



Government of India
Ministry of Earth Sciences
India Meteorological Department



Press Release
Date: 20th July, 2024
Time of Issue: 1315 hours IST

Subject: 1) Under the influence of Monsoon Depression over Odisha coast, isolated extremely heavy rainfall very likely over Vidarbha, south Chhattisgarh and heavy to very heavy rainfall over south Odisha, north Coastal Andhra Pradesh and Telangana today, the 20th July.
2) Isolated extremely heavy rainfall also very likely over Gujarat State during next 4-5 days; over Konkan & Goa, Ghat areas of Madhya Maharashtra today, the 20th July and slight reduction thereafter during subsequent 4-5 days.

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

- ✓ **Exceptionally heavy rainfall occurred** over Saurashtra (Devbhoomi Dwarka-42 cm).
- ✓ **Heavy to very heavy rainfall at some places with extremely heavy falls at isolated places** over South Chhattisgarh, Vidarbha, Konkan & Goa; **Heavy to very heavy rainfall with extremely heavy falls at isolated places** over Saurashtra & Kutch, Odisha, Coastal Andhra Pradesh; **Heavy to very heavy rainfall** at some places over Coastal Karnataka; at isolated places over Gujarat Region, South Interior Karnataka, Uttarakhand, West Uttar Pradesh, Assam & Meghalaya; **Heavy rainfall** at isolated places over East Rajasthan, East Uttar Pradesh, Madhya Pradesh, Tamil Nadu, Kerala, Rayalaseema, Telangana and Madhya Maharashtra.

Weather Systems

- ✓ The **depression** over Northwest and adjoining Westcentral Bay of Bengal off Odisha and adjoining north Andhra Pradesh coasts moved west-northwestwards and lay as a depression over Odisha coast near Chilika Lake at 0830 hours IST of today, the 20th July, 2024 over the same region near latitude 19.6°N and longitude 85.4°E, about 40 km south-southwest of Puri (Odisha) and 70 km East-Northeast of Gopalpur (Odisha). It is likely to move further northwestwards across Odisha & Chhattisgarh and weaken gradually into a well marked low pressure area during next 12 hours. **(Annexure II)**
- ✓ The Monsoon trough is active and lies south of its normal position. It is likely to remain south of its normal position during next 2-3 days.
- ✓ A shear zone lies in lower & middle tropospheric levels along 20°N tilting southwards with height.
- ✓ The off-shore trough at mean sea level runs along south Gujarat-north Kerala coasts at mean sea level.
- ✓ A cyclonic circulation lies over Saurashtra & Kutch and extends upto middle tropospheric levels.
- ✓ A Western Disturbance as a trough in middle tropospheric roughly along Long. 66°E to the north of Lat. 28°N.
- ✓ A cyclonic circulation lies over Himachal Pradesh and another over central Rajasthan in lower tropospheric levels.

Forecast & Warnings: (Annexure III)

❖ **West, Central, East and South Peninsular India**

- ✓ Fairly widespread to widespread light to moderate rainfall accompanied with thunderstorm & lightning very likely over the region during next 5 days.

- ✓ **Isolated extremely heavy rainfall very likely over Konkan & Goa, Madhya Maharashtra, Vidarbha, south Chhattisgarh on 20th; Gujarat state during 20th-24th July.**
- ✓ **Very heavy rainfall very likely at isolated/some places over Konkan & Goa, Madhya Maharashtra, Gujarat State, Madhya Pradesh during 21st-24th; Vidarbha on 21st & 22nd; Chhattisgarh on 21st; Coastal Karnataka on 20th & 21st; South Interior Karnataka, south Odisha, Marathwada, north Coastal Andhra Pradesh & Yanam and Telangana on 20th July.**
- ✓ **Heavy rainfall** very likely at isolated/some places over Rayalaseema, Tamil Nadu on 20th; North Interior Karnataka, Kerala & Mahe on 20th & 21st; Marathwada, Coastal Andhra Pradesh & Yanam, Telangana on 21st; Sub-Himalayan West Bengal & Sikkim during 20th-22nd; Gangetic West Bengal, Jharkhand on 22nd & 23rd; Bihar on 23rd & 24th July and Odisha, Vidarbha, Chhattisgarh, Coastal & South Interior Karnataka during next 5 days.

❖ **Northwest India**

- ✓ Scattered to fairly widespread light to moderate rainfall **accompanied with thunderstorm & lightning** very likely over Himachal Pradesh, Uttarakhand, East Rajasthan, Haryana-Chandigarh-Delhi, Uttar Pradesh; isolated to scattered rainfall likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Punjab and West Rajasthan during next 5 days.
- ✓ **Isolated extremely heavy rainfall very likely over Uttarakhand on 21st & 22nd July.**
- ✓ **Isolated very heavy rainfall also likely over East Rajasthan on 23rd & 24th; Uttarakhand on 23rd; Himachal Pradesh on 22nd & 23rd and West Uttar Pradesh on 22nd July.**
- ✓ Isolated **heavy rainfall** very likely over West Uttar Pradesh, Haryana during 21st-24th; West Rajasthan, East Uttar Pradesh during 22nd-24th; Punjab on 22nd & 23rd July and Himachal Pradesh, Uttarakhand, East Rajasthan during next 5 days.

