राष्ट्रीय मौसम पूर्वानुमान केन्द्र
भारत मौसम विज्ञान विभाग
पृथ्वी विज्ञान मंत्रालय

National Weather Forecasting Centre
India Meteorological Department
Ministry of Earth Sciences

Saturday, November 23, 2024
Time of Issue: 0820 hours IST
(MORNING)

ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

Significant Weather Features:

Weather Systems:

- Yesterday's **upper air cyclonic circulation** over east Equatorial Indian Ocean and adjoining south Andaman Sea moved west-northwestwards and lay over east Equatorial Indian Ocean and adjoining south Andaman Sea & southeast Bay of Bengal, extending upto mid tropospheric levels at 0530 hrs IST of today, the 23rd November 2024.Under its influence, **a low pressure area** is likely to form over southeast Bay of Bengal during next 24 hours. Thereafter, it is likely to continue to move west-northwestwards and intensify into a **depression** over central parts of south Bay of Bengal during subsequent 2 days.
- A **trough** runs from the cyclonic circulation over east Equatorial Indian Ocean and adjoining south Andaman Sea & southeast Bay of Bengal to Gulf of Mannar in lower & middle tropospheric levels tilting southwards with height.
- A **Western disturbance** seen as a trough runs roughly along Long. 65°E to the north of Lat. 30°N in middle tropospheric levels.

Forecast & Warnings (upto 7 days):

- ✓ Light to moderate rainfall at isolated places accompanied with isolated thunderstorm & lightning very likely over Kerala & Mahe on 26th and Coastal Andhra Pradesh & Yanam on 25th & 26th November.
- ✓ Light to moderate rainfall at many places over Andaman & Nicobar Islands during the week.
- ✓ Isolated **very heavy rainfall** very likely over Tamil Nadu, Puducherry & Karaikal during 26th- 28th, Kerala & Mahe on 28th November.
- ✓ Isolated **heavy rainfall** very likely over Nicobar Islands during 23rd – 25th, Tamil Nadu, Puducherry & Karaikal on 25th, Kerala & Mahe on 26th & 27th and Coastal Andhra Pradesh & Yanam & Rayalaseema during 26th - 28th November.
- ✓ **Dense fog conditions** very likely to prevail during late night/morning hours in isolated pockets of Punjab, Haryana, Chandigarh on 23rd & 24th, Uttarakhand on 23rd & 24th and Himachal Pradesh during 23rd - 26th November.

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 on 22nd November. Minimum temperatures were **appreciably above normal (3°C to 5°C)** at isolated places over Bihar; **above normal (1°C to 3°C)** at isolated places over Assam & Meghalaya & Nagaland, Manipur, Mizoram & Tripura. These were **appreciably below normal (3°C to 5°C)** at isolated places over East Rajasthan; **below normal (1°C to 3°C)** at isolated places over Madhya Pradesh, Gujarat state, Konkan & Goa, Madhya Maharashtra, Vidarbha, Telangana, North Interior Karnataka and Haryana-Chandigarh-Delhi and near normal over rest parts of the country. Yesterday, **the lowest minimum temperature** of **8.0°C** was reported at Hissar **(Haryana)** and Sikar **(East Rajasthan)** over the plains of the country.

Forecast of temperature:

- No large Change in minimum temperatures very likely over Western Himalayan region during next 2 days and gradual fall by 2-3°C thereafter.
- Rise in minimum temperatures by 1-2°C very likely over remaining parts of Northwest India during next 3 days and no large change thereafter.
- No large Change in minimum temperatures very likely over Central India during next 2 days and rise by 2-3°C thereafter.
- No large Change in minimum temperatures over East & West India during next 5 days.

iii. Weather forecast over Delhi/NCR during 23rd November to 25th November 2024

Past Weather:

There had been a slight rise in minimum and maximum temperatures over Delhi/NCR on 22nd November. The Maximum and Minimum temperature over Delhi were in the range of 25 to 27°C and 09 to 12°C respectively. The Maximum and Minimum temperature were near normal over the most places.

Weather Forecast:

23rd November: Mainly clear sky. The predominant surface wind is likely to be from west direction with speed less than 04 kmph during morning hours. Smog/ moderate fog is likely in the morning. The wind speed will increase thereafter becoming less than 06 kmph from 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.

24th November: 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 fog is likely in the morning. The wind speed will gradually increase becoming 08-10 kmph from northwest direction during afternoon. It will decrease thereafter becoming less than 06 kmph from northwest direction during evening and night. Smog/ shallow fog is likely in the evening/night.

25th November: Mainly clear sky. The predominant surface wind is likely to be from northwest direction with wind speed less than 06 kmph during morning hours. Smog/shallow to moderate fog in the morning. The wind speed will increase thereafter becoming 08-10 kmph from northwest direction during afternoon. It will gradually decrease becoming less than 06 kmph from northwest directions during evening and night. Smog/ shallow fog is likely in the evening/night.

Main Weather Observations:

- **Rainfall distribution** (from 0830 hours IST to 1730 hours IST of yesterday): **at a few places over** Andaman & Nicobar Islands over Lakshadweep; **at isolated places** over Sub-Himalayan West Bengal & Sikkim and Tamil Nadu, Puducherry & Karaikal.

- **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): **Andaman & Nicobar Islands:** Car Nicobar -3.

