



Government of India
Ministry of Earth Sciences
India Meteorological Department



Press Release

Date: 14th April, 2024.

Time of Issue: 1245 hours IST

Subject: Ongoing rainfall spell with moderate thunderstorms, lightning, gusty winds & hail over Northwest India likely to continue during next 48 hours and abate thereafter.

Realised weather during past 24 hours till 0830 hours IST of today: (details in Annexure I)

- ❖ **Light to moderate rainfall/snowfall** with isolated thunderstorm & lightning observed at most places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Uttarakhand and Arunachal Pradesh. **Light to moderate rainfall** with isolated thunderstorm & lightning observed at many places over Haryana-Chandigarh-Delhi and Sub-Himalayan West Bengal & Sikkim; at a few places over Punjab, West Rajasthan, Madhya Pradesh, North Interior Karnataka, Kerala & Mahe and Lakshadweep and at isolated places over Uttar Pradesh, East Rajasthan, Vidarbha, Chhattisgarh, Bihar, Odisha, Assam & Meghalaya, Madhya Maharashtra, Marathwada, Gujarat State, Coastal Andhra Pradesh & Yanam, Telangana, Coastal & South Interior Karnataka and Tamil Nadu, Puducherry & Karaikal.
- ❖ **Heavy Rainfall** observed at isolated places over West Uttar Pradesh, West Madhya Pradesh and North Interior Karnataka.
- ❖ **Hailstorm** observed at isolated places over Madhya Pradesh and Uttar Pradesh.
- ❖ **Duststorm** observed at isolated places over West Rajasthan.
- ❖ **Thundersquall/gusty winds** observed at isolated places over Madhya Pradesh.

Weather Systems and Forecast & Warnings: (Annexure II)

- ❖ An intense **Western Disturbance** as a cyclonic circulation lies over northeast Iran with an embedded trough in middle & upper tropospheric westerlies roughly along Long. 55°E to the north of Lat. 26°N with an induced **Low Pressure Area** over southwest Rajasthan.
- ❖ A cyclonic circulation lies over northeast Rajasthan with an east-west trough from this circulation to Gangetic West Bengal across south Uttar Pradesh, south Bihar & north Jharkhand in lower tropospheric levels. High moisture feeding from Arabian Sea is likely into Northwest India on 14th & 15th April.
- ❖ A fresh Western Disturbance is likely to affect Northwest India from 18th April, 2024.
- ❖ Under the influence these weather systems:
 - ✓ Fairly widespread to widespread light to moderate rainfall/snowfall with **thunderstorm, lightning & gusty winds (30-40 kmph)** over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Uttarakhand on 14th & 15th April, 2024.
 - ✓ Scattered to fairly widespread rainfall with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over West Uttar Pradesh, Punjab, Haryana-Chandigarh-Delhi, Rajasthan and Madhya Pradesh on 14th & 15th April, 2024.

- ✓ **Isolated hailstorm** very likely over Jammu Division, Himachal Pradesh & Uttarakhand on 14th & 15th and over Punjab, Haryana-Chandigarh-Delhi, West Uttar Pradesh, Rajasthan and Madhya Pradesh on 14th April, 2024.
 - ✓ **Isolated heavy rainfall/snowfall** very likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad and Himachal Pradesh on 14th & 15th April, 2024.
 - ✓ **Strong surface winds (30-40 kmph)** very likely to prevail over Haryana-Chandigarh-Delhi and Uttar Pradesh on 16th & 17th April, 2024.
- ❖ As the current intense Western Disturbance moves away from Northwest India towards Northeast India and receive fresh moisture feeding from Bay of Bengal to Northeast India, as a result:
- ✓ Fairly widespread to widespread light/moderate rainfall/snowfall with isolated **thunderstorm & lightning** over Arunachal Pradesh and Assam & Meghalaya during 16th-20th April, 2024.
 - ✓ **Isolated heavy rainfall** over Arunachal Pradesh and Assam on 16th & 17th April, 2024.
- ❖ A cyclonic circulation lies over Comorin area & neighbourhood with a trough/wind discontinuity from this circulation to North Interior Karnataka across Tamil Nadu & South Interior Karnataka in lower tropospheric levels. Under their influence; isolated light/moderate rainfall accompanied with **thunderstorm & lightning** very likely over Tamil Nadu, Puducherry-Karaikal, South Interior Karnataka, Kerala & Mahe and Lakshadweep on 14th April, 2024.

