



Government of India
Ministry of Earth Sciences
India Meteorological Department



Press Release
Date: 19th July, 2024
Time of Issue: 1345 hours IST

Subject: 1) Under the influence of Monsoon Depression currently over Northwest and adjoining Westcentral Bay of Bengal, isolated extremely heavy rainfall very likely over Coastal Andhra Pradesh & Yanam, south Odisha, south Chhattisgarh on 19th and over Vidarbha and Telangana on 19th & 20th July.
2) Isolated extremely heavy rainfall very likely over Konkan & Goa, Coastal Karnataka, South Interior Karnataka on 19th & 20th and over Gujarat State on 19th, 21st and 22nd July with slight reduction thereafter.

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

- ✓ **Exceptionally heavy rainfall occurred** over Saurashtra (Porbandar-49 cm).
- ✓ **Heavy to very heavy rainfall** with **extremely heavy falls at isolated** places over Saurashtra & Kutch, Tamil Nadu, Chhattisgarh, Coastal Andhra Pradesh & Yanam, Coastal Karnataka; **Heavy to very heavy rainfall** at some places over Kerala, Konkan & Goa, Telangana; at isolated places over Interior Karnataka, Madhya Maharashtra, Vidarbha, Tripura; **Heavy rainfall** at isolated places over Uttarakhand, West Rajasthan, Haryana, East Uttar Pradesh, Madhya Pradesh, Gujarat Region and Marathwada.

Weather Systems

- ✓ The well marked low-pressure area over northwest & adjoining westcentral Bay of Bengal off Odisha and adjoining north Andhra Pradesh coasts has concentrated into a **depression** at 0830 hours IST of today, the 19th July, 2024 over Northwest and adjoining Westcentral Bay of Bengal off Odisha and adjoining north Andhra Pradesh coasts near latitude 19.2°N and longitude 86.2°E, about 70 km southeast of Puri (Odisha), 130 km East of Gopalpur (Odisha), 130 km south-southeast of Paradip (Odisha) and 240 km east-northeast of Kalingapatnam (Andhra Pradesh). Associated cyclonic circulation extends up to upper tropospheric levels tilting southwestwards with height. It is likely to move northwestwards and cross Odisha coast near Puri as a depression during early morning hours of tomorrow, the 20th July, 2024. Thereafter, it would move west-northwestwards across Odisha & Chhattisgarh and weaken gradually during subsequent 24 hours. **(Annexure II)**
- ✓ The Monsoon trough is active and south of its normal position. It is likely to remain south of its normal position during next 2-3 days.
- ✓ A shear zone runs in lower & middle tropospheric levels roughly 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 Northeast Arabian Sea & adjoining Saurashtra in lower tropospheric levels.

Warnings associated with depression over Northwest and adjoining Westcentral Bay of Bengal off Odisha and adjoining north Andhra Pradesh coasts (Annexure III)

(i) Rainfall warning

- **Odisha:**
 - **South Odisha:** Light to moderate rainfall at most places with heavy to very heavy rainfall at a few places is very likely over South Odisha on 19th and 20th July and extremely heavy rainfall at isolated places on 19th July.
 - **North Odisha:** Light to moderate rainfall is very likely at most places with heavy to very heavy rainfall at isolated places on 19th and 20th July.
- **Gangetic West Bengal:** Light to moderate rainfall is very likely at most places on 19th and 20th July.

- **Andhra Pradesh:**
 - **North Coastal Andhra Pradesh:** Light to moderate rainfall at most places with heavy to very heavy rainfall at a few places is most likely on 19th & 20th July and extremely heavy rainfall at isolated places on 19th July.
 - **South Coastal Andhra Pradesh:** Light to moderate rainfall at most places with heavy rainfall at isolated places is likely over South Coastal Andhra Pradesh on 19th and 20th July.
- **Jharkhand:** Light to moderate rainfall at most places with heavy rainfall at isolated places is very likely on 20th July.
- **Chhattisgarh:** Light to moderate rainfall at most places with heavy to very heavy rainfall at isolated places is very likely on 19th and 20th July and extremely heavy rainfall at isolated places on 19th July.
- **Telangana & Vidarbha:** Light to moderate rainfall at most places with heavy to very heavy rainfall at a few places and extremely heavy rainfall at isolated places is very likely on 19th July. Light to moderate rainfall at most places with heavy to extremely heavy rainfall at isolated places is very likely on 20th July.

(ii) 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 19th and 20th July.

Forecast & Warnings over rest parts of the country:

❖ 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, Telangana, South Interior Karnataka, Coastal Karnataka, Vidarbha on 19th & 20th; Gujarat State, Coastal Andhra Pradesh & Yanam, south Odisha and south Chhattisgarh on 19th July; Gujarat Region on 21st and Saurashtra & Kutch on 22nd July.**
- ✓ **Heavy to very heavy rainfall very likely at isolated/some places over Konkan & Goa, Madhya Maharashtra, Gujarat State, Coastal & South Interior Karnataka during next 5 days; Kerala & Mahe, Telangana during 19th-21st; Coastal Andhra Pradesh & Yanam on 19th & 20th; Tamil Nadu on 19th & 20th; over Odisha, Vidarbha, Chhattisgarh, Marathwada on 20th; Madhya Pradesh during 20th-23rd July.**
- ✓ Isolated **Heavy rainfall** very likely over Madhya Pradesh, Vidarbha, Chhattisgarh, Odisha and North Interior Karnataka during next 5 days; Rayalaseema on 19th; Marathwada on 19th & 20th; Gangetic West Bengal, Jharkhand on 20th & 22nd July.