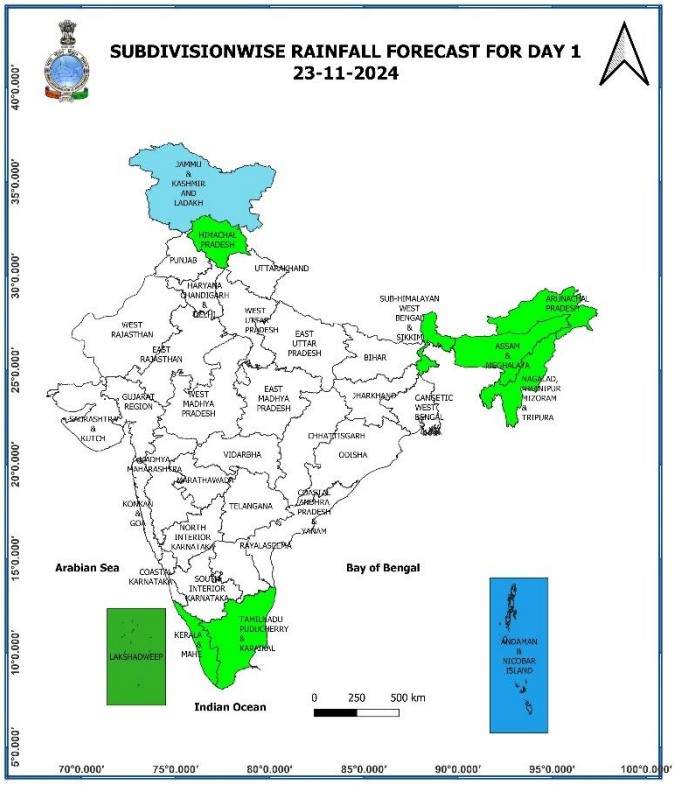
- **Minimum Temperature Departures (as on 22-11-2024):** Minimum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Bihar, Punjab, West Rajasthan and Nagaland, Manipur, Mizoram & Tripura; **above normal (2°C to 3°C)** at isolated places over Assam & Meghalaya. These were **appreciably below normal (-5.0°C to -3.1°C)** at isolated places over East Rajasthan; **below normal (-1.6°C to -3°C)** at isolated places over Madhya Pradesh, Gujarat state, Konkan & Goa, Madhya Maharashtra, Vidarbha, Telangana, North Interior Karnataka and Haryana-Chandigarh-Delhi and near normal over rest parts of the country. Yesterday, **the lowest minimum temperature** of **8.0°C** was reported at Hissar **(Haryana)** and Sikar **(East Rajasthan)** over the plains of the country. **(Fig.4)**

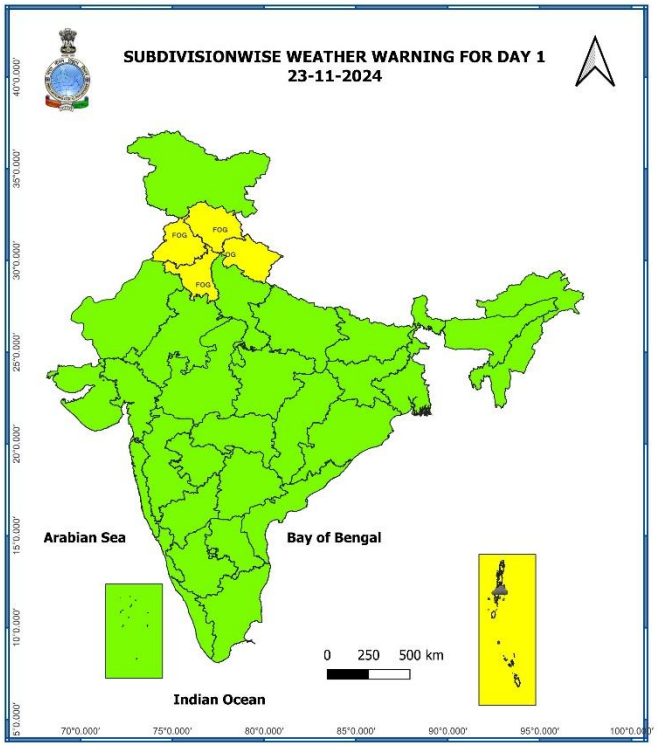
- **Maximum Temperature Departures (as on 22-11-2024):** Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Himachal Pradesh and Tamil Nadu, Puducherry & Karaikal; **above normal (1.6°C to 3.0°C)** at a few places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Kerala & Mahe; at isolated places over Punjab, West Rajasthan, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Gangetic West Bengal and South Interior Karnataka. These were **below normal (-1.6°C to -3.0°C)** at isolated places over Haryana-Chandigarh-Delhi, East Uttar Pradesh, West Rajasthan, Odisha, Madhya Pradesh, Madhya Maharashtra, Vidarbha, Telangana, Gujarat state. Yesterday, **the highest maximum temperature** of **35.2°C** was reported at **Kannur (Kerala & Mahe)** over the country. **(Fig. 2)**

Meteorological Analysis (Based on 0530 hours IST)

- The **cyclonic circulation** over east Bangladesh & neighbourhood between 1.5 km and 3.1 Km above mean sea level persists.
- The **cyclonic circulation** over south Kerala and neighbourhood at 1.5 km above mean sea level persists.
- The **Western disturbance** as a trough roughly along Long. 65°E to the north of Lat. 30°N at 3.1 km above mean sea level persists.
- Yesterday's **upper air cyclonic circulation** over east Equatorial Indian Ocean and adjoining south Andaman Sea moved west-northwestwards and lay over east Equatorial Indian Ocean and adjoining south Andaman Sea & southeast Bay of Bengal, extending upto mid tropospheric levels at 0530 hrs IST of today, the 23rd November 2024.Under its influence, **a low pressure area** is likely to form over southeast Bay of Bengal during next 24 hours. Thereafter, it is likely to continue to move west-northwestwards and intensify into a **depression** over central parts of south Bay of Bengal during subsequent 2 days.
- The **trough** from the above cyclonic circulation over east Equatorial Indian Ocean and adjoining south Andaman sea now runs from east Equatorial Indian Ocean and adjoining south Andaman Sea & southeast Bay of Bengal to Gulf of Mannar between 1.5 km and 4.5 km above mean sea level tilting southwards with height.

