



Government of India
Ministry of Earth Sciences
India Meteorological Department



Press Release
Date: 10th July, 2024
Time of Issue: 1315 hours IST

- Subject: (1) Heavy to very heavy rainfall with isolated extremely heavy falls likely over Northeast & adjoining east India during next 2 days and decrease in intensity thereafter.**
(2) Heavy to very heavy rainfall likely over Konkan, Madhya Maharashtra and Coastal Karnataka during 12th-15th; Goa during next 5 days.
(3) Heavy rainfall spell likely over western Himalayan Region during 11th-13th and over East Uttar Pradesh during next 5 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 Meghalaya; **Heavy to very heavy rainfall** at isolated places over Saurashtra & Kutch, Goa, Bihar; **Heavy rainfall** at isolated places over Gujarat Region, East Rajasthan, Madhya Pradesh, East Uttar Pradesh, Konkan, Madhya Maharashtra, Telangana, Assam and Sub-Himalayan West Bengal & Sikkim.

Weather Systems

- ✓ The Monsoon trough is near to its normal position and eastern end likely to shift northwards during next 2-days.
- ✓ A shear zone runs over north peninsular India in middle tropospheric levels tilting southwards with height.
- ✓ The off-shore trough at mean sea level runs along north Maharashtra- north Kerala coasts.
- ✓ A cyclonic circulation over Kutch in lower tropospheric levels tilting southwestwards with height.
- ✓ A cyclonic circulation over northeast Assam & neighbourhood and an east-west trough runs from northeast Uttar Pradesh to the above cyclonic circulation over northeast Assam in lower tropospheric levels.

Forecast & Warnings (Annexure II)

❖ West and South Peninsular India

- ✓ Fairly widespread to widespread light to moderate rainfall accompanied with thunderstorm & lightning very likely over Konkan & Goa, Madhya Maharashtra, Kerala & Mahe, Lakshadweep, Karnataka; scattered to fairly widespread light to moderate rainfall over Gujarat Region, Coastal Andhra Pradesh & Yanam, Telangana, Marathwada; isolated to scattered light to moderate rainfall over Tamil Nadu, Puducherry & Karaikal and Rayalaseema during next 5 days.
- ✓ Isolated **heavy rainfall** over Konkan & Goa, Madhya Maharashtra and Coastal Karnataka, Gujarat Region during 10th-14th; North Interior Karnataka during 11th-14th; Saurashtra & Kutch on 10th & 11th; Lakshadweep on 10th; Kerala & Mahe and South Interior Karnataka during 12th-14th July.
- ✓ **Isolated very heavy rainfall also likely over Goa on 10th & 11th; Konkan, ghat areas of Madhya Maharashtra, Coastal Karnataka during 12th-14th and Gujarat State today.**

❖ East & Northeast India

- ✓ Fairly widespread to widespread light to moderate rainfall accompanied with thunderstorm, lightning very likely over Andaman & Nicobar Islands, Sub-Himalayan West Bengal & Sikkim, Bihar and Northeast India; scattered to fairly widespread light to moderate rainfall over Gangetic West Bengal, Jharkhand, Odisha during next 5 days.
- ✓ **Heavy to very heavy rainfall** very likely at isolated places over Sub-Himalayan West Bengal & Sikkim, Bihar, Arunachal Pradesh, Assam & Meghalaya during 10th-14th; isolated **heavy rainfall** over Jharkhand on 11th & 12th; Odisha during 12th-14th; Nagaland and Manipur on 10th, 11th & 14th July.
- ✓ **Isolated extremely heavy rainfall very likely over Sub-Himalayan West Bengal & Sikkim, Meghalaya on 10th & 11th and Bihar on 11th July.**

