

Thursday, September 12, 2024  
Time of Issue: 0830 hours IST  
(MORNING)

## ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

### Significant Weather Features:

#### Weather Systems:

- ✓ The **depression** over Northwest Madhya Pradesh and adjoining southwest Uttar Pradesh moved slowly nearly northwards with a speed of 8 kmph during past 6 hours and lay centred at 0530 hours IST of today, the 12th September over Northwest Madhya Pradesh and neighbourhood near latitude 26.7°N and longitude 78.3°E, about 50 km north of Gwalior (Madhya Pradesh), about 60 km south-southeast of Agra (Uttar Pradesh), 130 km south of Aligarh (Uttar Pradesh) and 140 km north-northwest of Jhansi (Uttar Pradesh). It is likely to move slowly north-northeastwards during next 24 hrs. The system is under continuous surveillance of Doppler Weather Radars at Delhi and Lucknow).
- ✓ The **monsoon trough** is active and south of its normal position at mean sea level. It is likely to continue so for next 3-4 days.
- ✓ A cyclonic circulation lies over south Gujarat at lower tropospheric levels.

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

##### ❖ South Peninsular India:

- ✓ Fairly widespread to widespread light/moderate rainfall very likely over Coastal Karnataka, Kerala & Mahe, Lakshadweep; Scattered to Fairly widespread light/moderate rainfall over Coastal Andhra Pradesh & Yanam, Telangana; isolated to scattered rainfall over Rayalaseema, Tamil Nadu, Puducherry & Karaikal and Interior Karnataka during the week.

##### East & Northeast India

- ✓ Fairly widespread to widespread light/moderate rainfall very likely over Nagaland, Manipur, Mizoram & Tripura, Assam & Meghalaya, Andaman & Nicobar Islands, West Bengal & Sikkim, Jharkhand during the week; Scattered to Fairly widespread light/moderate rainfall very likely over Arunachal Pradesh, Bihar, Odisha during the week.
- ✓ **Isolated extremely heavy rainfall very likely over Nagaland, Manipur, Mizoram & Tripura on 13<sup>th</sup> September.**
- ✓ Isolated **very heavy rainfall** very likely over Assam & Meghalaya on 13<sup>th</sup> & 14<sup>th</sup>; Nagaland, Manipur, Mizoram & Tripura on 13<sup>th</sup>; Gangetic West Bengal on 13<sup>th</sup>; Jharkhand on 14<sup>th</sup> September.
- ✓ Isolated **heavy rainfall** very likely over Assam & Meghalaya during next 7 days; Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura during 12<sup>th</sup>-16<sup>th</sup>; Gangetic West Bengal during 12<sup>th</sup>-14<sup>th</sup>; Sub-Himalayan West Bengal & Sikkim on 13<sup>th</sup>; Bihar, Odisha on 13<sup>th</sup> & 14<sup>th</sup>; Jharkhand during 13<sup>th</sup> -15<sup>th</sup> September.

##### West & Central India:

- ✓ Fairly widespread to widespread light/moderate rainfall very likely over Central India and Konkan & Goa, Gujarat Region during the week; Isolated to Scattered light/moderate rainfall very likely over Madhya Maharashtra, Marathwada, Saurashtra & Kutch during the week.
- ✓ **Isolated extremely heavy rainfall** very likely over West Madhya Pradesh on 12<sup>th</sup> September.
- ✓ **Isolated very heavy rainfall** very likely over West Madhya Pradesh in 13<sup>th</sup> & 14<sup>th</sup>; East Madhya Pradesh on 12<sup>th</sup> September.
- ✓ Isolated **heavy rainfall** very likely over Madhya Maharashtra on 12<sup>th</sup>; Madhya Pradesh during 12<sup>th</sup> -15<sup>th</sup>; Chhattisgarh during 15<sup>th</sup> -17<sup>th</sup> September.

##### Northwest India

- ✓ Fairly widespread to widespread light/moderate rainfall very likely over Uttarakhand, East Rajasthan, Uttar Pradesh, Himachal Pradesh; isolated to scattered rainfall over the remaining region during the week.
- ✓ **Isolated extremely heavy rainfall** very likely over West Uttar Pradesh on 12<sup>th</sup> & 13<sup>th</sup>; Uttarakhand on 12<sup>th</sup> & 13<sup>th</sup> September.
- ✓ Isolated **very heavy rainfall** very likely over Uttarakhand, West Uttar Pradesh, East Rajasthan on 12<sup>th</sup> & 13<sup>th</sup>; East Uttar Pradesh on 12<sup>th</sup> September.
- ✓ Isolated **heavy rainfall** very likely over Uttar Pradesh, East Rajasthan during 12<sup>th</sup> -15<sup>th</sup>; Uttarakhand, Haryana-Chandigarh during 12<sup>th</sup> - 14<sup>th</sup>; Himachal Pradesh on 12<sup>th</sup> & 13<sup>th</sup>; West Rajasthan on 12<sup>th</sup> September.

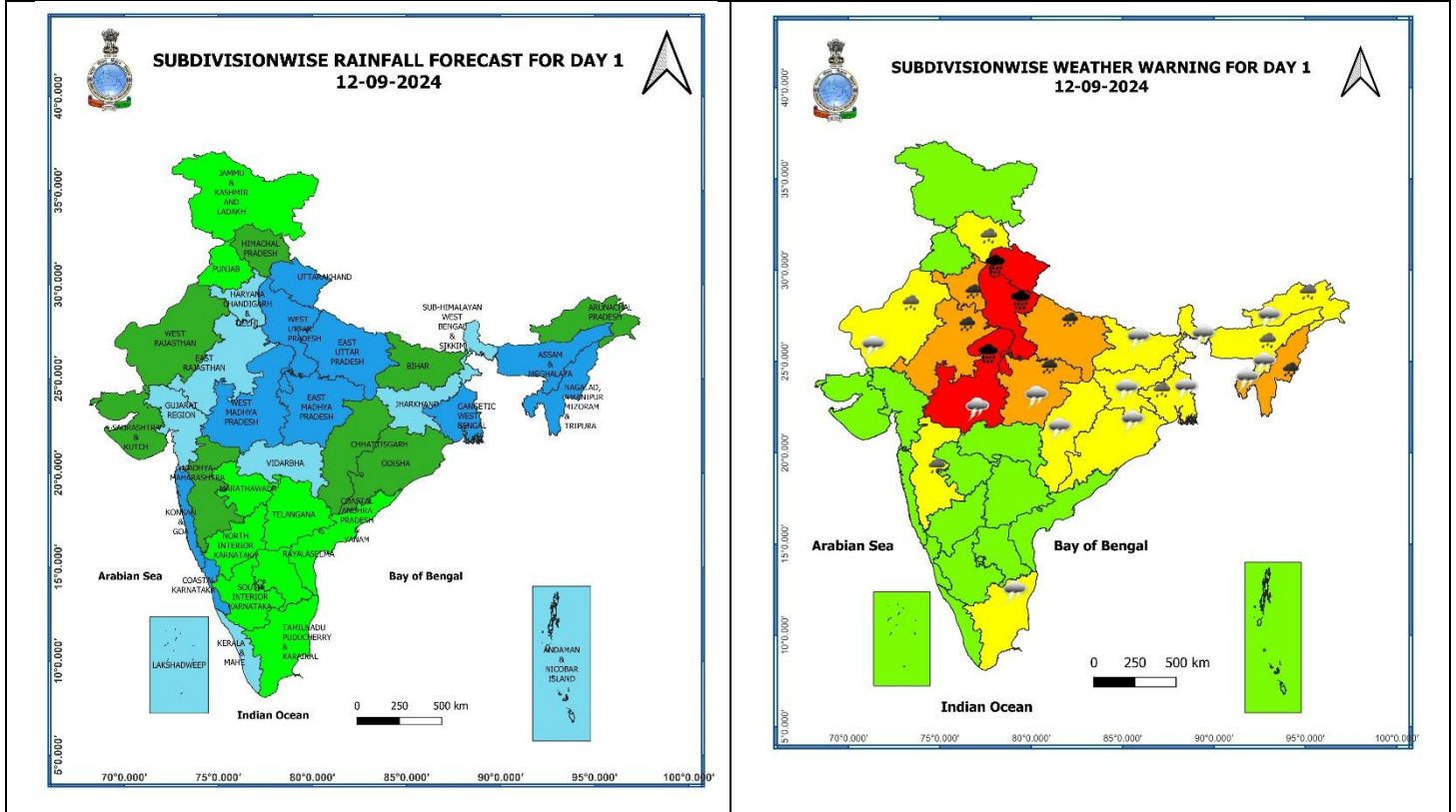
## Main Weather Observations:

- ❖ **Rainfall distribution** (from 0830 hours IST to 1730 hours IST of yesterday): **at most places** over Madhya Pradesh, Kerala & Mahe, Lakshadweep; **at many places** over Uttar Pradesh, East Rajasthan, Gujarat Region, Konkan & Goa, Assam & Meghalaya; **at a few places** over Himachal Pradesh, Madhya Maharashtra, West Bengal & Sikkim, Coastal Karnataka; **at isolated places** over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Punjab, Haryana-Chandigarh-Delhi, Saurashtra & Kutch, Odisha, Jharkhand, Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura, Andaman & Nicobar Islands, Marathwada, Chhattisgarh, North Interior Karnataka, Tamil Nadu, Puducherry & Karaikal.
- ❖ **Heavy rainfall recorded** (from 0830 hours IST to 1730 hours IST of yesterday): **Heavy to very heavy rainfall** at isolated places over East Rajasthan; **Heavy rainfall** at isolated places over West Uttar Pradesh and Madhya Pradesh.
- ❖ **Significant amount of rainfall** (from 0830 hours IST to 1730 hours IST of yesterday): (in cm): **East Rajasthan:** Rajakhera (Dholpur)-14, Aklera (Jhalawar) & Dholpur-7 each, Pilani, Mount Abu & Vanasthali Vidyapeeth-1 each, **East Madhya Pradesh:** Nowgong-10, Khajuraho-5, Malanjhand & Sagar-1 each, **West Madhya Pradesh:** Pachmarhi-11, Shivpuri-7, Gwalior-6, Bhopal-5, Raisen & Khargone-2 each, **West Uttar Pradesh:** Jhansi-10, Deomali-4, Hamirpur-3, Bareilly & Orai-2 each, **Saurashtra & Kutch:** Mahuva-4; **Assam:** Dhubri & Tezpur-2 each, Rangia-1, **Madhya Maharashtra:** Mahabaleshwar-3, **Gangetic West Bengal:** Kolkata (Alipore)-1, **Kerala:** Kottayam-2, Kochin, Karipur, Punalur & Kannur-1 each, **Tamil Nadu:** Valprai-1, East Uttar Pradesh: Fatehgarh-1.
- ❖ **Minimum Temperature Departures (as on 11-09-2024):** Minimum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over East Uttar Pradesh, Andaman & Nicobar Islands and Bihar; **above normal (1.6°C to 3.0°C)** at isolated places over Haryana-Chandigarh-Delhi, East Rajasthan, Gujarat state, Vidarbha, East Madhya Pradesh, Madhya Maharashtra, Marathwada, Odisha, West Bengal & Sikkim, Nagaland, Manipur, Mizoram & Tripura, Odisha, Coastal Andhra Pradesh & Yanam, Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe. These were **below normal (-1.6°C to -3.0°C)** at isolated places over Assam & Meghalaya and **near normal** over rest parts of the country. Yesterday, **the lowest minimum temperature of 19.4°C** was reported at **Koraput (Odisha)** over the plains of the country. **(Fig.4)**
- ❖ **Maximum Temperature Departures (as on 11-09-2024):** Maximum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at a few places over Sub-Himalayan West Bengal & Sikkim; **above normal (1.6°C to 3.0°C)** at many places over Nagaland, Manipur, Mizoram & Tripura; at a few places over Assam & Meghalaya and Bihar; at isolated places over Arunachal Pradesh, Gangetic West Bengal, Punjab, Himachal Pradesh, Haryana-Chandigarh-Delhi, Uttarakhand, Odisha, Jharkhand, Kerala & Mahe, Tamil Nadu, Puducherry & Karaikal. These were **markedly below normal (-5.1°C or less)** at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, West Uttar Pradesh and Madhya Pradesh; **below normal (-1.6°C to -3.0°C)** at a few places over East Rajasthan; **at isolated places** over West Rajasthan, East Uttar Pradesh, Gujarat Region and Telangana and **near normal** over rest parts of the country. Yesterday, **the highest Maximum Temperature of 39.0°C** is reported at **Madurai (Tamil Nadu)** over the country. **(Fig. 2)**