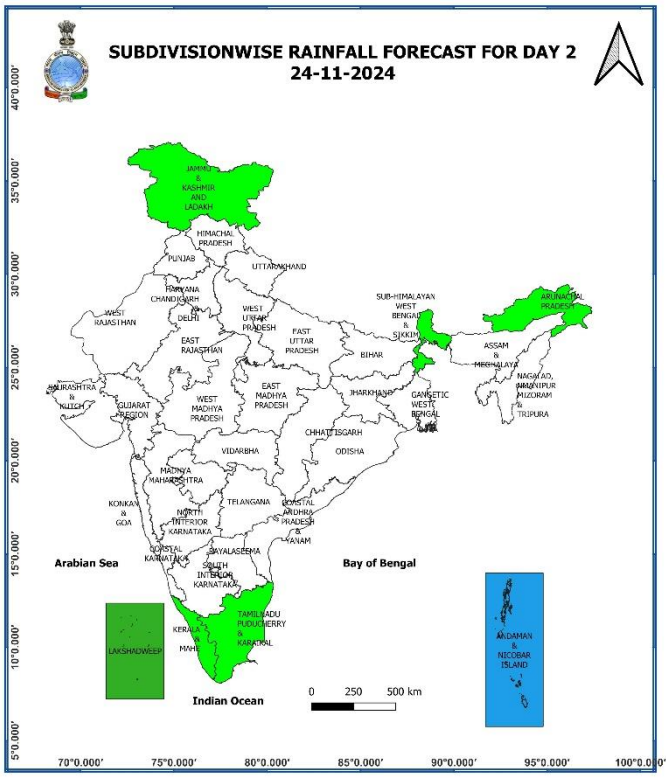
Weather Forecast & Warnings for next 7 days (Upto 0830 hours IST of 30th November, 2024)

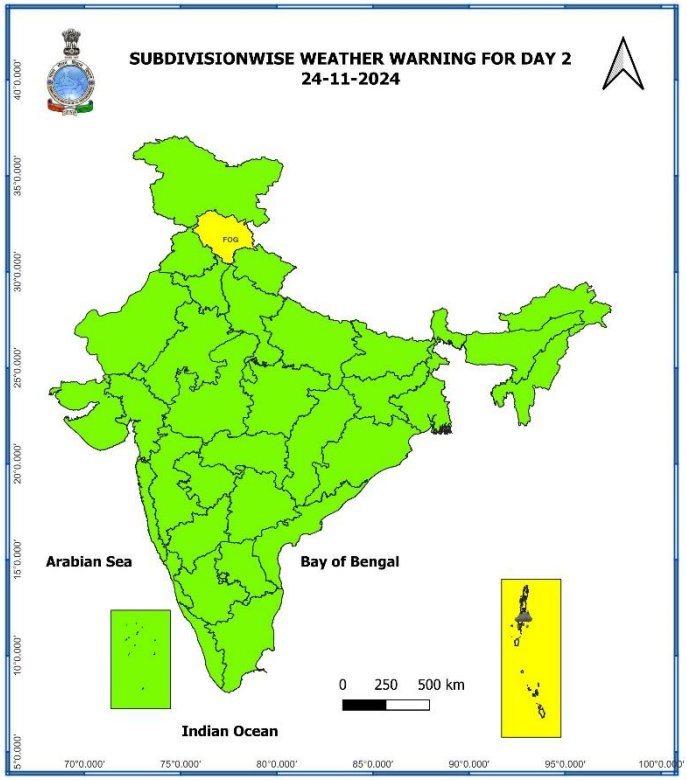




23 November (Day 1):

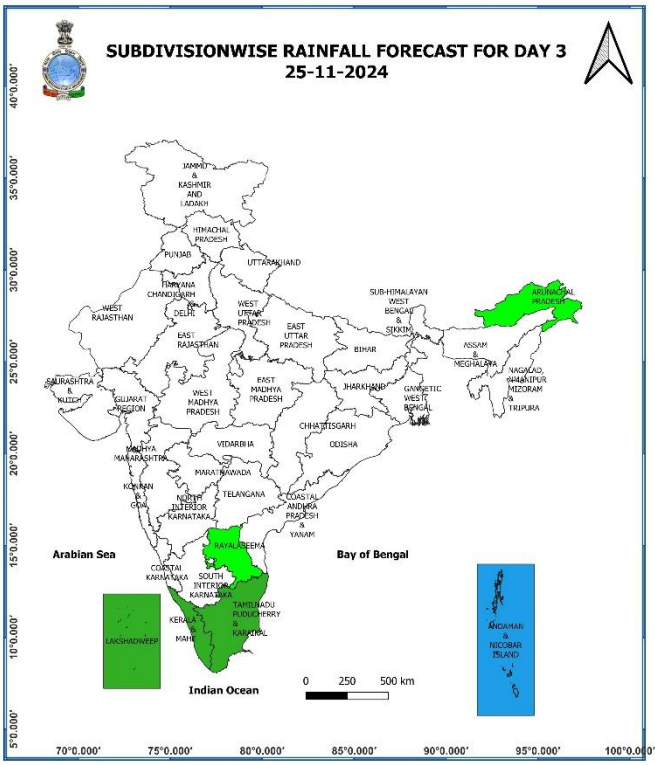
- **Heavy rainfall (≥ 7 cm)** very likely at isolated places over Andaman & Nicobar Islands.
- **Dense fog** very likely in isolated pockets of Himachal Pradesh, Uttarakhand, Punjab and Haryana-Chandigarh-Delhi in night/morning hours.
- **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevailing over many parts of southeast Bay of Bengal, south Andaman sea and adjoining North Andaman Sea.