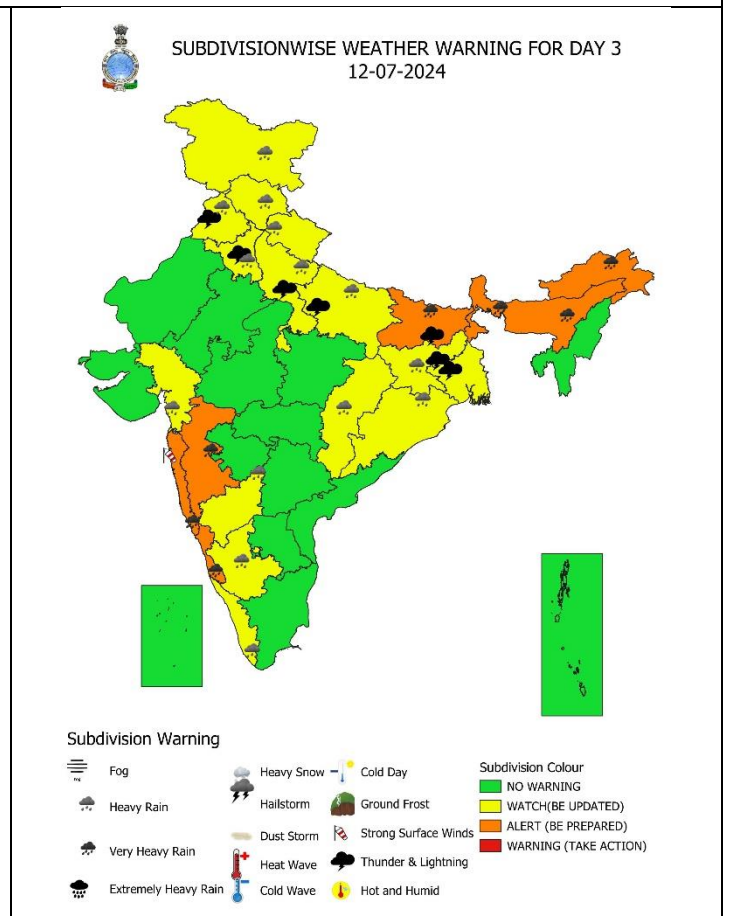
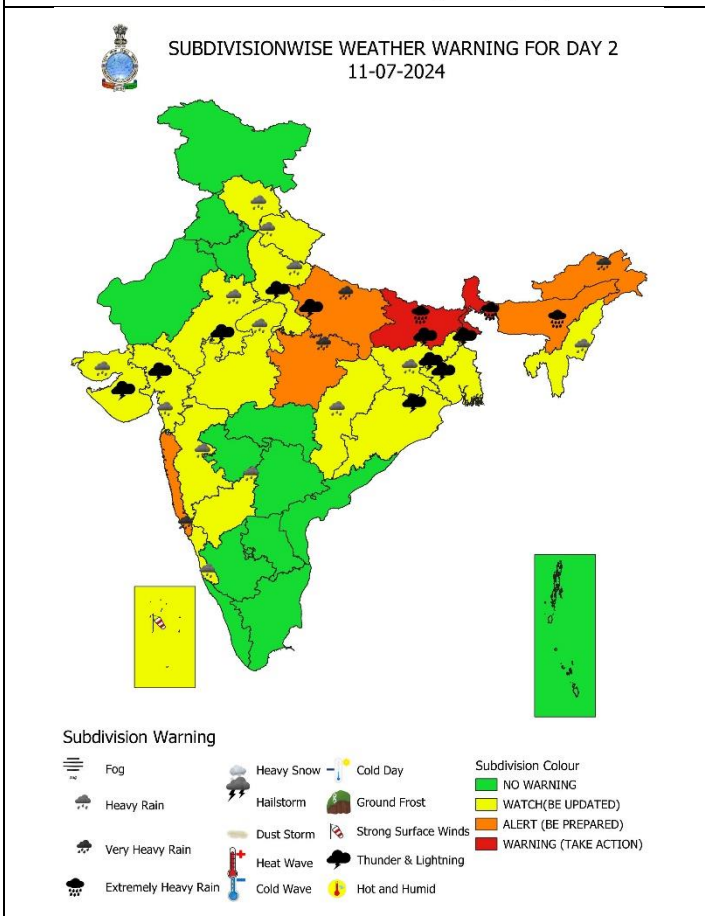
