

Saturday, November 16, 2024
Time of Issue: 0745 hours IST
(MORNING)

ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

Significant Weather Features:

Weather Systems:

- ❖ A cyclonic circulation lies over Gulf of Mannar & adjoining Sri Lanka coast in lower tropospheric levels.
- ❖ A Western Disturbance as a trough in middle tropospheric westerlies runs roughly along Long. 67°E to the north of Lat. 30°N.

Forecast & Warnings (upto 7 days):

- ✓ Light to moderate rainfall at a few places accompanied with isolated thunderstorm and lightning very likely over south Peninsular India during 16th-17th November, 2024.
- ✓ Light rainfall at many places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad and at isolated places over north Punjab today.
- ✓ **Isolated heavy rainfall** very likely over Kerala & Mahe on 16th November, 2024.
- ✓ **Dense to very dense fog** conditions very likely to prevail in night/early morning hours in some pockets of Punjab, Haryana, Bihar till 17th morning hours; East Uttar Pradesh till 16th morning hours. **Dense fog conditions** very likely to prevail in night/early morning hours in isolated pockets over West Rajasthan, Bihar till 18th morning hours; Himachal Pradesh during 17th-19th morning hours; Uttar Pradesh, Sub-Himalayan West Bengal & Sikkim during 17th morning hours.

ii. Temperature conditions and Forecast:

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

No significant change in minimum temperature observed over most parts of the country during past 24 hours. Minimum temperatures are **appreciably above normal by 3°C-5°C** at isolated places over northwest Rajasthan, Punjab, Haryana, south Telangana, Madhya Maharashtra, West Uttar Pradesh; **above normal by 2°C - 3°C** at many places over Coastal Andhra Pradesh & Yanam, Rayalaseema, southwest Rajasthan. These are **below normal by 2°C-3°C** at isolated places over central Madhya Pradesh, north Chhattisgarh and near normal over rest parts of the country. Today, **the lowest minimum temperature of 10.4°C** is reported at **Ambikapur (Chhattisgarh)** over the plains of the country.

Forecast of temperature:

- ❖ Gradual fall in minimum temperatures by 2-3°C very likely over Northwest & Central India during next 5 days.
- ❖ No significant change in minimum temperatures over West India during next 2 days and gradual fall by 2-3°C during subsequent 2-3 days.
- ❖ Gradual fall in minimum temperatures by 2-3°C very likely over East India during next 2-3 days.

iii. Weather forecast over Delhi/NCR during 16th Nov. to 18th Nov. 2024

Past Weather:

There has been a slight fall in minimum temperatures over Delhi/NCR during past 24hr. The Maximum and Minimum temperature over Delhi is in the range of 28 to 30°C and 11 to 17°C respectively. The maximum temperature was above normal by 1 to 2°C and the minimum temperature was above normal by 2 to 4°C over most places. Mainly smog condition with predominant surface wind from variable direction with wind speed reaching 04 to 08 kmph prevailed during past 24hr. Moderate fog reported at Palam airport. Palam airport recorded lowest visibility 500 m during 0630 to 0830 hours IST which improved thereafter becoming 600m at 0900 hours IST. Safdarjung airport recorded lowest visibility 400m during 0700 hours to 0800 IST which improved thereafter becoming 500m at 0830 hours IST. Mainly smog condition with wind speed less than 06 kmph variable direction prevailed over the region in the forenoon today.

Weather Forecast:

16.11.2024: Mainly clear sky. The predominant surface wind is likely to be from northwest direction with speed less than 06 kmph during morning hours. Smog/moderate fog is likely in the morning. The wind speed will increase thereafter becoming less than 12 kmph from northwest direction during afternoon. It will decrease thereafter becoming less than 10 kmph from northwest direction during evening and night. Smog/shallow fog is likely in the evening/night.

17.11.2024: Mainly clear sky. The predominant surface wind is likely to be from north direction with speed less than 08 kmph during morning hours. Smog/moderate fog is likely in the morning. The wind speed will gradually increase becoming 10-12 kmph from northwest direction during afternoon. It will decrease thereafter becoming less than 08 kmph from north direction during evening and night. Smog/shallow fog is likely in the evening/night.

18.11.2024: Mainly clear sky. The predominant surface wind is likely to be from northwest direction with wind speed less than 08 kmph during morning hours. Smog/shallow to moderate fog in the morning. The wind speed will increase thereafter becoming 10-12 kmph from northwest direction during afternoon. It will gradually decrease becoming less than 08 kmph from northwest directions during evening and night. Smog/shallow fog is likely in the evening/night.

