



Government of India
Ministry of Earth Sciences
India Meteorological Department



Press Release

Date: 21st April, 2024

Time of Issue: 1315 hours IST

Subject:

- i. **Heat wave spell likely to continue over East India during next 5 days.**
- ii. **Heavy rainfall accompanied with thunderstorms/lightning and gusty winds likely at isolated places over Northeast India during 21st-24th April, 2024.**

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

- ❖ **Heavy to very heavy rainfall** observed at isolated places over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura and **heavy rainfall** at isolated places over Odisha, Goa and North Interior Karnataka.
- ❖ **Hailstorm** observed at isolated places over Marathwada and Telangana.
- ❖ **Heat Wave conditions** prevailed in many parts with **severe heat wave conditions** in some parts over Gangetic West Bengal; **Heat Wave conditions** in some parts of Odisha and Bihar and in isolated places over Chhattisgarh and Jharkhand. **Heat wave conditions are prevailing over Odisha since 15th and over Gangetic West Bengal since 17th April.**
- ❖ **Warm Night conditions** with day maximum temperature exceeding 40°C prevailed in isolated pockets over Bihar, Gangetic West Bengal, Odisha, Chhattisgarh and East Madhya Pradesh.
- ❖ **Light to moderate rainfall/snowfall** accompanied with isolated thunderstorm & lightning observed at many places over Arunachal Pradesh and Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad; at isolated places over Himachal Pradesh.
- ❖ **Light/Moderate rainfall** accompanied with thunderstorm & lightning observed many places over Sub-Himalayan West Bengal & Sikkim; at a few places over Nagaland, Manipur, Mizoram & Tripura, Assam & Meghalaya and Coastal Karnataka and at isolated places over Konkan & Goa, Madhya Maharashtra, Marathwada, Chhattisgarh, Odisha, Madhya Pradesh, Vidarbha, South Interior Karnataka, Telangana, Coastal Andhra Pradesh & Yanam, Rayalaseema, Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe and Telangana.

Weather Systems and Forecast & Warnings: (Annexure II)

- ❖ A cyclonic circulation lies over northeast Assam, another over northeast Bangladesh and a north-south trough runs from the cyclonic circulation over northeast Bangladesh to north Bay of Bengal in lower tropospheric levels. Under its 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, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura during 21st-24th and isolated to scattered rainfall over Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura during 25th-27th April, 2024.
 - ✓ Isolated to scattered light/moderate rainfall accompanied with isolated **thunderstorm & lightning & gusty winds (30-40 kmph)** very likely over Sub-Himalayan West Bengal & Sikkim during 21st-24th; Odisha during 21st-23th; Gangetic West Bengal and Jharkhand on 23rd April, 2024.
 - ✓ **Isolated heavy rainfall** very likely over Arunachal Pradesh during 21st-25th; Assam & Meghalaya during 21st-23rd and Nagaland, Manipur on 21st April, 2024. **Isolated very heavy rainfall** also very likely over Arunachal Pradesh on 23rd April, 2024.
- ❖ A Western Disturbance as a trough runs along Long. 70°E to the north of Lat. 28°N and another Western Disturbance as a cyclonic circulation lies over east Iran in middle tropospheric levels. Under their influence:

- ✓ Isolated to scattered light to moderate rainfall/snowfall accompanied with **thunderstorm, lightning** very likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad on 22nd; Himachal Pradesh and Uttarakhand on 22nd & 23rd April, 2024.
- ✓ Isolated to scattered rainfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over East Rajasthan and West Uttar Pradesh on 22nd April, 2024.
- ✓ Thunderstorm/Duststorm accompanied with lightning very likely over West Rajasthan on 21st & 22nd April, 2024.
- ✓ **Strong surface winds (20-30 kmph)** very likely to prevail over Uttar Pradesh during 21st-22nd April, 2024.
- ❖ **A fresh Western Disturbance is likely to affect Western Himalayan Region from 26th April, 2024.**
- ❖ A trough runs from south Chhattisgarh to south Tamil Nadu across Telangana, Coastal Andhra Pradesh and Rayalaseema in lower tropospheric levels. Under its influence:
 - ✓ Isolated light rainfall accompanied with isolated **thunderstorm & lightning** very likely over Madhya Maharashtra and Marathwada on 21st, 22nd & 24th and Konkan & Goa on 21st April, 2024.
 - ✓ Isolated light to moderate rainfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over East Madhya Pradesh, Vidarbha and Chhattisgarh during 21st-23rd; West Madhya Pradesh on 21st & 22nd April, 2024.
 - ✓ Isolated to Scattered light/moderate rainfall accompanied with isolated **thunderstorm & lightning** very likely over Tamil Nadu, Kerala & Mahe and Karnataka on 21st & 22nd and isolated rainfall accompanied with **thunderstorm & lightning & gusty winds (40-60 kmph)** over Coastal Andhra Pradesh & Yanam and Telangana during 21st-24th April, 2024.

