

Government of India  
Ministry of Earth Sciences  
India Meteorological Department



Press Release

Date: 13<sup>th</sup> April, 2024.

Time of Issue: 1330 hours IST

**Subject: i) Moderate to severe thunderstorms accompanied with gusty winds, hail, lightning likely over Northwest India during 13<sup>th</sup>-15<sup>th</sup> with peak intensity on 13<sup>th</sup> & 14<sup>th</sup> April, 2024.**  
**ii) Moderate thunderstorms accompanied with gusty winds, hail, lightning and light to moderate rainfall spell likely to continue over Central India on today and decrease significantly thereafter.**

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

- ❖ **Hailstorm occurred** at isolated places over Madhya Pradesh and Marathwada.
- ❖ **Thundersquall/gusty winds** observed at isolated places over Madhya Pradesh and Vidarbha.
- ❖ **Thunderstorm** observed at many places over Vidarbha, Kerala & Mahe; at some parts of Madhya Pradesh, Telangana, Tamil Nadu, Puducherry & Karaikal, Interior Karnataka and at isolated places over Uttar Pradesh, West Rajasthan, Chhattisgarh, Sub-Himalayan West Bengal & Sikkim, Assam & Meghalaya, Odisha, Jharkhand, Madhya Maharashtra, Marathwada, Coastal Karnataka and Coastal Andhra Pradesh.

**Weather Systems and Forecast & Warnings: (Annexure II)**

- ❖ An intense **Western Disturbance** as a cyclonic circulation lies over Iran with a trough aloft in middle & upper tropospheric westerlies roughly along long. 56°E to the north of lat. 34°N. High moisture feeding from Arabian Sea is likely into Northwest India during 13<sup>th</sup>-15<sup>th</sup> April. A cyclonic circulation lies over south Rajasthan & adjoining north Gujarat and a trough runs from this cyclonic circulation to north Odisha in lower tropospheric levels. A cyclonic circulation lies over Comorin area & neighbourhood in lower tropospheric levels and a trough/wind discontinuity runs from this cyclonic circulation to Konkan and Goa in lower tropospheric levels. Under the influence of the above 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 during 13<sup>th</sup>-15<sup>th</sup> 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 and Rajasthan during 13<sup>th</sup>-15<sup>th</sup> April, 2024.
  - ✓ Isolated to scattered light/moderate rainfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over Kerala & Mahe, Tamil Nadu, Puducherry-Karaikal, Coastal Karnataka, Telangana, Madhya Maharashtra, Marathwada, Vidarbha, Chhattisgarh, Odisha, Jharkhand, Bihar, Gangetic West Bengal and Andaman & Nicobar Islands and with **gusty winds (40-50 kmph)** very likely over interior Karnataka and Madhya Pradesh on 13<sup>th</sup> & 14<sup>th</sup> April.
  - ✓ **Isolated hailstorm very likely over** Jammu and Kashmir, Rajasthan and East Madhya Pradesh on 13<sup>th</sup>; Himachal Pradesh, Punjab, Haryana and *West Madhya Pradesh* on 13<sup>th</sup> & 14<sup>th</sup> and Uttarakhand & West Uttar Pradesh on 14<sup>th</sup> April.
  - ✓ **Isolated heavy rainfall/snowfall** very likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad during 13<sup>th</sup>-15<sup>th</sup> and Himachal Pradesh on 14<sup>th</sup> & 15<sup>th</sup> April, 2024.
  - ✓ **Dust storm/thundersquall (50-60 kmph)** very likely over Rajasthan and Uttar Pradesh today.
  - ✓ **Strong surface winds (30-40 kmph)** very likely to prevail over Haryana-Chandigarh-Delhi and Uttar Pradesh during 16<sup>th</sup>-18<sup>th</sup> April, 2024.

