



Government of India  
Ministry of Earth Sciences  
India Meteorological Department



Press Release.

Date: 04<sup>th</sup> June, 2024

Time of Issue: 1330 hours IST

**Subject:**

- i. **In association with approaching Western Disturbance, rainfall/thunderstorm likely at a few places over Northwest India till 07<sup>th</sup> June, 2024.**
- ii. **Heat wave conditions with reduced intensity likely to continue in isolated pockets over parts of northwest & east India during next 4-5 days.**

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

- ❖ **Heat wave conditions** prevailed in some parts of Haryana-Chandigarh-Delhi and in isolated pockets of Himachal Pradesh, Punjab, Uttar Pradesh, West Rajasthan and East Madhya Pradesh. **Heat wave conditions** have been prevailing over Haryana since 17<sup>th</sup> and over Madhya Pradesh & Uttar Pradesh since 18<sup>th</sup> May, 2024.
- ❖ Yesterday, Maximum temperatures were in the range 43-46°C in some parts of Punjab, Haryana-Chandigarh-Delhi, West Rajasthan and East Madhya Pradesh and in isolated pockets of East Rajasthan and West Madhya Pradesh; in the range 40-43°C over many parts of Vidarbha and in isolated pockets of Bihar, Odisha, Chhattisgarh and Marathwada. These were above normal by 2-5°C in some parts of Jammu division, Punjab, Haryana-Chandigarh-Delhi and in isolated pockets of Himachal Pradesh, Uttar Pradesh and Bihar.
- ❖ Yesterday, **the highest maximum temperature of 46.8°C** was reported at Kanpur (**Uttar Pradesh**) over the country.
- ❖ **Heavy to very heavy rainfall with extremely heavy falls** observed at isolated places over Meghalaya; **Heavy to very heavy rainfall** at isolated places over Sub-Himalayan West Bengal & Sikkim, Manipur; **heavy rainfall** at isolated places over Kerala, Tamil Nadu and Karnataka.
- ❖ **Duststorm** observed at isolated places over Madhya Pradesh.
- ❖ **Gusty winds/squally winds** data reported over the country is attached in **Annexure II**.

**Advance of Southwest Monsoon:**

- ❖ Southwest Monsoon advanced into some more parts of central Arabian Sea, entire Goa, some more parts of Karnataka & Telangana, remaining parts of Rayalaseema, today the 04<sup>th</sup> June, 2024.
- ❖ The Northern Limit of Monsoon now passes through 16.5°N/60°E, 16.5°N/65°E, 16°N/70°E, Goa, Gadag, Narayanpet, Narsapur, 17°N/85°E, 19.5°N/88°E 21.5°N/90°E, 23°N/89.5°E and Islampur. (**Annexure III**)
- ❖ Conditions are favourable for further advance of Southwest Monsoon into remaining parts of central Arabian Sea, remaining parts of Karnataka, some parts of south Maharashtra, some more parts Telangana & Coastal Andhra Pradesh, some parts of south Chhattisgarh and South Odisha, some more parts of Westcentral and Northwest Bay of Bengal during next 3-4 days.

