



Government of India  
Ministry of Earth Sciences  
India Meteorological Department



Press Release

Date: 16<sup>th</sup> April, 2024.

Time of Issue: 1300 hours IST

- Subject: i) A fresh spell of rainfall with thunderstorms, lightning and gusty winds over Northwest India during 18<sup>th</sup>-21<sup>st</sup> April, 2024.**  
**ii) Light to moderate rainfall accompanied with thunderstorms & lightning and isolated heavy rainfall over Northeast India during 16<sup>th</sup>-21<sup>st</sup> April, 2024.**  
**iii) Second heat wave spell in April**

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

- ❖ **Heavy rainfall** occurred at isolated places over Kashmir.
- ❖ **Hailstorm** observed at isolated places over Vidarbha.
- ❖ **Heat Wave** conditions prevailed at isolated pockets over coastal Odisha.

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

- ❖ A **Western Disturbance** as a cyclonic circulation over Jammu-Kashmir & neighbourhood with trough aloft in middle tropospheric westerlies roughly along Long. 68°E to the north of Lat. 32°N. Under the influence, Isolated light to moderate rainfall/snowfall with **thunderstorm & lightning** likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh and Uttarakhand today.
- ❖ A fresh Western Disturbance is likely to affect Northwest India from 18<sup>th</sup> April, 2024. Under its influence:
  - ✓ 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 18<sup>th</sup>-21<sup>st</sup> April, 2024.
  - ✓ Isolated to scattered rainfall with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over Punjab, Haryana-Chandigarh-Delhi during 18<sup>th</sup>-20<sup>th</sup> April; West Uttar Pradesh, East Rajasthan on 19<sup>th</sup> & 21<sup>st</sup> and West Rajasthan on 18<sup>th</sup>, 19<sup>th</sup> & 21<sup>st</sup> April, 2024.
  - ✓ **Isolated hailstorm** very likely over Himachal Pradesh 18<sup>th</sup> & 19<sup>th</sup> and Uttarakhand & Punjab on 19<sup>th</sup> April, 2024.
  - ✓ **Isolated heavy rainfall/snowfall** very likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad on 18<sup>th</sup> & 19<sup>th</sup> April, 2024.
  - ✓ **Strong surface winds (30-40 kmph)** very likely to prevail over Haryana-Chandigarh-Delhi and Uttar Pradesh during 17<sup>th</sup>-19<sup>th</sup> April, 2024.
- ❖ A cyclonic circulation lies over East Bihar and another over northeast Assam in lower tropospheric levels. Under its influence:
  - ✓ Fairly widespread to widespread light/moderate rainfall/snowfall with isolated **thunderstorm & lightning** over Arunachal Pradesh, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura during 16<sup>th</sup>-21<sup>st</sup> April, 2024.

- ✓ Scattered to fairly widespread light/moderate rainfall/snowfall with isolated **thunderstorm & lightning** over Sub-Himalayan West Bengal & Sikkim during 16<sup>th</sup>-18<sup>th</sup> April with possibility of isolated hailstorm over Sikkim on 16<sup>th</sup> April, 2024.
- ✓ **Isolated heavy rainfall** over Arunachal Pradesh during 16<sup>th</sup>-20<sup>th</sup>; Assam & Meghalaya on 16<sup>th</sup>, 17<sup>th</sup>, 19<sup>th</sup> & 20<sup>th</sup> and Nagaland, Manipur, Mizoram & Tripura on 20<sup>th</sup> April, 2024.
- ❖ A cyclonic circulation lies over Rayalaseema and a trough runs from Marathwada to North Interior Karnataka in lower tropospheric levels. Under its influence: Isolated light rainfall with isolated **thunderstorm & lightning** very likely over Konkan & Goa, Madhya Maharashtra and Marathwada during 16<sup>th</sup>-18<sup>th</sup> April, 2024.
- ❖ A cyclonic circulation lies over south Tamil Nadu in lower tropospheric levels. Under its influence:
  - ✓ Scattered to fairly widespread light/moderate rainfall accompanied with isolated **thunderstorm & lightning** very likely over Kerala & Mahe, Lakshadweep and isolated rainfall with **thunderstorm & lightning** over Tamil Nadu, Puducherry-Karaikal, Karnataka, Andhra Pradesh during 18<sup>th</sup>-21<sup>st</sup> April, 2024.
  - ✓ **Isolated heavy rainfall** over Kerala & Mahe on 18<sup>th</sup> & 19<sup>th</sup> April, 2024.

