



Government of India  
Ministry of Earth Sciences  
India Meteorological Department



Press Release

Date: 21<sup>st</sup> June, 2024

Time of Issue: 1315 hours IST

**Subject: Heavy to very heavy rainfall very likely over Kerala, Coastal & South Interior Karnataka, Konkan-Goa during next 5 days.**

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

- ❖ *Heatwave conditions prevailed in isolated pockets of south Uttar Pradesh and Odisha.*
- ❖ *Maximum temperatures were in the range of 40-42°C in many parts of West Rajasthan; in some parts of south Uttar Pradesh and north Madhya Pradesh; in isolated pockets of Haryana-Delhi, East Rajasthan and Gujarat state.*
- ❖ *Yesterday, the highest Maximum Temperature of 43.8°C was reported at Sirsa (Haryana) over the country.*
- ❖ *Heavy to very heavy rainfall with extremely heavy falls occurred at isolated places over Konkan & Goa; Heavy to very heavy rainfall at isolated places over Madhya Maharashtra, Bihar, West Madhya Pradesh; heavy rainfall at isolated places over coastal & North Interior Karnataka, Arunachal Pradesh, Sub-Himalayan West Bengal & Sikkim, Odisha, Jharkhand, East Madhya Pradesh.*
- ❖ *Gusty winds/squally winds data reported over the country is attached in [Annexure II](#).*

**Advance of Southwest Monsoon:**

- ❖ Southwest Monsoon has further advanced into some more parts of Maharashtra, remaining parts of Vidarbha, some parts of Madhya Pradesh, some more parts of Chhattisgarh & Odisha, some parts of Gangetic West Bengal, remaining parts of Sub-Himalayan West Bengal and some parts of Jharkhand.
- ❖ The Northern Limit of Monsoon now passes through 20.5°N/60°E, 20.5°N/63°E, 20.5°N/70°E, Navsari, Jalgaon, Mandla, Pendra Road, Jharsuguda, Balasore, Haldia, Pakur, Sahibganj and Raxaul.
- ❖ Conditions are favourable for further advance of Southwest Monsoon into some more parts of North Arabian Sea, Gujarat State, remaining parts of Maharashtra, some more parts of Madhya Pradesh, Chhattisgarh, Odisha, Gangetic West Bengal, Jharkhand, Bihar and some parts of East Uttar Pradesh during next 3-4 days.

**Weather Systems and Forecast & Warnings:**

- ❖ A cyclonic circulation lies over northeast Assam & neighbourhood. Under its influence:
  - 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 during next 5 days.
  - Isolated **heavy rainfall** very likely over Sub-Himalayan West Bengal & Sikkim, Assam & Meghalaya, Arunachal Pradesh next 5 days with possibility of very heavy rainfall over Sub-Himalayan West Bengal & Sikkim on 24<sup>th</sup> & 25<sup>th</sup> and isolated heavy rainfall over Nagaland, Manipur, Mizoram & Tripura on 21<sup>st</sup> & 22<sup>nd</sup> June.
- ❖ A cyclonic circulation lies over Bihar & adjoining East Uttar Pradesh in lower tropospheric levels and an east-west trough runs from northeast Rajasthan to Manipur in lower tropospheric levels. Under their influence:
  - Fairly widespread light to moderate rainfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over Gangetic West Bengal, Bihar, Jharkhand, Odisha, Andaman & Nicobar Islands during next 5 days.
  - Isolated **heavy rainfall** very likely over Bihar during 21<sup>st</sup>-25<sup>th</sup>, Odisha on 21<sup>st</sup> & 22<sup>nd</sup>; Jharkhand on 24<sup>th</sup> & 25<sup>th</sup> and Andaman & Nicobar Islands during 22<sup>nd</sup>-25<sup>th</sup> June. Isolated **very heavy rainfall** likely over Odisha on 21<sup>st</sup> and over Bihar on 24<sup>th</sup> & 25<sup>th</sup> today.