## Meteorological Analysis (Based on 0530 hours IST)

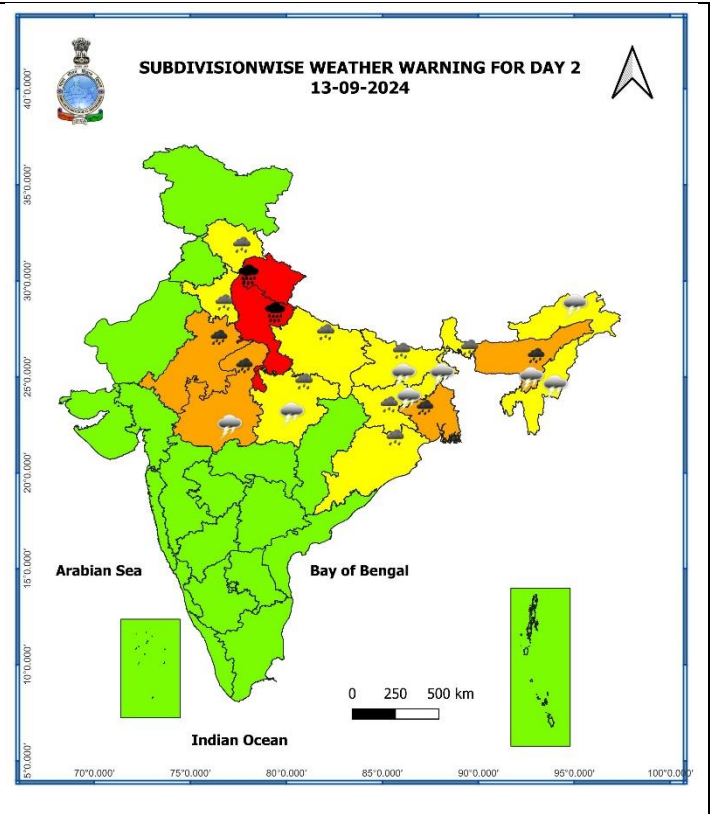
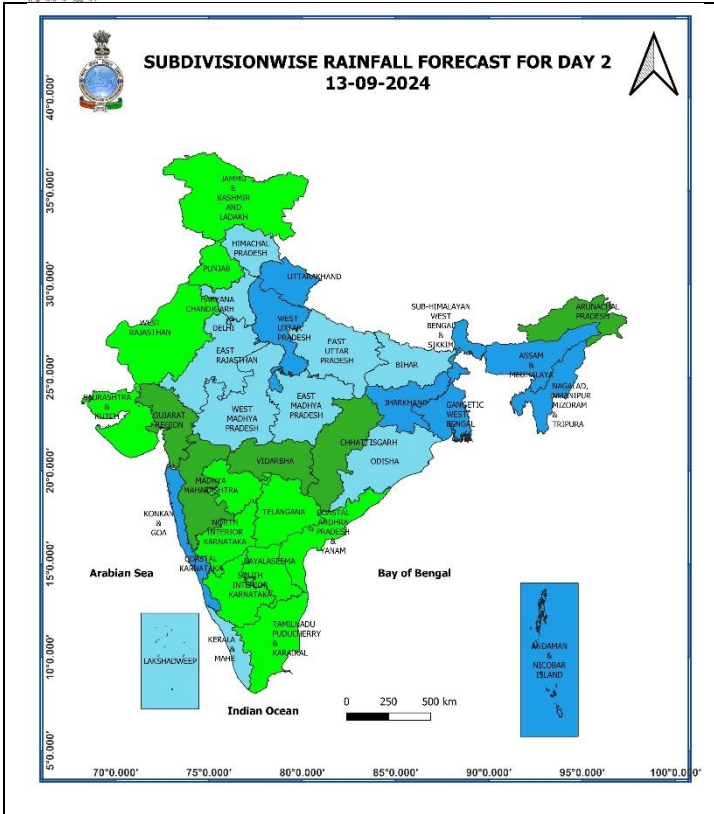
- ❖ The **depression** over Northwest Madhya Pradesh and adjoining southwest Uttar Pradesh moved slowly nearly northwards with a speed of 8 kmph during past 6 hours and lay centred at 0530 hours IST of today, the 12th September over Northwest Madhya Pradesh and neighbourhood near latitude 26.7°N and longitude 78.3°E, about 50 km north of Gwalior (Madhya Pradesh), about 60 km south-southeast of Agra (Uttar Pradesh), 130 km south of Aligarh (Uttar Pradesh) and 140 km north-northwest of Jhansi (Uttar Pradesh). It is likely to move slowly north-northeastwards during next 24 hrs. The system is under continuous surveillance of Doppler Weather Radars at Delhi and Lucknow).
- ❖ The **Monsoon trough** at mean sea level now passes through Bhatinda, Hissar, Delhi, the centre of **depression** over northeast Madhya Pradesh and adjoining south Uttar Pradesh, Satna, Daltonganj, Bankura, Haldia and thence eastwards to northeastwards Bay of Bengal and extends upto 1.5 km above mean sea level.
- ❖ The **Western Disturbance** as a trough in middle tropospheric westerlies with its axis at 5.8 km above mean sea level roughly along Long. 72°E to the north of Lat. 28°N persists.
- ❖ The **off-shore trough** at mean sea level along south Gujarat to North Kerala coast persists.
- ❖ The **cyclonic circulation** over south Gujarat between 3.1 & 5.8 km above mean sea level persists.
- ❖ The **cyclonic circulation** over central Assam extending upto 0.9 km above mean sea level persists.
- ❖ The **cyclonic circulation** over central parts of Myanmar now lies over westcentral Myanmar & neighbourhood extending upto mid tropospheric levels. It is likely to move west-northwest and likely to emerge over coastal Bangladesh and adjoining northwest Bay of Bengal during next 24 hours.

Weather Forecast & Warnings for next 7 days (Upto 0830 hours IST of 19<sup>th</sup> September, 2024)



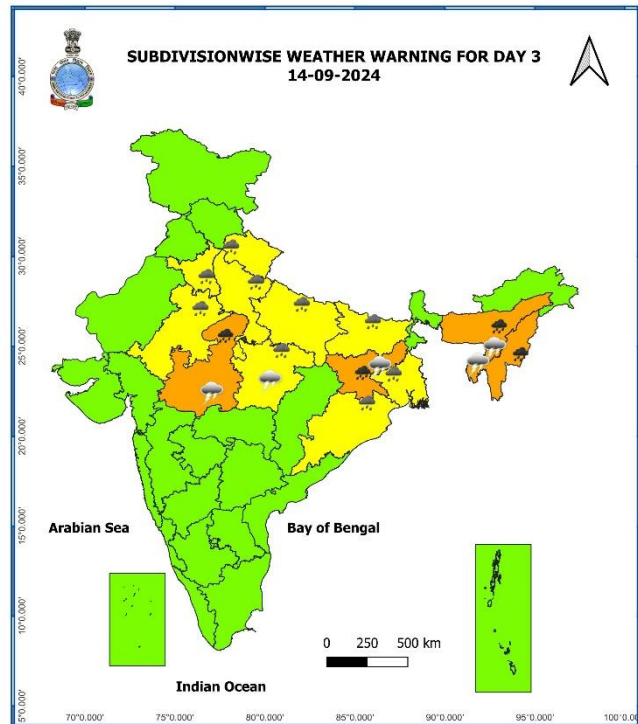
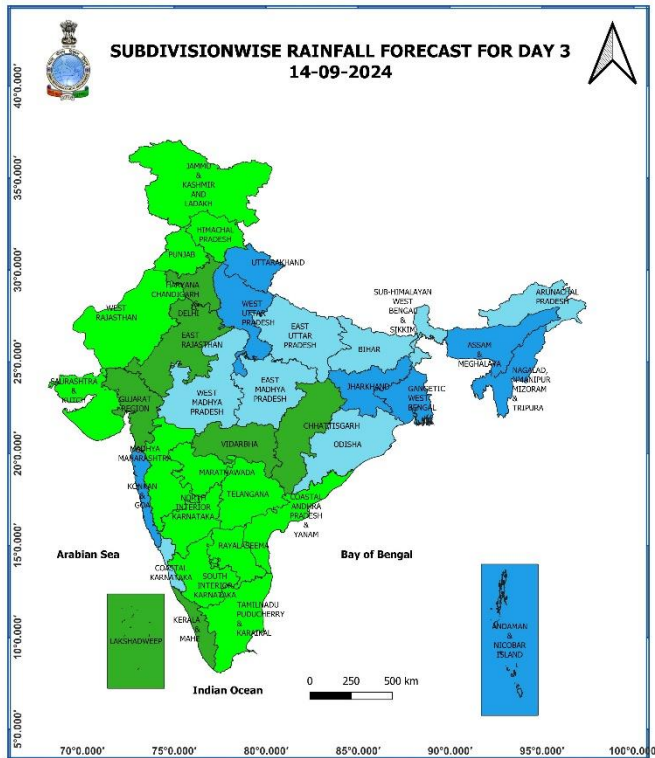
12 September (Day 1):

