



Wednesday, June 14, 2023  
Time of Issue: 0915 hours IST  
(MORNING)

## ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

### Significant Weather Features

#### Advance of Southwest Monsoon

- ❖ The Northern Limit of Monsoon (NLM) continues to pass through lat. 16.5°N/ Long. 55°E, lat. 17.0°N/ Long. 60°E, lat. 17°N/ Long. 65°E, lat. 17°N/ Long. 70°E, Ratnagiri, Koppal, Puttaparthi, Shriharikota, lat. 15.0°N/ Long. 83.0°E, 18.0°N/87.0°E, 22°N/89.0°E, Malda and Forbesganj, 28°N/86°E.

#### Very Severe Cyclonic Storm "Biparjoy" over Northeast and adjoining Eastcentral Arabian Sea

The Very Severe Cyclonic Storm "Biparjoy" (pronounced as "Biporjoy") over Northeast Arabian Sea moved nearly northwards with a speed of 3 kmph during past 6-hours and lay centered at 0530 hours IST of today, the 14<sup>th</sup> June, 2023 over the same region near latitude 21.9°N and longitude 66.3°E, about 280 km west-southwest of Jakhau Port (Gujarat), 290 km west-southwest of Devbhumi Dwarka, 300 km west-southwest of Naliya, 350 km west-northwest of Porbandar, and 340 km south-southwest of Karachi (Pakistan).

It is very likely to move nearly northeastwards and cross Saurashtra & Kutch and adjoining Pakistan coasts between Mandvi (Gujarat) and Karachi (Pakistan) near Jakhau Port (Gujarat) by evening of 15<sup>th</sup> June as a very severe cyclonic storm with maximum sustained wind speed of 125-135 kmph gusting to 150 kmph.

#### Weather forecast and warning over the country during next 5 days:

##### Northeast India:

- ❖ Widespread light/moderate rainfall at most places with isolated **Heavy to Very Heavy falls** very likely over the region during next 4 days. Isolated **extremely heavy rainfall** also likely over Meghalaya during 15<sup>th</sup>-17<sup>th</sup> June.

##### East India:

- ❖ Light/moderate fairly widespread to widespread rainfall with thunderstorm/lightning/gusty winds very likely over the region during next 4 days.
- ❖ **Heavy to very heavy rainfall** very likely at isolated places over Sub-Himalayan West Bengal & Sikkim during next 4 days. **Heavy rainfall** also very likely at isolated places over Andaman & Nicobar Islands on 17<sup>th</sup> June.

##### Northwest India:

- ❖ Light/moderate isolated to scattered rainfall with **hailstorm**, thunderstorm & lightning very likely in isolated places over Himachal Pradesh on 14<sup>th</sup> & 15<sup>th</sup> June and over Uttarakhand on 14<sup>th</sup> & 15<sup>th</sup> June. **Heavy to very heavy rainfall with extremely heavy falls** very likely at isolated places over southwest Rajasthan on 16<sup>th</sup> & 17<sup>th</sup> June and over southeast Rajasthan on 17<sup>th</sup> June.

##### South India:

- ❖ Light/moderate scattered to fairly widespread rainfall with thunderstorm/lightning/gusty winds very likely over the region during next 4 days.

**No significant weather likely over rest parts of the country during next 5 days.**

#### Heat Wave warning:

- ❖ No significant change in maximum temperatures very likely over most parts of the country during next 5 days except over Gujarat state, where temperatures are likely to fall by 5-6°C during next 5 days and by 2-3°C over Rajasthan on 16<sup>th</sup> & 17<sup>th</sup> June.
- ❖ **Heat Wave conditions** very likely to continue in isolated pockets over Odisha, Gangetic West Bengal, Bihar, Jharkhand, Chhattisgarh, Coastal Andhra Pradesh & Yanam during next 5 days; south Uttar Pradesh, Vidarbha during next 2 days; Madhya Pradesh, Telangana during next 24 hours.
- ❖ Hot and humid conditions very likely over Tamil Nadu and Rayalaseema during next 24 hours.



## Main Weather Observations

- ❖ **Rainfall/thundershowers observed** (from 0830 hours IST to 1730 hours IST of yesterday): at many places over Saurashtra & Kutch, Arunachal Pradesh, Konkan & Goa, Coastal Karnataka, Andaman & Nicobar Islands and Kerala & Mahe; at a few places over Gangetic West Bengal, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura and at isolated places over Himachal Pradesh, East Madhya Pradesh, Gujarat Region, Odisha, Madhya Maharashtra, Coastal Andhra Pradesh & Yanam, Rayalaseema, Tamil Nadu, Puducherry & Karaikal and Lakshadweep.
- ❖ **Heavy rainfall observed** (from 0830 hours IST to 1730 hours IST of yesterday): Very heavy rainfall at isolated places over Saurashtra & Kutch.
- ❖ **Significant rainfall recorded (in cm)** (from 0830 hours IST to 1730 hours IST of yesterday): **Saurashtra & Kutch:** Okha-14, Devbhoomi Dwarka-5, Porbandar-3, Naliya-2, Rajkot & Keshod-1 each; **Kerala:** Alapuzha-3, Cannur & Thrissur-1 each; **Rayalaseema:** Tirupathi-2; **Madhya Maharashtra:** Mahabaleshwar-2; **Konkan & Goa:** Harnai-1; **Assam:** Pet Jorhat, Tezpur, Majbat & Dhubri-1 each; **East Madhya Pradesh:** Sagar-1.
- ❖ **Thunderstorm observed** (from 0830 hours IST of yesterday to 0530 hours IST of today): at isolated places over Saurashtra & Kutch, Himachal Pradesh, Haryana, Chandigarh & Delhi, East Madhya Pradesh, Chhattisgarh, Odisha, Coastal Andhra Pradesh & Yanam, Coastal Karnataka, Gangetic West Bengal, Jharkhand, Vidarbha and Assam & Meghalaya.
- ❖ Yesterday, **Heat Wave to Severe Heat Wave conditions** prevailed over many parts of Coastal Andhra Pradesh & Yanam and in some parts of Telangana. **Heat Wave conditions** also observed over some parts of Jharkhand, Odisha, Vidarbha and in isolated pockets over Bihar, Gangetic West Bengal, East Madhya Pradesh and East Uttar Pradesh.
- ❖ **Minimum Temperature Departures (as on 13-06-2023):** Minimum temperatures were **appreciably above normal (3.1°C to 5.0°C)** at a few places over Punjab, Telangana and Coastal Andhra Pradesh & Yanam and at isolated places over East Madhya Pradesh, Vidarbha and Odisha; **above normal (1.6°C to 3.0°C)** at many places over Himachal Pradesh, Haryana, Chandigarh & Delhi, Chhattisgarh and Madhya Maharashtra; at a few places over Uttar Pradesh, East Rajasthan, West Madhya Pradesh, Marathwada, Telangana, Rayalaseema, Bihar, Jharkhand and Lakshadweep and at isolated places over Gujarat Region and Gangetic West Bengal. They were **below normal (-1.6°C to -3.0°C)** at a few places over Saurashtra & Kutch and Coastal Karnataka and **near normal** over rest parts of the country. Yesterday, **the lowest minimum temperature of 17.2°C** was reported at **Chaparmukh (Assam & Meghalaya)** over the plains of the country.
- ❖ **Maximum Temperature Departures (as on 13-06-2023):** Maximum temperatures were **markedly above normal (5.1°C or more)** at many places over Coastal Andhra Pradesh & Yanam; at a few places over Chhattisgarh, Odisha and Gangetic West Bengal; at isolated places over Telangana and Tamil Nadu, Puducherry & Karaikal; **appreciably above normal (3.1°C to 5.0°C)** at most places over Jharkhand; at many places over Punjab, East Uttar Pradesh, Vidarbha, Interior Karnataka and Rayalaseema; at a few places over Bihar, Nagaland, Manipur, Mizoram & Tripura, Madhya Pradesh and Madhya Maharashtra; at isolated places over West Uttar Pradesh; **above normal (1.6°C to 3.0°C)** at most places over Marathwada and Coastal Karnataka; at many places over Uttarakhand, Konkan & Goa; at a few places over Kerala & Mahe; at isolated places over Haryana, Chandigarh & Delhi and Gujarat Region. They were **appreciably below normal (-3.1°C to -5.0°C)** at a few places over Saurashtra & Kutch; **below normal (-1.6°C to -3.0°C)** at isolated places over Assam & Meghalaya and **near normal** over rest parts of the country. Today, **the highest maximum temperature of 45.9°C** was reported at **Jhansi (West Uttar Pradesh)**.