❖ 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; isolated to scattered rainfall likely over Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Punjab, Uttar Pradesh, Bihar and West Rajasthan during next 5 days.
- ✓ Isolated **heavy rainfall** very likely over Himachal Pradesh, Uttarakhand, Uttar Pradesh, Haryana, East Rajasthan during next 5 days; Punjab, West Rajasthan on 21st & 22nd July.

- ✓ **Isolated very heavy rainfall also likely over East Rajasthan on 21st; Himachal Pradesh on 22nd & 23rd and Uttarakhand during 20th-22nd July.**

❖ **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 and Northeast India during next 5 days.
- ✓ **Heavy rainfall** very likely at isolated places over Nagaland, Manipur, Mizoram & Tripura, Arunachal Pradesh, Assam & Meghalaya during next 4-5 days; Sub-Himalayan West Bengal & Sikkim on 20th & 21st July.

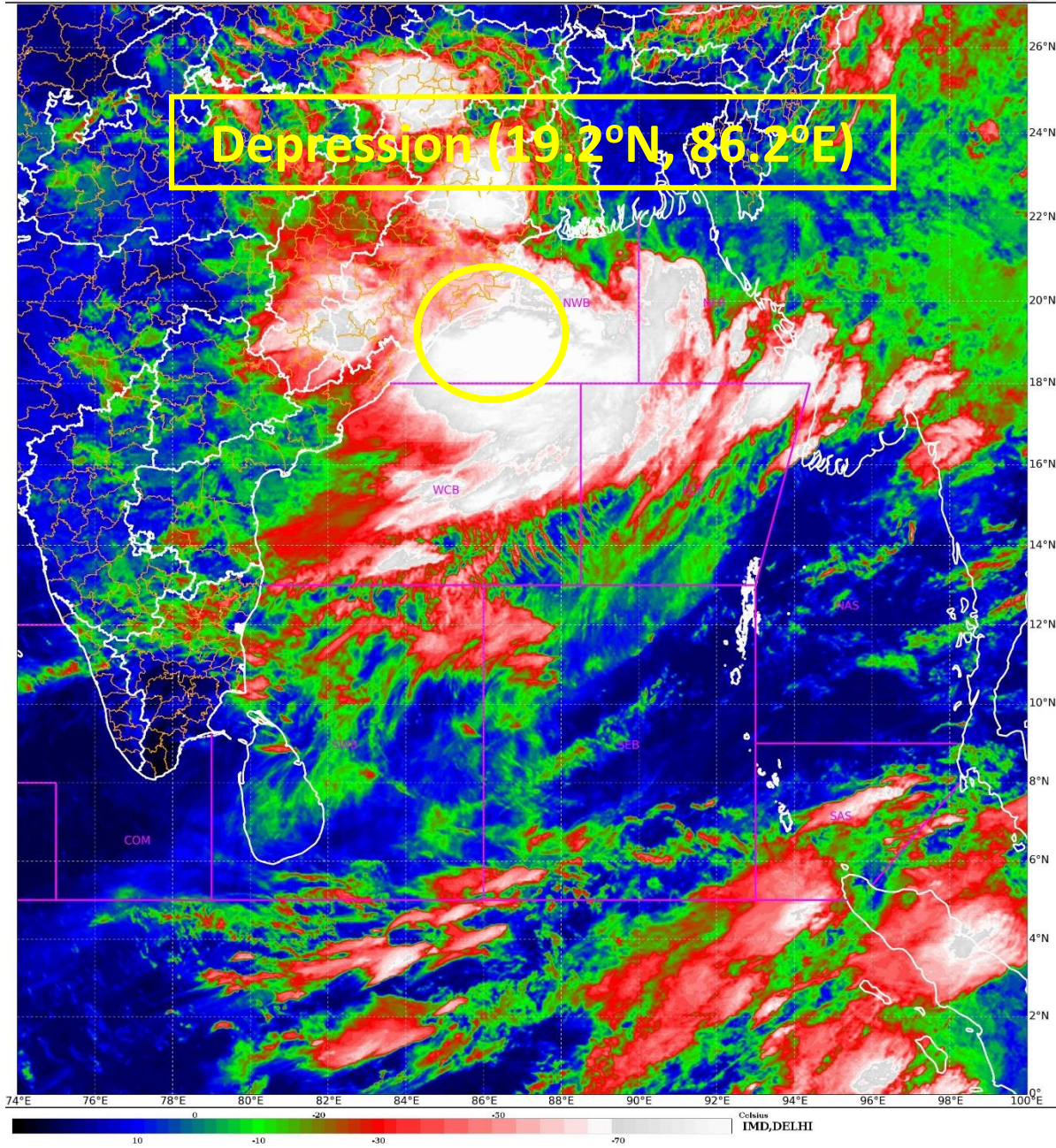
For more details, kindly refer: https://mausam.imd.gov.in/responsive/all_india_forecast_bulletin.php

