



Government of India
Ministry of Earth Sciences
India Meteorological Department



Press Release

Date: 13th July, 2024

Time of Issue: 1315 hours IST

Subject: 1) Isolated extremely heavy rainfall very likely over Konkan & Goa, ghat areas of Madhya Maharashtra during 13th-16th; Coastal Karnataka and South Interior Karnataka on 14th & 15th; Gujarat Region on 13th & 16th; Saurashtra & Kutch on 16th & 17th July.
2) Heavy to very heavy rainfall very likely over Coastal Andhra Pradesh; East Uttar Pradesh on 13th, Chhattisgarh on 13th & 14th, Telangana, Marathwada and Vidarbha on 15th and Odisha on 14th & 15th July.

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** occurred at isolated places over Tamil Nadu, Chhattisgarh; **Heavy to very heavy rainfall** at isolated places over Coastal Andhra Pradesh, Gujarat Region, Kerala & Mahe, Coastal Karnataka, South Interior Karnataka, Konkan & Goa, Madhya Maharashtra, East Uttar Pradesh, West Madhya Pradesh, Arunachal Pradesh, Sub-Himalayan West Bengal & Sikkim, Bihar; **Heavy rainfall** at isolated places over Jammu, Uttarakhand, Rajasthan, East Madhya Pradesh, Assam & Meghalaya, Gangetic West Bengal, Jharkhand, Odisha and West Uttar Pradesh.

Weather Systems

- ✓ The Monsoon trough is at its normal position today and extends upto lower tropospheric levels. It is likely to shift south of its normal position from tomorrow.
- ✓ The off-shore trough runs along Maharashtra-north Kerala coasts at mean sea level.
- ✓ A cyclonic circulation lies over north Gujarat in lower & middle tropospheric levels and another over West central Bay of Bengal off Coastal Andhra Pradesh in middle tropospheric levels.

Forecast & Warnings (Annexure II)

❖ West, Central 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, Gujarat state, Madhya Pradesh, Vidarbha, Chhattisgarh; scattered to fairly widespread light to moderate rainfall over Coastal Andhra Pradesh & Yanam, Telangana, Marathwada, Rayalaseema; isolated to scattered light to moderate rainfall over Tamil Nadu, Puducherry & Karaikal during next 5 days.
- ✓ **Heavy to very heavy rainfall** very likely at some places over Konkan & Goa; isolated places over Madhya Maharashtra, Gujarat State, Kerala & Mahe, Coastal & South Interior Karnataka during next 5 days; isolated **Heavy rainfall** over Telangana, Madhya Pradesh, Vidarbha, Chhattisgarh during 13th-17th; Tamil Nadu, Puducherry & Karaikal on 13th, 15th & 16th; Coastal Andhra Pradesh & Yanam during 13th-15th and Marathwada during 14th-16th July.
- ✓ **Isolated very heavy rainfall likely over Coastal Andhra Pradesh & Yanam on 13th; Chhattisgarh on 13th & 14th, Telangana, Marathwada and Vidarbha on 15th July.**

- ✓ **Isolated extremely heavy rainfall very likely over Konkan & Goa, ghat areas of Madhya Maharashtra during 13th-16th; Coastal Karnataka and South Interior Karnataka on 14th & 15th; Gujarat Region on 13th & 16th; Saurashtra & Kutch on 16th & 17th July.**

❖ **East & Northeast India**

- ✓ Fairly widespread to widespread light to moderate rainfall **accompanied with thunderstorm, lightning** very likely over East and Northeast India during next 5 days.
- ✓ **Heavy rainfall** very likely at isolated places over Odisha during 13th-17th; Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur during 13th-16th; Sub-Himalayan West Bengal & Sikkim during 13th-15th; Bihar on 13th & 14th; Jharkhand on 13th; Andaman & Nicobar Islands on 13th & 14th July.
- ✓ **Isolated very heavy rainfall also likely over Nagaland on 14th and Odisha on 14th & 15th July.**

