



Tuesday, March 19, 2024 Time of Issue: 0800 hours IST (MORNING)

ALL INDIA WEATHER SUMMARY AND FORECAST BULLETIN

Significant Weather Features:

Weather Systems and Forecast & Warnings:

- ❖ A cyclonic circulation lies over west Vidarbha and a trough/wind discontinuity runs from south Tamil Nadu to west Vidarbha & another trough from Jharkhand to north Coastal Andhra Pradesh in lower tropospheric levels. The anti-cyclonic circulation lies over Westcentral & adjoining Northwest Bay of Bengal off Odisha coast in lower tropospheric levels. Under their influence:
 - ✓ Scattered to fairly widespread light to moderate rainfall with isolated **thunderstorms**, **lightning & gusty winds** very likely over **Gangetic West Bengal and Odisha** till 21st with possibility of **hailstorm & squall (speed reaching 50-60 kmph)** on 19th March, 2024.
 - ✓ Scattered to fairly widespread light to moderate rainfall with **thunderstorms**, **lightning & gusty winds** very likely over Jharkhand, Vidarbha, Chhattisgarh & East Madhya Pradesh during 19th-20th and Bihar during 19th-21st March, 2024. **Isolated hailstorm also very likely over Vidarbha**, East Madhya Pradesh, Chhattisgarh & Jharkhand on 19th March, 2024. Thundersquall (speed reaching 50-60 kmph) very likely over East Madhya Pradesh on 19th March.
 - ✓ Isolated **heavy rainfall** very likely over Odisha on 19th & 20th and Chhattisgarh, Gangetic West Bengal & Jharkhand on 19th March, 2024.
 - ✓ Scattered to fairly widespread light/moderate rainfall with isolated thunderstorms & lightning very likely over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura during 19th-24th March, 2024.
 - ✓ Scattered to fairly widespread light/moderate rainfall with isolated thunderstorms & lightning very likely over Telangana during 19th-20th with possibility of **hailstorm** on 19th and over Coastal Andhra Pradesh & Yanam during 19th-21st March, 2024. Isolated **heavy rainfall** also likely over these sub-divisions on 20th March, 2024.
 - ✓ Isolated light rainfall with thunderstorm & lightning very likely over Marathwada during 19th-20th with possibility of **hailstorm** on 19th March.
- ❖ The feeble Western Disturbance seen as a trough in middle tropospheric westerlies along Long. 75°E to the north of Lat. 30°N. It is likely to cause isolated/scattered light rainfall/snowfall over Himachal Pradesh & Uttarakhand on 19th March, 2024.
- ❖ Another fresh Western Disturbance is likely to affect Western Himalayan Region from the night of 20th March, 2024. Under its influence; isolated/scattered light rainfall/snowfall very likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad during 20th-24th and over Himachal Pradesh & Uttarakhand on during 21st-24th March, 2024.

Maximum temperature forecast for next 5 days:

- ❖ Maximum temperatures are above normal by 2-3°C over many parts of the country except over some parts of Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Punjab and Northeast India & south Peninsular India, where these are near normal.
- ❖ Hot and humid weather very likely to prevail over coastal districts of Saurashtra & Kutch during next 4 days; over Kerala & Mahe, Rayalaseema and Tamil Nadu, Puducherry & Karaikal during next 2 days.





Main Weather Observations:

- ❖ Rainfall/snowfall distribution (from 0830 hours IST to 1730 hours IST of yesterday): at isolated places over Arunachal Pradesh, Himachal Pradesh and Uttarakhand.
- ❖ Rainfall distribution (from 0830 hours IST to 1730 hours IST of yesterday): at isolated places over East Madhya Pradesh, Chhattisgarh, Vidarbha, Jharkhand, Gangetic West Bengal, Odisha, Telangana and Assam & Meghalaya.
- ❖ Hailstorm (from 0830 hours IST to 1730 hours IST of yesterday): at isolated places over East Madhya Pradesh (Chhindwara), Vidarbha (Yavatmal) and Chhattisgarh (Kabeerdham, Bemetara & Pendra Road).
- ❖ Significant amount of rainfall (from 0830 hours IST to 1730 hours IST of yesterday) (in cm): East Madhya Pradesh: Seoni, Chhindwara-2 each; Jharkhand: Gumla, Ranchi, Ramgarh-2 each.
- ❖ Minimum Temperature Departures (as on 18-03-2024): Minimum temperatures were above normal (1.6°C to 3.0°C) at isolated places over Bihar, Jharkhand, Chhattisgarh, Madhya Pradesh, Odisha, West Bengal & Sikkim, Arunachal Pradesh, Assam & Meghalaya, Vidarbha, Madhya Maharashtra, Marathwada, Telangana, Kerala & Mahe and North Interior Karnataka. They were below normal (-1.6°C to -3.0°C) at most places over Haryana-Chandigarh-Delhi; at a few places over West Uttar Pradesh and West Rajasthan; at isolated places over East Uttar Pradesh, Punjab and West Rajasthan and near normal over rest parts of the country. Yesterday, the lowest minimum temperature of 9.5°C was reported at Sikar (East Rajasthan) over the plains of the country.
- *Maximum Temperature Departures (as on 18-03-2024): Maximum temperatures were markedly above normal (5.1°C or more) at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad; appreciably above normal (3.1°C to 5.0°C) at a few places over Assam & Meghalaya and Arunachal Pradesh; above normal (1.6°C to 3.0°C) at a few places over Punjab, Himachal Pradesh, Saurashtra & Kutch, Sub-Himalayan West Bengal & Sikkim, Nagaland, Manipur, Mizoram & Tripura and Kerala & Mahe; at isolated places over Uttarakhand, Konkan & Goa, North Interior Karnataka, Coastal Andhra Pradesh & Yanam, Rayalaseema and Tamil Nadu, Puducherry & Karaikal. They were below normal (-1.6°C to -3.0°C) at many places over Gangetic West Bengal; at a few places over Jharkhand, Odisha, Chhattisgarh, East Madhya Pradesh, East Uttar Pradesh and Telangana; at isolated places over Haryana-Chandigarh-Delhi, Rajasthan, West Uttar Pradesh, West Madhya Pradesh, Gujarat Region, Vidarbha and Bihar and near normal over rest parts of the country. Yesterday, the highest maximum temperature of 41.2°C was reported at Cuddapah (Rayalaseema) over the country.





Meteorological Analysis (Based on 0530 hours IST)

- The cyclonic circulation over west Vidarbha & neighbourhood extending upto 1.5 km above mean sea level persists.
- ❖ The trough/wind discontinuity from south Tamil Nadu to cyclonic circulation over west Vidarbha & neighbourhood across interior Karnataka at 0.9 km above mean sea level persists.
- ❖ The trough from Jharkhand to north Coastal Andhra Pradesh across Odisha at 0.9 km above mean sea level persists.
- ❖ The cyclonic circulation over east Assam & neighbourhood at 1.5 km above mean sea level persists.
- The cyclonic circulation over northwest Uttar Pradesh & neighbourhood persists and now seen between 1.5 & 3.1 km above mean sea level.
- The feeble Western Disturbance as a trough in westerlies with its axis at 5.8 km above mean sea level now runs roughly along Long. 75°E to the north of Lat. 30°N.
- ❖ A fresh Western Disturbance is likely to affect Western Himalayan Region from the night of 20th March, 2024.

Weather Forecast for next 7 days (Upto 0830 hours IST of 26th March, 2024)

- ❖ Meteorological sub-division wise detailed 7 days rainfall forecast is given in Table-1.
- ❖ Gradual rise in maximum temperatures by 2-4°C very likely over Northwest India during next 4-5 days.
- ❖ Fall in maximum temperatures by 2-3°C very likely over Central & East India during next 2 days and no significant change thereafter.
- ❖ No significant change in maximum temperatures very likely over rest part of the country during next 5 days.

