

Thursday, October 24, 2024  
Time of Issue: 1945 hours IST  
(NIGHT)

## ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

### Significant Weather Features:

#### Weather Systems:

- ❖ The **severe cyclonic storm "DANA" (pronounced as Dana)** over northwest Bay of Bengal moved north-northwestwards with a speed of 13 kmph during past 6 hours and lay centred at 1730 hrs IST of today, the 24th October, over the same region, near latitude 19.8° N and longitude 87.5°E, about 100 km east-southeast of Paradip (Odisha), 130 km south-southeast of Dhamara (Odisha) and 210 km south-southwest of Sagar Island (West Bengal). It is very likely to move north-northwestwards and cross north Odisha and West Bengal coasts between Puri and Sagar Island close to Bhitarkanika and Dhamara (Odisha) during mid-night of 24th to morning of 25th October, 2024 as a severe Cyclonic Storm with a wind speed of 100-110 kmph gusting 120 kmph.
- ❖ The **upper air cyclonic circulation** over Southeast Arabian Sea & adjoining Lakshadweep area extending upto 4.5 km above mean sea level persists.

### Forecast & Warnings (upto 7 days):

#### East India

- ✓ Light to moderate rainfall at most places with **heavy to very heavy rainfall** at a few places and **extremely heavy rainfall ( $\geq 21$  cm)** at isolated places over **Baleswar, Mayurbhanj, Bhadrak, Kendrapara, Jagatsingpur Kendujhar, Jajpur, Cuttack and Dhenkanal, Khorda and Puri** districts of Odisha on 24<sup>th</sup> & 25<sup>th</sup> October.
- ✓ **Light to moderate rainfall at most places with heavy to very heavy rainfall** at a few places with **extremely heavy rainfall** at isolated places over **South & North 24 Parganas, East & West Medinipur, Jhargram, Howrah, Hooghly, Kolkata and Bankura** districts of Gangetic West Bengal on 24<sup>th</sup> & 25<sup>th</sup> October.
- ✓ Light to moderate rainfall at most places is likely over south Jharkhand with **heavy rainfall** at isolated places on 24<sup>th</sup> and **heavy to very heavy rainfall** at isolated places on 25<sup>th</sup> October.

#### South Peninsular India

- ✓ Light to moderate rainfall at a few places accompanied with isolated thunderstorm and lightning very likely over Tamil Nadu, Puducherry & Karaikal, South Interior Karnataka, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe and Lakshadweep during next 2-3 days and decrease thereafter.
- ✓ **Isolated heavy to very heavy rainfall** very likely over Kerala & Mahe on 24<sup>th</sup> & 25<sup>th</sup> October.
- ✓ **Isolated heavy rainfall** very likely over Tamil Nadu, Puducherry & Karaikal on 24<sup>th</sup> & 25<sup>th</sup>, South Interior Karnataka on 24<sup>th</sup> and Kerala & Mahe during 26<sup>th</sup>-27<sup>th</sup> October.

#### Northeast India

- ✓ Light to moderate rainfall at many places accompanied with isolated thunderstorm and lightning very likely over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura during next 2 days and isolated places of Arunachal Pradesh and decrease thereafter.
- ✓ **Isolated heavy rainfall** very likely over Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura on 24<sup>th</sup> October.

#### Central, West & Northwest India

- ✓ No significant rainfall likely over these regions during the week.

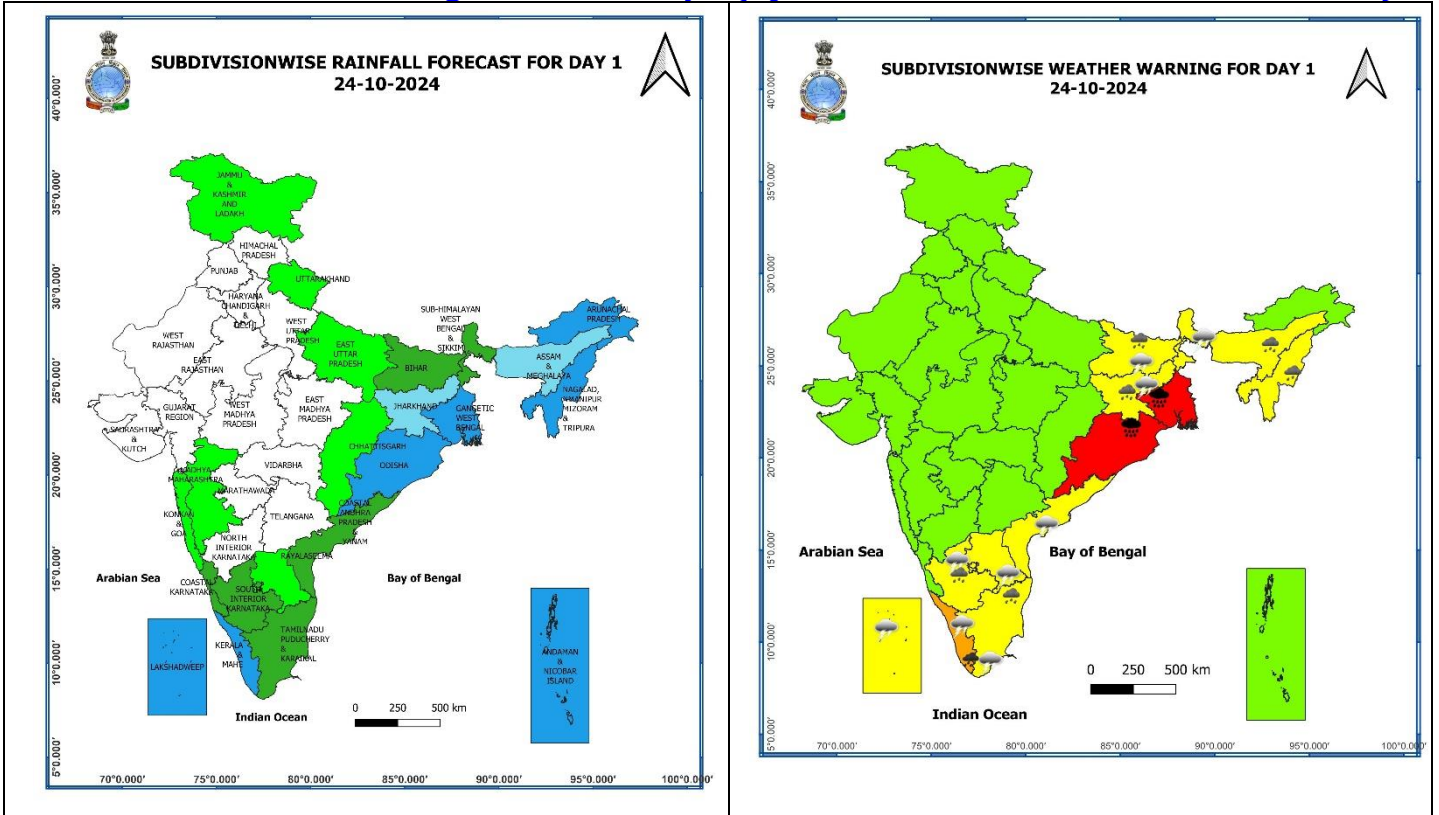
## Main Weather Observations:

- ❖ **Rainfall distribution** (from 0830 hours IST to 1730 hours IST of today): **at many places over** Andaman & Nicobar Islands; **at few places** over Kerala & Mahe, Tamil Nadu, Puducherry & Karaikal, Odisha, Gangetic West Bengal, Assam & Meghalaya; **at isolated places** over Chhattisgarh, Nagaland, Manipur, Mizoram & Tripura, Arunachal Pradesh, Sub-Himalayan West Bengal & Sikkim, Jharkhand.
- ❖ **Heavy rainfall recorded** (from 0830 hours IST to 1730 hours IST of today): **Nil.**
- ❖ **Significant amount of rainfall** (from 0830 hours IST to 1730 hours IST of today) (in cm): **Tamil Nadu:** Parangipettai 6, Cuddalore 4, Udthagamandalam 3, Salem 2; **Kerala & Mahe:** Palakkad 5, Kozhikode 4, Kannur 3; **Odisha:** Chandbali 3, Paradip 3; **Gangetic West Bengal:** Digha 2, Haldia 2; **Lakshadweep:** Minicoy 2; **Assam & Meghalaya:** Golaghat 2, **Tripura:** Agartala 2, Andaman & Nicobar Islands: Long Island 2.
- ❖ **Minimum Temperature Departures (as on 24-10-2024):** Minimum temperatures are **markedly above normal (5.1°C or more)** at isolated places over East Uttar Pradesh; **appreciably above normal (3.1°C to 5.0°C)** at most places over Saurashtra & Kutch; at many places over Gujarat Region; at isolated places over East Rajasthan, Haryana-Chandigarh-Delhi, West Uttar Pradesh, Bihar, Jharkhand, Odisha, Madhya Pradesh, Madhya Maharashtra, Marathwada; **above normal (1.6°C to 3.0°C)** at a few places over Konkan & Goa, Gangetic West Bengal, Rayalaseema, South Interior Karnataka, Tamil Nadu, Puducherry & Karaikal; at isolated places West Rajasthan, Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Uttarakhand, Chhattisgarh, Sub-Himalayan West Bengal & Sikkim, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura. Today, **the lowest minimum temperature of 15.3°C** is reported at **Mandla (East Madhya Pradesh)** over the plains of the country. **(Fig.4)**
- ❖ **Maximum Temperature Departures (as on 24-10-2024):** Maximum temperatures are **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Uttar Pradesh, Coastal Andhra Pradesh & Yanam; **above normal (1.6°C to 3.0°C)** at a few places over Himachal Pradesh; at isolated places over Punjab, Haryana-Chandigarh-Delhi, Uttarakhand, West Rajasthan, Gujarat state, Konkan & Goa, Telangana, Tamil Nadu, Puducherry & Karaikal. These are **markedly below normal (-5.1°C or less)** at a few places over Gangetic West Bengal; at appreciably **below normal (-3.1°C to -5.0°C)** at isolated places over Odisha, Assam & Meghalaya, Jharkhand, Sub-Himalayan West Bengal & Sikkim; **below normal (-3.0°C to -1.6°C)** at isolated places over Bihar, Madhya Pradesh, Nagaland, Manipur, Mizoram & Tripura. Today, **the highest maximum temperature of 38.4°C** is reported at **Phalodi IAF (West Rajasthan)** over the country. **(Fig. 2)**

## Meteorological Analysis (Based on 1730 hours IST)

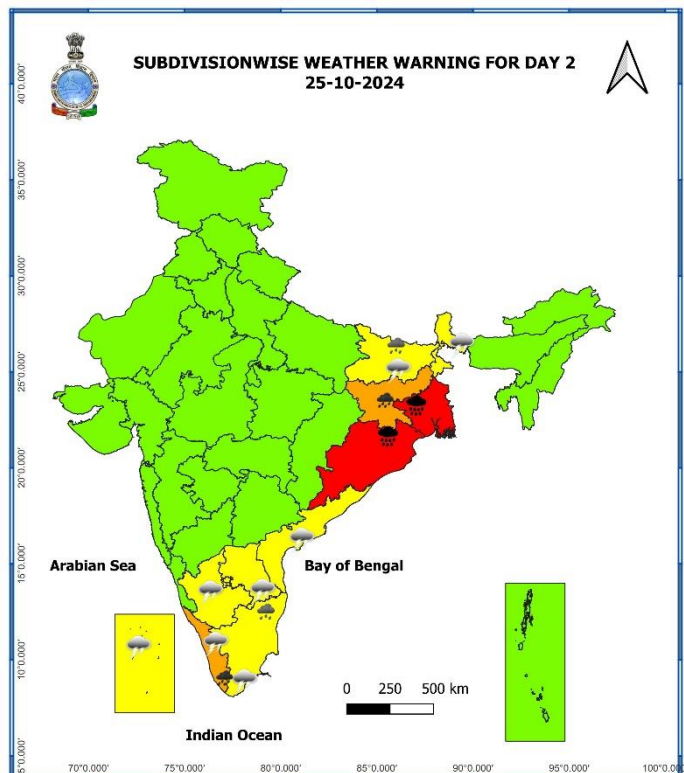
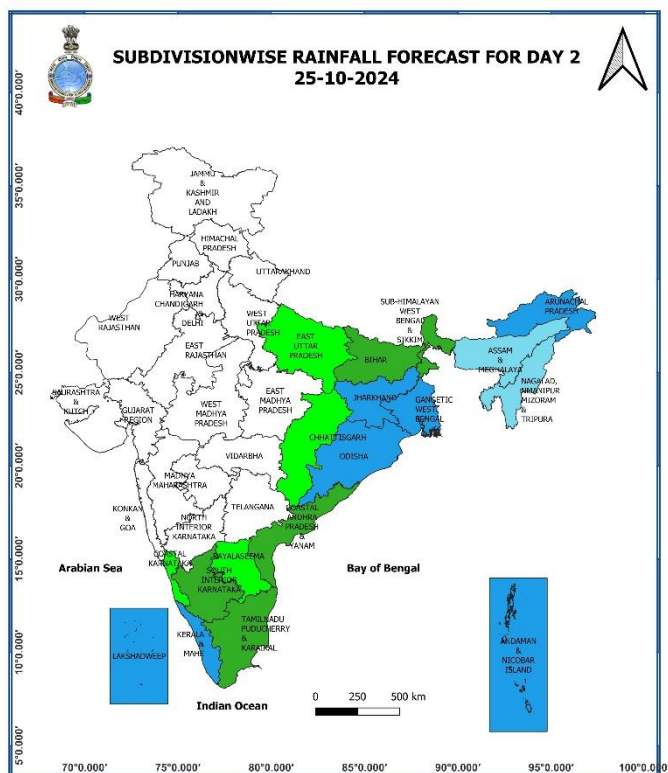
- ❖ The **severe cyclonic storm "DANA"** (pronounced as Dana) over northwest Bay of Bengal moved north-northwestwards with a speed of 13 kmph during past 6 hours and lay centred at 1730 hrs IST of today, the 24th October, over the same region, near latitude 19.8° N and longitude 87.5°E, about 100 km east-southeast of Paradip (Odisha), 130 km south-southeast of Dhamara (Odisha) and 210 km south-southwest of Sagar Island (West Bengal). It is very likely to move north-northwestwards and cross north Odisha and West Bengal coasts between Puri and Sagar Island close to Bhitarkanika and Dhamara (Odisha) during mid-night of 24th to morning of 25th October, 2024 as a severe Cyclonic Storm with a wind speed of 100-110 kmph gusting 120 kmph.
- ❖ The **upper air cyclonic circulation** over Southeast Arabian Sea & adjoining Lakshadweep area extending upto 4.5 km above mean sea level persists.

