



Government of India
Ministry of Earth Sciences
India Meteorological Department



Press Release
Date: 24th July, 2024
Time of Issue: 1345 hours IST

Subject: 1) Exceptionally heavy rainfall (>40 cm) very likely over Gujarat Region today and isolated extremely heavy rainfall very likely to continue over Gujarat State, Konkan & Goa, Madhya Maharashtra during next 2 days and heavy to very heavy rainfall thereafter
2) Very heavy rainfall likely to continue over Central India during next 2 days and heavy rainfall during subsequent 3 days.

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

- ✓ **Heavy to very heavy rainfall** with **extremely heavy falls at isolated** places over West Uttar Pradesh, Madhya Maharashtra, Gujarat State; **Heavy to very heavy rainfall** at isolated places over Chhattisgarh, East Rajasthan, East Madhya Pradesh, Odisha, Konkan & Goa, Coastal and South Interior Karnataka; **Heavy rainfall** at isolated places over Uttarakhand, West Madhya Pradesh, Vidarbha, West Bengal & Sikkim, Jharkhand, Assam & Meghalaya, Tamil Nadu, Telangana and North Interior Karnataka.

Weather Systems

- ✓ A **cyclonic circulation** lies over Jharkhand & neighbourhood in lower & middle tropospheric levels tilting southwards with height.
- ✓ The **Monsoon trough** is active and lies near to its normal position. It is likely to continue to near its normal position during next 4-5 days.
- ✓ The **shear zone** lies in lower & middle tropospheric levels along 21°N tilting southwards with height.
- ✓ The **off-shore trough** at mean sea level along South Gujarat-north Kerala coasts.
- ✓ A **cyclonic circulation** lies over north Gujarat in lower tropospheric levels.

Forecast & Warnings: (Annexure II)

❖ **West & Central India**

- ✓ Fairly widespread to widespread light to moderate rainfall accompanied with thunderstorm & lightning very likely over the region during next 5 days.
- ✓ **Exceptionally heavy rainfall (>40 cm) very likely over Gujarat Region today.**
- ✓ **Isolated extremely heavy rainfall very likely over Konkan & Goa on 24th, Madhya Maharashtra, Gujarat State on 24th & 25th July.**
- ✓ **Very heavy rainfall very likely at isolated places over Chhattisgarh on 24th; Madhya Pradesh on 24th & 25th; Konkan & Goa during 25th - 27th, Madhya Maharashtra on 26th & 27th; Gujarat State during 26th - 28th July.**
- ✓ **Heavy rainfall** very likely at isolated places over Marathwada on 24th & 25th; Vidarbha during 24th-26th; Madhya Pradesh, Chhattisgarh, Konkan & Goa, Madhya Maharashtra during 24th-28th July.

❖ Northwest India

- ✓ Fairly widespread to widespread light to moderate rainfall **accompanied with thunderstorm & lightning** very likely over Himachal Pradesh, Uttarakhand and Scattered to fairly widespread rainfall over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Punjab, Haryana-Chandigarh, Uttar Pradesh, Rajasthan during next 5 days.
- ✓ **Isolated very heavy rainfall also likely over West Uttar Pradesh, East Rajasthan on 24th July.**
- ✓ Isolated **heavy rainfall** very likely over West Rajasthan on 24th; Himachal Pradesh, Uttarakhand, East Rajasthan during 24th–28th; Punjab, Haryana-Chandigarh, southeast Uttar Pradesh on 24th & 25th; West Uttar Pradesh during 24th–27th July.

