

Government of India
Ministry of Earth Sciences
India Meteorological Department



Press Release

Date: 28th July, 2024

Time of Issue: 1330 hours IST

**Subject: 1) Active monsoon conditions likely over most parts of northwest India during next 4-5 days.
2) Increase in rainfall activity with isolated heavy falls likely over East India from 30th July.**

During past 24 hours till 0830 hours IST of today 28th July: (details in Annexure I)

- ✓ **Heavy to very heavy rainfall** at some places with **extremely heavy falls at isolated** places over West Madhya Pradesh; **Heavy to very heavy rainfall** at isolated places over Vidarbha, East Madhya Pradesh, Chhattisgarh and East Rajasthan; **Heavy rainfall** at isolated places over Uttarakhand, Himachal Pradesh, Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Odisha, Telangana, Madhya Maharashtra, Assam & Meghalaya, Coastal Karnataka and Konkan & Goa.

Weather Systems

- ✓ A **cyclonic circulation** over north Chhattisgarh & neighbourhood in lower & middle tropospheric levels.
- ✓ The **Monsoon trough** is active and south of its normal position at mean sea level.
- ✓ The **shear zone** now runs roughly along 21°N over Indian region in lower & middle tropospheric levels.
- ✓ The **off-shore trough** at mean sea level now runs along South Gujarat to north Kerala coast.

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.
- ✓ **Very heavy rainfall very likely at isolated places over Madhya Pradesh, Vidarbha on 28th July; Gujarat Region on 28th & 29th July; Saurashtra & Kutch on 29th July; Konkan & Goa, Madhya Maharashtra on 28th July & 1st August;**
- ✓ **Heavy rainfall** very likely at isolated places over Madhya Pradesh and Vidarbha on 29th, 31st July & 1st August; Chhattisgarh during 28th & 30th July-1st August; Konkan & Goa and Madhya Maharashtra during 29th to 31st July, Saurashtra & Kutch on 28th & 30th July; Gujarat Region during 30th July-1st August.

❖ Northwest India

- ✓ Fairly widespread to widespread light to moderate rainfall **accompanied with thunderstorm & lightning** very likely over Himachal Pradesh, Uttarakhand and East Rajasthan; scattered to fairly widespread rainfall over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Punjab, Haryana-Chandigarh-Delhi, Uttar Pradesh and West Rajasthan during next 5 days.
- ✓ **Isolated very heavy rainfall also likely over East Rajasthan on 28th & 29th; West Uttar Pradesh and Himachal Pradesh on 31st; Uttarakhand on 31st July & 1st August.**

- ✓ Isolated **heavy rainfall** very likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad during 28th July–1st August; Himachal Pradesh during 28th-30st July & 1st August; Uttarakhand during 28th-30th July, Haryana-Chandigarh-Delhi during 28th-31st July, West Rajasthan on 29th July; West Uttar Pradesh on 30th July & 1st August, East Uttar Pradesh and East Rajasthan during 30th July -1st August.

❖ **South Peninsular India:**

- ✓ Fairly widespread to widespread light to moderate rainfall over Coastal Karnataka and Kerala & Mahe and Scattered to fairly widespread light to moderate rainfall accompanied with thunderstorm & lightning very likely over Interior Karnataka, Telangana and Lakshadweep and isolated to scattered rainfall over Tamil Nadu, Puducherry & Karaikal, Coastal Andhra Pradesh & Yanam and Rayalaseema during next 5 days.
- ✓ **Very heavy rainfall very likely at isolated places over Kerala & Mahe on 28th July.**
- ✓ **Heavy rainfall** very likely at isolated places over South Interior Karnataka on 28th; Coastal Karnataka on 28th & 29th; Kerala & Mahe during 29th-31st July;