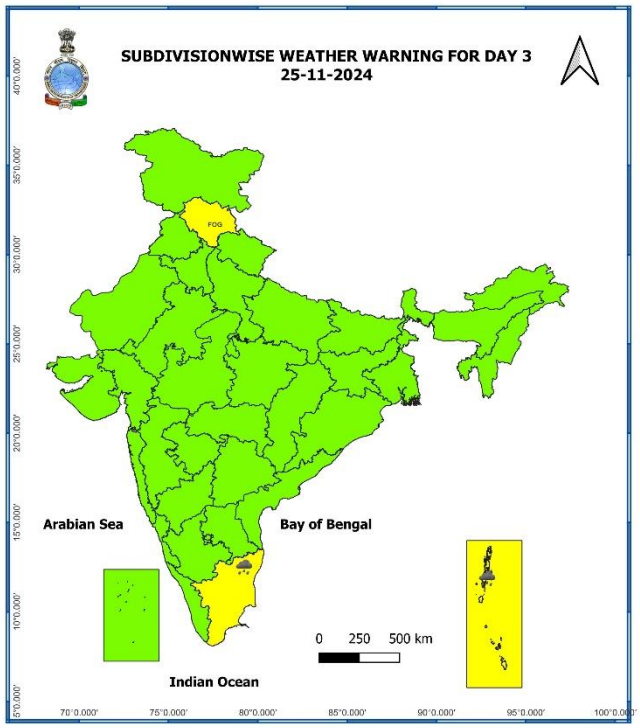




24 November (Day 2):

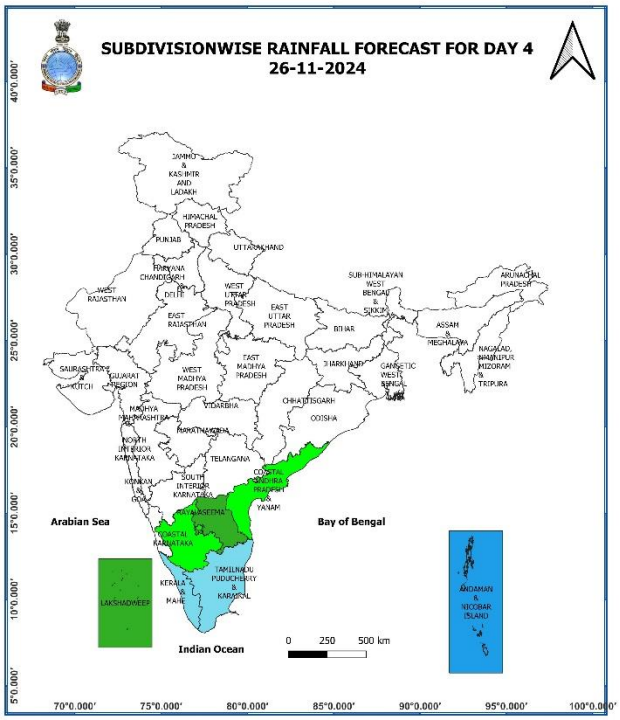
- **Heavy rainfall (≥ 7 cm)** very likely at isolated places over Andaman & Nicobar Islands.
- **Dense fog** very likely in isolated pockets of Himachal Pradesh in night/morning hours**.**
- **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevailing over most parts of southeast Bay of Bengal and adjoining parts of southwest Bay of Bengal, Andman sea. **Squally weather with wind speed 45 kmph to 55 kmph gusting to 65 kmph** is likely to prevailing over many parts of southeast Bay of Bengal and adjoining parts of southwest Bay of Bengal.

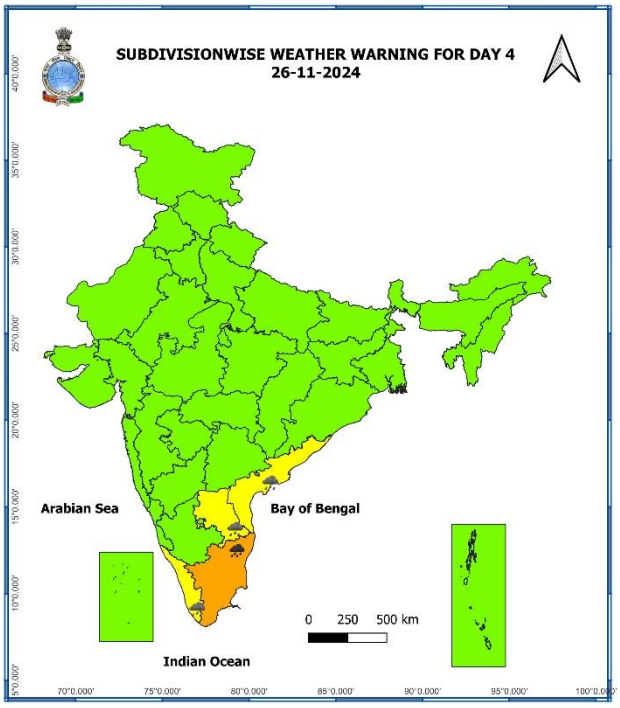




25 November (Day 3):

- **Heavy rainfall (≥ 7 cm)** likely at isolated places over Andaman & Nicobar Islands and Tamil Nadu, Puducherry & Karaikal.
- **Dense fog** likely in isolated pockets of Himachal Pradesh in night/morning hours.
- **Thunderstorm accompanied with lightning** likely at isolated places over Coastal Andhra Pradesh & Yanam.
- **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevailing over gulf of Mannar and adjoining Comorin area, over most parts of southwest Bay of Bengal and adjoining parts of southeast Bay of Bengal, off silence Coast and Andaman Sea. **Squally weather with wind speed 45 kmph to 55 kmph gusting to 65 kmph** is likely to prevailing over central parts of south Bay of Bengal.