❖ **Northwest India**

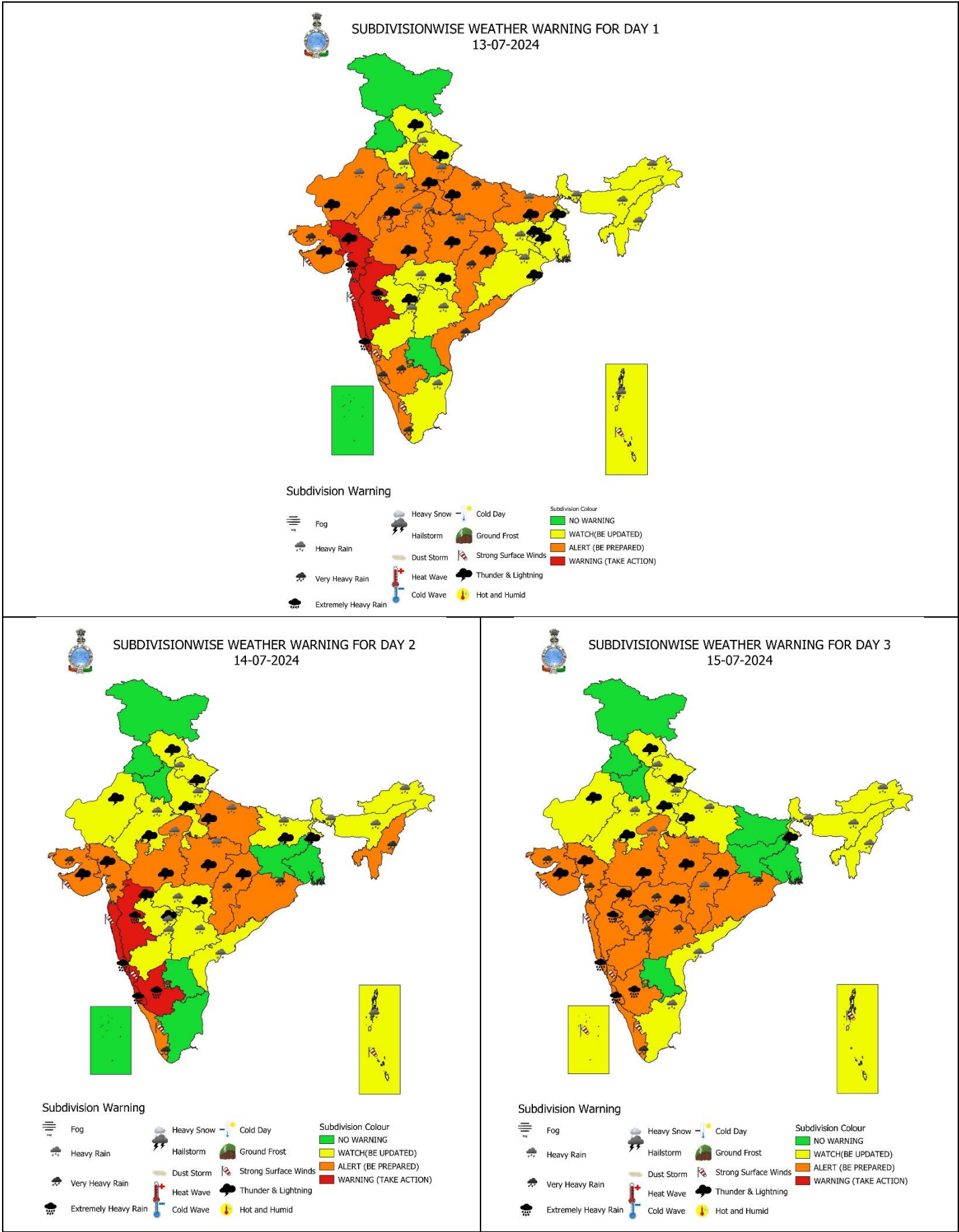
- ✓ Fairly widespread to widespread light to moderate rainfall **accompanied with thunderstorm & lightning** very likely over Uttarakhand; scattered to fairly widespread light to moderate rainfall over Himachal Pradesh, Uttar Pradesh, East Rajasthan during next 5 days. Isolated to scattered rainfall likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Punjab, Haryana-Chandigarh-Delhi and West Rajasthan during next 5 days.
- ✓ Isolated **heavy rainfall** very likely over Uttarakhand, East Rajasthan during 13th-17th; Uttar Pradesh during 13th-15th; northwest Rajasthan, south Haryana on 13th; Himachal Pradesh on 16th & 17th July.
- ✓ **Isolated very heavy rainfall also likely over East Uttar Pradesh on 13th July.**