- ❖ A trough at mean sea level runs off Karnataka and Kerala coasts and lower-level winds are likely to strengthen at the west coast during next 3 days. Under its influence:
  - Scattered to fairly widespread light to moderate rainfall accompanied with **thunderstorm, lightning** likely over Gujarat state, Konkan & Goa, Madhya Maharashtra & Marathwada during next 5 days.
  - Isolated **heavy to very heavy rainfall** very likely over Konkan & Goa and ghat areas of Madhya Maharashtra during 21<sup>st</sup>-25<sup>th</sup> and isolated **heavy rainfall** over Gujarat region on 21<sup>st</sup> & 23<sup>rd</sup> and Marathwada on 23<sup>rd</sup> June and southeast Rajasthan on 21<sup>st</sup>, 24<sup>th</sup> & 25<sup>th</sup> June 2024.
  - Fairly widespread to widespread light to moderate rainfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** likely over Karnataka, Kerala & Mahe, Lakshadweep; isolated to scattered light to moderate rainfall over Coastal Andhra Pradesh & Yanam, Rayalaseema, Telangana, Tamil Nadu, Puducherry & Karaikal during next 5 days.
  - Isolated **heavy to very heavy rainfall** very likely over Kerala & Mahe Karnataka, Tamil Nadu during 21<sup>st</sup>-25<sup>th</sup>; Lakshadweep on 22<sup>nd</sup> & 23<sup>rd</sup> and Telangana on 22<sup>nd</sup> June.
  - Isolated **extremely heavy rainfall** also likely over Coastal Karnataka on 22<sup>nd</sup> & 23<sup>rd</sup>; Konkan & Goa on 23<sup>rd</sup> & 24<sup>th</sup>; Kerala & Mahe & South Interior Karnataka on 23<sup>rd</sup> June, 2024.
- ❖ A cyclonic circulation lies over Vidarbha & neighbourhood in lower tropospheric levels. Under its influence; fairly widespread to widespread rainfall with **thunderstorm, lightning & gusty winds (40-50 kmph)** very likely over Madhya Pradesh, Vidarbha, Chhattisgarh during next 5 days. Isolated **heavy rainfall** very likely over Vidarbha during 21<sup>st</sup>-23<sup>rd</sup>; Chhattisgarh and Madhya Pradesh on 21<sup>st</sup> & 22<sup>nd</sup> June.
- ❖ A Western Disturbance seen as a cyclonic circulation over Himachal Pradesh & neighbourhood in lower & middle tropospheric levels with a trough aloft along Long. 68°E to the north of Lat. 28°N and an induced cyclonic circulation lies over northwest Uttar Pradesh in lower tropospheric levels. Under its influence; Isolated to scattered light to moderate rainfall with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh, Punjab, Haryana-Chandigarh-Delhi today and Uttar Pradesh & Rajasthan during next 5 days.
- ❖ Under the influence of lower-level easterlies from Bay of Bengal; Scattered to fairly widespread rainfall over Uttarakhand and East Uttar Pradesh during next 7 days. Isolated **heavy rainfall** very likely over Uttarakhand during 23<sup>rd</sup>-25<sup>th</sup> and East Uttar Pradesh on 24<sup>th</sup> & 25<sup>th</sup> June.

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

- ❖ Rise in maximum temperatures by about 3-4°C very likely over Northwest India during next 3 days and no significant change thereafter.
- ❖ Fall in maximum temperatures by 2-3°C very likely over East & Central India during next 24 hours and no significant change thereafter.
- ❖ No significant change in maximum temperatures very likely over rest parts of the country.

#### Heat Wave warning for next 5 days:

- ❖ **Heat wave conditions** very likely in isolated/some pockets of West Uttar Pradesh during 21<sup>st</sup>-24<sup>th</sup>; Jammu division during 23<sup>rd</sup>-25<sup>th</sup> June and **abate thereafter**.