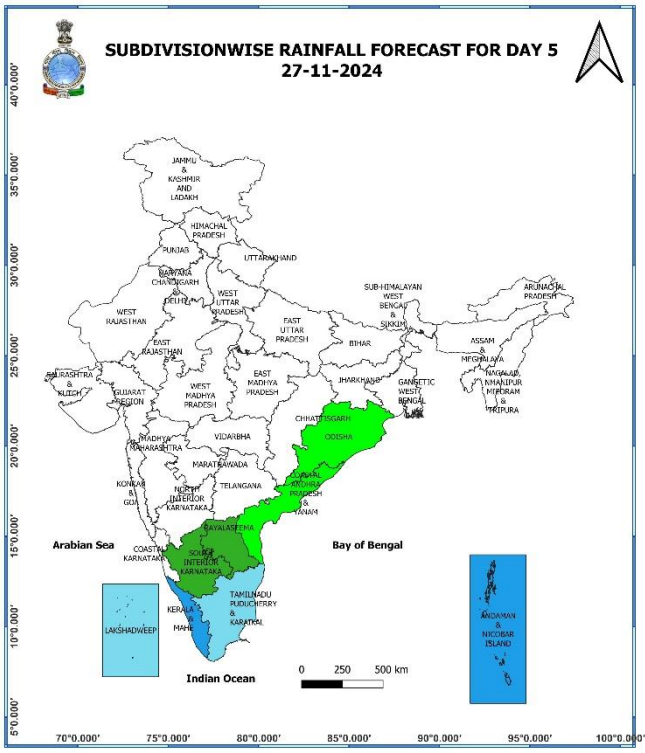


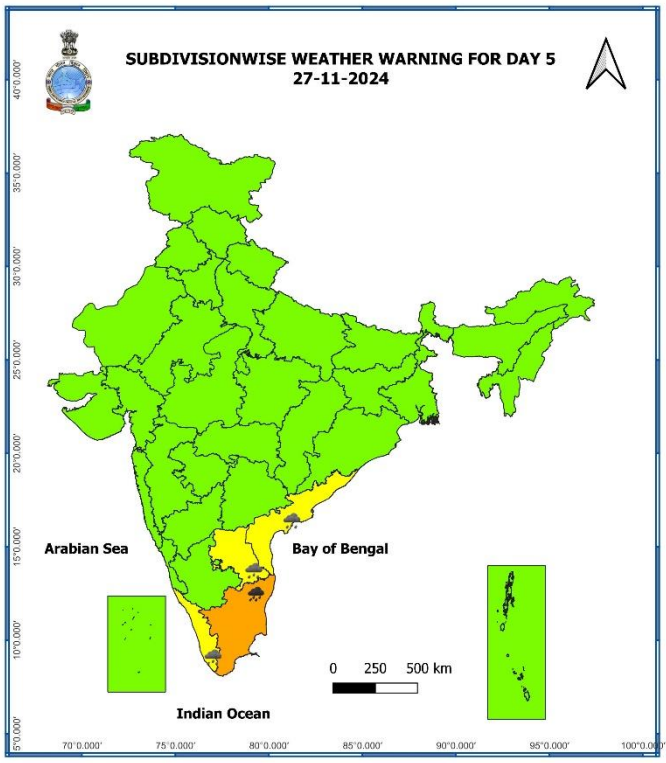
26 November (Day 4):

- **Heavy to very Heavy rainfall (≥ 12 cm)** likely at isolated places over Tamil Nadu, Puducherry & Karaikal; **Heavy rainfall (≥ 7 cm)** likely at isolated places over Kerala & Mahe, Coastal Andhra Pradesh & Yanam and Rayalaseema.

- **Thunderstorm accompanied with lightning** likely at isolated places over Kerala & Mahe and Coastal Andhra Pradesh & Yanam.

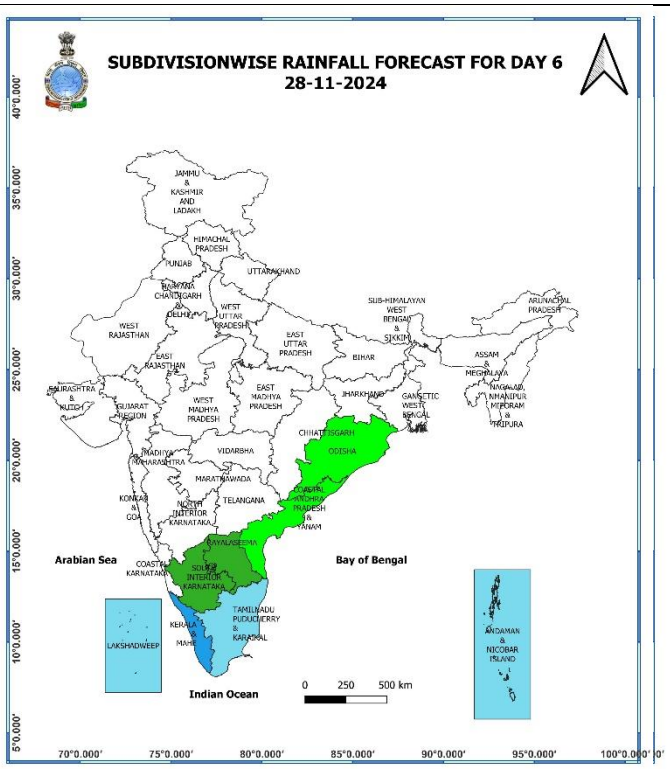
- **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevailing along and off south Kerala coast, over Gulf of Mannar and adjoining Comorin Area, over most parts of southwest Bay of Bengal and adjoining parts of southeast and west central Bay of Bengal, along and off silence coast, off Tamil Nadu coast, over Andaman Sea. **Squally weather with wind speed 45 kmph to 55 kmph gusting to 65 kmph** is likely to prevailing over many parts of southwest Bay of Bengal and adjoining parts of southeast Bay of Bengal.