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

- ❖ Yesterday, maximum temperatures were in the range of 38-40°C over many places over Gangetic West Bengal, Telangana, Coastal Andhra Pradesh & Yanam and Rayalaseema; at a few places over Gujarat state, Madhya Maharashtra, Marathwada, North Interior Karnataka, East Uttar Pradesh, Bihar, Jharkhand and Odisha; at isolated places over West Uttar Pradesh, South Interior Karnataka, Kerala & Mahe and Tamil Nadu, Puducherry & Karaikal. These were above normal by 2-3° C at isolated places over these areas.
- ❖ Gradual rise in maximum temperatures by 2-4°C very likely over Central, East & south peninsular India during next 3 days and no significant change thereafter.
- ❖ Gradual rise in maximum temperatures by 2-3°C very likely over Maharashtra during next 2 days and fall by 2-3°C thereafter.
- ❖ No significant change in maximum temperatures very likely over rest parts of the country.

#### Second heat wave spell in April:

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

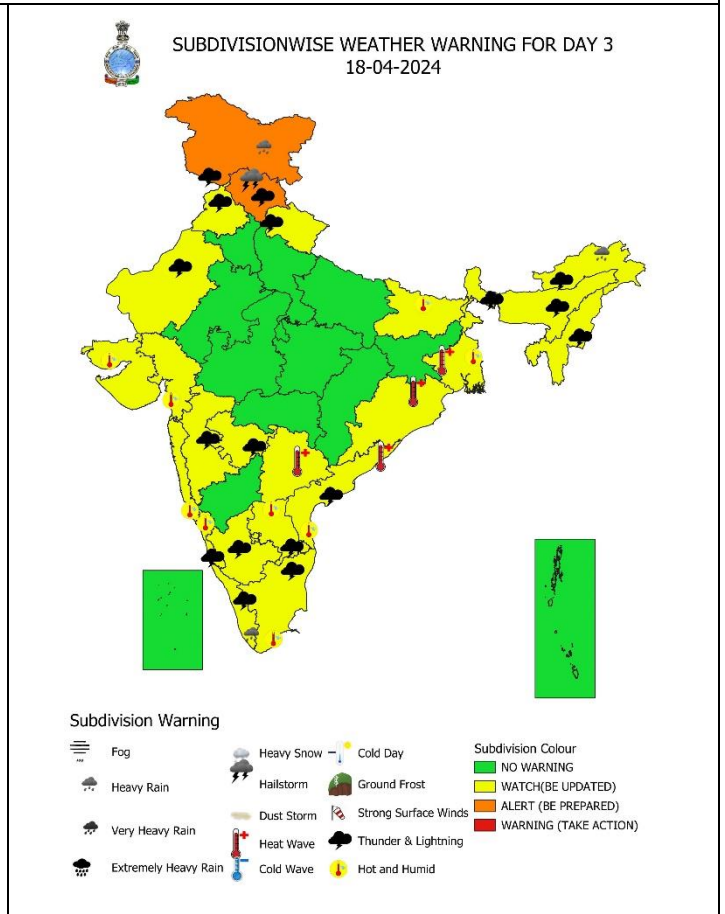
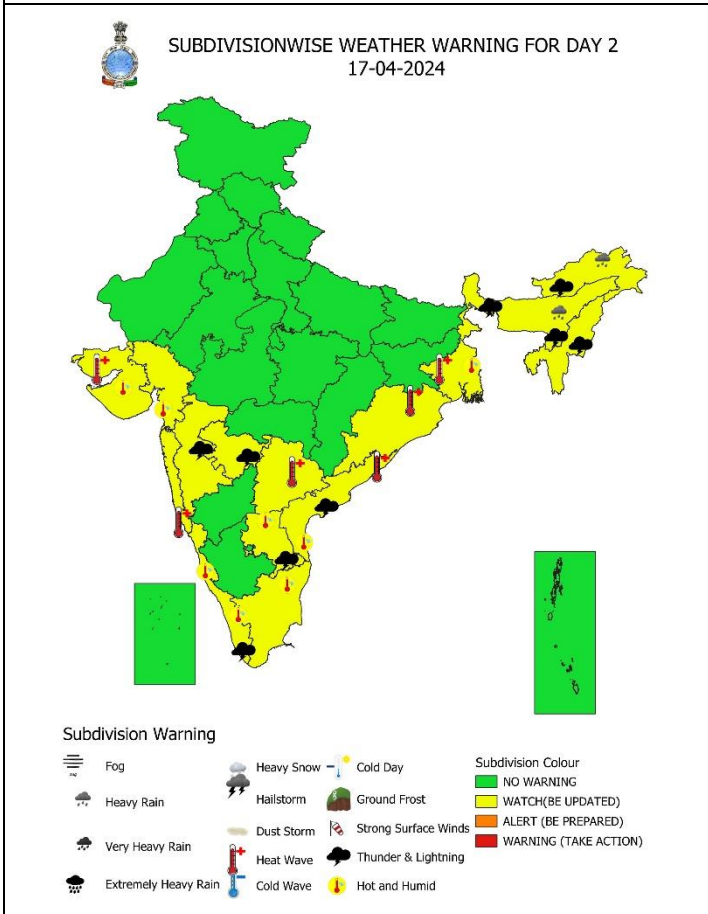
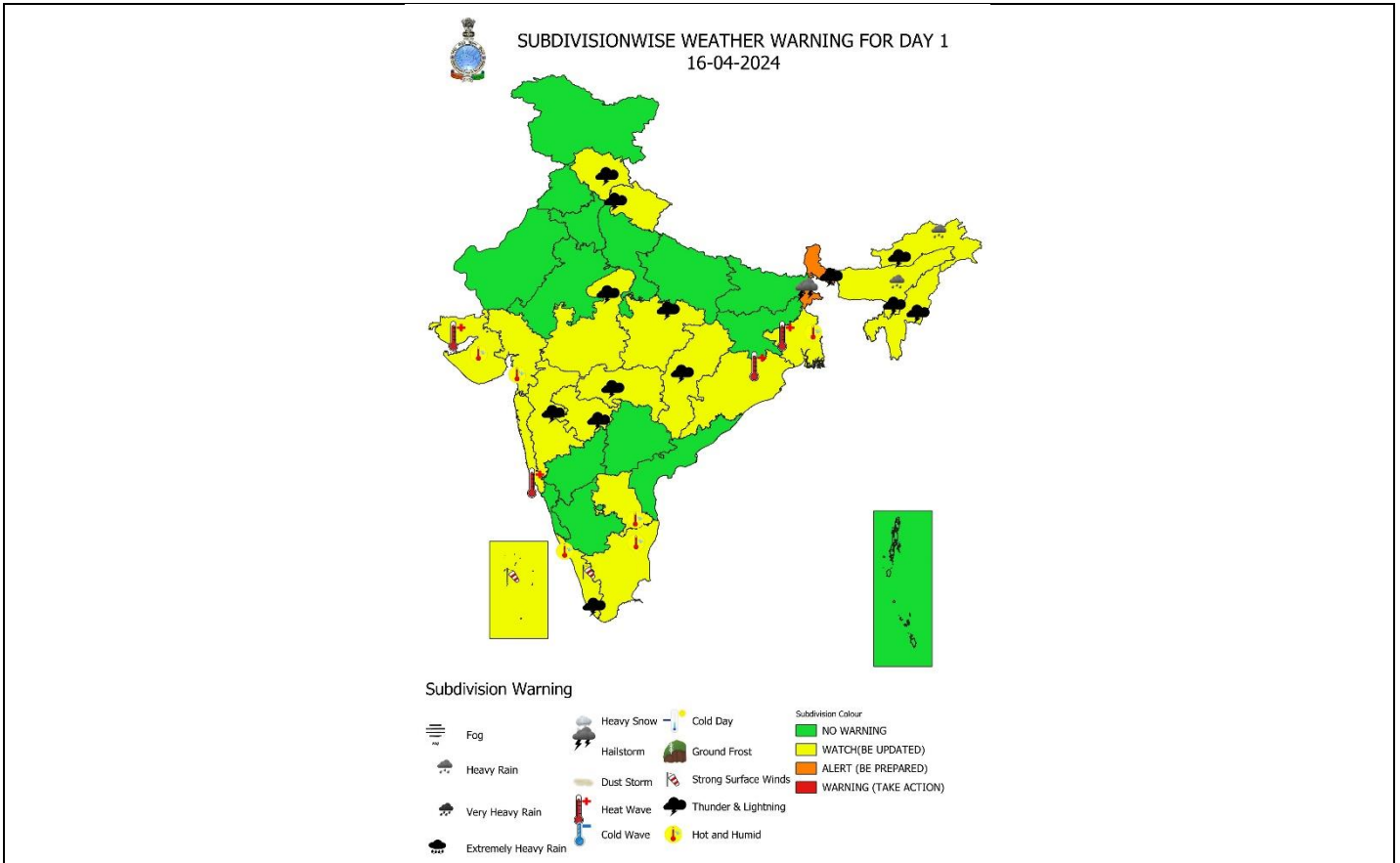
- ❖ **Heat Wave conditions** in isolated pockets of Odisha, Gangetic West Bengal during 16<sup>th</sup>-20<sup>th</sup>; north Konkan, Saurashtra & Kutch on 16<sup>th</sup> & 17<sup>th</sup>; Coastal Andhra Pradesh & Yanam on 17<sup>th</sup> & 18<sup>th</sup> and Telangana during 16<sup>th</sup>-18<sup>th</sup> April, 2024.
- ❖ **Hot and humid weather** very likely to prevail over Gangetic West Bengal, Tamil Nadu, Puducherry & Karaikal, Rayalaseema during 16<sup>th</sup>-20<sup>th</sup>; Coastal Karnataka, Kerala & Mahe on 16<sup>th</sup> & 17<sup>th</sup>; coastal areas of Gujarat during 16<sup>th</sup>-18<sup>th</sup>; Konkan & Goa during 18<sup>th</sup>-20<sup>th</sup> April, 2024.
- ❖ **Warm night** very likely to prevail over Madhya Maharashtra during 16<sup>th</sup>-18<sup>th</sup> and over Odisha during 17<sup>th</sup>-20<sup>th</sup> April, 2024.