Maximum temperature observation and forecast for next 5 days:

- ❖ Yesterday, maximum temperatures were in the range of 38-40°C over most parts of East Uttar Pradesh; at many places over Rayalaseema and Madhya Maharashtra; at a few places over Haryana-Chandigarh-Delhi, Gujarat State, Coastal Andhra Pradesh & Yanam and Tamil Nadu, Puducherry & Karaikal. These were below normal by 2-4 °C over Central and adjoining east & north peninsular India and normal over rest parts of plains of the country.
- ❖ Fall in maximum temperatures by 2-3°C very likely over Northwest India during next 24 hours and gradual rise by 2-4°C during subsequent 4-5 days.
- ❖ Rise in maximum by 4-6°C very likely over Central India during next 3 days and no significant change thereafter.
- ❖ Gradual rise in maximum by 2-4°C very likely over East India and Maharashtra during next 4-5 days.
- ❖ No significant change in maximum temperatures very likely over Gujarat State during next 2 days and gradual rise by 2-4°C during subsequent 3 days.
- ❖ No significant change in maximum temperatures very likely over rest parts of the country.

Heat Wave and Hot & Humid weather warning for next 5 days:

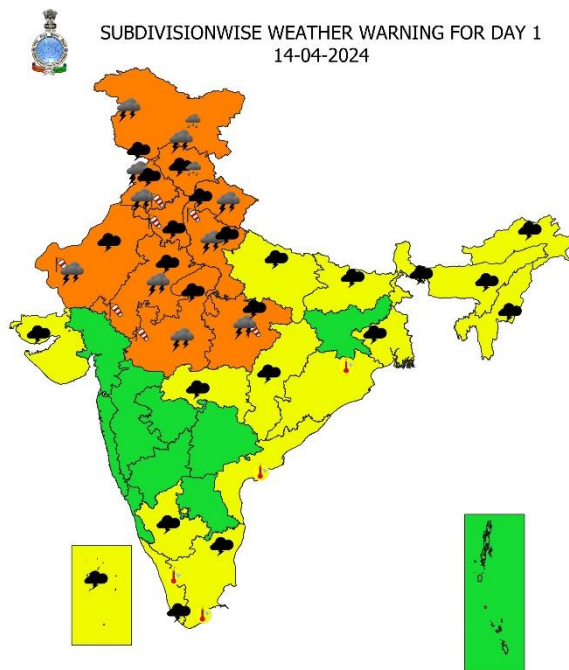
- ❖ **Hot and humid weather** very likely to prevail over coastal Odisha and Coastal Andhra Pradesh & Yanam during next 5 days and Gangetic West Bengal during 16th-18th with **Heat Wave conditions** in isolated pockets of these areas during 15th-18th April, 2024.
- ❖ **Hot and humid weather** very likely to prevail over Tamil Nadu, Puducherry & Karaikal during 14th-18th; Kerala & Mahe during 14th-17th and Konkan & Goa and Rayalaseema during 15th-18th April, 2024.

For more details, kindly refer: https://mausam.imd.gov.in/responsive/all_india_forecast_bulletin.php

Significant amount of rainfall (in cm):

- ❖ **West Madhya Pradesh:** Shamshabad (dist Vidisha) 8, Nateran (dist Vidisha) 6, Lateri (dist Vidisha) 4, Shyampur (dist Sehore) 3;
- ❖ **West Uttar Pradesh:** Mahroni (dist Lalitpur) 7, Talbehat (dist Lalitpur) 2, Lalitpur (dist Lalitpur) 2;
- ❖ **North Interior Karnataka:** Tavaragera (dist Koppal) 7, Dharwad Pto (dist Dharwad) 3, Bevoor (dist Koppal) 3, Mudgal (dist Raichur) 3, Indi (dist Vijayapura) 3;
- ❖ **East Madhya Pradesh:** Majholi (dist Jabalpur) 5, Rehli (dist Sagar) 3, Channodi (dist Shahdol) 3, Banda (dist Sagar) 3, Shahgarh (dist Sagar) 3;
- ❖ **Kerala & Mahe:** Padinjarathara Dam Aws (dist Wynad) 5, Kurudamannil (dist Pathanamthitta) 4, Mavelikara (dist Alapuzha) 4, Karumadi Aws (dist Alapuzha) 3;
- ❖ **Tamil Nadu, Puducherry & Karaikal:** Kovilankulam (dist Virudhunagar) 4, Karuppanadhi Dam (dist Tenkasi), Echanviduthi (dist Thanjavur), Virudhunagar (dist Virudhunagar), Pulipatti (dist Madurai) 3 each;
- ❖ **South Interior Karnataka:** Jayapura (dist Chikkamagaluru) 4, N R Pura (dist Chikkamagaluru) 4, Anavatti (dist Shivamogga) 3;
- ❖ **Jammu-Kashmir:** Pahalgam (dist Anantnag) 3, Gund (dist Ganderbal) 3, Nowgam (dist Kupwara) 3, Banihal (dist Ramban) 3, Srinagar 2;
- ❖ **Coastal Andhra Pradesh & Yanam:** Mangalagiri (dist Guntur) 2, Vijayawada (arg) (dist Ntr District);
- ❖ **Saurashtra & Kutch:** Kandla New (dist Kutch) 2;
- ❖ **West Rajasthan:** Bikaner (pbo) (dist Bikaner) 2, Lunkaransar (dist Bikaner) 1, Bhopalgarh Sr (dist Jodhpur) 1, Bikaner Tehsil Sr (dist Bikaner) 1, Kolayat Magra (dist Bikaner) 1, Pungal Sr (dist Bikaner) 1;
- ❖ **East Rajasthan:** Asnawar Sr (dist Jhalawar) 1, Fatehpur (dist Sikar) 1;
- ❖ **Himachal Pradesh:** Manali (dist Kullu) 1
- ❖ **Madhya Maharashtra:** Yaval (dist Jalgaon) 2, Akalkot (dist Sholapur) 1;
- ❖ **Marathwada:** Kallamb (dist Dharashiv) 1, Beed (dist Beed) 1;
- ❖ **Telangana:** Madnur (dist Kamareddy) 2, Jukkal (dist Kamareddy) 1, Tadwai Mlg (dist Mulugu) 1, Ranjal (dist Nizamabad) 1, Navipet (dist Nizamabad) 1, Kotgiri (dist Nizamabad) 1.