## Weather Systems and Forecast & Warnings: (Annexure IV)

- ❖ A cyclonic circulation lies over northeast Assam in lower tropospheric levels. Strong southwesterly/southerly winds are prevailing from Bay of Bengal to northeastern States in lower tropospheric levels. Under their influence:
  - ✓ Fairly widespread to widespread light to moderate rainfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** likely over Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura and Sub-Himalayan West Bengal & Sikkim during next 7 days.
  - ✓ Isolated **heavy to very heavy rainfall** very likely over Assam & Meghalaya on 04<sup>th</sup>, 07<sup>th</sup> & 08<sup>th</sup>; with heavy rainfall on 05<sup>th</sup> & 06<sup>th</sup>; isolated **heavy rainfall** over Sub-Himalayan West Bengal & Sikkim during 04<sup>th</sup>-08<sup>th</sup>; Arunachal Pradesh during 06<sup>th</sup>-08<sup>th</sup>; Nagaland, Manipur, Mizoram & Tripura on 04<sup>th</sup> & 08<sup>th</sup> June.
- ❖ A cyclonic circulation lies over south Tamil Nadu & neighbourhood and another cyclonic circulation lies over westcentral Bay of Bengal adjoining southwest Bay of Bengal off south Coastal Andhra Pradesh-north Tamil Nadu in lower tropospheric levels. Under its influence:
  - ✓ Fairly widespread to widespread light to moderate rainfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** likely over Kerala & Mahe, Lakshadweep, Andaman & Nicobar Islands, Karnataka; isolated to scattered light to moderate rainfall over Tamil Nadu, Puducherry & Karaikal, Coastal Andhra Pradesh, Telangana, Rayalaseema during next 5 days.
  - ✓ *Isolated **heavy rainfall** very likely over Kerala & Mahe, Karnataka during 04<sup>th</sup>-08<sup>th</sup> and Tamil Nadu during 04<sup>th</sup>-06<sup>th</sup> June, 2024.*
  - ✓ Isolated to scattered light to moderate rainfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over Marathwada during next 5 days; Konkan & Goa, Madhya Maharashtra during 04<sup>th</sup>-06<sup>th</sup> June.
  - ✓ Fairly widespread light to moderate rainfall with **thunderstorm, lightning & gusty winds (40-50 kmph)** very likely over Konkan & Goa and Madhya Maharashtra during 07<sup>th</sup>-10<sup>th</sup> June, 2024.
  - ✓ Isolated **heavy rainfall** very likely over Konkan & Goa on 04<sup>th</sup>, during 06<sup>th</sup>-10<sup>th</sup> and Madhya Maharashtra on 04<sup>th</sup> & 06<sup>th</sup> June.
- ❖ A cyclonic circulation lies over East Uttar Pradesh and a trough runs roughly along Long. 87°E to the north of Lat. 22°N in lower tropospheric levels. Under its influence:
  - ✓ Isolated to scattered light to moderate rainfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over Bihar, Jharkhand, Gangetic West Bengal on 04<sup>th</sup> & 05<sup>th</sup>; over Chhattisgarh, Odisha, Vidarbha, Madhya Pradesh during next 5 days.
- ❖ A fresh Western Disturbance as a cyclonic circulation lies over Iran & neighbourhood lower tropospheric levels. Prevailing southwesterly winds from Arabian Sea over the plains of Northwest India are likely to continue during next 3-4 days. Under their influence;
  - ✓ Isolated to scattered light rainfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh and Uttarakhand during next 4-5 days.
  - ✓ Isolated very light to light rainfall with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over Punjab, Haryana, West Uttar Pradesh during 04<sup>th</sup>-07<sup>th</sup>; East Uttar Pradesh on 04<sup>th</sup> & 05<sup>th</sup> and Rajasthan during 05<sup>th</sup>-08<sup>th</sup> June.
  - ✓ **Duststorm** very likely over West Uttar Pradesh, Punjab, Haryana-Chandigarh-Delhi on 04<sup>th</sup> & 05<sup>th</sup>; West Rajasthan during 05<sup>th</sup>-08<sup>th</sup> and East Rajasthan during 06<sup>th</sup>-08<sup>th</sup> June, 2024.

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

- ❖ Rise by 3-4°C in maximum temperatures very likely over East India during next 3 days and no significant change thereafter.
- ❖ No significant change in maximum temperatures very likely over Uttar Pradesh 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 in isolated pockets of East Madhya Pradesh, Jharkhand during 04<sup>th</sup>-08<sup>th</sup>; Punjab, Haryana-Chandigarh-Delhi, Rajasthan on 04<sup>th</sup> & 05<sup>th</sup>; Bihar during 05<sup>th</sup>-08<sup>th</sup>; Odisha during 04<sup>th</sup>-06<sup>th</sup>; Bihar on 06<sup>th</sup> & 07<sup>th</sup> June, 2024.
- ❖ **Heat wave conditions** very likely in isolated pockets of Uttar Pradesh during 04<sup>th</sup>-06<sup>th</sup> and **heat wave to severe heat wave conditions** in some parts on 07<sup>th</sup> & 08<sup>th</sup> June.
- ❖ **Hot and humid weather** very likely to prevail over isolated pockets of Odisha on 07<sup>th</sup> & 08<sup>th</sup>; Bihar on 04<sup>th</sup>; Gangetic West Bengal during 06<sup>th</sup>-08<sup>th</sup> June, 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)

**Realised Rainfall during past 24 hours till 0830 hours IST of today:**

- ❖ Light to moderate rainfall accompanied with thunderstorm & lightning observed **at most places** over Coastal Karnataka, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim; **at many places** over Kerala & Mahe, Vidarbha, Andaman & Nicobar Islands; **at a few places** over Himachal Pradesh, Uttarakhand, Lakshadweep; **at isolated places** over Tamil Nadu, Puducherry & Karaikal, interior Karnataka, Coastal Andhra Pradesh & Yanam, Telangana, Rayalaseema, Konkan & Goa, Madhya Maharashtra, Marathwada, Gujarat State, Madhya Pradesh, Chhattisgarh, Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Punjab, Haryana-Chandigarh-Delhi, Uttar Pradesh, Rajasthan, Gangetic West Bengal, Odisha, Bihar and Jharkhand.