## Meteorological Analysis (Based on 0530 hours IST)

- ❖ The Northern Limit of Monsoon (NLM) continues to pass through lat. 16.5°N/ Long. 55°E, lat. 17.0°N/ Long. 60°E, lat. 17°N/ Long. 65°E, lat. 17°N/ Long. 70°E, Ratnagiri, Koppal, Puttaparthi, Shriharikota, lat. 15.0°N/ Long. 83.0°E, 18.0°N/87.0°E, 22°N/89.5°E, Malda and Forbesganj, 28°N/86°E.
- ❖ **The Very Severe Cyclonic Storm “Biparjoy”** (pronounced as “Biporjoy”) over Northeast Arabian Sea moved nearly northwards with a speed of 3 kmph during past 6-hours and lay centered at 0530 hours IST of today, the 14<sup>th</sup> June, 2023 over the same region near latitude 21.9°N and longitude 66.3°E, about 280 km west-southwest of Jakhau Port (Gujarat), 290 km west-southwest of Devbhumi Dwarka, 300 km west-southwest of Naliya, 350 km west-northwest of Porbandar, and 340 km south-southwest of Karachi (Pakistan). It is very likely to move nearly northeastwards and cross Saurashtra & Kutch and adjoining Pakistan coasts between Mandvi (Gujarat) and Karachi (Pakistan) near Jakhau Port (Gujarat) by evening of 15<sup>th</sup> June as a very severe cyclonic storm with maximum sustained wind speed of 125-135 kmph gusting to 150 kmph.
- ❖ The trough at mean sea level over Southeast & adjoining Eastcentral Arabian Sea off Karnataka-Kerala coast persists.
- ❖ The Western Disturbance as a trough in middle tropospheric levels with its axis at 5.8 km above mean sea level roughly along Lat. 68°E to the north of 32°N persists.
- ❖ The cyclonic circulation over East Uttar Pradesh at 0.9 km above mean sea level persists.
- ❖ The north-south trough from above cyclonic circulation over East Uttar Pradesh to north Odisha across Chhattisgarh at 0.9 km above mean sea level persists.
- ❖ The trough roughly along Lat. 88°E to the north of 24°N at 5.8 km above mean sea level persists.

## Weather Forecast for next 5 days (Upto 0830 hours IST of 19<sup>th</sup> June, 2023)

- ❖ Meteorological sub-division wise detailed 5 days rainfall forecast is given in Table-1.
- ❖ **Maximum Temperatures Forecast:** No significant change in maximum temperatures over the country except over Gujarat where these are likely to fall by 5-6°C and over during next 5 days and by 2-3°C over Rajasthan on 16<sup>th</sup> & 17<sup>th</sup> June.

## Weather Outlook for subsequent 2 days (During 19<sup>th</sup> -21<sup>st</sup> June, 2023)

- ❖ Fairly widespread to widespread light/moderate rainfall with thunderstorm likely to continue over northeast India, Kerala & Mahe and Coastal Karnataka. Isolated to scattered rainfall over Tamil Nadu, Puducherry & Karaikal, Interior Karnataka and Islands.
- ❖ Isolated rainfall over Western Himalayan Region and adjoining plains of Northwest India.
- ❖ Dry weather over rest parts of the country.



## Weather Warning during next 5 days

**14 June (Day 1):** ♦ **Heavy to very heavy rainfall with extremely heavy falls** very likely at isolated places over Saurashtra & Kutch; **Heavy to very heavy rainfall** at isolated places over Sub-Himalayan West Bengal & Sikkim, Arunachal Pradesh, Assam & Meghalaya and **heavy rainfall** at isolated places over Nagaland, Manipur, Mizoram & Tripura.

♦ **Hailstorm with thunderstorm, lightning and gusty winds (wind speed 40-50 kmph)** very likely at isolated places over Himachal Pradesh.

♦ **Thunderstorm with lightning & squall (speed 60-70 kmph)** very likely at isolated places over Uttarakhand; **with lightning & gusty winds (speed 40-50 kmph)** at isolated places over Karnataka; **with lightning & gusty winds (speed 30-40 kmph)** at isolated places over Vidarbha, Chhattisgarh, Andaman & Nicobar Islands, Jharkhand, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe; **with lightning** at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh, Rajasthan, West Bengal & Sikkim, Odisha, Bihar, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Gujarat State and Tamil Nadu, Puducherry & Karaikal.

♦ **Heat Wave conditions** very likely in isolated pockets of Uttar Pradesh, Madhya Pradesh, Vidarbha, Chhattisgarh, Gangetic West Bengal, Odisha, Bihar, Jharkhand, Coastal Andhra Pradesh & Yanam, Telangana.

♦ **Gale wind** speed reaching 145-155 kmph gusting to 170 kmph prevailing over Northeast Arabian Sea. **Gale wind** speed reaching 60-70 kmph gusting to 80 kmph prevailing over Eastcentral Arabian Sea. **Gale wind** speed reaching 65-75 kmph gusting to 85 kmph along & off Porbandar & Devbhoomi Dwarka district coasts. Fishermen are advised not to venture into these areas.

**15 June (Day 2):** ♦ **Heavy to very heavy rainfall with extremely heavy falls** very likely at isolated places over Saurashtra & Kutch and Assam & Meghalaya; **Heavy to very heavy rainfall** at isolated places over Sub-Himalayan West Bengal & Sikkim, Arunachal Pradesh and **heavy rainfall** at isolated places over Nagaland, Manipur, Mizoram & Tripura, Gujarat Region.

♦ **Hailstorm with thunderstorm, lightning and gusty winds (wind speed 40-50 kmph)** very likely at isolated places over Himachal Pradesh.

♦ **Thunderstorm with lightning & gusty winds (speed 40-50 kmph)** very likely at isolated places over Uttarakhand; **with lightning & gusty winds (speed 30-40 kmph)** at isolated places over Vidarbha, Chhattisgarh, Jharkhand, Karnataka, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe; **with lightning** at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh, Rajasthan, Gangetic West Bengal, Odisha, Bihar, Gujarat State and Tamil Nadu, Puducherry & Karaikal.

♦ **Heat Wave conditions** very likely in isolated pockets of East Uttar Pradesh, Vidarbha, Chhattisgarh, Gangetic West Bengal, Odisha, Bihar, Jharkhand and Coastal Andhra Pradesh & Yanam.

♦ **Gale wind speed reaching 125-135 kmph gusting 150** is likely to prevail over northeast Arabian Sea. **Gale wind 125-135 kmph gusting to 150 kmph** over Saurashtra & Kutch coasts. **Squally wind 45-55 kmph gusting to 65 kmph** over Eastcentral Arabian Sea. Fishermen are advised not to venture into these areas.

**\* Red color warning does not mean "Red Alert" Red color 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**

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**16 June (Day 3):** ♦ **Heavy to very heavy rainfall with extremely heavy falls** very likely at isolated places over Gujarat state, West Rajasthan and Assam & Meghalaya; **Heavy to very heavy rainfall** at isolated places over Sub-Himalayan West Bengal & Sikkim and **heavy rainfall** at isolated places over Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura.

♦ **Thunderstorm with lightning & gusty winds (speed 40-50 kmph)** very likely at isolated places over Uttarakhand; **with lightning & gusty winds (speed 30-40 kmph)** at isolated places over Vidarbha, Chhattisgarh, Jharkhand, Karnataka, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe; **with lightning** at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Himachal Pradesh, Punjab, Haryana, Chandigarh & Delhi, Rajasthan, Gangetic West Bengal, Odisha, Bihar, Gujarat state and Tamil Nadu, Puducherry & Karaikal.

♦ **Heat Wave conditions** very likely in isolated pockets of Chhattisgarh, Gangetic West Bengal, Odisha, Bihar, Jharkhand and Coastal Andhra Pradesh & Yanam.

♦ **Squally wind 50-60 kmph gusting to 70 kmph** over north Gujarat and **speed reaching 45-55 kmph gusting to 65 kmph** is likely over Northeast & Eastcentral Arabian Sea and south Rajasthan. Fishermen are advised not to venture into these areas.

**17 June (Day 4):** ♦ **Heavy to very heavy rainfall with extremely heavy falls** very likely at isolated places over south Rajasthan and Assam & Meghalaya; **Heavy to very heavy rainfall** at isolated places over north Gujarat Region and **heavy rainfall** at isolated places over Andaman & Nicobar Islands, Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura, Saurashtra & Kutch, Sub-Himalayan West Bengal & Sikkim.

♦ **Thunderstorm with lightning & gusty winds (speed 40-50 kmph)** very likely at isolated places over Uttarakhand; **with lightning & gusty winds (speed 30-40 kmph)** at isolated places over Vidarbha, Chhattisgarh, Jharkhand, Karnataka, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe; **with lightning** at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Himachal Pradesh, Punjab, Haryana, Chandigarh & Delhi, Rajasthan, Gangetic West Bengal, Odisha, Bihar, Madhya Maharashtra, Marathwada, Gujarat state, Telangana and Tamil Nadu, Puducherry & Karaikal.

♦ **Heat Wave conditions** very likely in isolated pockets of Chhattisgarh, Gangetic West Bengal, Odisha, Bihar, Jharkhand and Coastal Andhra Pradesh & Yanam.

**18 June (Day 5):** ♦ **Heavy to very heavy rainfall with extremely heavy falls** very likely at isolated places over Assam & Meghalaya and **heavy rainfall** at isolated places over East Rajasthan, West Madhya Pradesh, Andaman & Nicobar Islands, Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura, Saurashtra & Kutch, Sub-Himalayan West Bengal & Sikkim.

♦ **Thunderstorm with lightning & gusty winds (speed 40-50 kmph)** very likely at isolated places over Uttarakhand; **with lightning & gusty winds (speed 30-40 kmph)** at isolated places over Vidarbha, Chhattisgarh, Jharkhand, Karnataka, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe; **with lightning** at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Himachal Pradesh, Punjab, Haryana, Chandigarh & Delhi, Rajasthan, Gangetic West Bengal, Odisha, Bihar, Madhya Maharashtra, Marathwada, Gujarat state, Telangana and Tamil Nadu, Puducherry & Karaikal.

♦ **Heat Wave conditions** very likely in isolated pockets of Chhattisgarh, Gangetic West Bengal, Odisha, Bihar, Jharkhand and Coastal Andhra Pradesh & Yanam.