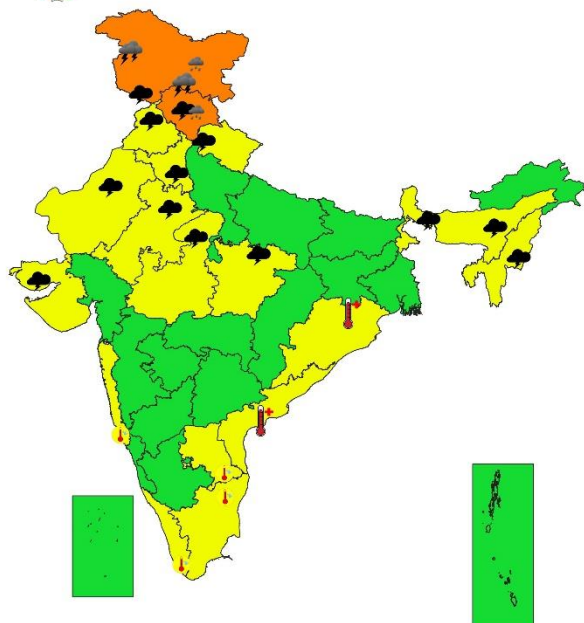
SUBDIVISIONWISE WEATHER WARNING FOR DAY 1
14-04-2024



Subdivision Warning



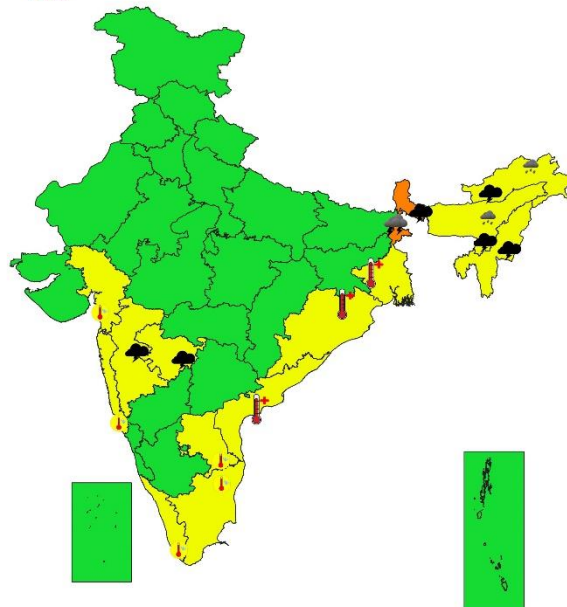
SUBDIVISIONWISE WEATHER WARNING FOR DAY 2
15-04-2024