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

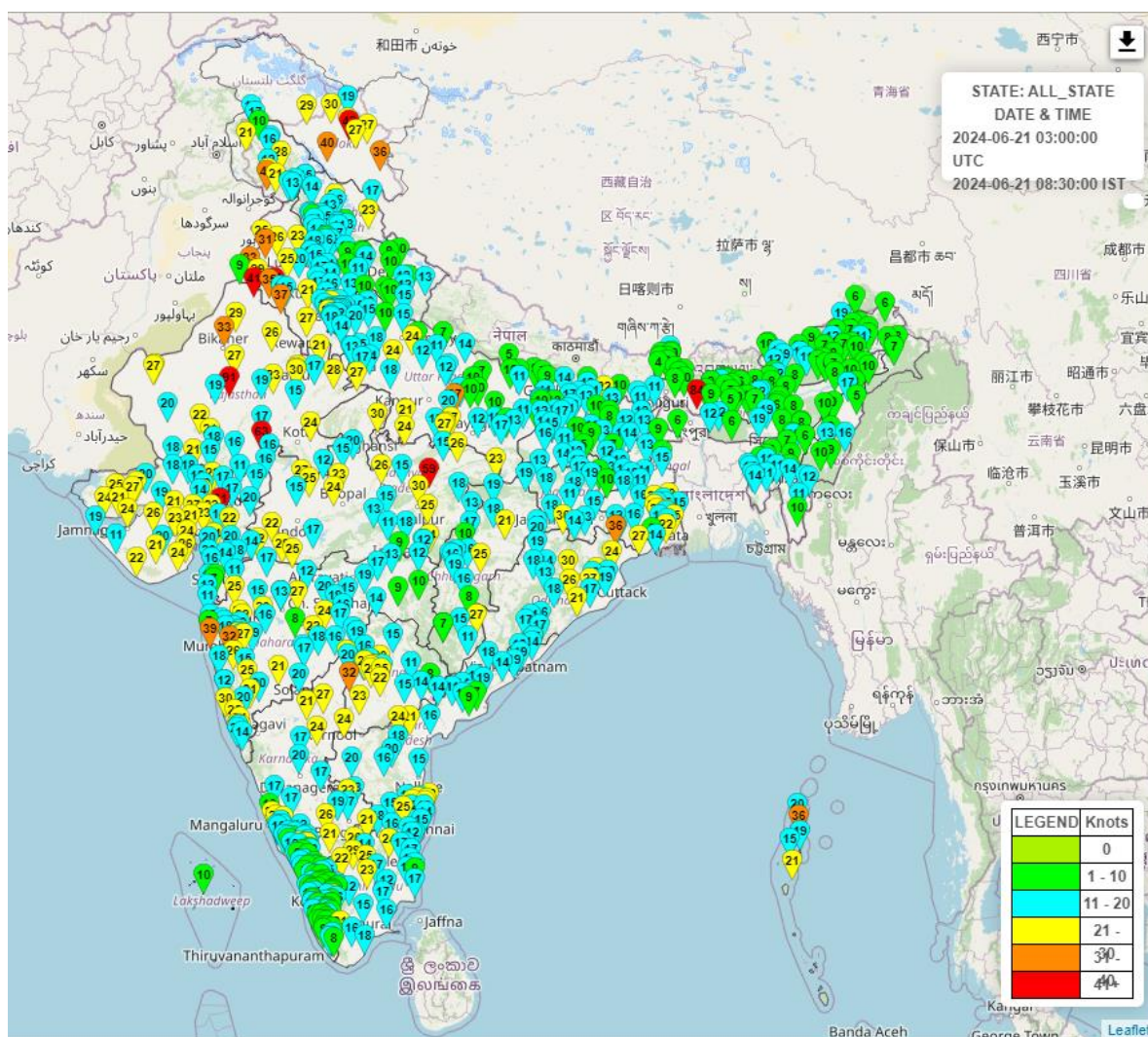
**Significant amount of rainfall (in cm):**