❖ South Peninsular India:

- ✓ Scattered to fairly widespread light to moderate rainfall accompanied with thunderstorm & lightning very likely over Kerala & Mahe, Karnataka, Lakshadweep, Telangana and isolated to scattered rainfall over Coastal Andhra Pradesh & Yanam, Rayalaseema, Tamil Nadu, Puducherry & Karaikal during next 5 days.
- ✓ **Very heavy rainfall very likely at isolated places over South Interior Karnataka on 24th; Coastal Karnataka on 24th & 25th July.**
- ✓ **Heavy rainfall** very likely at isolated places over Telangana on 24th & 25th; north Coastal Andhra Pradesh & Yanam, Interior Karnataka during 24th-26th; Kerala & Mahe, Coastal Karnataka during 24th–27th July.

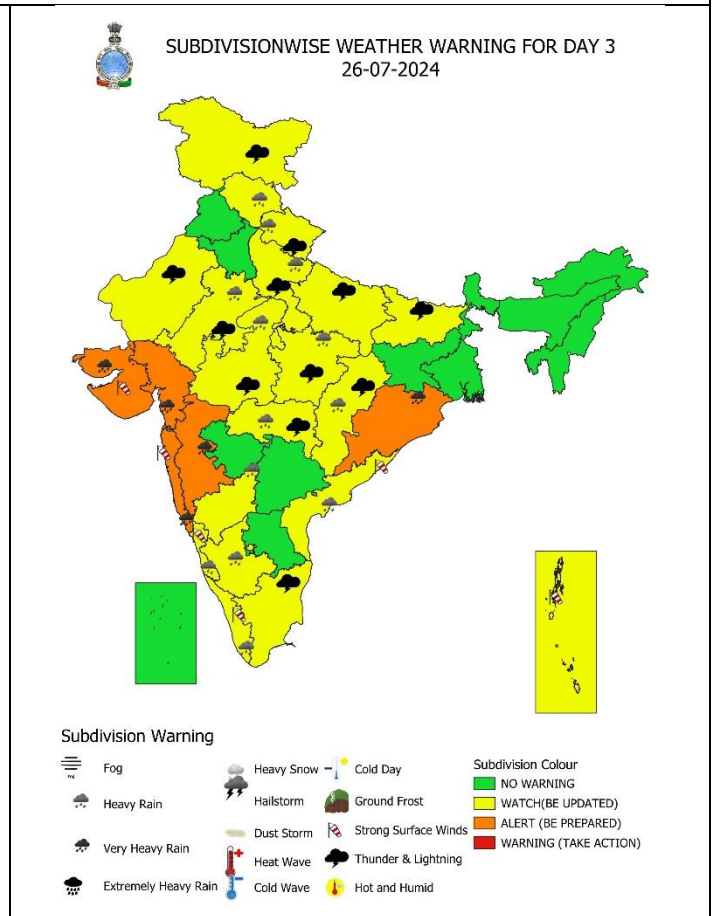
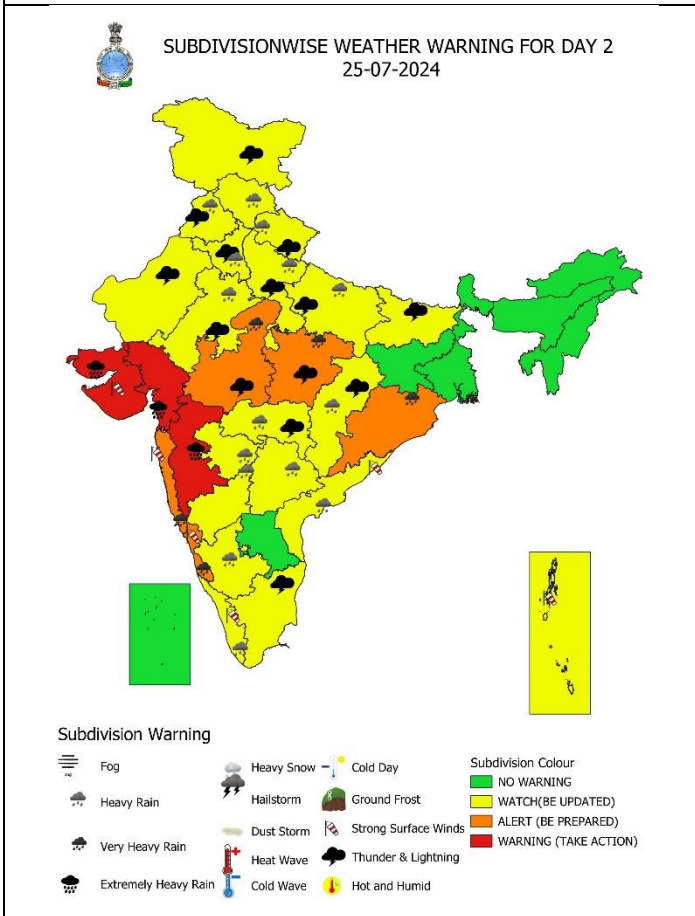
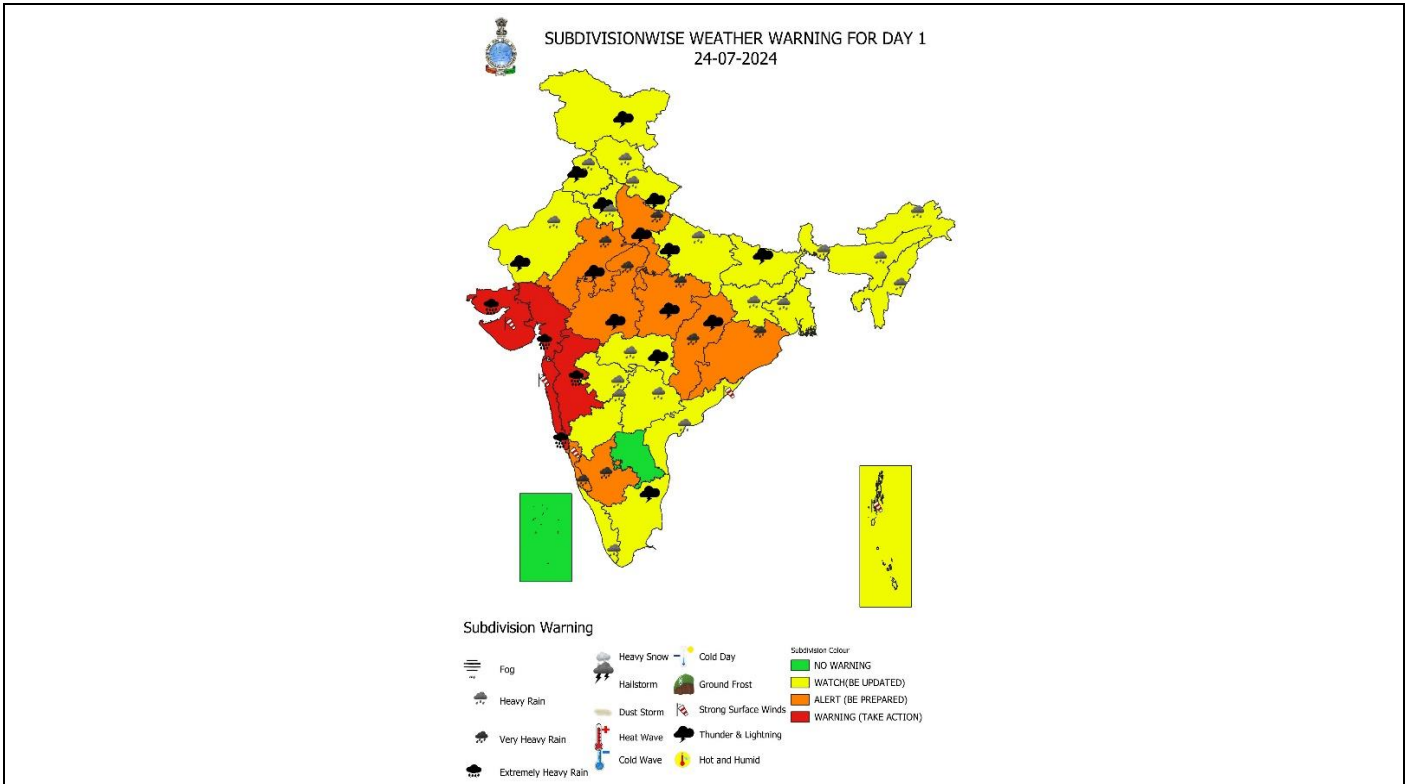
❖ East & Northeast India

