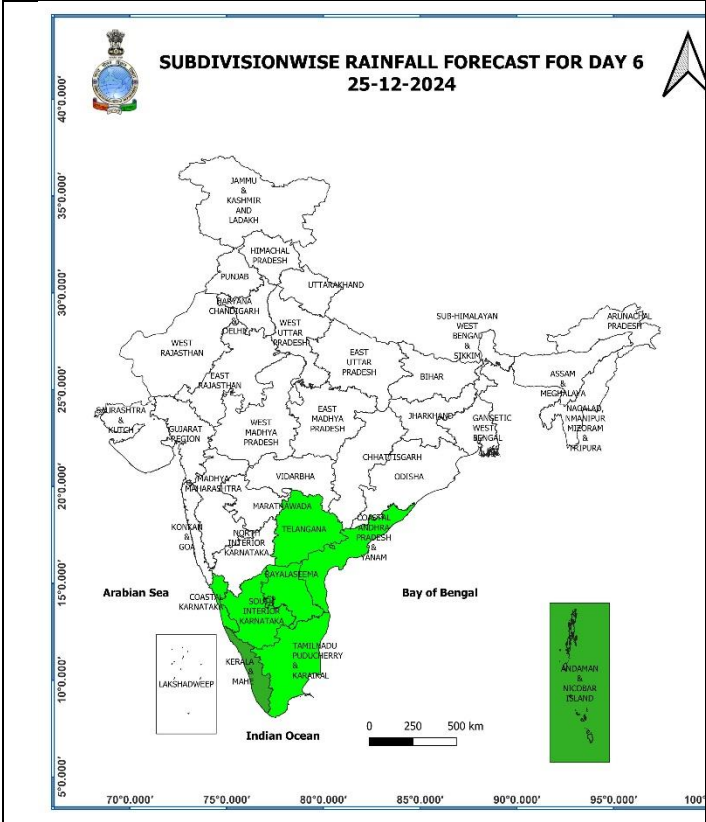
23 December (Day 4):

- ❖ **Dense fog** likely in isolated pockets of Punjab and Haryana-Chandigarh in night/morning hours.
- ❖ **Cold Wave Conditions** likely in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh and West 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 and parts of northwest Bay of Bengal, off north Andhra Pradesh, Odisha coasts. Fishermen are advised not to venture into these areas.



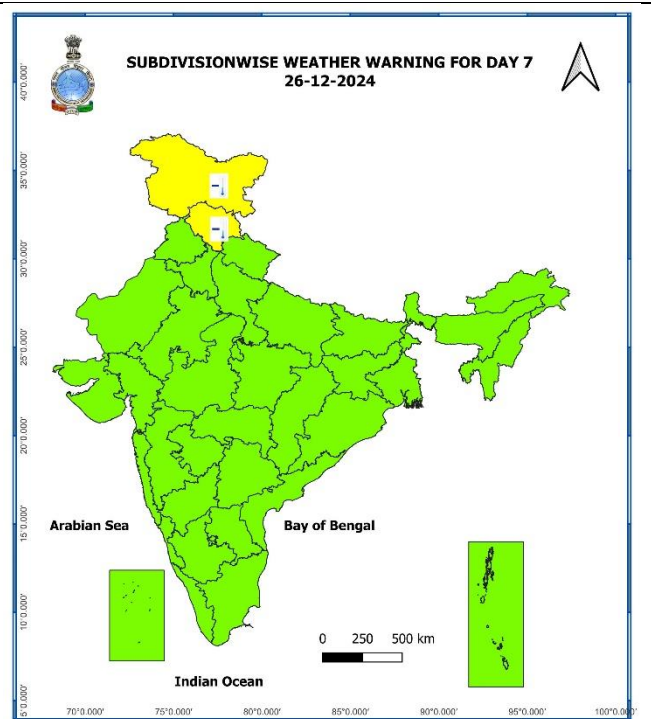
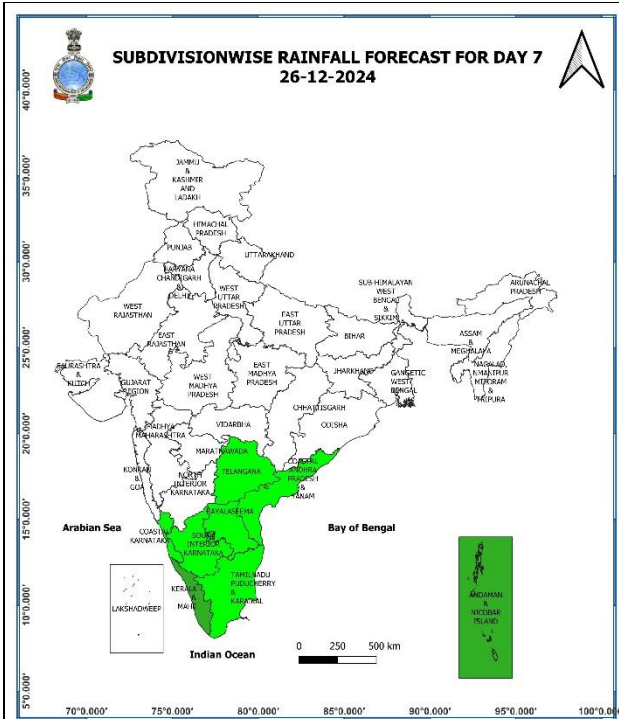
24 December (Day 5):