Maximum temperature observation and forecast for next 5 days:

- ❖ Yesterday, maximum temperatures were in the range of 42-46°C over many parts of Gangetic West Bengal over some parts of, Chhattisgarh and Jharkhand and in isolated pockets over East Uttar Pradesh, Vidarbha, Bihar and East Madhya Pradesh. These are in the range of 40-42°C at many parts of Coastal Andhra Pradesh & Yanam and Rayalaseema and at some parts of Odisha and Tamil Nadu, Puducherry & Karaikal and at isolated pockets over Gujarat state and Marathwada. These were above normal by 2-4°C over many parts of Gangetic West Bengal and in isolated pockets over Chhattisgarh, Jharkhand, Bihar, East Uttar Pradesh, East Madhya Pradesh, Coastal Andhra Pradesh & Yanam, Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Rayalaseema, Telangana, Vidarbha and Odisha.
- ❖ No significant change in maximum temperatures very likely over Northwest India during next 24 hours and rise gradually by 2-3°C thereafter.
- ❖ No significant change in maximum temperatures very likely over East India during next 24 hours and fall by about 2°C during subsequent 2 days and rise by 2-3°C thereafter.
- ❖ No significant change in maximum temperatures very likely over West India during next 3 days and rise by 2-3°C thereafter.
- ❖ No significant change in maximum temperatures very likely over rest parts of the country.