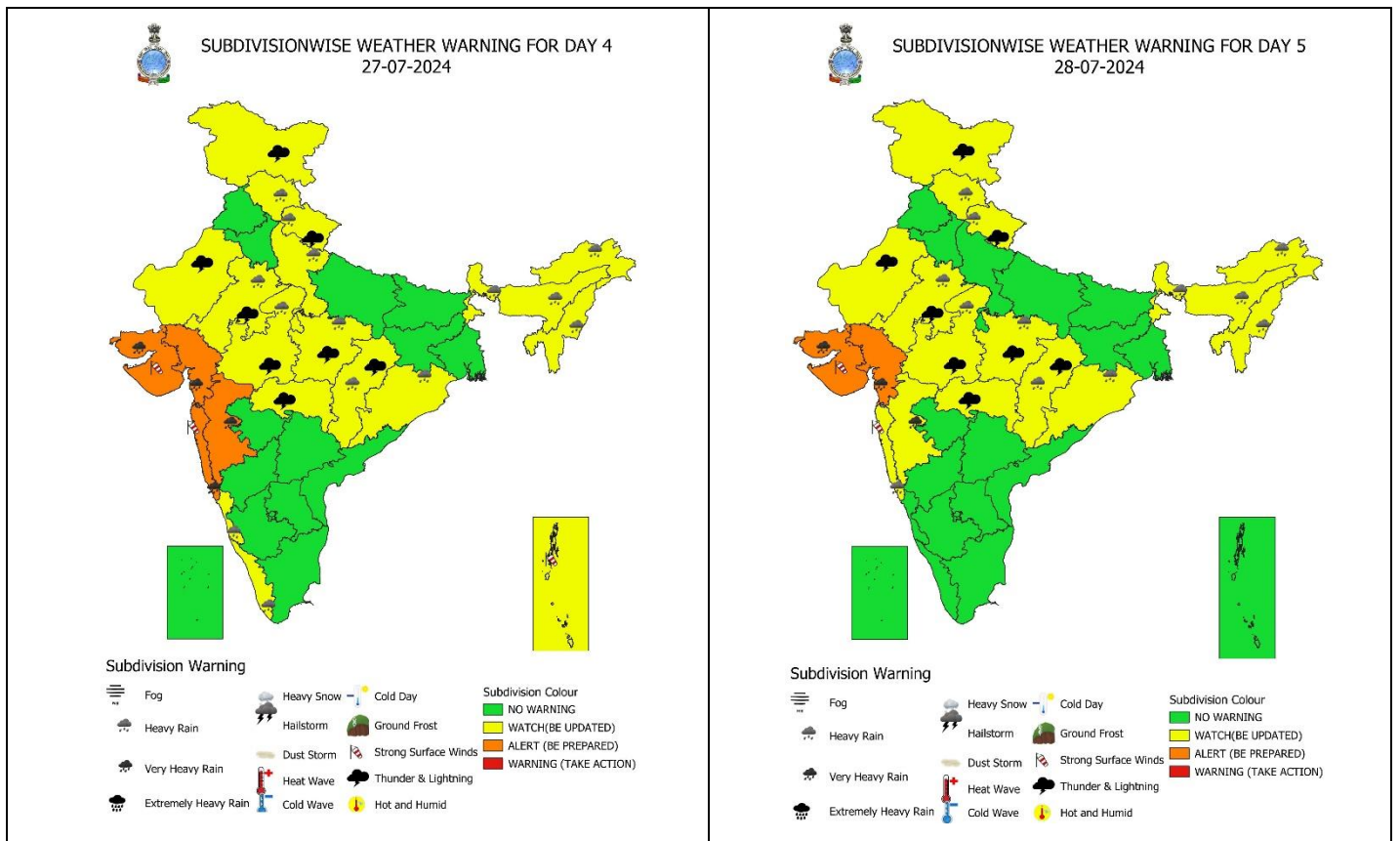
- ✓ Fairly widespread to widespread light to moderate rainfall with **accompanied with thunderstorm, lightning** very likely over East & Northeast India during next 5 days.
- ✓ **Very heavy rainfall very likely at isolated places over Odisha during 24th – 26th July.**
- ✓ Isolated **heavy rainfall** very likely over Gangetic West Bengal, Jharkhand on 24th; Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Sub-Himalayan West Bengal & Sikkim on 24th, 27th & 28th and Odisha on 27th & 28th July.

