

Government of India
Ministry of Earth Sciences
India Meteorological Department



Press Release

Date: 23rd June, 2024

Time of Issue: 1315 hours IST

Subject: Heavy to very heavy rainfall very likely along the West Coast during next 5 days.

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

- ❖ **Maximum temperatures** are in the range of 40-41°C over some parts of Haryana, West Rajasthan & Gujarat state and in the range of 38-40°C over many parts of Punjab, north Madhya Pradesh and over some parts of East Rajasthan, south Uttar Pradesh & West Jharkhand.
- ❖ **Yesterday, the highest Maximum Temperature of 43.8°C** was reported at **Kanpur IAF (East Uttar Pradesh)** over the country.
- ❖ **Heavy to very heavy rainfall** at isolated places over Telangana, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura; **heavy rainfall** at isolated places over Gujarat Region, Chhattisgarh, West Bengal & Sikkim.
- ❖ **Gusty winds/squally winds** data reported over the country is attached in **Annexure II**.

Advance of Southwest Monsoon:

- ❖ Today, the Southwest Monsoon has advanced into some more parts of Arabian Sea, Gujarat state; remaining parts of Maharashtra; some more parts of Madhya Pradesh & Chhattisgarh; remaining parts of Odisha and some parts of Jharkhand.
- ❖ Northern Limit of Monsoon continues to pass 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 and Gujarat State; some more parts of Madhya Pradesh; remaining parts of Chhattisgarh, West Bengal, Jharkhand and Bihar; some parts of Uttar Pradesh and Uttarakhand during next 3-4 days.

Weather Systems and Forecast & Warnings:

- ❖ A trough at mean sea level runs off Maharashtra-Kerala coasts. A cyclonic circulation lies over south Chhattisgarh in lower & middle tropospheric levels and a trough runs from this cyclonic circulation to south Maharashtra in lower levels. Under their influence:
 - Fairly widespread to widespread light to moderate rainfall accompanied with **thunderstorm, lightning & gusty winds (40-50 kmph)** very likely over Konkan & Goa, Madhya Maharashtra & Marathwada, Karnataka, Kerala & Mahe, Lakshadweep, Gujarat state; scattered to fairly widespread 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 Konkan & Goa, Ghat areas of Madhya Maharashtra, Karnataka during next 5 days; over Gujarat Region on 23rd & 24th; over ghat areas of Tamil Nadu on 23rd; Kerala & Mahe during 23rd-25th and isolated **heavy rainfall** over Marathwada on 23rd, Saurashtra & Kutch, Lakshadweep on 23rd & 24th; Gujarat Region on 25th; Tamil Nadu on 24th & 25th; Kerala & Mahe on 26th & 27th and over Coastal Andhra Pradesh & Yanam during 25th -27th June, 2024.
 - **Isolated extremely heavy rainfall also likely over Coastal & South Interior Karnataka and Kerala & Mahe on 23rd June, 2024.**
 - 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 West Madhya Pradesh on 23rd, 24th & 27th; East Madhya Pradesh, Chhattisgarh on 23rd, 26th & 27th and Vidarbha on 23rd & 27th June.

- ❖ Strong southerly/southwesterly winds prevail in the lower tropospheric levels from the Bay of Bengal into east & northeast India. In the lower tropospheric levels, a cyclonic circulation lies over central Rajasthan and a trough runs from this cyclonic circulation to south Chhattisgarh. Under influence of these systems;
 - Fairly widespread light to moderate rainfall accompanied with **thunderstorm, lightning & gusty winds (30-40 kmph)** very likely over Sub-Himalayan West Bengal & Sikkim on 23rd & 24th; Gangetic West Bengal, Uttar Pradesh during 25th -27th; Bihar, Jharkhand, Odisha during next 5 days.
 - Isolated **heavy to very heavy rainfall** very likely over Andaman & Nicobar Islands on 24th & 25th; Sub-Himalayan West Bengal & Sikkim during 25th – 27th and isolated heavy rainfall over Uttarakhand, East Uttar Pradesh, Bihar, Jharkhand during 25th -27th; West Uttar Pradesh, East Rajasthan, Odisha on 26th & 27th; Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura during 23rd-25th and Arunachal Pradesh on 24th & 26th June.