Weather Outlook for subsequent 3 days (26th-28th March, 2024)

- Scattered to fairly widespread light to moderate rainfall/snowfall likely over Northeast India.
- ❖ Isolated light rainfall likely over Bihar, Jharkhand, Gangetic West Bengal and Andaman & Nicobar Islands.
- Dry weather likely to prevail over rest parts of the country.



राष्ट्रीय मौसम पूर्वानुमान केन्द्र भारत मौसम विज्ञान विभाग पृथ्वी विज्ञान मंत्रालय



National Weather Forecasting Centre India Meteorological Department Ministry of Earth Sciences

Table-1

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

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





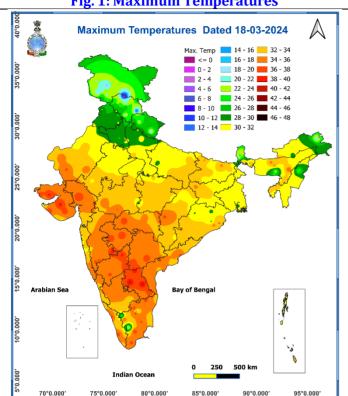


Fig. 2: Departure of Maximum Temperatures

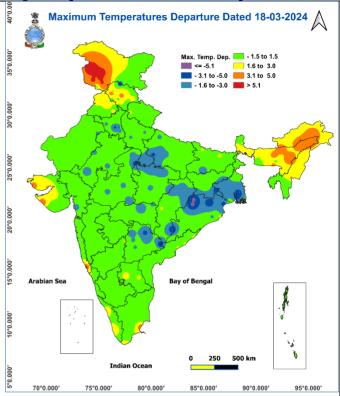


Fig. 3: Minimum Temperatures

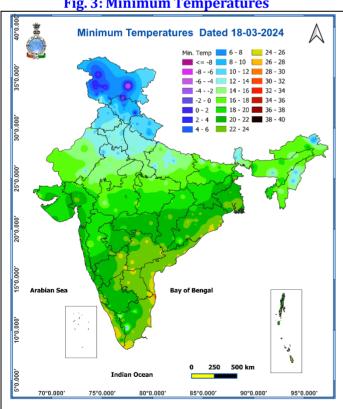


Fig. 4: Departure of Minimum Temperatures

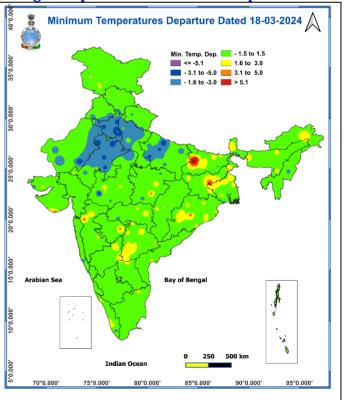
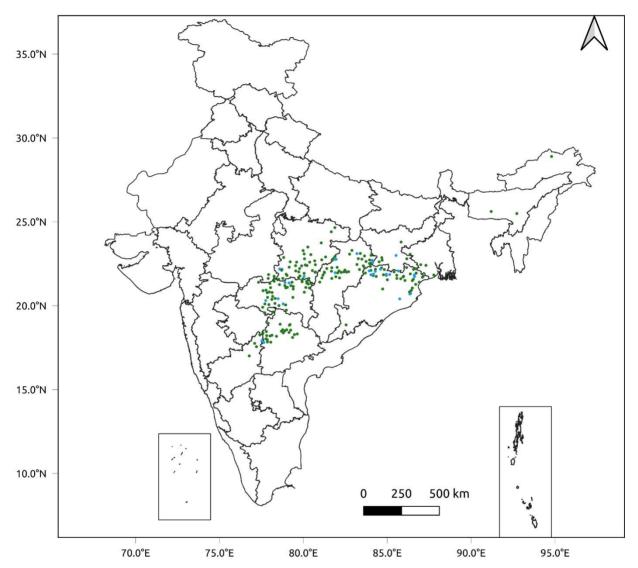