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

- ❖ **Saurashtra & Kutch:** Porbandar (dist Porbandar) 49, Kalyanpur (dist Devbhoomi Dwarka) 29, Vanthali (dist Junagadh) 25, Keshod (dist Junagadh) 25, Ranavav (dist Porbandar) 24, patan-veraval (dist gir somnath) 19, Sutrapada (dist Gir Somnath) 18, Manavadar (dist Junagadh) 16, Jamjodhpur (dist Jamnagar) 14, Kutiana (dist Porbandar) 14, Veraval (dist Gir Somnath) 14, Mendarda (dist Junagadh) 13, Mangrol(j) (dist Junagadh) 13, Khambha (dist Amreli) 12, Visavadar (dist Junagadh) 12, Talala (dist Gir Somnath) 12, Upleta (dist Rajkot) 12, Malia (dist Junagadh) 11, Dhoraji (dist Rajkot) 11, Junagadh (dist Junagadh) 9, Kalavad (dist Jamnagar) 9,
- ❖ **Coastal Andhra Pradesh & Yanam:** Kukunoor (dist Eluru) 27, Polavaram (dist Eluru) 27, Chintalapudi (dist Eluru) 18, Pusapatirega (dist Vizianagaram) 16, Tadepalligudem (dist West Godavari) 13, Koyyalagudem (dist Eluru) 12, Tanuku (dist West Godavari) 11, Ranastalam (dist Srikakulam) 11, Visakhapatnam (dist Vishakhapatnam) 11, Bhimadole (dist Eluru) 9, Kunavaram (dist Alluri Sitharamaraju) 9, Chintur (dist Alluri Sitharamaraju) 9, Palakoderu (dist West Godavari) 8, Vizianagaram (dist Vizianagaram) 8, Denkada (dist Vizianagaram) 7, Visakhapatnam Ap (dist Vishakhapatnam) 7,
- ❖ **Chhattisgarh:** Bhopalpatnam (dist Bijapur) 25, Jagdalpur (dist Bastar) 8,
- ❖ **Coastal Karnataka:** Castle Rock (dist Uttara Kannada) 24, Kollur (dist Udupi) 19, Joida (dist Uttara Kannada) 15, Siddapur (dist Uttara Kannada) 15, Ankola (dist Uttara Kannada) 13, Kadra (dist Uttara Kannada) 13, Kumta (dist Uttara Kannada) 13, Belthangadi (dist Dakshina Kannada) 12, Gersoppa (dist Uttara Kannada) 12, Mani (dist Dakshina Kannada) 11, Shirali Pto (dist Uttara Kannada) 11, Dharmasthala (dist Dakshina Kannada) 11, Manki (dist Uttara Kannada) 11, Panambur Obsy (dist Dakshina Kannada) 10,
- ❖ **South Interior Karnataka:** Kottigehara (dist Chikkamagaluru) 19, Hunchadakatte (dist Shivamogga) 14, Agumbe Emo (dist Shivamogga) 13, Bhagamandala (dist Kodagu) 13, Linganamakki Hms (dist Shivamogga) 12, Kalasa (dist Chikkamagaluru) 11, Mudigere (dist Chikkamagaluru) 9, Kammardi (dist Chikkamagaluru) 7, Koppa (dist Chikkamagaluru) 7, Balehonnur (dist Chikkamagaluru) 7;
- ❖ **Konkan & Goa:** Pen (dist Raigad) 19, Kankavli (dist Sindhudurg) 17, Vaibhavwadi (dist Sindhudurg) 15, Tala (dist Raigad) 15, Valpoi (dist North Goa) 15, Poladpur (dist Raigad) 15, Sawantwadi (dist Sindhudurg) 14, Uran (dist Raigad) 14, Canacona (dist South Goa) 13, Mhasla (dist Raigad) 13, Rameshwar_agri (dist Sindhudurg) 13, Mulde_Agri (dist Sindhudurg) 13, Panjim - Imd Obsy (dist North Goa) 13, Pernem (dist North Goa) 13, Mahad (dist Raigad) 13, Sangameshwar Devrukh (dist Ratnagiri) 12, Sanguem (dist South Goa) 12, Rajapur (dist Ratnagiri) 12, Quepem (dist South Goa) 12, Kudal (dist Sindhudurg) 12, Mapusa (dist North Goa) 12, Mandangad (dist Ratnagiri) 11, Colaba - Imd Obsy (dist Mumbai City) 11, Sudhagad Pali (dist Raigad) 11, Dapoli_agri (dist Ratnagiri) 11,
- ❖ **Vidarbha:** Sironcha (dist Gadchiroli) 19, Rajura (dist Chandrapur) 16, Gondpipri (dist Chandrapur) 10, Chandrapur (dist Chandrapur) 10, Pombhurna (dist Chandrapur) 10, Chamorshi (dist Gadchiroli) 9, Sindewahi (dist Chandrapur) 8, Saoli (dist Chandrapur) 8, Ahiri (dist Gadchiroli) 7,
- ❖ **Tamil Nadu:** Nilgiris-22, Coimbatore-11;
- ❖ **Telangana:** Kotapalle (dist Mancherial) 18, Kagaznagar (dist Kumaram Bheem) 17, Aswaraopeta (dist B. Kothagudem) 15, Vemanapalle (dist Mancherial) 15, Kataram (dist J. Bhupalpally) 14, Perur(arg) (dist J. Bhupalpally) 13, Manthani (dist Peddapalle) 12, Mutharam Mahadevpur (dist J. Bhupalpally) 11, Sirpur (t) (dist Kumaram Bheem) 11, Bejjur (dist Kumaram Bheem) 10, Chennur (dist Mancherial) 10, Jaipur (dist Mancherial) 10,
- ❖ **Kerala & Mahe:** Vellarikkundu AWS (Kasaragod district) 13, Kannur, Aralam AWS (Kannur district) & Panathur AWS (Kasaragod district) 10 each, AMS KANNUR (Kannur district), Vadakara (Kozhikode district), Vythiri (Wayanad district), Irikkur, Cheruvanchery AWS, Kannur Icar AWS & Chemberi AWS (all in Kannur district) 9 each, Mananthavady (Wayanad district), Taliparamba (Kannur district), Hosdurg (Kasaragod district), Ayyankunnu AWS & Peringome AWS (both in Kannur district) & Padannakkad AWS (Kasaragod district) 8 each,
- ❖ **Madhya Maharashtra:** Mahabaleshwar- Imd Obsy (dist Satara) 13;
- ❖ **North Interior Karnataka:** Londa (dist Belagavi) 12;
- ❖ **Tripura:** Teliamura_arg (dist Khowai) 12,
- ❖ **Odisha:** Kotpad (Koraput) 12, Kosagumda (Nawarangpur) 11, Banpur (Khurda) 11, Dabugan (Nawarangpur) 9, Chilika (Khurda) 9, Banki (Cuttack) 9, Nandahandi (Nawarangpur) 8, Krishnaprasad (Puri) 7, Similiguda (Koraput) 7,
- ❖ **West Rajasthan:** Balotra Sr (dist Barmer) 10, Pachpadra (dist Barmer) 9, Barmer (dist Barmer) 7,
- ❖ **Uttarakhand:** Shama(Bageshwar)_AWS: 8, Mussoorie(Dehradun):7,
- ❖ **West Madhya Pradesh:** Gwalior (dist Gwalior) 8, Gogawan (dist Khargone) 8, Bagh (dist Dhar) 7,
- ❖ **Haryana:** Beri (dist Jhajjar) 7,
- ❖ **East Madhya Pradesh:** Chahtarpur-aws (dist Chhatrapur) 7,
- ❖ **GUJARAT REGION:** Valsad (dist Valsad) 9,
- ❖ **Marathwada:** Hadgaon (dist Nanded) 7,