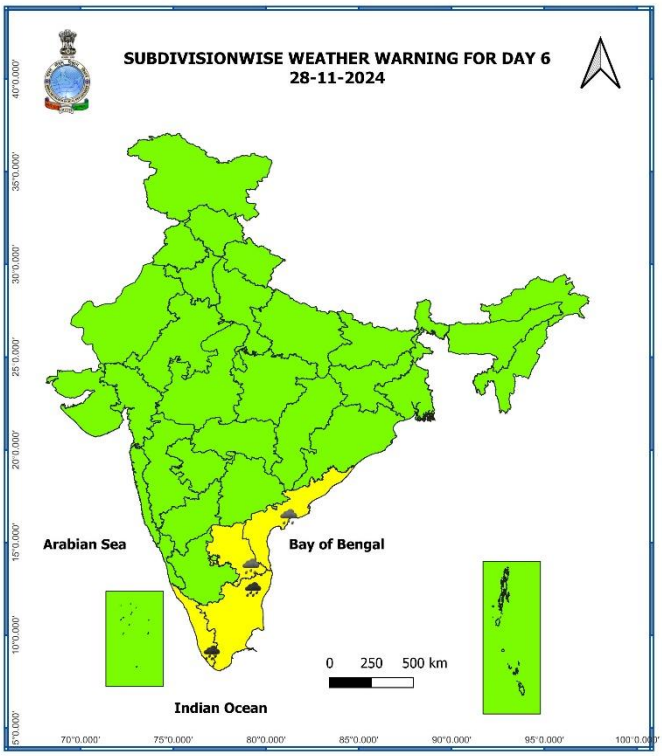




27 November (Day 5):

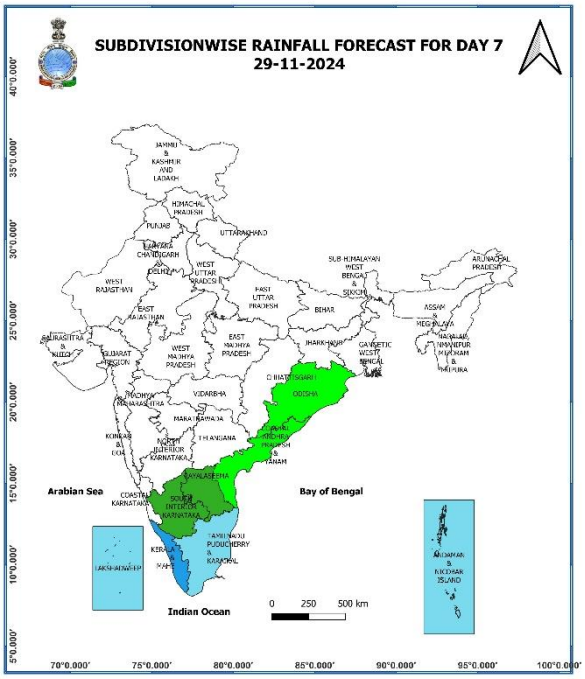
- **Heavy to very Heavy rainfall (≥ 12 cm)** likely at isolated places over Tamil Nadu, Puducherry & Karaikal; **Heavy rainfall (≥ 7 cm)** likely at isolated places over Kerala & Mahe, Coastal Andhra Pradesh & Yanam and Rayalaseema.

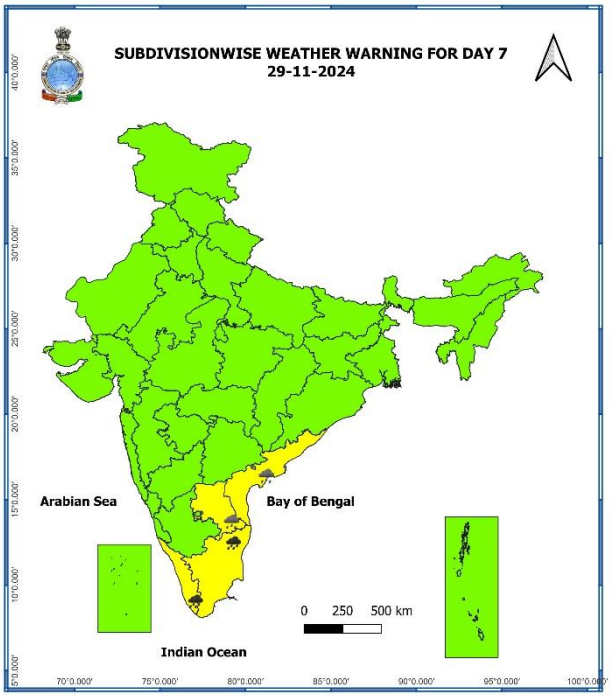




28 November (Day 6):

- **Heavy to very Heavy rainfall (≥ 12 cm)** likely at isolated places over Tamil Nadu, Puducherry & Karaikal and Kerala & Mahe; **Heavy rainfall (≥ 7 cm)** likely at isolated places over Coastal Andhra Pradesh & Yanam and Rayalaseema.





29 November (Day 7):

- **Heavy to very Heavy rainfall (≥ 12 cm)** likely at isolated places over Tamil Nadu, Puducherry & Karaikal and Kerala & Mahe; **Heavy rainfall (≥ 7 cm)** likely at isolated places over Coastal Andhra Pradesh & Yanam and Rayalaseema.

Weather Outlook for subsequent 3 days (During 30th November – 02nd December, 2024)

- Isolated to Scattered light rainfall likely over some parts of south peninsular India and central India.
- Mainly dry weather will prevail over rest parts of country.

- **Action may be taken based on ORANGE AND RED COLOUR warnings.**
- **Vulnerable regions likely urban and hilly areas action may be initiated for heavy rainfall warning.**
- **As the lead period increases forecast accuracy decreases.**

Impact & Action Suggested due to very heavy rainfall over Tamil Nadu, Puducherry & Karaikal during 26th - 28th; **Kerala & Mahe** on 28th November 2024.

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 due to dense/ very dense fog in the late night /morning hours over parts of Northwest India during next 4-5 days.

❖ 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.

Agromet advisories for Heavy Rainfall likely over Andaman & Nicobar Islands and Meghalaya:

- ✓ In **Andaman & Nicobar Islands**, shift the harvested produce of rice, coconut and arecanut in safe place. In transplanted vegetable fields, keep the bunds open and provide drainage facilities.

- ✓ In **Meghalaya**, use hail nets or hail caps in fruit orchards to protect them from mechanical damage. Provide staking to vegetables and mechanical support to horticultural crops