❖ **Northeast India**

- ✓ Fairly widespread to widespread light to moderate rainfall with **isolated heavy rainfall and accompanied with thunderstorm, lightning** very likely over Northeast India during next 5 days.
- ✓ **Isolated very heavy rainfall also likely over Arunachal Pradesh and Assam & Meghalaya on 21st July.**

Fishermen Warning : (Annexure IV)

- ✓ Fishermen are advised not to venture into northwest and adjoining westcentral Bay of Bengal and along & off North Andhra Pradesh, Odisha, West Bengal & adjoining Bangladesh coasts on 20th July.
- ✓ For more information; kindly visit <https://rsmcnewdelhi.imd.gov.in/>

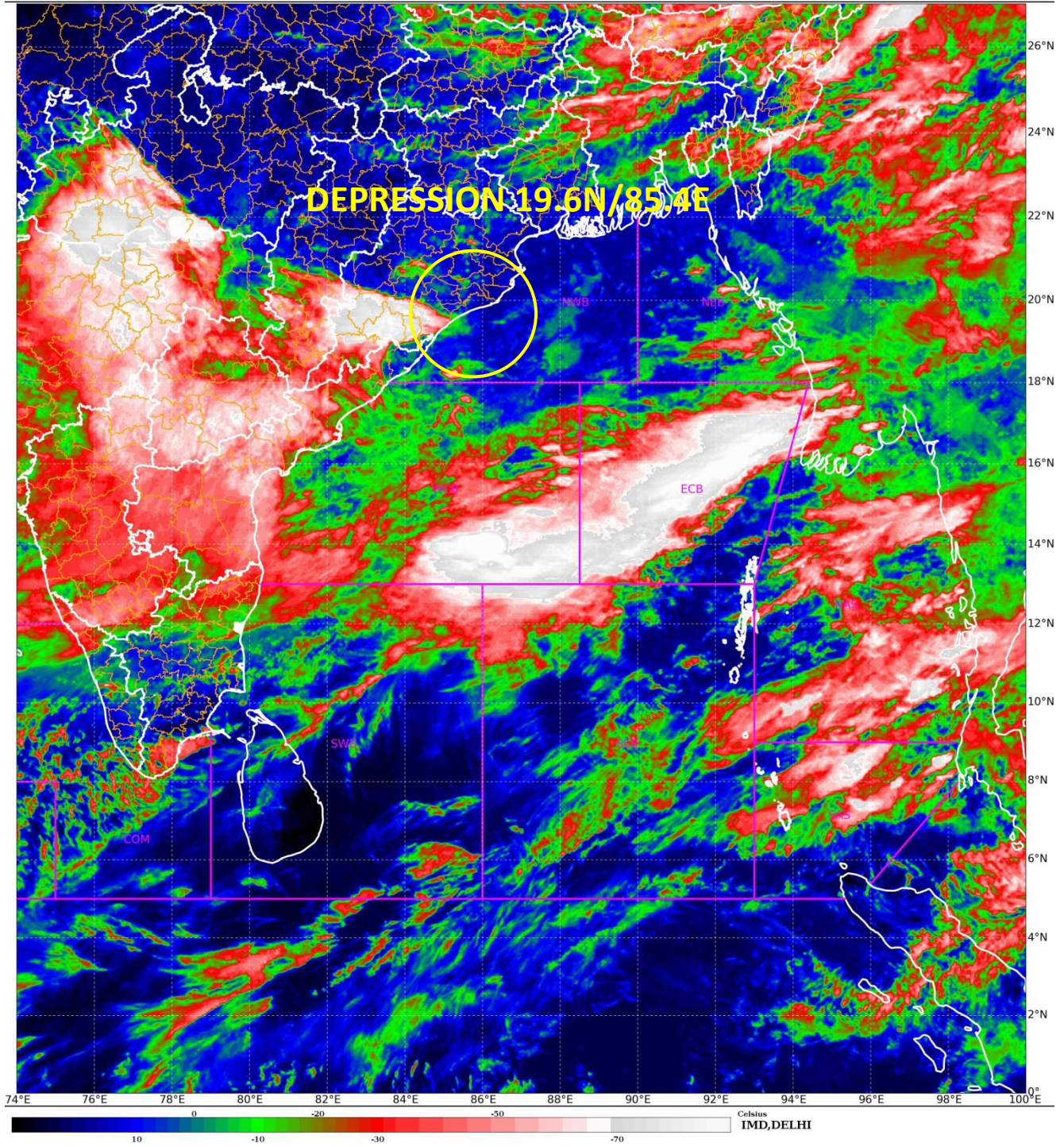
For more details, kindly refer: https://mausam.imd.gov.in/responsive/all_india_forecast_bulletin.php