- ❖ A cyclonic circulation lies over central Assam & neighbourhood and another over northeast Assam in lower tropospheric levels. Under its influence:
  - ✓ Scattered to fairly widespread light/moderate rainfall/snowfall with isolated **thunderstorm & lightning** very likely over Arunachal Pradesh; isolated to scattered light to moderate rainfall with isolated **thunderstorm, lightning & gusty winds** over Sub-Himalayan West Bengal & Sikkim, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura during next 7 days.
  - ✓ *Isolated heavy rainfall very likely over Arunachal Pradesh and Assam on 16<sup>th</sup> & 17<sup>th</sup> April, 2024.*

#### Maximum temperature observation and forecast for next 5 days:

- ❖ Yesterday, maximum temperatures are in the range of 40-42°C over many parts of West Rajasthan; at isolated places over Saurashtra & Kutch, Rayalaseema and Madhya Maharashtra. These are above normal by 2-4 °C over West Rajasthan.
- ❖ **Gradual fall by 2-4°C very likely over Northwest India during next 2 days and no significant change thereafter.**
- ❖ No significant change in maximum temperatures very likely over Central & south peninsular India and 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 many parts of West India during next 24 hours and gradual rise by 3-4°C during subsequent 4 days.
- ❖ Gradual rise by 3-5°C very likely over many parts of East India during next 4-5 days.
- ❖ No significant change in maximum temperatures very likely over rest parts of the country.

#### Heat wave, Warm Night and Hot & Humid weather warning for next 5 days:

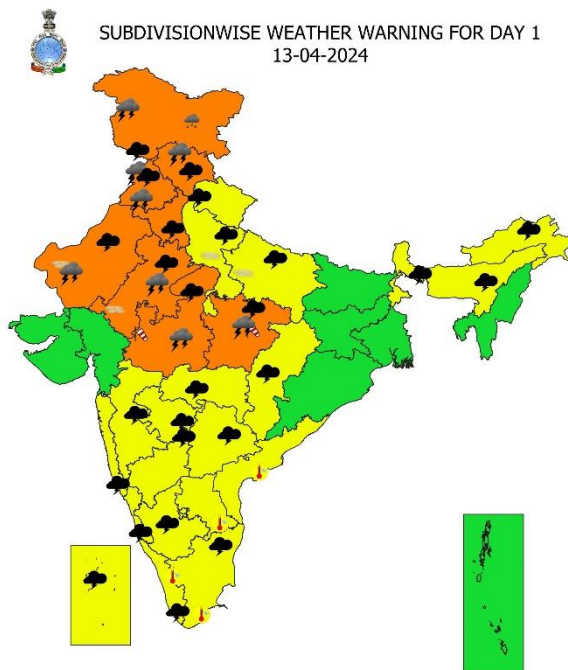
- ❖ **Hot and humid weather** very likely to prevail over Kerala & Mahe, Rayalaseema, Tamil Nadu, Puducherry & Karaikal during 13<sup>th</sup>-17<sup>th</sup>; over, Coastal Andhra Pradesh & Yanam on 13<sup>th</sup> & 14<sup>th</sup>; Gujarat State and Coastal Karnataka during 15<sup>th</sup>-17<sup>th</sup> and Gangetic West Bengal on 16<sup>th</sup> & 17<sup>th</sup> April, 2024.
- ❖ **Heat Wave conditions** likely over Odisha and Coastal Andhra Pradesh & Yanam during 15<sup>th</sup>-17<sup>th</sup> April, 2024.

For more details, kindly refer: [https://mausam.imd.gov.in/responsive/all\\_india\\_forecast\\_bulletin.php](https://mausam.imd.gov.in/responsive/all_india_forecast_bulletin.php)