Weather Forecast & Warnings for next 7 days (Upto 0830 hours IST of 31<sup>st</sup> October, 2024)



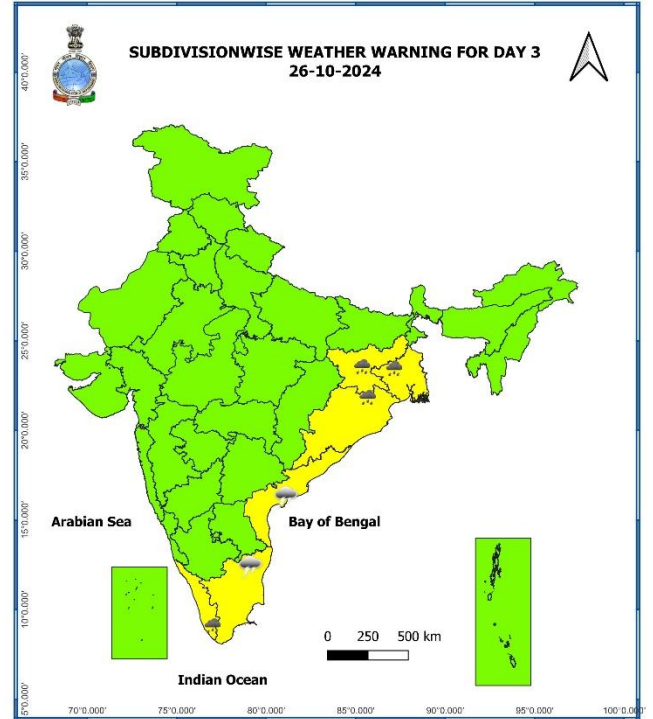
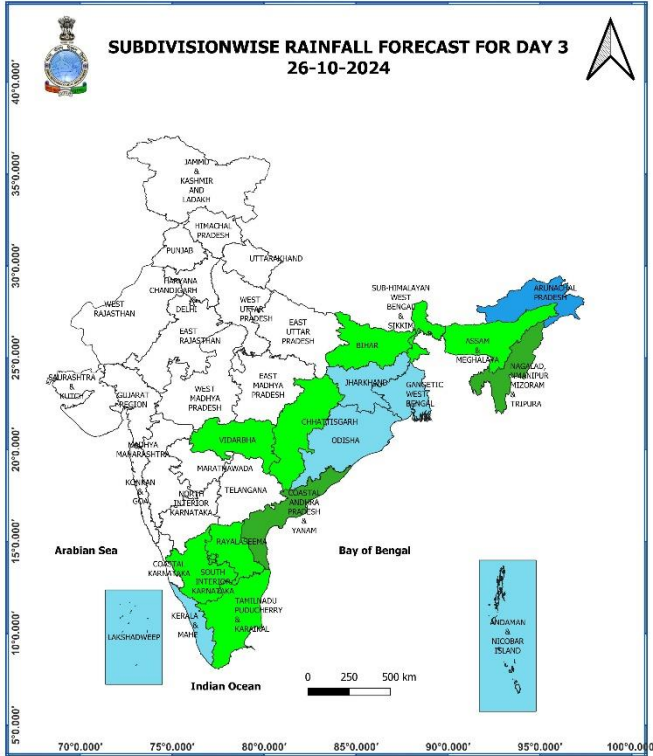
24 October (Day 1):

- ❖ **Heavy to very heavy rainfall with extremely heavy falls ( $\geq 20$  cm)** very likely at isolated places over Odisha, Gangetic West Bengal; **Heavy to very heavy rainfall ( $\geq 12$  cm)** likely at isolated places over Kerala & Mahe; **Heavy rainfall ( $\geq 7$ cm)** likely at isolated places over northeast Bihar, Jharkhand, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Tamil Nadu, Puducherry & Karaikal, South Interior Karnataka.
- ❖ **Thunderstorm accompanied with lightning** very likely at isolated places over Sub-Himalayan West Bengal & Sikkim, Bihar, Jharkhand, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Lakshadweep, Coastal Andhra Pradesh & Yanam, Rayalaseema, South Interior Karnataka.
- ❖ **Gale wind speed reaching 95-105 kmph gusting to 115 kmph** is prevailing over Northwest Bay of Bengal, Adjoining areas of central Bay of Bengal. **Gale wind speed reaching 60-70 kmph gusting to 80 kmph** is prevailing along & off Odisha-west Bengal coasts. **Gale wind speed reaching 60-80 kmph gusting to 90 kmph** is likely along & off south Odisha and remaining districts of coastal West Bengal. **Squally wind speed reaching 50-60 kmph gusting to 70 kmph** is likely to prevail over adjoining areas of northeast Bay of Bengal.
- ❖ **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevail along and off Kerala east coast and over Lakshadweep area.