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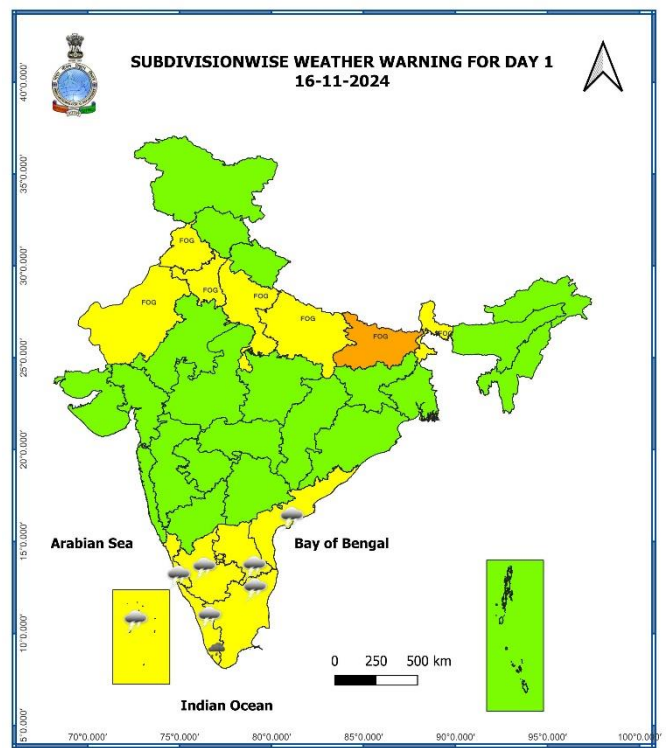
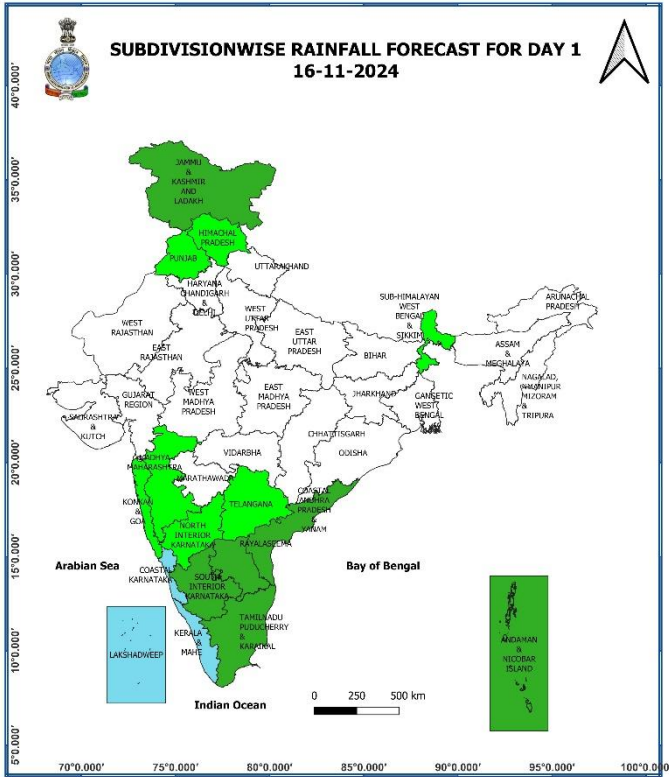
Main Weather Observations:

- ❖ **Rainfall distribution** (from 0830 hours IST to 1730 hours IST of yesterday): **at most places** over Tamil Nadu, Puducherry & Karaikal; **at isolated places** over Madhya Maharashtra, Karnataka, Rayalaseema, Coastal Andhra Pradesh & Yanam, Kerala & Mahe.
- ❖ **Heavy rainfall recorded** (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): **Tamil Nadu, Puducherry & Karaikal:** Erode 4, Tuticorin New Port 3, Dharmapuri 2; **Kerala & Mahe:** Anayirankal dam (Idukki dist), Nilambur (Malappuram dist) 3 each, Munderi (Malappuram dist.) 2; **Coastal Andhra Pradesh & Yanam:** Nellore 2; **Madhya Maharashtra:** Satara 2.
- ❖ **Fog Observed (at 0530 hours IST of today):** **Dense to very dense fog** in a few pockets of Punjab; in isolated pockets of Haryana-Chandigarh, West Rajasthan, Uttar Pradesh; **Shallow to moderate fog** in isolated pockets of Delhi & Bihar.
- ❖ **Visibility Recorded (at 0530 hours IST of today) (≤ 500 meters):** **Punjab:** Amritsar, Patiala, Ludhiana, Halwara, Adampur, Bhatinda- 0 each; **Haryana-Chandigarh:** Ambala, Sirsa- 0 each, Hissar 500; **West Rajasthan:** Ganganagar-0, Suratgarh 500; **West Uttar Pradesh:** Sarsawa 0, Hindon, Agra- 500 each; **East Uttar Pradesh:** Gorakhpur 0, Lucknow 200; **Bihar:** Purnia 200, Bhagalpur 500; **Delhi-** Safdarjung 200, Palam 500.
- ❖ **Minimum Temperature Departures (as on 15-11-2024):** Minimum temperatures were **markedly above normal (5.1°C or more)** at isolated places over Madhya Maharashtra; **appreciably above normal (3.1°C to 5.0°C)** at many places over Konkan & Goa; at a few places over North Interior Karnataka; at isolated places over Punjab, East Rajasthan, Telangana, Coastal Andhra Pradesh & Yanam, Marathwada; **above normal (1.6°C to 3.0°C)** at most places over South Interior Karnataka; at many places over Uttarakhand, West Uttar Pradesh, Bihar and Coastal Karnataka; at a few places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, East Uttar Pradesh, East Rajasthan, Sub-Himalayan West Bengal & Sikkim and Kerala & Mahe; at isolated places over Gangetic West Bengal, Odisha, Chhattisgarh, West Madhya Pradesh, Gujarat Region and Tamil Nadu, Puducherry & Karaikal. These were **below normal (-1.6°C to -3.0°C)** at isolated places over East Madhya Pradesh, Vidarbha and near normal over rest parts of the country. Yesterday, **the lowest minimum temperature of 10.4°C** was reported at **Ambikapur (Chhattisgarh)** over the plains of the country. **(Fig.4)**
- ❖ **Maximum Temperature Departures (as on 15-11-2024):** Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Telangana; **above normal (1.6°C to 3.0°C)** at a few places over Himachal Pradesh, Assam & Meghalaya, Arunachal Pradesh, Saurashtra & Kutch; at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Rajasthan, Uttarakhand, Haryana-Chandigarh-Delhi, East Uttar Pradesh, Sub-Himalayan West Bengal & Sikkim, Kerala & Mahe. These were **appreciably below normal (-3.1°C to -5.0°C)** at isolated places over Punjab; **below normal (-1.6°C to -3.0°C)** at isolated places over Bihar, Madhya Maharashtra, Coastal Andhra Pradesh & Yanam Tamil Nadu, Puducherry & Karaikal and near normal over rest parts of the country. Yesterday, **the highest maximum temperature of 36.4°C** was reported at **Rajkot (Saurashtra & Kutch)** over the country. **(Fig. 2)**