Fig. 5: Accumulated Rainfall (mm) during past 24 hours



24 Hr cumulative rainfall recorded over different stations during 0830 IST of 17-3-2024 to 0830 IST of 18-3-2024

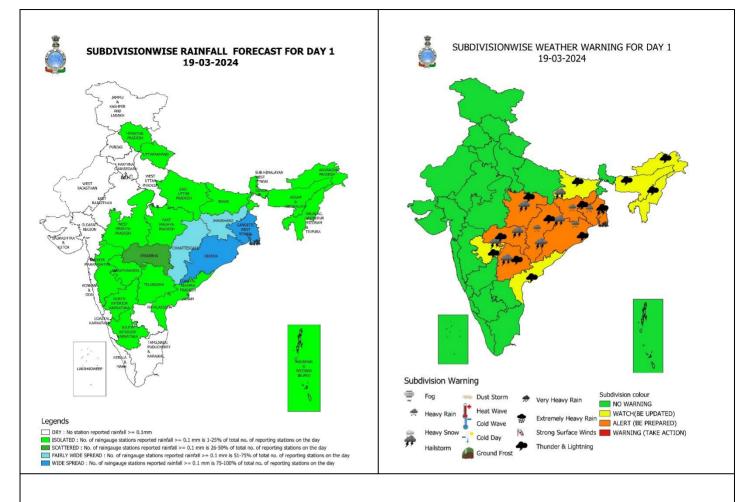


Legends

- 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 (>=204.5 mm)





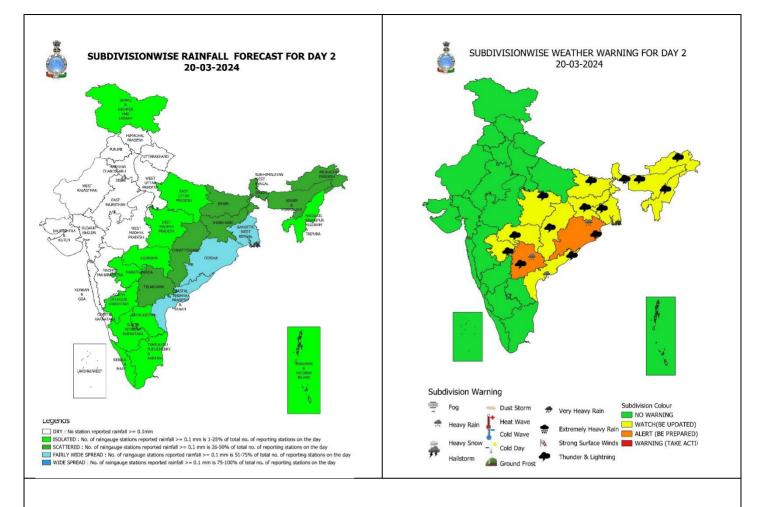


19 March (Day 1):

- ❖ Thundersquall accompanied with lightning & hail (speed reaching 50-60 kmph) very likely at isolated places East Madhya Pradesh, Gangetic West Bengal and Odisha; thunderstorm accompanied with lightning, hail & gusty winds (speed reaching 40-50 kmph) at isolated places over Vidarbha, Telangana, Jharkhand, Marathwada and Chhattisgarh; with lightning & gusty winds (speed reaching 30-40 kmph) at isolated places over Bihar and with lightning at isolated places over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura and Coastal Andhra Pradesh & Yanam.
- **\Display Heavy rainfall** very likely at isolated places over Gangetic West Bengal, Odisha, Jharkhand and Chhattisgarh.