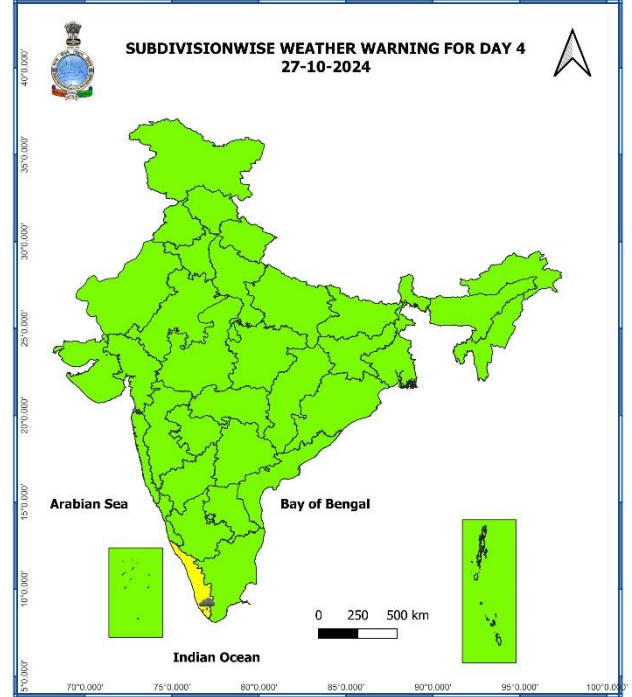
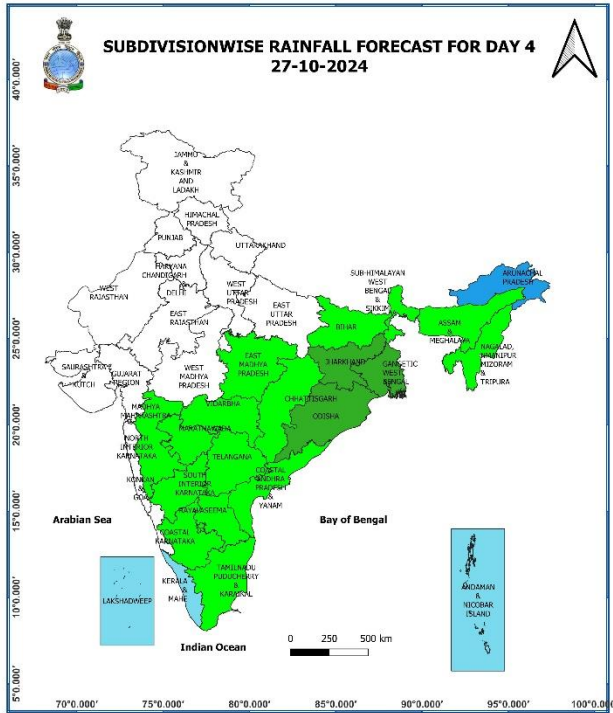
## 25 October (Day 2):

- ❖ **Heavy to very heavy rainfall with extremely heavy falls ( $\geq 20$  cm) very likely at isolated places over Odisha, Gangetic West Bengal; Heavy to very heavy rainfall ( $\geq 12$  cm) likely at isolated places over Jharkhand, Kerala & Mahe; Heavy rainfall ( $\geq 7$ cm) likely at isolated places over northeast Bihar, Tamil Nadu, Puducherry & Karaikal.**
- ❖ **Thunderstorm accompanied with lightning very likely at isolated places over Chhattisgarh, Sub-Himalayan West Bengal & Sikkim, Bihar, Jharkhand, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Lakshadweep, Coastal Andhra Pradesh & Yanam, Rayalaseema, South Interior Karnataka.**
- ❖ **Gale wind speed reaching 100-110 kmph gusting to 80 kmph gusting to 120 kmph along & off north Odisha and east Medinipur district of West Bengal. Gale wind speed reaching 60-80 kmph gusting to 90 kmph is likely along & off south Odisha and remaining districts of coastal West Bengal. Squally wind speed reaching 50-60 kmph gusting to 70 kmph is likely to prevail over adjoining areas of northeast Bay of Bengal. Squally wind speed reaching 40-50 gusting to 60 kmph is very likely to prevail over South Jharkhand.**
- ❖ **Squally weather with wind speed 35 kmph to 45 kmph gusting to 55 kmph is likely to prevail along and off Kerala coast and over Lakshadweep area.**



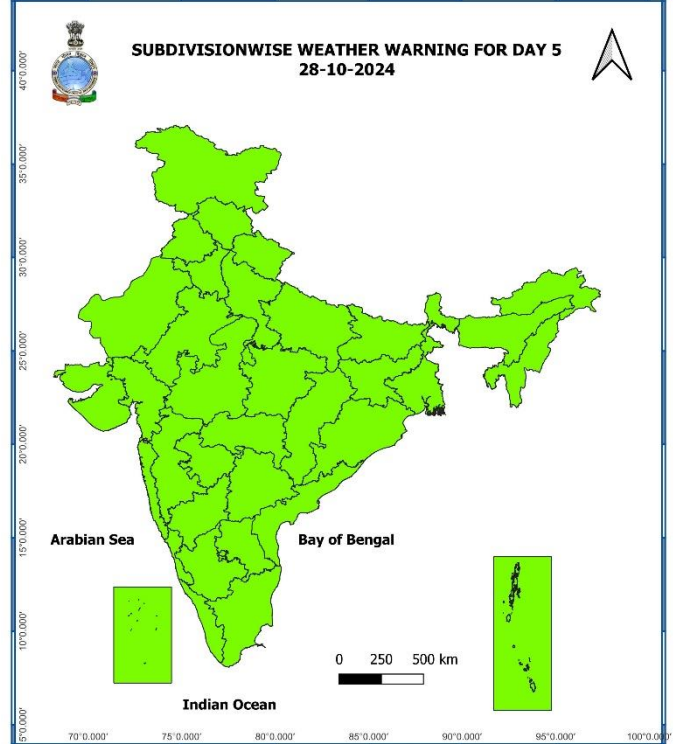
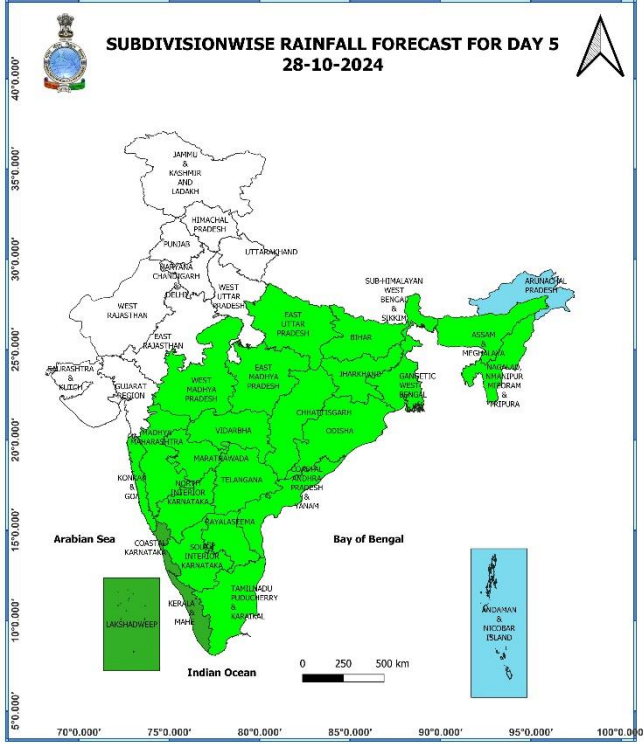
### 26 October (Day 3):

- ❖ **Heavy rainfall ( $\geq 7\text{cm}$ )** very likely at isolated places over Gangetic West Bengal, Jharkhand, Odisha, Kerala & Mahe.
- ❖ **Thunderstorm accompanied with lightning** very likely at isolated places over Vidarbha, Chhattisgarh, Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Coastal Andhra Pradesh & Yanam.
- ❖ **Squally wind speed reaching 40-50 gusting to 60 kmph** is very likely to prevail over South Jharkhand.