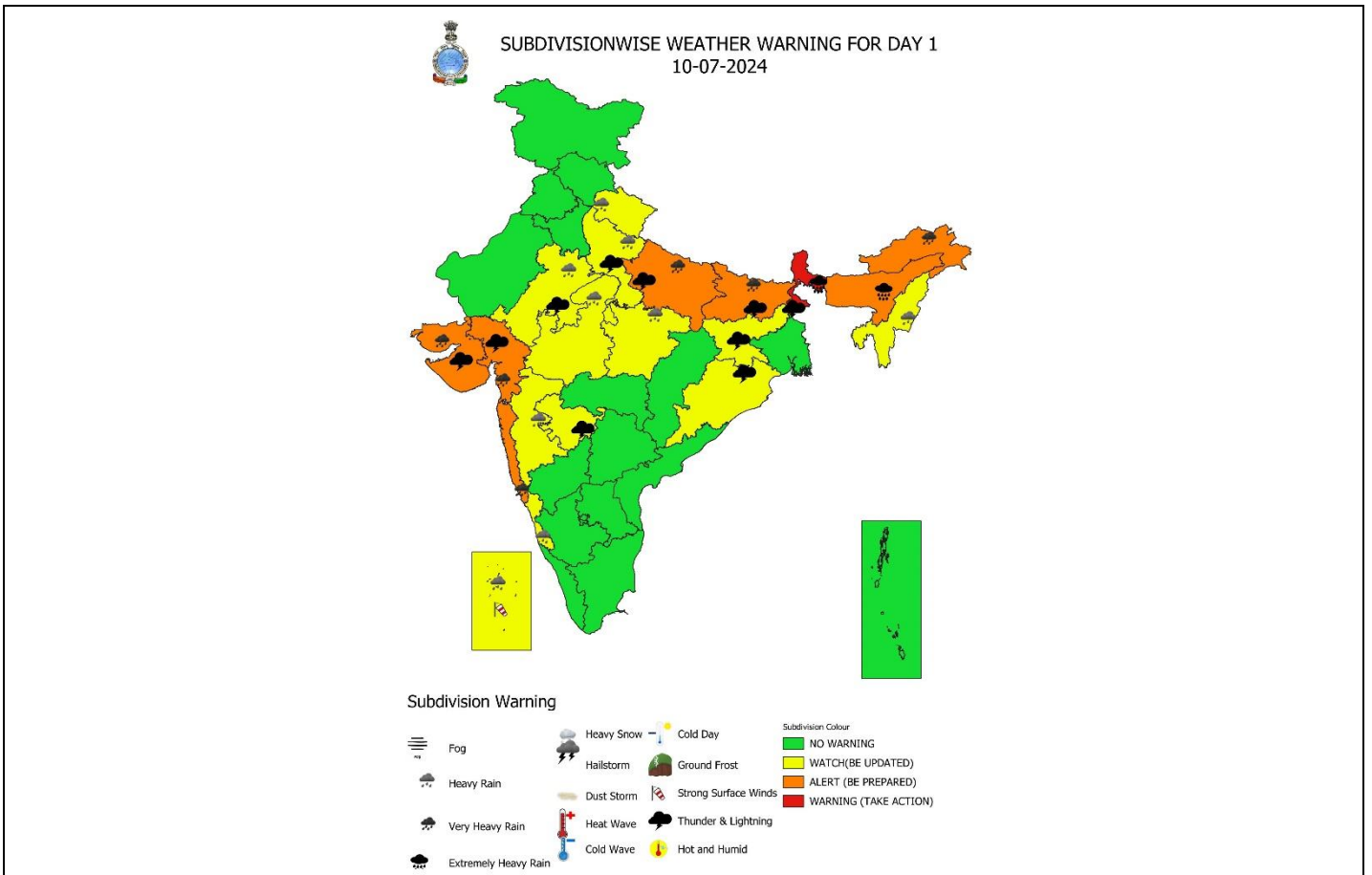
❖ Northwest & Central India