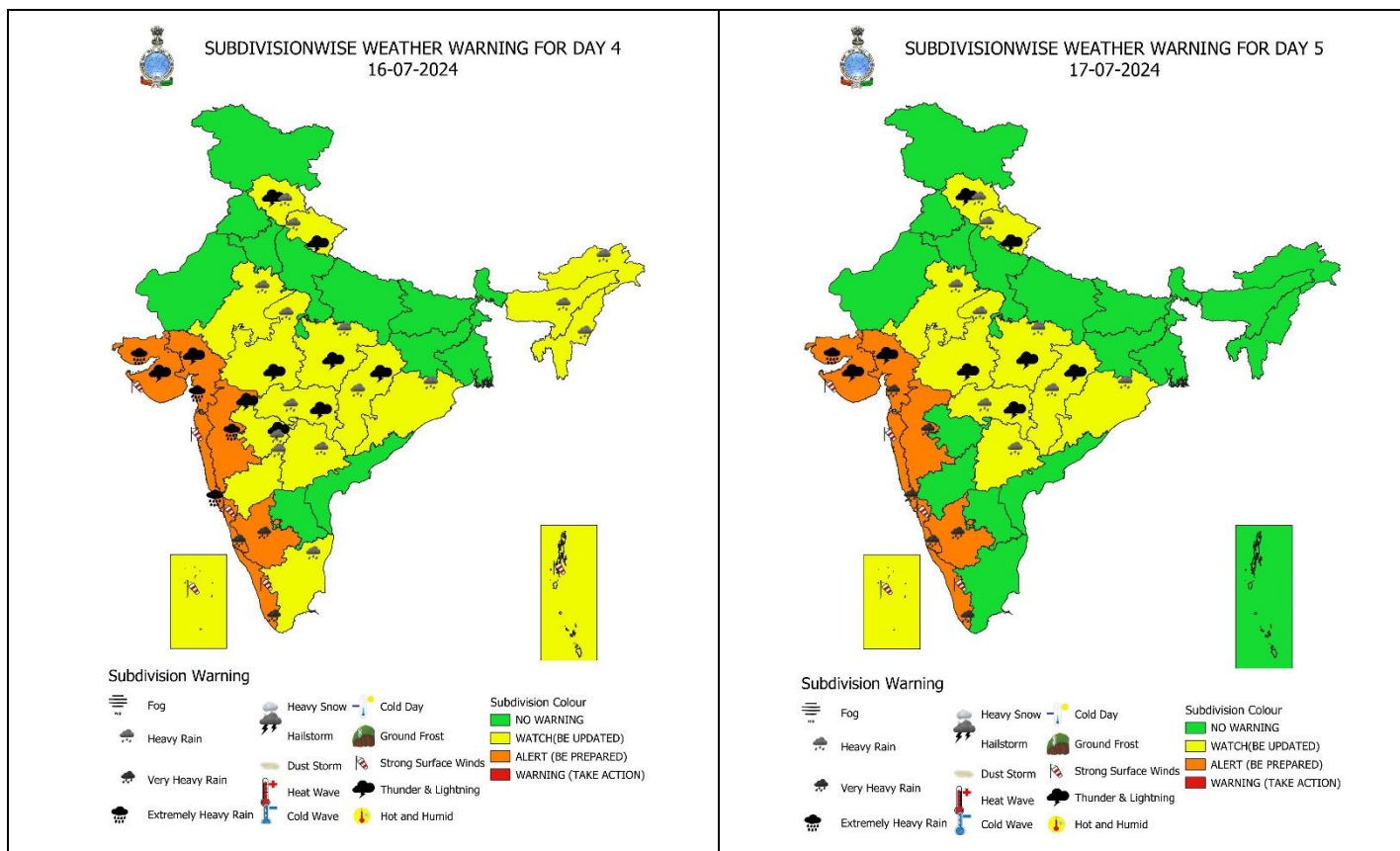
For more details, kindly refer: https://mausam.imd.gov.in/responsive/all_india_forecast_bulletin.php