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

01-08-2023/(0245 to 0312) GMT
01-08-2023/(0815 to 0842) IST





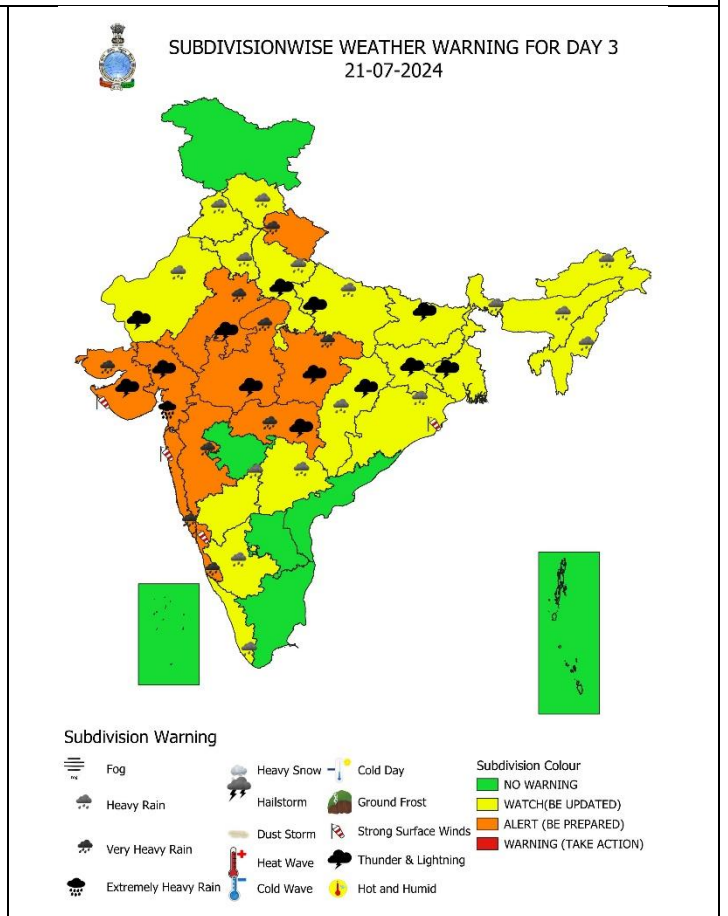
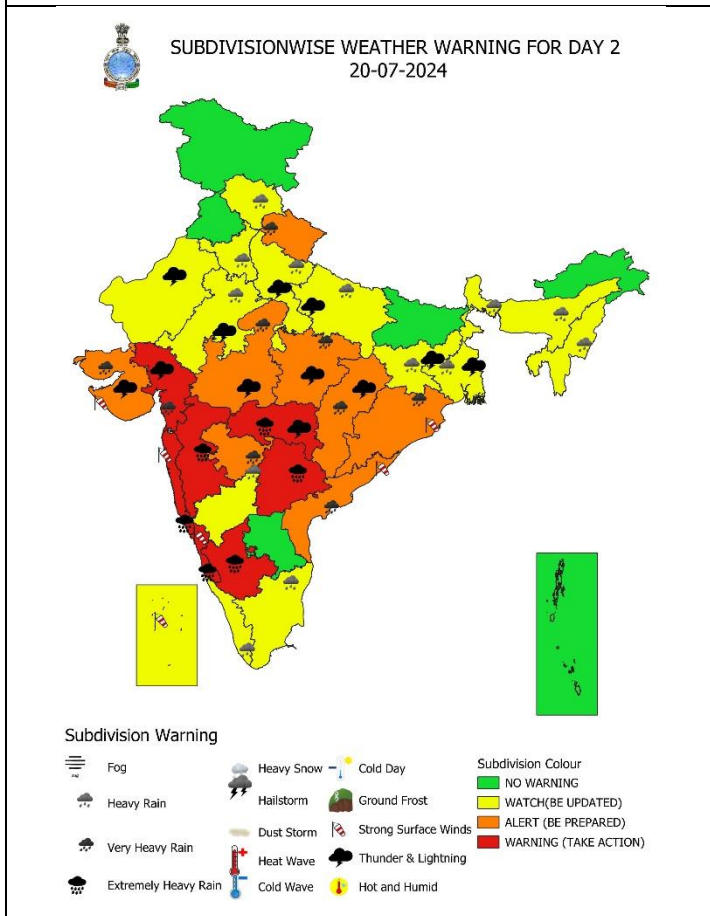