- ❖ **Konkan & Goa:** Valpoi (dist North Goa) 26, Dodamarg (dist Sindhudurg) 21, Matheran (dist Raigad) 17, Kankavli (dist Sindhudurg) 16, Vaibhavwadi (dist Sindhudurg) 16, Karjat\_agri (dist Raigad) 14, Chiplun (dist Ratnagiri) 14, Awalegaon - Arg (dist Sindhudurg) 13, Wakwali\_agri (dist Ratnagiri) 11, Savarde-arg (dist Ratnagiri) 11, Tbia Imd Part Time (dist Thane) 11, Ponda (dist North Goa) 10, Sawantwadi (dist Sindhudurg) 10, Rajapur (dist Ratnagiri) 9, Bhiwandi (dist Thane) 9, Mulde\_ Agri (dist Sindhudurg) 9, Mandangad (dist Ratnagiri) 8, Kalyan (dist Thane) 7, Ulhasnagar (dist Thane) 7, Pernem (dist North Goa) 7, Sanguem (dist South Goa) 7, Thane (dist Thane) 7, Kudal (dist Sindhudurg) 7
- ❖ **Madhya Maharashtra:** Gaganbawada (dist Kolhapur) 17, Mahabaleshwar- Imd Obsy (dist Satara) 7, Ajra (dist Kolhapur) 7,
- ❖ **Bihar:** Sattar Kataiya (dist Saharsa) 13, Kahara (dist Saharsa) 7, Saurbazar (dist Saharsa) 7, Banmankhi (dist Purnea) 7, Sonbarsa (dist Saharsa) 7,
- ❖ **West Madhya Pradesh:** Bairagarh Airport (dist Bhopal) 12, Sehore-aws (dist Sehore) 11, Sailana (dist Ratlam) 9, Salwani (dist Raisen) 8, Ichhawar (dist Sehore) 8, Navibagh Aet (dist Bhopal) 7,
- ❖ **Coastal Karnataka:** Kadra (dist Uttara Kannada) 11, Yellapur (dist Uttara Kannada) 8,
- ❖ **Odisha:** Talcher ( Angul) 11, Banarpal ( Angul) 10, Betanati ( Mayurbhanj) 10, Jhorigam ( Nawarangpur) 9, Bhuban ( Dhenkanal) 9, Parjang ( Dhenkanal) 9, Telkoi ( Keonjhar) 8, Balimundali ( Mayurbhanj) 7,
- ❖ **North Interior Karnataka:** Londa (dist Belagavi) 10, Belagavi Pto (dist Belagavi) 3,
- ❖ **Chhattisgarh:** Kharora (dist Raipur) 10, Kawardha (dist Kabirdham) 6, Arang (dist Raipur) 6,
- ❖ **Sub-Himalayan West Bengal & Sikkim:** Sevoke (dist Darjeeling) 10, Rongo (dist Kalimpong) 5, Jhallong (dist Kalimpong) 5,
- ❖ **East Madhya Pradesh:** Beohari (dist Shahdol) 7, Bina (dist Sagar) 7,
- ❖ **Jharkhand:** west Singhbhum-7
- ❖ **Arunachal Pradesh:** Namsai (dist Lohit) 7, Roing (dist Lower Dibang Valley) 4.

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

- ❖ **Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad:** Jammu & Kargil 74 each, Leh 67, Ramban 52;
- ❖ **Punjab:** Fazilka 61, Faridkot 57, Barnala & Firozpur 46 each;
- ❖ **Haryana:** Sirsa 87, Hisar 68, Mahendragarh 50;
- ❖ **Rajasthan:** Hanumangarh 76, Bikaner 61, Jaipur 55;
- ❖ **Uttar Pradesh:** Jalaun 68, Jhansi 55, Chitrakoot 50;
- ❖ **Madhya Pradesh:** Jabalpur 55, Agar 50;
- ❖ **Gujarat state:** Ahmedabad & Kachchh 50 each, Bhavnagar & Rajkot 48 each;
- ❖ **Maharashtra:** Raigad 72, Pune 59, Sindhudurg 55, Jalna 50;
- ❖ **Odisha:** Mayurbhanj 67, Sundergarh & Angul 55 each;
- ❖ **Telangana:** Vikarabad 59, Hyderabad 55.