Meteorological Analysis (Based on 0530 hours IST)

- ❖ The **cyclonic circulation** over Gulf of Mannar & adjoining Sri Lanka coast extending upto 1.5 km above mean sea level persists.
- ❖ The **Western Disturbance** as a trough in middle tropospheric westerlies with its axis at 5.8 km above mean sea level now runs roughly along Long. 67°E to the north of Lat. 30°N.
- ❖ **Jet Stream Winds** of the order upto 120 knots at 12.6 km above mean sea level are prevailing over Northwest India.

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



16 November (Day 1):

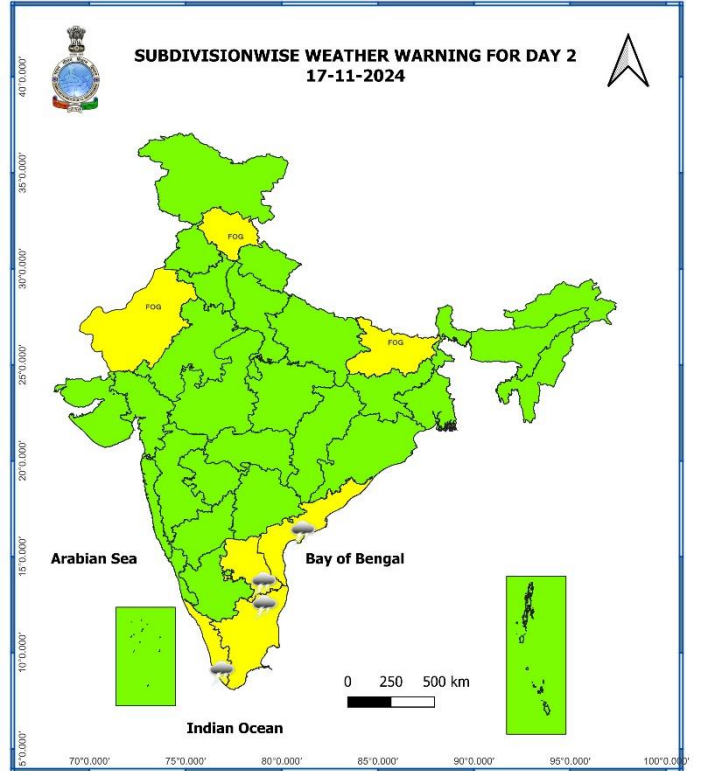
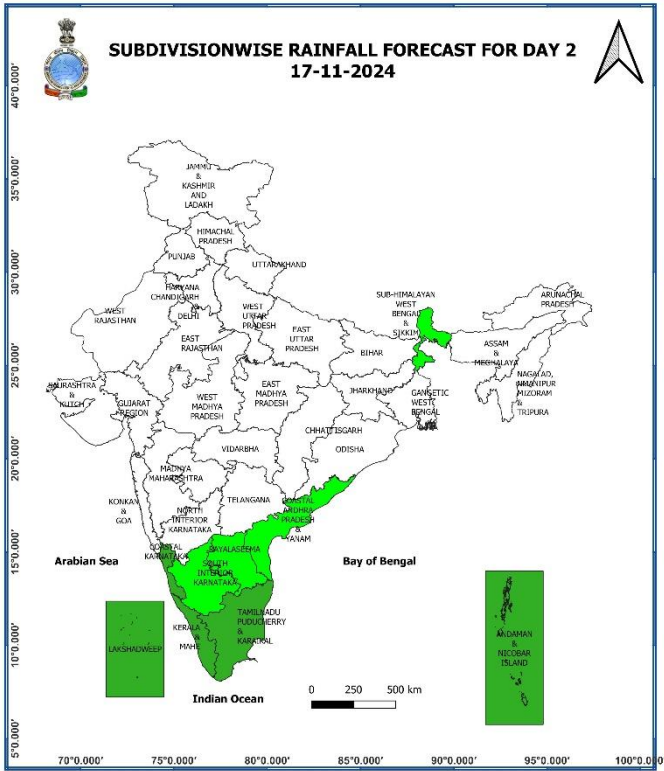
- ❖ **Heavy rainfall (≥ 7 cm)** very likely at isolated places over Kerala & Mahe.
- ❖ **Dense to Very dense fog conditions** very likely in isolated pockets over Punjab, Haryana-Chandigarh-Delhi, Bihar; **Dense fog conditions** very likely in isolated pockets of Uttar Pradesh, West Rajasthan, Sub-Himalayan West Bengal & Sikkim in the morning hours.
- ❖ **Thunderstorm accompanied with lightning** very likely at isolated places over Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Lakshadweep, Coastal Andhra Pradesh & Yanam, Rayalaseema, Coastal & South Interior Karnataka.