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Table-1

<b>5 Day Rainfall Forecast</b>						
S. No.	Subdivision	14-Jun	15-Jun	16-Jun	17-Jun	18-Jun
		Day 1	Day 2	Day 3	Day 4	Day 5
1	ANDAMAN & NICOBAR ISLANDS	WS	WS	WS	WS	WS
2	ARUNACHAL PRADESH	WS	WS	WS	WS	WS
3	ASSAM & MEGHALAYA	WS	WS	WS	WS	WS
4	NAGALAND, MANIPUR, MIZORAM & TRIPURA	FWS	WS	WS	WS	WS
5	SUB-HIMALAYAN WEST BENGAL & SIKKIM	WS	WS	WS	WS	WS
6	GANGETIC WEST BENGAL	ISOL	ISOL	ISOL	SCT	SCT
7	ODISHA	SCT	ISOL	ISOL	ISOL	ISOL
8	JHARKHAND	ISOL	ISOL	ISOL	ISOL	ISOL
9	BIHAR	ISOL	ISOL	ISOL	SCT	SCT
10	EAST UTTAR PRADESH	ISOL	ISOL	DRY	ISOL	SCT
11	WEST UTTAR PRADESH	ISOL	ISOL	DRY	ISOL	SCT
12	UTTARAKHAND	FWS	SCT	SCT	SCT	FWS
13	HARYANA CHANDIGARH & DELHI	ISOL	ISOL	ISOL	SCT	SCT
14	PUNJAB	SCT	SCT	SCT	SCT	SCT
15	HIMACHAL PRADESH	SCT	FWS	SCT	SCT	FWS
16	JAMMU & KASHMIR AND LADAKH	SCT	SCT	ISOL	ISOL	FWS
17	WEST RAJASTHAN	ISOL	ISOL	FWS	WS	WS
18	EAST RAJASTHAN	ISOL	ISOL	SCT	SCT	SCT
19	WEST MADHYA PRADESH	ISOL	ISOL	DRY	ISOL	ISOL
20	EAST MADHYA PRADESH	ISOL	ISOL	DRY	ISOL	ISOL
21	GUJARAT REGION	SCT	FWS	WS	SCT	SCT
22	SAURASHTRA & KUTCH	WS	WS	WS	SCT	SCT
23	KONKAN & GOA	FWS	SCT	SCT	SCT	SCT
24	MADHYA MAHARASHTRA	ISOL	ISOL	ISOL	ISOL	ISOL
25	MARATHAWADA	ISOL	ISOL	ISOL	ISOL	ISOL
26	VIDARBHA	ISOL	ISOL	ISOL	ISOL	ISOL
27	CHHATTISGARH	ISOL	ISOL	ISOL	ISOL	ISOL
28	COASTAL ANDHRA PRADESH & YANAM	ISOL	ISOL	ISOL	ISOL	ISOL
29	TELANGANA	ISOL	ISOL	ISOL	ISOL	ISOL
30	RAYALASEEMA	ISOL	ISOL	ISOL	ISOL	ISOL
31	TAMILNADU PUDUCHERRY & KARAIKAL	ISOL	ISOL	ISOL	SCT	SCT
32	COASTAL KARNATAKA	FWS	FWS	FWS	FWS	FWS
33	NORTH INTERIOR KARNATAKA	ISOL	ISOL	ISOL	SCT	SCT
34	SOUTH INTERIOR KARNATAKA	SCT	SCT	SCT	SCT	SCT
35	KERALA & MAHE	WS	FWS	FWS	FWS	FWS
36	LAKSHADWEEP	FWS	FWS	FWS	SCT	SCT

Legend	Category	% Stations
WS	Widespread/Most Places	76-100
FWS	Fairly Widespread/Many Places	51-75
SCT	Scattered/ A Few Places	26-50
ISOL	Isolated Places	1-25
DRY	No Rain	0

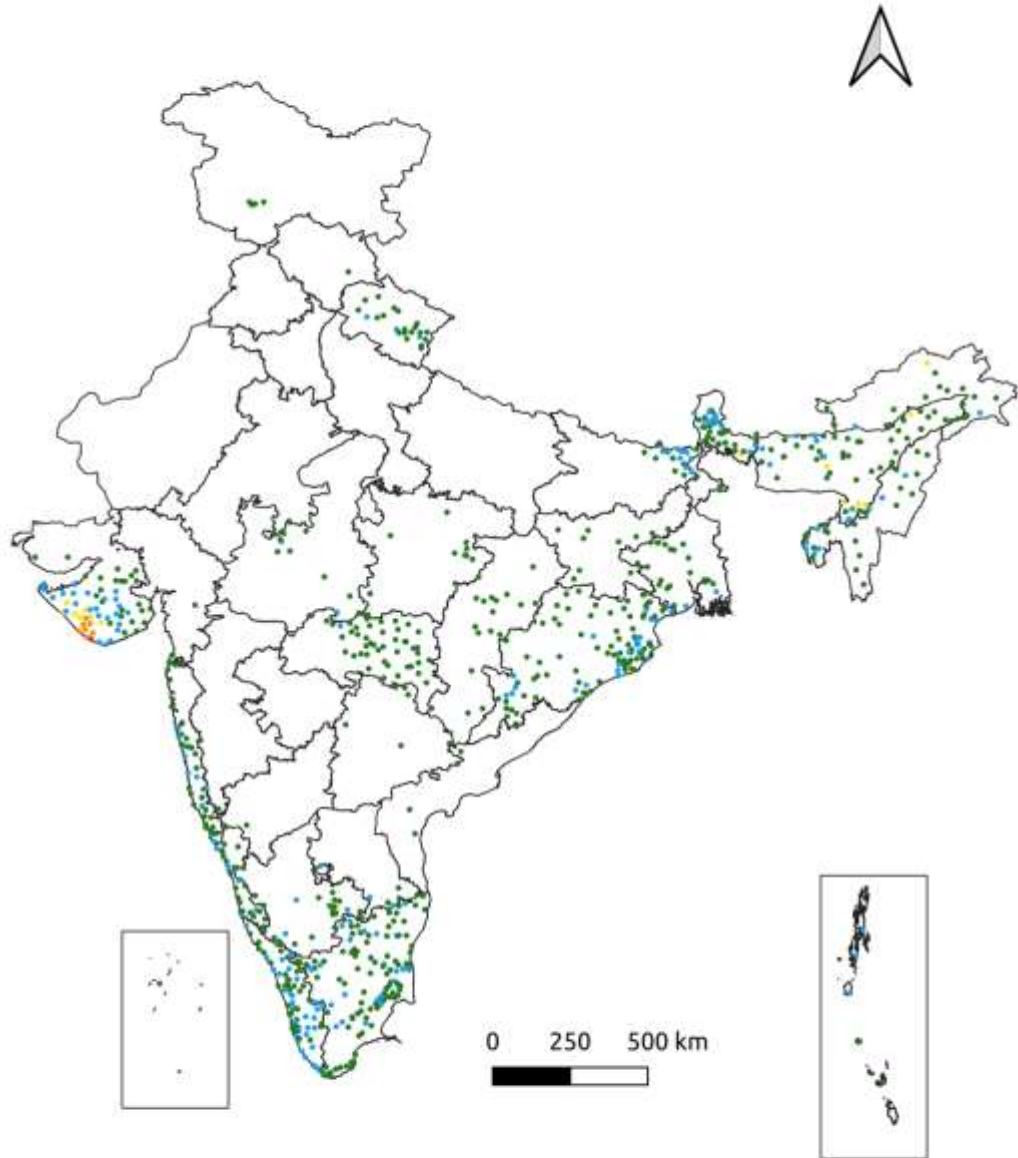
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Fig. 1: Accumulated Rainfall (mm) during past 24 hours