- ❖ **Cold Wave Conditions** likely in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad and Himachal Pradesh.



25 December (Day 6):

- ❖ **Cold Wave Conditions** likely in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad and Himachal Pradesh.



26 December (Day 7):

- ❖ **Cold Wave Conditions** likely in isolated pockets of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad and Himachal Pradesh.

Weather Outlook for subsequent 3 days (During 27th December – 29th 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 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 nurseries, pigeon pea, green gram, black gram, sesame and other standing crop fields and vegetables in **South Coastal Andhra Pradesh**.
- 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

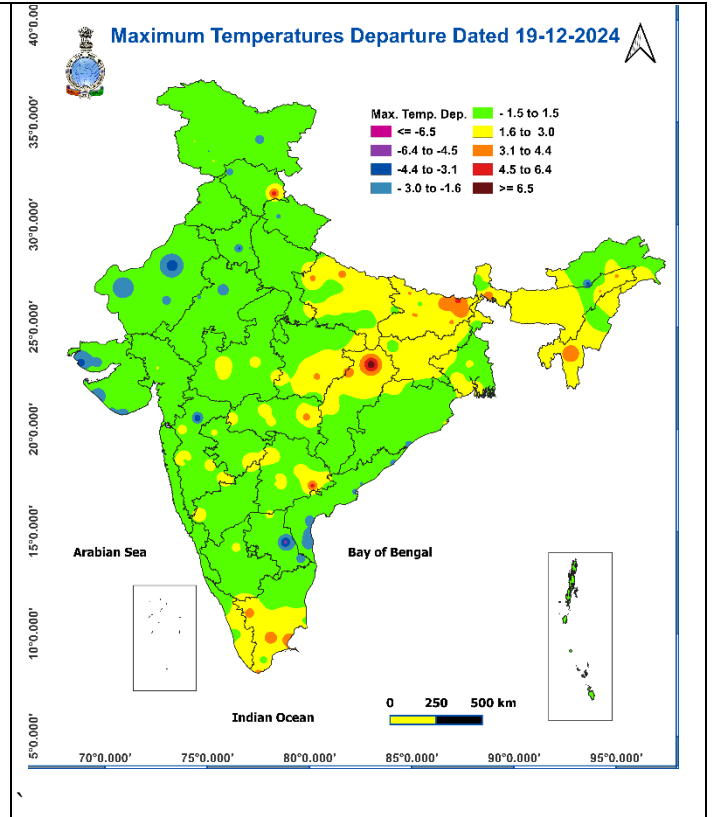
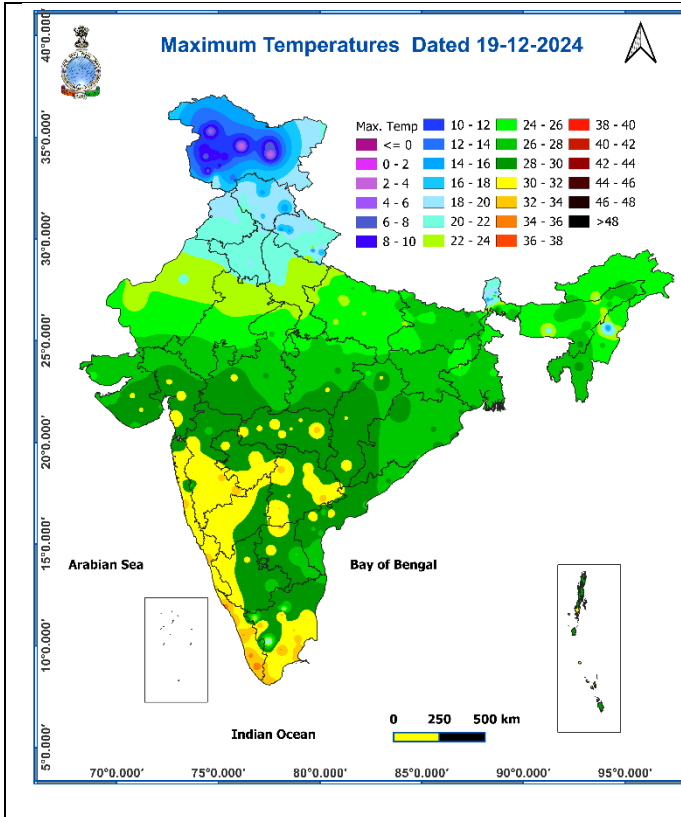