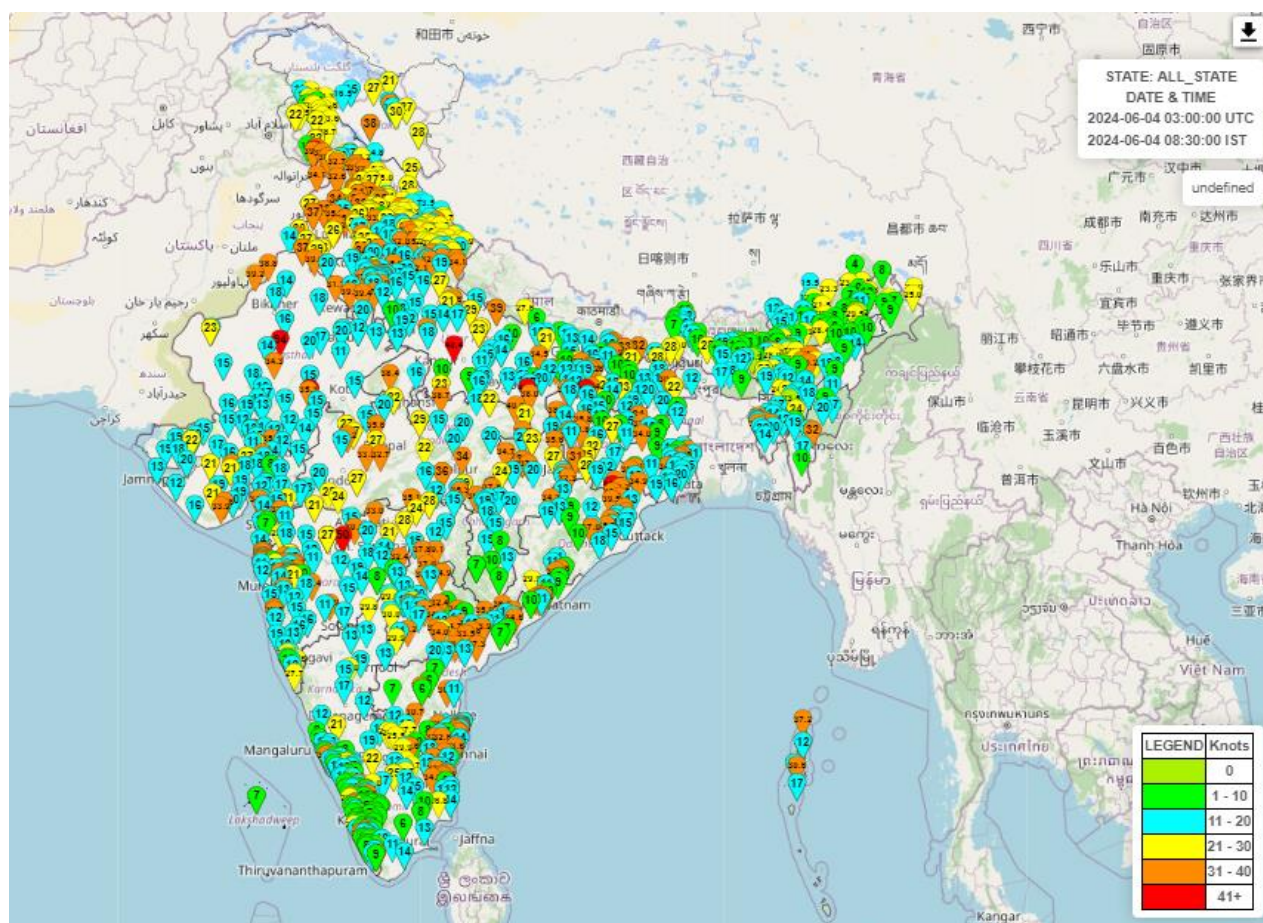
**Significant amount of rainfall (in cm):**