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

- ❖ **Tamil Nadu:** Kilacheruvai (dist Cuddalore) 23, Lakkur (dist Cuddalore) 14, Thirukalukundram (dist Chengalpattu) 13, Avadi (dist Tiruvallur) 11, Maduranthagam (dist Chengalpattu) 10, Mahabalipuram (dist Chengalpattu) , Mahabalipuram AWS (dist Chengalpattu) 9 each, Singampunari (dist Sivagangai), Idayapatti (dist Madurai), YMCA Nandnam ARG (dist Chennai), Pelandurai (dist Cuddalore), Taluk Office Pandalur (dist The Nilgiris), RSCL-3 Valathy (dist Villupuram), Viraganur Dam (dist Madurai), RSCL-3 Avalurpettai (dist Villupuram), Tirupathur (dist Sivagangai) 8 each, Kallikudi (dist Madurai), Zone 08 Malar Colony (dist Chennai), Thiruvallangadu (dist Tiruvallur), Arakonam (dist Ranipet), Chetpet (dist Tiruvannamalai), Vepur (dist Cuddalore), Minnal (dist Ranipet), Zone 07 Ambattur (dist Chennai), Uthiramerur (dist Kancheepuram), Chinnakalar (dist Coimbatore), Vilupuram (dist Villupuram), Gingee (dist Villupuram), Tirutani AWS (dist Tiruvallur) 7 each
- ❖ **Chhattisgarh:** Kusmi (dist Balrampur) 23, Raghunath Nagar (dist Balrampur) 9, Ambikapur (dist Surguja) 9, Kunkuri (dist Jashpur) 9, Kutaru (dist Bijapur) 7, Chhura (dist Gariaband) 7, Ramanujnagar (dist Surajpur) 7, Bodari (dist Bilaspur) 7,
- ❖ **Konkan & Goa:** Ratnagiri - Imd Obsy (dist Ratnagiri) 18, Mandangad (dist Ratnagiri) 15, Talasari (dist Palghar) 14, Matheran (dist Raigad) 14, Tala (dist Raigad) 14, Roha (dist Raigad) 14, Sangameshwar Devrukh (dist Ratnagiri) 13, Poladpur (dist Raigad) 13, Sanguem (dist South Goa) 13, Devgad (dist Sindhudurg) 12, Mahad (dist Raigad) 11, Mhasla (dist Raigad) 11, Murud (dist Raigad) 11, Guhagarh (dist Ratnagiri) 11, Vaibhavwadi (dist Sindhudurg) 11, Jawhar (dist Palghar) 10, Shriwardhan (dist Raigad) 10, Rajapur (dist Ratnagiri) 10, Sudhagad Pali (dist Raigad) 10, Valpoi (dist North Goa) 10, Dahanu - Imd Obsy (dist Palghar) 9, Dapoli_agri (dist Ratnagiri) 9, Khalapur (dist Raigad) 9, Pen (dist Raigad) 9, Ponda (dist North Goa) 9, Wakwali_agri (dist Ratnagiri) 8, Karjat_agri (dist Raigad) 8, Panjim - Imd Obsy (dist North Goa) 8, Khed (dist Ratnagiri) 8, Panvel_agri (dist Raigad) 8, Kudal (dist Sindhudurg) 8, Thane (dist Thane) 8, Dodamarg (dist Sindhudurg) 8, Palghar_agri (dist Palghar) 7;