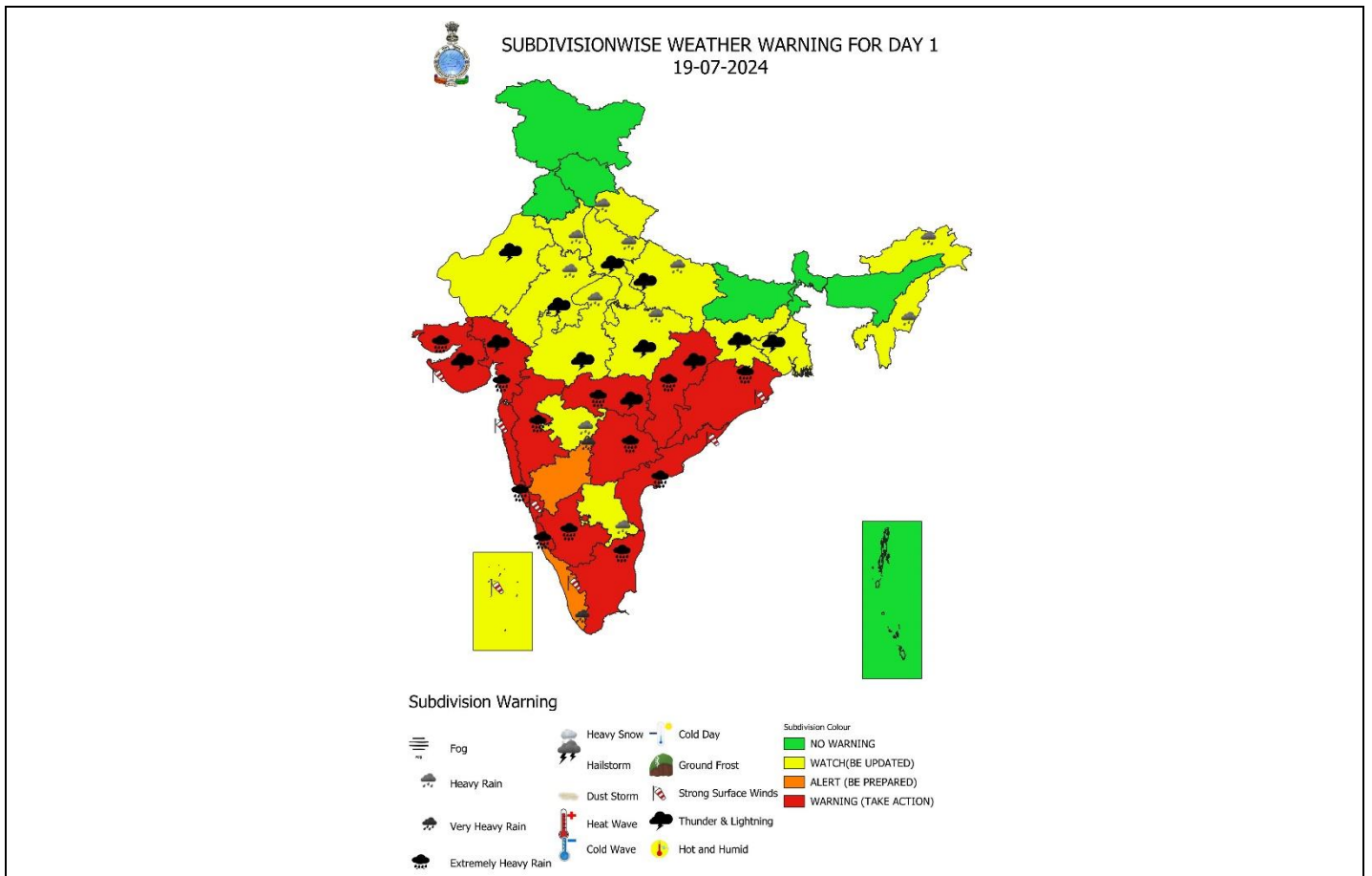
OBSERVED AND FORECAST TRACK OF DEPRESSION OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL OFF ODISHA AND ADJOINING NORTH ANDHRA PRADESH COASTS BASED ON 0300 UTC OF 19TH JULY, 2024.