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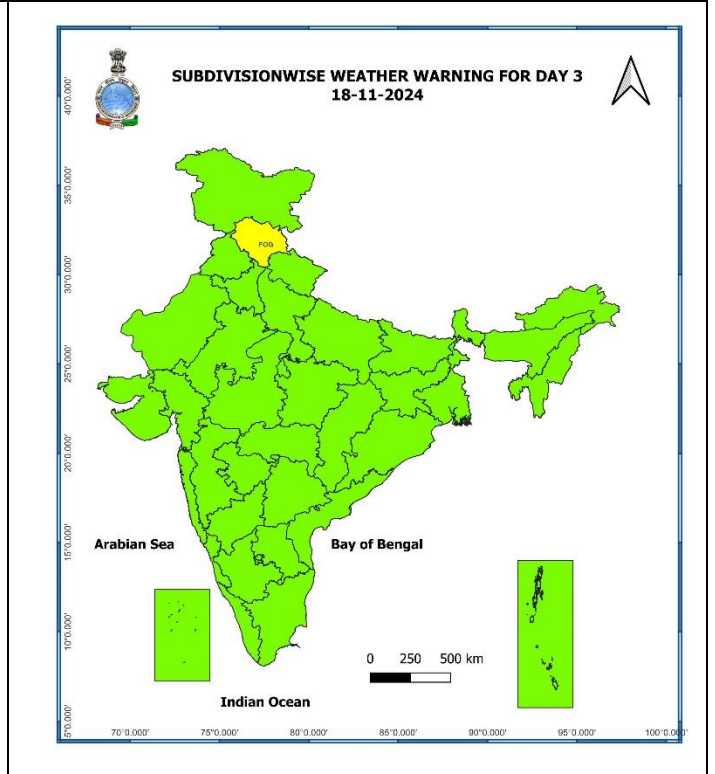
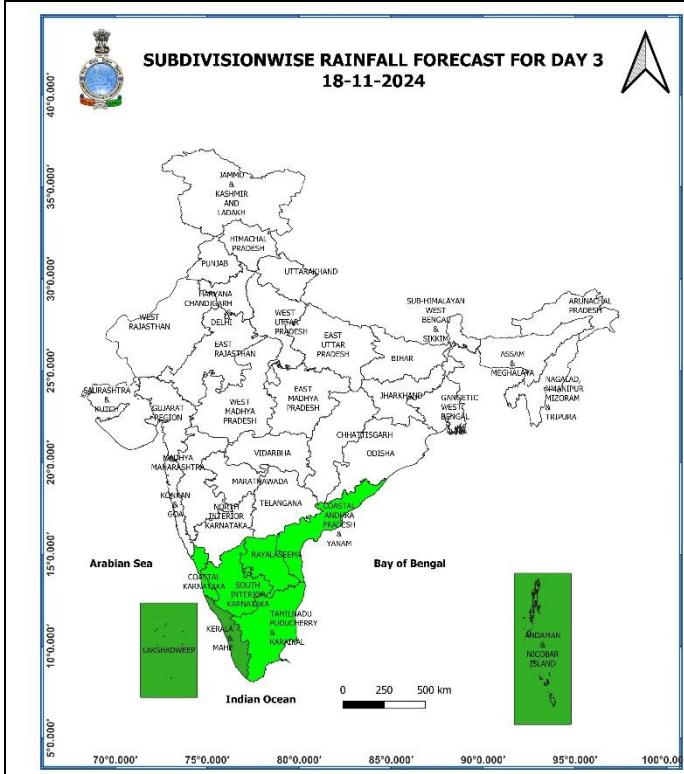
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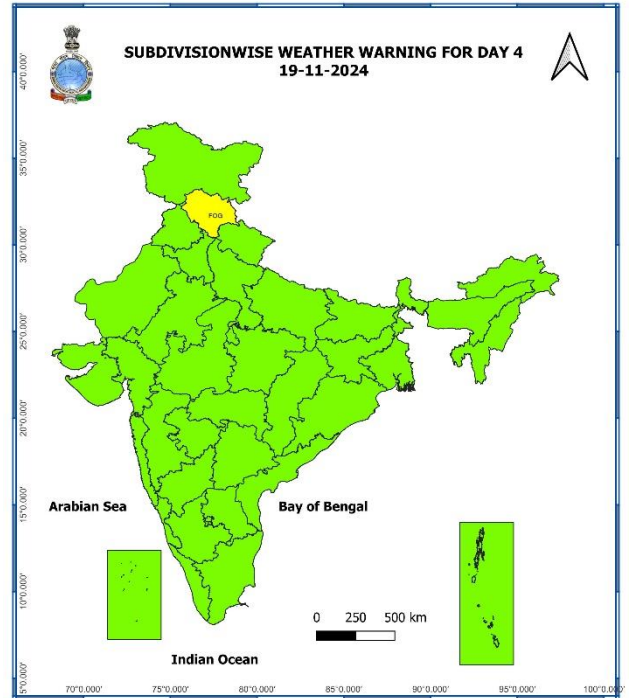
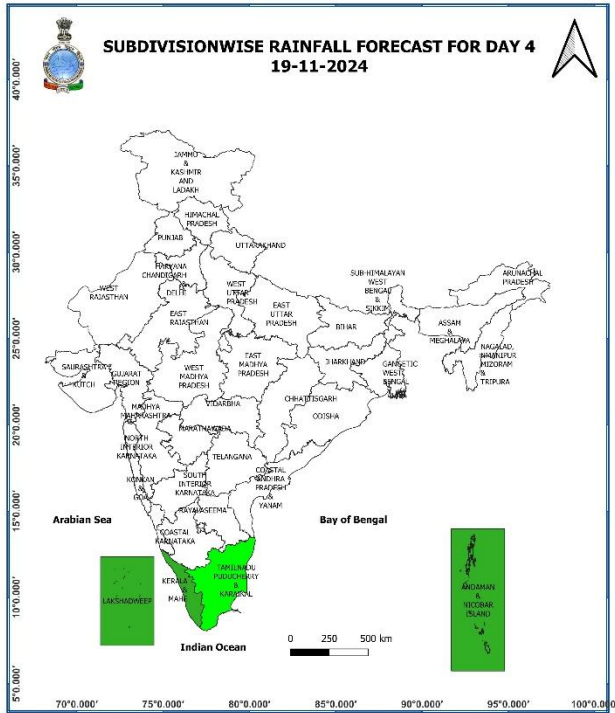
17 November (Day 2):