Fig. 3: Minimum Temperatures

Fig. 4: Departure of Minimum Temperatures

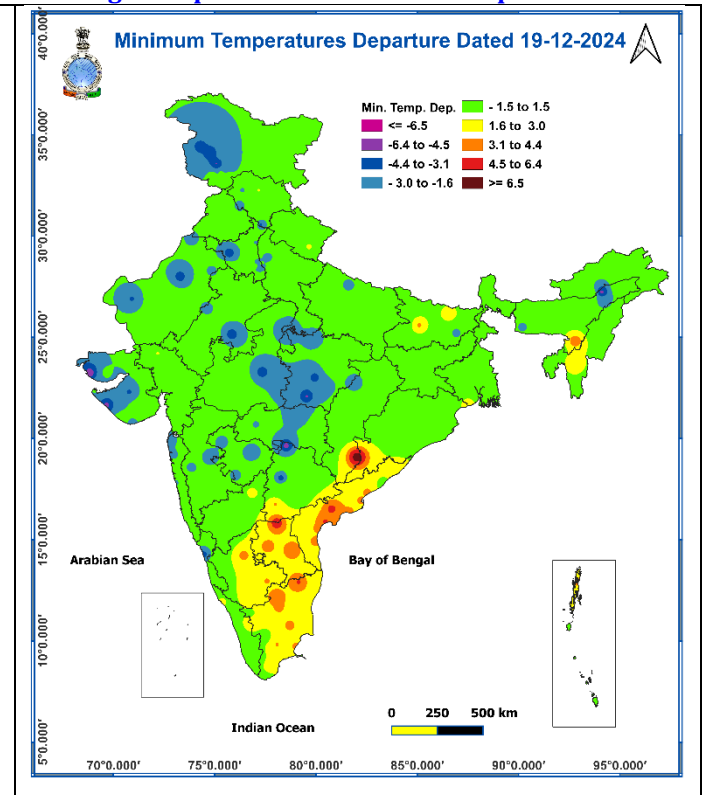