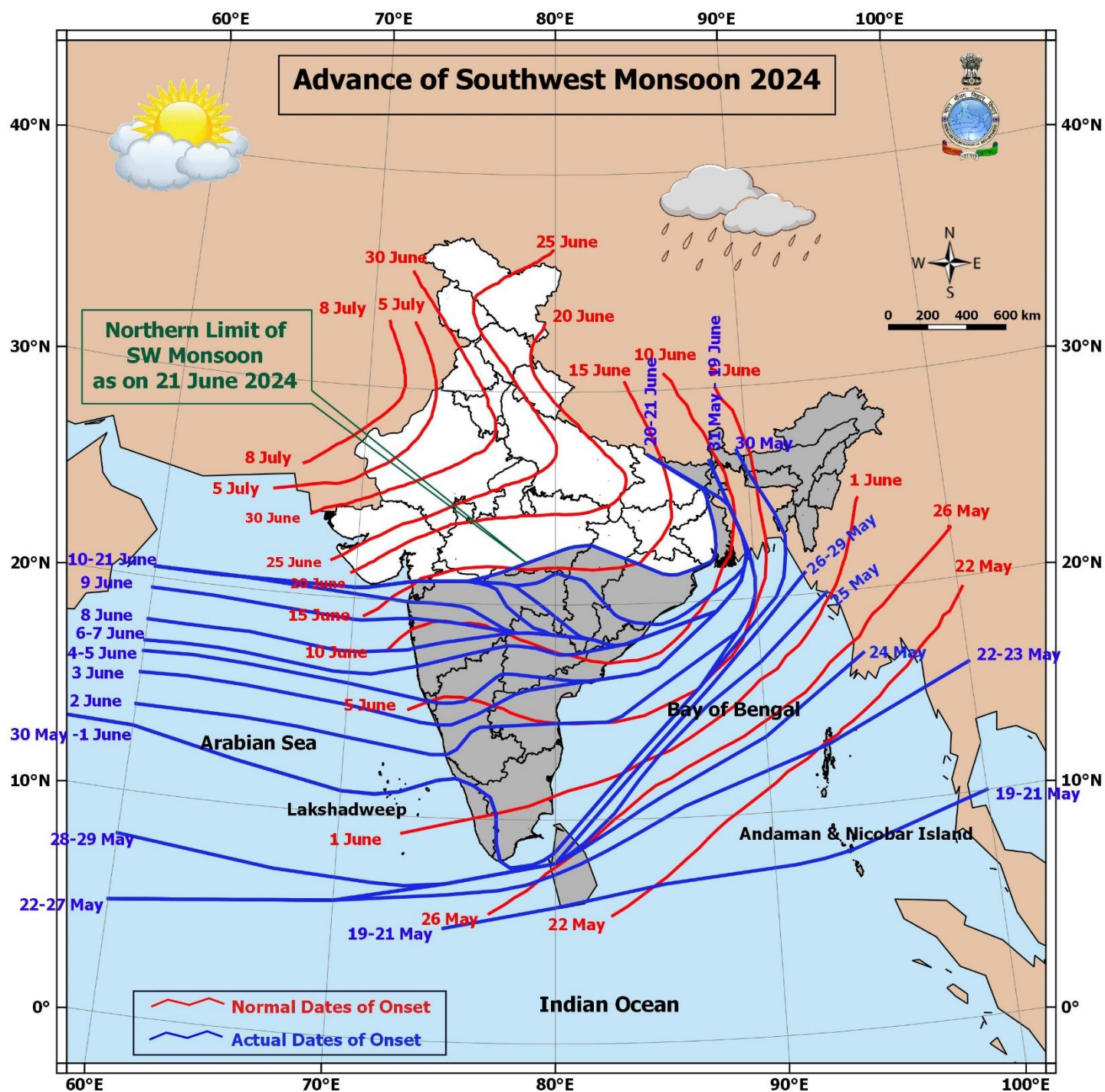
**Fig.: Gusty winds reported over the country (in knots, 1 Knot = 1.85 kmph) from 0830 hrs IST of 20.06.2024 to 0830 hrs IST of 21.06.2024**