- ❖ **Dense fog conditions** likely in isolated pockets of West Rajasthan, Himachal Pradesh, Bihar in the morning hours.
- ❖ **Thunderstorm accompanied with lightning** very likely at isolated places over Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Coastal Andhra Pradesh & Yanam, Rayalaseema.



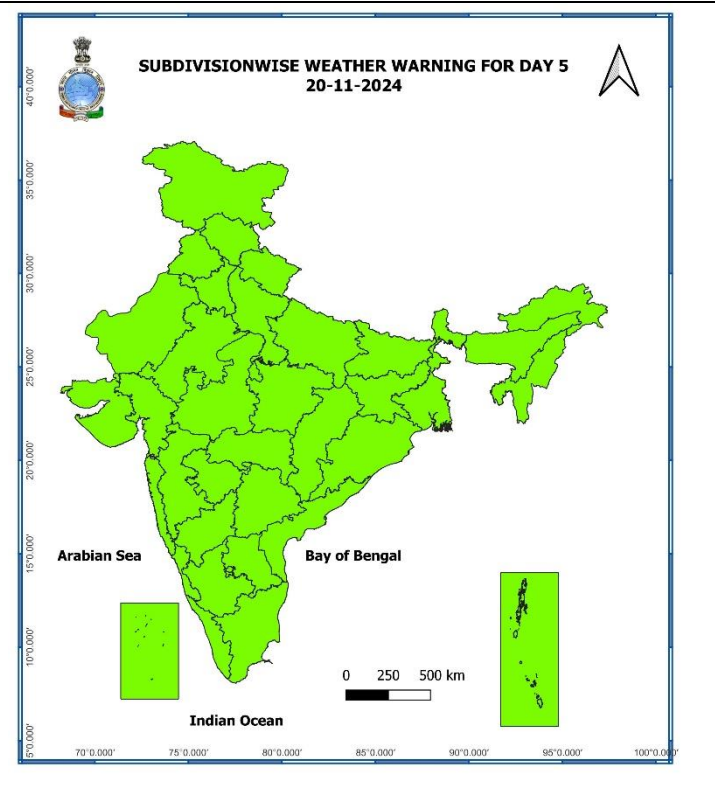
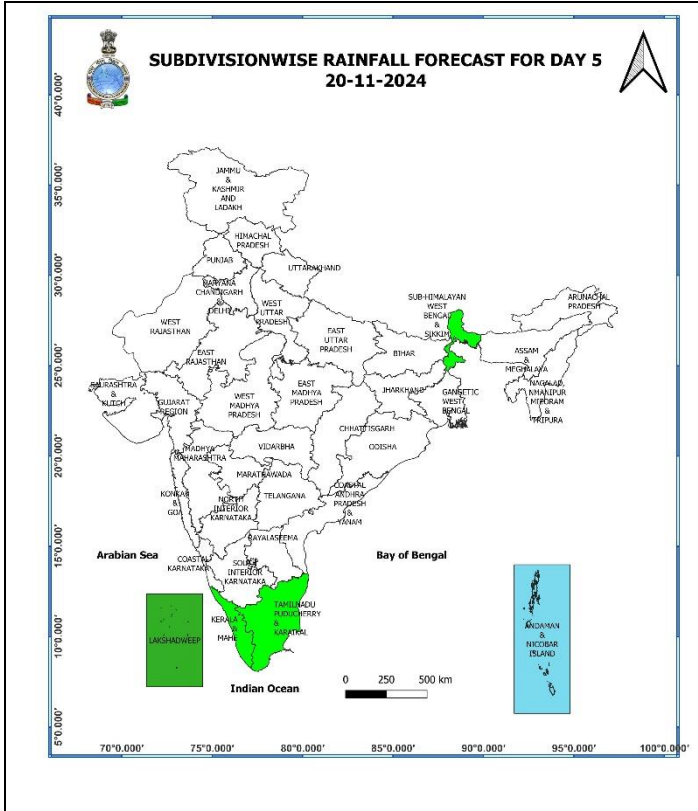
18 November (Day 3):

- ❖ **Dense fog conditions** likely in isolated pockets of Himachal Pradesh in the morning hours.