**Significant amount of rainfall (in cm):**

- ❖ **Tamil Nadu:** Sivakasi (dist Virudhunagar) 7, Bodinaickanur (dist Theni), Coonoor (dist The Nilgiris), Coonoor PTO (dist The Nilgiris) 6 each, Echanviduthi (dist Thanjavur), Billimalai Estate (dist The Nilgiris) 5 each, Vembakottai (dist Virudhunagar), Kil Kotagiri Estate (dist The Nilgiris), Peraiyur (dist Madurai) 4, Singampunari (dist Sivagangai), Kariyapatti (dist Virudhunagar), Virudunagar AWS (dist Virudhunagar), Srivilliputhur (dist Virudhunagar) 4 each,
- ❖ **West Madhya Pradesh:** Nasrullahganj (dist Sehore) 6, Jawar (dist Sehore) 4, Ichhawar (dist Sehore) 4, Lateri (dist Vidisha) 3, Ashta-aws (dist Sehore) 3, Berasia (dist Bhopal) 3, Raisen-aws (dist Raisen) 2,
- ❖ **Kerala:** Kayamkulam & Mavelikkara (both in Alappuzha district) 5 each, Thiruvananthapuram, Airport Chacka ARG (Thiruvananthapuram district) & Palluruthy ARG (Ernakulam district) 4 each, Thiruvananthapuram Airport, NAS Kochi (Ernakulam district), Kayamkulam\_agri (Alappuzha district), Vaikom (Kottayam district), Aluva (Ernakulam district), Kunnamkulam & Enamakkal (both in Thrissur district), Kollengode (Palakkad district), Aluva AWS (Ernakulam district), Kollengode AWS & Erimayur ARG (both in Palakkad district) 3 each,
- ❖ **North Interior Karnataka:** Regode (dist Medak) 3, Banswada (dist Kamareddy) 3, Madnur (dist Kamareddy) 3, Narayankhed(arg) (dist Nirmal) 3, Jukkal (dist Kamareddy) 2, Pargi(arg) (dist Vikarabad) 2, Banswada(arg) (dist Kamareddy) 2,
- ❖ **South Interior Karnataka:** Regode (dist Medak) 3, Banswada (dist Kamareddy) 3, Madnur (dist Kamareddy) 3, Narayankhed(arg) (dist Nirmal) 3, Jukkal (dist Kamareddy) 2, Pargi(arg) (dist Vikarabad) 2,
- ❖ **Telangana:** Regode (dist Medak) 3, Banswada (dist Kamareddy) 3, Madnur (dist Kamareddy) 3, Narayankhed(arg) (dist Nirmal) 3, Jukkal (dist Kamareddy) 2, Pargi(arg) (dist Vikarabad) 2, Banswada(arg) (dist Kamareddy) 2,
- ❖ **Vidarbha:** Yeotmal (aws) (dist Yeotmal) 6, Chimur (dist Chandrapur) 2, Karanjlad (dist Washim) 2, Agriculture College (dist Nagpur) 2,
- ❖ **Madhya Maharashtra:** Yaval (dist Jalgaon) 4, Pandharpur (dist Sholapur) 1, Bhusawal (dist Jalgaon) 1
- ❖ **Marathwada:** Dharur (dist Beed) 4, Jalkot (dist Latur) 3, Gangakhed (dist Parbhani) 3, Selu (dist Parbhani) 3, Jintur (dist Parbhani) 2, Manjlegaon (dist Beed) 2, Udgir - Imd Parttime (dist Latur) 2, Palam (dist Parbhani) 2, Purna (dist Parbhani) 2, Nilanga (dist Latur) 2,
- ❖ **East Madhya Pradesh:** Kesli (dist Sagar) 3, Sausar (dist Chindwara) 2, Bichhua (dist Chindwara) 2, Umreth (dist Chindwara) 2,

