

Monday, September 23, 2024  
Time of Issue: 0745 hours IST  
(MORNING)

## ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

### Significant Weather Features:

#### Weather Systems:

- ✓ Conditions are becoming favourable for withdrawal of **Southwest Monsoon** from parts of West Rajasthan and Kachchh around from 23<sup>rd</sup> September.
- ✓ The **east-west trough** from Andhra Pradesh coast to south coastal Myanmar with two embedded upper air cyclonic circulations, one over Westcentral Bay of Bengal and another over south coastal Myanmar & neighbourhood and extends upto mid tropospheric levels. The later upper air cyclonic circulation is likely to move west-northwestwards.
- ✓ Under the influence of these two upper air cyclonic circulations, a **low-pressure** area is likely to form over Westcentral Bay of Bengal & neighbourhood during the next 24 hours.

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

##### South Peninsular India

- ✓ Fairly widespread to widespread light/moderate rainfall very likely over Coastal Karnataka during the week; Isolated to Scattered light to moderate rainfall very likely over Tamil Nadu, Puducherry & Karaikal during the week; Scattered to Fairly widespread light to moderate rainfall very likely over the remaining south peninsular India during the week.
- ✓ Isolated **heavy rainfall** very likely over South Interior Karnataka on 23<sup>rd</sup>; Coastal Karnataka, Rayalaseema, North Interior Karnataka, Kerala & Mahe on 23<sup>rd</sup> & 24<sup>th</sup>; Telangana, Coastal Andhra Pradesh & Yanam during 23<sup>rd</sup> -25<sup>th</sup> September.

##### Central India:

- ✓ Fairly widespread to widespread light/moderate rainfall very likely over Vidarbha, Chhattisgarh during the week; Isolated to Scattered light to moderate rainfall during next 3 days over Madhya Pradesh & Scattered to Fairly widespread light to moderate rainfall during the next subsequent 4 days over the same region.
- ✓ Isolated **heavy rainfall** very likely over Vidarbha & Chhattisgarh during 23<sup>rd</sup>-26<sup>th</sup>; Madhya Pradesh during 24<sup>th</sup>-27<sup>th</sup> September.

##### East & Northeast India

- ✓ Fairly widespread to widespread light/moderate rainfall very likely over Odisha, Andaman & Nicobar Islands, West Bengal & Sikkim; Isolated to Scattered light to moderate rainfall over Bihar, Jharkhand during next 3 days and Scattered to Fairly widespread light to moderate rainfall during the next subsequent 4 days over the same region; Isolated to Scattered light to moderate rainfall very likely over northeast India during next 2 days and Fairly widespread to widespread light/moderate light to moderate rainfall during the next subsequent 5 days over the same region.
- ✓ Isolated **heavy rainfall** very likely over Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura during 23<sup>rd</sup>-29<sup>th</sup>; Odisha during 23<sup>rd</sup>-26<sup>th</sup>; Arunachal Pradesh during 24<sup>th</sup>-29<sup>th</sup>; Sub-Himalayan West Bengal & Sikkim, Jharkhand during 25<sup>th</sup>-27<sup>th</sup>; Gangetic West Bengal on 25<sup>th</sup> & 26<sup>th</sup>; Bihar during 27<sup>th</sup> - 29<sup>th</sup> September.
- ✓ **Hot and Humid Weather** very likely over Northeast India on 23<sup>rd</sup> September.

##### West India

- ✓ Fairly widespread to widespread light/moderate rainfall very likely over West India during the week except Saurashtra & Kutch and Gujarat Region where Isolated to Scattered light to moderate rainfall very likely during next 2 days & Scattered to Fairly widespread light to moderate rainfall very likely during the next subsequent 4 days.
- ✓ Isolated **heavy to very heavy rainfall** very likely over Konkan & Goa during 23<sup>rd</sup>-26<sup>th</sup>; Madhya Maharashtra during 23<sup>rd</sup>-27<sup>th</sup>; Marathwada during 23<sup>rd</sup>-25<sup>th</sup> September.
- ✓ Isolated **heavy rainfall** very likely over Gujarat Region during 25<sup>th</sup>-27<sup>th</sup> September.

##### Northwest India

- ✓ Isolated to Scattered light to moderate rainfall very likely over northwest India except West Rajasthan where mainly dry weather likely to prevail during the week.

\* 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

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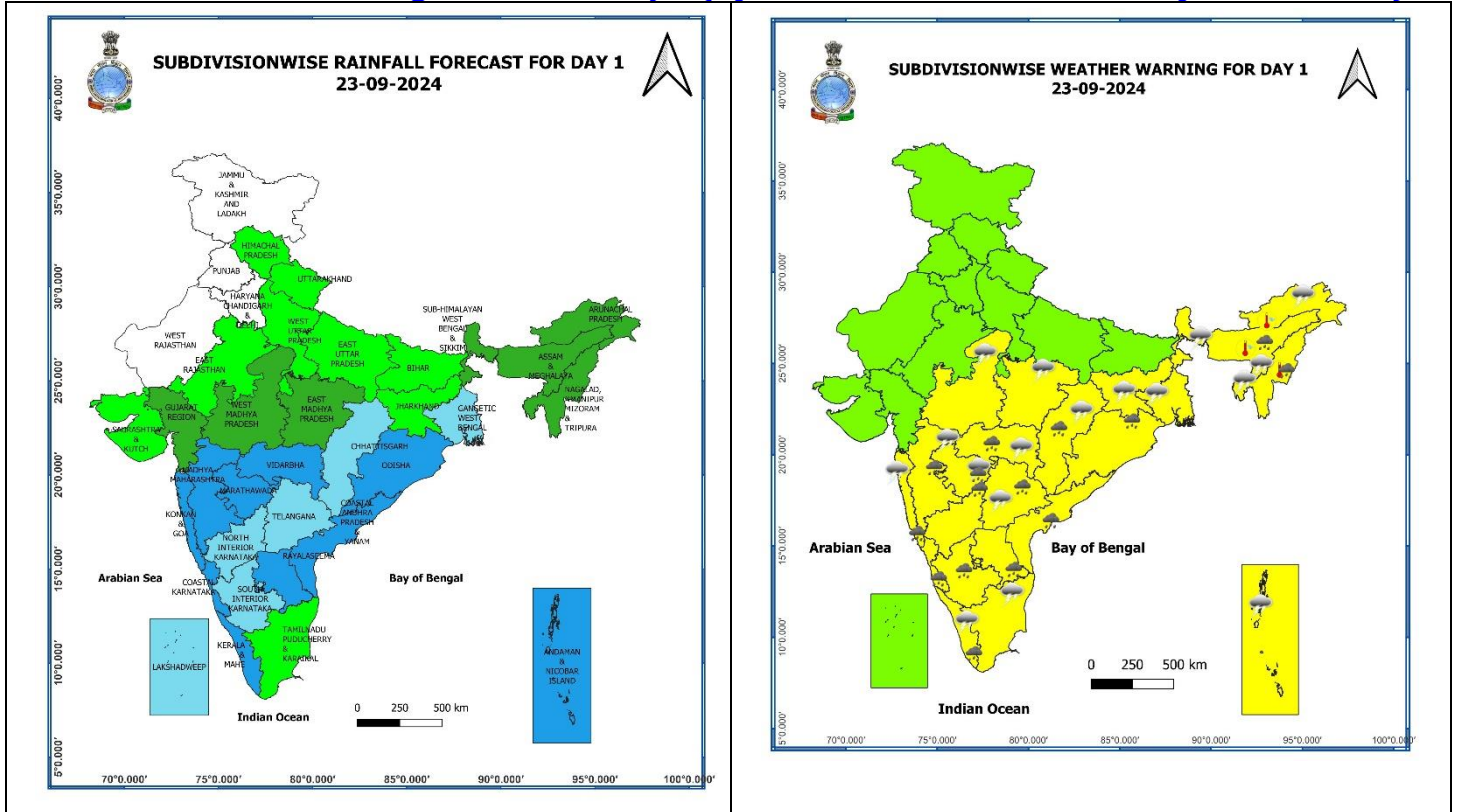
## Main Weather Observations:

- ❖ **Rainfall distribution** (from 0830 hours IST to 1730 hours IST of yesterday): **at a few places** over Odisha, Chhattisgarh, Kerala & Mahe; **at isolated places** over Madhya Maharashtra, Gujarat Region, Marathwada, Vidarbha, Telangana, Coastal Andhra Pradesh & Yanam, South Interior Karnataka, Tamil Nadu, Puducherry & Karaikal, Jharkhand.
- ❖ **Significant amount of rainfall** (from 0830 hours IST to 1730 hours IST of yesterday) (in cm): **Gujarat Region:** daman 5; **Kerala & Mahe:** Kannur 3, Kannur 3, Palakkad 2; **Odisha:** Ganjam 3, Nayagarh 3, Cuttack 2; **Tamil Nadu:** Vellore 2; **Chhattisgarh:** Jahjgir Champa 2, Jashpur 2.
- ❖ **Minimum Temperature Departures (as on 22-09-2024):** Minimum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Punjab, Rajasthan, Madhya Pradesh; **above normal (1.6°C to 3.0°C)** at a few places over Tamil Nadu, Puducherry & Karaikal and Gujarat Region; at isolated places over Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, Odisha, Vidarbha, West Bengal & Sikkim, Assam & Meghalaya, Madhya Maharashtra, Saurashtra & Kutch and Coastal Andhra Pradesh & Yanam. These were **below normal (-1.6°C to -3.0°C)** at isolated places over Telangana and **near normal** over rest parts of the country. Yesterday, **the lowest minimum temperature** of 21.8°C was reported at **Dhar (West Madhya Pradesh)** over the plains of the country. **(Fig.4)**
- ❖ **Maximum Temperature Departures (as on 22-09-2024):** Maximum temperatures were **markedly above normal (5.1°C or more)** at a few places over Assam & Meghalaya; at isolated places over Sub-Himalayan West Bengal & Sikkim, Arunachal Pradesh and Jammu division; **appreciably above normal (3.1°C to 5.0°C)** at isolated places over Himachal Pradesh, East Uttar Pradesh, Bihar, Gangetic West Bengal, Coastal Andhra Pradesh & Yanam; **above normal (1.6°C to 3.0°C)** at many places over Madhya Pradesh; at a few places over West Uttar Pradesh, Punjab, Haryana-Chandigarh-Delhi, Odisha, Kerala & Mahe; at isolated places over Rajasthan, Madhya Maharashtra, Marathwada, Chhattisgarh, Jharkhand, Saurashtra & Kutch. These were **below normal (-1.6°C to -3.0°C)** at isolated places over Tamil Nadu, Puducherry & Karaikal and **near normal** over rest parts of the country. Yesterday, **the highest Maximum Temperature** of 39.4°C was reported at **Jaisalmer (West Rajasthan)** over the country. **(Fig. 2)**

## Meteorological Analysis (Based on 0530 hours IST)

- ❖ Conditions are becoming favourable for withdrawal of **Southwest Monsoon** from parts of West Rajasthan and Kachchh around from 23<sup>rd</sup> September.
- ❖ The **Monsoon trough** at mean sea level now passes through Bikaner, Kota, Guna, Sagar, Raipur, Kalingapatnam and thence southeastwards to westcentral Bay of Bengal.
- ❖ The **east-west trough** from Andhra Pradesh coast to south Coastal Myanmar with two embedded upper air cyclonic circulations, one over **Westcentral Bay of Bengal** and another over **south Coastal Myanmar & neighbourhood** extending upto 5.8 Km above mean sea level persists. The later upper air cyclonic circulation is likely to move west-northwestwards.
- ❖ Under the influence of these two upper air cyclonic circulations, a **low-pressure area** is likely to form over Westcentral Bay of Bengal & neighbourhood during the next 24 hours.

