

Friday, January 3, 2025  
Time of Issue: 1330 hours IST  
(MID-DAY)

## ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

### Significant Weather Features:

#### Weather Systems, Forecast and warning:

- ❖ A **Western disturbance** as a cyclonic circulation over eastern parts of Iran and neighbourhood in lower to upper tropospheric levels. It is very likely to cause
  - ✓ Isolated to scattered light to moderate rainfall accompanied with thunderstorm, lightning likely over Punjab, Himachal Pradesh & Uttarakhand on 05<sup>th</sup> & 06<sup>th</sup> January.
  - ✓ Isolated heavy rainfall/ snowfall very likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad on 04<sup>th</sup> & 05<sup>th</sup> January.

#### 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 & Ladakh; **6-11°C** over many parts of Northwest India; **9-14°C** over many parts of Central & East India and **15-20°C** over many parts of West India. Today, the lowest minimum temperature of **4.4°C** is reported at **Nowgong (East Madhya Pradesh)** over the plains of the country.
- ❖ There has been a fall in minimum temperature by 1-3°C over many parts of Telangana, Madhya Maharashtra, North interior Karnataka, Bihar & isolated pockets of Uttar Pradesh; rise by 3-4 °C over isolated pockets of Vidarbha, Gujarat, Sub-Himalayan West Bengal & Sikkim. There has been rise in minimum temperature by 1-3°C over some parts of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Madhya Pradesh, Uttar Pradesh; rise by 3-4 over some parts of Rajasthan and Himachal Pradesh.

##### Forecast of temperature:

- ❖ Gradual rise in minimum temperatures by 2-3°C likely over Northwest India during next 4 days and fall thereafter by 2-4°C.
- ❖ No significant change in minimum temperatures likely over East India during next 5 days.
- ❖ No significant change in minimum temperatures likely over central India during next 24 hours, and rise by 2-3 subsequent 2-3 days.
- ❖ No significant change in minimum temperatures likely over West India during next 5 days except Gujarat state where no significant change during next 3 days and fall thereafter by 2-3°C.

##### Cold Wave Warnings:

**Cold wave** conditions very likely in isolated pockets of Telangana & North Interior Karnataka on 03<sup>rd</sup> & 4<sup>th</sup> January.

##### Cold Day Warnings:

**Cold Day** conditions very likely in isolated pockets of Punjab, Haryana, Chandigarh and in some parts of West Uttar Pradesh, Bihar on 03<sup>st</sup> January; in isolated pockets of East Uttar Pradesh on 03<sup>rd</sup> & 4<sup>th</sup> January.

##### Dense Fog Warnings:

**Very Dense fog Condition** very likely to prevail during late night/early morning hours in isolated pockets of Punjab, Haryana Chandigarh & Delhi and some parts of Uttar Pradesh; **Dense fog conditions** very likely to prevail during late night/early morning hours in isolated pockets of Himachal Pradesh, Sub-Himalayan West Bengal & Sikkim, Odisha, Assam & Meghalaya; in isolated pockets of north Madhya Pradesh, Bihar on 3<sup>rd</sup> & 4<sup>th</sup> January; Assam & Meghalaya during 03<sup>rd</sup> - 5<sup>th</sup> January; Uttar Pradesh during 7<sup>th</sup> - 9<sup>th</sup> January.

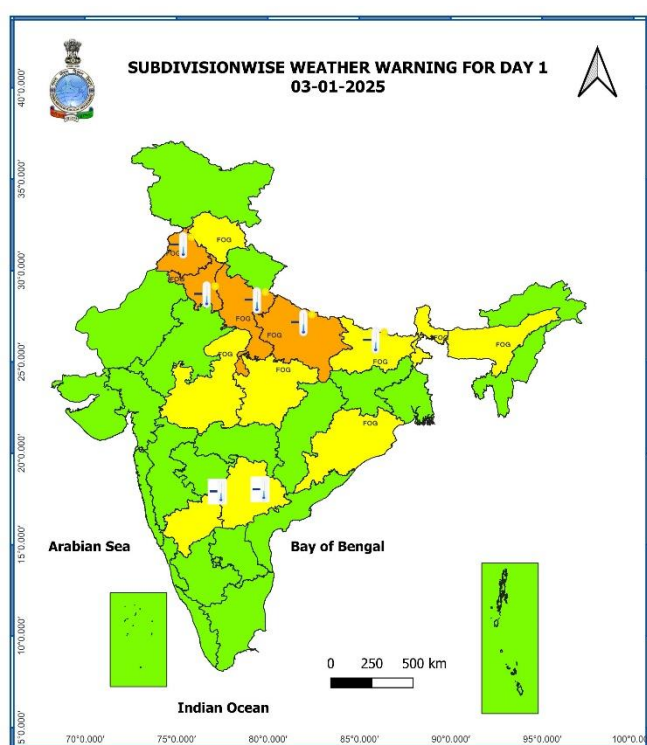
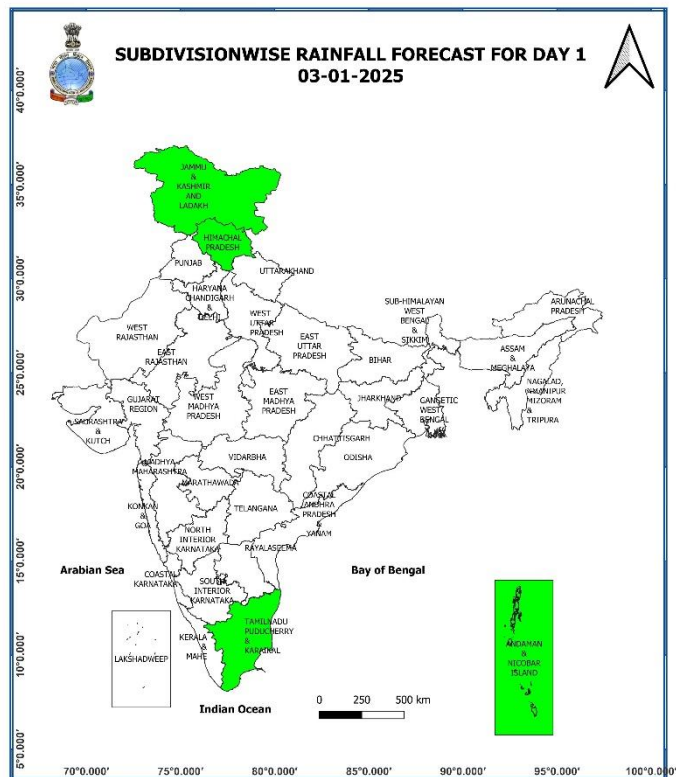
## Main Weather Observations:

- ❖ **Rainfall/Snowfall distribution** (from 0830 hours IST of yesterday to 0830 hours IST of today): **at isolated places** over Jammu-Kashmir and Andaman & Nicobar Islands.
- ❖ **Heavy rainfall** (from 0830 hours IST of yesterday to 0830 hours IST of today): **NIL**.
- ❖ **Fog reported** (upto 0830 hours IST of today): **Very dense fog** reported in isolated pockets of Delhi, Uttar Pradesh, Madhya Pradesh, Jammu & Kashmir, Punjab, Chandigarh, East Madhya Pradesh; **Dense fog** in isolated pockets of West Bengal.
- ❖ **Visibility reported** (upto 0830 hours IST of today) ( $\leq 50$  meter): **Delhi:** Palam 00, Safdarjung 00; **Uttar Pradesh:** Agra 00, Kushinagar 00, Gorakhpur 00, Ayodhya 50, Varanasi 50; **Chandigarh:** 00; **Madhya Pradesh:** Gwalior 00, Khajuraho 50; **Jammu & Kashmir:** Srinagar 00, Jammu 50; **Punjab:** Amritsar 00, Pathankot 00; **West Bengal:** Cooch Behar 50.
- ❖ **Cold day conditions** in isolated pockets of Bihar.
- ❖ **Minimum Temperature Departures (as on 03-01-2025):** Minimum temperatures are **appreciably above normal ( $3^{\circ}\text{C}$  to  $5^{\circ}\text{C}$ )** at a few places over Punjab and Haryana-Chandigarh; at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh and Saurashtra & Kutch; **above normal ( $1^{\circ}\text{C}$  to  $3^{\circ}\text{C}$ )** at a few places over West Uttar Pradesh; at isolated places over West Rajasthan, Gujarat Region, Konkan & Goa, East Madhya Pradesh, Odisha, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Coastal Andhra Pradesh & Yanam, Kerala & Mahe and Tamil Nadu, Puducherry & Karaikal. These are **appreciably below normal ( $-3.1^{\circ}\text{C}$  to  $-5.0^{\circ}\text{C}$ )** at isolated places over East Madhya Pradesh and Vidarbha; **below normal ( $-1.6^{\circ}\text{C}$  to  $-3.0^{\circ}\text{C}$ )** at many places over North Interior Karnataka; at a few places over Gangetic West Bengal and Telangana; at isolated places over East Uttar Pradesh, Bihar and Chhattisgarh and near normal over rest part of the country. Today, the **lowest minimum temperature of  $4.4^{\circ}\text{C}$**  is reported at **Nowgong (East Madhya Pradesh)** over the plains of the country (Fig. 4).
- ❖ **Maximum Temperature Departures (as on 02-01-2025):** Maximum temperatures were **Markedly above normal ( $5.1^{\circ}\text{C}$  or above)** at a few places over Rajasthan, Himachal Pradesh; at isolated places over Gujarat state; **appreciably above normal ( $3.1^{\circ}\text{C}$  to  $5.0^{\circ}\text{C}$ )** at isolated places over West Madhya Pradesh, Vidarbha, Marathwada, Madhya Maharashtra, Konkan & Goa, Assam & Meghalaya, Arunachal Pradesh; **above normal ( $1.6^{\circ}\text{C}$  to  $3.0^{\circ}\text{C}$ )** at isolated places over East Madhya Pradesh, Chhattisgarh, Odisha, Telangana, Kerala & Mahe. These were **markedly below normal ( $-5.1^{\circ}\text{C}$  or less)** at many places over Uttar Pradesh; at a few places over Haryana Chandigarh-Delhi; at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Bihar; **appreciably below normal ( $-3.1^{\circ}\text{C}$  to  $-5.0^{\circ}\text{C}$ )** at isolated places over Punjab; **below normal ( $-1.6^{\circ}\text{C}$  to  $-3.0^{\circ}\text{C}$ )** at many places over Jharkhand, Gangetic West Bengal; at isolated places over Sub-Himalayan West Bengal & Sikkim and near normal over rest part of the country. Yesterday, the **highest maximum temperature of  $35.8^{\circ}\text{C}$**  was reported at **Kannur Airport (Kerala)** over the plains of the country (Fig. 2).