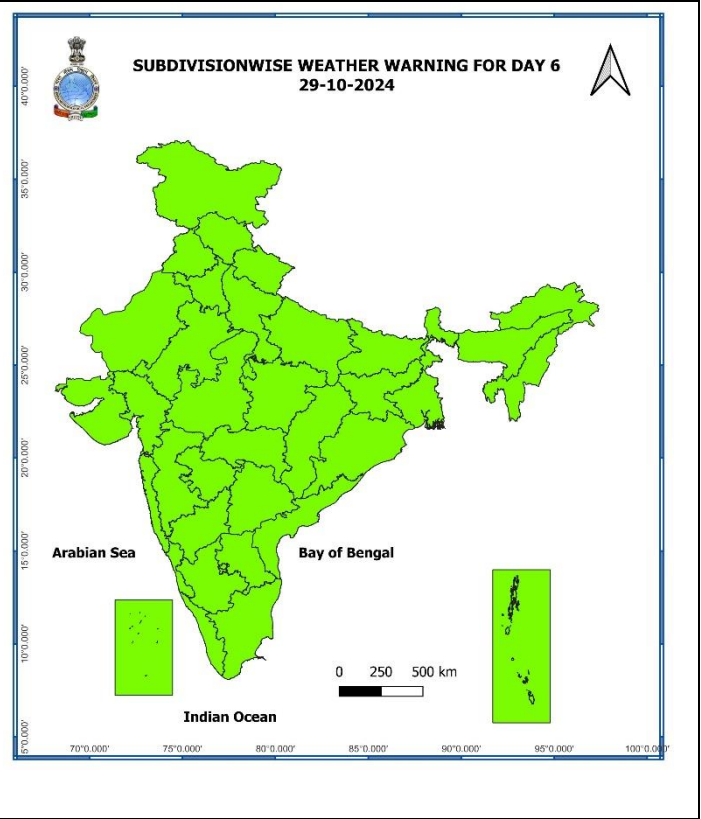
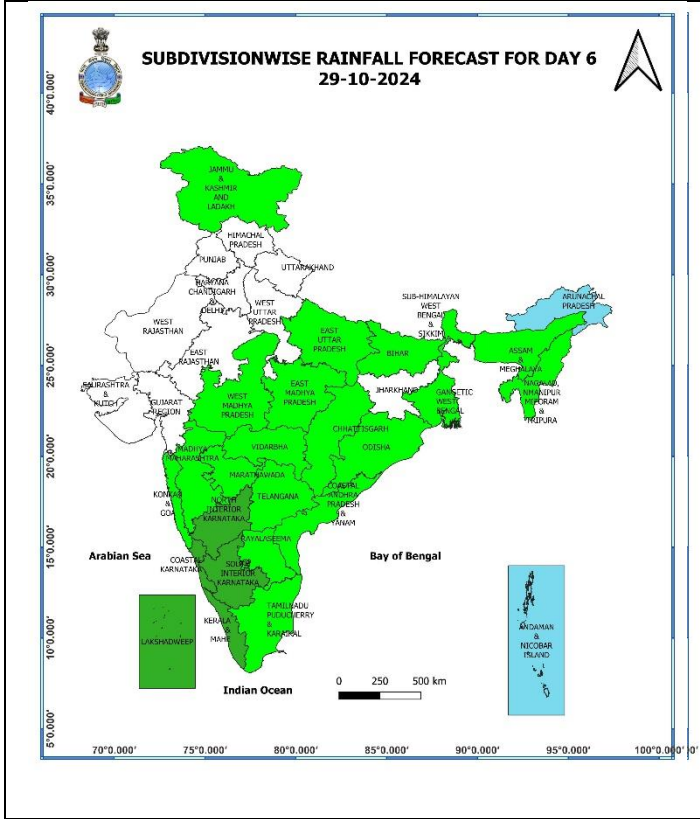
**27 October (Day 4):**

- ❖ Heavy rainfall ( $\geq 7\text{cm}$ ) likely at isolated places over Kerala & Mahe.
- ❖ Thunderstorm accompanied with lightning likely at isolated places over East Madhya Pradesh, Vidarbha, Chhattisgarh.



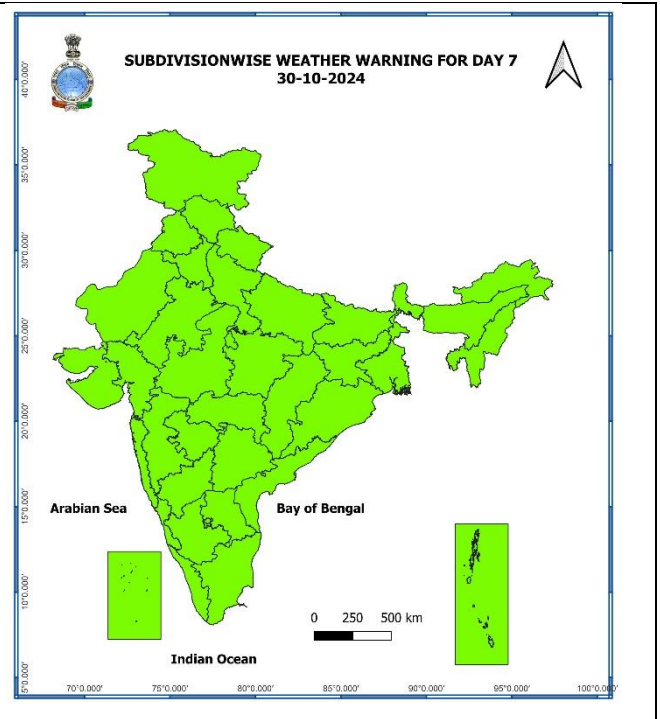
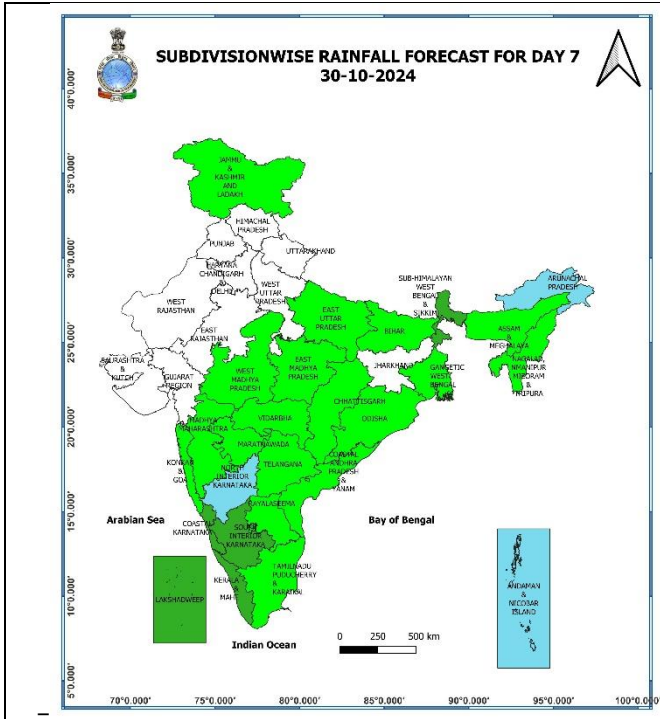
**28 October (Day 5):**

- ❖ **Thunderstorm accompanied with lightning** likely at isolated places over East Madhya Pradesh, Chhattisgarh.