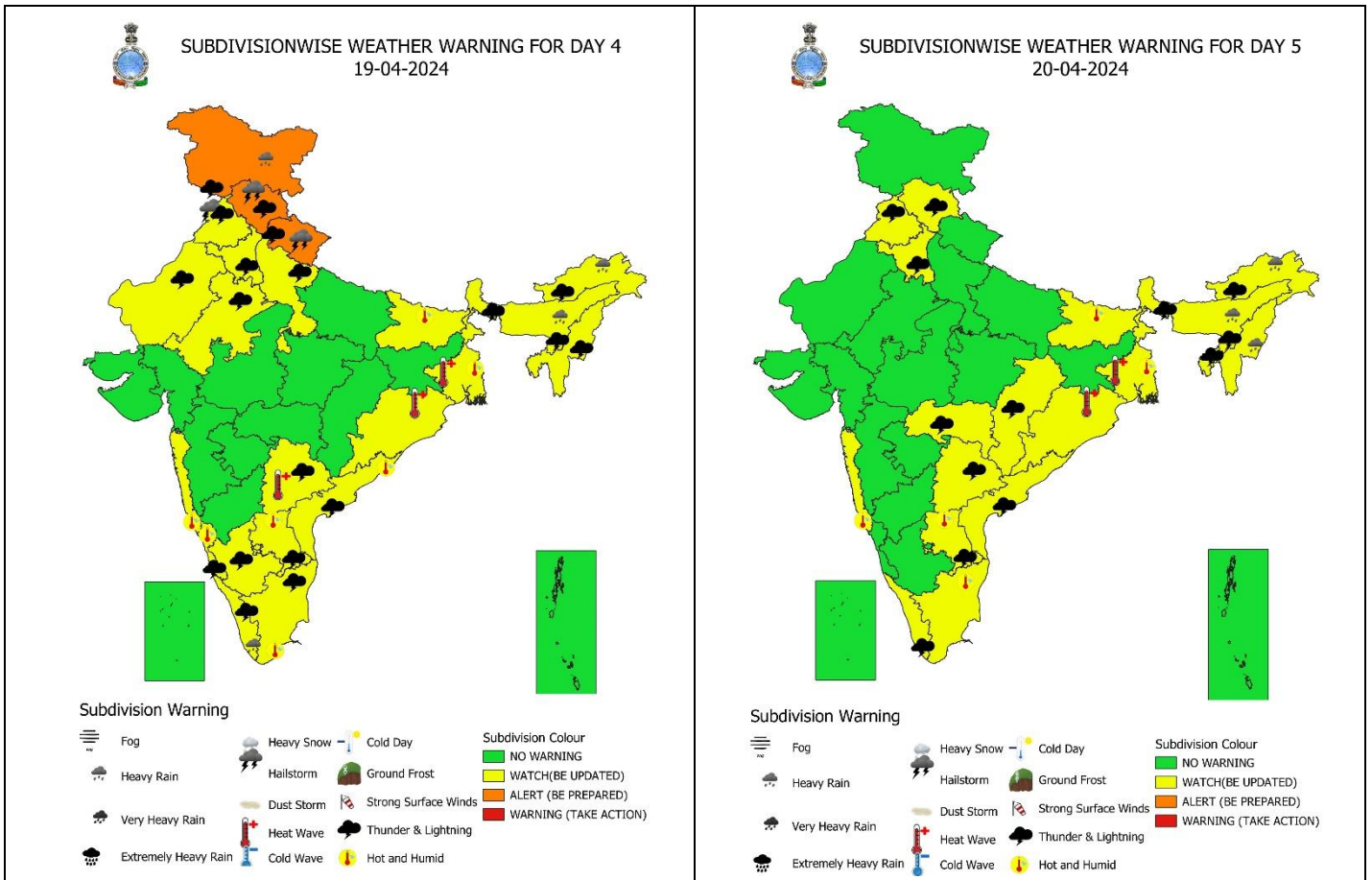
For more details, kindly refer: [https://mausam.imd.gov.in/responsive/all\\_india\\_forecast\\_bulletin.php](https://mausam.imd.gov.in/responsive/all_india_forecast_bulletin.php)