Subdivision Warning

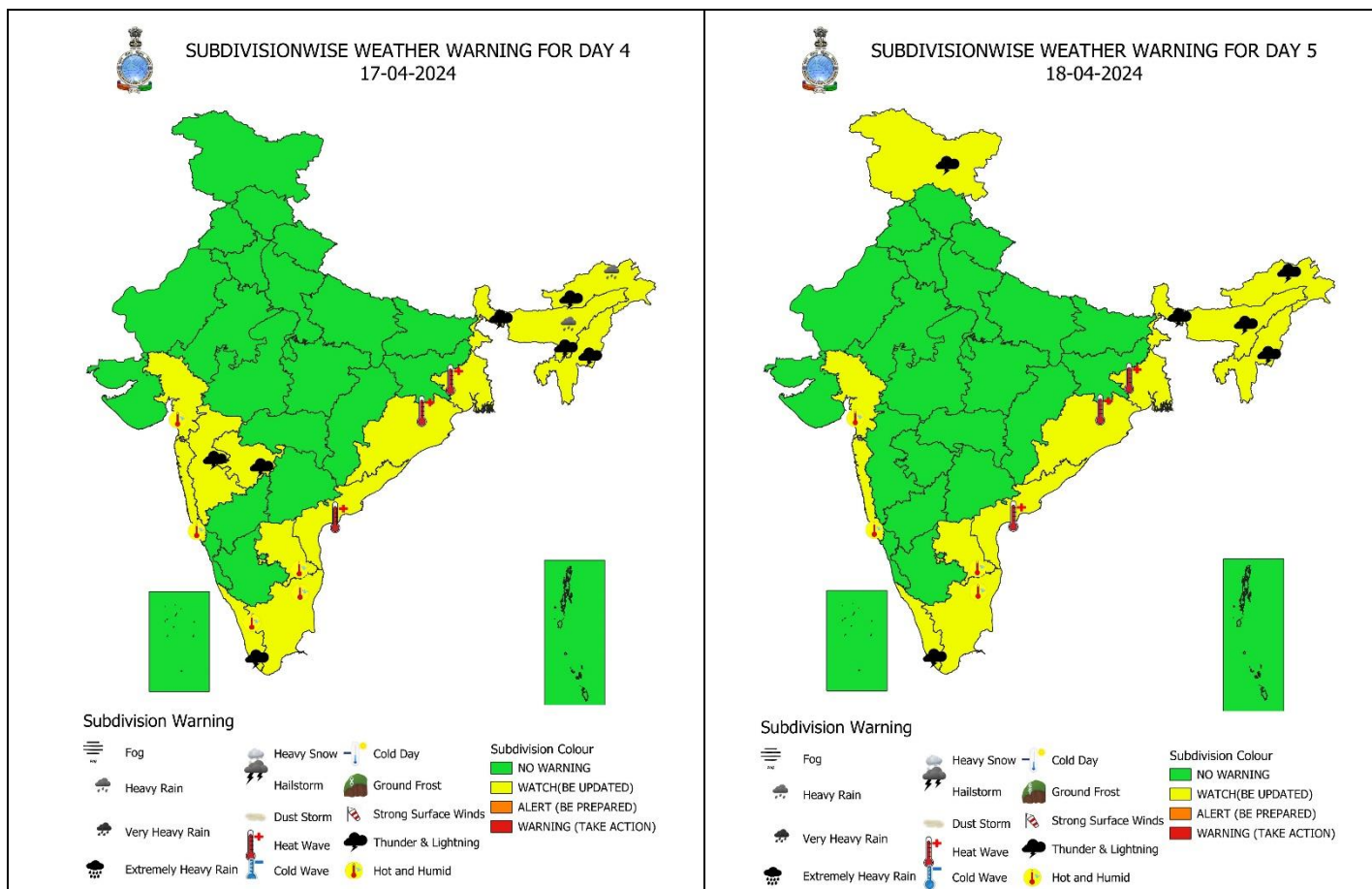


SUBDIVISIONWISE WEATHER WARNING FOR DAY 3
16-04-2024



Subdivision Warning





Impact expected and action suggested due to thunderstorm accompanied with lightning/gusty winds & Hailstorm over Jammu Division, Himachal Pradesh & Uttarakhand on 14th & 15th and over Punjab, Haryana-Chandigarh-Delhi, West Uttar Pradesh, Rajasthan and Madhya Pradesh on 14th April, 2024.

Impact expected:

- ❖ Strong wind/hail may damage plantation, horticulture and standing crops.
- ❖ Hail may injure people and cattle at open places.
- ❖ Partial damage to vulnerable structures due to strong winds.
- ❖ Minor damage to kutcha houses/walls and huts.
- ❖ Loose objects may fly.

Action suggested:

- ❖ Stay indoors, close windows & doors and avoid travel if possible.
- ❖ Take safe shelters; do not take shelter under trees.
- ❖ Do not lie on concrete floors and do not lean against concrete walls.
- ❖ Unplug electrical/ electronic appliances.
- ❖ Immediately get out of water bodies.
- ❖ Keep away from all the objects that conduct electricity.