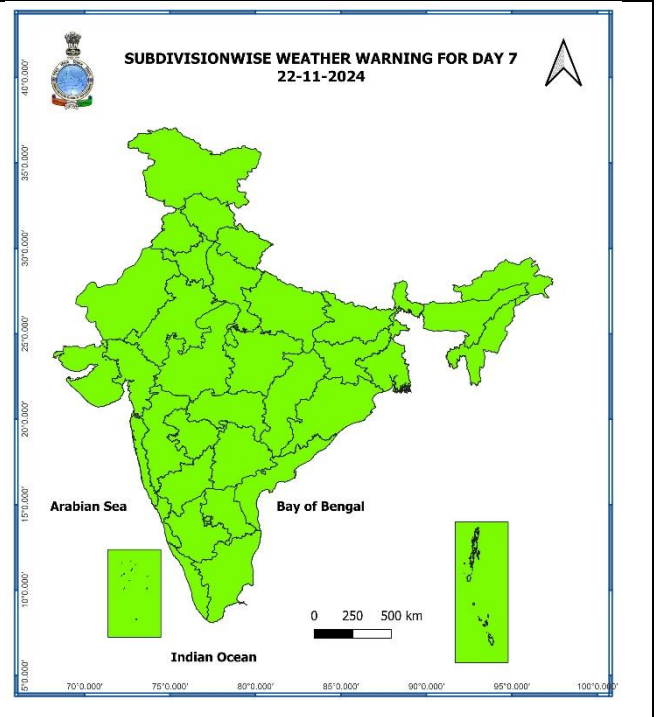
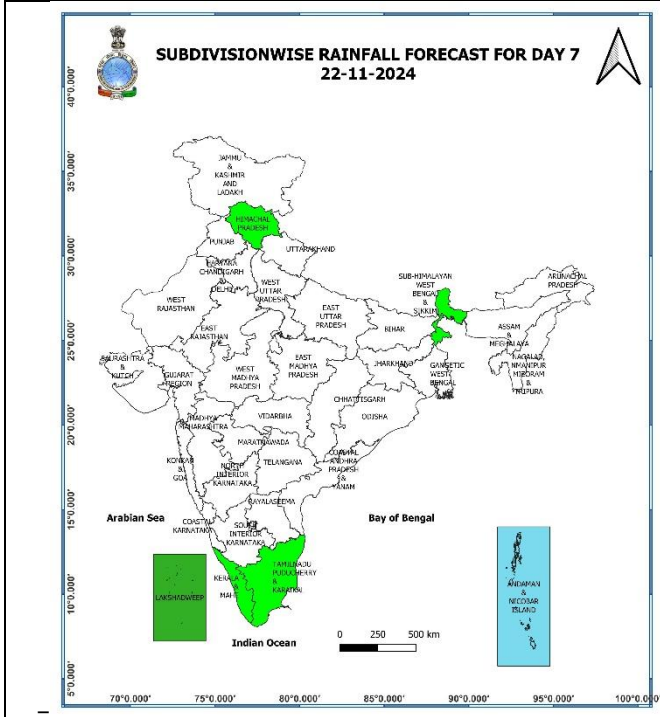
19 November (Day 4):

- ❖ **Dense fog conditions** likely in isolated pockets of Himachal Pradesh in the morning hours.



20 November (Day 5):

❖ **No Warning**



22 November (Day 7):

❖ **No Warning**

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

- ❖ Isolated to Scattered light rainfall likely over some parts of western Himalayan region and 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.

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Agromet advisories for Heavy Rainfall likely over various parts of the country:

- ✓ Make arrangements to drain out excess water from the standing crop fields and fruit orchards in Tamil Nadu, Kerala, South Interior Karnataka, Coastal Andhra Pradesh and Rayalaseema.
- ✓ Keep the harvested produce at safer places.
- ✓ Provide mechanical support to horticultural crops and staking to vegetables.

Impact expected due to dense to very dense fog in the late night /morning hours over.

❖ 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.