24 Hr cumulative rainfall recorded over different stations  
during 0830 IST of 12-6-2023 to 0830 IST of 13-6-2023

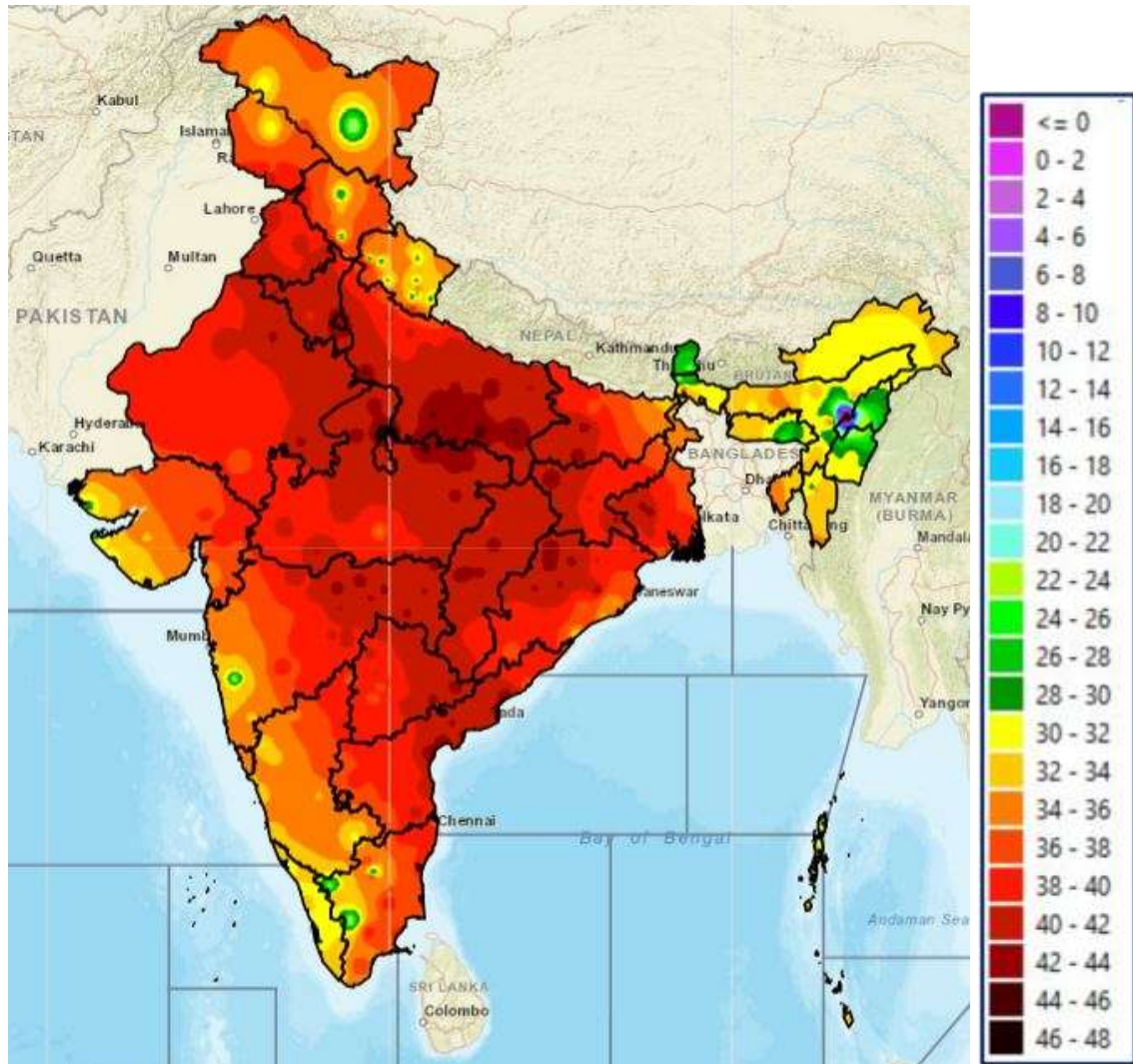


## Legends

- Very Light to Light Rainfall (0.1 - 15.5 mm)
- Moderate Rainfall (15.6 - 64.4 mm)
- Heavy Rainfall (64.5 - 115.5 mm)
- Very Heavy Rainfall (115.6 - 204.4 mm)
- Extremely Heavy Rainfall ( $\geq 204.5$  mm)



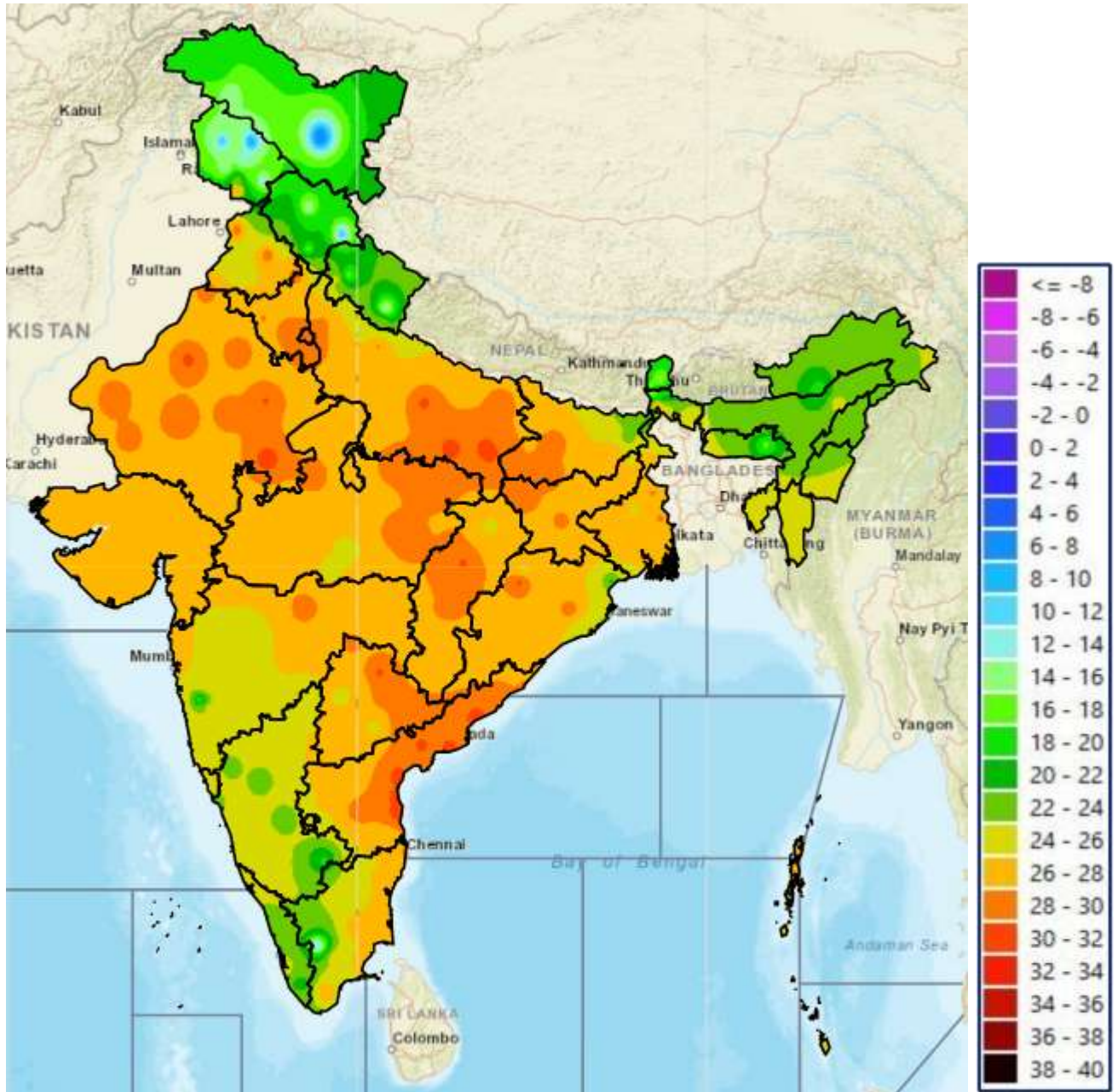
Fig. 2: Maximum Temperatures Dated 13.06.2023



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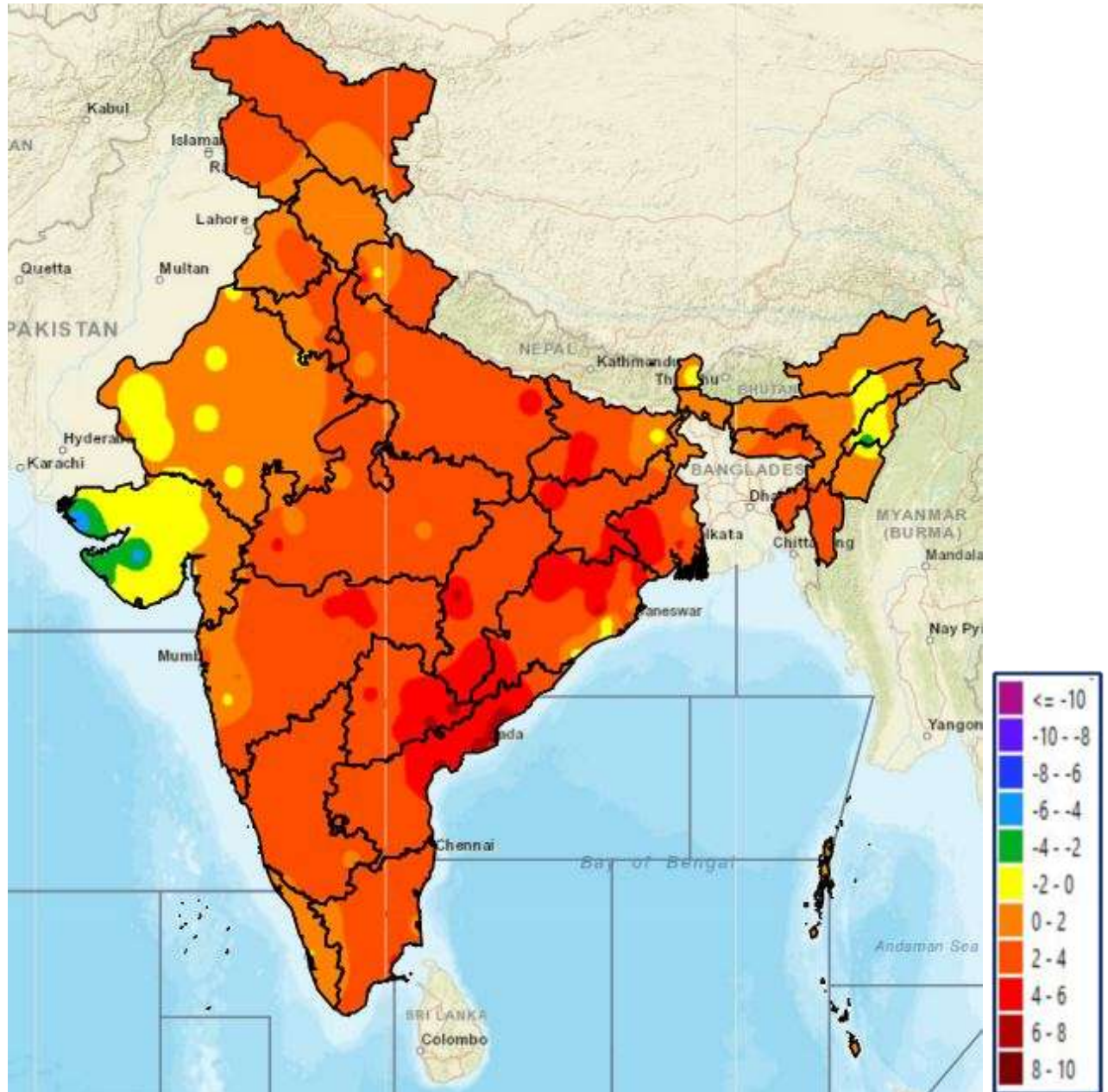
Fig. 3: Minimum Temperatures Dated 13.06.2023