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

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

- ❖ **Gujarat Region:** Umerpada (dist Surat) 30, Palsana (dist Surat) 27, Kamrej (dist Surat) 23, Bardoli (dist Surat) 23, Khergam (dist Navsari) 22, Mangrol (dist Surat) 21, Vyara (dist Tapi) 18, Surat (dist Surat) 18, Navsari (dist Navsari) 17, Mahuva (dist Surat) 17, Waghai (dist Dangs) 17, Sagbara (dist Narmada) 16, Songadh (dist Tapi) 16, Navasari_aws (dist Navsari) 16, Jalalpor (dist Navsari) 15, Surat City (dist Surat) 15, Vansda (dist Navsari) 15, Dang (dist Dangs) 15, Jhagadia (dist Bharuch) 15, Dolvan (dist Tapi) 14, Dangs (ahwa) (dist Dangs) 14, Bharuch (dist Bharuch) 13, Mandvi (dist Surat) 13, Maktampur_aws (dist Bharuch) 13, Hansot (dist Bharuch) 13, Valia (dist Bharuch) 13, Subir (dist Dangs) 12, Ukai (dist Surat) 12, Valod (dist Tapi) 11, Narmada(dist Narmada) 11, Choryasi (dist Surat) 11, Chikhli (dist Navsari) 10, Ankleshwer (dist Bharuch) 10,
- ❖ **Madhya Maharashtra:** Lonavala(dist Pune) 27, Chinchwad(dist Pune) 18, Mahabaleshwar (dist Satara) 15, Shahuwadi (dist Kolhapur) 14, Gaganbawada (dist Kolhapur) 14, Paud Mulshi (dist Pune) 12, Patan (dist Satara) 11, Chandgad (dist Kolhapur) 10, Surgana (dist Nashik) 10, Trimbakshwar (dist Nashik) 10, Vadgaon Maval (dist Pune) 9, Ajra (dist Kolhapur) 9, Peth (dist Nashik) 9, Navapur (dist Nandurbar) 9, Harsul - Fmo (dist Nashik) 8, Akkalkuwa (dist Nandurbar) 8, Velhe (dist Pune) 7, Igatpuri (dist Nashik) 7, Panhala (dist Kolhapur) 7,
- ❖ **West Uttar Pradesh:** Pali (dist Lalitpur) 27, Mahroni (dist Lalitpur) 22, Moradabad (dist Moradabad) 14, Moradabad (dist Moradabad) 7,
- ❖ **Saurashtra & Kutch:** Visavadar (dist Junagadh) 22, Jodia (dist Jamnagar) 21, Dwarka (dist Devbhoomi Dwarka) 18, Mandvi (dist Kutch) 15, Bagasra (dist Amreli) 14, Mundra (dist Kutch) 12, Bhanvad (dist Devbhoomi Dwarka) 11, Rapar (dist Kutch) 11, Dhoraji (dist Rajkot) 10, Jamjodhpur (dist Jamnagar) 9, Anjar (dist Kutch) 9, Vanthali (dist Junagadh) 9, Nakhatrana (dist Kutch) 9, Bhesan (dist Junagadh) 8, Talala (dist Gir Somnath) 8, Manavadar (dist Junagadh) 8, Keshod (dist Junagadh) 8, Lakhpat (dist Kutch) 8, Mendarda (dist Junagadh) 8, Kandla Airport (dist Kutch) 8, Junagadh (dist Junagadh) 7,
- ❖ **Odisha:** Jharbandh (Bargarh) 20, Paikmal (Bargarh) 17, Ullunda (Sonepur) 16, Padampur (Bargarh) 13, Padmapur (Rayagada) 13, Nawapara (Nawapara) 12, Salebhata (Bolangir) 10, Pallahara (Angul) 9, Kantamal (Boudhgarh) 9, Agalpur (Bolangir) 9, Banki (Cuttack) 9, Tarva (Sonepur) 9, Parjang (Dhenkanal) 9, Dunguripalli (Sonepur) 8, Kankadahad (Dhenkanal) 8, Altuma (Dhenkanal) 8, Kamakhyanager (Dhenkanal) 8, Binika (Sonepur) 7, Angul (Angul) 7, Barpalli (Bargarh) 7, Gaisilet (Bargarh) 7, Bolangir (Bolangir) 7,