## Meteorological Analysis (Based on 0830 hours IST)

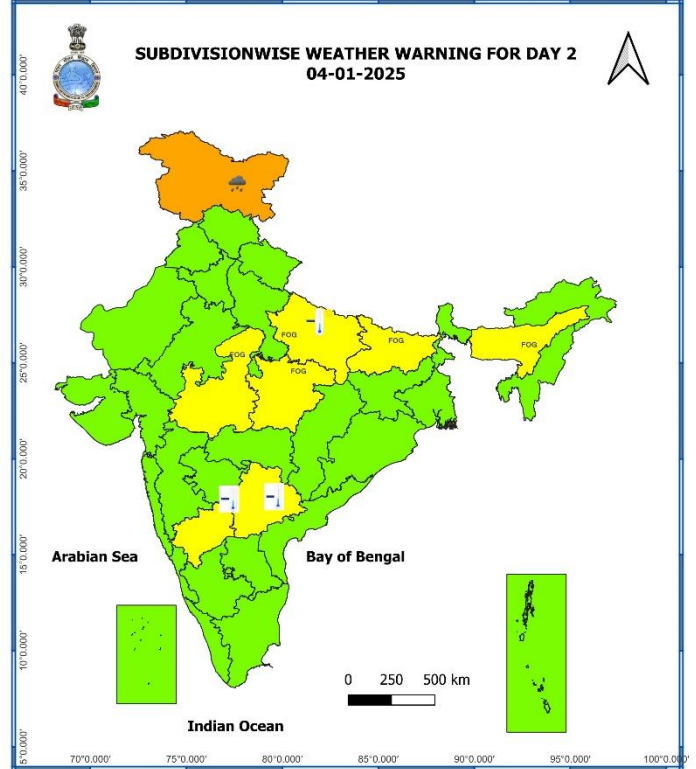
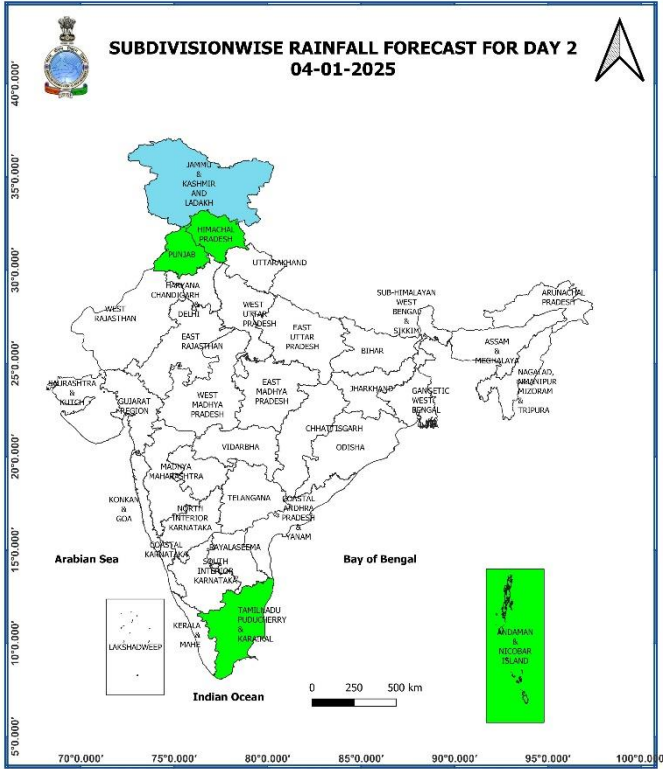
- ❖ The **Western Disturbance** as a cyclonic circulation over eastern parts of Iran & neighbourhood persists and now seen between 3.1 & 9.4 km above mean sea level.
- ❖ Subtropical **westerly Jet Stream** with core winds of the order upto 120 knots at 12.6 km above mean sea level is prevailing over North India.

**Weather Forecast & Warnings for next 7 days (Upto 0830 hours IST of 09<sup>th</sup> January, 2025)**



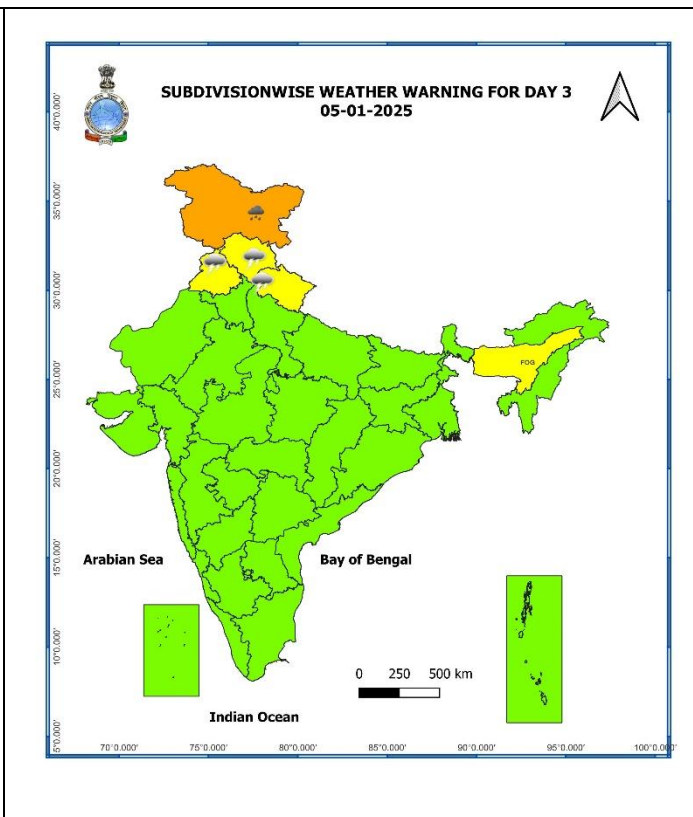
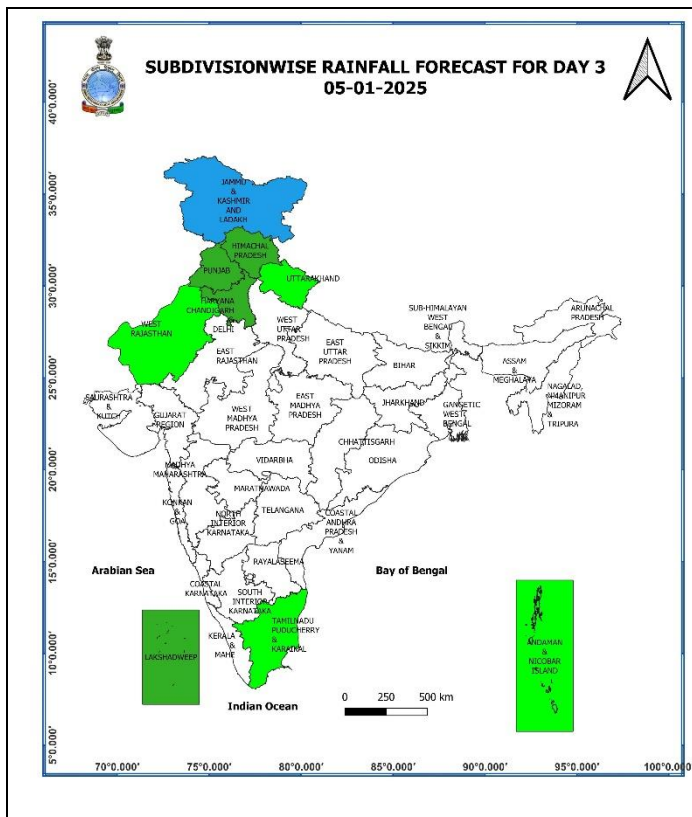
**03<sup>rd</sup> January (Day 1):**