- ❖ **East Uttar Pradesh:** Bansi Tehsil (dist Siddharth Nagar) 17, Domeriaganj (dist Siddharth Nagar) 9, Tulasipur (dist Balrampur) 8, Sirauli Gauspur Tehsil (dist Barabanki) 8, Raniganj (dist Pratapgarh) 7, Kaiserganj (dist Bahraich) 7,
- ❖ **Kerala & Mahe:** Vadakara (dist Kozhikode) 15, Quilandi (dist Kozhikode) 14, Tellichery (dist Cannur) 14, Mahe (dist Mahe) 12, Poonjar Aws (dist Kottayam) 12, Vadakara Aws (dist Kozhikode) 11, Cheruvanchery Aws (dist Cannur) 11, Pinarayi Aws (dist Cannur) 11, Kozhikode (dist Kozhikode) 11, Mannarkkad (dist Palakkad) 11, Venkurinji Aws (dist Pathanamthitta) 10, Aralam Aws (dist Cannur) 10, Bayar Aws (dist Kasargod) 10, Anakayam Arg (dist Malappuram) 9, Panniyoor Arg (dist Cannur) 9, Thennala Aws (dist Malappuram) 9, Ams Kannur (dist Cannur) 9, Peermade To (dist Idukki) 9, Karipur Ap. (dist Malappuram) 9, Perinthalamanna (dist Malappuram) 9, Kannur (dist Cannur) 9, Kannur Airport Aws (dist Cannur) 9, Vytthiri (dist Wynad) 8, Chemberi Aws (dist Cannur) 8, Munderi Aws (dist Malappuram) 8, Kodungallur (dist Thrissur) 8, Vellarikkundu Aws (dist Kasargod) 8, Laha Aws (dist Pathanamthitta) 8, Manjeri (dist Malappuram) 7,
- ❖ **Coastal Andhra Pradesh:** Masulipatnam Cdr (dist Krishna) 15, Guntur (dist Guntur) 14, Tenali (dist Guntur) 12, Palakoderu (dist West Godavari) 7, Narsapuram (dist West Godavari) 7,
- ❖ **Bihar:** Sikta (dist West Champaran) 14, Barahar Kothi (dist Purnea) 14, Chhatapur (dist Supaul) 8, Naugachia (dist Bhagalpur) 7, Manpur (dist Gaya) 7, Tedhagach (dist Kishanganj) 7,
- ❖ **Coastal Karnataka:** Ankola (dist Uttara Kannada) 13, Kumta (dist Uttara Kannada) 13, Kadra (dist Uttara Kannada) 13, Gersoppa (dist Uttara Kannada) 13, Karkala (dist Udupi) 13, Mangaluru Ap Obsy (dist Dakshina Kannada) 11, Panambur Obsy (dist Dakshina Kannada) 11, Kundapur (dist Udupi) 11, Gokarna (dist Uttara Kannada) 10, Puttur Hms (dist Dakshina Kannada) 10, Kota (dist Udupi) 9, Kollur (dist Udupi) 9, Shirali Pto (dist Uttara Kannada) 9, Mulki (dist Dakshina Kannada) 9, Manki (dist Uttara Kannada) 9, Uppinangadi (dist Dakshina Kannada) 8, Sulya (dist Dakshina Kannada) 8, Belthangadi (dist Dakshina Kannada) 8, Mani (dist Dakshina Kannada) 8, Castle Rock (dist Uttara Kannada) 8, Dharmasthala (dist Dakshina Kannada) 8, Udupi (dist Udupi) 7, Mangaluru (dist Dakshina Kannada) 7, Siddapura (dist Udupi) 7

