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(Ministry of Earth Sciences)**

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Sub: Severe Cyclonic Storm "MICHAUNG" (pronounced as MIGJAUM) over Westcentral & adjoining Southwest Bay of Bengal off south Andhra Pradesh and adjoining north Tamilnadu coasts (Cyclone Warning for Andhra Pradesh and adjoining North Tamil Nadu-Puducherry Coasts: Red Message)

The Severe Cyclonic Storm "MICHAUNG" (pronounced as MIGJAUM) over Westcentral & adjoining Southwest Bay of Bengal off south Andhra Pradesh and adjoining north Tamilnadu coasts moved northwestwards with a speed of 8 kmph during past 06 hours and lay centered at 1130 hours IST of 4th December, 2023 over the same region near Latitude 13.5°N and Longitude 80.8°E, about 90 km northeast of Chennai, 140 km southeast of Nellore, 200 km north-northeast of Puducherry, 270 km south of Bapatla and 300 km south of Machilipatnam.

It is likely to intensify gradually and move nearly northwards almost parallel and close to south Andhra Pradesh coast and cross South Andhra Pradesh coast between Nellore and Machilipatnam, close to Bapatla during forenoon of 5th December as a **Severe Cyclonic Storm with a maximum sustained wind speed of 90-100 kmph gusting to 110 kmph.**

Track and Intensity Forecasts:

Date/Time (IST)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
04.12.23/1130	13.5/80.8	85-95 kmph gusting to 105 kmph	Severe Cyclonic Storm
04.12.23/1730	14.1/80.5	95-105 kmph gusting to 115 kmph	Severe Cyclonic Storm
04.12.23/2330	14.7/80.4	95-105 kmph gusting to 115 kmph	Severe Cyclonic Storm
05.12.23/0530	15.3/80.4	90-100 kmph gusting to 110 kmph	Severe Cyclonic Storm
05.12.23/1130	15.8/80.4	90-100 kmph gusting to 110 kmph	Severe Cyclonic Storm
05.12.23/2330	16.7/80.8	60-70 kmph gusting to 80 kmph	Cyclonic Storm
06.12.23/1130	17.4/81.4	40-50 kmph gusting to 60 kmph	Depression
06.12.23/2330	17.9/82.1	20-30 kmph gusting to 40 kmph	Well Marked Low Pressure Area

Warnings:

(i) Rainfall Warning (graphics enclosed):

- **North Coastal Tamil Nadu & Puducherry:** Light to moderate rainfall at most places with heavy to very heavy rainfall at a few places with isolated extremely heavy falls is very likely on 4th and isolated heavy rainfall on 5th December and decrease thereafter.
- **Coastal Andhra Pradesh:** Light to moderate rainfall at most places and heavy to very heavy rainfall at a few places with extremely heavy falls at isolated places over coastal Andhra Pradesh & Yanam on 4th & 5th December. **Exceptionally heavy rainfall** at one or two places is also likely over south coastal Andhra Pradesh on 4th and over north coastal and adjoining south coastal Andhra Pradesh on 5th December. Isolated heavy rainfall is likely over north coastal Andhra Pradesh on 6th December.
- **Rayalaseema:** Light to moderate rainfall at many places with isolated heavy to extremely heavy falls is very likely on 4th and isolated heavy rainfall on 5th December and decrease thereafter.
- **Telangana:** Light to moderate rainfall at few places with isolated heavy rainfall is likely on 4th. It is likely to increase becoming light to moderate rainfall at most places with isolated heavy to extremely heavy rainfall over the same region on 5th December.
- **Odisha:** Light to moderate rainfall at most places with isolated heavy rainfall is likely over south Coastal and adjoining south Interior Odisha during 4th & 6th with isolated heavy to very heavy rainfall over the same region on 5th December.

(ii) Wind warning:

- **Southwest Bay of Bengal along & off north Tamil Nadu-Puducherry Coasts:**

Gale wind speed reaching **85-95 kmph gusting to 105 kmph** is prevailing around the center. It is likely to continue for next 6 hours and gradually decrease thereafter.

The Gale wind speed reaching **60-70 kmph gusting to 80 kmph** is prevailing along and off north Tamilnadu coast (Chennai and to its north). It is likely to continue during next 6 hours and gradually decrease thereafter.