- ❖ **Assam & Meghalaya:** Matijuri Arg (dist Hailakandi) 15, Karimganj (dist Karimganj) 8, Mawphlang (dist East Khasi Hills) 7, A P Ghat (dist Cachar) 6, Mawsynram (dist East Khasi Hills) 6, Guwahati City Imd (dist Kamrup Metropolitan) 5, B P Ghat (dist Karimganj) 5, Shella (dist East Khasi Hills) 5, Fakiragram Arg (dist Kokrajhar) 5,
- ❖ **Nagaland, Manipur, Mizoram & Tripura:** Kamalpur\_aws (dist Dhalai) 14, Khowai (dist Khowai) 9, Budhjongnagar Arg (dist West Tripura) 9, Teliamura\_arg (dist Khowai) 7, Dm Office Arg (dist West Tripura) 6, Gandachara Aws (dist Dhalai) 6, Lembuchhera (dist West Tripura) 6, Hrc Nagicherra Arg (dist West Tripura) 5, Saiha (dist Saiha) 4, Gandechehra (dist Dhalai) 4,
- ❖ **Sub-Himalayan West Bengal & Sikkim:** Samsing (dist Darjeeling) 14, Tadong (dist East Sikkim) 11, Alipurduar (pto) (dist Alipurduar) 11, Cooch Behar (dist Cooch Behar) 8, Chepan (dist Alipurduar) 8, Gangtok (dist East Sikkim) 7, Kumargram (dist Alipurduar) 7,
- ❖ **COASTAL KARNATAKA:** Puttur Hms (dist Dakshina Kannada) 10, Uppinangadi (dist Dakshina Kannada) 9, Gokarna (dist Uttara Kannada) 8, Kumta (dist Uttara Kannada) 6, Kadra (dist Uttara Kannada) 4,
- ❖ **North Interior Karnataka:** Shirahatti (dist Gadag) 10, Kundgol (dist Dharwad) 5, Bellatti (dist Gadag) 3, Lakshmeswar (dist Gadag) 2,
- ❖ **South Interior Karnataka:** Gundlupet (dist Chamarajanagar) 9, Harapanahalli (dist Vijayanagara) 5, Chamarajanagar (dist Chamarajanagar) 3, Somwarpet (dist Kodagu) 3, Sargur (dist Mysuru) 3, H D Kote (dist Mysuru) 2
- ❖ **Tamil Nadu:** Salem (dist Salem) 9, Adiramapattinam (dist Thanjavur), Adiramapattinam AWS (dist Thanjavur) 7 each, Devala (dist The Nilgiris), Kariyakovil Dam (dist Salem) 6 each,
- ❖ **Kerala & Mahe:** Vellarikkundu AWS (Kasaragod district) 9, Aralam AWS (Kannur district) 8, Ayyankunnu AWS (Kannur district) & Panathur AWS (Kasaragod district) 5 each, Kunnamkulam (Thrissur district) & Padamala AWS (Wayanad district) 4 each,

**Reported maximum wind speed (kmph) during past 24 hours till 0830 hours IST of today:**

- ❖ **Rajasthan:** Chittaurgarh 78, Jaisalmer 42;
- ❖ **Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad:** Leh 74, Kargil 70, Jammu 67;
- ❖ **Uttar Pradesh:** Baharaich 72, Sitapur 54, Bareilly 50, Shahjahanpur 48;
- ❖ **Himachal Pradesh:** Bilaspur 68, Una 67, Shimla 65;
- ❖ **Punjab:** Shahid\_Bhagat\_Singh\_Nagar, Faridkot 68, Jalandar 63, Ropar, Moga 61;
- ❖ **Haryana:** Karnal 67, Kaithal 51;
- ❖ **Madhya Pradesh:** Seonni 66, Mandla 62, Sagar 54, Khandwa, Shajapur, Agra, Sehore 50;
- ❖ **Bihar:** Madhubani 61, Supaul 59, Purnea, Krishnaganj 52;
- ❖ **Jharkhand:** Jamtara, Simdega 57;
- ❖ **Chhattisgarh:** Korba 57, Jashpur 50, Mungeli 44, Surajpur 42;
- ❖ **Maharashtra:** Jalgaon, Yavatmal, Nagpur 52, Aurangabad 50;
- ❖ **Gujarat State:** Ahmedabad 52, Kachchh 40;
- ❖ **Delhi:** South\_West\_Delhi 48;
- ❖ **Tamil Nadu:** Erode 46;
- ❖ **South Interior Karnataka:** Chamarajnagar 41;