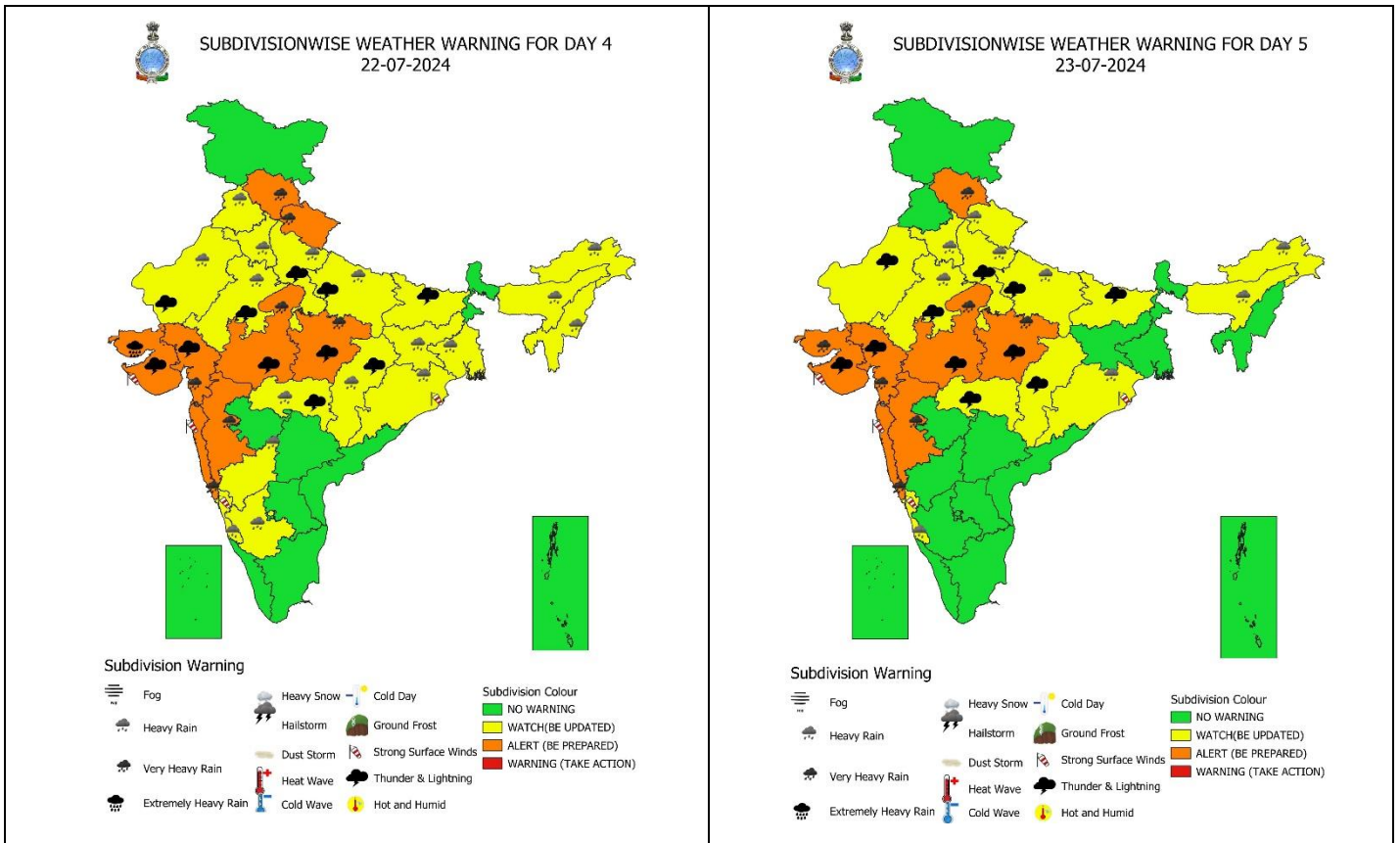


DATE/TIME IN UTC
 IST=UTC + 0530
 L: LOW PRESSURE AREA
 WML: WELL MARKED LOW PRESSURE AREA
 D: DEPRESSION (17-27 KT)
 DD: DEEP DEPRESSION (28-33 KT)
 CS: CYCLONIC STORM (34-47 KT)
 SCS: SEVERE CYCLONIC STORM (48-63KT)
 VSCS: VERY SEVERE CYCLONIC STORM (64-89 KT)
 ESCS: EXTREMELY SEVERE CYCLONIC STORM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

Forecast	DISTANCE (KM) AND DIRECTION FROM STATIONS			
Date and Time (UTC)	PURI	GOPALPUR	PARADIP (CWR)	KALINGAPATAM
19.07.24/0300	80, SSE	140, E	140, SSW	240, ENE





IMPACT & ACTION SUGGESTED due to

- ✓ Isolated extremely heavy rainfall very likely over Konkan & Goa, Madhya Maharashtra, Telangana, South Interior Karnataka, Coastal Karnataka, Vidarbha on 19th & 20th; Gujarat State, Coastal Andhra Pradesh & Yanam, south Odisha and south Chhattisgarh on 19th July; Gujarat Region on 21st and Saurashtra & Kutch on 22nd July.
- ✓ Heavy to very heavy rainfall very likely at isolated/some places over Konkan & Goa, Madhya Maharashtra, Gujarat State, Coastal & South Interior Karnataka during next 5 days; Kerala & Mahe, Telangana during 19th-21st; Coastal Andhra Pradesh & Yanam on 19th & 20th; Tamil Nadu on 19th & 20th July.