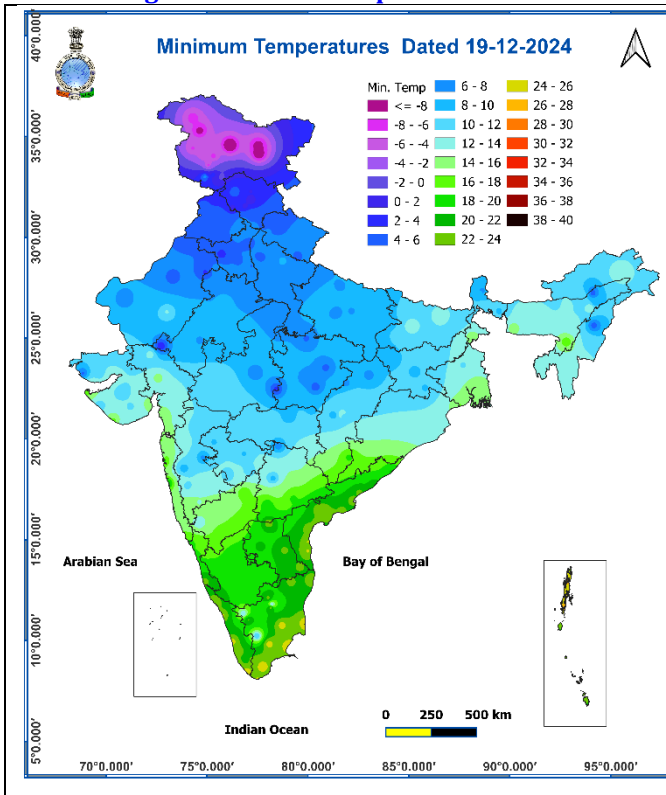
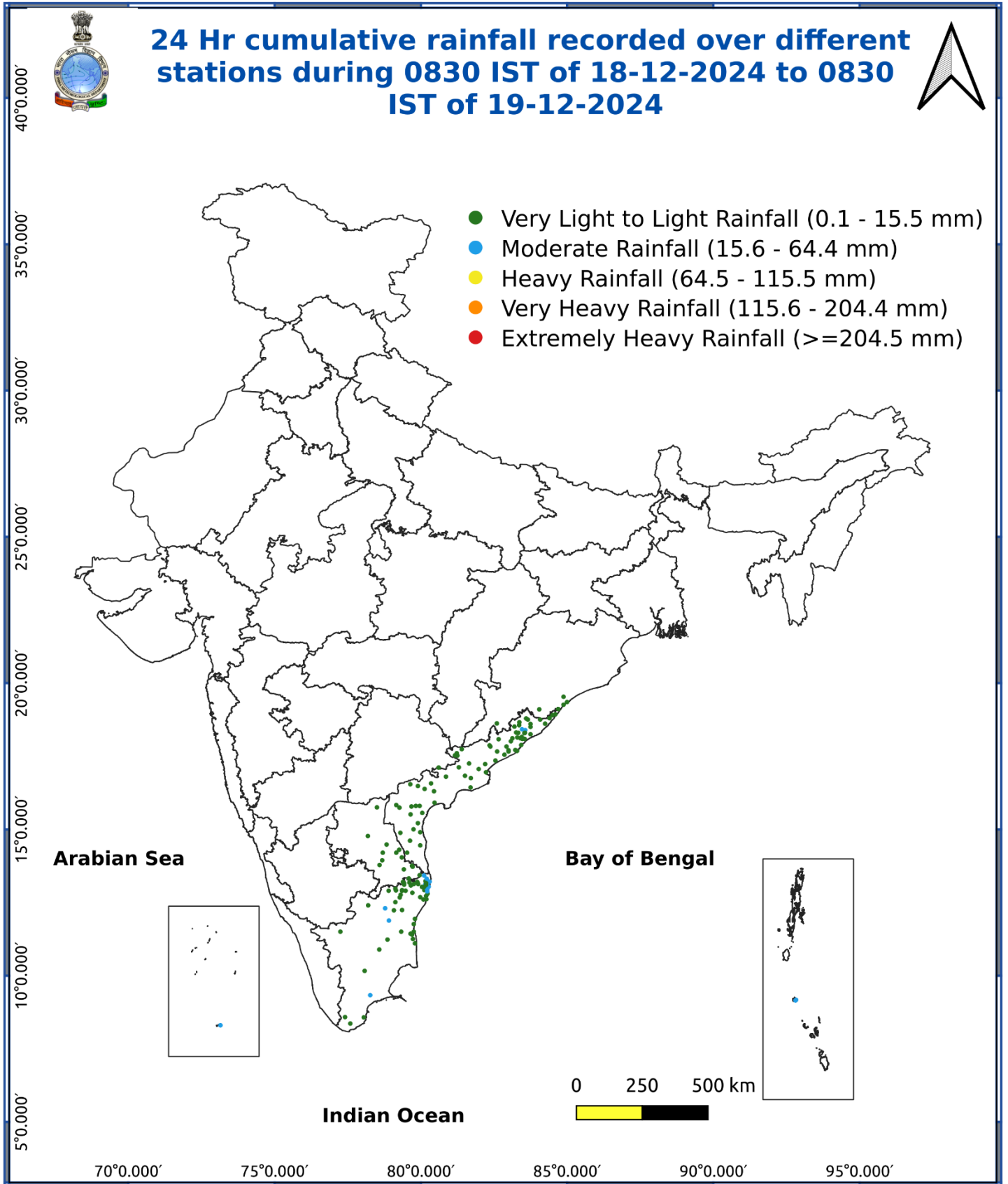