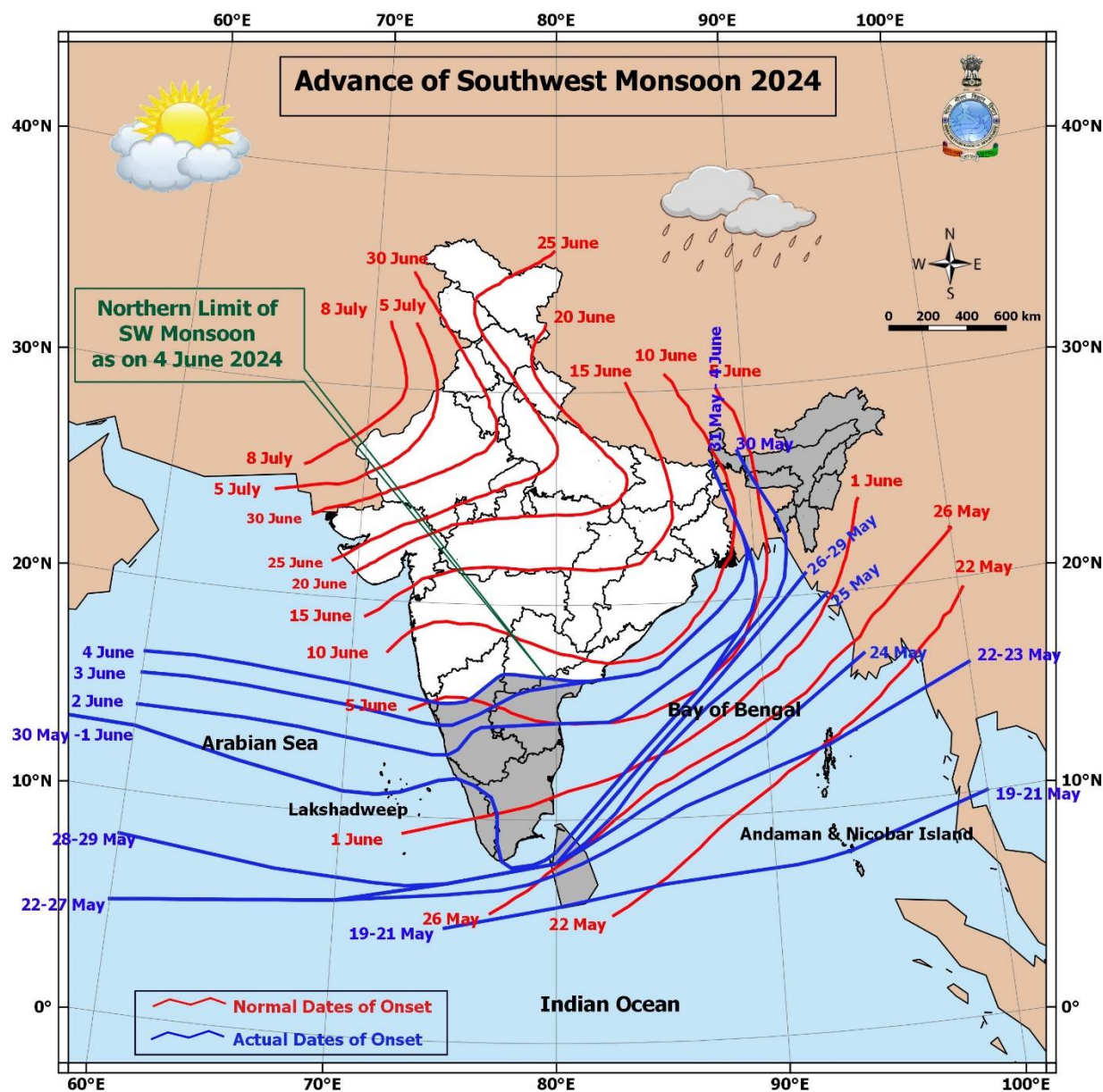
**Fig.: Gusty winds reported over the country (in knots, 1 Knot = 1.85 kmph) from 0830 hrs IST of 03.06.2024 to 0830 hrs IST of 04.06.2024**