- **Westcentral Bay of Bengal and along & off south Andhra Pradesh Coast:**

Gale wind speed reaching **85-95 kmph gusting to 105 kmph** is prevailing over westcentral Bay of Bengal. It is likely to gradually increase becoming **90-100 kmph gusting to 110 kmph** from 4th afternoon and **95-105 kmph gusting to 115 kmph** from 4th mid night till 5th December morning. It would become **90-100 kmph gusting to 110 kmph** from morning of 5th till noon of 5th and further gradually decrease thereafter.

Gale wind speed reaching **60-70 kmph gusting to 80 kmph** is prevailing along and off Nellore district & **50-60 kmph gusting to 70 kmph** along and off remaining districts of south Andhra Pradesh coast. It is likely to gradually increase becoming **90-100 kmph gusting to 110 kmph** from 4th December evening to 5th December noon.

- **Along & off north Andhra Pradesh Coast:**

Squally wind speed reaching **45-55 kmph gusting to 75 kmph** likely from 4th December evening, likely to gradually increase becoming **55-65 kmph gusting to 75 kmph** from 5th December morning for subsequent 24 hours. It would gradually decrease thereafter.

- **Along & off Odisha Coast:**

Squally wind speed reaching **35-45 kmph gusting to 55 kmph** likely from 4th December evening, likely to gradually increase becoming **40-50 kmph gusting to 60 kmph** from 5th December evening for subsequent 12 hours. It would gradually decrease thereafter.

(iii) Sea Condition:

- **Southwest Bay of Bengal and along & off north Tamil Nadu-Puducherry Coasts:**

High sea condition is prevailing and likely to continue till 4th December evening and likely to become high to very rough from 4th December night and very rough to rough thereafter till 5th December morning. It is likely to improve thereafter gradually.

- **Westcentral Bay of Bengal and along & off south Andhra Pradesh Coast:**

High to very high sea condition is prevailing over the region. It is likely to continue till 5th December noon. It is likely to improve thereafter gradually becoming high to very rough from 5th evening and very rough to rough from 6th morning for subsequent 12 hours.

- **Along & off North Andhra Pradesh Coast:**

Rough to Very Rough to sea condition is likely on 4th December, very rough to high on 5th and very rough to rough on 6th December.

- **Along & off Odisha Coast:**

Rough to Very Rough to sea condition is likely from 4th December evening till 6th December morning.

(iv) Fishermen Warning (graphics attached):

Fishermen are advised not to venture into:

- Southwest Bay of Bengal and along & off North Tamil Nadu-Puducherry Coasts till 5th December.
- Westcentral Bay of Bengal and along & off Andhra Pradesh Coast till 6th December.
- Northwest Bay of Bengal and along & off Odisha coast till 6th December.

(v) Storm Surge (Graphics enclosed):

Storm surge of about 1-1.5 meter above astronomical tide likely to inundate south Coastal Andhra Pradesh districts at the time of landfall.

(vi) Damage Expected over coastal districts of South Andhra Pradesh (Nellore, Tirupati Prakasam, Bapatla, Guntur, Krishna and West Godavari) and adjoining coastal districts of North Tamil Nadu-Puducherry:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Possibilities of damage to vulnerable structure.
- Breaking of tree branches, uprooting of large avenue trees. Major damage to banana and papaya trees. Large dead limbs blown from trees.
- Minor damage to power and communication lines due to breaking of branches and uprooting of trees.
- Major damage to Kutcha and minor damage to Pucca roads due to heavy rain.
- Damage to paddy crops, horticultural crops and orchards.
- Sea water inundation in low lying areas after erosion of Kutcha embankments
- Inundation of low lying areas in coastal districts due to heavy rainfall and flash flood
- Localized Flooding of roads and closure of underpasses mainly in urban areas of the above region.
- Occasional reduction in visibility due to heavy rainfall.
- Disruption of traffic due to water logging and squally winds
- Localized Landslides/Mudslides
- It may lead to riverine flooding in some river catchments (for riverine flooding please visit Web page of CWC)