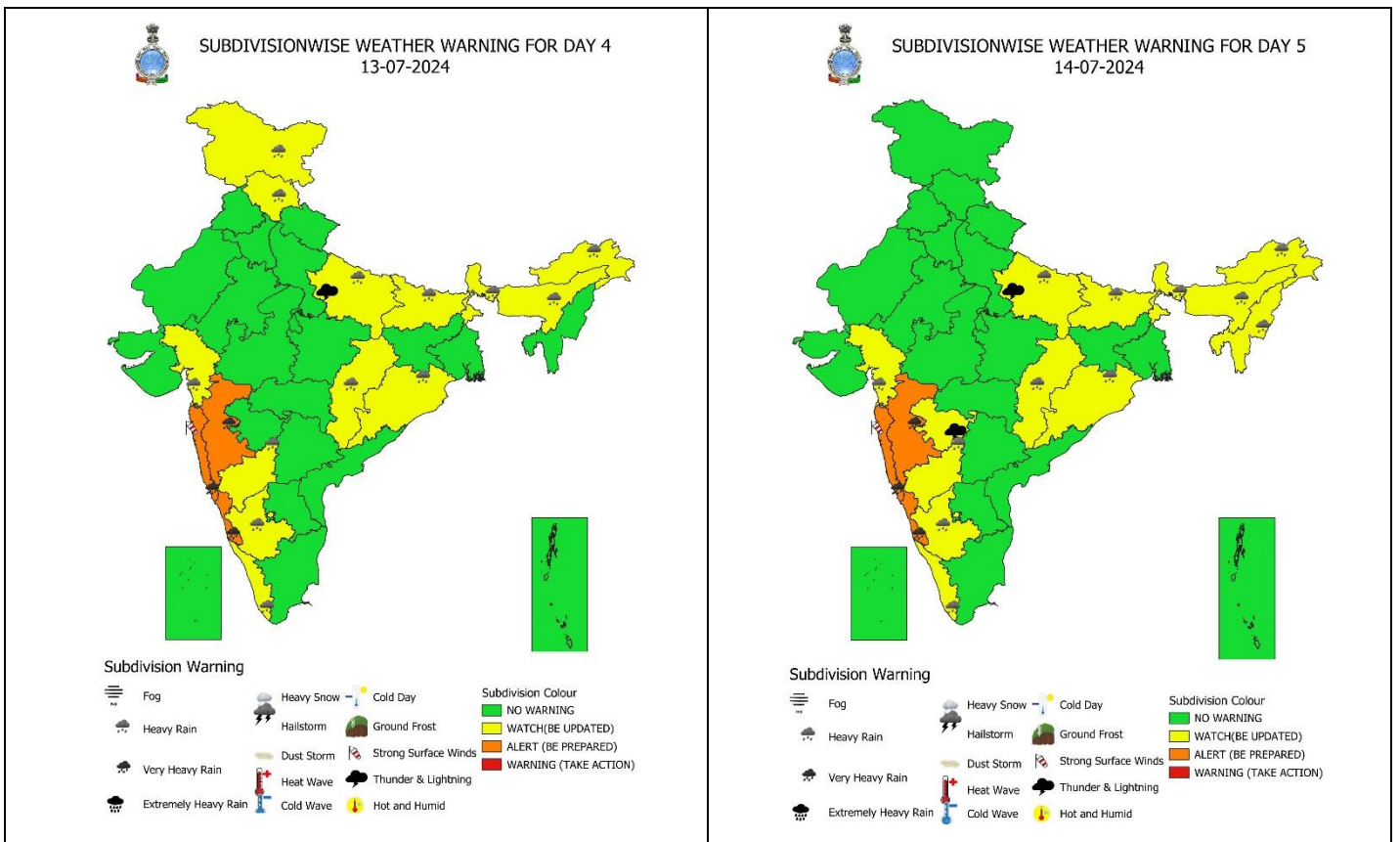
- ✓ Fairly widespread to widespread light to moderate rainfall accompanied with thunderstorm & lightning very likely over Uttarakhand and Central India; scattered to fairly widespread light to moderate rainfall over Himachal Pradesh, Uttar Pradesh, Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad and East Rajasthan during next 5 days; Punjab, Haryana-Chandigarh-Delhi during 11th-13th July.
- ✓ Isolated **heavy rainfall** very likely over East Uttar Pradesh during 10th-14th; Uttarakhand, West Uttar Pradesh during 10th-12th; Himachal Pradesh during 11th-13th; Jammu on 12th & 13th; north Haryana, north Punjab on 12th; East Rajasthan, Madhya Pradesh on 10th & 11th and Chhattisgarh during 11th-14th July.
- ✓ **Isolated very heavy rainfall also likely over East Uttar Pradesh on 10th & 11th and East Madhya Pradesh on 11th July.**