- ❖ **Dense to very dense fog conditions** very likely in some parts of Uttar Pradesh; in isolated pockets of Punjab and Haryana-Chandigarh-Delhi; **dense fog** in isolated pockets of Himachal Pradesh, north Madhya Pradesh, Sub-Himalayan West Bengal & Sikkim, Bihar, Odisha and Assam & Meghalaya in night/morning hours.
- ❖ **Cold Day conditions** very likely in some parts of Uttar Pradesh; in isolated pockets of Punjab and Haryana-Chandigarh-Delhi.
- ❖ **Cold wave conditions** very likely in isolated pockets of North Interior Karnataka and Telangana.
- ❖ **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** likely to prevail over gulf of Mannar, Comorin area and Maldives area, over southern parts of southeast Arabian sea. **Squally wind with speed 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest Arabian sea, along and off Somalia coast, over western parts of westcentral Arabian sea, along and off Oman coast. Fisherman are advised not to venture in to these areas.



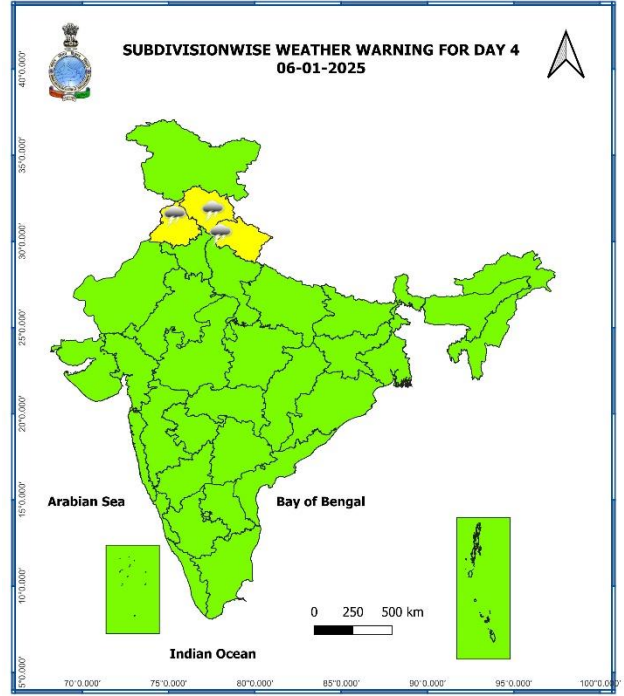
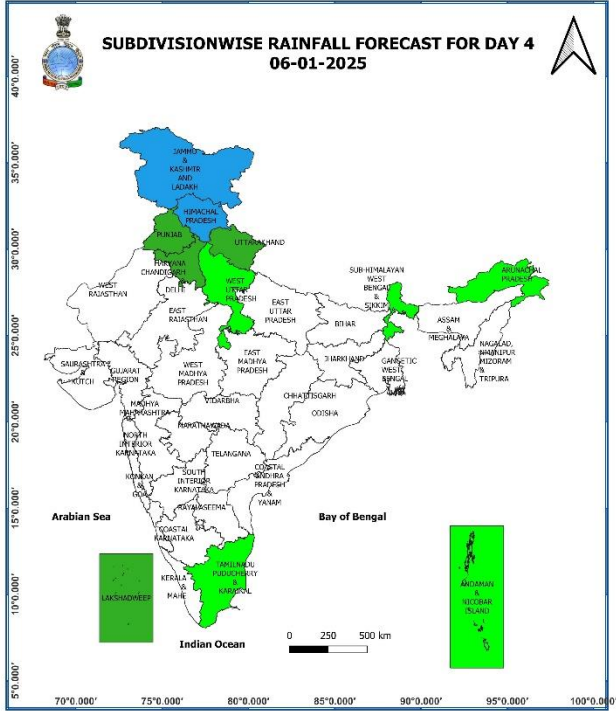
### 04<sup>th</sup> January (Day 2):

- ❖ **Heavy Rainfall ( $\geq 7\text{cm}$ )/snowfall ( $\geq 70\text{ cm}$ )** very likely at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad.
- ❖ **Dense fog conditions** very likely in isolated pockets of East Uttar Pradesh, north Madhya Pradesh, Bihar and Assam & Meghalaya in night/morning hours.
- ❖ **Cold Day conditions** very likely in isolated pockets of East Uttar Pradesh.
- ❖ **Cold wave conditions** very likely in isolated pockets of North Interior Karnataka and Telangana.
- ❖ **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** likely to prevail over gulf of Mannar, Comorin area and Maldives area, over southern parts of southeast Arabian sea. **Squally wind with speed 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest Arabian sea, along and off Somalia coast, over western parts of westcentral Arabian sea, along and off Oman coast. Fisherman are advised not to venture in to these areas.