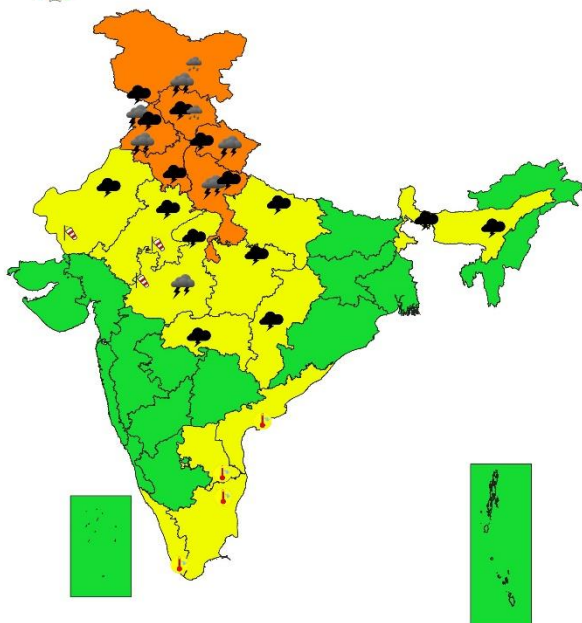
**SUBDIVISIONWISE WEATHER WARNING FOR DAY 1**  
13-04-2024



**Subdivision Warning**



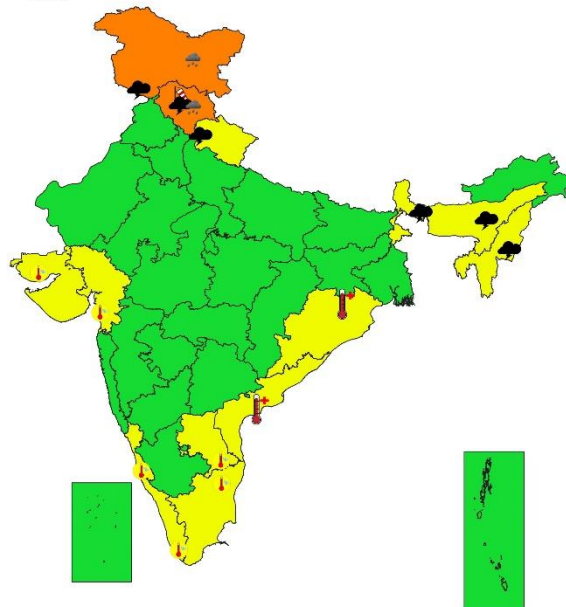
**SUBDIVISIONWISE WEATHER WARNING FOR DAY 2**  
14-04-2024