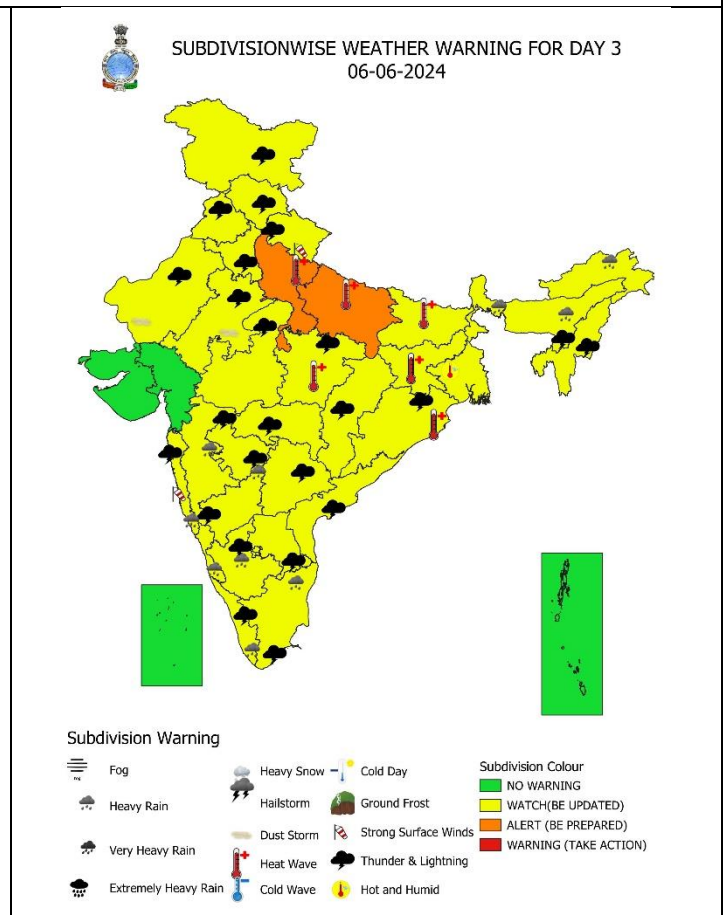
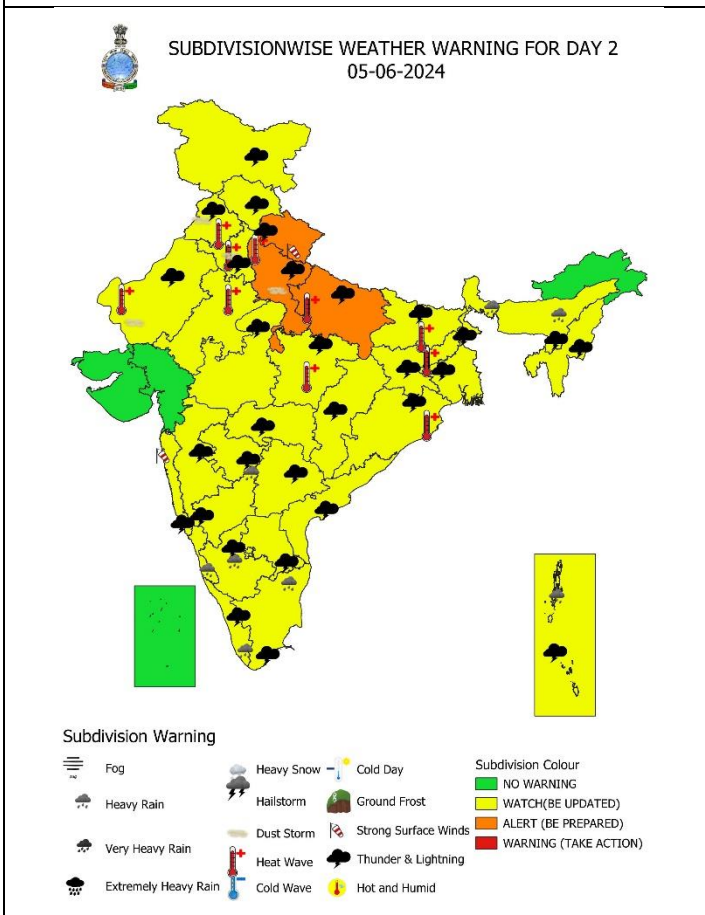
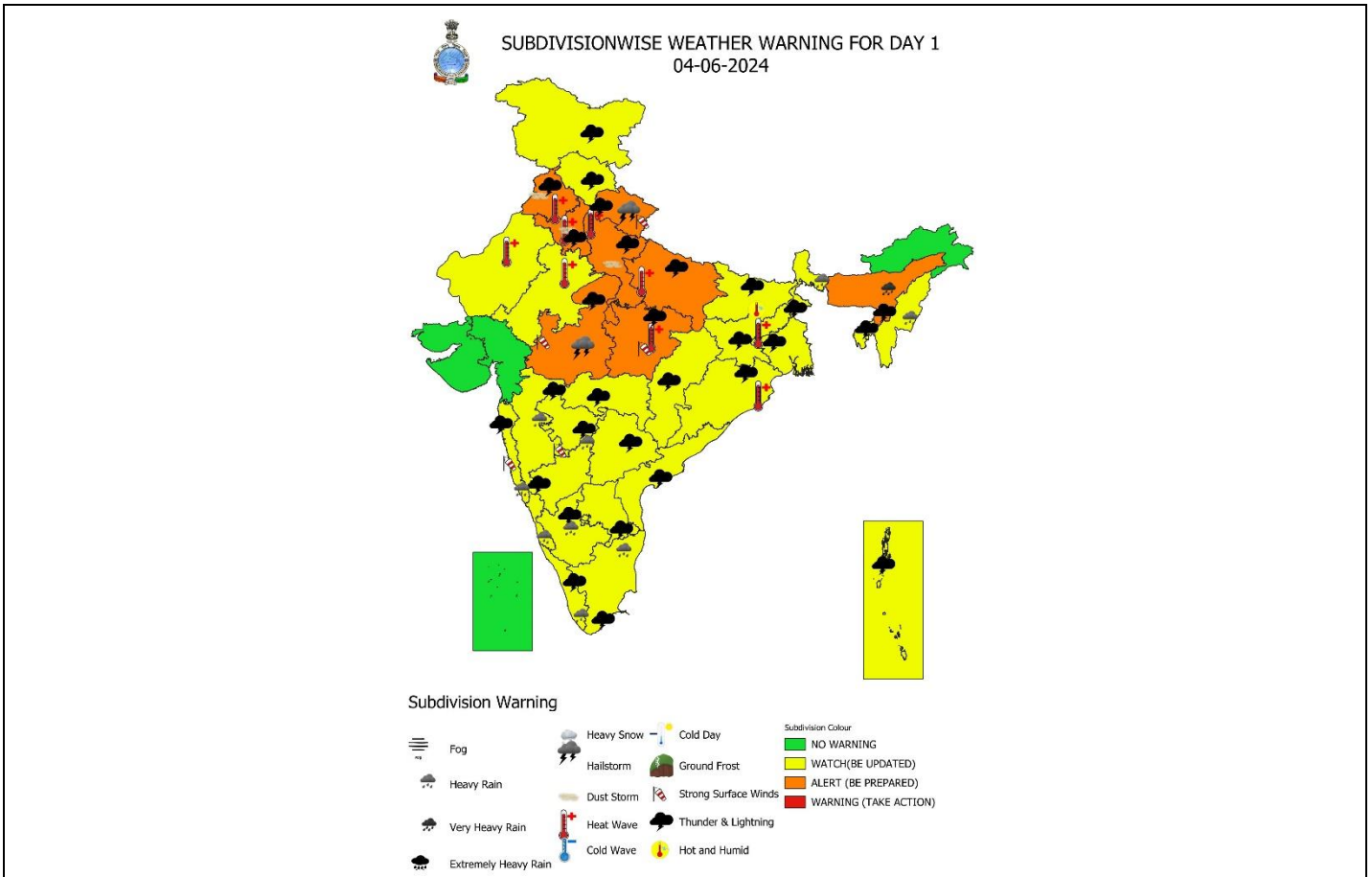