- ❖ **East Madhya Pradesh:** Dheemarkheda (dist Katni) 18, Tikamgarh (dist Tikamgarh) 17, Umariyapan (dist Katni) 16, Rampur (dist Sidhi) 16, Kusmi (dist Sidhi) 15, Sleemanabad (dist Katni) 14, Bijuri (dist Anuppur) 11, Jaisinagar (dist Sagar) 10, Sagar- (dist Sagar) 10, Bilaspur (dist Umaria) 10, Niwas (dist Mandla) 10, Kumdam (dist Jabalpur) 9, Bina (dist Sagar) 9, Jaitpur (dist Shahdol) 9, Gonour (dist Panna) 9, Beohari (dist Shahdol) 9, Kotma (dist Anuppur) 9, Barhi (dist Katni) 8, Sihawal (dist Sidhi) 7, Gohparu (dist Shahdol) 7, Gudh (dist Rewa) 7, Sihora (dist Jabalpur) 7, Amarpatan (dist Satna) 7, Channodi (dist Shahdol) 7, Amanganj (dist Panna) 7,
- ❖ **Konkan & Goa:** Quepem (dist South Goa) 15, Matheran (dist Raigad) 12, Murbad (dist Thane) 12, Sanguem (dist South Goa) 12, Jawhar (dist Palghar) 10, Vikramgad (dist Palghar) 9, Mokheda - Fmo (dist Palghar) 9, Poladpur (dist Raigad) 9, Shahapur (dist Thane) 9, Karjat_agri (dist Raigad) 9, Sudhagad Pali (dist Raigad) 8, Sangameshwar Devrukh (dist Ratnagiri) 8, Margao (dist South Goa) 8, Khalapur (dist Raigad) 7, Chiaplun (dist Ratnagiri) 7, Ulhasnagar (dist Thane) 7, Pen (dist Raigad) 7, Guhagarh (dist Ratnagiri) 7, Wakwali_agri (dist Ratnagiri) 7,
- ❖ **Chhattisgarh:** Bhairamgarh (dist Bijapur) 15, Kutaru (dist Bijapur) 15, Lawan (dist Baloda Bazar) 13, Kashdol (dist Baloda Bazar) 13, Kusmi (dist Balrampur) 12, Pithora (dist Mahasamund) 11, Mahasamund (dist Mahasamund) 11, Kelhari (dist Manendragarh Bharatpur) 10, Bagbahara (dist Mahasamund) 9, Latori (dist Surajpur) 9, Bastanar (dist Bastar) 9, Kharora (dist Raipur) 9, Patharia (dist Mungeli) 9, Pasaan (dist Korba) 8, Lal Bahadur Nagar (dist Rajnandgaon) 8, Komakhan (dist Mahasamund) 8, Sonakhan (dist Baloda Bazar) 8, Raipur (dist Raipur) 8, Basana (dist Mahasamund) 8, Dharshiva (dist Raipur) 8,
- ❖ **Vidarbha:** Desaiganj (dist Gadchiroli) 13, Armori (dist Gadchiroli) 9, Bhandara (dist Bhandara) 9, Dhanora (dist Gadchiroli) 9, Bhamragad (dist Gadchiroli) 8, Gadchiroli (dist Gadchiroli) 8, Sakoli (dist Bhandara) 7, Kamptee (dist Nagpur) 7, Pauni (dist Bhandara) 7,
- ❖ **East Rajasthan:** Sarmathura (dist Dholpur) 12, Bahadurpur (dist Alwar) 10, Rajgarh (dist Alwar) 9, Chabra (dist Baran) 8, Shahpura(dist Jaipur) 7, Alwar(dist Alwar) 7,
- ❖ **Uttarakhand:** Jollygrant (Dehradun) 10, Loharkhet (Bageshwar) 7,
- ❖ **Telangana:** Bejjur (dist Kumaram Bheem) 10, Sirpur (dist Kumaram Bheem) 8,
- ❖ **Jharkhand:** Chandil (dist Seraikela-kharsawan) 10, Icar Namkum (dist Ranchi) 9, Ranchi Aero (dist Ranchi) 7, Purvi Tundi (dist Dhanbad) 7,
- ❖ **Assam & Meghalaya:** Cherrapunji (dist East Khasi Hills) 8, Mawsynram (dist East Khasi Hills) 8,
- ❖ **Gangetic West Bengal:** Bankura (dist Bankura) 9, Burnpur (dist Paschim Bardhaman) 8,
- ❖ **Sub-Himalayan West Bengal:** Sukiapokhri (dist Darjeeling) 7,
- ❖ **West Madhya Pradesh:** Shyampur (dist Sehore) 7, Begumganj (dist Raisen) 7,