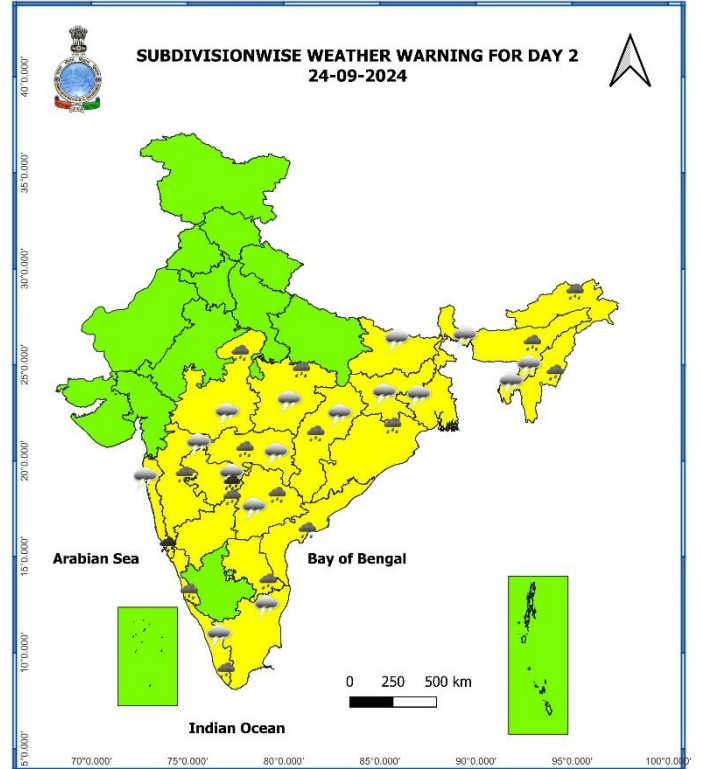
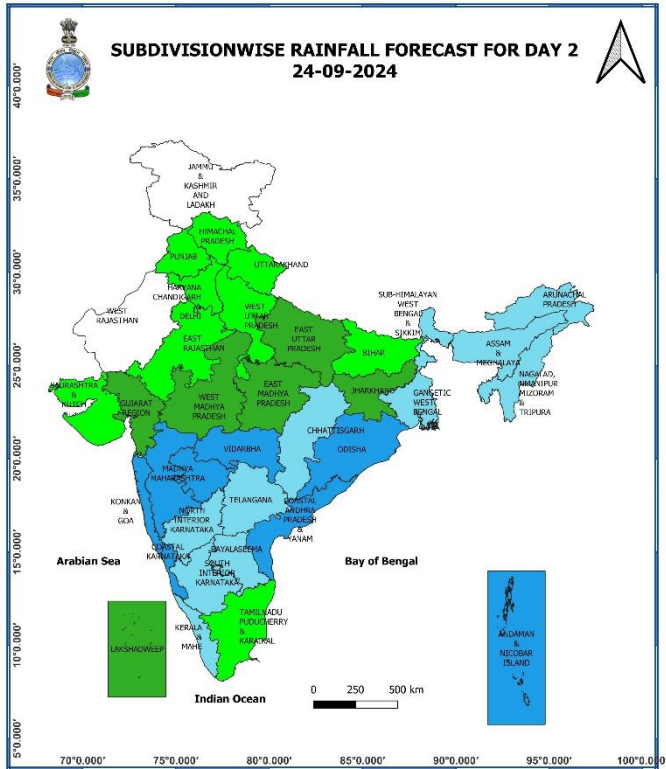
Weather Forecast & Warnings for next 7 days (Upto 0830 hours IST of 30<sup>th</sup> September, 2024)



23 September (Day 1):

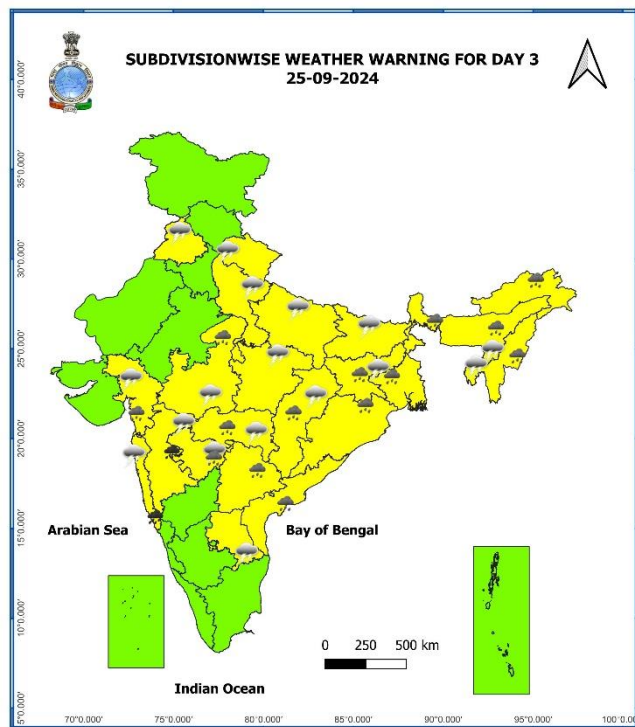
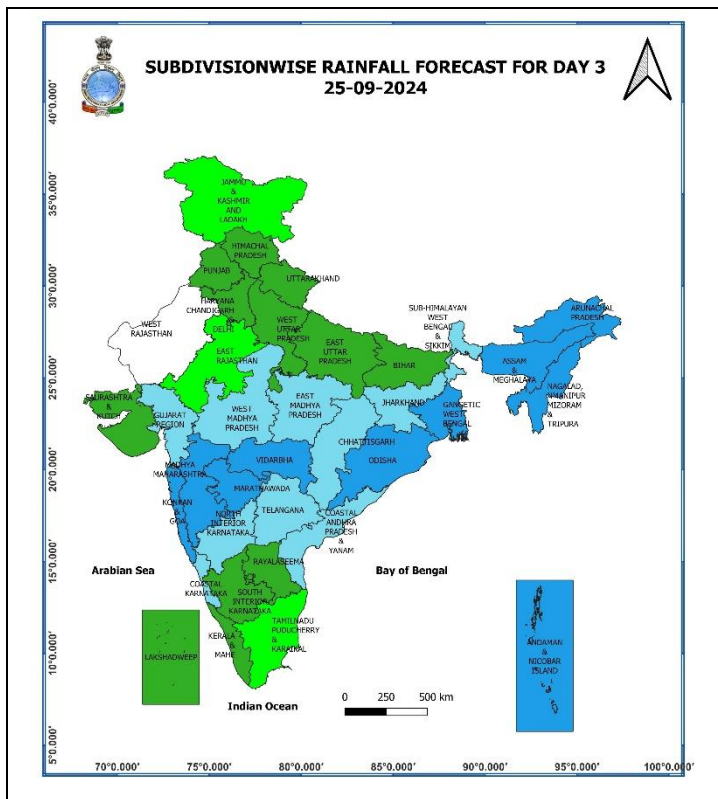
- ❖ **Heavy rainfall ( $\geq 7$  cm)** very likely at isolated places over Vidarbha, Chhattisgarh, Odisha, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Konkan & Goa, Madhya Maharashtra, Marathwada, Kerala & Mahe, Coastal Andhra Pradesh & Yanam, Rayalaseema, Telangana and Coastal & North Interior Karnataka.
- ❖ **Thunderstorm accompanied gusty winds (speed reaching 30-40 kmph)** very likely at isolated places over Telangana, Andaman & Nicobar Islands and Kerala & Mahe; **with lightning** very likely at isolated places over Chhattisgarh, Madhya Pradesh, Vidarbha, West Bengal & Sikkim, Jharkhand, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Konkan & Goa, Madhya Maharashtra, Marathwada, Tamil Nadu, Puducherry & Karaikal, Coastal Andhra Pradesh & Yanam, Rayalaseema, Coastal Karnataka and North Interior Karnataka.
- ❖ **Hot & humid weather** very likely at isolated places over Assam & Meghalaya, Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura.
- ❖ **Squally weather with wind speed reaching 35 kmph to 45 kmph gusting to 55 kmph** very likely to prevail over some parts of eastcentral Arabian sea, along and off Kerala, Karnataka coasts, adjoining Lakshadweep area, over gulf of Mannar, off Sri Lanka coast, many parts of south and adjoining parts of westcentral Bay of Bengal, many parts of eastcentral Bay of Bengal. **Squally winds with speed reaching 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest Arabian sea adjoining westcentral Arabian sea along and off Somalia coast. Fishermen are advised not to venture into these areas.