- ❖ **Heavy to very heavy rainfall ( $\geq 12$  cm) with extremely heavy falls ( $> 20$  cm)** very likely at isolated places over Uttarakhand, West Uttar Pradesh, West Madhya Pradesh; **Heavy to very heavy rainfall ( $\geq 12$  cm)** very likely at isolated places over Haryana-Chandigarh, East Rajasthan, East Uttar Pradesh, East Madhya Pradesh, Nagaland, Manipur, Mizoram & Tripura; **Heavy rainfall ( $\geq 7$  cm)** at isolated places over Himachal Pradesh, West Rajasthan, Gangetic West Bengal, Arunachal Pradesh, Assam & Meghalaya, Madhya Maharashtra.
- ❖ **Thunderstorm accompanied with lightning** very likely at isolated places over Madhya Pradesh, Jharkhand, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, West Rajasthan, Chhattisgarh, West Bengal & Sikkim, Bihar, Odisha, Arunachal Pradesh, Tamil Nadu, Puducherry & Karaikal.
- ❖ **Squally weather with wind speed reaching 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevail over many parts of west central Arabian sea and adjoining east central Arabian sea, northern parts of southwest Arabian sea, off Sri Lanka coast, many parts of south and central Bay of Bengal, northeast Bay of Bengal. **Squally weather with wind speed reaching 45 kmph to 55 kmph gusting to 65 kmph** is likely to prevail over gulf of manner, Tamil Nadu coast. Squally winds with speed reaching 45 kmph to 55 kmph gusting to 65 kmph likely to prevail over western parts of southwest Arabian sea & southwestern parts of Westcentral Arabian sea, along and off Somalia coast. Fishermen are advised not to venture into these areas.



### 13 September (Day 2):

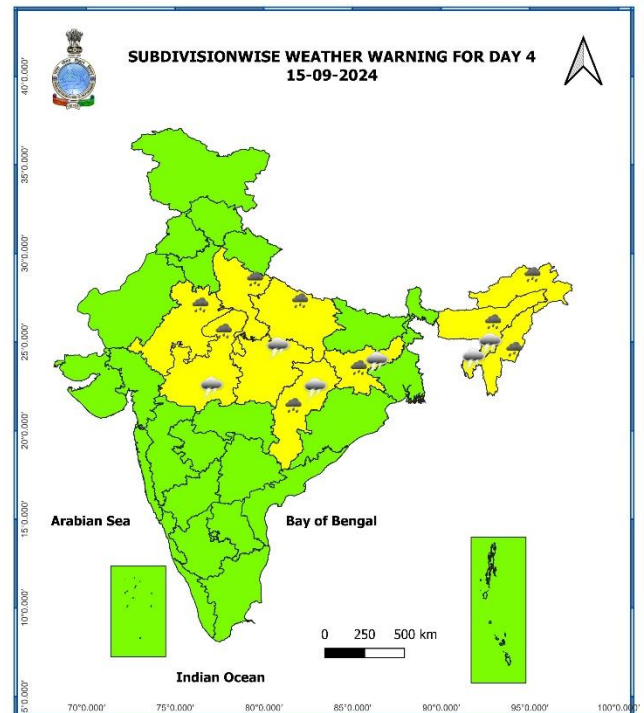
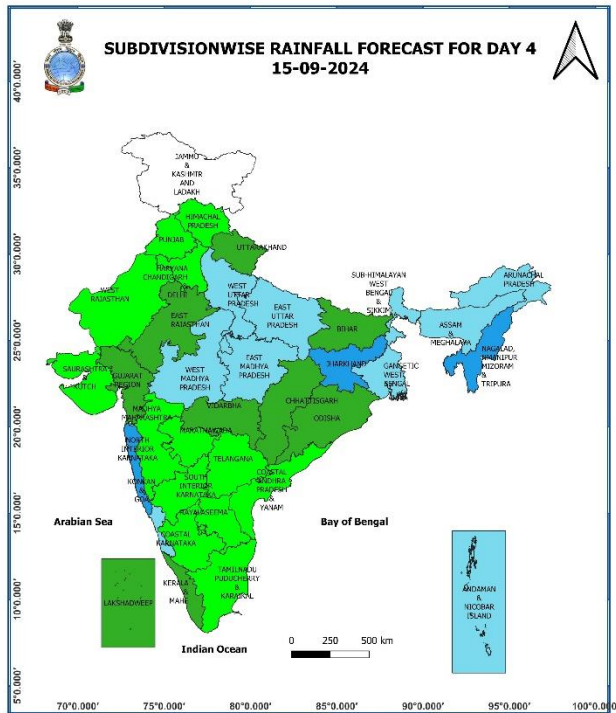
- ❖ **Heavy to very heavy rainfall ( $\geq 12$  cm) with extremely heavy falls ( $> 20$  cm)** very likely at isolated places over Uttarakhand, West Uttar Pradesh; **Heavy to very heavy rainfall ( $\geq 12$  cm)** very likely at isolated places over East Rajasthan, West Madhya Pradesh, Gangetic West Bengal, Assam & Meghalaya, Mizoram, Tripura; **Heavy rainfall ( $\geq 7$  cm)** at isolated places over Himachal Pradesh, Haryana-Chandigarh, East Uttar Pradesh, East Madhya Pradesh, Sub-Himalayan West Bengal & Sikkim, Bihar, Jharkhand, Odisha.
- ❖ **Thunderstorm accompanied with lightning** very likely at isolated places over Madhya Pradesh, Jharkhand, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim, Bihar, Arunachal Pradesh.
- ❖ **Squally weather with wind speed reaching 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevail over central parts of central Arabian sea, over gulf of manner, off Sri Lanka coast, many parts of south and central Bay of Bengal, northeast & adjoining northwest Bay of Bengal, along and off west Bengal coast. **Squally winds with speed reaching 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest Arabian sea & southwestern parts of Westcentral Arabian sea, along and off Somalia coast. Fishermen are advised not to venture into these areas.