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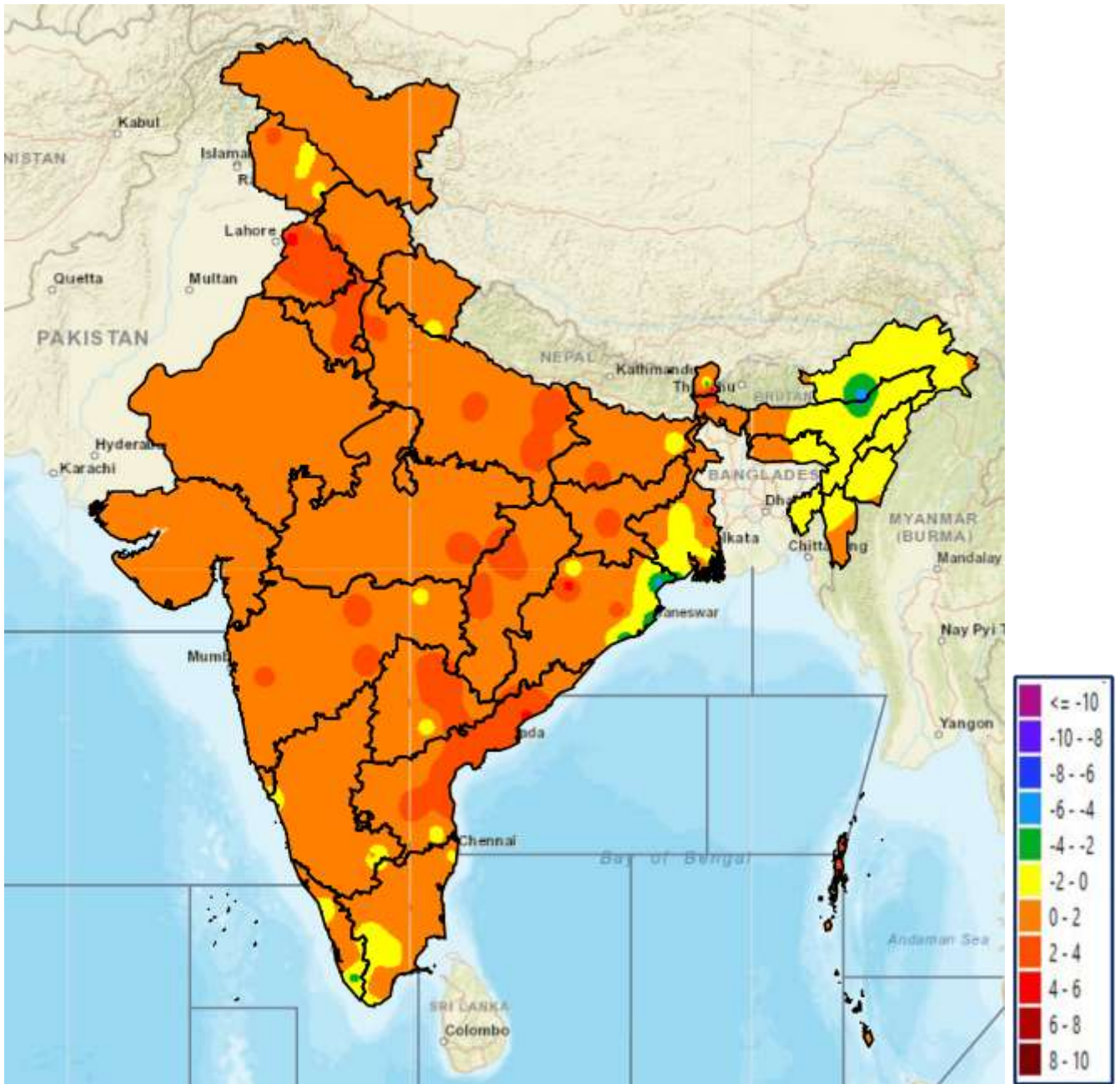


Fig. 4: Departure from Normal of Maximum Temperatures Dated 13.06.2023



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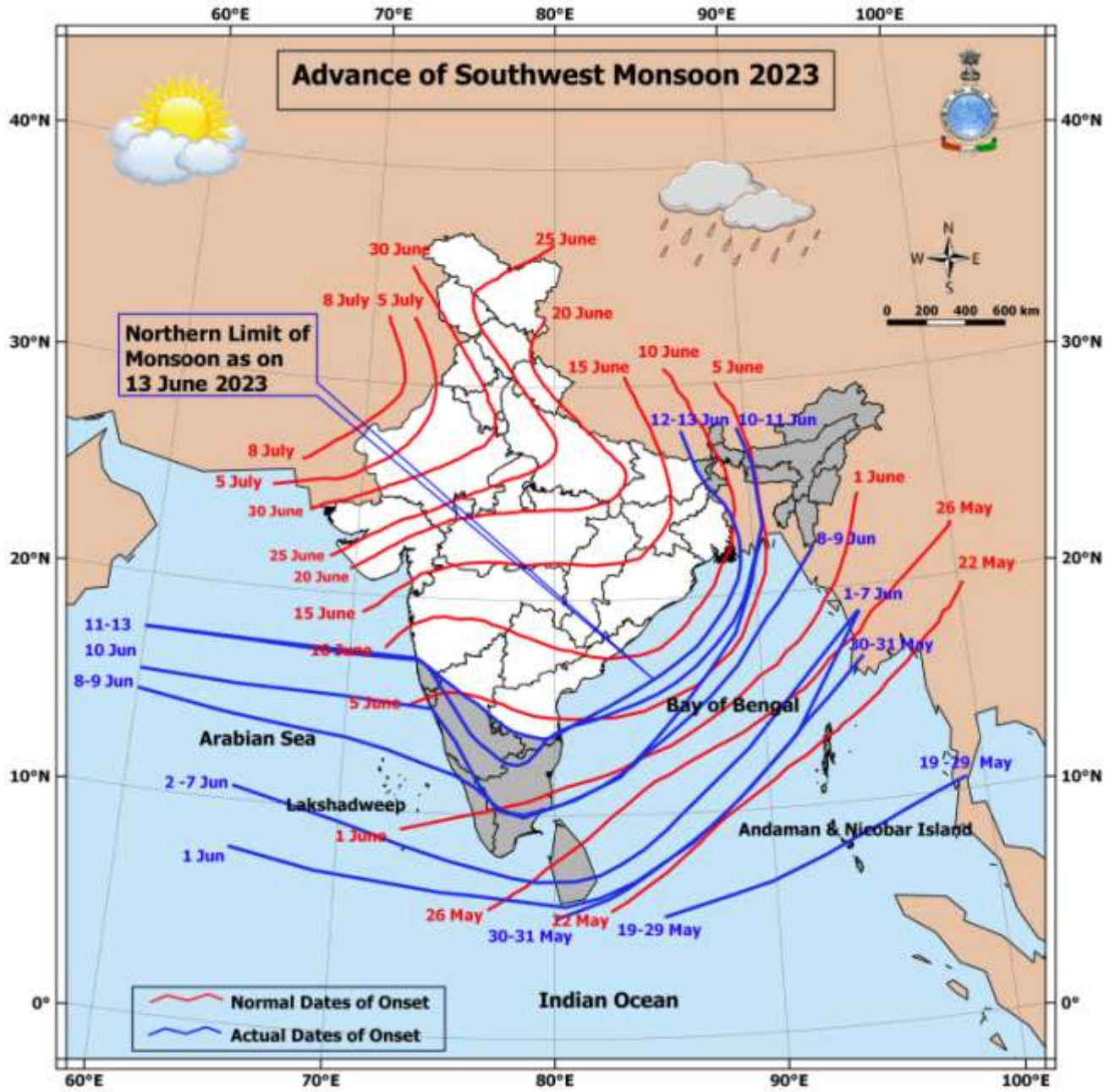
Fig. 5: Departure from Normal of Minimum Temperatures Dated 13.06.2023