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

- ❖ **Saurashtra & Kutch: Dwarka (dist Devbhoomi Dwarka) 42,** Okha (dist Devbhoomi Dwarka) 26, Porbandar (dist Porbandar) 19, Vanthali (dist Junagadh) 15, Kalyanpur (dist Devbhoomi Dwarka) 13, Keshod (dist Junagadh) 13, Ranavav (dist Porbandar) 11, Junagadh (dist Junagadh) 11, Kalavad (dist Jamnagar) 9, Manavadar (dist Junagadh) 8, Malia (dist Junagadh) 8, Upleta (dist Rajkot) 8, Khambhalia (dist Devbhoomi Dwarka) 8,
- ❖ **Chhattisgarh:** Bhairamgarh (dist Bijapur) 25, Aundhi (dist Mohala Manpur Chowki) 17, Durgkondal (dist Kanker) 17, Bhanupratappur (dist Kanker) 17, Konta (dist Sukma) 15, Sukma (dist Sukma) 15, Dornapal (dist Sukma) 15, Gadiras (dist Sukma) 14, Doundi (dist Balod) 13, Tongpaal (dist Sukma) 13, Kutaru (dist Bijapur) 13, Chhindgarh (dist Sukma) 13, Jagargunda (dist Sukma) 13, Nangur (dist Bastar) 13, Antagarh (dist Kanker) 12, Narayanpur (dist Narayanpur) 12, Bijapur (dist Bijapur) 12, Lal Bahadur Nagar (dist Rajnandgaon) 12, Kohkameta (dist Narayanpur) 11, Gangalur (dist Bijapur) 11, Bastanar (dist Bastar) 11, Chhuria (dist Rajnandgaon) 11, Katekalyan (dist Dantewada) 11, Kuakonda (dist Dantewada) 10,
- ❖ **Vidarbha:** Lakhandur (dist Bhandara) 24, Pauni (dist Bhandara) 20, Bramhapuri (dist Chandrapur) 19, Arjuni Morgaon (dist Gondia) 15, Desaignanj (dist Gadchiroli) 14, Bhiwapur (dist Nagpur) 14, Deori (dist Gondia) 12, Armori (dist Gadchiroli) 12, Nagbhir (dist Chandrapur) 12, Umrer (dist Nagpur) 12, Kurkheda (dist Gadchiroli) 11, Korchi (dist Gadchiroli) 11, Chimur (dist Chandrapur) 11, Bhandara (dist Bhandara) 11, Kuhi (dist Nagpur) 10, Sakoli (arg) (dist Bhandara) 10, Sindewahi (dist Chandrapur) 10, Kamptee (dist Nagpur) 10, Dhanora (dist Gadchiroli) 10, Lakhani (dist Bhandara) 10, Bhamragad (dist Gadchiroli) 9, Selu (dist Wardha) 9, Nagpur Aerodrome (dist Nagpur) 9, Agriculture College (dist Nagpur) 9, Nagpur (dist Nagpur) 9,
- ❖ **Odisha:** Chitrakunda K Guma (dist Malkangiri) 22, Korukunda (dist Malkangiri) 22, Malkangiri (dist Malkangiri) 18, Mathili (dist Malkangiri) 16, Kotpad (dist Koraput) 16, Padia (dist Malkangiri) 13, Nandahandi (dist Nawarangpur) 11, Tentulikhunti (dist Nawarangpur) 11, Papadahandi (dist Nawarangpur) 11, Aska (dist Ganjam) 10, Kosagumda (dist Nawarangpur) 10, Nawarangpur (dist Nawarangpur) 9, Nawarangpur Pto (dist Nawarangpur) 9, Jeypore (dist Koraput) 9, Nandapur (dist Koraput) 9, Th Rampur (dist Kalahandi) 9, Purushottampur (dist Ganjam) 8, Lamataput (dist Koraput) 8, Berhampur (dist Ganjam) 7, Similiguda (dist Koraput) 7, Rangeilunda (dist Ganjam) 7, Ganjam (dist Ganjam) 7,
- ❖ **Coastal Andhra Pradesh & Yanam:** Chintur (dist Alluri Sitharamaraju) 21, Anakapalle (dist Anakapalli) 13, Nuzvid (dist Eluru) 10, Paderu (dist Alluri Sitharamaraju) 9, Vararamachandrapur (dist Alluri Sitharamaraju) 9, Narsipatnam (dist Anakapalli) 9, Araku Valley (dist Alluri Sitharamaraju) 8, Kukunoor (dist Eluru) 8, Visakhapatnam Ap (dist Vishakhapatnam) 7, Therlam (dist Vizianagaram) 7, Kurupam (dist Parvathipuram Manyam) 7, Bondapalle (dist Vizianagaram) 7, Tekkali (dist Srikakulam) 7, Kunavaram (dist Alluri Sitharamaraju) 7, Chodavaram (dist Anakapalli) 7;