**14 September (Day 3):**

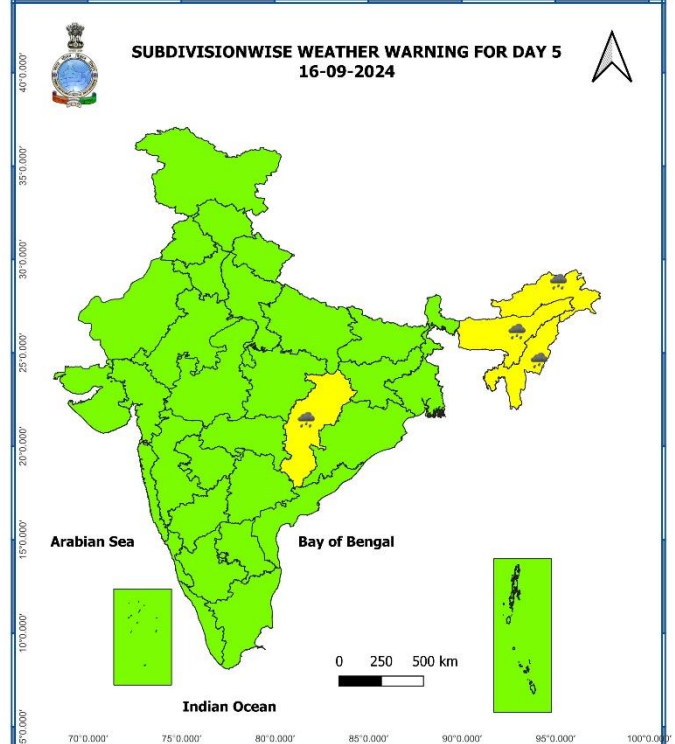
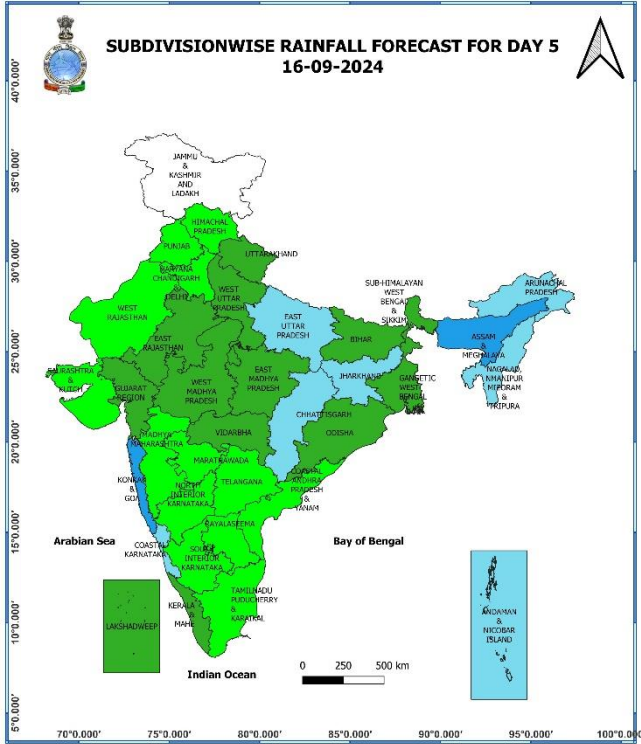
- ❖ **Heavy to very heavy rainfall ( $\geq 12$  cm)** likely at isolated places over West Madhya Pradesh, Jharkhand, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura; **Heavy rainfall ( $\geq 7$  cm)** likely at isolated places over Uttarakhand, Haryana-Chandigarh, Uttar Pradesh, East Rajasthan, East Madhya Pradesh, Gangetic West Bengal, Bihar, Odisha, Arunachal Pradesh.
- ❖ **Thunderstorm accompanied with lightning** very likely at isolated places over Madhya Pradesh, Jharkhand, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura.
- ❖ **Squally weather with wind speed reaching 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevail over central parts of central Arabian sea, over gulf of manner, off Sri Lanka coast, many parts of south and central Bay of Bengal, northeast & adjoining northwest Bay of Bengal, along and off west Bengal coast. **Squally winds with speed reaching 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest Arabian sea & southwestern parts of Westcentral Arabian sea, along and off Somalia coast. Fishermen are advised not to venture into these areas.

\* 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)



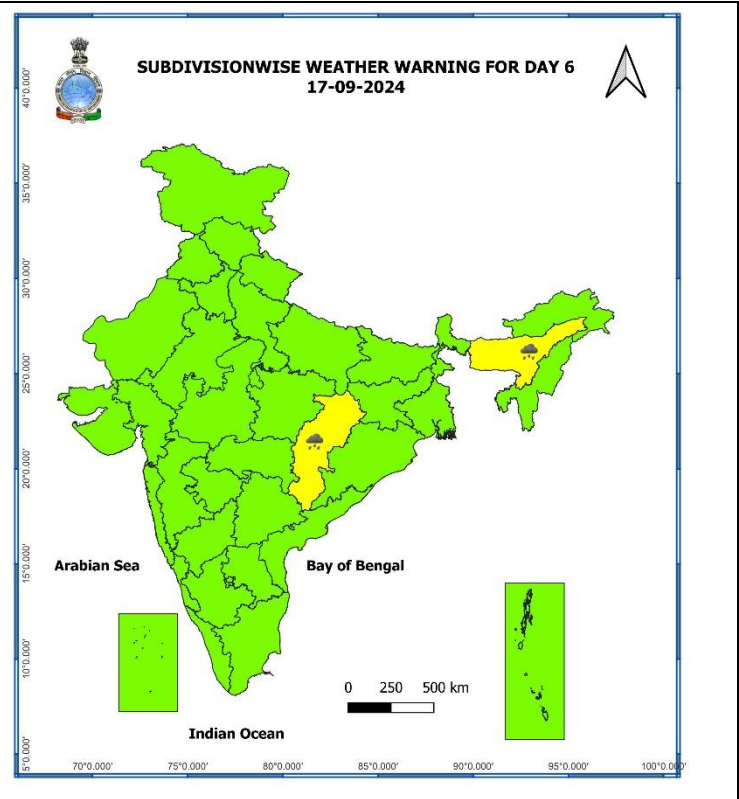
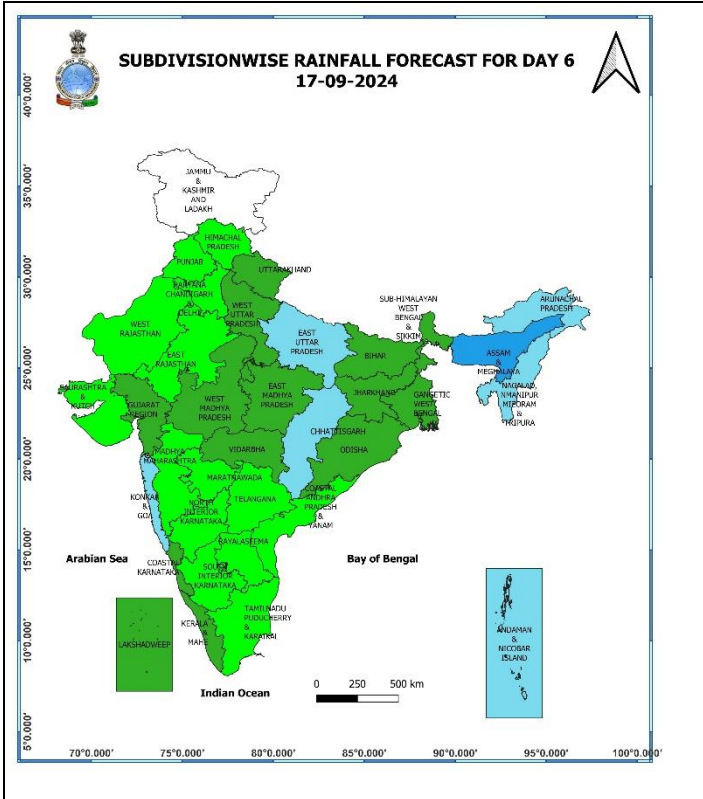
### 15 September (Day 4):

- ❖ **Heavy rainfall ( $\geq 7$  cm)** likely at isolated places over Uttar Pradesh, West Madhya Pradesh, Chhattisgarh, Jharkhand, Assam & Meghalaya, Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura.
- ❖ **Thunderstorm accompanied with lightning** very likely at isolated places over Madhya Pradesh, Jharkhand, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Chhattisgarh.
- ❖ **Squally weather with wind speed reaching 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevail over many parts of west central Arabian sea and adjoining parts of east central Arabian sea, over gulf of manner, off Sri Lanka coast, most parts of south and central Bay of Bengal. **Squally weather with wind speed reaching 45 kmph to 55 kmph gusting to 65 kmph** is likely to prevail over many parts of southeast Bay of Bengal & adjoining parts. **Squally winds with speed reaching 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest and Westcentral Arabian sea, along and off Somalia coast.