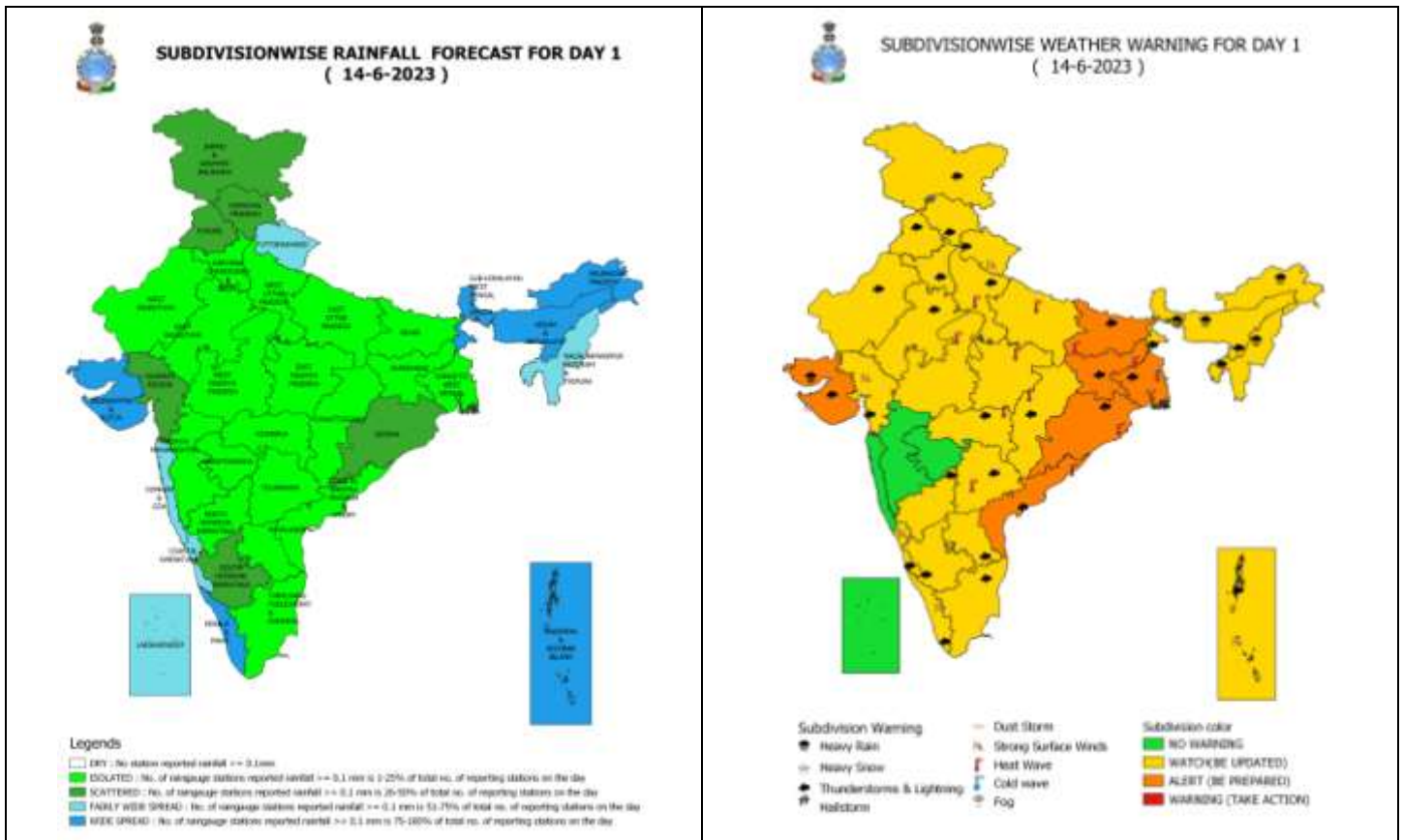


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Fig. 6: Advance of Southwest Monsoon





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♦ **Hailstorm with thunderstorm, lightning and gusty winds (wind speed 40-50 kmph)** very likely at isolated places over Himachal Pradesh.

♦ **Thunderstorm with lightning & squall (speed 60-70 kmph)** very likely at isolated places over Uttarakhand; **with lightning & gusty winds (speed 40-50 kmph)** at isolated places over Karnataka; **with lightning & gusty winds (speed 30-40 kmph)** at isolated places over Vidarbha, Chhattisgarh, Andaman & Nicobar Islands, Jharkhand, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe; **with lightning** at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh, Rajasthan, West Bengal & Sikkim, Odisha, Bihar, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Gujarat State and Tamil Nadu, Puducherry & Karaikal.

♦ **Heat Wave conditions** very likely in isolated pockets of Uttar Pradesh, Madhya Pradesh, Vidarbha, Chhattisgarh, Gangetic West Bengal, Odisha, Bihar, Jharkhand, Coastal Andhra Pradesh & Yanam, Telangana.

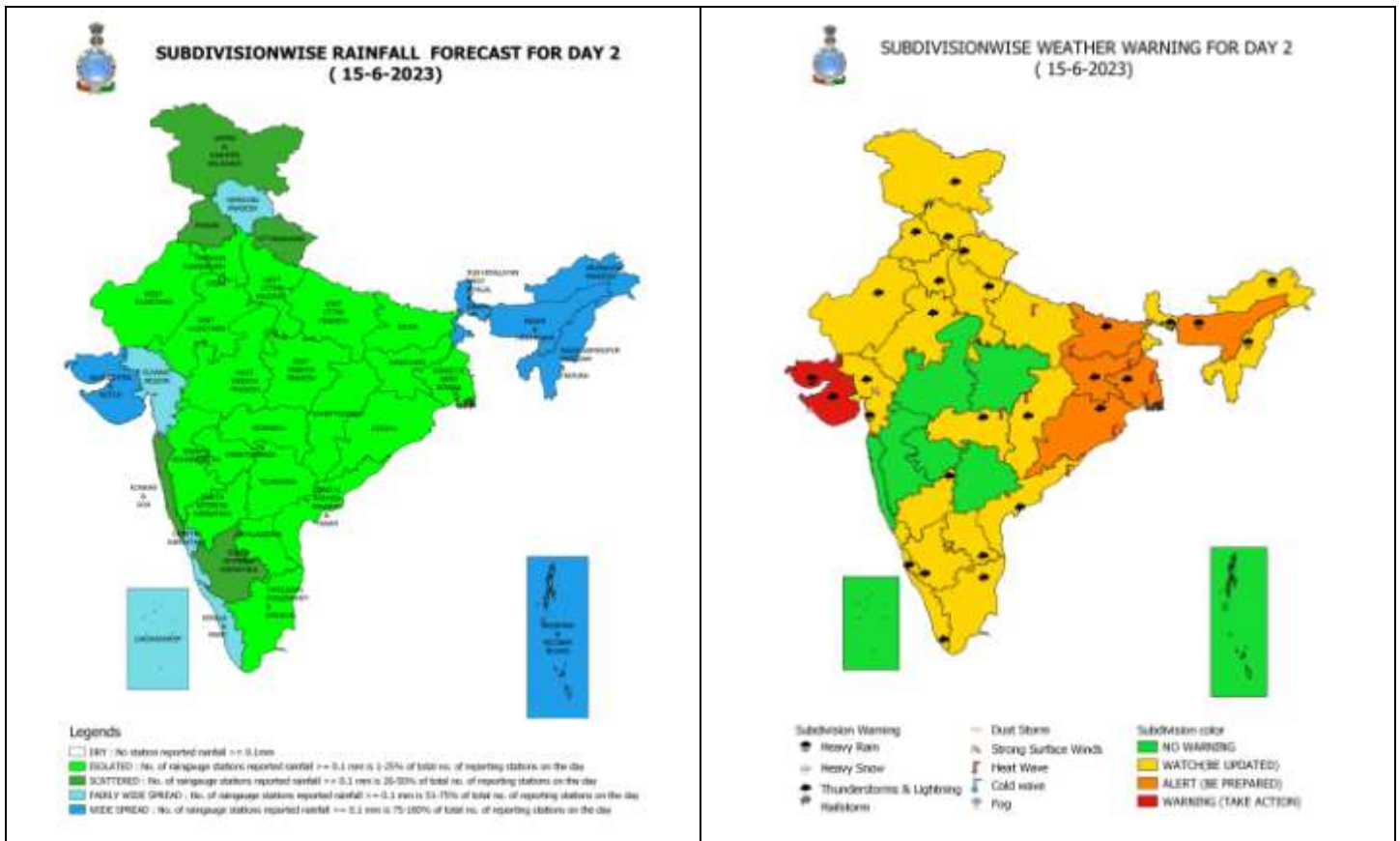
♦ **Gale wind** speed reaching 145-155 kmph gusting to 170 kmph prevailing over Northeast Arabian Sea. **Gale wind** speed reaching 60-70 kmph gusting to 80 kmph prevailing over Eastcentral Arabian Sea. **Gale wind** speed reaching 65-75 kmph gusting to 85 kmph along & off Porbandar & Devbhoomi Dwarka district coasts. Fishermen are advised not to venture into these areas.

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**15 June (Day 2):** ♦ **Heavy to very heavy rainfall with extremely heavy falls** very likely at isolated places over Saurashtra & Kutch and Assam & Meghalaya; **Heavy to very heavy rainfall** at isolated places over Sub-Himalayan West Bengal & Sikkim, Arunachal Pradesh and **heavy rainfall** at isolated places over Nagaland, Manipur, Mizoram & Tripura, Gujarat Region.

♦ **Hailstorm with thunderstorm, lightning and gusty winds (wind speed 40-50 kmph)** very likely at isolated places over Himachal Pradesh.

♦ **Thunderstorm with lightning & gusty winds (speed 40-50 kmph)** very likely at isolated places over Uttarakhand; **with lightning & gusty winds (speed 30-40 kmph)** at isolated places over Vidarbha, Chhattisgarh, Jharkhand, Karnataka, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe; **with lightning** at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Punjab, Haryana, Chandigarh & Delhi, West Uttar Pradesh, Rajasthan, Gangetic West Bengal, Odisha, Bihar, Gujarat State and Tamil Nadu, Puducherry & Karaikal.

♦ **Heat Wave conditions** very likely in isolated pockets of East Uttar Pradesh, Vidarbha, Chhattisgarh, Gangetic West Bengal, Odisha, Bihar, Jharkhand and Coastal Andhra Pradesh & Yanam.