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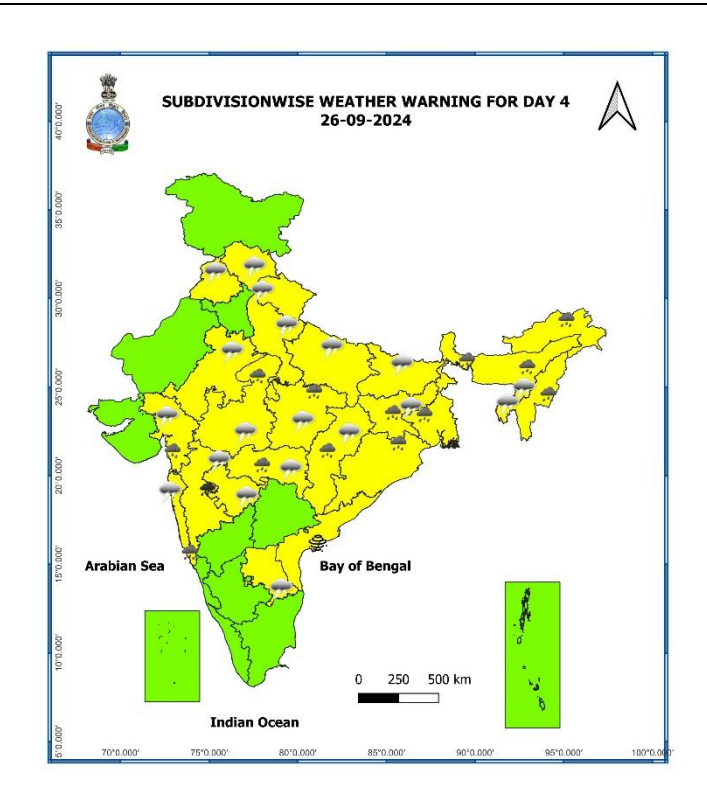
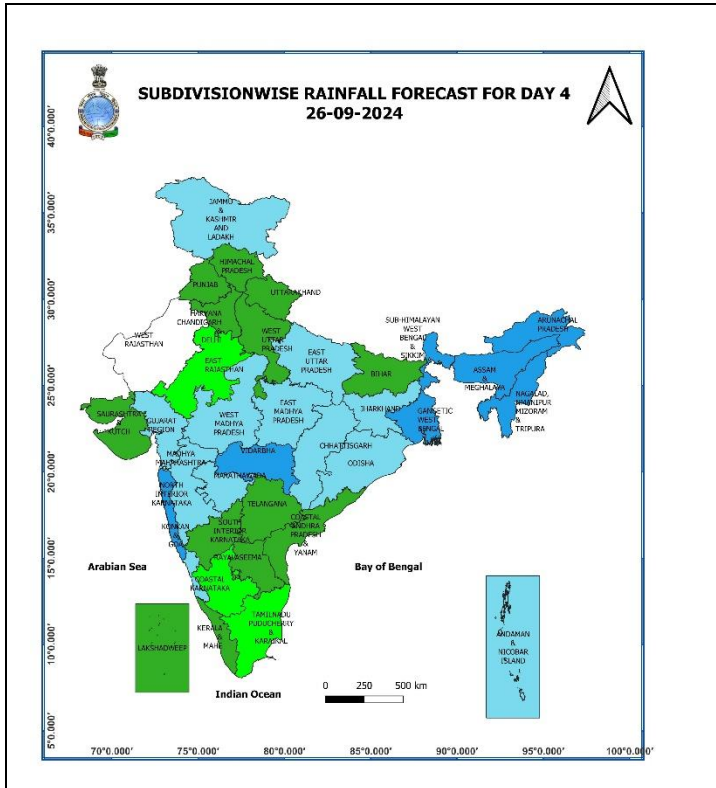
## 24 September (Day 2):

- ❖ **Heavy to very Heavy rainfall ( $\geq 12$  cm)** very likely at isolated places over Konkan & Goa and Marathwada; **Heavy rainfall ( $\geq 7$  cm)** very likely at isolated places over Madhya Pradesh, Vidarbha, Chhattisgarh, Odisha, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Madhya Maharashtra, Kerala & Mahe, Coastal Andhra Pradesh & Yanam, Rayalaseema, Telangana, Coastal & North Interior Karnataka.
- ❖ **Thunderstorm accompanied gusty winds (speed reaching 30-40 kmph)** very likely at isolated places over Telangana, Sub-Himalayan West Bengal & Sikkim and Kerala & Mahe; **with lightning** very likely at isolated places over Chhattisgarh, Madhya Pradesh, Vidarbha, Gangetic West Bengal, Bihar, Jharkhand, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Konkan & Goa, Madhya Maharashtra, Marathwada, Tamil Nadu, Puducherry & Karaikal, Coastal Andhra Pradesh & Yanam, Rayalaseema, Coastal Karnataka and North Interior Karnataka.
- ❖ **Squally weather with wind speed reaching 35 kmph to 45 kmph gusting to 55 kmph** is very likely to prevail along and off Kerala, Karnataka coasts and adjoining Lakshadweep, Comorin areas, along and off goa, Konkan coasts, over gulf of Mannar, off Sri Lanka coast, many parts of south and adjoining parts of central Bay of Bengal. **Squally winds with speed reaching 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest Arabian sea adjoining westcentral Arabian sea along and off Somalia coast. Fishermen are advised not to venture into these areas.