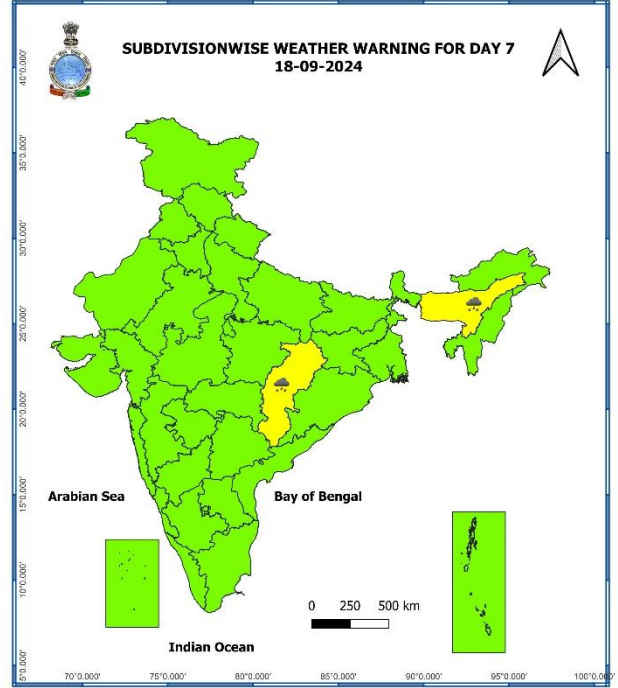
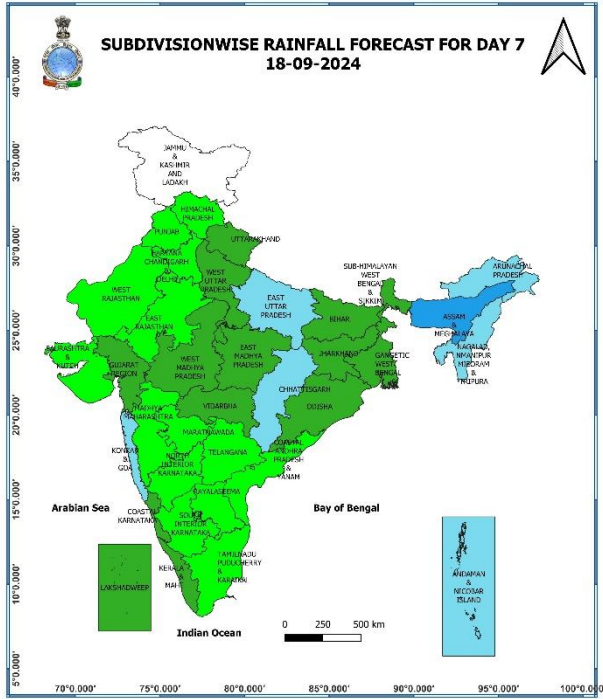
**16 September (Day 5):**

- ❖ **Heavy rainfall ( $\geq 7$  cm)** likely at isolated places over Chhattisgarh, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura.



**17 September (Day 6):**

❖ **Heavy rainfall ( $\geq 7$  cm)** likely at isolated places over Assam & Meghalaya, Chhattisgarh.



### 18 September (Day 7):

- ❖ Heavy rainfall ( $\geq 7$  cm) likely at isolated places over Assam & Meghalaya, Chhattisgarh.

### Weather Outlook for subsequent 3 days (During 19<sup>th</sup> September- 21<sup>st</sup> September, 2024)

- ❖ Fairly widespread to widespread rainfall likely over most parts of the country except Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, West Rajasthan, Punjab, Tamil Nadu, Puducherry & Karaikal where isolated to scattered rainfall likely.

- 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 West Uttar Pradesh, Uttarakhand on 12<sup>th</sup> & 13<sup>th</sup>; East Uttar Pradesh on 12<sup>th</sup> September. West Madhya Pradesh on 12<sup>th</sup>; Nagaland, Manipur, Mizoram & Tripura on 13<sup>th</sup> September.
- ✓ **Very heavy rainfall** at isolated places over Uttarakhand, West Uttar Pradesh, East Rajasthan during 12<sup>th</sup> - 13<sup>th</sup>; West Madhya Pradesh on 13<sup>th</sup> & 14<sup>th</sup>; East Madhya Pradesh on 12<sup>th</sup>; Assam & Meghalaya on 13<sup>th</sup> & 14<sup>th</sup>; Nagaland, Manipur, Mizoram & Tripura during 12<sup>th</sup> -14<sup>th</sup>; Gangetic West Bengal on 13<sup>th</sup>; Jharkhand on 14<sup>th</sup> September.
- ✓ **Moderate to High flash flood risk** likely over Uttarakhand, Himachal Pradesh, Uttar Pradesh, Madhya Pradesh and East Rajasthan on 12<sup>th</sup> & 13<sup>th</sup> September. **(ANNEXURE I)**

### 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 and roadways 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/landslips/mud slips/land sinks/mud sinks.
- ✓ Damage to horticulture and standing crops in some areas due to inundation and wind.
- ✓ It may lead to riverine flooding in some river catchments (for riverine flooding please visit Web page of CWC)

### Action Suggested

- ✓ 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 for Heavy Rainfall likely over various parts of the country

- Drain out excess water from cotton, maize, soybean, pulses and vegetables in **Madhya Pradesh**; from maize, sorghum, pearl millet, groundnut, pulses and vegetables in **East Rajasthan**; from rice, groundnut, sesame, arhar, black gram and vegetables in **West Uttar Pradesh**; from rice, banana, cotton, pigeon pea, castor in **Gujarat** region to prevent water logging.
- Make provision for draining out excess water from standing crop fields and fruit orchards to avoid water stagnation in Arunachal Pradesh, Uttarakhand, Konkan & Goa and Madhya Maharashtra.
- Provide mechanical support to horticultural crops & staking to vegetables.
- Keep the harvested produce at safer place.

**Flash Flood Guidance:**

**24 hours Outlook for the Flash Flood Risk (FFR) till 0530 IST of 13-09-2024 :**

**Moderate to High flash flood risk likely over few watersheds & neighbourhoods of West**

**Uttarakhand** - Pauri Garwal, Tehri Garwal, Dehradun, Uttarkashi, Rudraprayag, Bageshwar, Almora, Nainital, Champawat, Chamoli and Pithoragarh districts