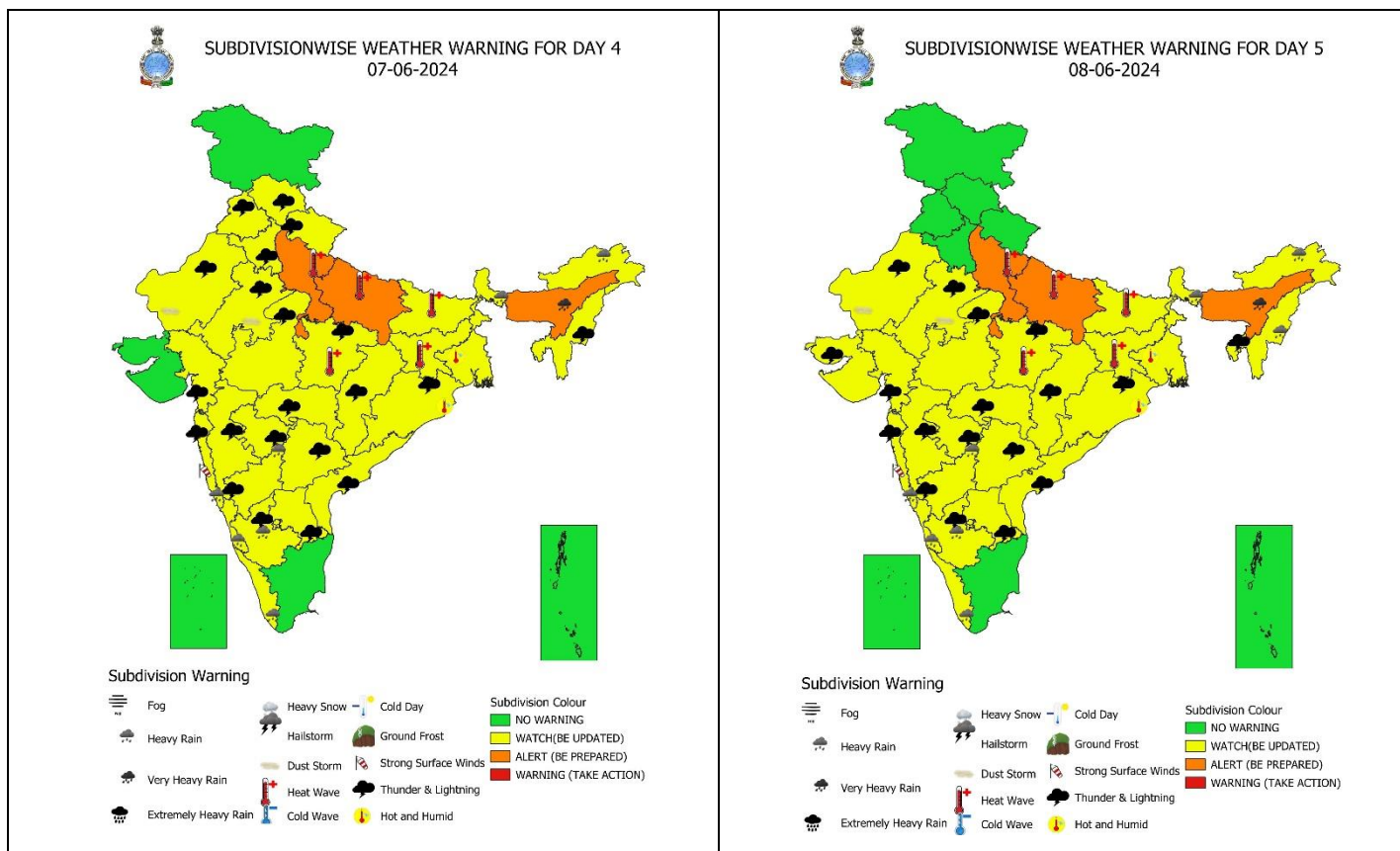
For more details, kindly refer: <http://aws.imd.gov.in:8091/>



