



Government of India
Ministry of Earth Sciences
India Meteorological Department



Press Release

Date: 19th April, 2024

Time of Issue: 1245 hours IST

Subject:

- i. **Heat wave to severe heat wave spell likely to continue over East India till 23rd and heat wave spell over parts of South Peninsular India on 19th April, 2024.**
- ii. **Thunderstorms with lightning, gusty winds and heavy rainfall likely at isolated places over Northeast India during 19th-22nd April, 2024.**
- iii. **Rainfall spell with thunderstorms, lightning and gusty winds over Northwest India on 19th & 20th and a fresh spell on 22nd & 23rd April, 2024.**

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

- ❖ **Heavy rainfall** observed at isolated places over Arunachal Pradesh.
- ❖ **Heat Wave conditions** prevailed in some pockets over Gangetic West Bengal and Odisha and in isolated pockets over Telangana, Rayalaseema and Saurashtra & Kutch.
- ❖ **Warm Night conditions** prevailed in isolated pockets over Saurashtra & Kutch, Madhya Maharashtra, Coastal Andhra Pradesh & Yanam and Rayalaseema.

Weather Systems and Forecast & Warnings: (Annexure II)

- ❖ A Western Disturbance as a cyclonic circulation lies over north Pakistan & neighbourhood with trough aloft in middle & upper tropospheric westerlies roughly along Long. 65°E to the north of Lat. 22°N. An induced cyclonic circulation lies over Pakistan & adjoining Punjab in lower tropospheric levels. A fresh Western Disturbance is likely to affect Northwest India from 22nd April, 2024. Under their influence:
 - ✓ Scattered to fairly widespread light to moderate rainfall/snowfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh on 19th & 20th and isolated to scattered rainfall during 21st-25th April. Isolated to scattered rainfall also likely over Uttarakhand during 19th-25th April, 2024.
 - ✓ Isolated to scattered rainfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over Punjab during 19th-22nd; Haryana-Chandigarh on 19th & 21st; West Rajasthan on 19th & 22nd; East Rajasthan and West Uttar Pradesh on 19th April, 2024.
 - ✓ **Isolated hailstorm** very likely over Himachal Pradesh 19th April, 2024.
 - ✓ **Isolated heavy rainfall/snowfall** very likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad on 19th April, 2024.
 - ✓ **Strong surface winds (25-35 kmph)** very likely to prevail over Haryana-Chandigarh-Delhi, Uttar Pradesh and Bihar on 19th April, 2024.
- ❖ A cyclonic circulation lies over central Assam and a trough runs from northwest Bihar to this cyclonic circulation in lower tropospheric levels. Under their influence:
 - ✓ Fairly widespread to widespread light to moderate rainfall/snowfall accompanied with isolated **thunderstorm & lightning & gusty winds (30-40 kmph)** very likely over Arunachal Pradesh and scattered to fairly widespread rainfall over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura during 19th-24th April, 2024.

- ✓ Scattered light/moderate rainfall/snowfall accompanied with isolated **thunderstorm & lightning & gusty winds (30-40 kmph)** very likely over Sub-Himalayan West Bengal & Sikkim on 19th & 20th April, 2024.
- ✓ **Isolated heavy rainfall** very likely over Arunachal Pradesh during 19th-23rd; Assam & Meghalaya during 19th-21st; Nagaland, Manipur, Mizoram & Tripura on 19th & 21st April, 2024. **Isolated very heavy rainfall** also very likely over Arunachal Pradesh on 20th April, 2024.
- ❖ A trough/Wind discontinuity runs from Marathwada to south Tamil Nadu in lower tropospheric levels. Under its influence:
 - ✓ Isolated light rainfall accompanied with isolated **thunderstorm & lightning** very likely over Madhya Maharashtra and Marathwada during 19th-22nd and Konkan & Goa during 19th-21st April, 2024.
 - ✓ Isolated to scattered rainfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over Vidarbha and Chhattisgarh during 19th-22nd and Madhya Pradesh on 20th & 21st April, 2024.
 - ✓ Scattered to fairly widespread light/moderate rainfall accompanied with isolated **thunderstorm & lightning** very likely over Kerala & Mahe during 19th-21st and isolated rainfall accompanied with **thunderstorm & lightning & gusty winds (30-40 kmph)** over Coastal Andhra Pradesh & Yanam, Rayalaseema, Karnataka, Telangana, Tamil Nadu, Puducherry & Karaikal during 19th-23rd and Lakshadweep on 19th April, 2024.