**Himachal Pradesh** - Simla, Sirmour, Kullu and Kinnaur districts

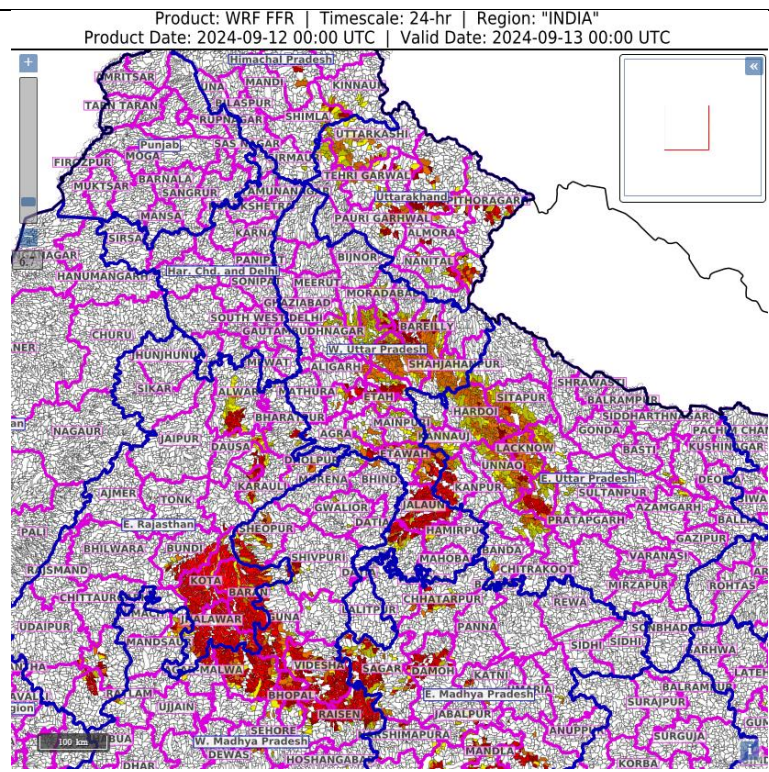
**Uttar Pradesh** - Moradabad, Rampur, Bareilly, Philiphit, Jyotibaphule Nagar, Sambhal, Badaun, Bulandsahar, Aligarh, Kanshiram Nagar, Mahamayanagar, Etah, Auraiya, Etah, Shahjahanpur, Firozabad, Mainpuri, Etawah, Auraiya, Hamirpur, Jalaun, Jhansi, Kannauj, Kanpur Dehat, Hardoi, Keeri, Sitapur, Lacknow, Unnao, Raibareli, and Barabanki districts.

**East Madhya Pradesh** - Chhatarpur, Damoh and Sagar districts.

**West Madhya Pradesh** - Agarmalwa, Ashoknagar, Bhind, Bhopal, Datia, Guna, Morena, Rajgarh, Sheopur, Shivpuri, Raisen, and Videsha districts.

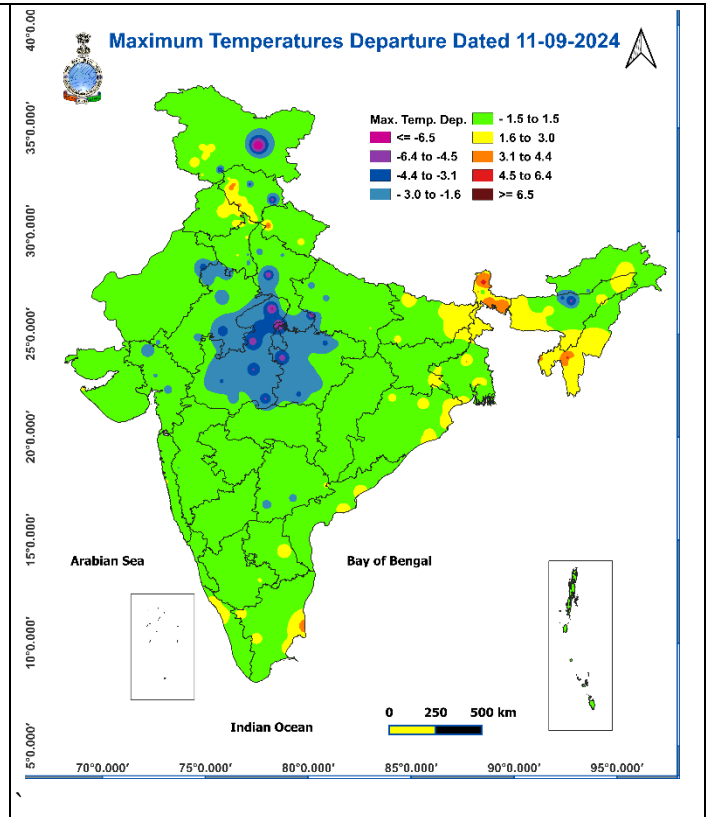
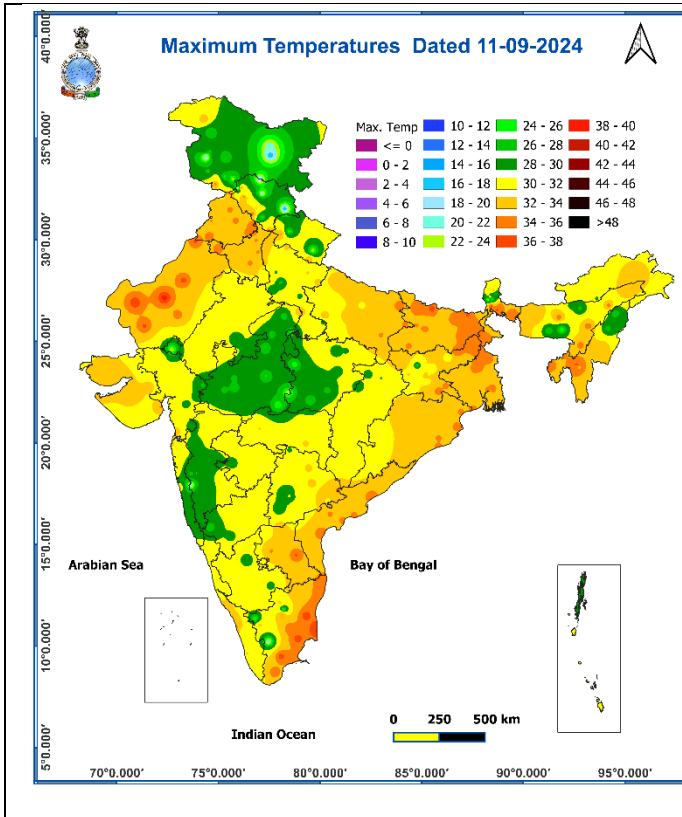
**East Rajasthan** - Kota, Baraj, Jhalawar, Pratapgarh, Alwar, Dausa, Bundi, Karauli and Bharatpur districts