- ❖ **Light to moderate rainfall/snowfall** with isolated thunderstorm & lightning observed at most places over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad; at many places over Himachal Pradesh; **Light rainfall/snowfall** at isolated places over Uttarakhand.
- ❖ **Light to moderate rainfall/snowfall** with isolated thunderstorm & lightning observed at isolated places over Arunachal Pradesh and Sikkim.
- ❖ **Light to moderate rainfall** with thunderstorm & lightning observed at some places over Punjab, Assam & Meghalaya; at isolated places over Haryana-Chandigarh, Madhya Pradesh, Vidarbha, Jharkhand, West Bengal, Madhya Maharashtra and Tamil Nadu.
- ❖ **Light rainfall** with thunderstorm & lightning observed at isolated places over West Uttar Pradesh, Chhattisgarh, Nagaland, Manipur, Mizoram & Tripura, Konkan & Goa, Marathwada, Telangana and Coastal Andhra Pradesh.

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

- ❖ **Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad:** Jammu Aws (dist Jammu) 9, Jammu (dist Jammu) 9, Reasi Arg (dist Reasi) 7, Udhampur(iaf) (dist Udhampur) 7, Katra (dist Reasi) 6, Jammu Aero (dist Jammu) 5, Verinag (dist Anantnag) 5, Nowgam (dist Kupwara) 5, Qazi Gund (dist Kulgam) 4, Chatha\_agro Aws (dist Jammu) 4, Rs Pura Arg (dist Jammu) 4, Batote (dist Ramban) 4, Anantnag Aws (dist Anantnag) 4, Batkoot Arg (dist Anantnag) 4, Kupwara Kvk Aws (dist Kupwara) 4, Pahalgam (dist Anantnag) 4, Banihal (dist Ramban) 4, Konibal (dist Pulwama) 4, Bhaderwah Arg (dist Doda) 4, Burmal Arg (dist Kathua) 4, Govindpura Aws (dist Ramban) 3, Pahalgam Aws (dist Anantnag) 3, Anantnag (dist Anantnag) 3, Gulmarg R.s. (dist Baramulla) 3,
- ❖ **Himachal Pradesh:** Kullu-6, Chamba-4, Lahaul & Spiti-3
- ❖ **Kerala:** Ernakulam South 3, Thodupuzha ARG (Idukki district) 2
- ❖ **West Madhya Pradesh:** Bhainsdehi (dist Betul) 3, Kalapipal (dist Shajapur) 1, Jharda (dist Ujjain) 1,
- ❖ **Assam & Meghalaya:** Panbari (dist Chirang) 3, Gossaigaon (dist Kokrajhar) 3, Gossaigaon\_Aws (dist Kokrajhar) 3, Jowai\_aws (dist West Jaintia Hills) 3, Melabazar/matunga (dist Nalbari) 2, Barpeta/sarbhog\_aws (dist Barpeta) 2, Goibargaon (dist Baksa) 2, Beky Rly.bridge (dist Barpeta) 2, Manikpur Arg (dist Bongaigaon) 2, Beki Mathungari (dist Barpeta) 2, Drf (dist Baksa) 2, Tamulpur (dist Baksa) 2,
- ❖ **Sub-Himalayan West Bengal & Sikkim:** Jalpaiguri-3, north Sikkim-2
- ❖ **East Madhya Pradesh:** Patharia (dist Damoh) 2, Barghat (dist Seoni) 1, Gaurihar (dist Chhatarpur) 1,
- ❖ **Vidarbha:** Nandgaonkazi (dist Amraoti) 2, Amraoti (dist Amraoti) 1, Chikhalda (dist Amraoti) 1, Batkuli (dist Amraoti) 1
- ❖ **Arunachal Pradesh:** Deomali\_aws (dist Tirap) 2





**Impact expected and action suggested due to thunderstorm accompanied with lightning/gusty winds & Hailstorm over Sikkim on 16<sup>th</sup>; Himachal Pradesh on 18<sup>th</sup> & 19<sup>th</sup> and Uttarakhand & Punjab 19<sup>th</sup> 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 Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad on 18<sup>th</sup> & 19<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 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, North Konkan, Saurashtra & Kutch, Telangana 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.

## 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.

<b>SPATIAL DISTRIBUTION</b> (% 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)

<b>Probabilistic Forecast</b>	
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 < 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)