Fig. 1: Maximum Temperatures

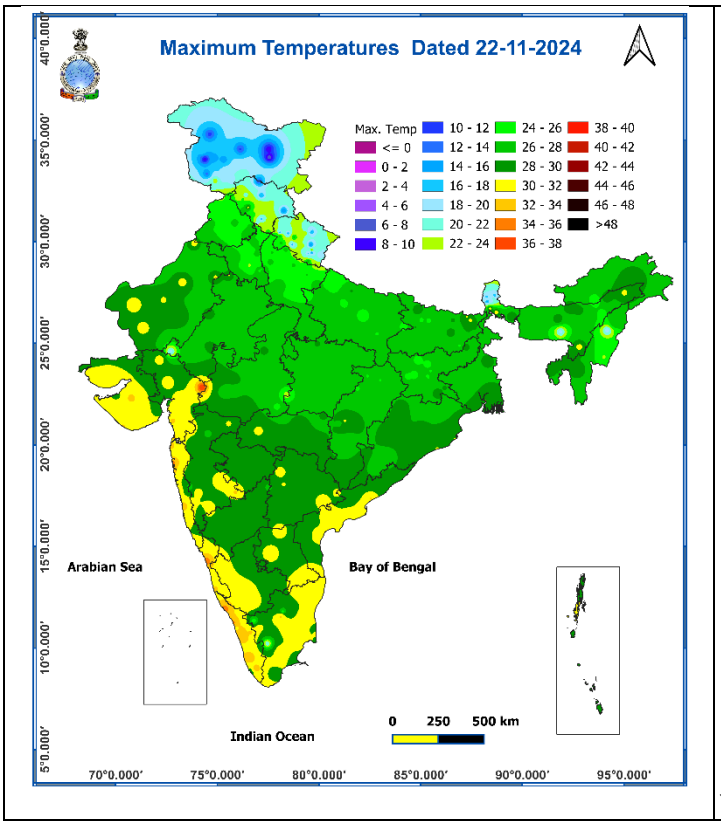


Fig. 2: Departure of Maximum Temperatures

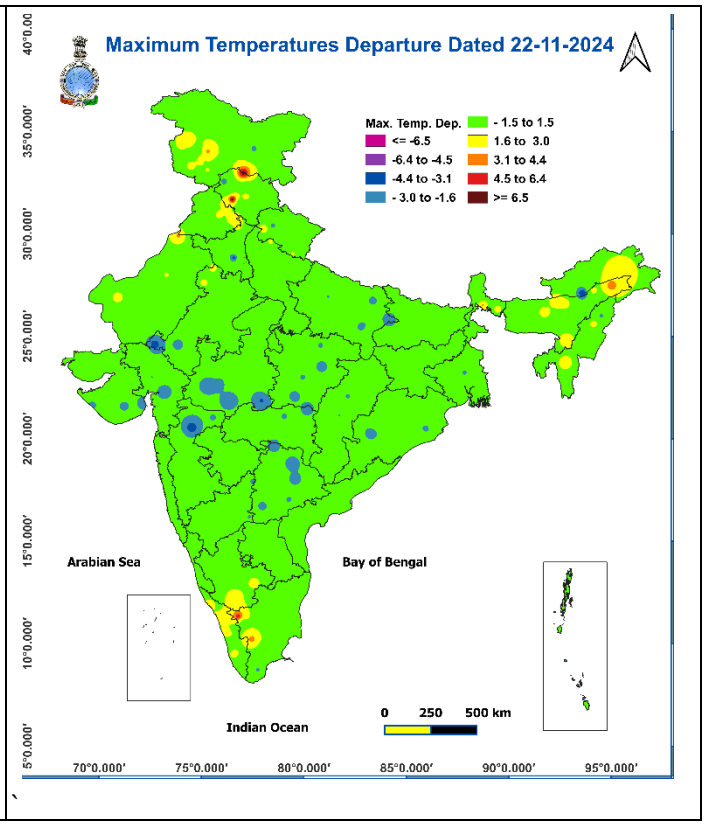


Fig. 3: Minimum Temperatures

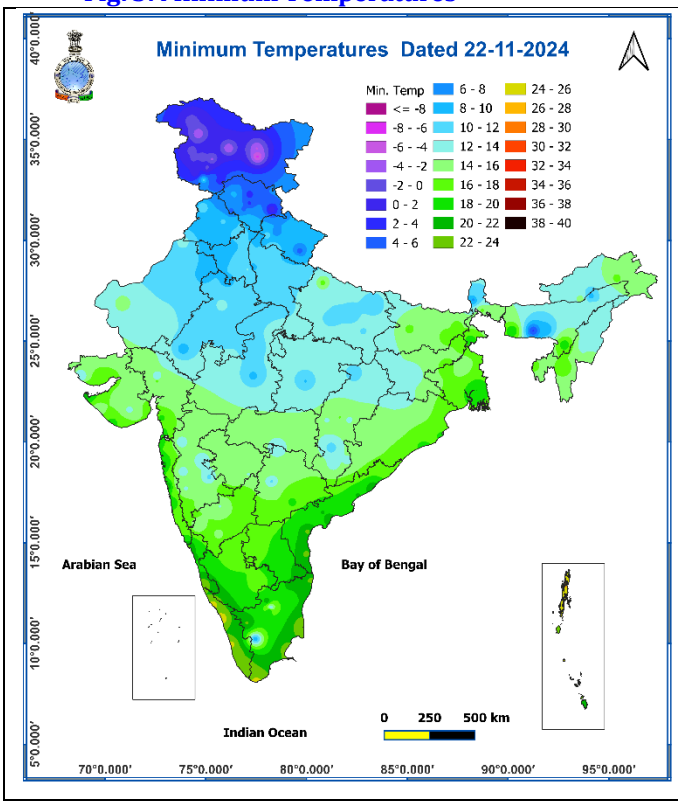
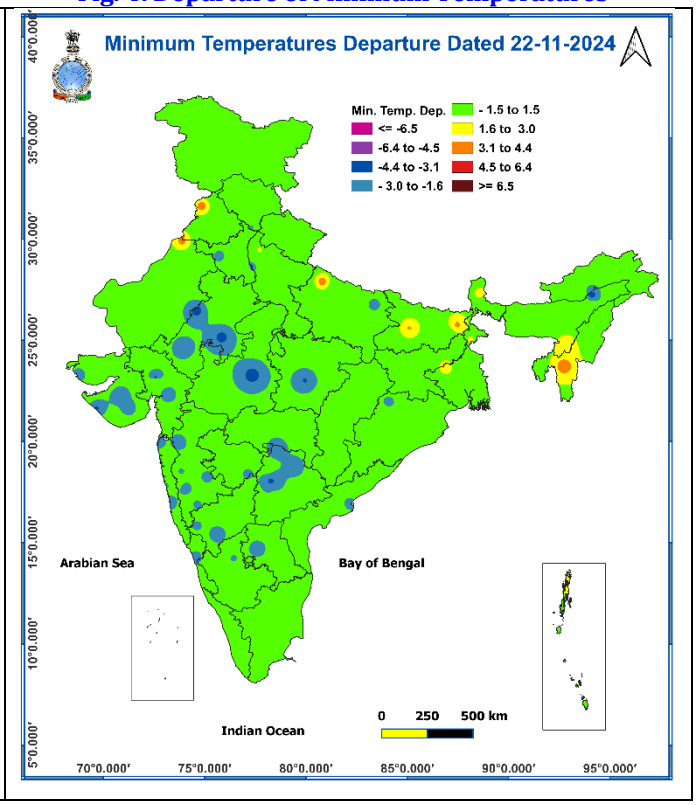
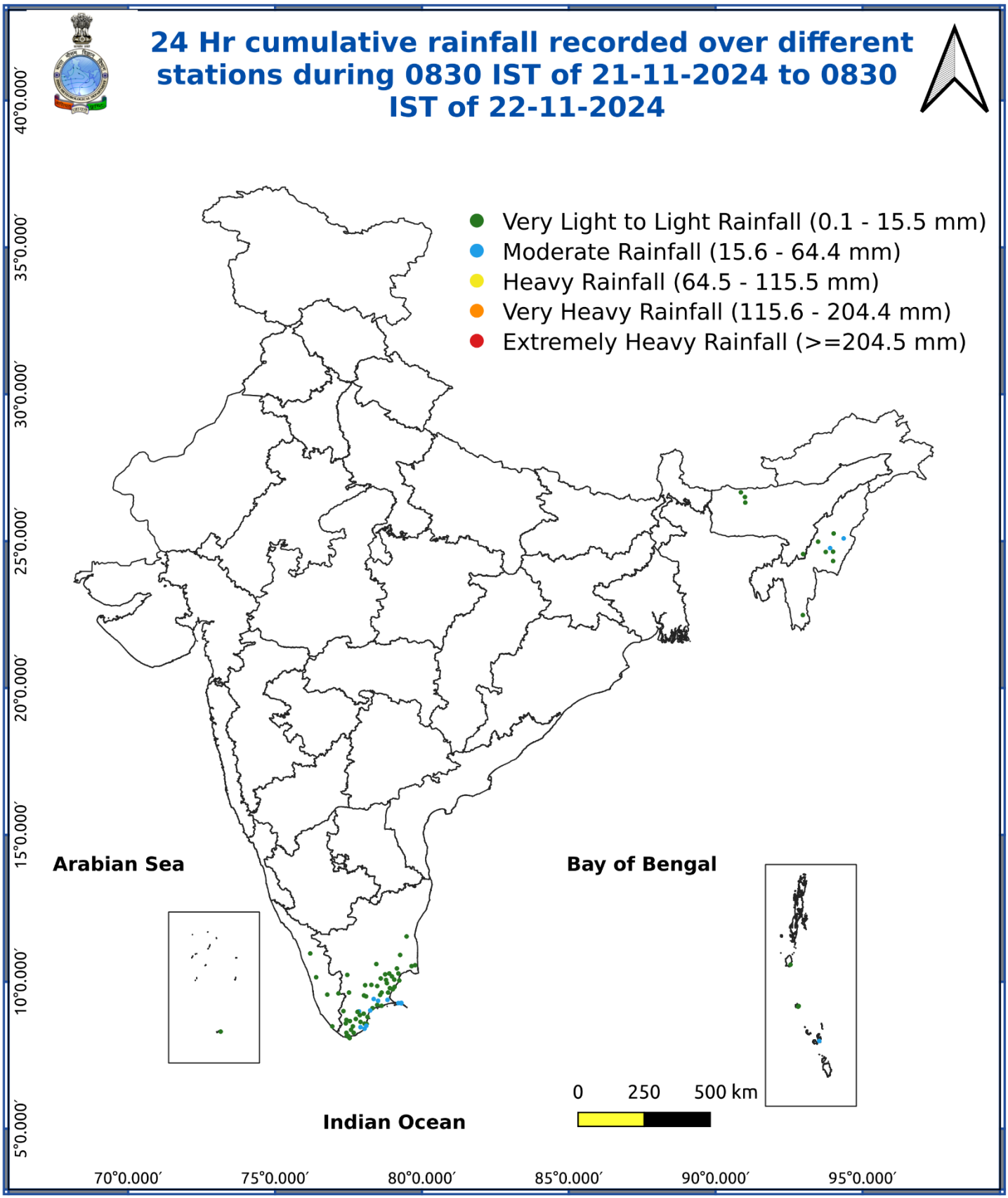


Fig. 4: Departure of Minimum Temperatures



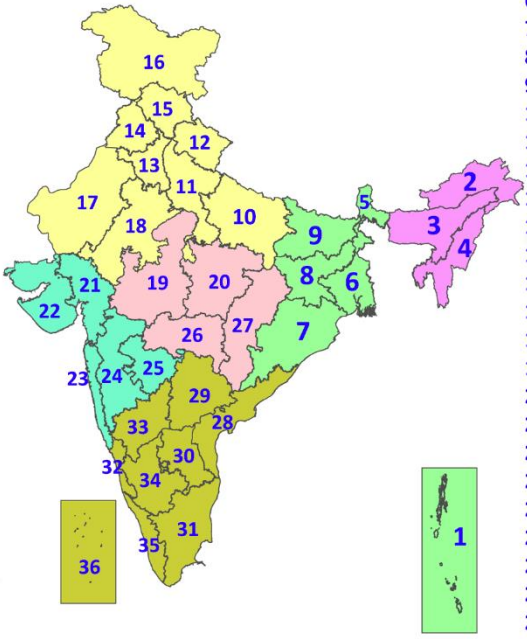
* Red colour warning does not mean "Red Alert", Red colour warning means "Take Action".
Forecast and Warning for any day is valid from 0830 hours IST of day till 0830 hours IST of next day.
For more details, kindly visit https://mausam.imd.gov.in or contact: 011-2434-4599
(Service to the Nation since 1875)

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



LEGENDS

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



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

SPATIAL DISTRIBUTION (% of Stations reporting)

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

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

COLOUR CODED WARNING

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

Probabilistic Forecast

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

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Forecast and Warning for any day is valid from 0830 hours IST of day till 0830 hours IST of next day.
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(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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