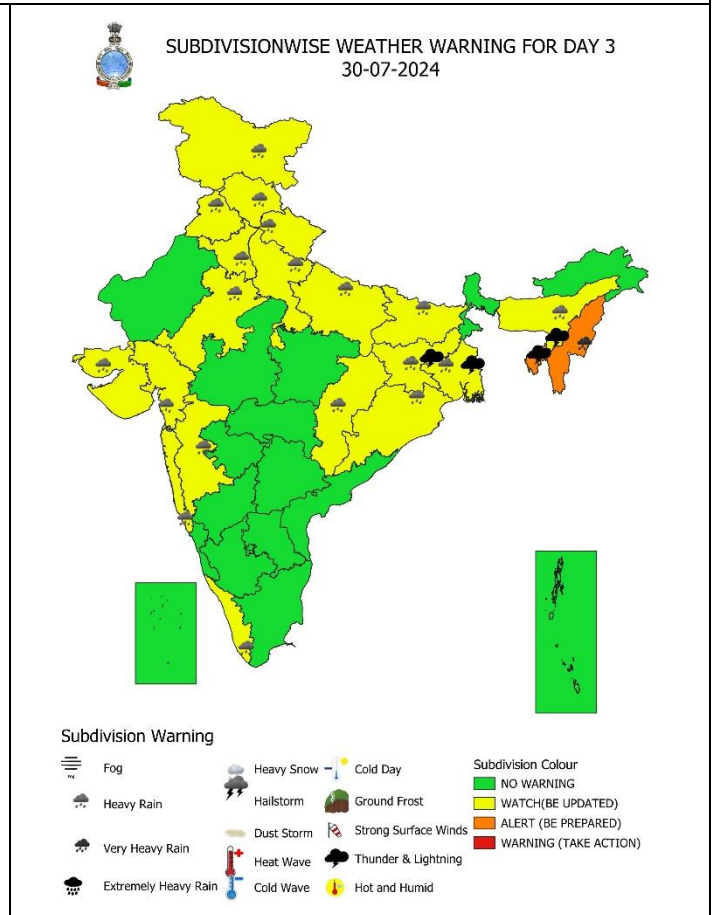
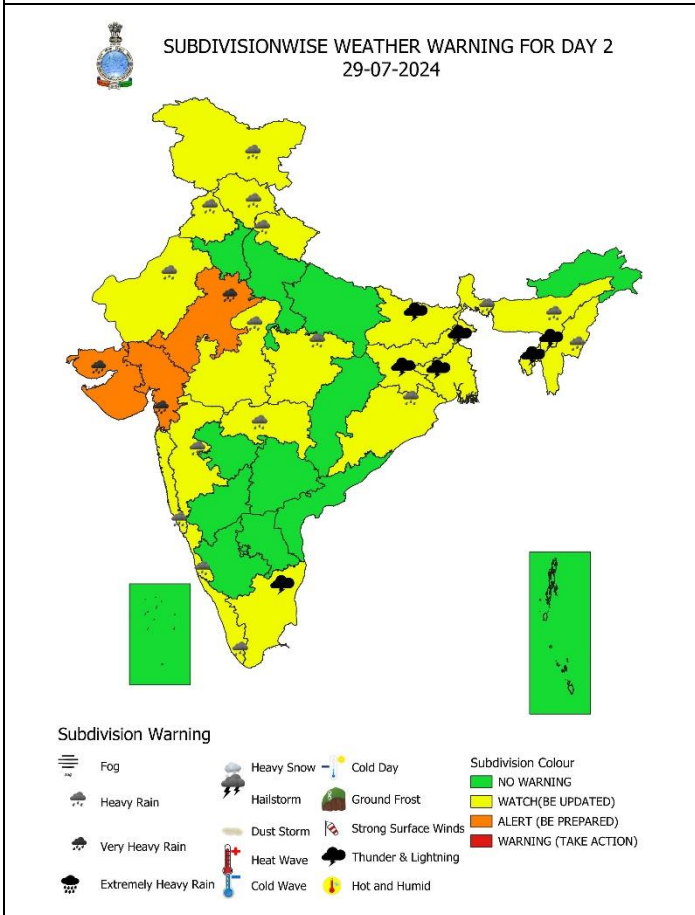