IMPACT & ACTION SUGGESTED due to

- ✓ Exceptionally heavy rainfall (>40 cm) very likely over Gujarat Region today.
- ✓ Isolated extremely heavy rainfall very likely over Konkan & Goa on 24th, Madhya Maharashtra, Gujarat State on 24th & 25th July.
- ✓ Very heavy rainfall very likely at isolated places over Chhattisgarh, South Interior Karnataka, West Uttar Pradesh, East Rajasthan on 24th; Madhya Pradesh, Coastal Karnataka on 24th & 25th; Odisha during 24th – 26th Konkan & Goa during 25th – 27th, Madhya Maharashtra on 26th & 27th; Gujarat State during 26th – 28th July.

- 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/land sinks/mud sinks.
- 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 likely over various parts of the country

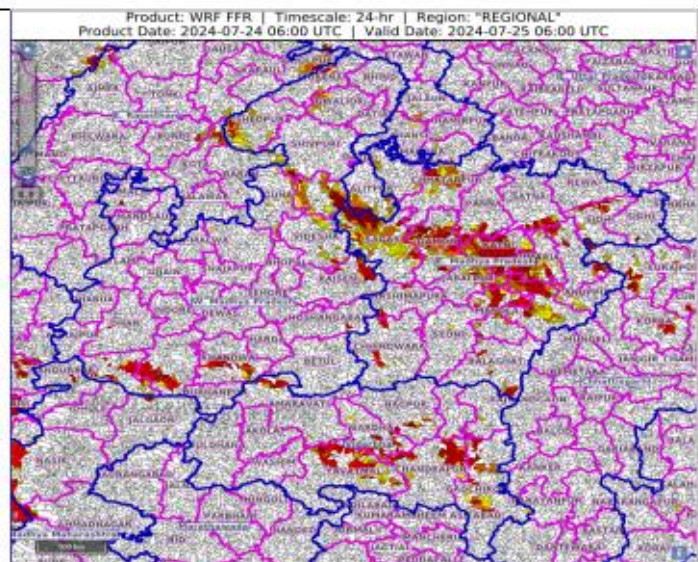
- Make provision for draining out excess water from crop fields to avoid water stagnation in Arunachal Pradesh, Assam & Meghalaya, Sub Himalayan West Bengal, Odisha, Himachal Pradesh, Uttarakhand, Punjab, Haryana, Uttar Pradesh, East Rajasthan, Madhya Pradesh, Chhattisgarh, Vidarbha, Konkan & Goa, Ghat areas of Madhya Maharashtra, Gujarat State, Kerala, Karnataka, Coastal Andhra Pradesh and Telangana.
- Postpone transplanting of rice, finger millet and vegetables in Konkan and ghat areas of Madhya Maharashtra.
- Postpone sowing of kharif groundnut, black gram, green gram and sesame in Saurashtra.
- Provide mechanical support to horticultural crops & staking to vegetables.