Maximum temperature forecast for next 5 days:

- ❖ Rise in maximum temperature by about 2°C very likely over most parts of West Uttar Pradesh, Haryana, Chandigarh, Delhi and Punjab during next 3 days and no significant change thereafter.
- ❖ Fall in maximum temperature by 2-3°C very likely over most parts of 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 pockets of Punjab, Haryana, West Uttar Pradesh on 24th & 25th June and abate thereafter.

For more details, kindly refer: https://mausam.imd.gov.in/responsive/all_india_forcast_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, Andaman & Nicobar Islands, Konkan & Goa, Coastal Karnataka, Vidarbha ; **at many places** over Madhya Pradesh, Chhattisgarh, Sub-Himalayan West Bengal & Sikkim, Marathwada, Coastal Andhra Pradesh & Yanam; **at a few places** over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Uttarakhand, Gangetic West Bengal, Madhya Maharashtra, Odisha, Arunachal Pradesh, Assam & Meghalaya, Uttar Pradesh; **at isolated places** over Himachal Pradesh, Haryana, Bihar, Jharkhand, Rajasthan, Interior Karnataka, Rayalaseema, Nagaland, Manipur, Mizoram & Tripura.

Realised Rainfall during past 24 hours till 0830 hours IST of today (in cm):

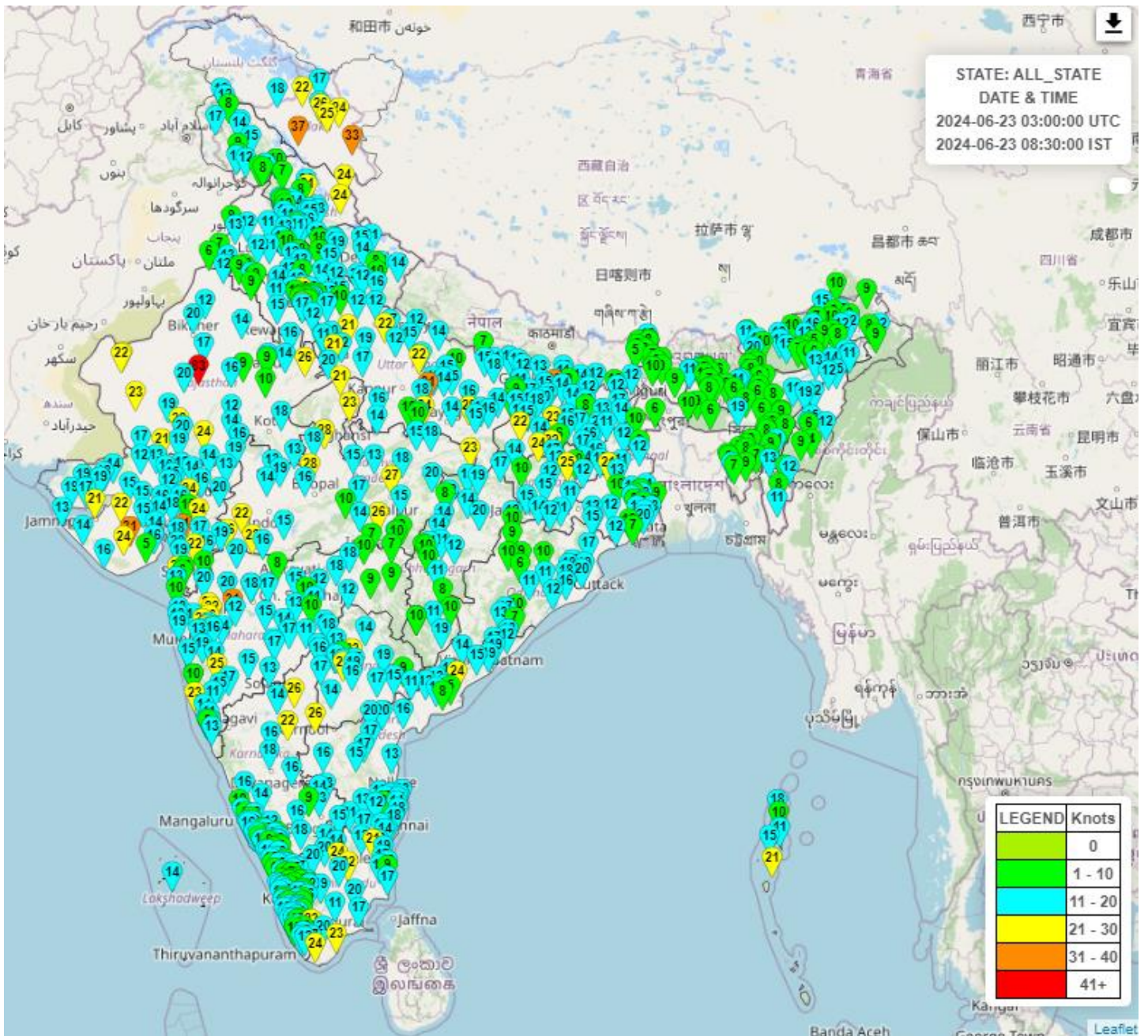
- ❖ **Telangana:** Utnur (dist Adilabad) 14, Aswaraopeta (dist B. Kothagudem) 12, Manuguru (dist B. Kothagudem) 10, Navipet (dist Nizamabad) 9, Nanganur (dist Siddipet) 8, Bejjanki (dist Siddipet) 7;
- ❖ **Assam & Meghalaya:** Moranhat (dist Dibrugarh) 12, Dholla Bazar (dist Tinsukia) 10, Margherita (dist Tinsukia) 6, Khowang (dist Dibrugarh) 5,
- ❖ **Nagaland, Manipur, Mizoram & Tripura:** Mangkolemba (dist Mokokchung) 13,
- ❖ **Gangetic West Bengal:** Gheropara (dist Birbhum) 10, Sri Niketan (dist Birbhum) 3;