Maximum temperature observation and forecast for next 5 days:

- ❖ Yesterday, maximum temperatures were in the range of 42-43°C at many places over Marathwada, Telangana, Rayalaseema; at a few places over Madhya Maharashtra, Odisha and at isolated places over Gujarat Region, Vidarbha; 40-42°C at a few places over Saurashtra & Kutch, Madhya Pradesh, Chhattisgarh, Gangetic West Bengal, Jharkhand, East Uttar Pradesh; at isolated places over West Rajasthan, Tamil Nadu, Puducherry & Karaikal. These were above normal by 2-3°C over many parts of the above areas.
- ❖ Rise in maximum temperatures by about 2°C very likely over East India during next 3 days and no significant change thereafter.
- ❖ 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:

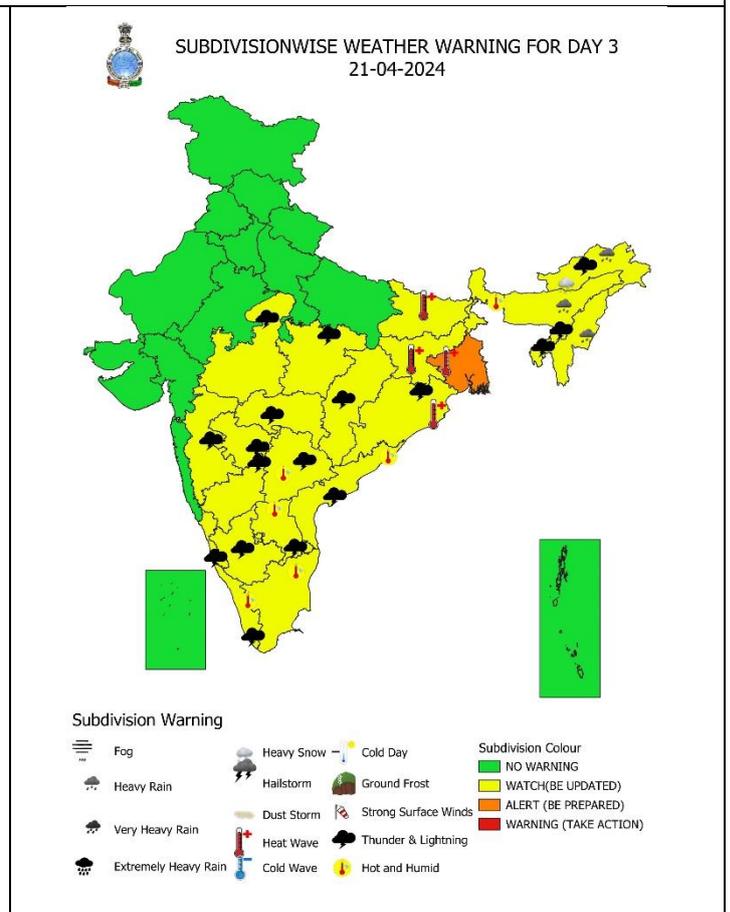
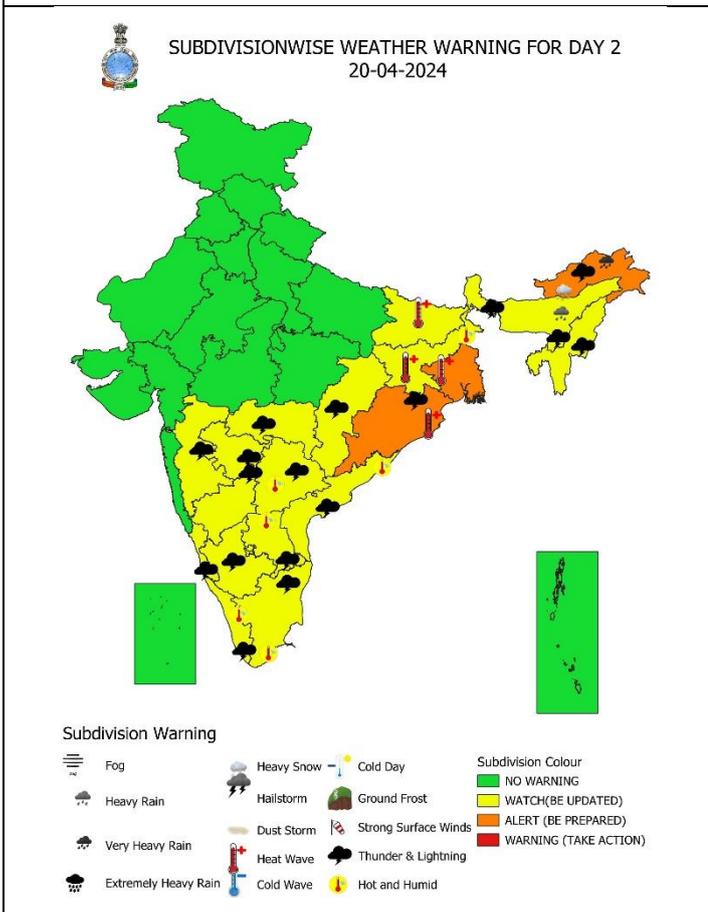
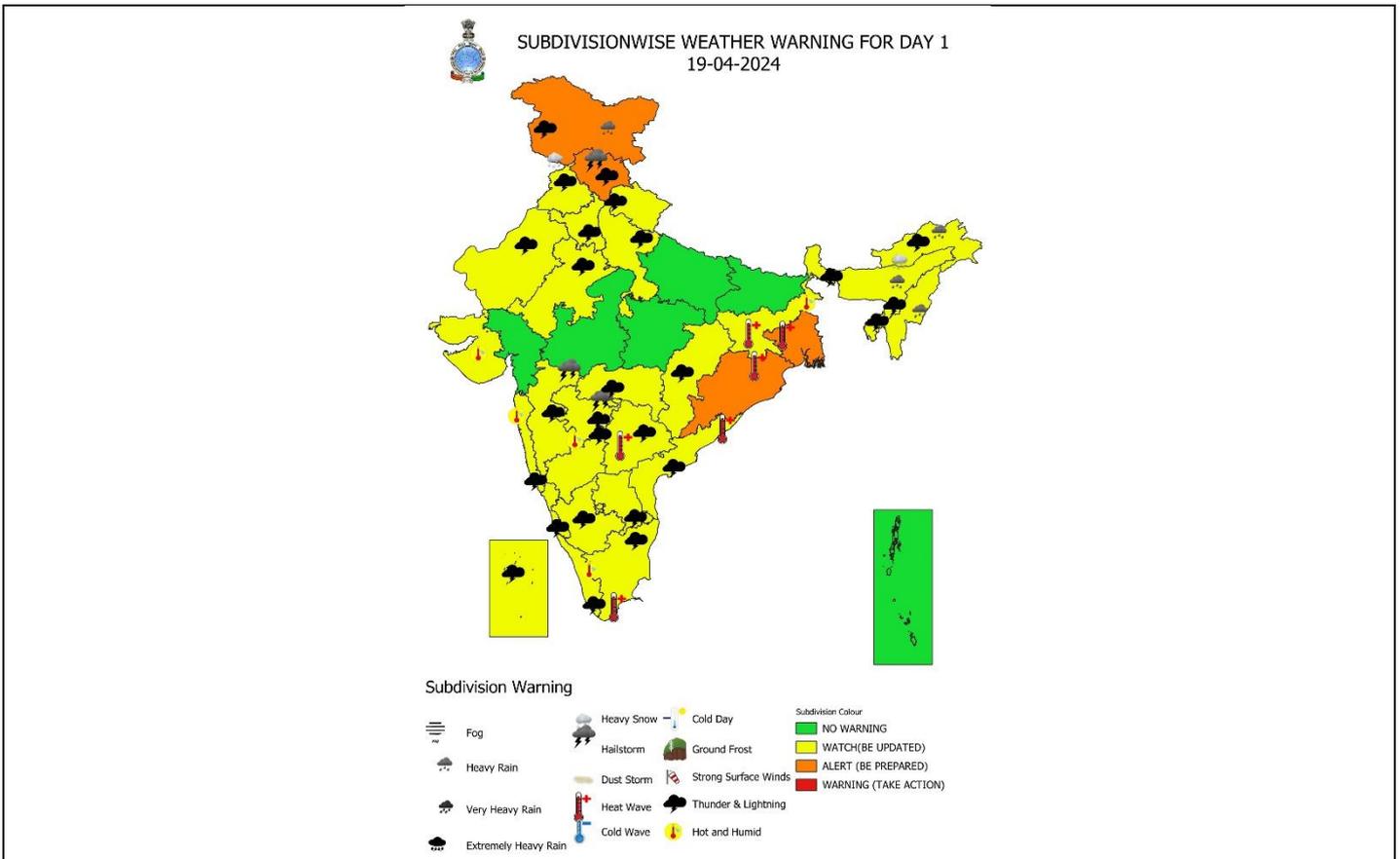
- ❖ **Heat Wave conditions** very likely to prevail in isolated to some pockets of Odisha during 19th-21st; Jharkhand and Gangetic West Bengal during 19th-23rd; Bihar during 20th-23rd; Coastal Andhra Pradesh & Yanam, Rayalaseema, Telangana and interior Tamil Nadu on 19th April, 2024. **Severe Heat Wave conditions also likely in isolated pockets of Odisha on 19th & 20th and Gangetic West Bengal during 19th-22nd April, 2024.**
- ❖ **Hot and humid weather** very likely to prevail over Konkan & Goa, north Madhya Maharashtra, Saurashtra & Kutch on 19th; Telangana on 20th & 21st; Coastal Andhra Pradesh & Yanam, Rayalaseema and Telangana during 19th-22nd and Kerala & Mahe, Sub-Himalayan West Bengal & Sikkim during 19th-23rd April, 2024.
- ❖ **Warm night conditions** very likely to prevail over Odisha and East Uttar Pradesh on 19th & 20th; over Madhya Maharashtra, Coastal Andhra Pradesh & Yanam, Rayalaseema on 19th April, 2024.