**29 October (Day 6):**

❖ **No weather warning.**



**30 October (Day 7):**

❖ No weather warning.

**Weather Outlook for subsequent 3 days (During 31<sup>st</sup> October – 02<sup>nd</sup> November, 2024)**

- ❖ Isolated to Scattered light rainfall likely over some parts of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe and Northeast 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 due to

- ✓ **Isolated extremely heavy rainfall** very likely over Odisha, Gangetic West Bengal on 24<sup>th</sup> & 25<sup>th</sup> October.
- ✓ **Isolated heavy to very heavy rainfall** very likely over Kerala & Mahe on 24<sup>th</sup> & 25<sup>th</sup>; Jharkhand on 25<sup>th</sup> October.
- ✓ **Low to Moderate flash flood** risk likely over few watersheds & neighbourhoods of Odisha, Gangetic West Bengal on 24<sup>th</sup> & 25<sup>th</sup> October. (**Annexure I**)

## Impact Expected

- ✓ Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- ✓ Minor damage to power and communication lines.
- ✓ Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- ✓ Possibilities of damage to vulnerable structure. Breaking of tree branches and uprooting of trees.
- ✓ Moderate damage to banana and papaya trees. Large dead limbs blown from trees.
- ✓ Damage to horticulture and standing crops in some areas due to inundation and wind.
- ✓ Damage to embankments/ salt pans.
- ✓ 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 and roadways due to water logging in roads and poor visibility due to heavy rain leading to increased travel time and incidents
- ✓ Localized Landslides/Mudslides/landslips/mud slips/land sinks/mud sinks.
- ✓ Likely disruption of marine and inland water transportation like small boats and trawlers.
- ✓ It may lead to riverine flooding in some river catchments (for riverine flooding please visit Webpage of Central Water Commission)

## Action Suggested

- ❖ **for districts of Odisha (Baleswar, Bhadrak, Kendrapara, Jajpur, Jagatsinghpur, Puri, Khorda, Mayurbhanj, Kendujhar, Cuttack, Dhenkanal) and West Bengal (South & North 24 Parganas, East & West Medinipur, Jhargram, Howrah, Hooghly, Kolkata & Bankura)**
- ✓ Total suspension of fishing operations during 24<sup>th</sup> to 25<sup>th</sup> Oct over Central and North Bay of Bengal.
- ✓ Fishermen are advised not to venture into :
- ✓ Eastcentral Bay of Bengal on 24<sup>th</sup> October.
- ✓ **Adjoining areas of Westcentral Bay of Bengal** on 24<sup>th</sup> Oct.
- ✓ **Northwest and adjoining northeast Bay of Bengal and along & off Odisha, West Bengal and Bangladesh coasts** on 24<sup>th</sup> & 25<sup>th</sup> October morning.
- ✓ Movement in motor boats unsafe.
- ✓ Coastal hutment dwellers to be moved to safer places.
- ✓ People in affected areas to remain indoors.
- ✓ Judicious regulation of onshore/offshore, Port and maritime activities including shipping.
- ✓ Judicious regulation of tourism activities in coastal areas.
- ✓ Judicious regulation of surface transports including railways and roadways.
- ✓ 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.

## Agromet advisories in view of Severe Cyclonic storm "DANA" over northwest Bay of Bengal (Cyclone Warning for Odisha and West Bengal coasts)

- ✓ Immediately shift the harvested produce to safer places.
- ✓ In **Odisha**, Postpone harvesting of rice, maize, black gram, green gram, groundnut, vegetables and fruits till the cessation of rains. Withhold sowing of pre-rabi pulses and winter vegetables. Provide propping in sugarcane by tying leaves from four to five plants together to prevent their lodging.
- ✓ In **Gangetic West Bengal**, drain out excess water from Aman rice, groundnut, pulses and vegetables. Postpone harvesting of kharif rice, vegetables, and fruits till the cessation of rains.
- ✓ In **Andaman & Nicobar Islands**, collect and safely dispose of fallen fruits and vegetables to prevent the spread of fungal diseases. Collect fallen coconuts and transport them to the market as soon as possible. For harvested rice, ensure proper sun-drying when the weather conditions are clear to minimize moisture retention and reduce the risk of mould or spoilage.
- ✓ Make arrangements for adequate drainage to avoid water logging in crop fields.
- ✓ Provide mechanical support to young fruit plants and staking in vegetables to prevent their lodging.

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

- ✓ In **Tamil Nadu**, drain out excess water from rice nurseries and fields of rice, maize, pepper and newly planted turmeric. Undertake detrashing and propping of more than five-months-old sugarcane to avoid lodging. Provide support to banana plantations.
- ✓ Make necessary arrangements to drain out excess water from standing crop fields and fruit orchards to avoid water stagnation in Kerala, South Interior Karnataka, Assam, Meghalaya and Nagaland.
- ✓ Keep the harvested produce at safer places.
- ✓ Provide mechanical support to horticultural crops & staking to vegetables

**Flash Flood Risk**

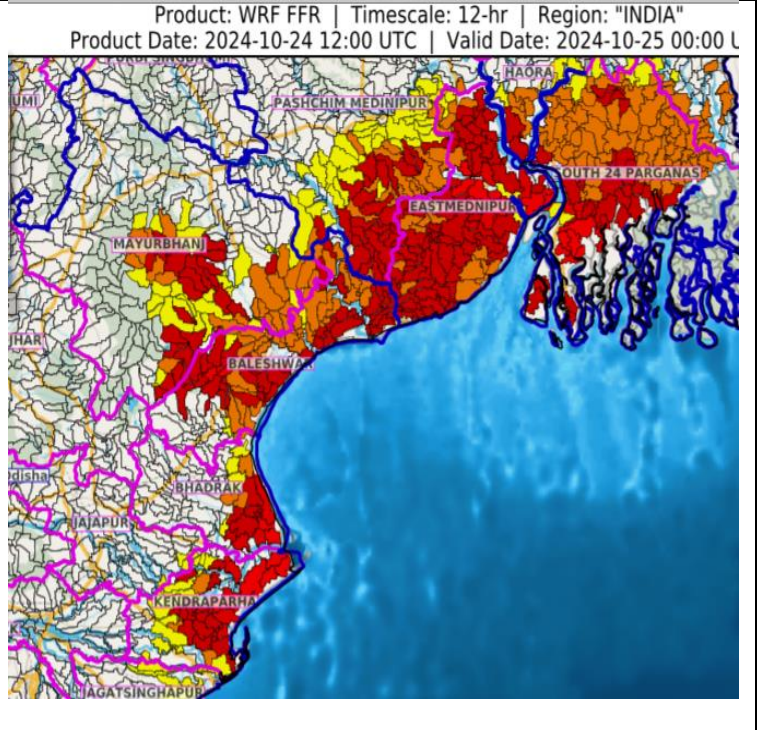
**Annexure I**

**24 hours Outlook for the Flash Flood Risk (FFR) till 1730 IST of 25-10-2024 :**

**Moderate to High flash flood risk** likely over few watersheds & neighbourhoods of following Met Sub-divisions during next 24 hours.