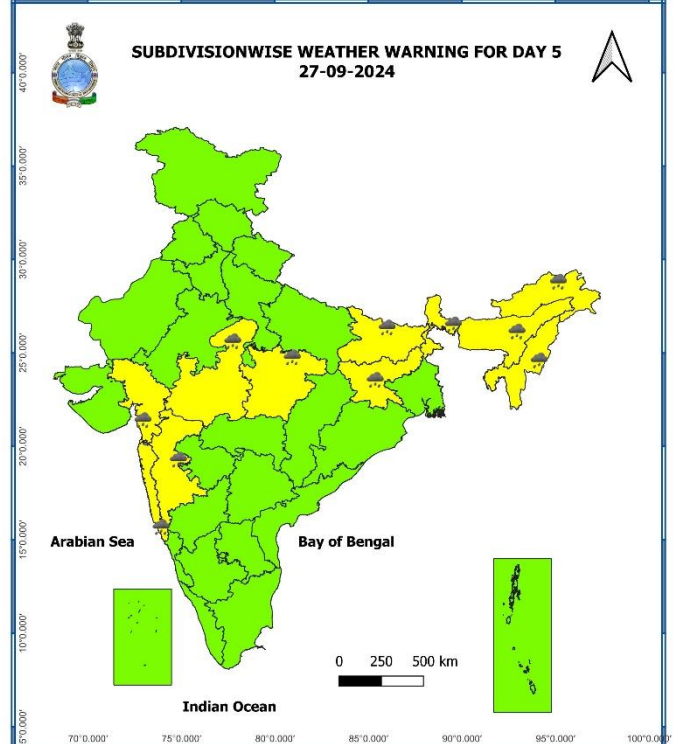
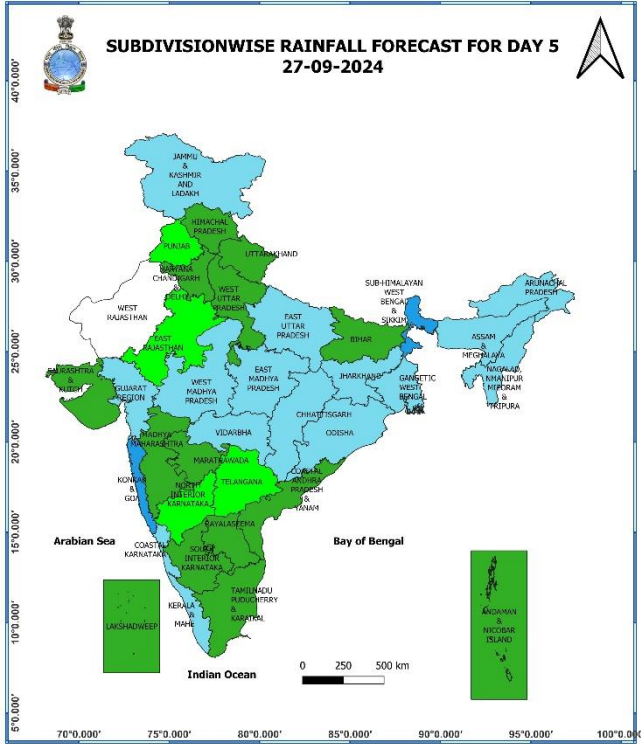
### 25 September (Day 3):

- ❖ **Heavy to very Heavy rainfall ( $\geq 12$  cm)** very likely at isolated places over Konkan & Goa and Madhya Maharashtra; **Heavy rainfall ( $\geq 7$  cm)** very likely at isolated places over Madhya Pradesh, Vidarbha, Chhattisgarh, West Bengal & Sikkim, Jharkhand, Odisha, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Marathwada, Gujarat Region, Coastal Andhra Pradesh & Yanam and Telangana.
- ❖ **Thunderstorm accompanied with lightning** very likely at isolated places over Chhattisgarh, Madhya Pradesh, Vidarbha, Uttarakhand, Punjab, Uttar Pradesh, Bihar, Jharkhand, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Konkan & Goa, Madhya Maharashtra, Gujarat Region, Marathwada, Coastal Andhra Pradesh & Yanam and Rayalaseema.
- ❖ **Squally weather with wind speed reaching 35 kmph to 45 kmph gusting to 55 kmph** very likely to prevail over along and off Maharashtra, Konkan, goa coasts, over gulf of Mannar, off Sri Lanka coast, many parts of south and central Bay of Bengal. **Squally winds with speed reaching 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest Arabian sea adjoining few parts of west central Arabian sea along and off Somalia coast. Fishermen are advised not to venture into these areas.



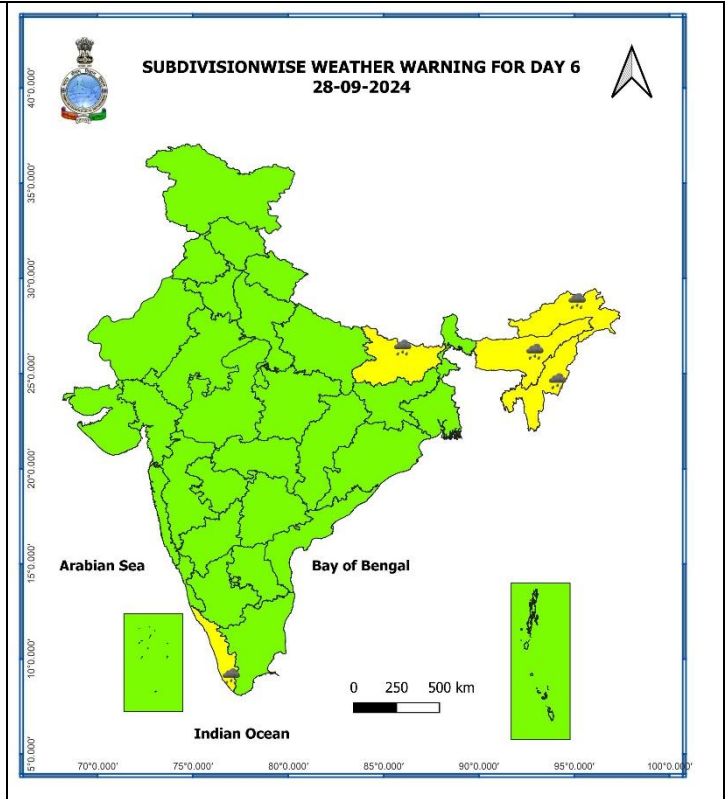
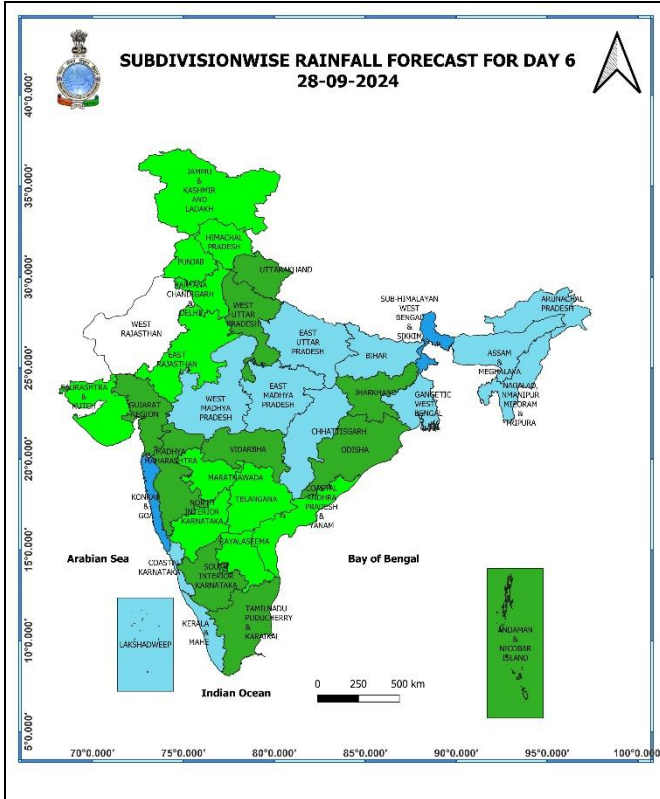
### 26 September (Day 4):