- ❖ **South Interior Karnataka:** Bhagamandala (dist Kodagu) 13, Kottigehara (dist Chikkamagaluru) 11, Kammardi (dist Chikkamagaluru) 9, Agumbe Emo (dist Shivamogga) 9, Linganamakki Hms (dist Shivamogga) 8, Sringeri Hms (dist Chikkamagaluru) 8, Napoklu (dist Kodagu) 8,
- ❖ **Madhya Maharashtra:** Mahabaleshwar- Imd Obsy (dist Satara) 13, Lonavala_agri (dist Pune) 10,
- ❖ **Gujarat Region:** Khanvel (dist Dadara & Nagar Haveli) 13, Gandevi (dist Navsari) 13, Khergam (dist Navsari) 13, Navsari (dist Navsari) 13, Daman (dist Daman) 13, Pardi (dist Valsad) 11, Valsad (dist Valsad) 11, Chikhli (dist Navsari) 11, Jalalpor (dist Navsari) 11, Navasari_aws (dist Navsari) 10, Daman Fmo (dist Daman) 9, Umergam (dist Valsad) 9, Silvassa (dist Dadara & Nagar Haveli) 9, Vyara (dist Tapi) 9, Dharampur (dist Valsad) 8, Madhbun (dist Dadara & Nagar Haveli) 8, Vapi (dist Valsad) 7, Songadh (dist Tapi) 7, Morva Hadaf (dist Panchmahal) 7, Mahuva (dist Surat) 7, Dolvan (dist Tapi) 7,
- ❖ **West Madhya Pradesh:** Zirapur (dist Rajgarh) 13, Pachore (dist Rajgarh) 10,
- ❖ **Sub-Himalayan West Bengal & Sikkim:** Buxaduar (dist Alipurduar) 12, Barobhisha (dist Alipurduar) 11, Kumargram (dist Alipurduar) 9, Hasimara (dist Alipurduar) 9, Alipurduar (pto) (dist Alipurduar) 8, Mekhliganj (dist Cooch Behar) 8, Darjeeling (dist Darjeeling) 7
- ❖ **East Madhya Pradesh:** Churhat (dist Sidhi) 11, Jaithari (dist Anuppur) 7, Damoh-aws (dist Damoh) 7, Amarwara (dist Chindwara) 7, Gohparu (dist Shahdol) 7,
- ❖ **East Rajasthan:** Bundi (dist Bundi) 9, Todaraisingh Sr (dist Tonk) 8, Malpura (dist Tonk) 7, Hindoli (dist Bundi) 7, Pilani (dist Jhunjhunu) 7, Talera Sr (dist Bundi) 7,
- ❖ **West Rajasthan:** Taranagar / Reni (dist Churu) 9, Dungargarh (dist Bikaner) 9, Sujangarh (dist Churu) 7, Karanpur (dist Sri Ganganagar) 7,
- ❖ **West Uttar Pradesh:** Nagina (dist Bijnor) 9,
- ❖ **Telangana:** Koilkonda (dist Mahabubnagar) 8, Julurpad (dist B. Kothagudem) 8,
- ❖ **Odisha:** Ganjam-8, Sonepur-6
- ❖ **Jammu & Kashmir:** Udampur(iaf) (dist Udhampur) 7, Katra (dist Reasi) 7,
- ❖ **Uttarakhand:** Kashipur (Udham Singh Nagar) : 7,
- ❖ **Gangetic West Bengal:** Contai (dist East Midnapore) 7
- ❖ **Assam & Meghalaya:** Cherrapunji (dist East Khasi Hills) 7, Mawsynram (dist East Khasi Hills) 7,