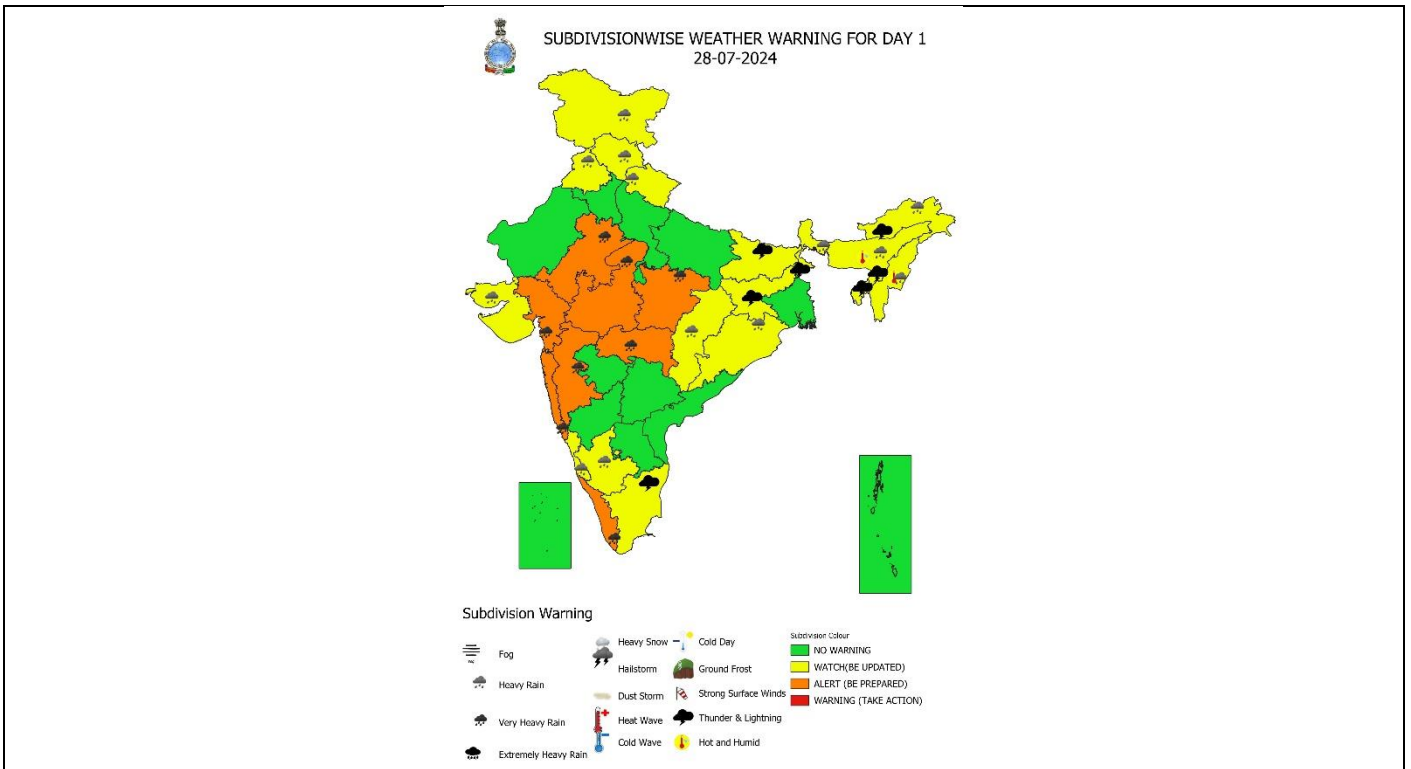
❖ **East & Northeast India**