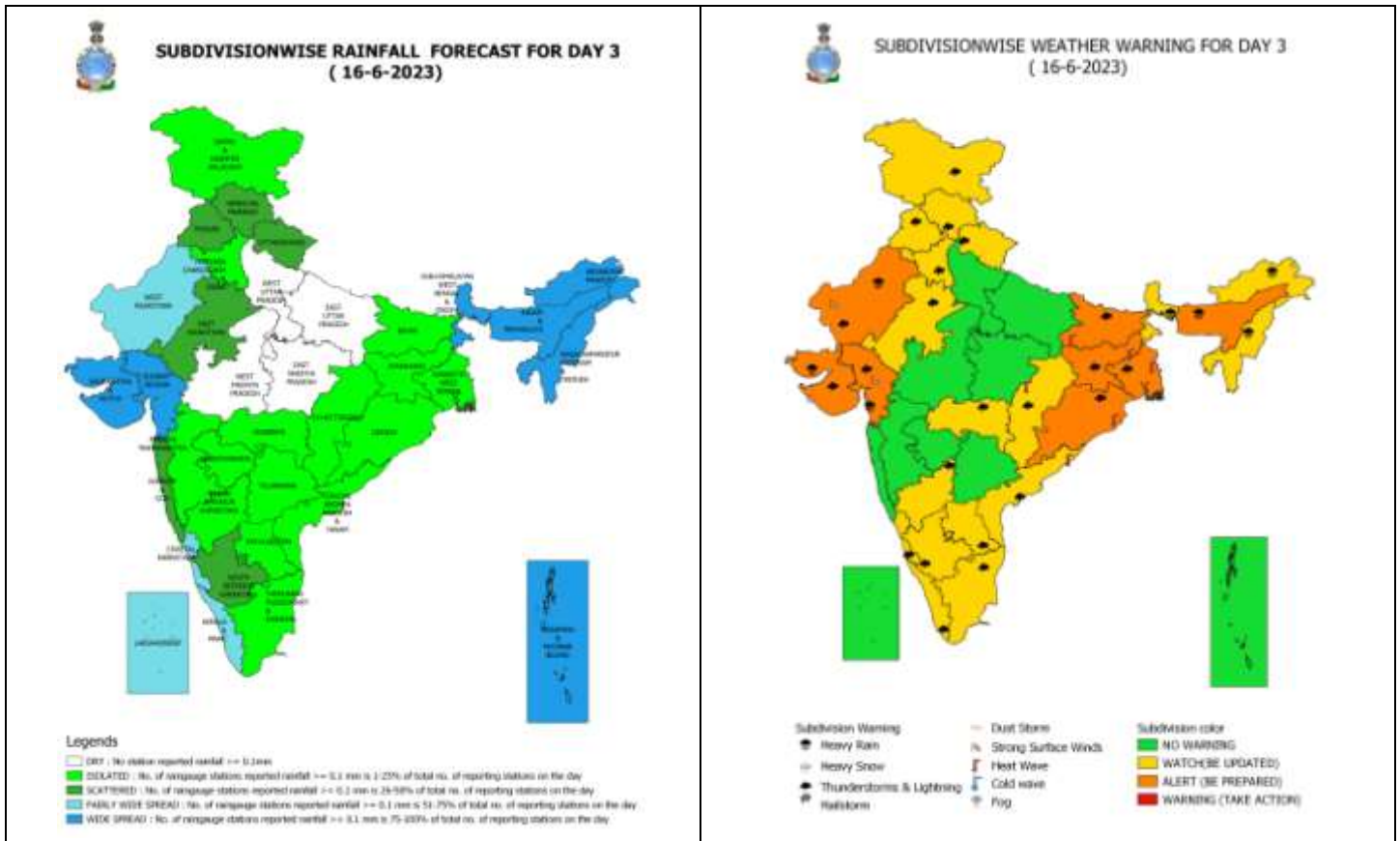
♦ **Gale wind speed reaching 125-135 kmph gusting 150** is likely to prevail over northeast Arabian Sea. **Gale wind 125-135 kmph gusting to 150 kmph** over Saurashtra & Kutch coasts. **Squally wind 45-55 kmph gusting to 65 kmph** over Eastcentral Arabian Sea. Fishermen are advised not to venture into these areas.

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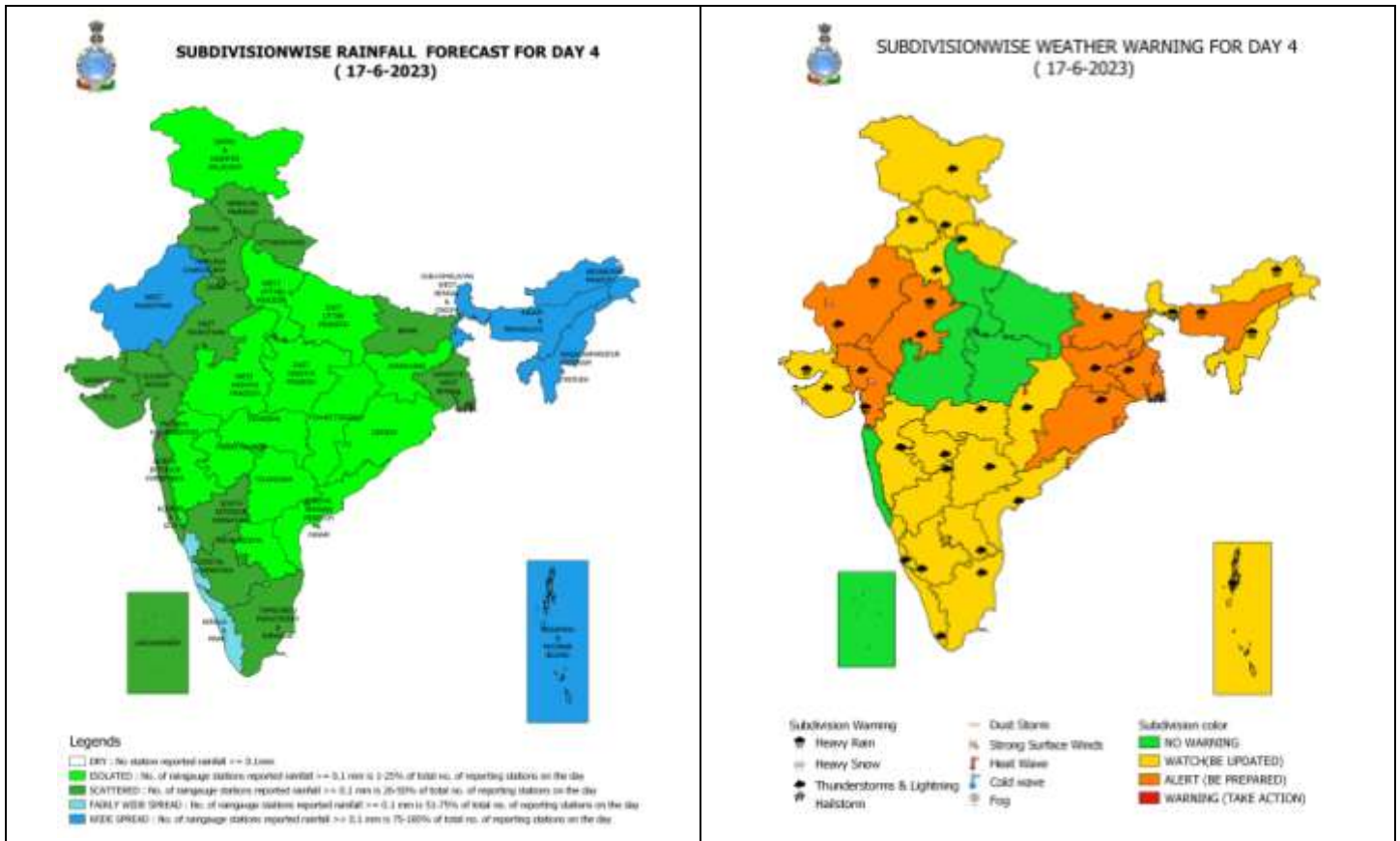


**16 June (Day 3):** ♦ **Heavy to very heavy rainfall with extremely heavy falls** very likely at isolated places over Gujarat state, West Rajasthan and Assam & Meghalaya; **Heavy to very heavy rainfall** at isolated places over Sub-Himalayan West Bengal & Sikkim and **heavy rainfall** at isolated places over Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura.

♦ **Thunderstorm with lightning & gusty winds (speed 40-50 kmph)** very likely at isolated places over Uttarakhand; **with lightning & gusty winds (speed 30-40 kmph)** at isolated places over Vidarbha, Chhattisgarh, Jharkhand, Karnataka, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe; **with lightning** at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Himachal Pradesh, Punjab, Haryana, Chandigarh & Delhi, Rajasthan, Gangetic West Bengal, Odisha, Bihar, Gujarat state and Tamil Nadu, Puducherry & Karaikal.

♦ **Heat Wave conditions** very likely in isolated pockets of Chhattisgarh, Gangetic West Bengal, Odisha, Bihar, Jharkhand and Coastal Andhra Pradesh & Yanam.

♦ **Squally wind 50-60 kmph gusting to 70 kmph** over north Gujarat and **speed reaching 45-55 kmph gusting to 65 kmph** is likely over Northeast & Eastcentral Arabian Sea and south Rajasthan. Fishermen are advised not to venture into these areas.



**17 June (Day 4):** ♦ **Heavy to very heavy rainfall with extremely heavy falls** very likely at isolated places over south Rajasthan and Assam & Meghalaya; **Heavy to very heavy rainfall** at isolated places over north Gujarat Region and **heavy rainfall** at isolated places over Andaman & Nicobar Islands, Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura, Saurashtra & Kutch, Sub-Himalayan West Bengal & Sikkim.

♦ **Thunderstorm with lightning & gusty winds (speed 40-50 kmph)** very likely at isolated places over Uttarakhand; **with lightning & gusty winds (speed 30-40 kmph)** at isolated places over Vidarbha, Chhattisgarh, Jharkhand, Karnataka, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe; **with lightning** at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Himachal Pradesh, Punjab, Haryana, Chandigarh & Delhi, Rajasthan, Gangetic West Bengal, Odisha, Bihar, Madhya Maharashtra, Marathwada, Gujarat state, Telangana and Tamil Nadu, Puducherry & Karaikal.