## Advance of Southwest Monsoon 2024







**IMPACT & ACTION SUGGESTED due to very heavy rainfall over Assam & Meghalaya on 04<sup>th</sup>, 07<sup>th</sup> & 08<sup>th</sup> June, 2024.**

### Impact Expected

- Localized Flooding of roads, water logging in low lying areas and closure of underpasses mainly in urban areas of the above region.
- Occasional reduction in visibility due to heavy rainfall.
- Disruption of traffic in major cities due to water logging in roads leading to increased travel time.
- Minor damage to kutchha roads.
- Possibilities of damage to vulnerable structure.
- Localized Landslides/Mudslides/landslips/mudslips/landsinks/mudsinks.
- Damage to horticulture and standing crops in some areas due to inundation.
- It may lead to riverine flooding in some river catchments (for riverine flooding please visit Web page of CWC)

### A. Action Suggested

- Check for traffic congestion on your route before leaving for your destination.
- Follow any traffic advisories that are issued in this regard.
- Avoid going to areas that face the water logging problems often.
- Avoid staying in vulnerable structure.



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

### **Orange alert Areas:**

- High temperature & increased likelihood of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing heavy work.
- High health concern 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:**

- 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.

## **Impact expected and action suggested due to thunderstorms, lightning/squall/gusty winds over Madhya Pradesh, Punjab, Haryana-Chandigarh-Delhi on 04<sup>th</sup> June, 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.

## **Agromet advisories for Heavy Rainfall, Gusty winds and Heat Wave likely over various parts of the country: -**

- Drain out excess water from crop fields to avoid water stagnation in Tamil Nadu, Kerala, Karnataka, Sub Himalayan West Bengal and Assam & Meghalaya.
- Apply light and frequent irrigation to standing crops to avoid heat stress; provide mulching to conserve soil moisture and minimise evaporation in Punjab, Haryana, Uttar Pradesh, Rajasthan, Bihar, Jharkhand, Odisha and East 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 Uttarakhand and West Madhya Pradesh.
- Provide mechanical support to horticultural crops & staking to vegetables to prevent damage from gusty winds.

## 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)



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