- ❖ **Heavy to very Heavy rainfall ( $\geq 12$  cm)** likely at isolated places over Madhya Maharashtra; **Heavy rainfall ( $\geq 7$  cm)** very likely at isolated places over Madhya Pradesh, Vidarbha, Chhattisgarh, West Bengal & Sikkim, Jharkhand, Odisha, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Konkan & Goa and Gujarat Region.
- ❖ **Thunderstorm accompanied with lightning** likely at isolated places over Chhattisgarh, Madhya Pradesh, Vidarbha, Himachal Pradesh, Uttarakhand, Punjab, Uttar Pradesh, East Rajasthan, Bihar, Jharkhand, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Konkan & Goa, Madhya Maharashtra, Gujarat Region, Marathwada, Coastal Andhra Pradesh & Yanam and Rayalaseema.
- ❖ **Squally weather with wind speed reaching 35 kmph to 45 kmph gusting to 55 kmph** is likely to prevail over gulf of Mannar, off Sri Lanka coast, most parts of southwest and westcentral Bay of Bengal, adjoining parts southeast and eastcentral, northwest Bay of Bengal. **Squally winds with speed reaching 45 kmph to 55 kmph gusting to 65 kmph** likely to prevail over western parts of southwest Arabian sea adjoining few parts of westcentral Arabian sea along and off Somalia coast. Fishermen are advised not to venture into these areas.



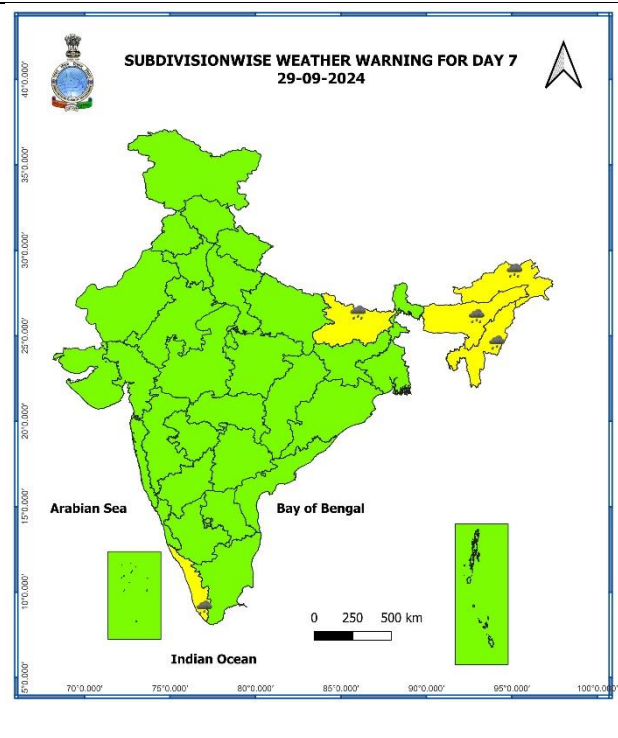
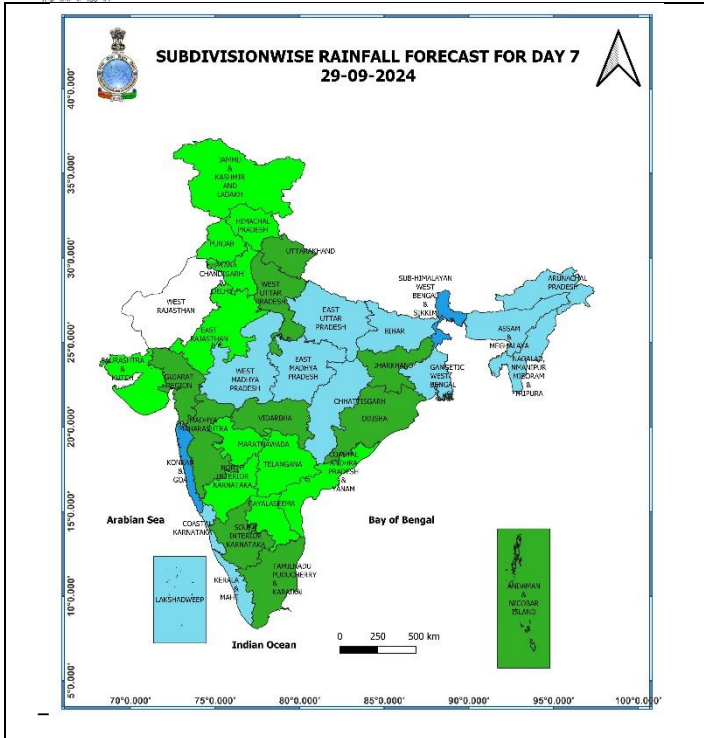
**27 September (Day 5):**

- ❖ **Heavy rainfall ( $\geq 7$  cm)** likely at isolated places over Madhya Pradesh, Sub-Himalayan West Bengal & Sikkim, Bihar, Jharkhand, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Konkan & Goa, Madhya Maharashtra and Gujarat Region.



**28 September (Day 6):**

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



### 29 September (Day 7):

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

### Weather Outlook for subsequent 3 days (During 30<sup>th</sup> September- 02<sup>nd</sup> October, 2024)

- ❖ Dry weather likely to prevail over West Rajasthan, north Gujarat, Punjab, Haryana-Chandigarh-Delhi, and Isolated rainfall activity likely over Himachal Pradesh, Uttarakhand, East Rajasthan and Uttar Pradesh.
- ❖ Isolated to Scattered rainfall likely over Central, Eastern, North Eastern and Peninsular India.