**Odisha** - Baleshwar, Bhadrak, Jagatsinghapur, Kendraparha and Mayurbhanj districts.  
**Gangetic West Bengal** - Eastmednipur, Haora, North 24 Praganas, Pashchim Medinipur and South 24 Parganas districts.

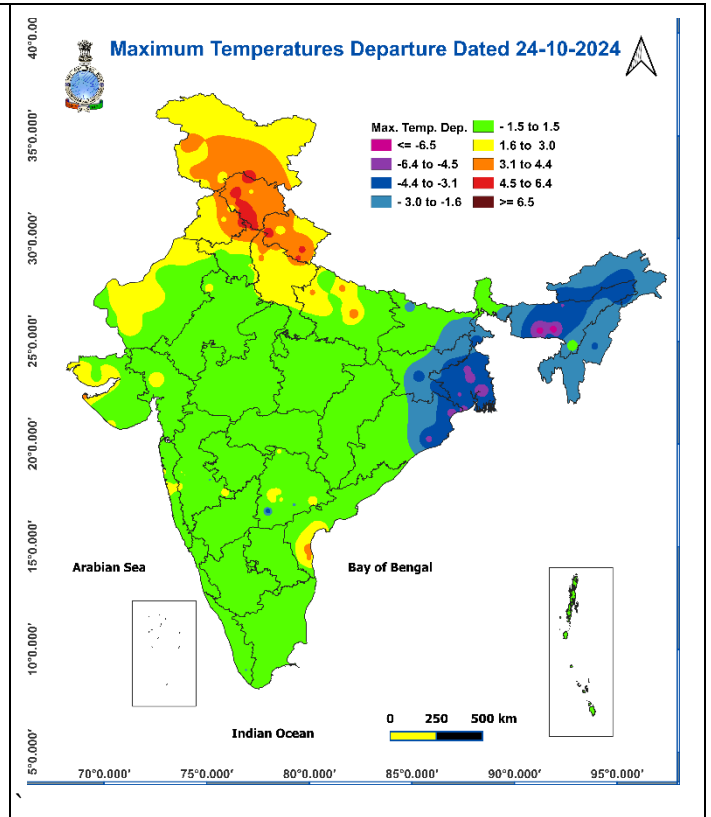
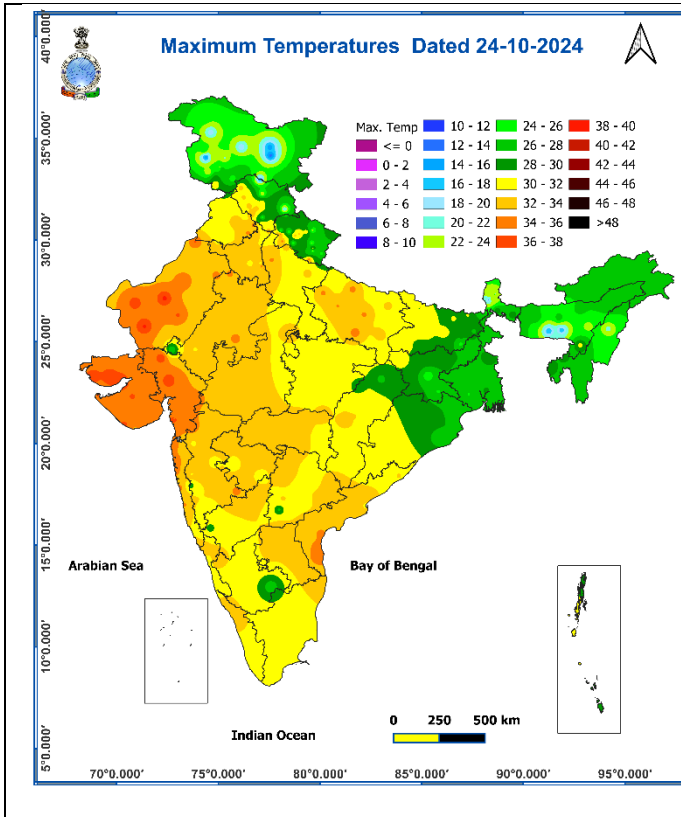
Surface runoff/ Inundation may occur at some fully saturated soils & low-lying areas over AoC as shown in map due to expected rainfall occurrence in next 24 hours.



**Fig. 1: Maximum Temperatures**

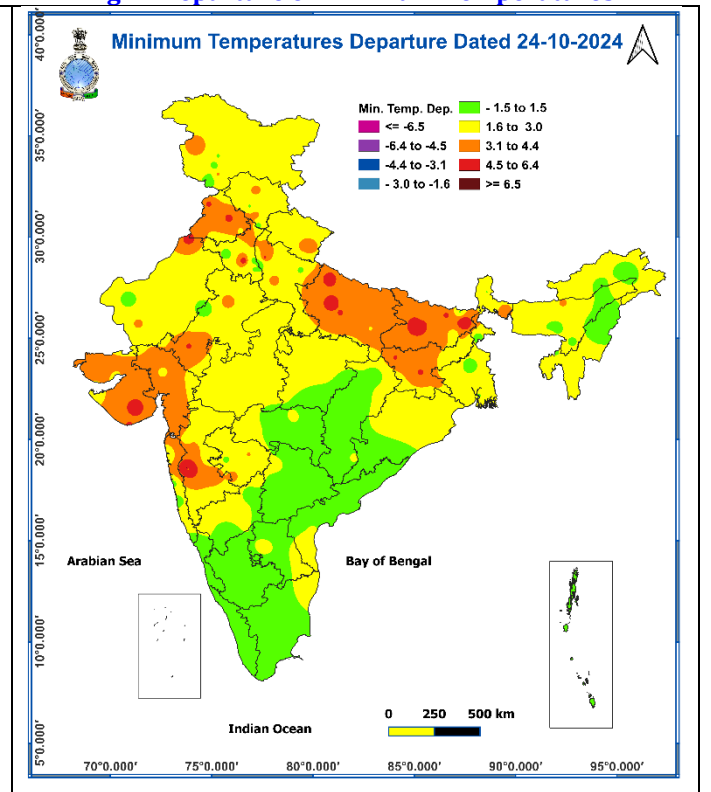
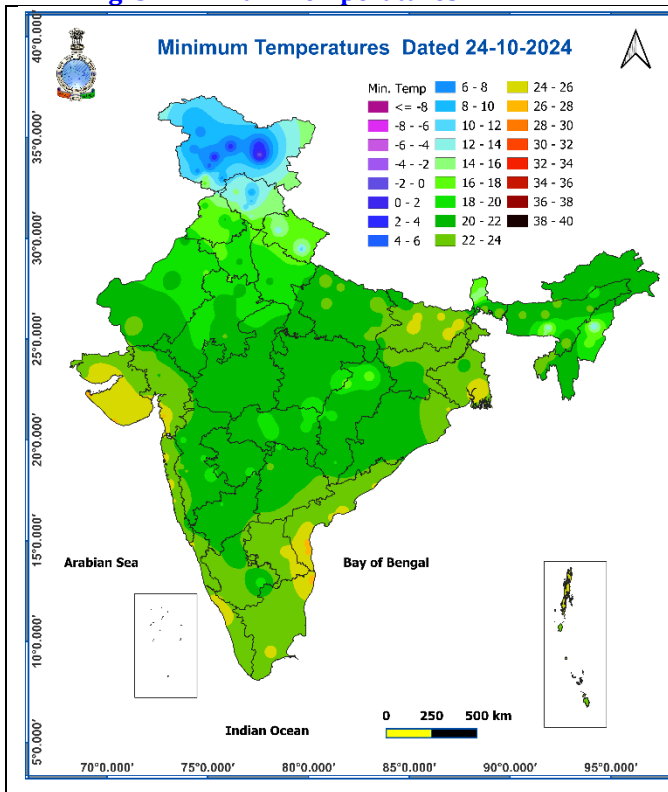
**Fig. 2: Departure of Maximum Temperatures**