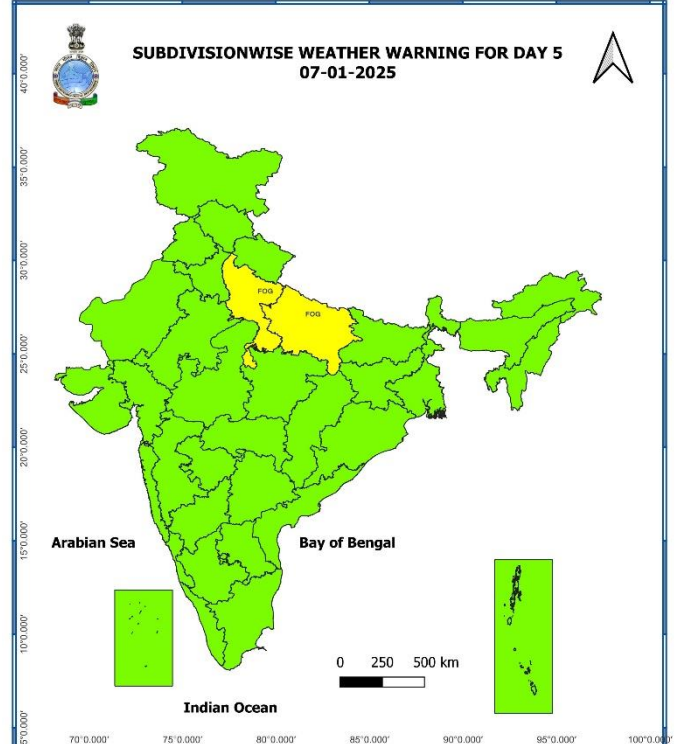
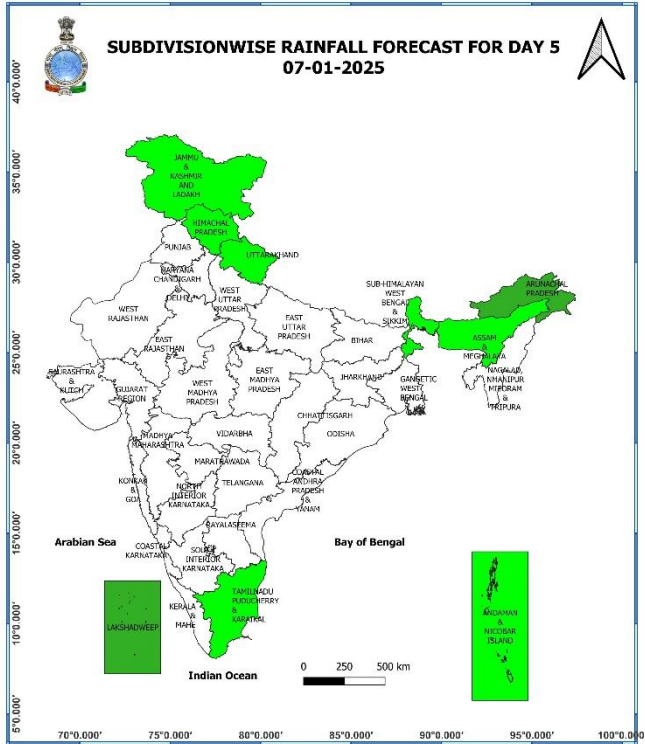
**05<sup>th</sup> January (Day 3):**

- ❖ **Heavy Rainfall ( $\geq 7\text{cm}$ )/snowfall ( $\geq 70\text{ cm}$ )** very likely at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad.
- ❖ **Thunderstorm accompanied with lightning** very likely at isolated places over Himachal Pradesh, Uttarakhand and Punjab.
- ❖ **Dense fog conditions** very likely in isolated pockets of Assam & Meghalaya in night/morning hours.
- ❖ **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** likely to prevail over parts of Comorin area, over Maldives area, over southern parts of southeast Arabian sea. **Squally wind with speed 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest Arabian sea, along and off Somalia coast, over western parts of westcentral Arabian sea. Fisherman are advised not to venture in to these areas.



**06<sup>th</sup> January (Day 4):**

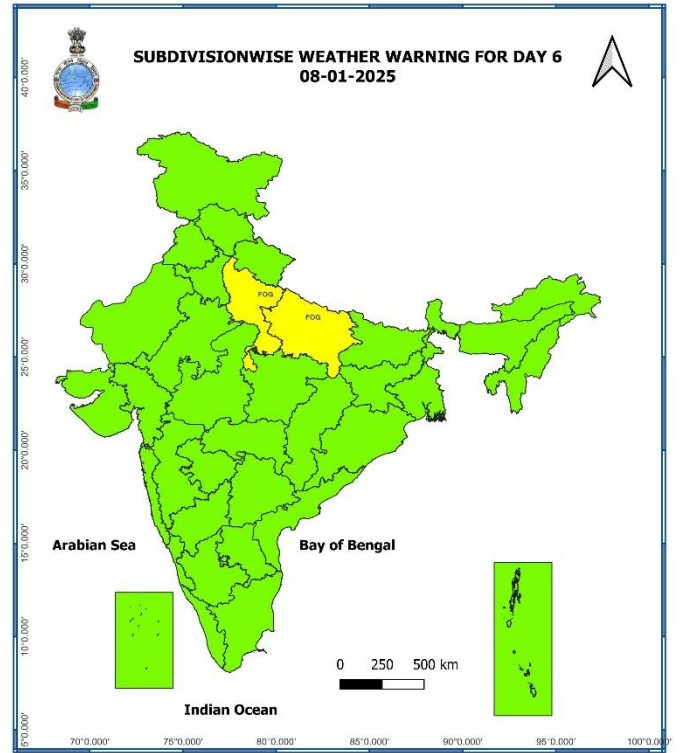
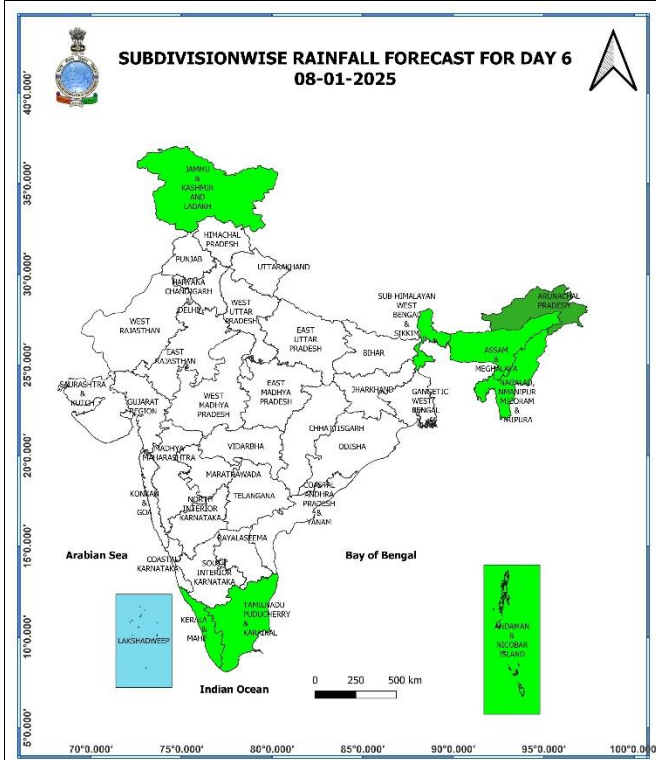
- ❖ **Thunderstorm accompanied with lightning** likely at isolated places over Himachal Pradesh, Uttarakhand and Punjab.
- ❖ **Squally wind with speed 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest Arabian sea, along and off Somalia coast, western parts of westcentral Arabian sea. Fisherman are advised not to venture in to these areas.