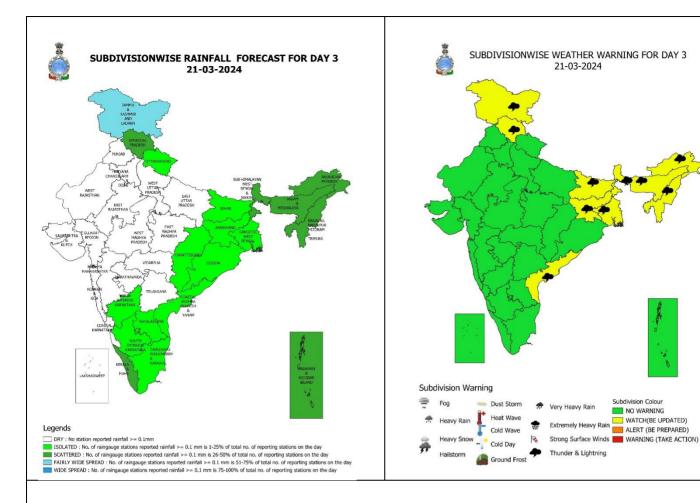


20 March (Day 2):

- ❖ Thunderstorm accompanied with lightning & gusty winds (speed reaching 40-50 kmph) very likely at isolated places over Gangetic West Bengal; with lightning & gusty winds (speed reaching 30-40 kmph) at isolated places over East Madhya Pradesh, Chhattisgarh, Bihar, Odisha, Jharkhand, Marathwada and Telangana and with lightning at isolated places over Vidarbha, Sub-Himalayan West Bengal & Sikkim, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura and Coastal Andhra Pradesh & Yanam.
- **Heavy rainfall** very likely at isolated places over Odisha, Coastal Andhra Pradesh & Yanam and Telangana.





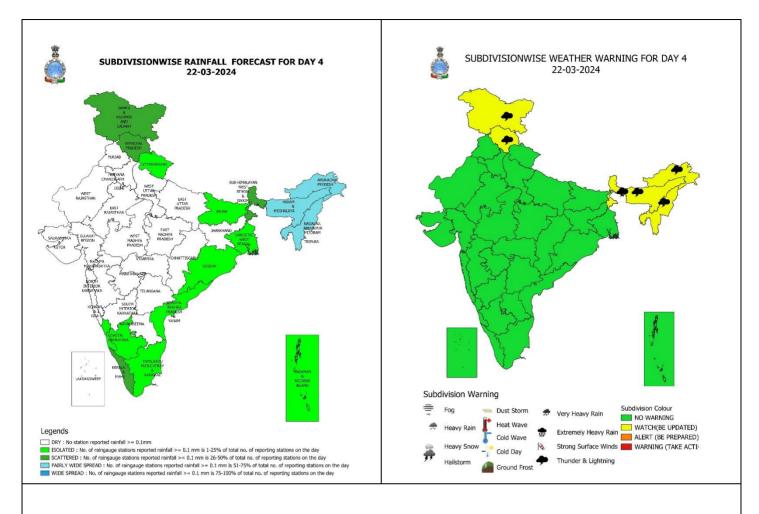


21 March (Day 3):

❖ Thunderstorm accompanied with lightning very likely at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Bihar, Jharkhand, West Bengal & Sikkim, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura and Coastal Andhra Pradesh & Yanam.





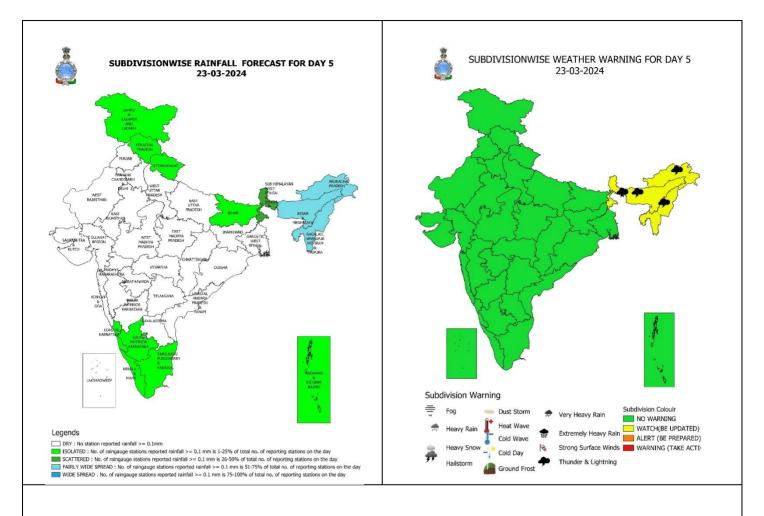


22 March (Day 4):

* Thunderstorm accompanied with lightning likely at isolated places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Sub-Himalayan West Bengal & Sikkim, Arunachal Pradesh, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura.