- ❖ **Kerala & Mahe:** Kudulu (Kasaragod district) 8, Ayyankunnu AWS (Kannur district), Vellarikkundu AWS (Kasaragod district) & Muliya AWS (Kasargod district) 7 each. Manjeri (Malappuram district), Taliparamba & Pinarayi AWS (both in Kannur district) & Padannakkad AWS (Kasargod district) 6 each, Kodungallur & Chalakkudy (both in Thrissur district), Vadakara AWS (Kozhikode district), Panathur AWS (Kasargod district), Cheruthazham ARG & Panniyoor ARG (both in Kannur district) 5 each,
- ❖ **Chhattisgarh:** Sukma (dist Sukma) 9, Lalpur Thana (dist Mungeli) 6, Bhopalpatnam (dist Bijapur) 5, Lal Bahadur Nagar (dist Rajnandgaon) 5,
- ❖ **Gujarat Region:** Kukarmunda (dist Tapi) 8, Vyara (dist Tapi) 6, Bodeli (dist Chhota Udepur) 6, Nizer (dist Tapi) 5, Sagbara (dist Narmada) 5, Vapi (dist Valsad) 4, Naswadi (dist Chhota Udepur) 4, Chhotaudepur_kvks Aws (dist Chhota Udepur) 4
- ❖ **Sub-Himalayan West Bengal & Sikkim:** Rongli (dist Pakyong) 7, Amfu Kalimpong (dist Kalimpong) 5, Samsing (dist Darjeeling) 5, Jhallong (dist Kalimpong) 5,
- ❖ **Konkan & Goa:** Awalegaon - Arg (dist Sindhudurg) 6, Mahad (dist Raigad) 6, Mandangad (dist Ratnagiri) 6, Kudal (dist Sindhudurg) 5, Mulde_ Agri (dist Sindhudurg) 5, Mhasla (dist Raigad) 5, Malvan (dist Sindhudurg) 5,
- ❖ **Lakshadweep:** Agathi (Lakshadweep UT) 6, Amini (Lakshadweep UT) 5,
- ❖ **Odisha:** Tentulikhunti (Nawarangpur) 6, Phulbani (Kandhamal) 5, Kujanga (Jagatsinghpur) 5, Bhanjnagar (Ganjam) 5, Malkangiri (Malkangiri) 5, Karanjia (Mayurbhanj) 5,
- ❖ **Coastal Andhra Pradesh:** Kunavaram (dist Alluri Sitharamaraju) 6, Nellimarla (dist Vizianagaram) 5 **East Madhya Pradesh:** Patan (dist Jabalpur) 5, Barghat (dist Seoni) 5, Mehadwani (dist Dindori) 5,
- ❖ **West Madhya Pradesh:** Harda (dist Harda) 5, Neapanagar (dist Burhanpur) 5, Gogawan (dist Khargone) 5,
- ❖ **Madhya Maharashtra:** Nandurbar (dist Nandurbar) 5,
- ❖ **Marathwada:** Gangakhed (dist Parbhani) 5,
- ❖ **Arunachal Pradesh:** Tezu (dist Lohit) 5