- 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.

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

- ✓ Make provision for draining out excess water from standing crop fields and fruit orchards to avoid water stagnation in Tamil Nadu, Interior Karnataka, Andhra Pradesh, Telangana, Chhattisgarh, Maharashtra and North Eastern States.
- ✓ Keep the harvested produce at safer places.
- ✓ Provide mechanical support to horticultural crops & staking to vegetables.

Fig. 1: Maximum Temperatures

Fig. 2: Departure of Maximum Temperatures

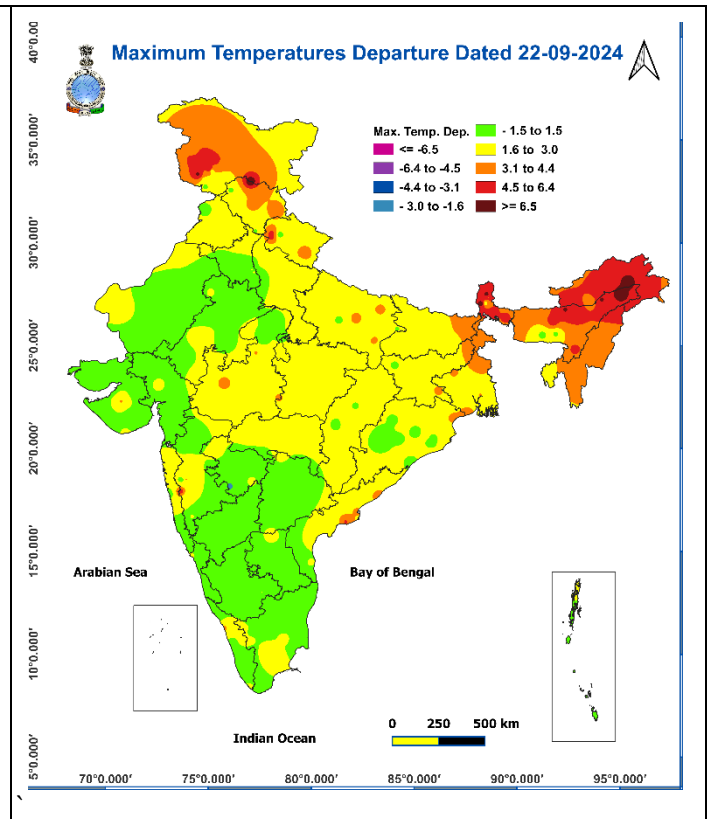
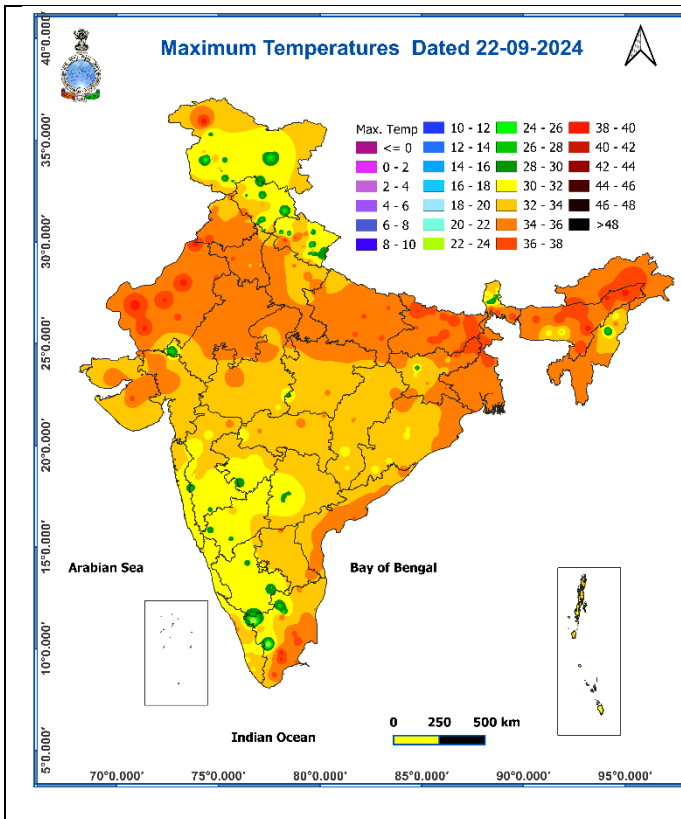
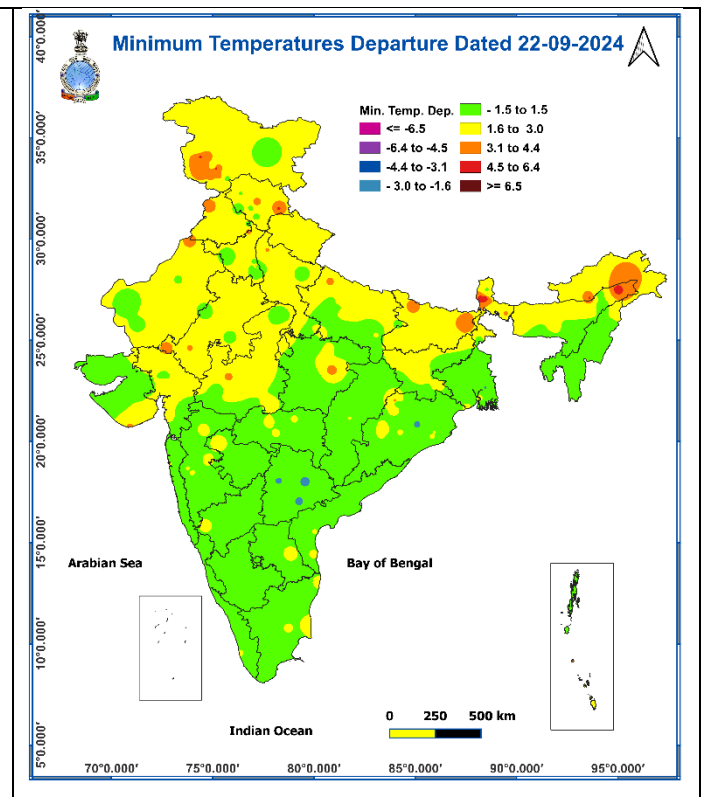
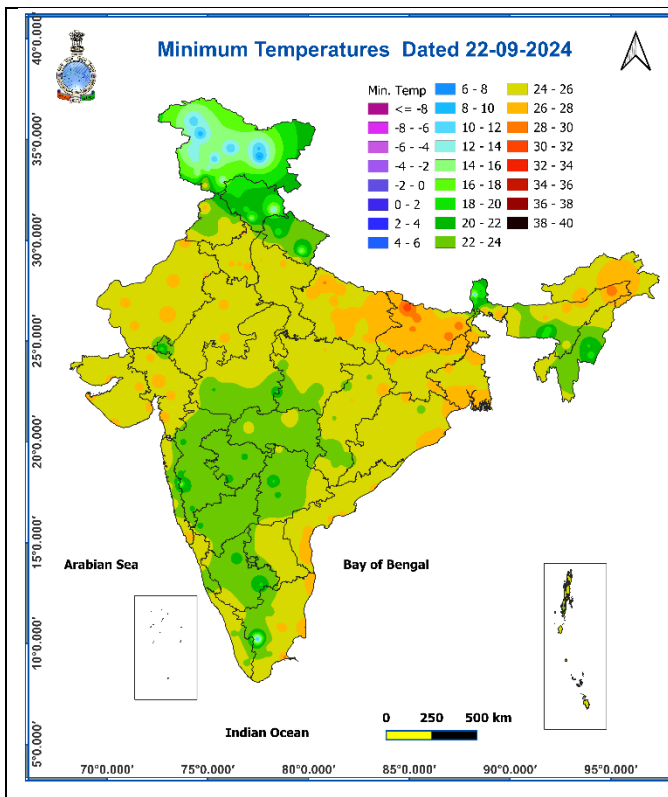