23 March (Day 5):

❖ Thunderstorm accompanied with lightning likely at isolated places Sub-Himalayan West Bengal & Sikkim, Arunachal Pradesh, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura.







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 Widespred (FWS/ Many Places)	1-25	isolated (ISOL)

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





LEGENDS Probabilistic Forecast WARNING Probability of Occurrence (%) WARNING (TAKE ACTION) Terms ALERT (BE PREPARED) Likely WATCH (BE UPDATED) Very Likely Most Likely > 75 Heavy: 64.5 to 115.5 mm/cm * Very Heavy: 115.6 to 204.4 mm/cm* Extremely Heavy: > 204.4 mm/cm Rain/ Snow When maximum temperature of a station reaches ≥40° C for plains and ≥30° C for hilly regions (a) Based on Departure from normal Heat Wave: Maximum Temperature Departure from normal 4.5° C to 6.4° C. Severe Heat Wave: Maximum Temperature Departure from normal ≥6.5° C (b). Based on Actual maximum temperature **Heat Wave** Heat Wave: When actual maximum temperature ≥45°C Severe Heat Wave: When actual maximum temperature ≥47°C (c). Criteria for heat wave for coastal stations When maximum temperature departure is >4.5°C from normal. Heat Wave may be described provided maximum temperature ≥37°C When maximum temperature remains 40°C **J+**Warm Night Warm Night: When minimum temperature departure 4.5 °C to 6.4 °C Severe Warm Night: When minimum temperature departure >6.4 °C. When minimum temperature of a station ≤10°C for plains and ≤0°C for hilly regions. (a). Based on departure Cold Wave: Minimum Temperature Departure from normal -4.5 °C to -6.4 °C. Severe Cold Wave: Minimum Temperature Departure from normal ≤ -6.5 °C (b) Based on actual Minimum Temperature (for Plains only) Cold Wave Cold Wave : When Minimum Temperature is ≤ 4.0 °C Severe Cold Wave: When Minimum Temperature is ≤ 2.0 °C When Minimum Temperature departure is ≤-4.5 °C & actual Minimum Temperature is ≤ 15 °C When minimum temperature of a station ≤10°C for plains and ≤0°C for hilly regions Based on departure Cold Day: Maximum Temperature Departure from normal -4.5 °C to -6.4 °C. **Cold Day** Severe Cold Day: Maximum Temperature Departure from normal ≤ -6.5 °C Phenomenon of small droplets suspended in air and the horizontal visibility < 1km Moderate Fog: When the visibility between 500-200 metres 0 Dense Fog: when the visibility between 50-200 metres Fog Very Dense Fog: when the visibility < 50 metres 44 Sudden electrical discharges manifested by a flash of light (Lightning) and a sharp rumbling sound (thunder) Thunderstorm An ensemble of particles of dust or sand energetically lifted to great heights by a strong and **Dust/Sand** turbulent wind. Storm Ice deposits on ground 55 Air temperature ≤4°C (over Plains) Frost A strong wind that rises suddenly, lasts for atleast 1 minute. Moderate: Wind speed 52-61 kmph 4 Severe: Wind speed 62-87 kmph Squall Very Severe: Wind speed >87 kmph 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 Sea State Phenomenal: Wind speed >117 kmph (>63 knots) & Wave height >14 metre Cyclonic Storm: Wind speed 62-87 kmph (34-47 knots) Severe Cyclonic Storm: Wind speed 88-117 kmph (48-63 knots) 9 Very Severe Cyclonic Storm: Wind speed 118-165 kmph (64 - 89 knots) Extremely Severe Cyclonic Storm: Wind speed 166-220 kmph (90 -119 knots) Cyclone Super Cyclone Strom: Wind speed >220 kmph (>119 knots)