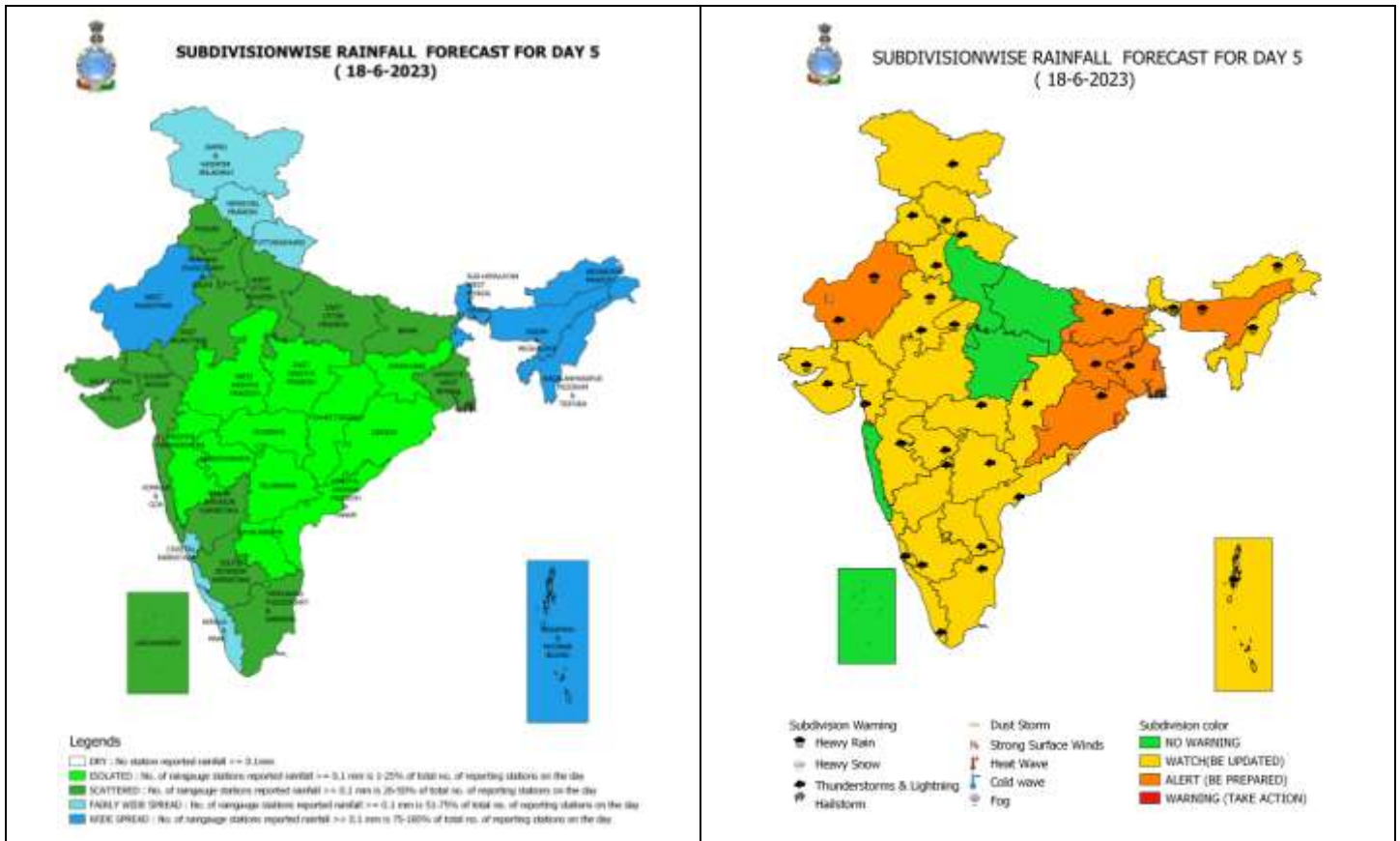
♦ **Heat Wave conditions** very likely in isolated pockets of Chhattisgarh, Gangetic West Bengal, Odisha, Bihar, Jharkhand and Coastal Andhra Pradesh & Yanam.

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**18 June (Day 5):** ♦ **Heavy to very heavy rainfall with extremely heavy falls** very likely at isolated places over Assam & Meghalaya and **heavy rainfall** at isolated places over East Rajasthan, West Madhya Pradesh, Andaman & Nicobar Islands, Arunachal Pradesh, Nagaland, Manipur, Mizoram & Tripura, Saurashtra & Kutch, Sub-Himalayan West Bengal & Sikkim.

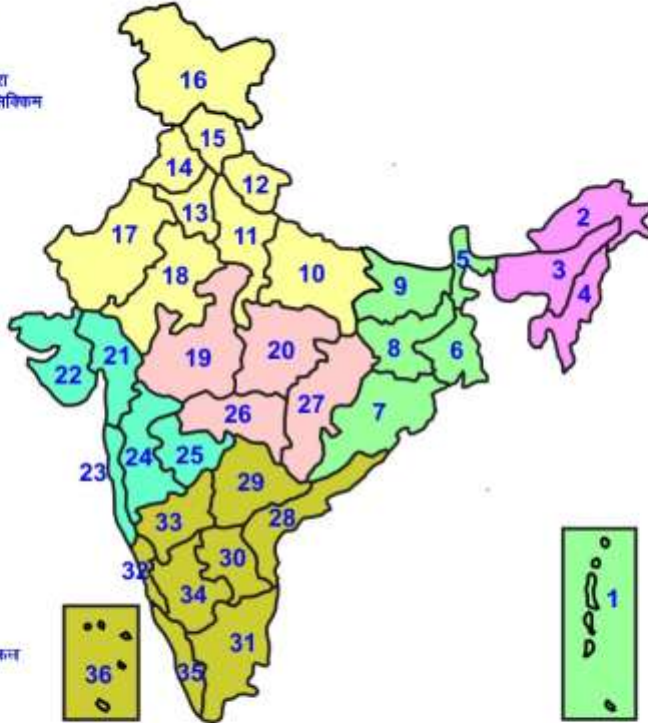
♦ **Thunderstorm with lightning & gusty winds (speed 40-50 kmph)** very likely at isolated places over Uttarakhand; **with lightning & gusty winds (speed 30-40 kmph)** at isolated places over Vidarbha, Chhattisgarh, Jharkhand, Karnataka, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe; **with lightning** at isolated places over Jammu, Kashmir, Ladakh, Gilgit, Baltistan & Muzaffarabad, Himachal Pradesh, Punjab, Haryana, Chandigarh & Delhi, Rajasthan, Gangetic West Bengal, Odisha, Bihar, Madhya Maharashtra, Marathwada, Gujarat state, Telangana and Tamil Nadu, Puducherry & Karaikal.

♦ **Heat Wave conditions** very likely in isolated pockets of Chhattisgarh, Gangetic West Bengal, Odisha, Bihar, Jharkhand and Coastal Andhra Pradesh & Yanam.



## LEGENDS

- 1 अंडमान और निकोबार द्वीप समूह
- 2 अरुणाचल प्रदेश
- 3 असम और मेघालय
- 4 नागालैंड मनीपुर मीज़ोरम और त्रिपुरा
- 5 उप हिमालय पश्चिम बंगाल एवं सिक्किम
- 6 पश्चिम बंगाल
- 7 ओडिशा
- 8 झारखंड
- 9 बिहार
- 10 पूर्वी उत्तर प्रदेश
- 11 पश्चिम उत्तर प्रदेश
- 12 उत्तराखंड
- 13 हरियाणा चंडीगढ़ एवं दिल्ली
- 14 पंजाब
- 15 हिमाचल प्रदेश
- 16 जम्मू एवं कश्मीर एवं लद्दाख
- 17 पश्चिम राजस्थान
- 18 पूर्वी राजस्थान
- 19 पश्चिम मध्य प्रदेश
- 20 पूर्वी मध्य प्रदेश
- 21 गुजरात
- 22 सौराष्ट्र
- 23 गुजरात क्षेत्र
- 24 मध्य प्रदेश
- 25 मध्य प्रदेश
- 26 मध्य प्रदेश
- 27 छत्तीसगढ़
- 28 उत्तरी आंध्र प्रदेश एवं बंगल
- 29 तेलंगाना
- 30 आंध्र प्रदेश
- 31 तमिलनाडु, पुदुचेरी एवं केरल
- 32 तमिलनाडु
- 33 आंतरिक उत्तरी केरल
- 34 आंतरिक दक्षिणी केरल
- 35 केरल एवं 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. Orissa
8. Jharkhand
9. Bihar
10. East Uttar Pradesh
11. West Uttar Pradesh
12. Uttarakhand
13. Haryana, Chd & 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. Marathawada
26. Vidharbha
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)

## WARNING

<b>WARNING (TAKE ACTION)</b>
<b>ALERT ( BE PREPARED)</b>
<b>WATCH (BE UPDATED)</b>
<b>NO WARNING ( NO ACTION)</b>

## Probabilistic Forecast

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



Heavy Rain



Heavy Snow



Thunderstorm



Dust Storm



Strong Winds



Visibility



Cyclone



Squall/ Hail



Frost



Cold Wave



Heat Wave



Sea State

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## LEGENDS

### WARNING

WARNING (TAKE ACTION)
ALERT ( BE PREPARED)
WATCH (BE UPDATED)
NO WARNING ( NO ACTION)

### Probabilistic Forecast

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



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 Storm: Wind speed  $> 220$  kmph ( $> 119$  knots)

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