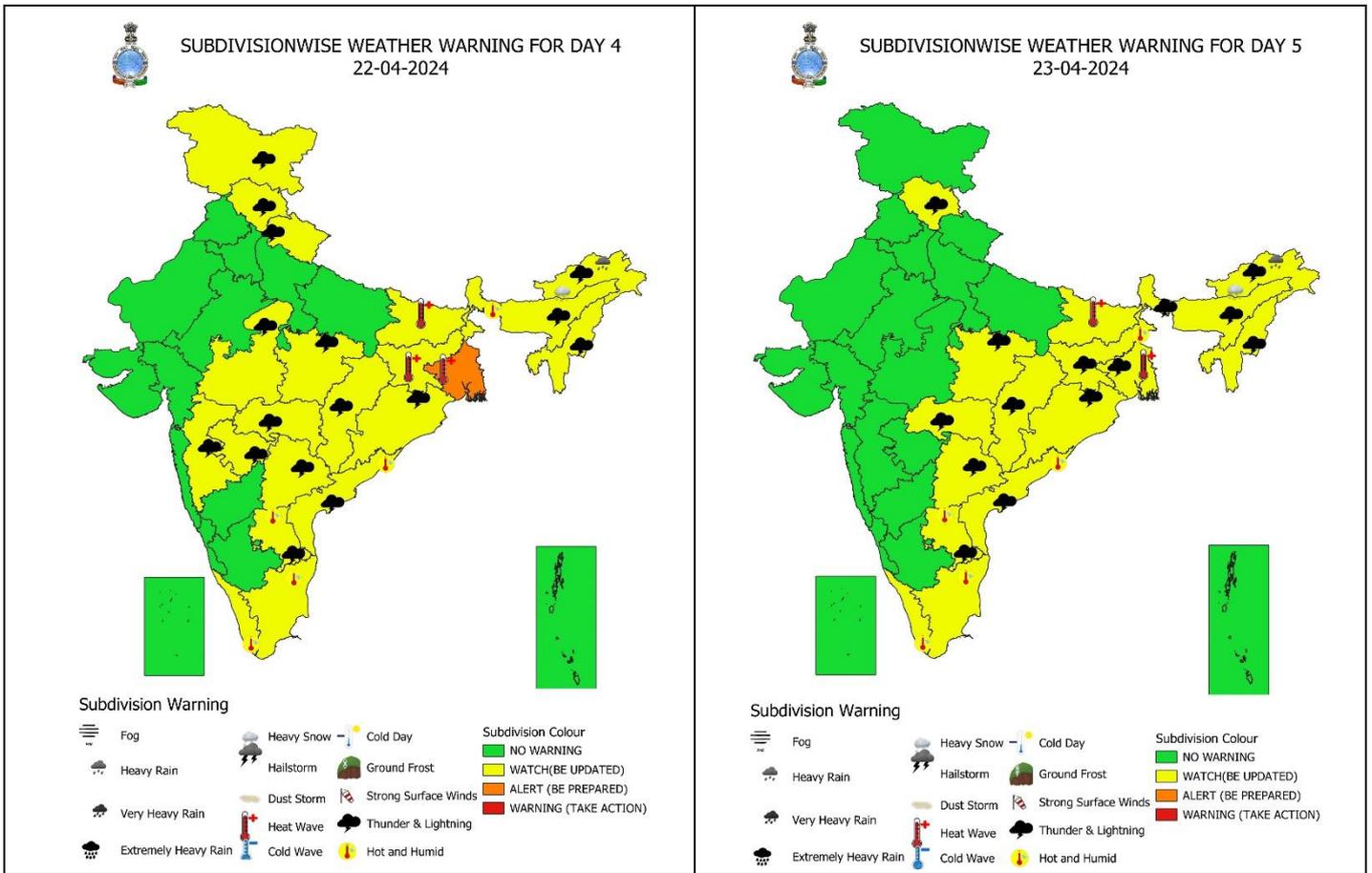
For more details, kindly refer: https://mausam.imd.gov.in/responsive/all_india_forecast_bulletin.php