ANNEXURE II

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

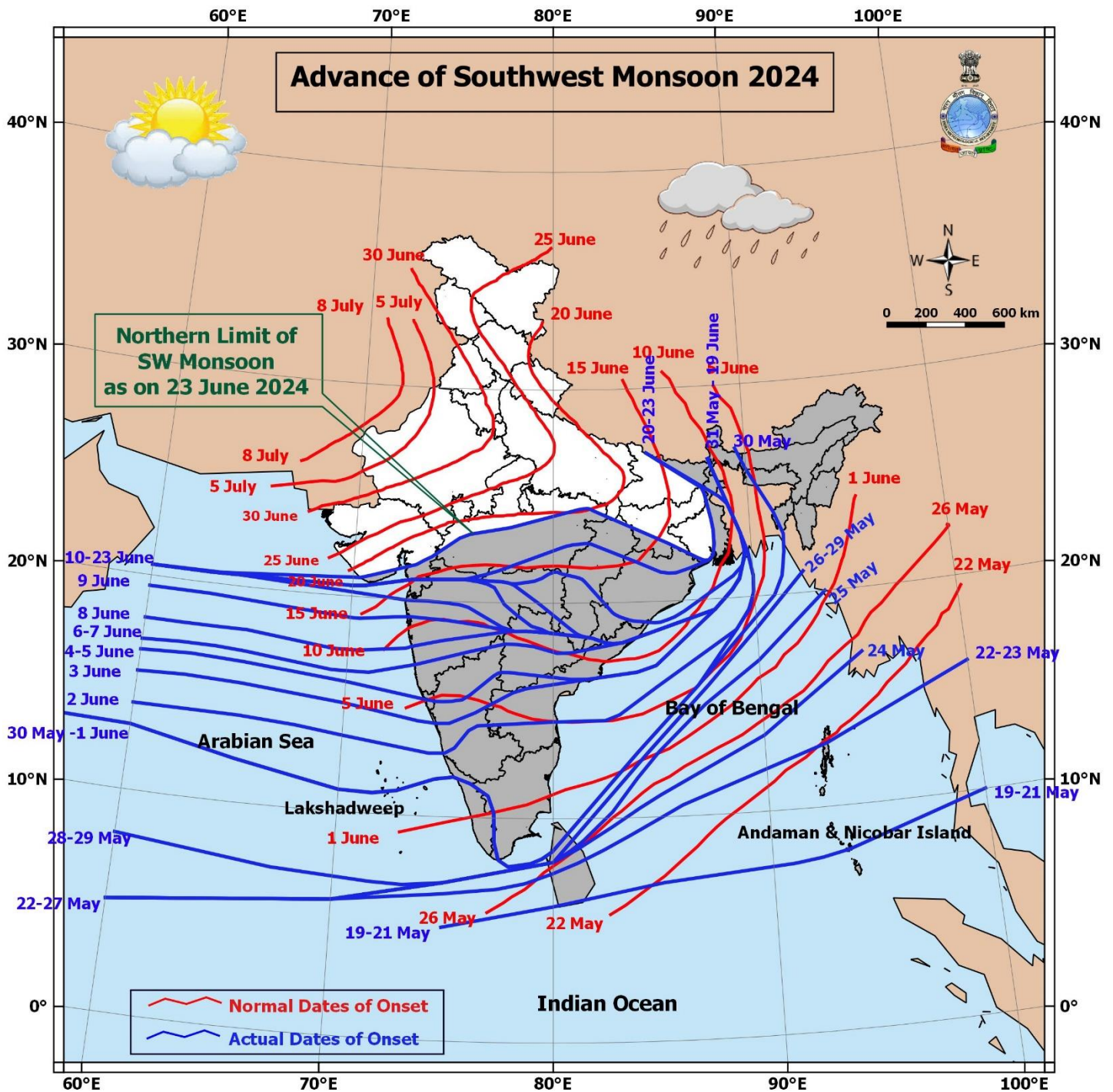
- ❖ **Bihar:** Muzaffarpur-72, Nalanda-42, Aurangabad-41
- ❖ **Ladakh:** Kargil-68, Leh-61
- ❖ **Uttar Pradesh:** Jalaun-57, Bhadohi-54, Chitrakoot-44, Kannauj-41, Lucknow-41
- ❖ **Gujarat state:** Bharuch, Amreli-57 each, Panchmahal, Chhotaudepur-44 each
- ❖ **Maharashtra:** Ahmednagar-57, Pune-48, Satara-46, Sindhudurg-42
- ❖ **Haryana:** Mewat-54, Gurgaon-39
- ❖ **West Madhya Pradesh:** Sehore/ Ashoknagar -52, Gwalior - 47, Datia -43, Badwani -41, Bhind -37, Shajapur - 36, Guna - 34, Neemuch - 30, Khandwa -28, Bhopal Airport - 27;
- ❖ **East Madhya Pradesh:** Jabalpur - 56, Seoni - 48, Singrauli - 43, Shahdol - 37, Rewa/ Katni - 34, Chhindwara - 32, Sagar/ Mandla/ Satna - 28
- ❖ **Rajasthan:** Karauli-48, Udaipur-44, Barmer-42, Jaisalmer, Sirohi-41 each
- ❖ **Jharkhand:** Bokaro-46, Chatra-44, Hazaribagh-41
- ❖ **Tamil Nadu, Puducherry & Karaikal:** Kanyakumari, Namakkal-44 each, Thoothukudi, Tenkasi-42 each