**07<sup>th</sup> January (Day 5):**

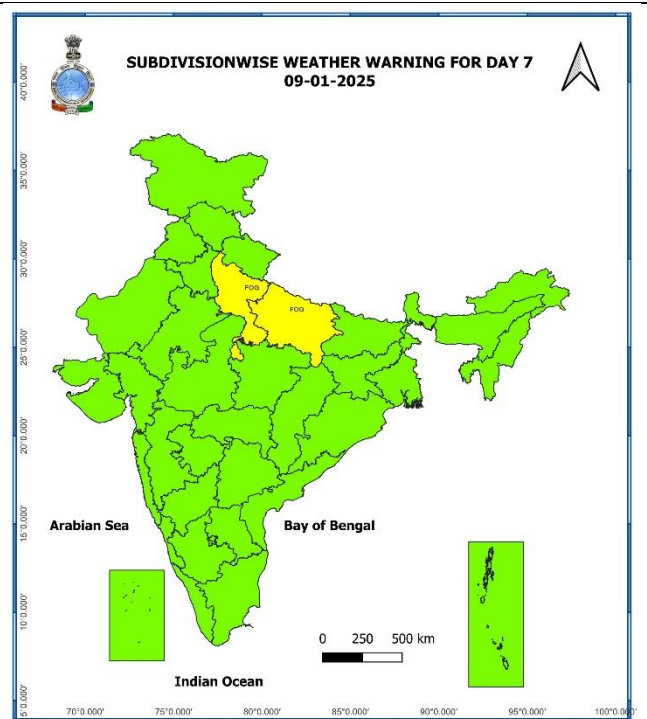
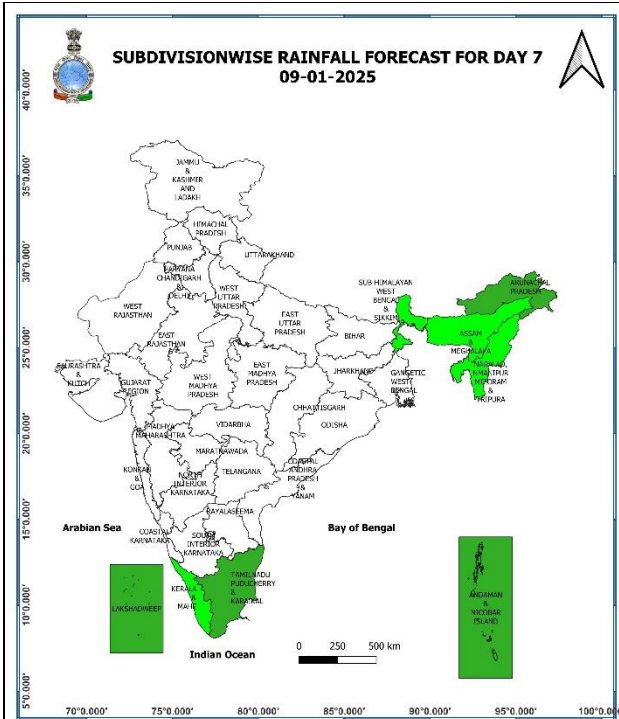
- ❖ **Dense fog** likely in isolated pockets of Uttar Pradesh in night/morning hours.





**08<sup>th</sup> January (Day 6):**

- ❖ **Dense fog** likely in isolated pockets of Uttar Pradesh in night/morning hours.



### 09<sup>th</sup> January (Day 7):

- ❖ Dense fog likely in isolated pockets of Uttar Pradesh in night/morning hours.