Fig. 1: Maximum Temperatures

Fig. 2: Departure of Maximum Temperatures

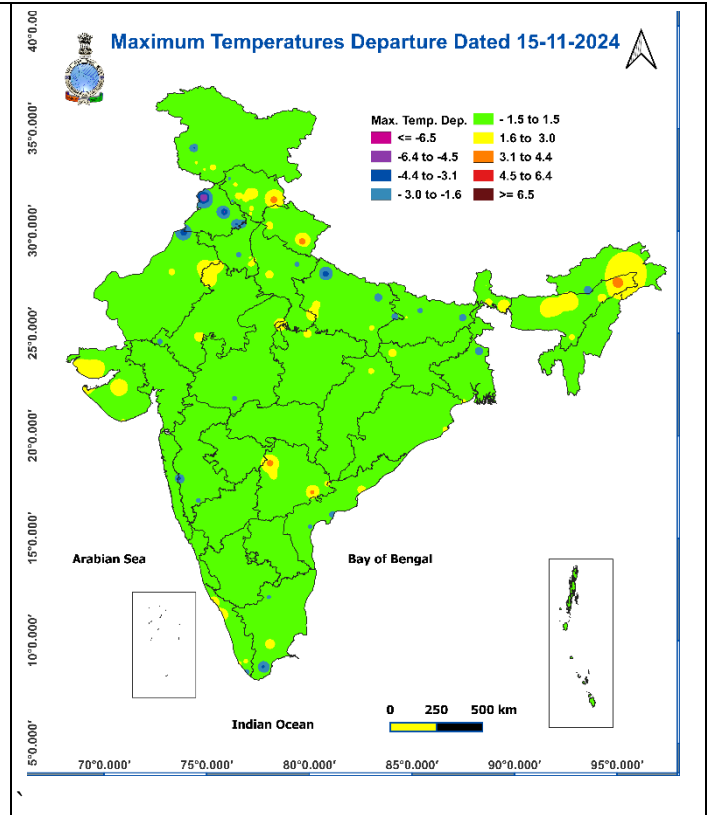
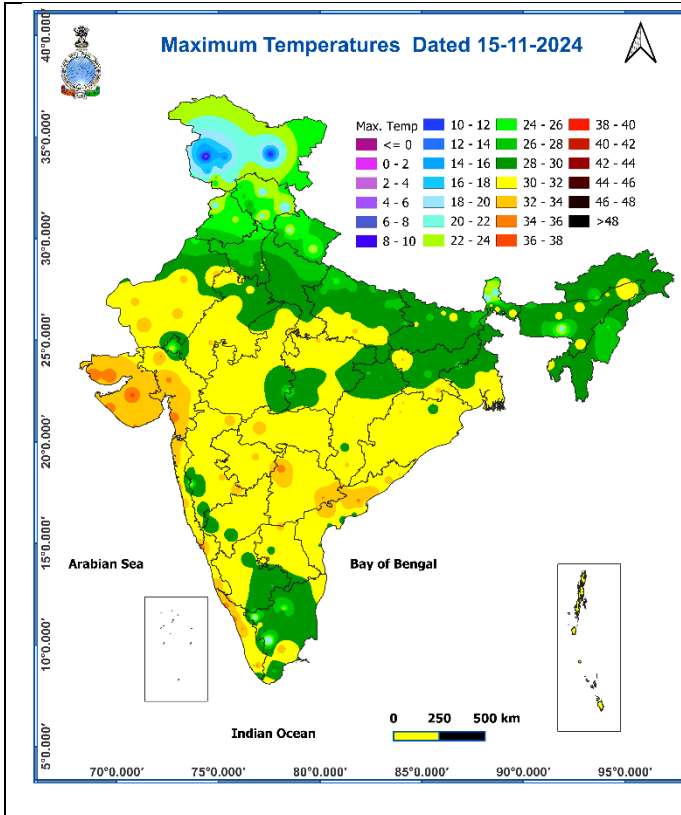