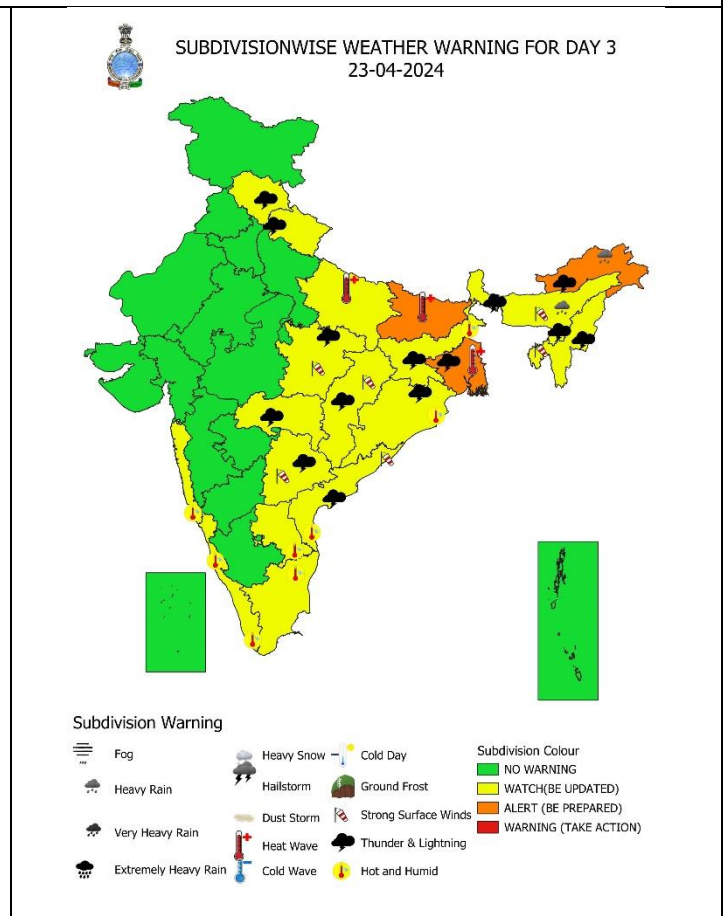
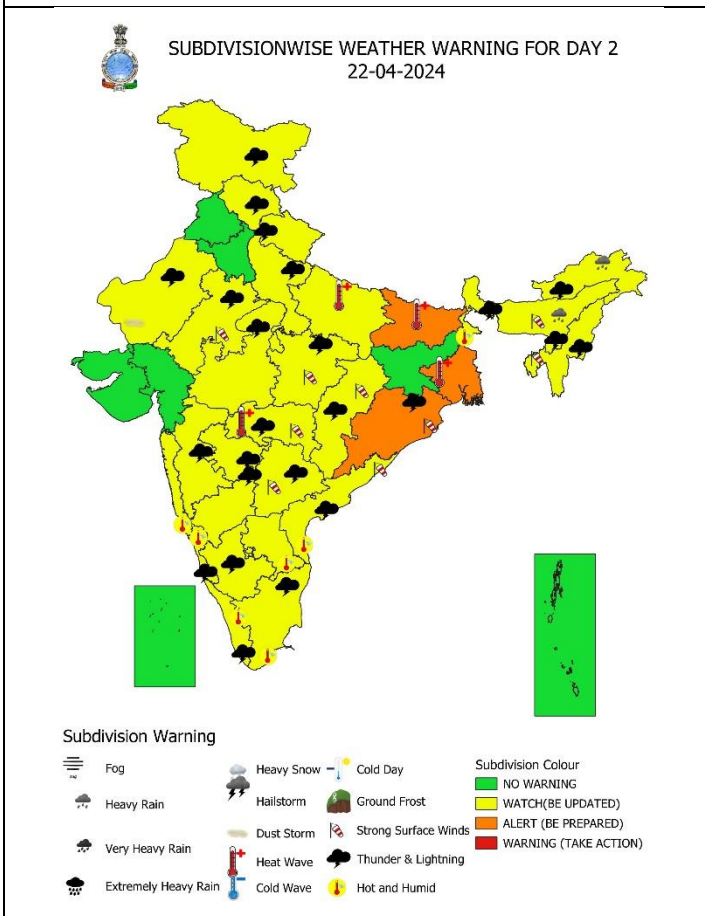