### Weather Outlook for subsequent 3 days (During 10<sup>th</sup> January- 12<sup>th</sup> January, 2025)

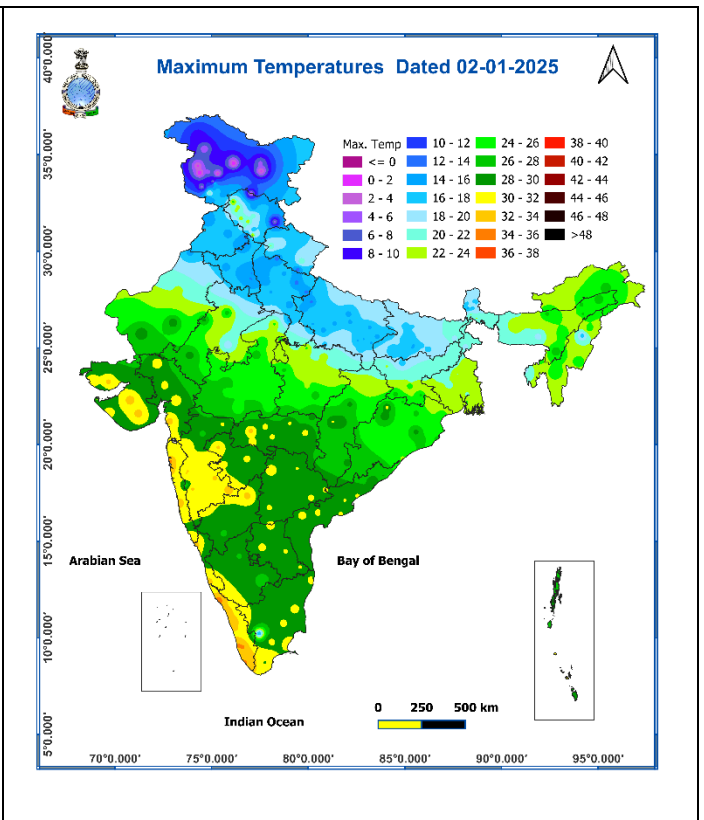
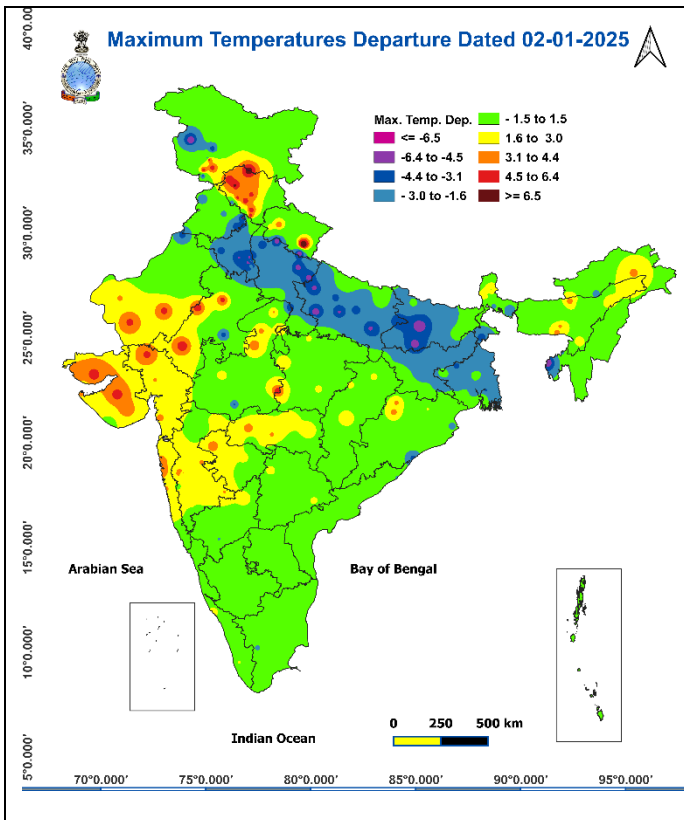
- ❖ Isolated to scattered light to moderate rainfall over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Andaman & Nicobar Islands.
- ❖ Mainly dry weather will prevail over rest parts of country.

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.