- ❖ **Light to moderate rainfall/snowfall** accompanied with isolated thunderstorm & lightning observed at many places over Arunachal Pradesh and Sikkim.
- ❖ **Light to moderate rainfall/snowfall** at most places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad; at a few places over Himachal Pradesh; light rainfall at isolated places over Uttarakhand.
- ❖ **Light/Moderate rainfall** accompanied with thunderstorm & lightning observed many places over Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal; at a few places over Karnataka and at isolated places over Punjab, Haryana, Rajasthan, Odisha, Assam & Meghalaya, Konkan & Goa, Madhya Maharashtra, Marathwada, Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Coastal Andhra Pradesh & Yanam, Telangana and Rayalaseema.

Significant amount of rainfall (in cm):

- ❖ **Arunachal Pradesh:** Nachu (dist Upper Subansiri) 8, Kamba (dist West Siang) 2, Bameng Circle (dist East Kameng) 1, Anini_ (dist Dibang Valley) 1
- ❖ **Nagaland, Manipur, Mizoram & Tripura:** South (dist South Tripura) 4, Dharmanagar/Panisagar (dist North Tripura) 3, Kailashahar (dist Unakoti) 3, Arundhutinagar (dist West Tripura) 3, DM Office (dist West Tripura) 3, Hrc Nagicherra (dist West Tripura) 3, Agartala (dist West Tripura) 3, Kailashahar (dist Unakoti) 3, Gokulpur_aws (dist Gomati) 3, CTI (dist Sipahijala) 2,
- ❖ **Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad:** Nowgam (dist Kupwara) 3, Gulmarg (dist Baramulla) 3, Kupwara (dist Kupwara) 3, Baramulla (dist Baramulla) 2, Pahalgam (dist Anantnag) 2, Banihal (dist Ramban) 2, Tengmarg (dist Baramulla) 2, Bandipora (dist Bandipore) 2,
- ❖ **Himachal Pradesh:** Kangra-2, Chamba-1
- ❖ **Sikkim:** North Sikkim-2





Impact expected and action suggested due to thunderstorm accompanied with lightning/gusty winds & Hailstorm over Himachal Pradesh, Madhya Maharashtra and Marathwada on 19th 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/snowfall over

- (i) Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad on 19th April and**
- (ii) Arunachal Pradesh during 19th-23rd; Assam & Meghalaya during 19th-21st; Nagaland, Manipur, Mizoram & Tripura on 19th & 21st April, 2024.**

Impacts Expected for Rainfall/Snowfall over above regions:

- ❖ 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:

Orange alert Areas (Odisha & Gangetic West Bengal)

- ❖ 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– keep cool. Avoid dehydration.
- ❖ Drink sufficient water- even if not thirsty.
- ❖ Use ORS, homemade drinks like lassi, torani (rice water), lemon water, buttermilk, etc. to keep yourself hydrated

Yellow alert Areas (Jharkhand, Bihar, Coastal Andhra Pradesh & Yanam, Rayalaseema, Telangana and interior Tamil Nadu)

- ❖ 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, Hailstorm, Gusty Winds and Heat Wave likely over various parts of the country

(Based on the IBF and advisories issued by different AMFUs)

- Use hail nets or hail caps in fruit orchards to prevent mechanical damage and provide mechanical support to horticultural crops & staking to vegetables in South Madhya Maharashtra and Himachal 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 and North Eastern States.
- Apply light and frequent irrigation to standing crops to avoid heat stress; provide mulching to conserve soil moisture and minimise evaporation in Odisha, Gangetic West Bengal, Bihar, Jharkhand, Saurashtra & Kutch, Tamilnadu, Andhra Pradesh and Telangana.

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 < 1km

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)