- ✓ Isolated very heavy rainfall likely over Odisha, Vidarbha, Chhattisgarh, Marathwada on 20th; Madhya Pradesh during 20th-23rd; East Rajasthan on 21st; Himachal Pradesh on 22nd & 23rd and Uttarakhand during 20th-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

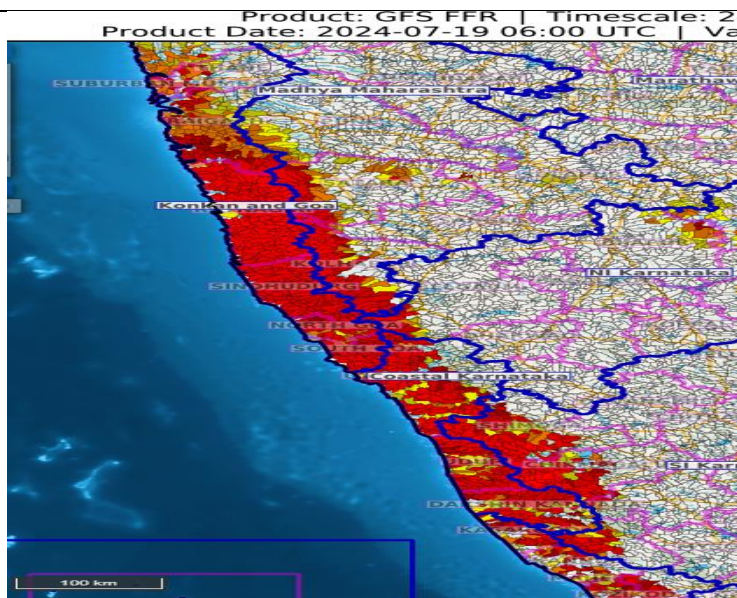
- Make provision for draining out excess water from crop fields to avoid water stagnation in Odisha, Uttarakhand, Madhya Pradesh, Chhattisgarh, Vidarbha, Konkan & Goa, Ghat areas of Madhya Maharashtra, Gujarat State, Tamil Nadu, Kerala, Karnataka, Coastal Andhra Pradesh and Telangana.
- Postpone transplanting of rice and finger millet in Konkan; rice in Coastal Karnataka and south Gujarat.
- Postpone sowing of green gram, black 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 20-07-2024 :

Low to Moderate flash flood risk likely over few watersheds & neighbourhoods of Coastal Karnataka, SI Karnataka and Konkan & Goa Met Sub-divisions during next 24 hours.