**Fig. 1: Maximum Temperatures**

**Fig. 2: Departure of Maximum Temperatures**



**Fig. 3: Minimum Temperatures**

**Fig. 4: Departure of Minimum Temperatures**

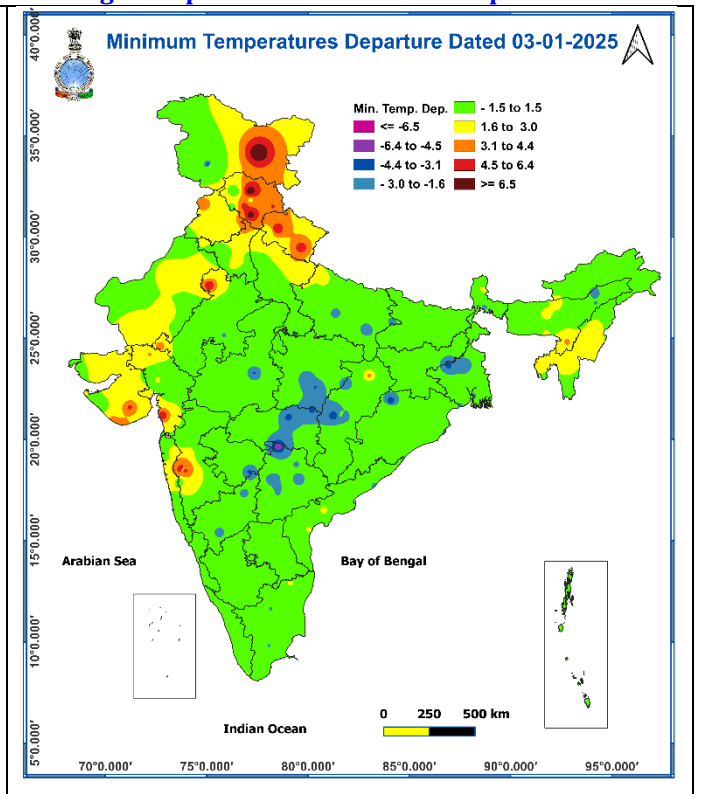
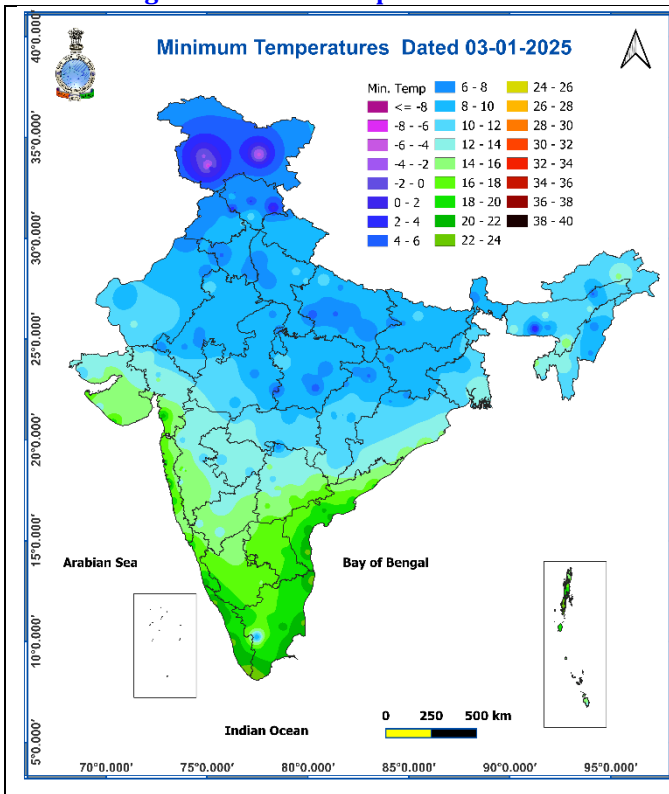
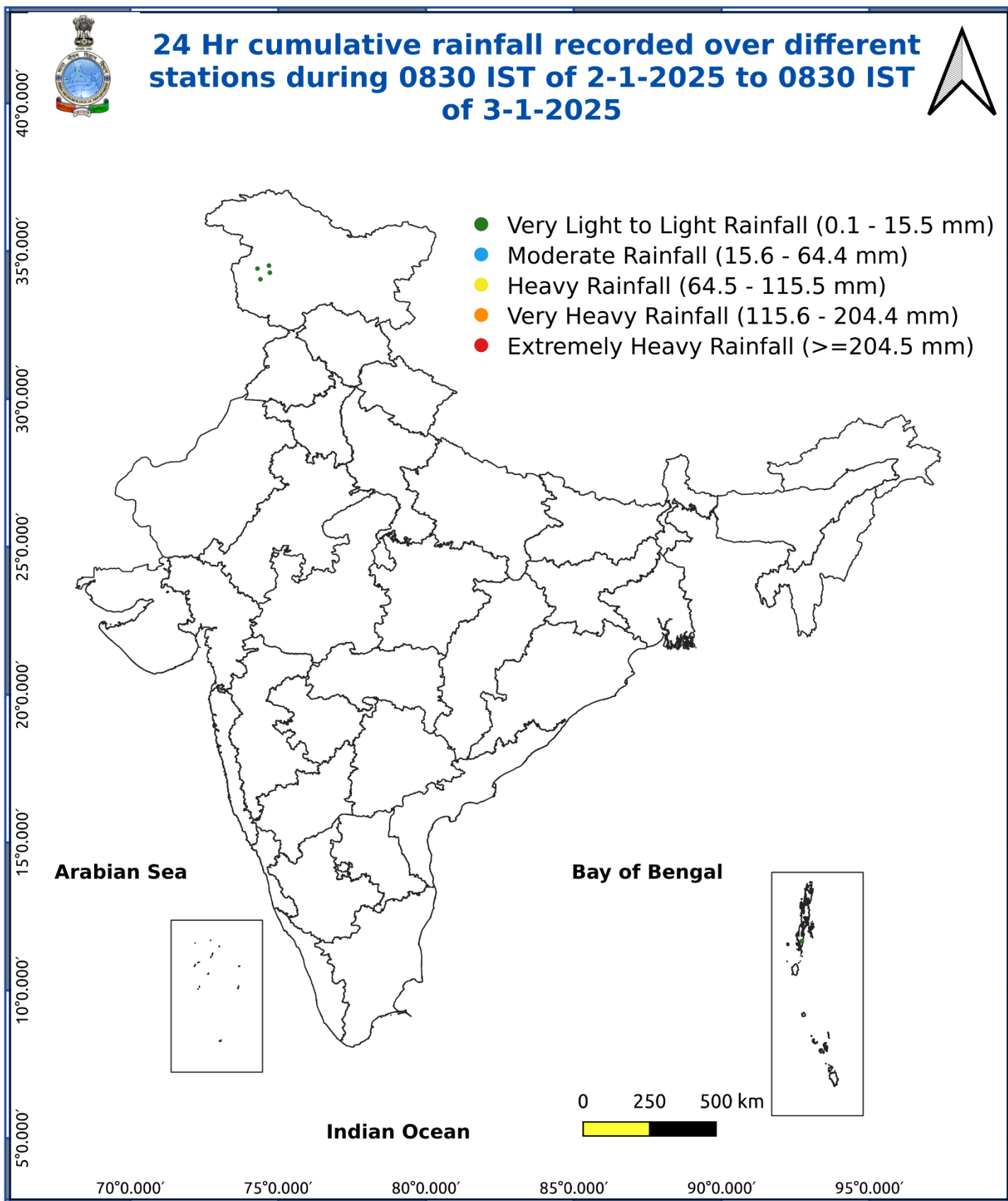


Fig. 5: Accumulated Rainfall (mm) during past 24 hours



\* 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)

### Impact expected due to dense/very 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 Day/Severe Cold day 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 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 likely impact of Heavy Rainfall / Cold Wave/ Ground Frost

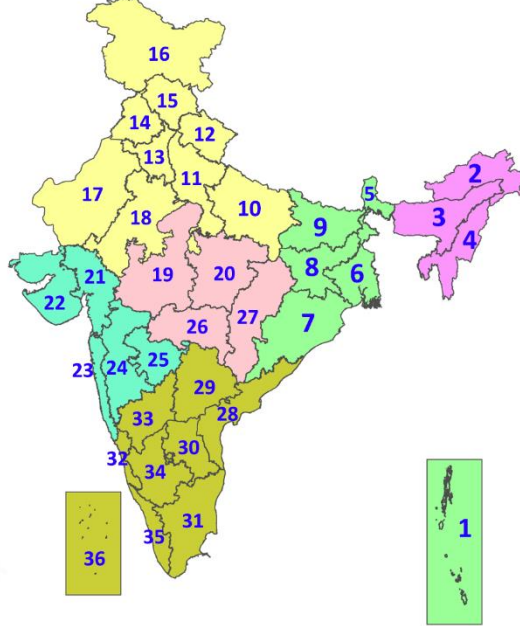
- Drain out excess water from rice, sugarcane, cotton, turmeric, vegetables, and other standing crop fields, as well as coconut and banana orchards in **Tamil Nadu**.
- In **North Eastern States**, apply light and frequent irrigation to the standing crops in the evening to protect them from low temperature stress or cold injuries. Use mulching and cover vegetable nurseries and young fruit plants with straw/polythene sheets to maintain optimum soil temperature.

## Livestock

- Keep the animals inside the shed during heavy rainfall period and provide them balanced feed. Store feed and fodder in a safe place to prevent spoilage.
- 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.

## 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  $4.5^\circ\text{C}$  to  $6.4^\circ\text{C}$ .

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  $40^\circ\text{C}$

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

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  $-4.5^\circ\text{C}$  to  $-6.4^\circ\text{C}$ .

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  $-4.5^\circ\text{C}$  to  $-6.4^\circ\text{C}$ .

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)