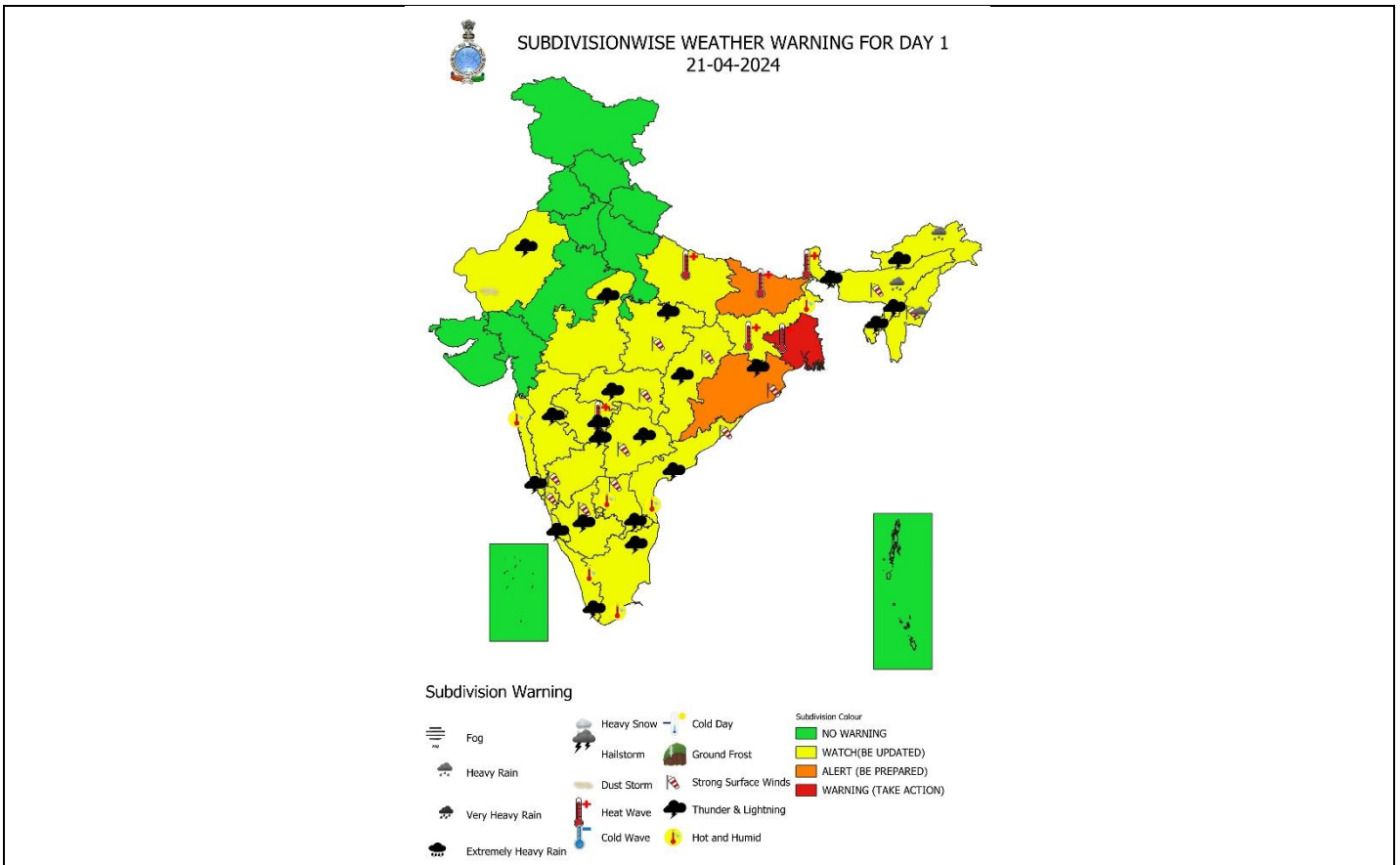
Heat Wave, Warm Night and Hot & Humid weather warning for next 5 days:

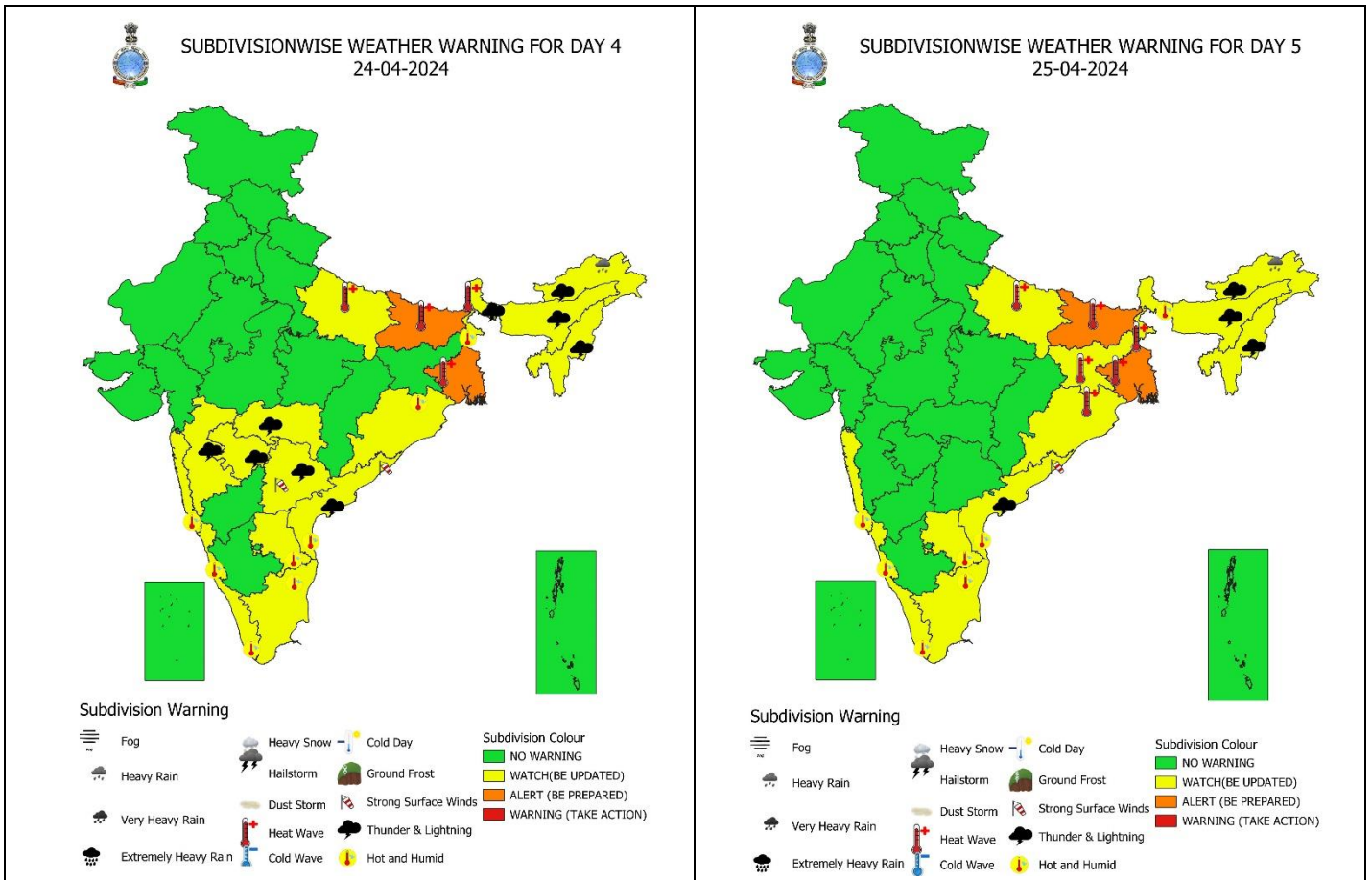
- ❖ **Heat Wave conditions** very likely to prevail in many/some parts of Gangetic West Bengal during next 5 days and over Odisha on 21st & 22nd; **heat wave conditions** in isolated pockets over East Uttar Pradesh and Bihar during next 5 days; over Sub-Himalayan West Bengal on 21st, 24th & 25th and over Jharkhand on 21st & 25th April. **Severe Heat Wave conditions also likely in isolated pockets of Odisha on 21st & 22nd and Gangetic West Bengal during 21st-25th April, 2024.**
- ❖ **Hot and humid weather** very likely to prevail over Sub-Himalayan West Bengal, Coastal Andhra Pradesh & Yanam, Rayalaseema, Tamil Nadu, Puducherry & Karaikal, Coastal Karnataka and Kerala & Mahe during 21st - 25th April, 2024.
- ❖ **Warm night conditions** with day maximum temperature exceeding 40°C very likely to prevail over Gangetic West Bengal and Odisha on 21st & 22nd April, 2024.