- ❖ **Konkan & Goa:** Pen (dist Raigad) 21, Sudhagad Pali (dist Raigad) 19, Roha (dist Raigad) 18, Uran (dist Raigad) 14, Sangameshwar Devrukh (dist Ratnagiri) 13, Tala (dist Raigad) 12, Khalapur (dist Raigad) 12, Tbia Imd Part Time (dist Thane) 12, Matheran (dist Raigad) 11, Colaba - Imd Obsy (dist Mumbai City) 11, Sawantwadi (dist Sindhudurg) 11, Karjat_agri (dist Raigad) 10, Wakwali_agri (dist Ratnagiri) 10, Panvel_agri (dist Raigad) 10, Mangaon (dist Raigad) 10, Murud (dist Raigad) 9, Mandangad (dist Ratnagiri) 9, Pernem (dist North Goa) 9, Shriwardhan (dist Raigad) 9, Lanja (dist Ratnagiri) 9, Poladpur (dist Raigad) 9, Quepem (dist South Goa) 8, Canacona (dist South Goa) 8, Khed (dist Ratnagiri) 8, Santacruz - Imd Obsy (dist Mumbai Suburban) 8, Mhasla (dist Raigad) 8, Dodamarg (dist Sindhudurg) 7, Valpoi (dist North Goa) 7, Ratnagiri - Imd Obsy (dist Ratnagiri) 7, Mahad (dist Raigad) 7,
- ❖ **West Uttar Pradesh:** Hamirpur (dist Hamirpur) 18, Bharthana (dist Etawah) 7,
- ❖ **Assam & Meghalaya:** Ranganadi Nt Xing (dist Lakhimpur) 17, N.lakhimpur/lilabari (dist Lakhimpur) 9,
- ❖ Tamulpur Arg (dist Baksa) 7, Margherita (dist Tinsukia) 7,
- ❖ **Uttarakhand:** Haripur (Dehradun) : 17, Narendra Nagar (Tehri Garhwal) : 9, Gairsain (Chamoli) : 8,
- ❖ **Gujarat Region:** Umergam (dist Valsad) 16, Daman (dist Daman) 16, Daman (dist Daman) 12, Silvassa (dist Dadara & Nagar Haveli) 11, Daman_ (dist Daman) 9, Pardi (dist Valsad) 9, Valsad (dist Valsad) 9, Vapi (dist Valsad) 8, Madhbun (dist Dadara & Nagar Haveli) 8, Khanvel (dist Dadara & Nagar Haveli) 7,
- ❖ **Coastal Karnataka:** Gersoppa (dist Uttara Kannada) 12, Castle Rock (dist Uttara Kannada) 11, Siddapur (dist Uttara Kannada) 11, Honavar Obsy (dist Uttara Kannada) 10, Kadra (dist Uttara Kannada) 10, Kumta (dist Uttara Kannada) 9, Manki (dist Uttara Kannada) 9, Puttur Hms (dist DakshinaKannada) 8, Gokarna (dist Uttara Kannada) 8, Ankola (dist Uttara Kannada) 8, Sulya (dist DakshinaKannada) 7, Banavasi (dist Uttara Kannada) 7, Udupi (dist Udupi) 7,
- ❖ **South Interior Karnataka:** Agumbe Emo (dist Shivamogga) 13, Kammardi (dist Chikkamagaluru) 11, Jayapura (dist Chikkamagaluru) 9, Sringeri Hms (dist Chikkamagaluru) 9, Tyagarthi (dist Shivamogga) 9, Bhagamandala (dist Kodagu) 8, Somwarpet (dist Kodagu) 8, Balehonnur (dist Chikkamagaluru) 8, Koppa (dist Chikkamagaluru) 8, Hunchadakatte (dist Shivamogga) 7,
- ❖ **East Uttar Pradesh:** Tirwa (dist Kannauj) 11, Sawayajpur (dist Hardoi) 7,
- ❖ **Madhya Maharashtra:** Mahabaleshwar- Imd Obsy (dist Satara) 11, Chandgad (dist Kolhapur) 10, Shahuwadi (dist Kolhapur) 9, Gaganbawada (dist Kolhapur) 7, Ajra (dist Kolhapur) 7;
- ❖ **Tamil Nadu:** Avalanche (dist The Nilgiris) 10, Upper Bhavani (dist The Nilgiris) 8,
- ❖ **Kerala:** Vythiri & Mananthavady (both in Wayanad district), Irikkur (Kannur district) & Vellarikkundu (Kasaragod district) 7 each;
- ❖ **Rayalaseema:** Rudravaram (dist Nandyal) 7, Dornipadu (dist Nandyal) 7;
- ❖ **Telangana:** Venkatapuram (dist Mulugu) 8, Bayyaram (dist Mahabubabad) 7, Julurpad (dist B. Kothagudem) 7, Manuguru (dist B. Kothagudem) 7;
- ❖ **Madhya Pradesh:** Mohkheda (dist Chindwara) 10, Baihar (dist Balaghat) 8, Vidisha (dist Vidisha) 9, Udaipura (dist Raisen) 8;