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

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

- ❖ **Assam & Meghalaya:** Mawsynram (dist East Khasi Hills) 22, Cherrapunji(rkm) (dist East Khasi Hills) 17, Cherrapunji (dist East Khasi Hills) 12, Gossaigaon (dist Kokrajhar) 10, Bilasipara Arg (dist Dhubri) 9, Mawkyrwat_arg (dist South West Khasi Hills) 8, Kokrajhar (dist Kokrajhar) 8, Shella (dist East Khasi Hills) 8, Mawkyrwat (dist South West Khasi Hills) 7,
- ❖ **Bihar:** Dighalbank (dist Kishanganj) 16, Bahadurganj (dist Kishanganj) 11, Pothia (dist Kishanganj) 9, Taibpur (dist Kishanganj) 8, Siswan (dist Siwan) 7, Tedhagach (dist Kishanganj) 7,
- ❖ **Konkan & Goa:** Panjim - Imd Obsy (dist North Goa) 10, Mapusa (dist North Goa) 8, Dodamarg (dist Sindhudurg) 7,
- ❖ **Saurashtra & Kutch:** Lodhika (dist Rajkot) 13, Vanthali (dist Junagadh) 11, Manavadar (dist Junagadh) 11, Malia (dist Junagadh) 10, Talala (dist Gir Somnath) 9, Mendarda (dist Junagadh) 9, Lathi (dist Amreli) 9, Dhoraji (dist Rajkot) 9, Bhanvad (dist Devbhoomi Dwarka) 8, Keshod (dist Junagadh) 8, Ranavav (dist Porbandar) 8, Chotila (dist Surendranagar) 7, Nakhatrana (dist Kutch) 7, Bagasra (dist Amreli) 7, Kandla Airport (dist Kutch) 7,
- ❖ **Sub-Himalayan West Bengal & Sikkim:** Kumargram (dist Alipurduar) 11, Barobhisha (dist Alipurduar) 9, Yuksom (dist Gyalshing) 5,
- ❖ **Gujarat Region:** Bhabhar (dist Banaskantha) 10, Mahemdavad (dist Kheda) 7,
- ❖ **East Uttar Pradesh:** Rudhauri (dist Basti) 9, Ghazipur Obsy (dist Ghazipur) 5, Bansi Tehsil (dist Siddharth Nagar) 4,
- ❖ **East Rajasthan:** Bagidora Sr (dist Banswara) 8, Ganeshpur Sr (dist Dungarpur) 7, Chikali Sr (dist Dungarpur) 5,
- ❖ **West Madhya Pradesh:** Gohad (dist Bhind) 9
- ❖ **East Madhya Pradesh:** Kurai (dist Seoni) 7
- ❖ **Madhya Maharashtra:** Erandol (dist Jalgaon) 7,
- ❖ **Telangana:** Palawanacha (dist B. Kothagudem) 7, Burgampadu (dist B. Kothagudem) 7,





IMPACT & ACTION SUGGESTED due to

- ✓ **Isolated extremely heavy rainfall very likely over Meghalaya and Sub-Himalayan West Bengal & Sikkim on 10th & 11th and Bihar on 11th July.**
- ✓ **Isolated very heavy rainfall very likely over Konkan & Goa during 10th-14th; Bihar, Sub-Himalayan West Bengal & Sikkim, Arunachal Pradesh, Assam & Meghalaya during 10th-12th; Gujarat State on 10th; East Uttar Pradesh on 10th & 11th; ghat areas of Madhya Maharashtra, Coastal Karnataka during 12th-14th 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 kutcha 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 likely over various parts of the country