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

Significant amount of rainfall (in cm):

- ❖ **Assam & Meghalaya:** Sarupathar Arg (dist Golaghat) 14, Lakhipur Arg (dist Cachar) 8, Silchar (dist Cachar) 5, Barpathar (dist Golaghat) 4, Golaghat_pto (dist Golaghat) 3, Cacher Kvk Aws (dist Cachar) 3, Majbat (dist Udalguri) 3, Cherrapunji (dist East Khasi Hills) 2, Shella (dist East Khasi Hills) 2, Jorhat (dist Jorhat) 2, Tezpur (dist Shonitpur) 2, Tamulpur Arg (dist Baksa) 1, Dhekiajuli (dist Shonitpur) 1, Tamulpur (dist Baksa) 1, Gohpur_arg (dist Shonitpur) 1, Goibargaon (dist Baksa) 1, Shillongani_aws (dist Nagaon) 1, Cherrapunji(rkm) (dist East Khasi Hills) 1;
- ❖ **Nagaland, Manipur, Mizoram & Tripura:** Mokokchang (dist Mokokchung) 12, Jiribam_ Aws (dist Imphal East) 7, Mangkolemba (dist Mokokchung) 7, Bishnupur (dist Bishnupur) 3, Zunheboto (dist Zunheboto) 2, Bishnupur_ Aws (dist Bishnupur) 2, Kolasib Agri (dist Kolasib) 1, Churachandpur (dist Churachandpur) 1, Tamenglong (dist Tamenglong) 1, Kolasib_aws (dist Kolasib) 1;
- ❖ **Arunachal Pradesh:** Ziro (dist Lower Subansiri) 4, Tawang_ Aws (dist Tawang) 3, Tawang Chamgbu Kvk Aws (dist Tawang) 3, Tawang (dist Tawang) 2, Kamba Aws (dist West Siang) 1, Anini_aws (dist Dibang Valley) 1, Itanagar (dist Papumpara) 1, Nachu Arg (dist Upper Subansiri) 1;
- ❖ **Odisha:** Kotpad (Koraput) 11, Kolnara (Rayagada) 2, Rayagada (Rayagada) 2, Rayagada Pto (Rayagada) 2, Jaipatna (Kalahandi) 1;
- ❖ **Goa:** Panjim - Imd Obsy (dist North Goa) 9, Ponda (dist North Goa) 5, Mormugao - Pmo Imd (dist South Goa) 4, Quepem (dist South Goa) 3, Sanguem (dist South Goa) 2;
- ❖ **North Interior Karnataka:** Khajuri (dist Kalaburgi) 9, Gadag Pbo Obsy (dist Gadag) 7, Kuknoor (dist Koppal) 5, Shiggaon (dist Haveri) 5, Savanur (dist Haveri) 4, Kalaburgi Obsy (dist Kalaburgi) 3, Shirahatti (dist Gadag) 3, Afzalpur Hms (dist Kalaburgi) 2, Aland (dist Kalaburgi) 2, Kalghatgi (dist Dharwad) 2, Hubballi (dist Dharwad) 1, Yelburga (dist Koppal) 1;
- ❖ **Marathwada:** Tuljapur (dist Dharashiv) 6, Ausa (dist Latur) 4, Dharashiv Imd Parttime (dist Dharashiv) 3, Renapur (dist Latur) 3, Sambhajinagar-imd Obsy (dist Chh. Sambhajinagar) 2, Lohara (dist Dharashiv) 1, Latur (dist Latur) 1, Nanded - Imd Parttime (dist Nanded) 1;
- ❖ **Telangana:** Narmetta (dist Jangaon) 5, Ghanpur (dist Jangaon) 3, Esci_gachibowli(a) (dist Rangareddy) 3, Siddipet(arg) (dist Siddipet) 2, Doultabad (dist Siddipet) 2, Himayatnagar (dist Hyderabad) 2, Golkonda(arg) (dist Hyderabad) 1, Kondapak (dist Siddipet) 1, Charminar (dist Hyderabad) 1, Nanganur (dist Siddipet) 1, Golkonda (dist Hyderabad) 1, Mortad (dist Nizamabad) 1, Peddemul (dist Vikarabad) 1, Tandur (dist Vikarabad) 1;
- ❖ **Kerala:** Kuppady (Wayanad district) 5, Poonjar AWS (Kottayam district) 3, Mananthavady (Wayanad district) 2 and Kanjirappally (Kottayam district), Pookot, Vythiri & Ambalavayal (all in Wayanad district) & Neryamangalam ARG (Ernakulam district) 1 each;
- ❖ **Madhya Maharashtra:** Velhe (dist Pune) 3, Mahabaleshwar- Imd Obsy (dist Satara) 3, Paud Mulshi (dist Pune) 2, Kolhapur/karvir Imd (dist Kolhapur) 1, Nda Pune - Arg (dist Pune) 1, Sholapur - Imd Obsy (dist Sholapur) 1;
- ❖ **Rayalaseema:** Banaganapalle (dist Nandyal) 3, Jupadu Bungalow (dist Nandyal) 3, Koilkuntla (dist Nandyal) 1;
- ❖ **Tamil Nadu:** Suralacode (dist Kanniyakumari) 3, Thalavadi (dist Erode) 2, Sholayar (dist Coimbatore) 1;
- ❖ **Chhattisgarh:** Tokapal (dist Bastar) 2, Baderajpur (dist Kondagaon) 1, Jagdalpur (dist Bastar) 1.





Impact expected and action suggested due to thunderstorm accompanied with lightning/gusty winds & Hailstorm over Vidarbha on 22nd 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 Arunachal Pradesh during 21st-25th; Assam & Meghalaya on 21st, 22nd & 23rd 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, East Uttar Pradesh, 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)

- Drain out excess water from crop field to avoid water stagnation in North Eastern States. Postpone sowing of maize and cowpea in Arunachal Pradesh.
- Make necessary arrangements for draining out excess water from crop fields to avoid water stagnation in Karnataka & Goa and keep the harvested produce at safer places.
- Use hail nets or hail caps in fruit orchards to prevent mechanical damage and provide mechanical support to horticultural crops & staking to vegetables in Telangana.
- Provide mechanical support to horticultural crops & staking to vegetables in Vidarbha, Chhattisgarh, North Interior Karnataka, South Interior Karnataka, Rayalaseema, Nagaland and Manipur.
- 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, East Uttar Pradesh and Tamil Nadu.

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 Strom: Wind speed >220 kmph (>119 knots)