FLASH FLOOD GUIDANCE:

24 hours Outlook for the Flash Flood Risk (FFR) till 1130 IST of 25-07-2024 :

Low moderate flash flood risk likely over few watersheds & neighbourhoods of **East Madhya Pradesh, Vidarbha and West Madhya Pradesh** Met Sub-divisions during next 24 hours.

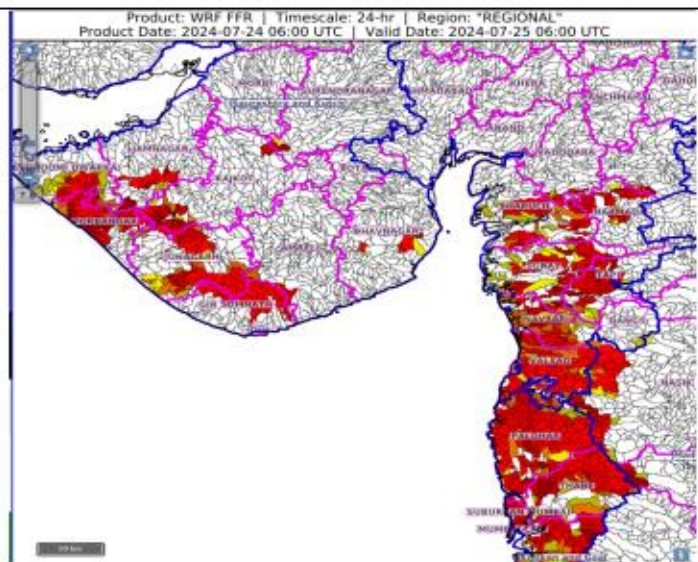
Surface runoff/ Inundation may occur at some fully saturated soils & low-lying areas over AoC as shown in map due to expected rainfall occurrence in next 24 hours.



24 hours Outlook for the Flash Flood Risk (FFR) till 1130 IST of 25-07-2024 :

Low to moderate flash flood risk likely over few watersheds & neighbourhoods of **Gujarat Region, north parts of Konkan & Goa and Saurashtra & Kutch** Met Sub-divisions during next 24 hours.

Surface runoff/ Inundation may occur at some fully saturated soils & low-lying areas over AoC as shown in map due to expected rainfall occurrence in next 24 hours.



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; **ARG:** Automatic Rain Gauge; **dist:** District; **NH:** National Highway; **KVK:** Krishi Vigyan Kendra; **DVC:** Damodar Valley Corporation; **PTO:** Part Time Office, **Aero:** Aerodrome, **IAF:** Indian Air Force.
- ❖ **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 Widespred (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

Subdivision Colour

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)