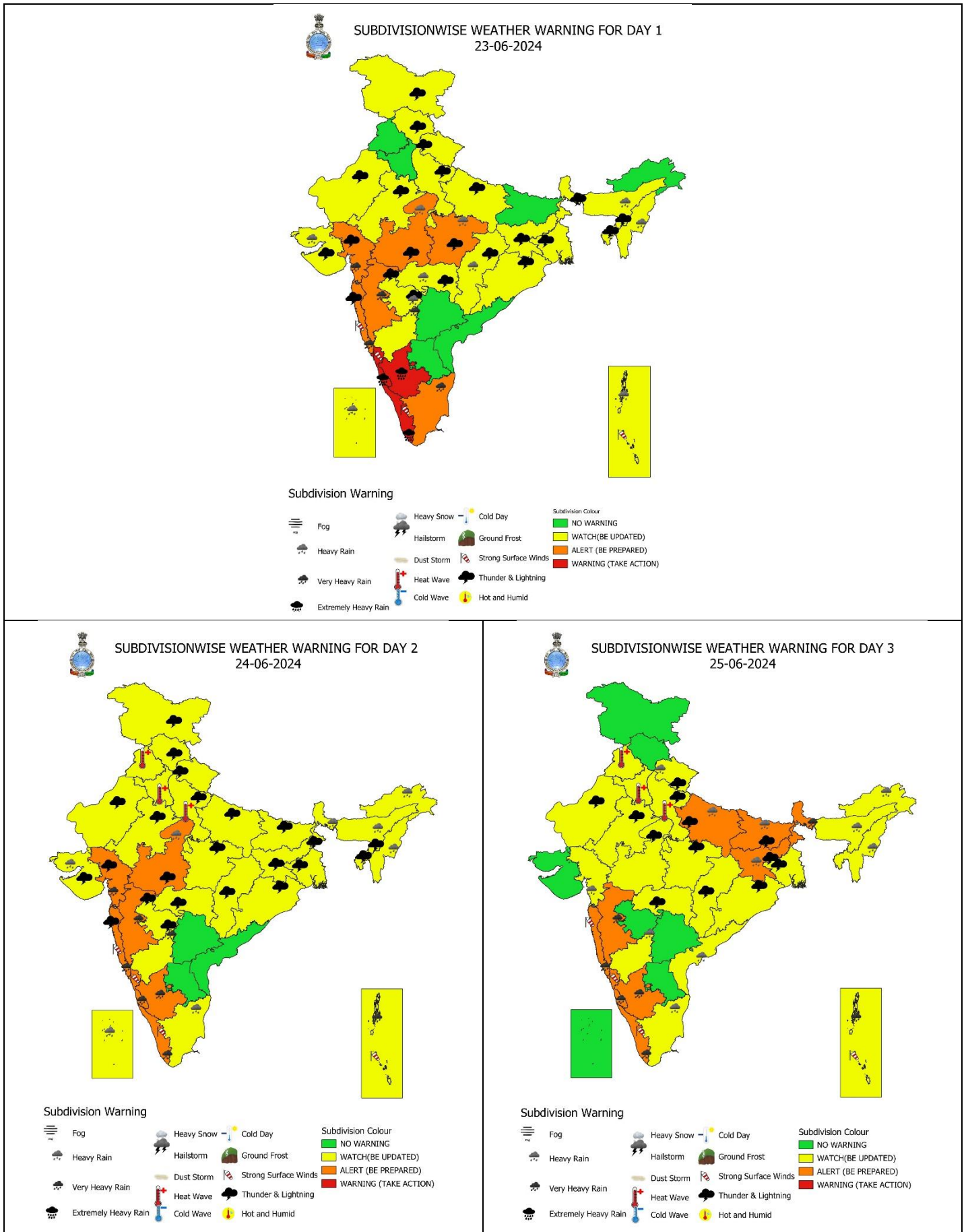
Fig.: Gusty winds reported over the country (in knots, 1 Knot = 1.85 kmph) from 0830 hrs IST of 22.06.2024 to 0830 hrs IST of 23.06.2024