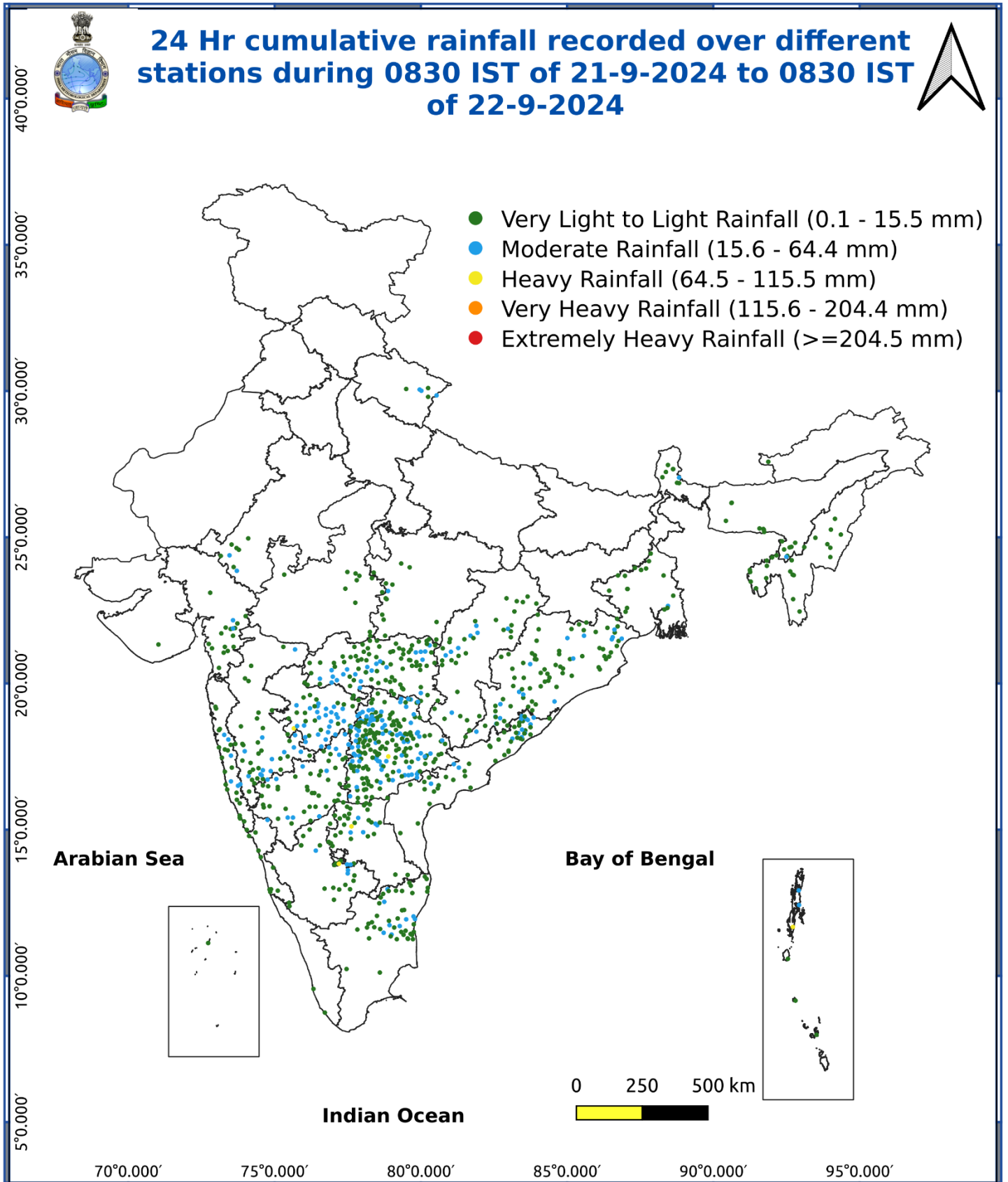
Fig. 3: Minimum Temperatures

Fig. 4: Departure of Minimum Temperatures



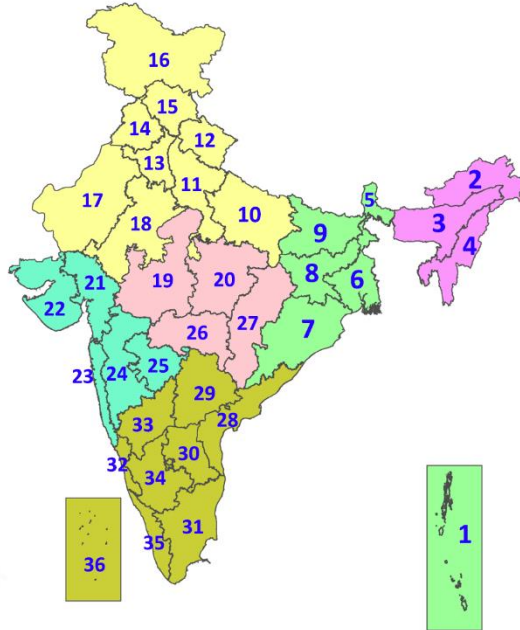
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Fig. 5: Accumulated Rainfall (mm) during past 24 hours



## 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 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)