\* 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)



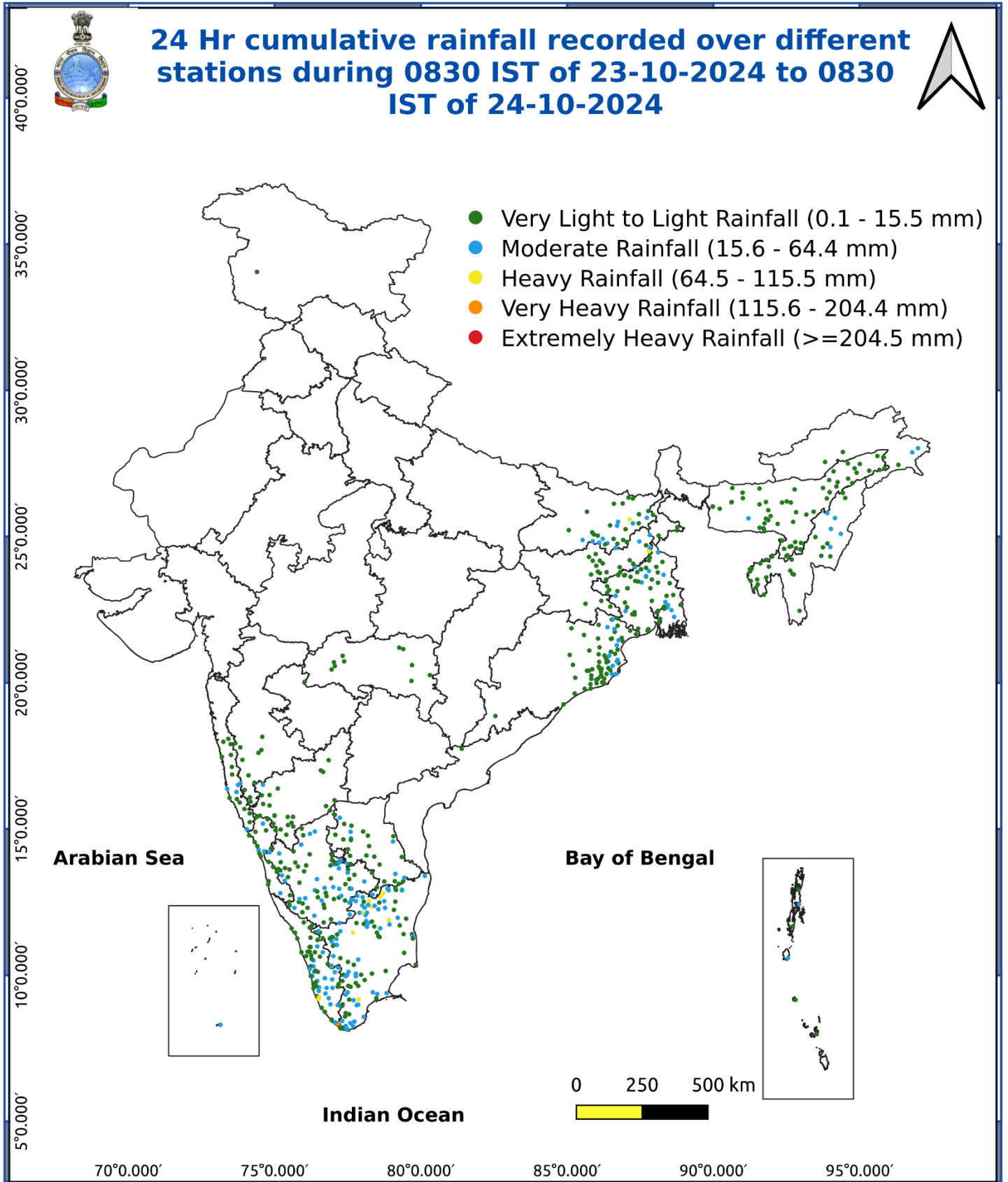
**Fig. 3: Minimum Temperatures**

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



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

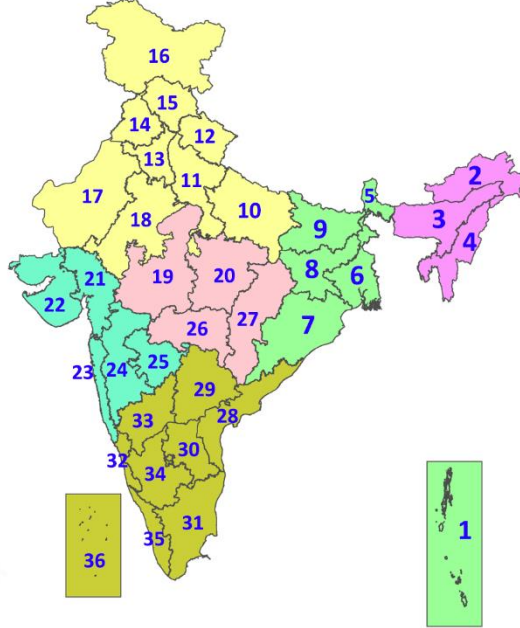
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## LEGENDS

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  $4.5^\circ\text{C}$  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)