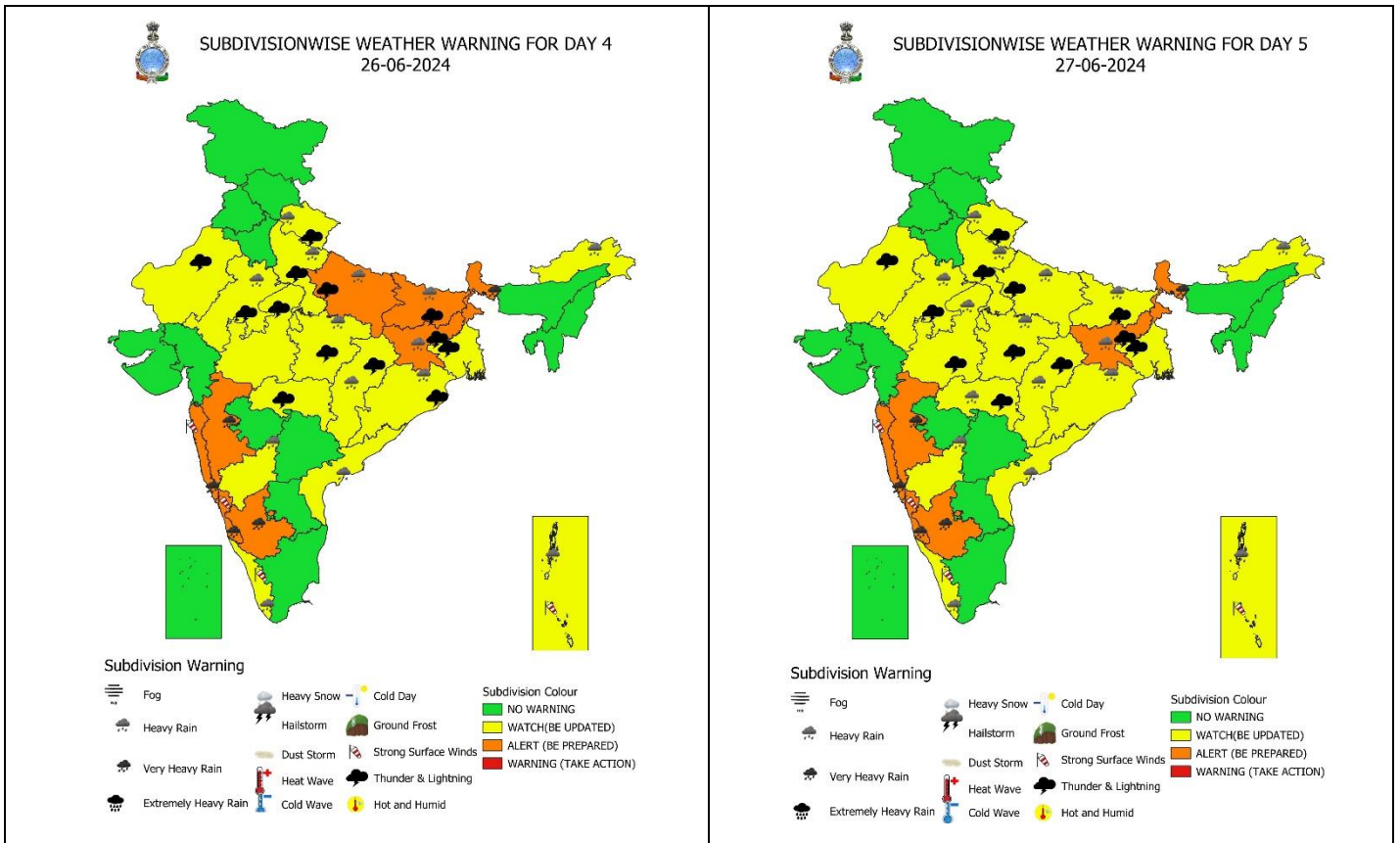


For more details, kindly refer: <http://aws.imd.gov.in:8091/>

Advance of Southwest Monsoon 2024







IMPACT & ACTION SUGGESTED due to very heavy/extremely heavy rainfall over Kerala & Mahe during 23rd-25th; Konkan & Goa, ghat areas of Madhya Maharashtra and Coastal & South Interior Karnataka during next 5 days; Andaman & Nicobar Islands on 24th & 25th; over Sub-Himalayan West Bengal & Sikkim during 25th-27th; ghat areas of Tamil Nadu, Puducherry & Karaikal on 23rd; North Interior Karnataka on 23rd & 24th 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 kutchha roads.
- Possibilities of damage to vulnerable structure.
- Localized Landslides/Mudslides/landslips/mud slips/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:

- Make provision for draining out excess water from crop fields to avoid water stagnation in Arunachal Pradesh, Assam & Meghalaya, Nagaland, Andaman & Nicobar Islands, Sub Himalayan West Bengal & Sikkim, Chhattisgarh, Madhya Pradesh, Maharashtra, Gujarat, Tamil Nadu, Kerala, Lakshadweep, 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 Punjab, Haryana and 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)

 Fog  Heavy Rain  Very Heavy Rain  Extremely Heavy Rain	 Heavy Snow  Hailstorm  Dust Storm  Heat Wave  Cold Wave	 Cold Day  Ground Frost  Strong Surface Winds  Thunder & Lightning  Hot and Humid	<p>Subdivision Colour</p> <table border="0"> <tr><td style="background-color: #00FF00; width: 20px; height: 10px;"></td><td>NO WARNING</td></tr> <tr><td style="background-color: #FFFF00; width: 20px; height: 10px;"></td><td>WATCH (BE UPDATED)</td></tr> <tr><td style="background-color: #FFA500; width: 20px; height: 10px;"></td><td>ALERT (BE PREPARED)</td></tr> <tr><td style="background-color: #FF0000; width: 20px; height: 10px;"></td><td>WARNING (TAKE ACTION)</td></tr> </table>		NO WARNING		WATCH (BE UPDATED)		ALERT (BE PREPARED)		WARNING (TAKE ACTION)
	NO WARNING										
	WATCH (BE UPDATED)										
	ALERT (BE PREPARED)										
	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 $< 1\text{km}$

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