**Subdivision Warning**

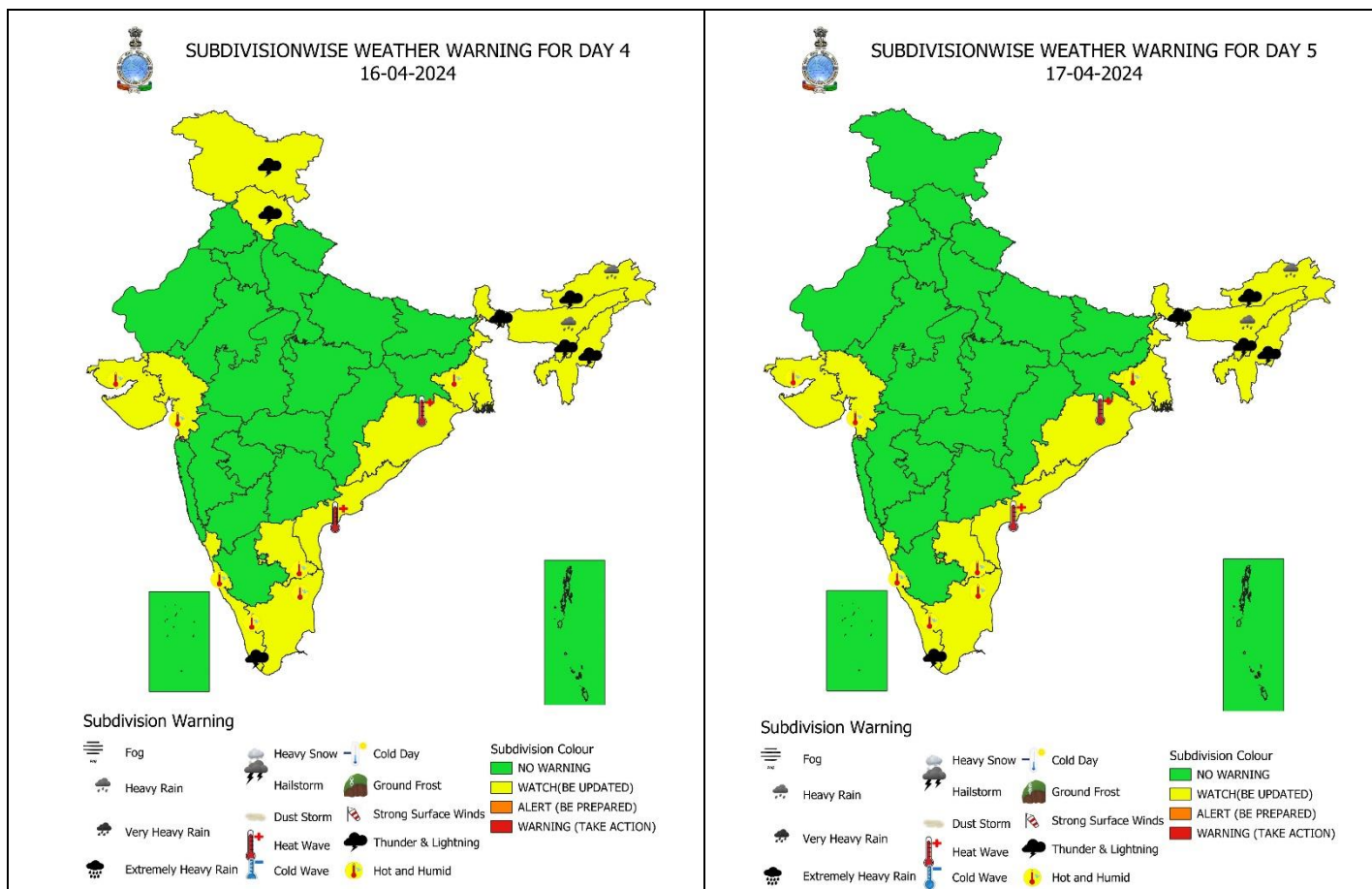


**SUBDIVISIONWISE WEATHER WARNING FOR DAY 3**  
15-04-2024



**Subdivision Warning**





**Impact expected and action suggested due to thunderstorm accompanied with lightning/gusty winds & Hailstorm over East Madhya Pradesh, Jammu, Rajasthan on 13<sup>th</sup>; West Madhya Pradesh Himachal Pradesh, Punjab, Haryana on 13<sup>th</sup> & 14<sup>th</sup> and Uttarakhand & West Uttar Pradesh on 14<sup>th</sup> April.**

#### 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 during 13<sup>th</sup>- 15<sup>th</sup> and Himachal Pradesh on 14<sup>th</sup> & 15<sup>th</sup> 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 kuccha houses during heavy rainfall as it may collapse anytime soon.
- ❖ Drive carefully.

**IMPACT & ACTION SUGGESTED due to Heat Wave Conditions:**

**Yellow alert Areas (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**

- Harvest Withhold harvesting of mustard and pulses in Jammu & Kashmir; mustard in Himachal Pradesh; wheat and mustard in Punjab and wheat in Haryana. Keep the already harvested crop at safer places.
- Undertake immediate harvesting of matured mustard, wheat and barley in Uttarakhand; wheat and mustard in West Uttar Pradesh and keep the harvested produce at safer places.
- Harvest the matured crops, fruits and vegetables during clear weather and keep the harvested produce at safer places or cover the heaps of harvested produce in the fields with tarpaulin sheets in Rajasthan and Madhya Pradesh.
- 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.
- Make necessary arrangements for draining out excess water from crop fields to avoid water stagnation in Tamil Nadu, Jammu & Kashmir and Himachal 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 Marathwada.
  - **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  $4.5^{\circ}\text{C}$  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)