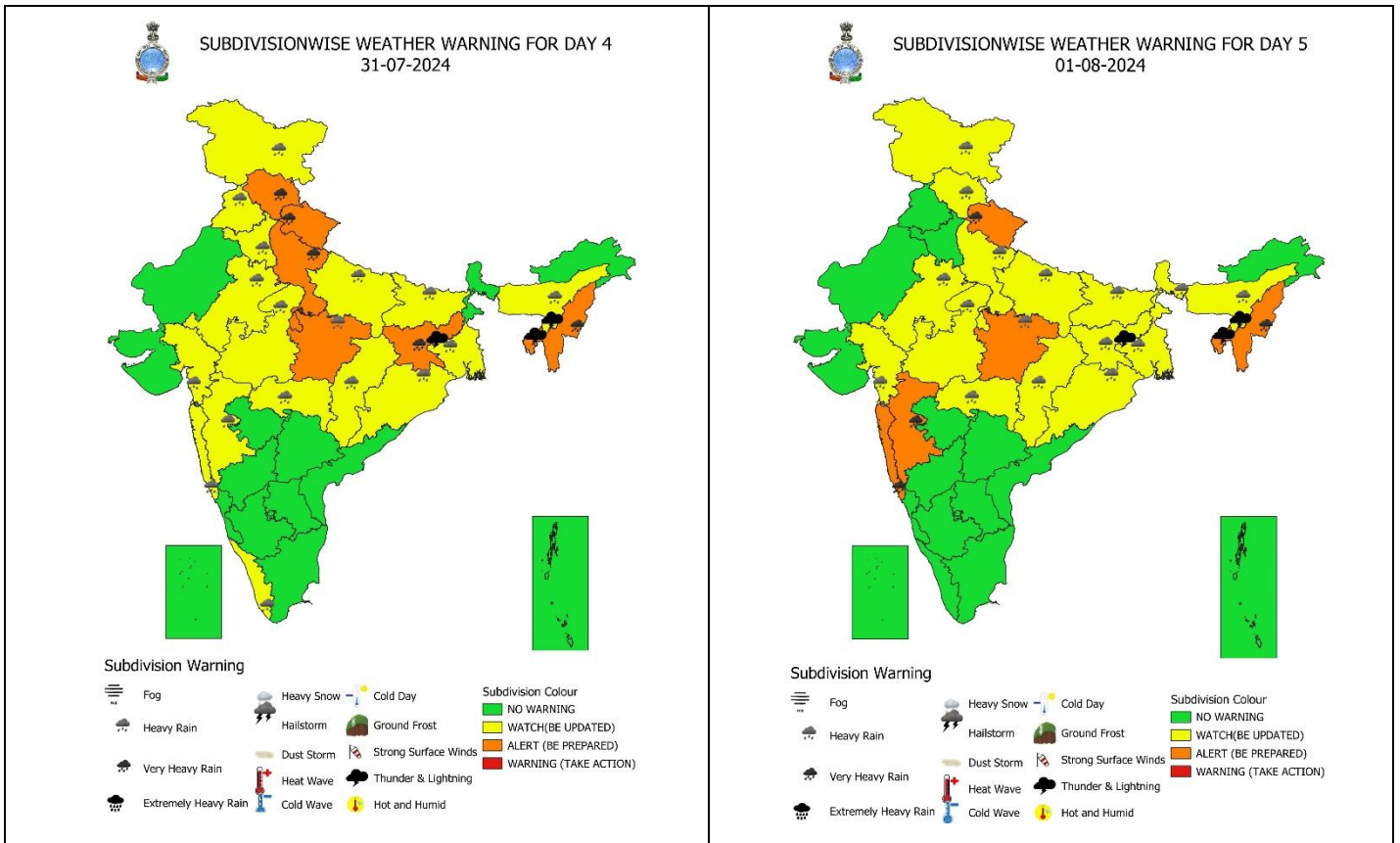
- ✓ Fairly widespread to widespread light to moderate rainfall **accompanied with thunderstorm, lightning** very likely over East India and Scattered to fairly widespread light to moderate rainfall accompanied with thunderstorm & lightning very likely over Northeast India during next 5 days.
- ✓ **Very heavy rainfall very likely at isolated places over Jharkhand on 31st July; Nagaland, Manipur, Mizoram & Tripura during 30th July – 1st August.**
- ✓ Isolated **heavy rainfall** very likely over Arunachal Pradesh on 28th July; Nagaland, Manipur, Mizoram & Tripura on 28th & 29th July; Assam & Meghalaya during 28th July- 1st August; West Bengal & Sikkim during 30th July -1st August; Andaman & Nicobar Islands on 29th July & 1st August; Odisha during 28th July- 1st August; Jharkhand on 30th July & 1st August.