Impact & Action Suggested due to heavy rainfall over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad and Himachal Pradesh on 14th & 15th April, 2024.

Impacts Expected for Rain/Snow

- ❖ Disruption of Electricity.
- ❖ Landslide, rock fall and mudslides, Blocking/washout of roads/highways/bridges Nallahs.
- ❖ Disruption of traffic flow.
- ❖ Damage to Kuccha and unsecured structures.

Suggested Actions

- ❖ Avoid roadway underpasses, drainage ditches, low lying areas and areas where water collects – they can unexpectedly flood or overflow.
- ❖ Stay away from power lines or electrical wires.
- ❖ Don't stay in kuchcha houses during heavy rainfall as it may collapse anytime soon.
- ❖ Drive carefully.

IMPACT & ACTION SUGGESTED due to Heat Wave Conditions:

Yellow alert Areas (Gangetic West Bengal, coastal Odisha and Coastal Andhra Pradesh & Yanam)

- ❖ Moderate temperature & heat is tolerable for general public but moderate health concern likely for vulnerable people e.g. infants, elderly, people with chronic diseases.
- ❖ Avoid heat exposure.
- ❖ Wear lightweight, light colour, loose, cotton clothes.
- ❖ Cover your head, use a cloth, hat or umbrella.














Agromet advisories for Heavy Rainfall, Gusty Winds, Hailstorm and Heat Wave likely over various parts of the country:

- Use hail nets or hail caps in fruit orchards to prevent mechanical damage and provide mechanical support to horticultural crops & staking to vegetables in North-West India and Madhya Pradesh. Keep the harvested produce at safer places or cover the heaps of harvested produce in the fields with tarpaulin sheets.
- Make necessary arrangements for draining out excess water from crop fields to avoid water stagnation in Jammu & Kashmir, Himachal Pradesh, Arunachal Pradesh and Assam & Meghalaya.
- Withhold harvesting of mustard and pulses in Jammu & Kashmir; mustard in Himachal Pradesh; wheat, mustard, barley and pulses in Uttarakhand; wheat and mustard in Punjab and wheat in Haryana. Keep the already harvested crop at safer places.
- Postpone fresh sowing of rice, soybean, vegetables and maize in *Jhum in* in Arunachal Pradesh. Harvest the mustard crop and keep the harvested produce at the safer place.
- Apply light and frequent irrigation to standing crops to avoid heat stress; provide mulching to conserve soil moisture and minimise evaporation in Odisha and Coastal Andhra Pradesh.

Legends & abbreviations:

- ❖ **Heavy Rain:**64.5-115.5mm; **Very Heavy Rain:**115.6-204.4mm; **Extremely Heavy Rain:** >204.4mm.
- ❖ **Obsy:** Observatory; **AWS:** Automatic Weather Station; **dist:** District; **NH:** National Highway; **KVK:** Krishi Vigyan Kendra; **DVC:** Damodar Valley Corporation; **PTO:** Part Time Office.
- ❖ **Region wise classification of meteorological Sub-Divisions:**
 - **Northwest India:** Western Himalayan Region (Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh and Uttarakhand); Punjab, Haryana-Chandigarh-Delhi; West Uttar Pradesh, East Uttar Pradesh, West Rajasthan and East Rajasthan.
 - **Central India:** West Madhya Pradesh, East Madhya Pradesh, Vidarbha and Chhattisgarh.
 - **East India:** Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim; Gangetic West Bengal, Odisha and Andaman & Nicobar Islands.
 - **Northeast India:** Arunachal Pradesh, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura.
 - **West India:** Gujarat Region, Saurashtra & Kutch, Konkan & Goa, Madhya Maharashtra and Marathawada.
 - **South India:** Coastal Andhra Pradesh & Yanam, Telangana, Rayalaseema, Coastal Karnataka, North Interior Karnataka, South Interior Karnataka, Kerala & Mahe, Tamil Nadu, Puducherry & Karaikal and 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)

Subdivision Warning	 Dust Storm	Subdivision color
 Heavy Rain	 Strong Surface Winds	 NO WARNING
 Heavy Snow	 Heat Wave	 WATCH(BE UPDATED)
 Thunderstorms & Lightning	 Cold wave	 ALERT (BE PREPARED)
 Hailstorm	 Fog	 WARNING (TAKE ACTION)

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

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°C to 6.4°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°C

Warm Night: When minimum temperature departure 4.5°C to 6.4°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°C to -6.4°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°C to -6.4°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)