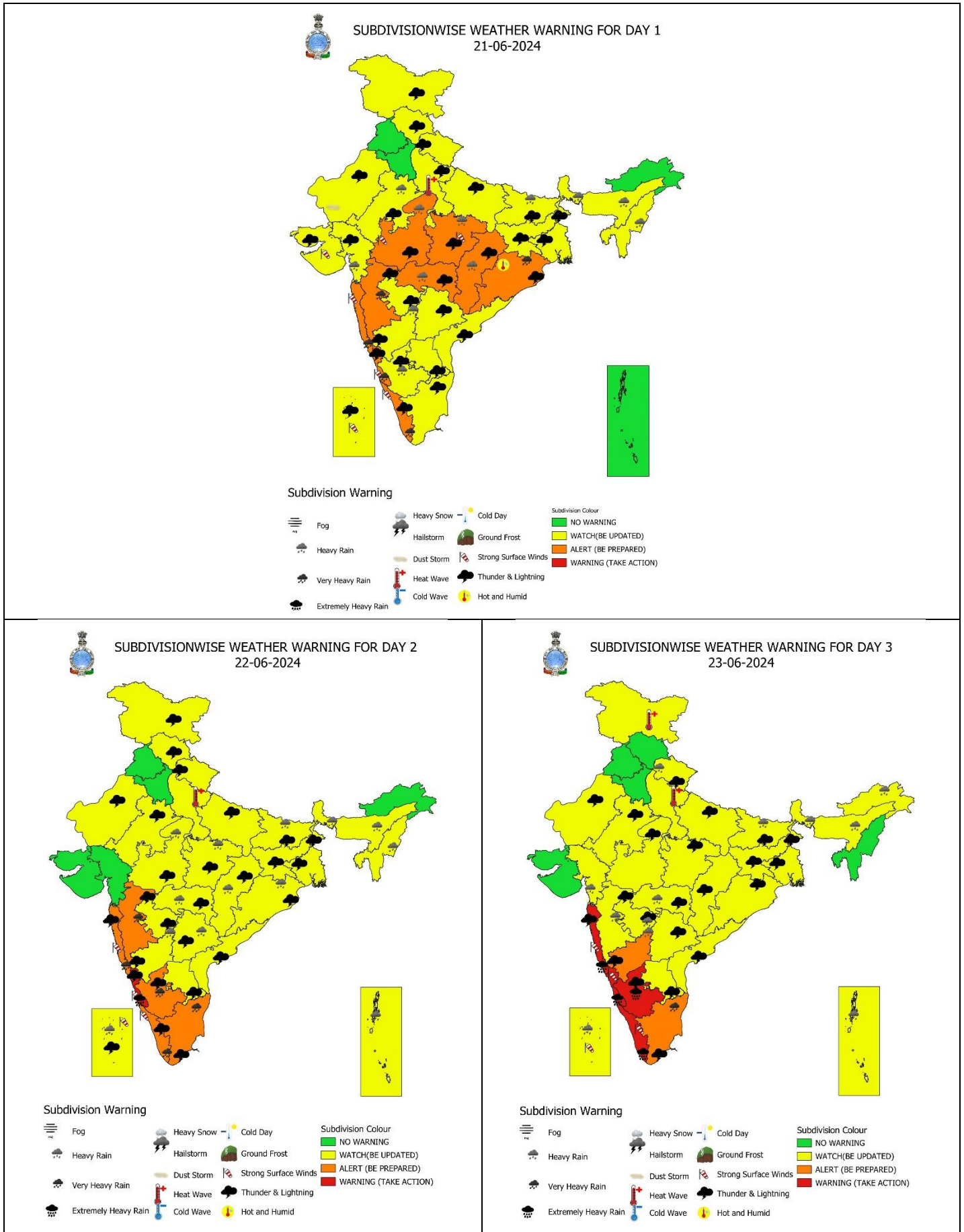


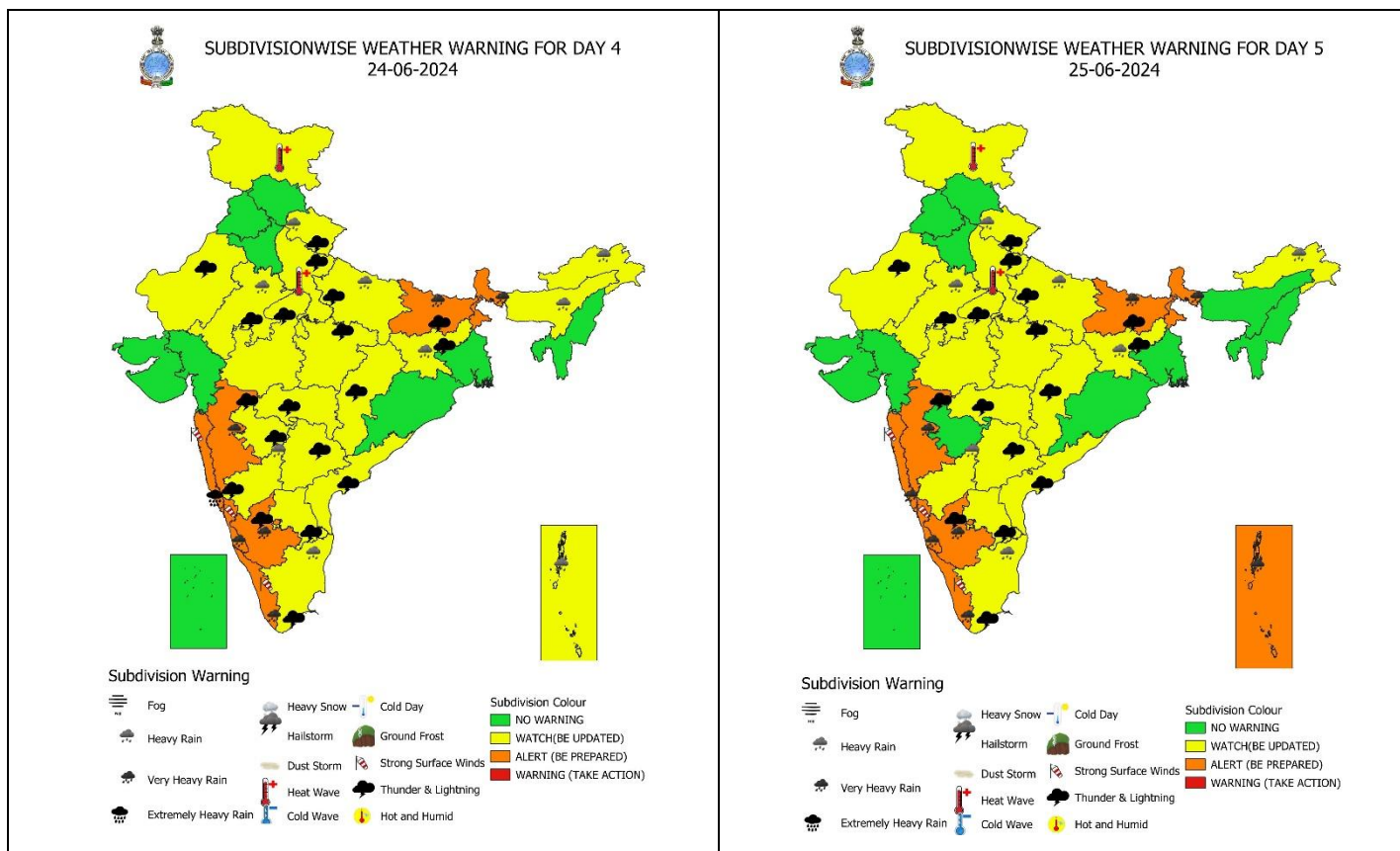
For more details, kindly refer: <http://aws.imd.gov.in:8091/>



## Advance of Southwest Monsoon 2024







**IMPACT & ACTION SUGGESTED due to very heavy/extremely heavy rainfall over ghat areas of Madhya Maharashtra, Konkan & Goa, Coastal Karnataka, Kerala & Mahe during 21<sup>st</sup>-25<sup>th</sup>; Tamil Nadu, South Interior Karnataka during 22<sup>nd</sup>-25<sup>th</sup> and Sub-Himalayan West Bengal & Sikkim, Bihar on 24<sup>th</sup> & 25<sup>th</sup> June.**

### 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 kutcha 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)

### 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.

### 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 Assam & Meghalaya, Nagaland, Manipur, Sub Himalayan West Bengal & Sikkim, Odisha, Bihar, Chhattisgarh, Konkan, Madhya Pradesh, Vidarbha, Tamilnadu, Kerala, Karnataka and Telangana.
- Apply light and frequent irrigation to standing crops to avoid heat stress; provide mulching to conserve soil moisture and minimise evaporation in West Uttar Pradesh.
- Provide mechanical support to horticultural crops & staking to vegetables.



## 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)