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 28th July (in cm):

- ❖ **West Madhya Pradesh:** Suvasara (dist Mandsaur) 21, Shamgarh (dist Mandsaur) 20, Barod (dist Agar-malwa) 14, Agar (dist Agar-malwa) 12, Pathari (dist Vidisha) 11, Pachmarhi (dist Narmadapuram) 11, Dolariya (dist Narmadapuram) 11, Narmadapuram (dist Narmadapuram) 10, Ichhawar (dist Sehore) 9, Kalapipal (dist Shajapur) 9, Sitamau (dist Mandsaur) 9, Budhni (dist Sehore) 9, Khategaon (dist Dewas) 9, Shajapur (dist Shajapur) 8, Garoth (dist Mandsaur) 8, Kayampur (dist Mandsaur) 8, Jharda (dist Ujjain) 8, Mungaoli (dist Ashoknagar) 8, Rehti (dist Sehore) 8, Pipariya (dist Narmadapuram) 8, Moman Badodiya (dist Shajapur) 8, Itarsi (dist Narmadapuram) 8, Shujalpur (dist Shajapur) 7, Kannod (dist Dewas) 7, Bhavgarh (dist Mandsaur) 7, Nalkheda (dist Agar-malwa) 7, Manasa (dist Neemuch) 7, Gulana (dist Shajapur) 7, Susner (dist Agar-malwa) 7;
- ❖ **Vidarbha:** Dhanora (dist Gadchiroli) 15, Gadchiroli (dist Gadchiroli) 14, Saoli (dist Chandrapur) 11, Lakhandur (dist Bhandara) 11, Mul (dist Chandrapur) 10, Bhiwapur (dist Nagpur) 10, Tiroda (arg) (dist Gondia) 10, Nagbhir (dist Chandrapur) 10, Kuhi (dist Nagpur) 10, Lakhani (dist Bhandara) 9, Sakoli (arg) (dist Bhandara) 9, Bhandara (dist Bhandara) 9, Pauni (dist Bhandara) 9, Desaignanj (dist Gadchiroli) 8, Tirora (dist Gondia) 8, Kurkheda (dist Gadchiroli) 8, Sakoli (dist Bhandara) 8, Chimur (dist Chandrapur) 8, Bramhapuri (dist Chandrapur) 8, Armori (dist Gadchiroli) 7, Sindewahi (dist Chandrapur) 7, Samudrapur (dist Wardha) 7, Mohadi (dist Bhandara) 7, Sadakarjuni (dist Gondia) 7, Hingna (dist Nagpur) 7, Goregaon (dist Gondia) 7;
- ❖ **East Madhya Pradesh:** Khurai (dist Sagar) 18, Tamia (dist Chindwara) 10, Tendukheda (dist Damoh) 10, Lalburra (dist Balaghat) 10, Patan (dist Jabalpur) 9, Sausar (dist Chindwara) 8, Gotegaon (dist Narsinghpur) 8, Malthone (dist Sagar) 7, Umreth (dist Chindwara) 7, Mohkheda (dist Chindwara) 7, Deori (dist Sagar) 7, Kesli (dist Sagar) 7, Niwas (dist Mandla) 7;