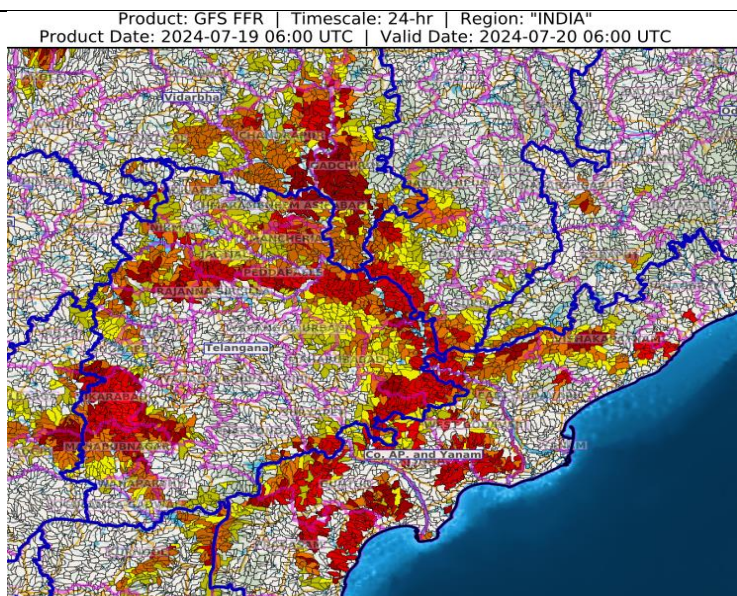
Surface runoff/ Inundation may occur at some fully saturated soils & low-lying areas over AoC as shown in map due to expected rainfall occurrence in next 24 hours.

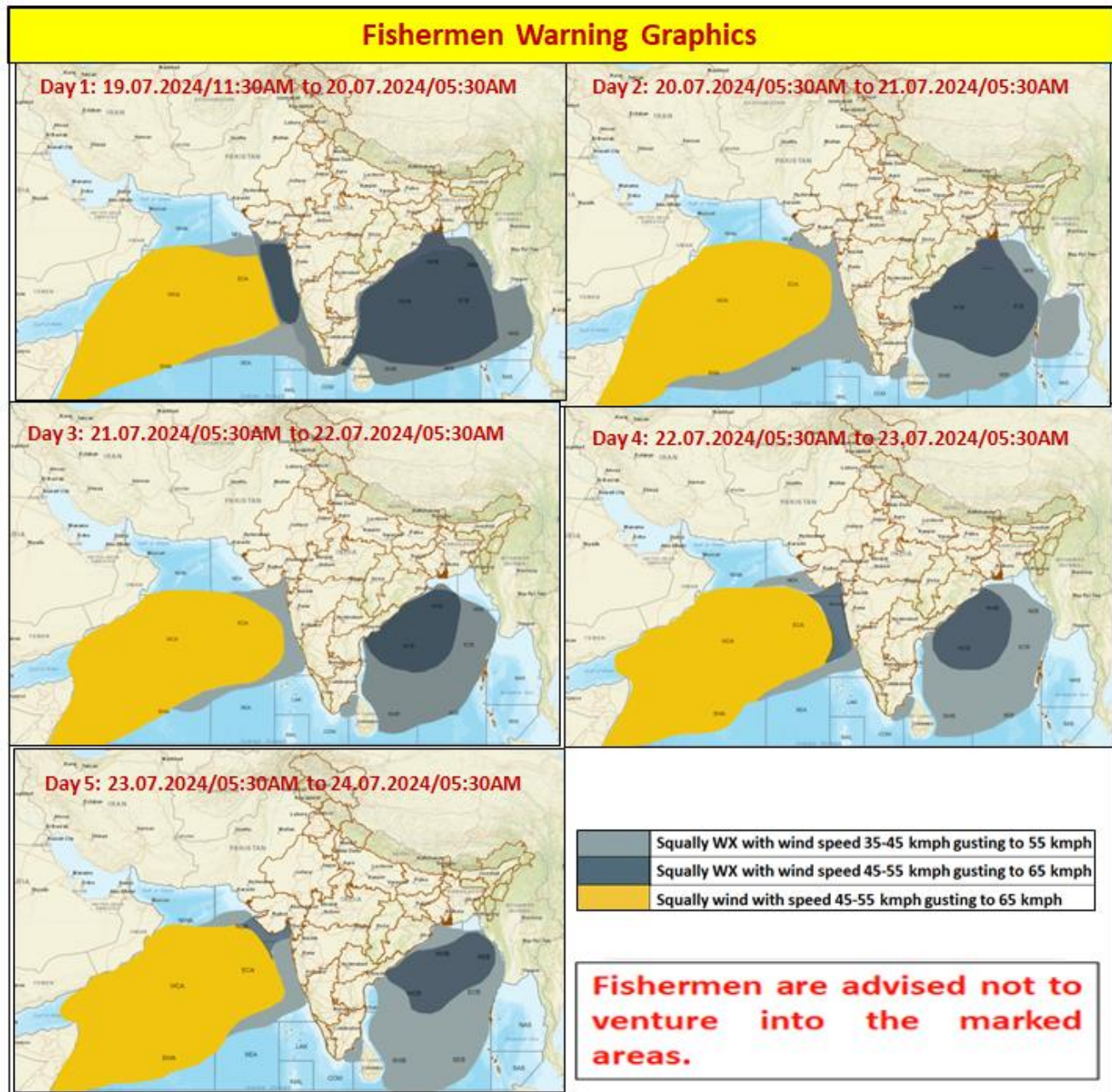


24 hours Outlook for the Flash Flood Risk (FFR) till 1130 IST of 20-07-2024 :

Low to Moderate flash flood risk likely over few watersheds & neighbourhoods of Coastal AP & Yanam, Telangana and Vidarbha adjoining Chhattisgarh 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 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)	