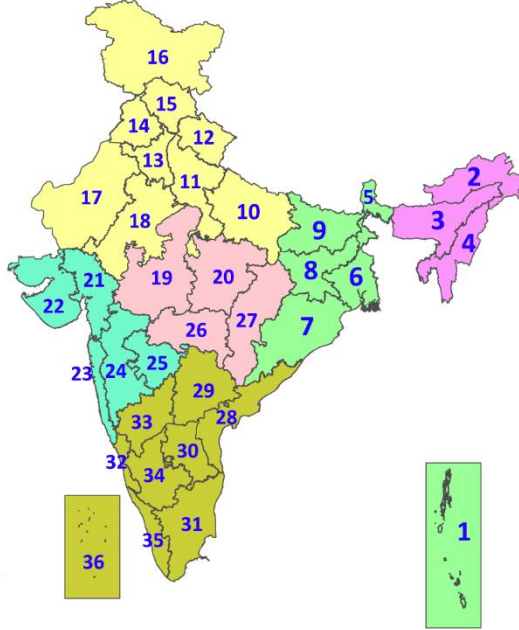
Fig. 5: Accumulated Rainfall (mm) during past 24 hours



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LEGENDS

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



1. Andaman & Nicobar Islands
2. Arunachal Pradesh
3. Assam & Meghalaya
4. Nagaland, Manipur, Mizoram & Tripura
5. Sub-Himalayan West Bengal & Sikkim
6. Gangetic West Bengal
7. Odisha
8. Jharkhand
9. Bihar
10. East Uttar Pradesh
11. West Uttar Pradesh
12. Uttarakhand
13. Haryana, Chandigarh & Delhi
14. Punjab
15. Himachal Pradesh
16. Jammu & Kashmir and Ladakh
17. West Rajasthan
18. East Rajasthan
19. West Madhya Pradesh
20. East Madhya Pradesh
21. Gujarat
22. Saurashtra
23. Konkan & Goa
24. Madhya Maharashtra
25. Marathwada
26. Vidarbha
27. Chhattisgarh
28. Coastal Andhra Pradesh & Yanam
29. Telangana
30. Rayalaseema
31. Tamilnadu, Puducherry & Karaikal
32. Coastal Karnataka
33. North Interior Karnataka
34. South Interior Karnataka
35. Kerala & Mahe
36. Lakshadweep

SPATIAL DISTRIBUTION (% of Stations reporting)

% Stations	Category	% Stations	Category
76-100	Widespread (WS/Most Places)	26-50	Scattered (SCT/A Few Places)
51-75	Fairly Widespread (FWS/Many Places)	1-25	Isolated (ISOL)