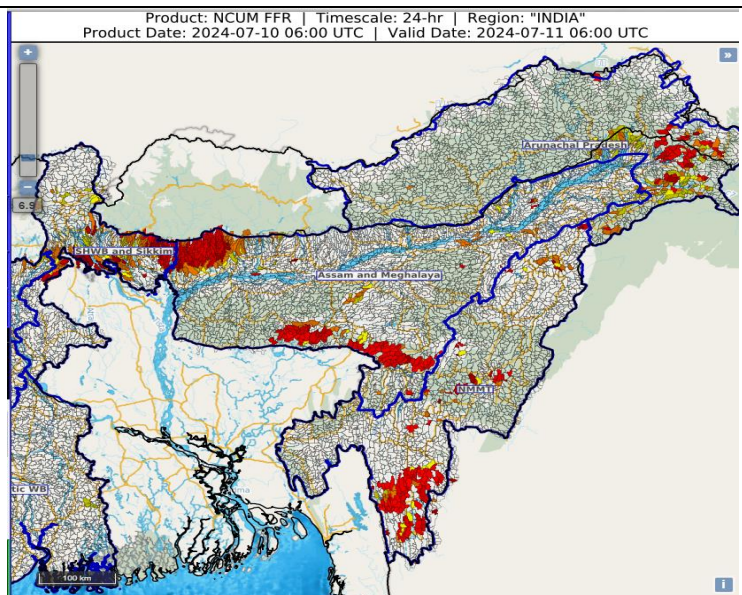
- Make provision for draining out excess water from crop fields to avoid water stagnation in Assam & Meghalaya, Sub-Himalayan West Bengal & Sikkim, Bihar, East Rajasthan, Madhya Pradesh, Konkan & Goa, ghat areas of Madhya Maharashtra, Gujarat State and Coastal Karnataka.
- Provide mechanical support to horticultural crops & staking to vegetables.

FLASH FLOOD GUIDANCE:

24 hours Outlook for the Flash Flood Risk (FFR) till 1130 IST of 11-07-2024 :

Low to Moderate flash flood risk likely over few watersheds & neighbourhoods of extreme Eastern parts of Arunachal Pradesh, North-west and southern parts of Assam & Meghalaya, Southern parts of NMMT and SHWB & Sikkim Met Sub-divisions during next 24 hours.

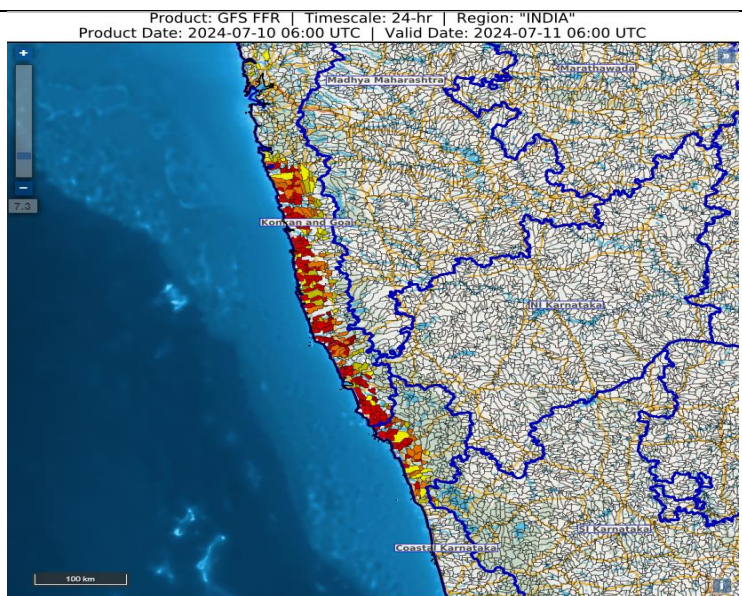
Surface runoff/ Inundation may occur at some fully saturated soils & low-lying areas over AoC as shown in map due to expected rainfall occurrence in next 24 hours.



24 hours Outlook for the Flash Flood Risk (FFR) till 1130 IST of 11-07-2024 :

Low to Moderate flash flood risk likely over few watersheds & neighbourhoods of Coastal Karnataka and Konkan & Goa 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; **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 < 1km

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)