SAT : INSAT-3DR IMG
IMG_TIR1_TEMP 10.8 um
L1C Mercator

20-07-2024/(0445 to 0512) GMT
20-07-2024/(1015 to 1042) IST



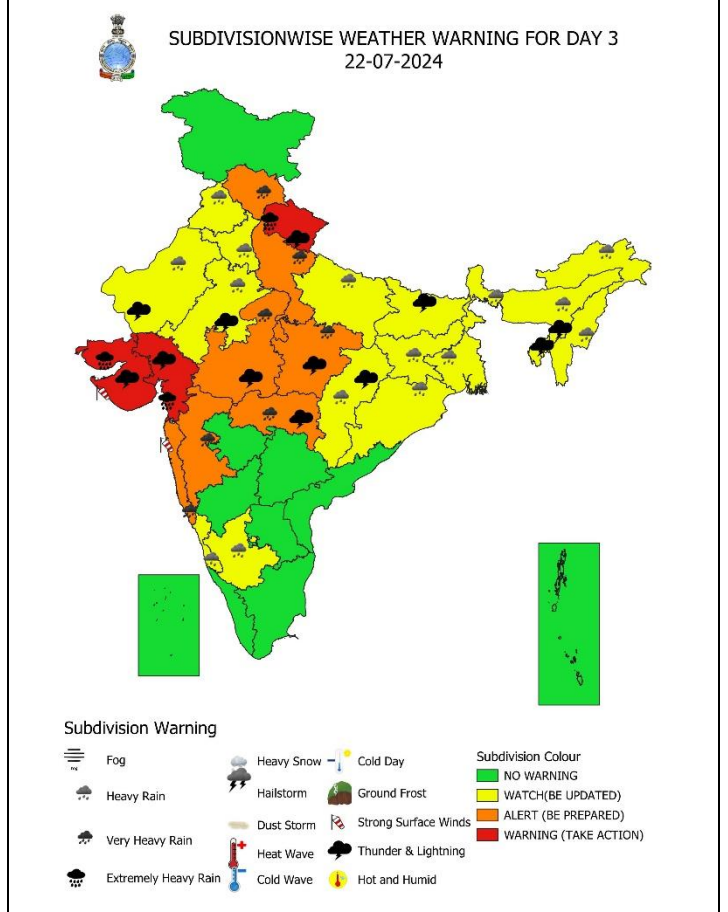
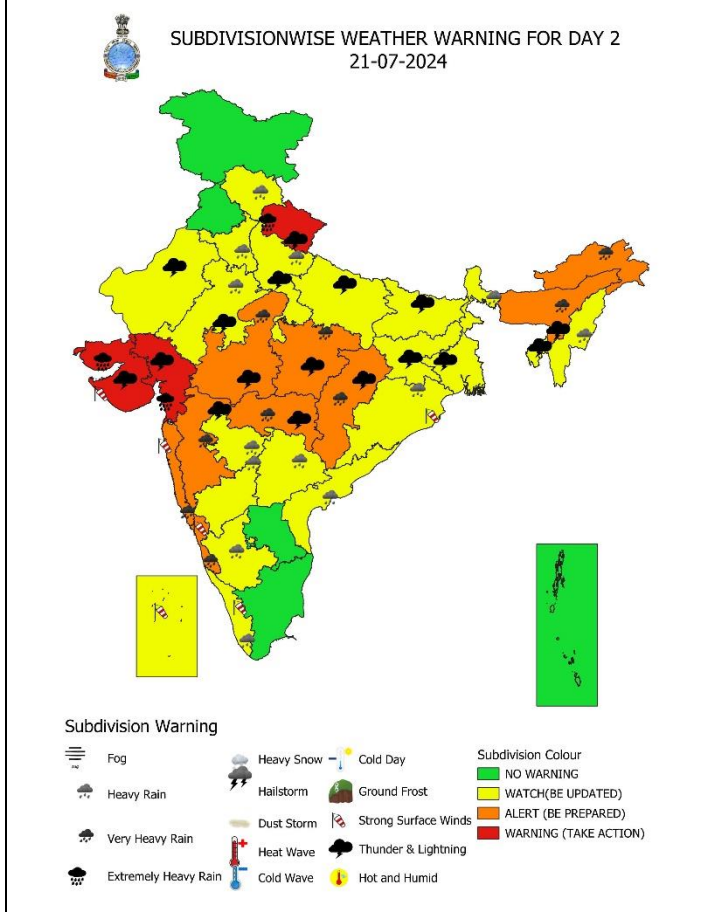
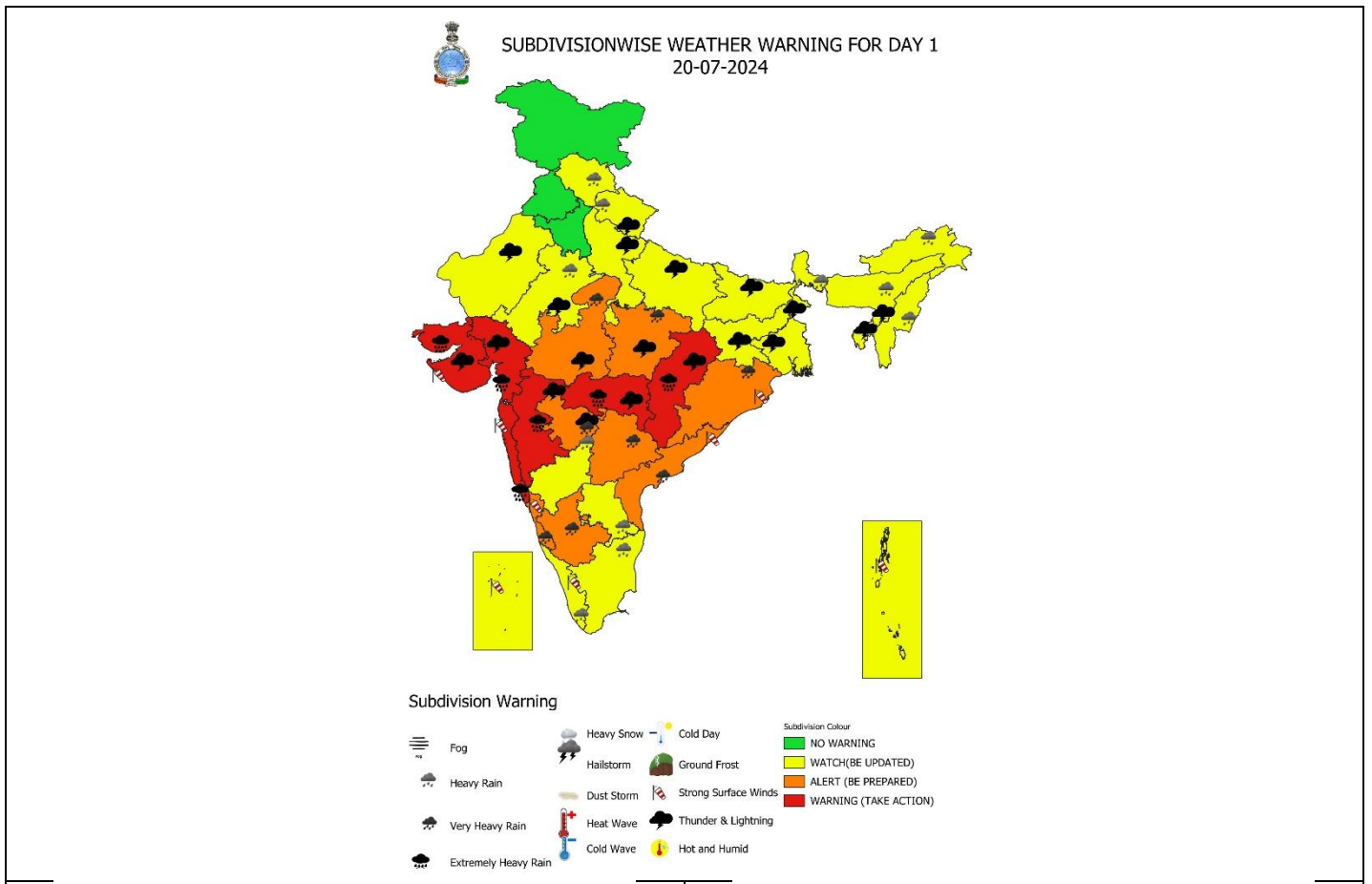