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

COLOUR CODED WARNING

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

Probabilistic Forecast

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

DEFINITION/CRITERIA

Rain/ Snow *

Heavy: 64.5 to 115.5 mm/cm *
Very Heavy: 115.6 to 204.4 mm/cm*
Extremely Heavy: > 204.4 mm/cm *

Heat Wave

When maximum temperature of a station reaches $\geq 40^\circ\text{C}$ for plains and $\geq 30^\circ\text{C}$ for hilly regions
(a) Based on Departure from normal

Heat Wave: Maximum Temperature Departure from normal 4.5°C to 6.4°C .
Severe Heat Wave: Maximum Temperature Departure from normal $\geq 6.5^\circ\text{C}$

(b). Based on Actual maximum temperature

Heat Wave: When actual maximum temperature $\geq 45^\circ\text{C}$.
Severe Heat Wave: When actual maximum temperature $\geq 47^\circ\text{C}$

(c) Criteria for heat wave for coastal stations

When maximum temperature departure is $>4.5^\circ\text{C}$ from normal. Heat Wave may be described provided maximum temperature $\geq 37^\circ\text{C}$

Warm Night

When maximum temperature remains 40°C

Warm Night: When minimum temperature departure 4.5°C to 6.4°C .
Severe Warm Night: When minimum temperature departure $>6.4^\circ\text{C}$.

Cold Wave

When minimum temperature of a station $\leq 10^\circ\text{C}$ for plains and $\leq 0^\circ\text{C}$ for hilly regions.
(a). Based on departure

Cold Wave: Minimum Temperature Departure from normal -4.5°C to -6.4°C .
Severe Cold Wave: Minimum Temperature Departure from normal $\leq -6.5^\circ\text{C}$

(b) Based on actual Minimum Temperature (for Plains only)

Cold Wave : When Minimum Temperature is $\leq 4.0^\circ\text{C}$
Severe Cold Wave: When Minimum Temperature is $\leq 2.0^\circ\text{C}$

(c) For Coastal Stations

When Minimum Temperature departure is $\leq -4.5^\circ\text{C}$ & actual Minimum Temperature is $\leq 15^\circ\text{C}$

Cold Day

When minimum temperature of a station $\leq 10^\circ\text{C}$ for plains and $\leq 0^\circ\text{C}$ for hilly regions
Based on departure

Cold Day: Maximum Temperature Departure from normal -4.5°C to -6.4°C .
Severe Cold Day: Maximum Temperature Departure from normal $\leq -6.5^\circ\text{C}$

Fog

Phenomenon of small droplets suspended in air and the horizontal visibility $< 1\text{km}$

Moderate Fog: When the visibility between 500-200 metres
Dense Fog: when the visibility between 50- 200 metres
Very Dense Fog: when the visibility < 50 metres

Thunderstorm

Sudden electrical discharges manifested by a flash of light (Lightning) and a sharp rumbling sound (thunder)

Dust/Sand Storm

An ensemble of particles of dust or sand energetically lifted to great heights by a strong and turbulent wind.

Frost

Ice deposits on ground

Air temperature $\leq 4^\circ\text{C}$ (over Plains)

Squall

A strong wind that rises suddenly, lasts for atleast 1 minute.

Moderate: Wind speed 52-61 kmph
Severe: Wind speed 62-87 kmph
Very Severe: Wind speed >87 kmph

Sea State

Effect of various waves in the sea over specific area

Rough to very rough: Wind speed 41-62 kmph (22-33 knots) & Wave height 2.5-6 metre
High to very high: Wind speed 63-117 kmph (34-63 knots) & Wave height 6-14 metre
Phenomenal: Wind speed >117 kmph (>63 knots) & Wave height >14 metre

Cyclone

Cyclonic Storm: Wind speed 62-87 kmph (34-47 knots)
Severe Cyclonic Storm: Wind speed 88-117 kmph (48-63 knots)
Very Severe Cyclonic Storm: Wind speed 118-165 kmph (64 - 89 knots)
Extremely Severe Cyclonic Storm: Wind speed 166-220 kmph (90 -119 knots)
Super Cyclone Strom: Wind speed >220 kmph (>119 knots)