Fig. 3: Minimum Temperatures

Fig. 4: Departure of Minimum Temperatures

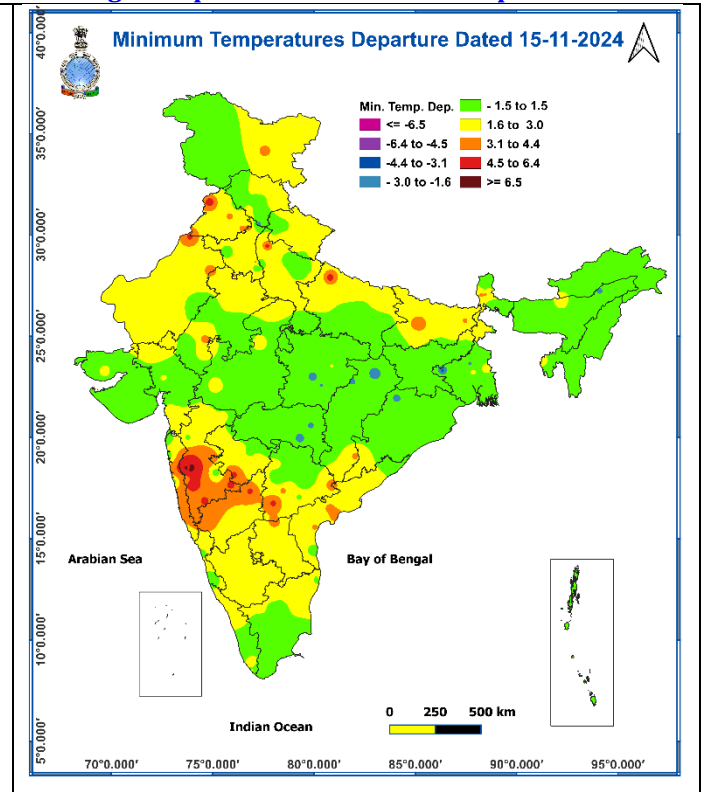
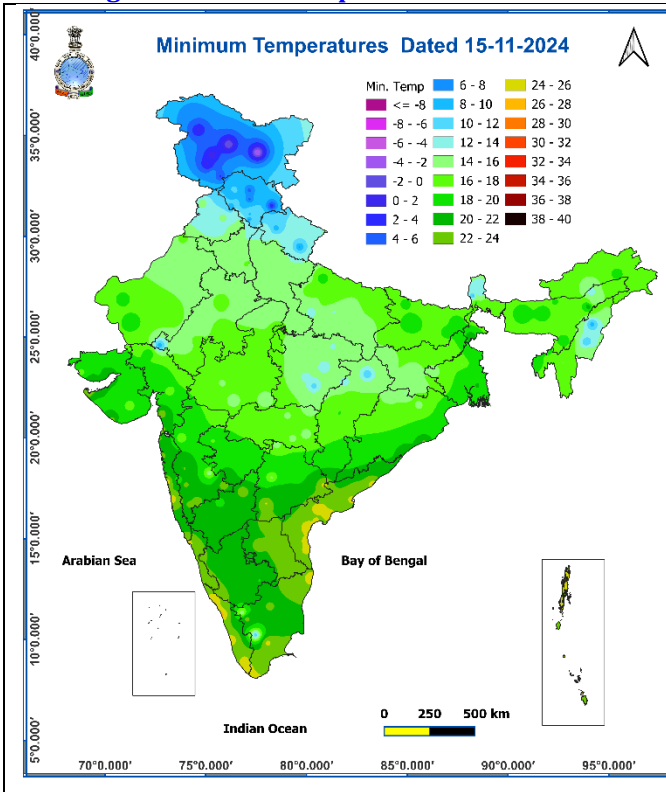
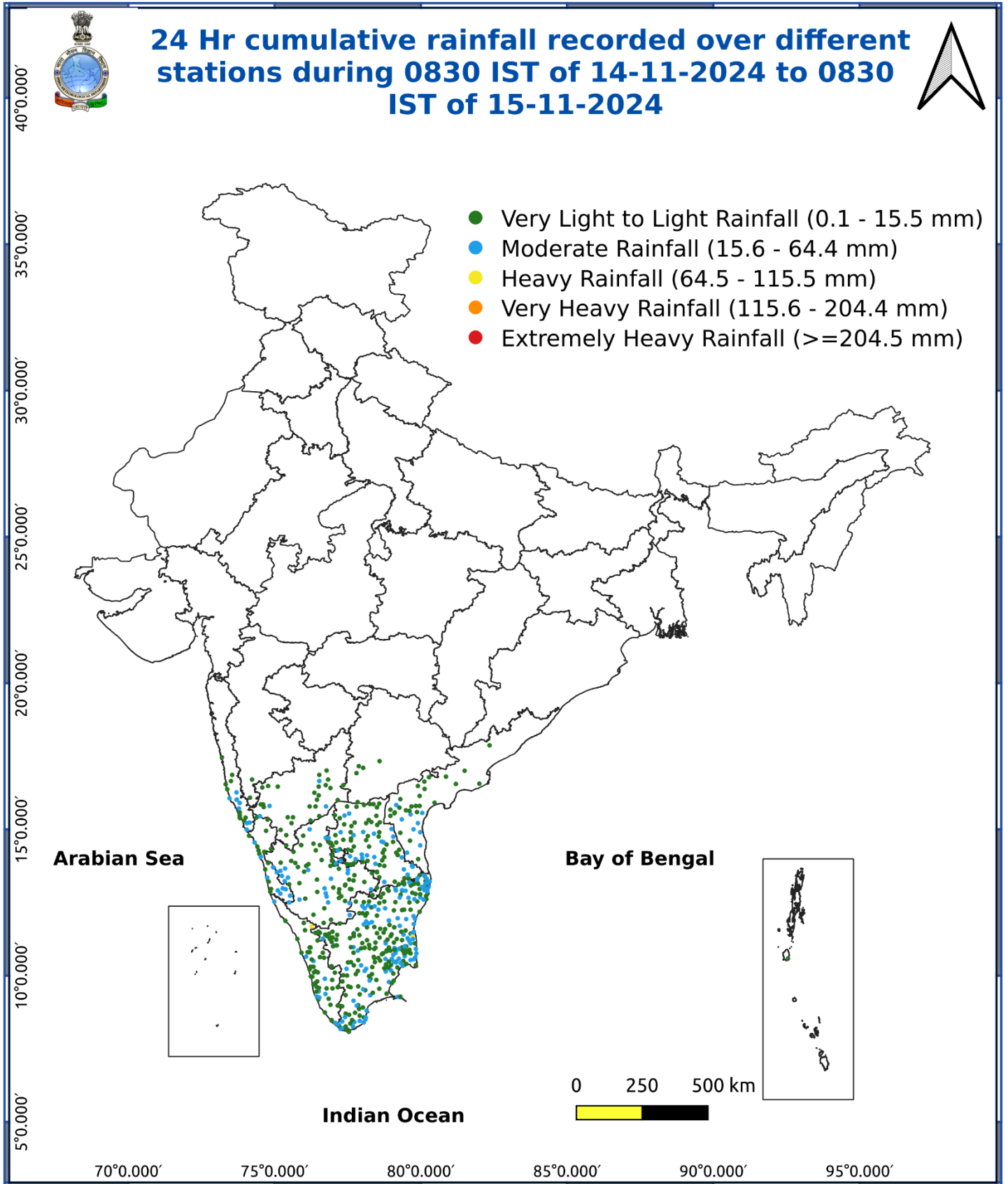


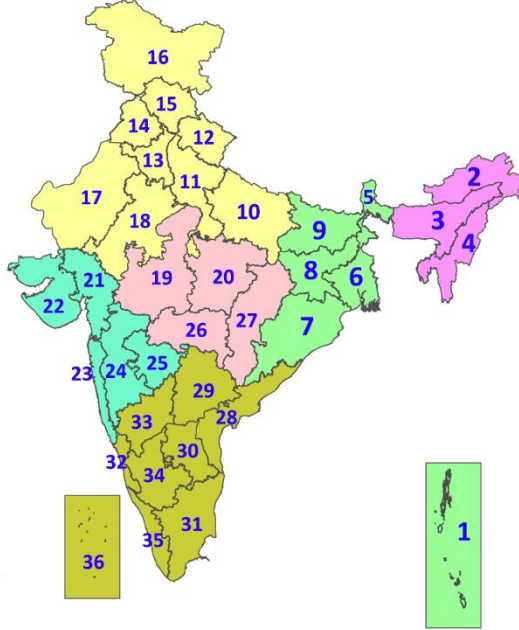
Fig. 5: Accumulated Rainfall (mm) during past 24 hours



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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)