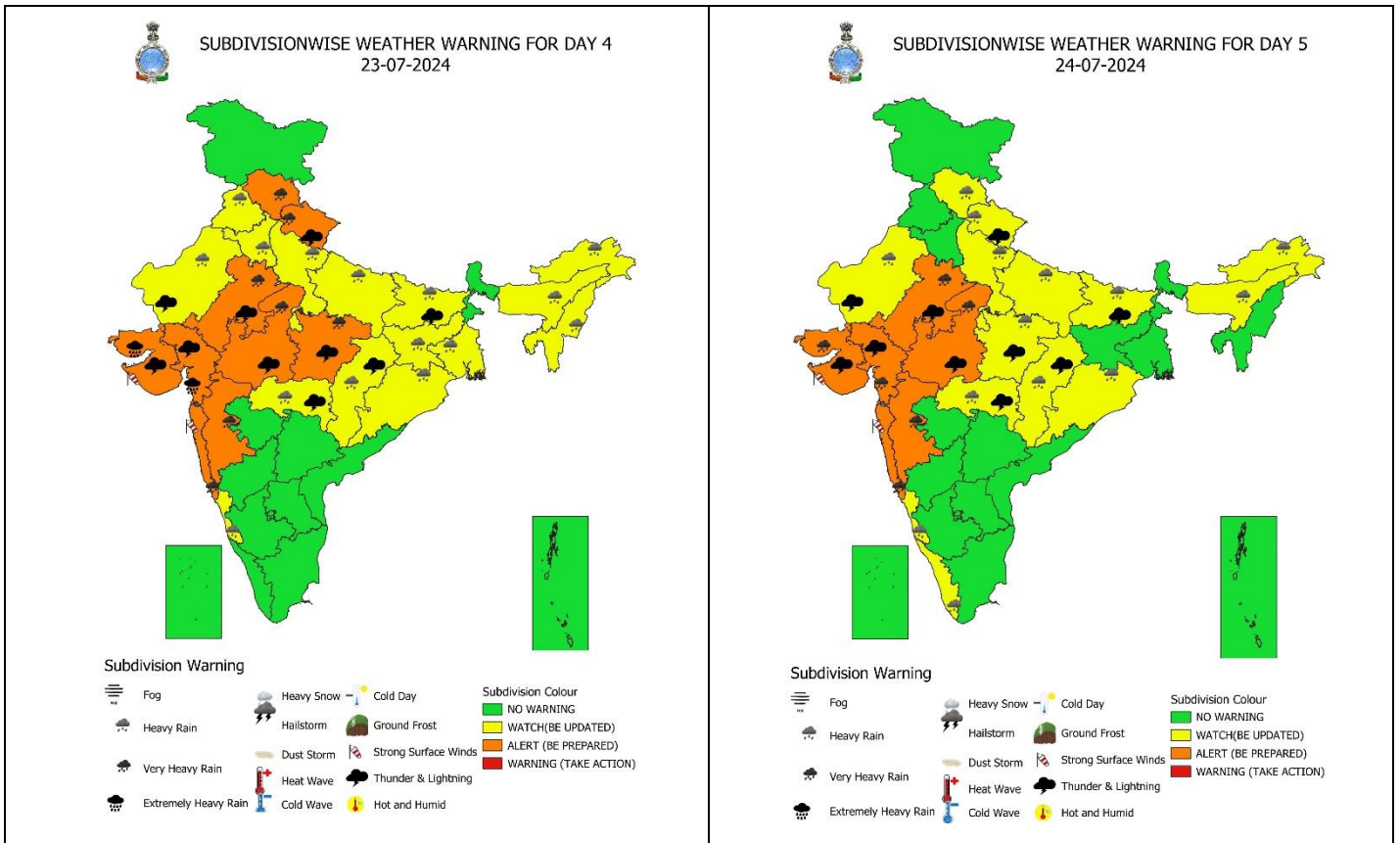
OBSERVED AND FORECAST TRACK OF DEPRESSION OVER ODISHA COAST BASED ON 0300 UTC OF 20TH JULY, 2024.



DATE/TIME IN UTC
IST=UTC + 0530
L: LOW PRESSURE AREA
WML: WELL MARKED LOW PRESSURE AREA
D: DEPRESSION (17-27 KT)
DD: DEEP DEPRESSION (28-33 KT)
CS: CYCLONIC STORM (34-47 KT)
SCS: SEVERE CYCLONIC STORM (48-63KT)
VSCS: VERY SEVERE CYCLONIC STORM (64-89 KT)
ESCS: EXTREMELY SEVERE CYCLONIC STORM (90-119 KT)
SuCS: SUPER CYCLONIC STORM (\geq 120 KT)