IMPACT & ACTION SUGGESTED due to

- ✓ **Isolated extremely heavy rainfall very likely over Konkan & Goa, ghat areas of Madhya Maharashtra during 13th-16th; Coastal Karnataka and South Interior Karnataka on 14th & 15th; Gujarat Region on 13th & 16th; Saurashtra & Kutch on 16th & 17th July.**
 - ✓ **Isolated very heavy rainfall very likely over Gujarat Region on 14th & 15th; Saurashtra & Kutch during 13th-15th; East Uttar Pradesh on 13th; Chhattisgarh on 13th & 14th; Odisha on 14th & 15th, North Interior Karnataka, Telangana and Marathwada on 15th 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/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.

Impact expected and action suggested due to thunderstorm accompanied with lightning over Bihar, East Uttar Pradesh, Rajasthan on 13th; Madhya Pradesh, Chhattisgarh during 13th-15th July.

Impact expected:

- ❖ Strong wind/hail may damage plantation, horticulture and standing crops.
- ❖ Hail may injure people and cattle at open places.
- ❖ Partial damage to vulnerable structures due to strong winds.
- ❖ Minor damage to kutcha houses/walls and huts.
- ❖ Loose objects may fly.

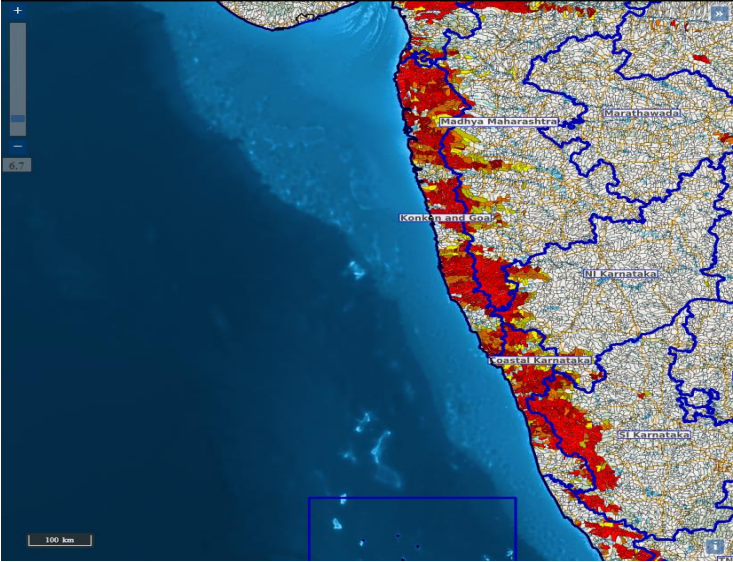
Action suggested:

- ❖ Stay indoors, close windows & doors and avoid travel if possible.
- ❖ Take safe shelters; do not take shelter under trees.
- ❖ Do not lie on concrete floors and do not lean against concrete walls.
- ❖ Unplug electrical/ electronic appliances.
- ❖ Immediately get out of water bodies.
- ❖ Keep away from all the objects that conduct electricity.

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 & Sikkim, Odisha, Uttarakhand, Uttar Pradesh, Rajasthan, Madhya Pradesh, Chhattisgarh, Konkan & Goa, Ghat areas of Madhya Maharashtra, Gujarat State, Tamil Nadu, Kerala, Karnataka, Coastal Andhra Pradesh and Telangana.
- Postpone transplanting of rice, finger millet and vegetables in Konkan.
- Provide mechanical support to horticultural crops & staking to vegetables.

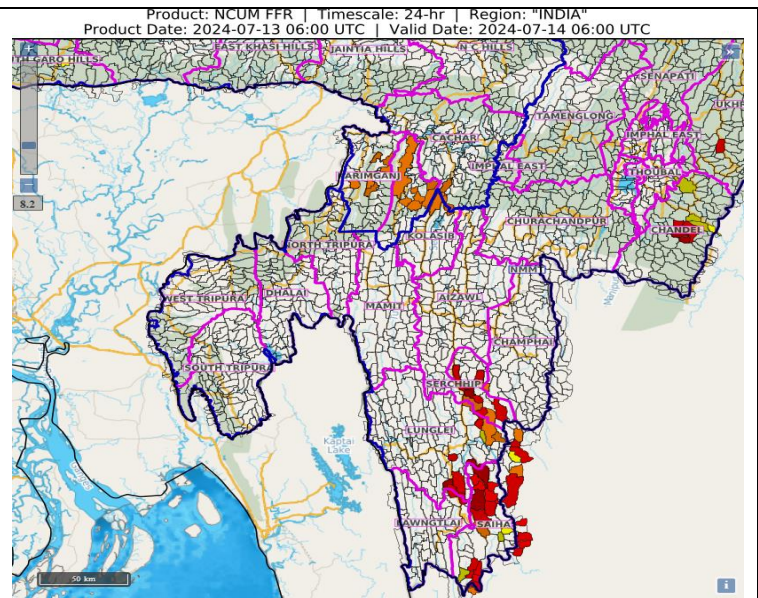
FLASH FLOOD GUIDANCE:

<p>24 hours Outlook for the Flash Flood Risk (FFR) till 1130 IST of 14-07-2024 :</p> <p>Low to Moderate flash flood risk likely over few watersheds & neighbourhoods of Southern parts of Gujarat Region, Konkan & Goa, Coastal Karnataka & adjoining SI Karnataka Met Sub-divisions during next 24 hours.</p> <p>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.</p>	<div> <div>Product: NCUM FFR Timescale: 24-hr Region: "REGIONAL"</div> <div>Product Date: 2024-07-13 06:00 UTC Valid Date: 2024-07-14 06:00 UTC</div>  </div>
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24 hours Outlook for the Flash Flood Risk (FFR) till 1130 IST of 14-07-2024 :

Low flash flood risk likely over few watersheds & neighbourhoods of Southern parts of Assam & Meghalaya and NMMT 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)



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