- ❖ **Chhattisgarh:** Keshkal (dist Kondagaon) 16, Antagarh (dist Kanker) 15, Pakhanjur (dist Kanker) 14, Bhanupratappur (dist Kanker) 14, Baderajpur (dist Kondagaon) 14, Bhairamgarh (dist Bijapur) 13, Durgkondal (dist Kanker) 12, Dhanora (dist Kondagaon) 12, Charama (dist Kanker) 11, Kanker (dist Kanker) 10, Pharasgaon (dist Kondagaon) 10, Bamhnidih (dist Janjgir) 9, Poudi Uparora (dist Korba) 9, Pachpedi (dist Bilaspur) 9, Navagarh (dist Janjgir) 9, Sarena (dist Kanker) 8, Dhabhara (dist Sakti) 7, Amlipadar (dist Gariaband) 7, Bade Bachel (dist Dantewada) 7, Nerharpur (dist Kanker) 7, Gangalur (dist Bijapur) 7, Pamgarh (dist Janjgir) 7, Bhothiya (dist Sakti) 7;
- ❖ **East Rajasthan:** Kotri (Bhilwara) 13, Pachpahar (Jhalawar) 11, Bhilwara Tehsil (Bhilwara) 10, Bhilwara (Bhilwara) 10, Bhinay (Ajmer) 10, Bijoliya (Bhilwara) 10, Mandalgarh (Bhilwara) 8, Dug (Jhalawar) 8, Gangdhar (Jhalawar) 8, Baseri (Dholpur) 7, Vijaynagar (Ajmer) 7, Kota-aero (Kota) 7, Bhainoadgarh (Chittorgarh) 7, Bamanwas (Sawai Madhopur) 7;
- ❖ **Uttarakhand:** Hariipur (Dehradun) 11;
- ❖ **Odisha:** Ranpur (Nayagarh) 11, Raigarh (Nawarangpur) 11, Koksara (Kalahandi) 8, Chandahandi (Nawarangpur) 7, Batli (Bargarh) 7, Jhorigam (Nawarangpur) 7;
- ❖ **Himachal Pradesh:** Jogindarnagar (dist Mandi) 9;
- ❖ **Jammu & Kashmir:** Rajouri (dist Rajouri) 9, Rajouri Arg (dist Rajouri) 7, Jammu Aws (dist Jammu) 7,
- ❖ **Telangana:** Kataram (dist J. Bhupalpally) 9, Venkatapuram (dist Mulugu) 8, Mutharam Mahadevpur (dist J. Bhupalpally) 7,
- ❖ **Madhya Maharashtra:** Mahabaleshwar- Imd Obsy (dist Satara) 10, Chandgad (dist Kolhapur) 8, Shahuwadi (dist Kolhapur) 7;
- ❖ **Assam & Meghalaya:** Cherrapunji (rkm) (dist East Khasi Hills) 10, Cherrapunji (dist East Khasi Hills) 9, Mawsynram (dist East Khasi Hills) 9,
- ❖ **Coastal Karnataka:** Castle Rock (dist Uttara Kannada) 7,
- ❖ **Konkan & Goa:** Poladpur (dist Raigad) 7.