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



**Fig. 1: Maximum Temperatures**

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



**Fig. 3: Minimum Temperatures**

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

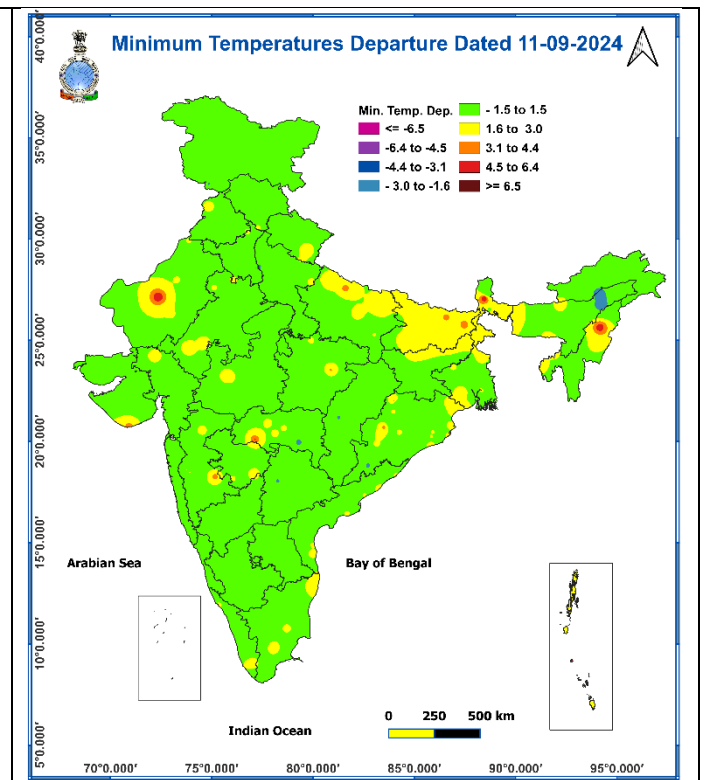
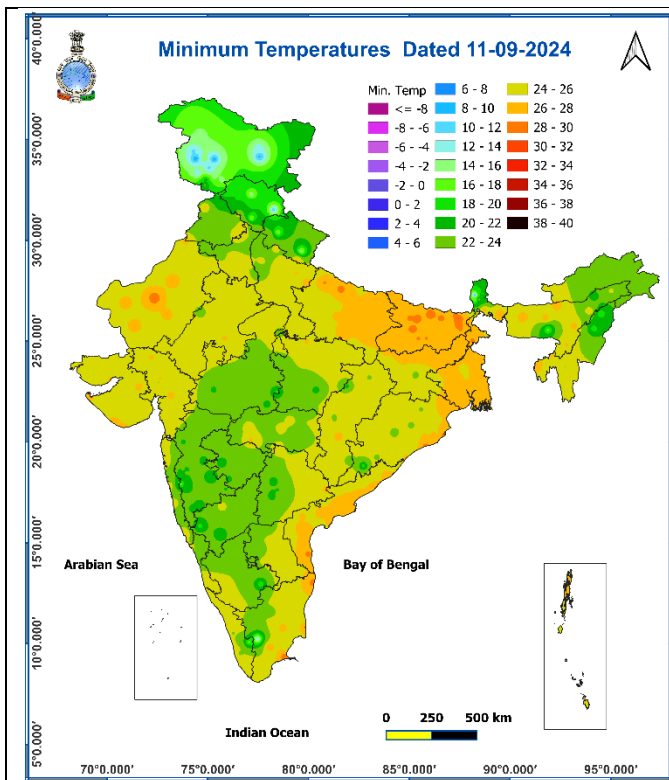
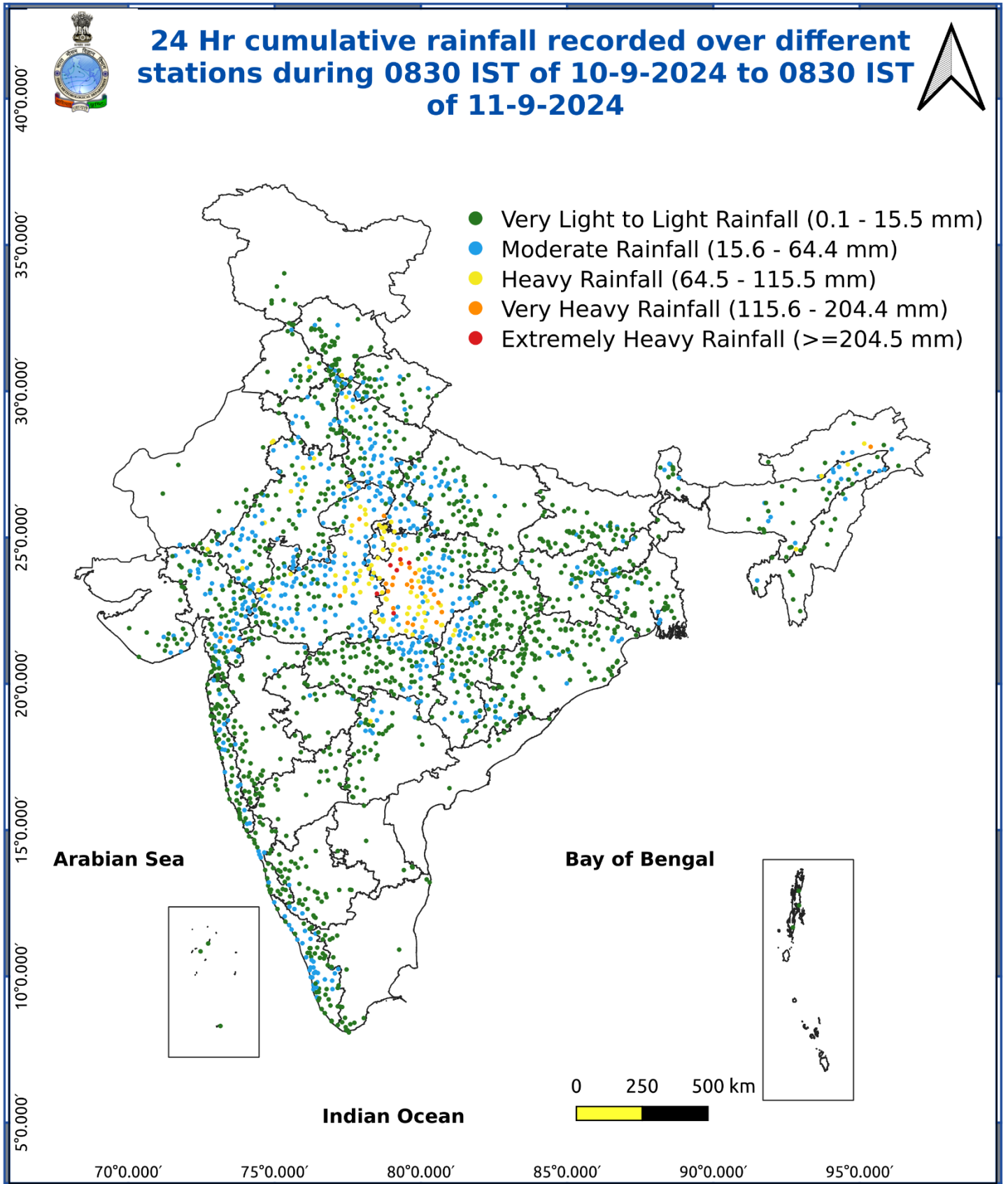


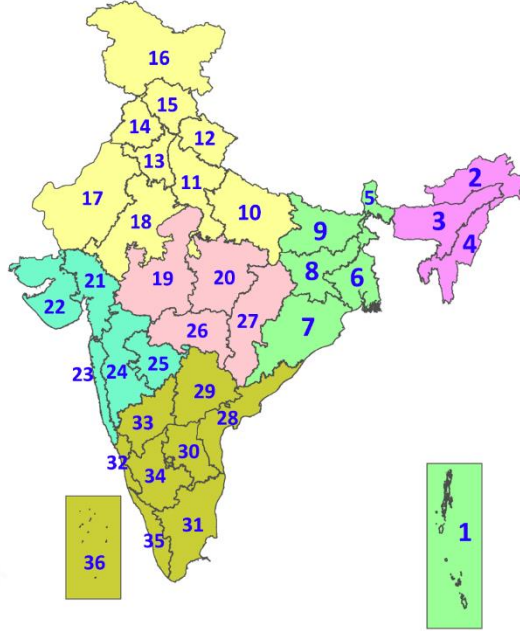
Fig. 5: Accumulated Rainfall (mm) during past 24 hours



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