- LESS THAN 34 KT
- 34-47 KT
- \geq 48 KT
- OBSERVED TRACK
- FORECAST TRACK
- CONE OF UNCERTAINTY





IMPACT & ACTION SUGGESTED due to

- ✓ Isolated extremely heavy rainfall very likely over Konkan & Goa, Madhya Maharashtra, Vidarbha, south Chhattisgarh on 20th; Gujarat state during 20th-24th and Uttarakhand on 21st & 22nd July.
- ✓ Heavy to very heavy rainfall very likely at isolated/some places over Konkan & Goa, Madhya Maharashtra, Gujarat State, Vidarbha, Chhattisgarh and Madhya Pradesh during next 5 days.
- ✓ Isolated very heavy rainfall also likely over Coastal Karnataka, South Interior Karnataka on 20th & 21st; south Odisha, Marathwada, north Coastal Andhra Pradesh & Yanam and Telangana on 20th; East Rajasthan on 23rd & 24th; Uttarakhand on 23rd; Himachal Pradesh on 22nd & 23rd and West Uttar Pradesh on 22nd 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)

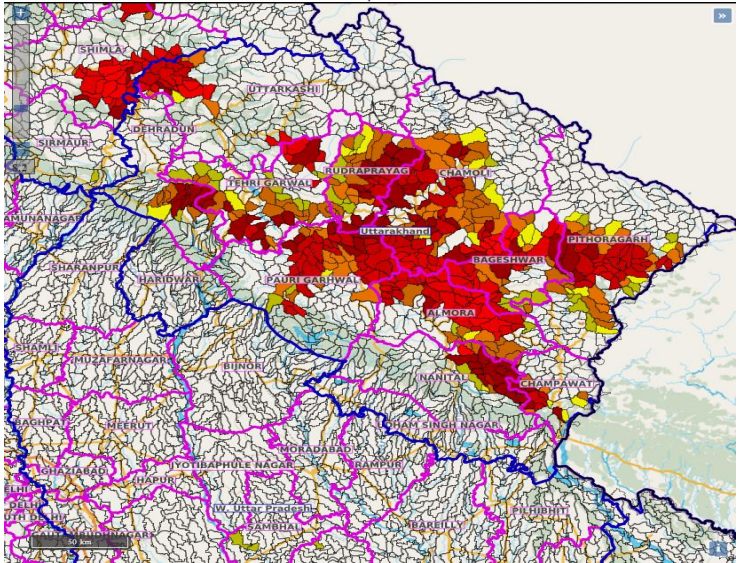
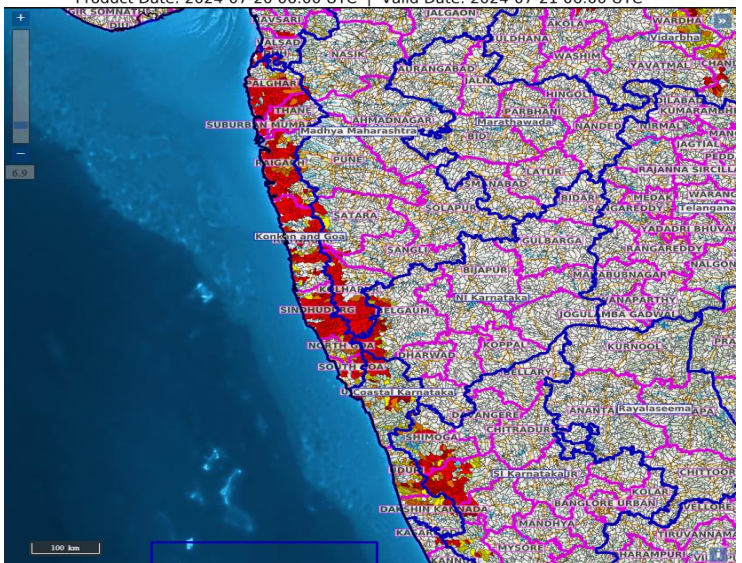
Action Suggested

- 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.

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, Odisha, Uttarakhand, Madhya Pradesh, Chhattisgarh, Vidarbha, Konkan & Goa, Ghat areas of Madhya Maharashtra, Gujarat State, Tamil Nadu, Kerala, Karnataka, Coastal Andhra Pradesh and Telangana.
- Postpone transplanting rice in south Gujarat, south Odisha and south Chhattisgarh; rice and vegetables in East Vidarbha; rice, finger millet and vegetables in Konkan and ghat areas of Madhya Maharashtra.
- Postpone sowing of black gram, green gram, kharif maize, groundnut and red gram in south Odisha; maize in north Coastal Andhra Pradesh; soybean, red gram, green gram, black gram, kharif maize and finger millet in south Chhattisgarh and green gram, black gram and sesame in Saurashtra.
- Provide mechanical support to horticultural crops & staking to vegetables.

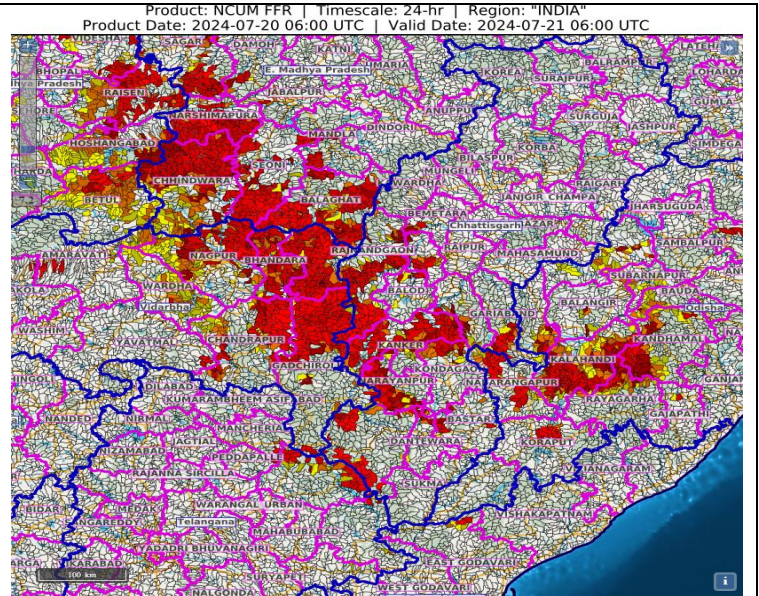
FLASH FLOOD GUIDANCE:

<p>24 hours Outlook for the Flash Flood Risk (FFR) till 1130 IST of 21-07-2024 :</p> <p>Low to Moderate flash flood risk likely over few watersheds & neighbourhoods of Uttarakhand 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>	<p>Product: NCUM FFR Timescale: 24-hr Region: "INDIA" Product Date: 2024-07-20 06:00 UTC Valid Date: 2024-07-21 06:00 UTC</p> 
<p>24 hours Outlook for the Flash Flood Risk (FFR) till 1130 IST of 21-07-2024 :</p> <p>Low to Moderate flash flood risk likely over few watersheds & neighbourhoods of Coastal Karnataka, adjoining SI Karnataka and Konkan & Goa 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>	<p>Product: NCUM FFR Timescale: 24-hr Region: "INDIA" Product Date: 2024-07-20 06:00 UTC Valid Date: 2024-07-21 06:00 UTC</p> 

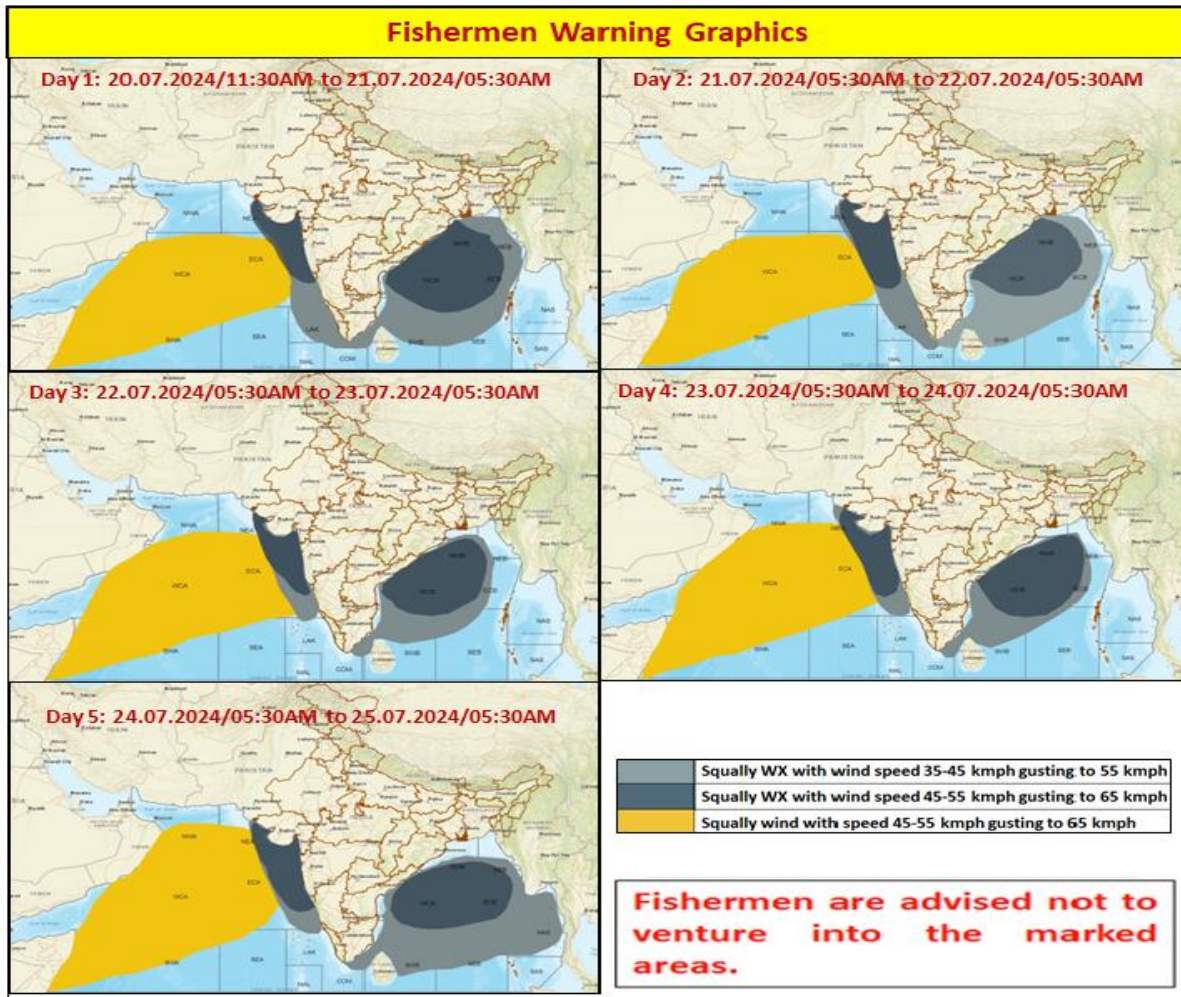
24 hours Outlook for the Flash Flood Risk (FFR) till 1130 IST of 21-07-2024:

Moderate flash flood risk likely over few watersheds & neighbourhoods of Vidarbha & adjoining parts of East Madhya Pradesh, West Madhya Pradesh, South Chhattisgarh and Western Odisha 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.



ANNEXURE IV



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)	
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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)	