IMPACT & ACTION SUGGESTED due to

✓ Very heavy rainfall very likely at isolated places over Madhya Pradesh, Vidarbha and Kerala & Mahe on 28th July; Gujarat Region and East Rajasthan on 28th & 29th July; Saurashtra & Kutch on 29th July; Konkan & Goa, Madhya Maharashtra on 28th July & 1st August; Nagaland, Manipur, Mizoram & Tripura during 30th July – 1st August; West Uttar Pradesh, Himachal and Jharkhand Pradesh on 31st; Uttarakhand on 31st July & 1st August.

- 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/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

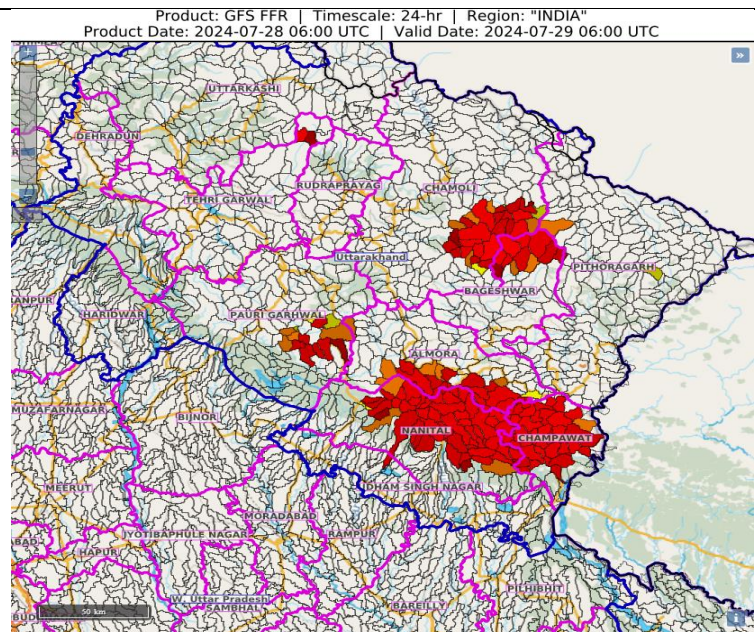
- Make provision for draining out excess water from crop fields to avoid water stagnation in North Eastern States, Sub Himalayan West Bengal, Odisha, Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Punjab, East Rajasthan, Madhya Pradesh, Chhattisgarh, Vidarbha, Konkan & Goa, *Ghat* areas of Madhya Maharashtra, Gujarat State, Kerala and Coastal Karnataka.
- 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 29-07-2024 :

Low to Moderate flash flood risk likely over few watersheds & neighbourhoods of **Uttarakhand** Met Sub-divisions during next 24 hours.

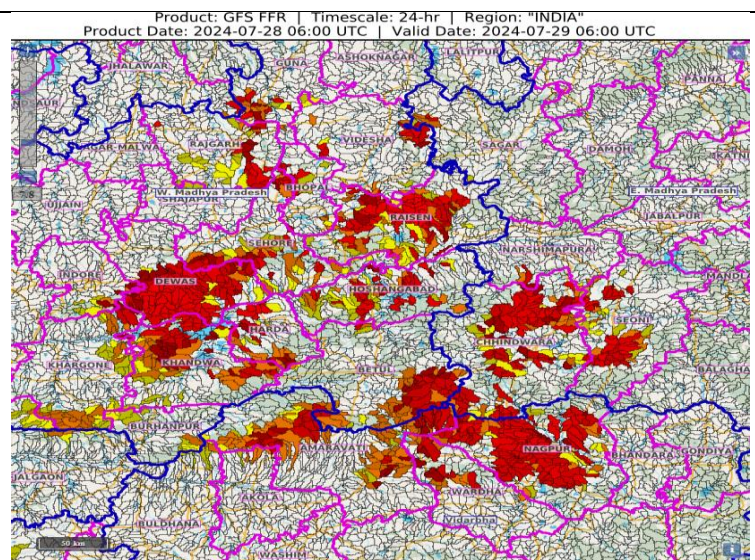
Surface runoff/ Inundation may occur at some fully saturated soils & low-lying areas over area of concern as shown in map due to expected rainfall occurrence in next 24 hours.



24 hours Outlook for the Flash Flood Risk (FFR) till 1130 IST of 29-07-2024 :

Low to Moderate flash flood risk likely over few watersheds & neighbourhoods of Northern parts of 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 area of concern 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 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

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)