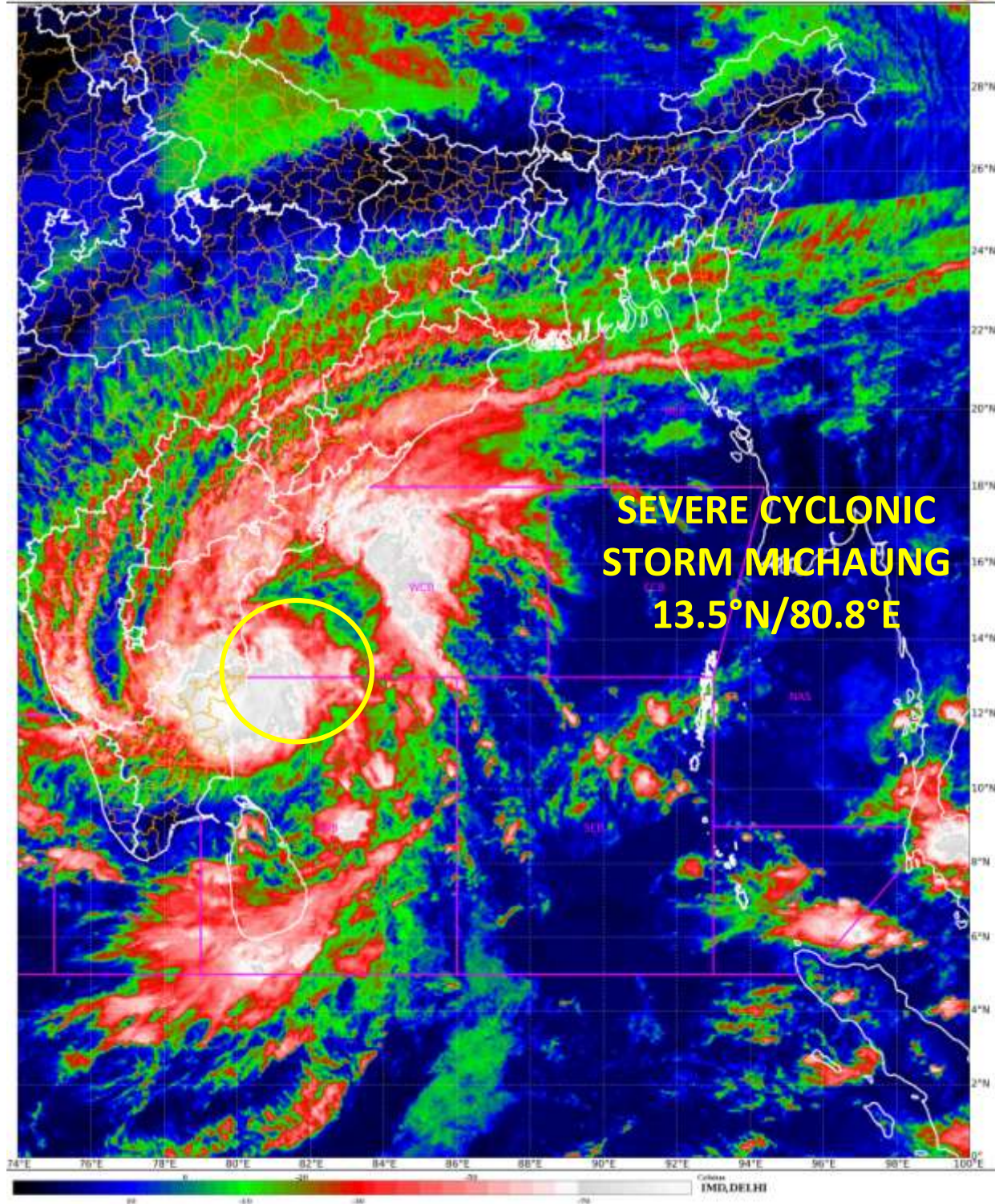
(vi) Action Suggested for coastal districts of South Andhra Pradesh and adjoining coastal districts of North Tamil Nadu-Puducherry:

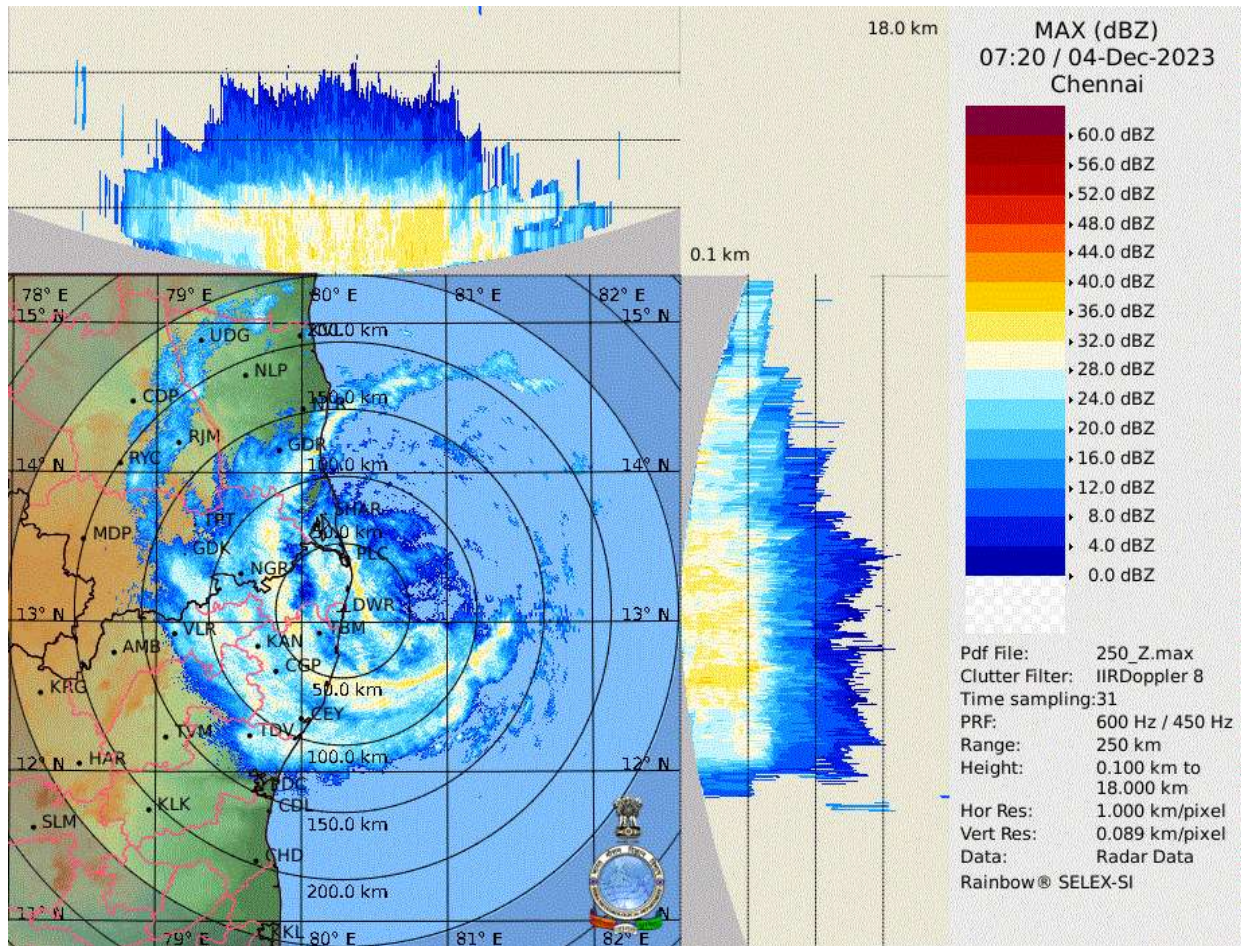
- Total suspension of fishing operations.
- Surface transport and shipping operations need to be regulated
- Onshore & Offshore operation need to be regulated as per guidelines
- Coastal hutment dwellers to be in safer places.
- People in affected areas to remain indoors.
- Avoid going to areas that face the water logging problems often.
- Avoid staying in vulnerable structure.

The system is under continuous surveillance and the next message will be issued at 1730 hours IST of 04th December, 2023.

**(Akhil Srivastava)
Scientist D, Cyclone Warning Division, New Delhi**

Copy to: ACWC Chennai/ ACWC Kolkata/ CWC Bhubaneswar/ CWC Vishakhapatnam/ MC Amravati





Chennai DWR



OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH SEVERE CYCLONIC STORM "MICHAUNG" OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL BASED ON 0600 UTC (1130 IST) OF 4TH DECEMBER 2023.



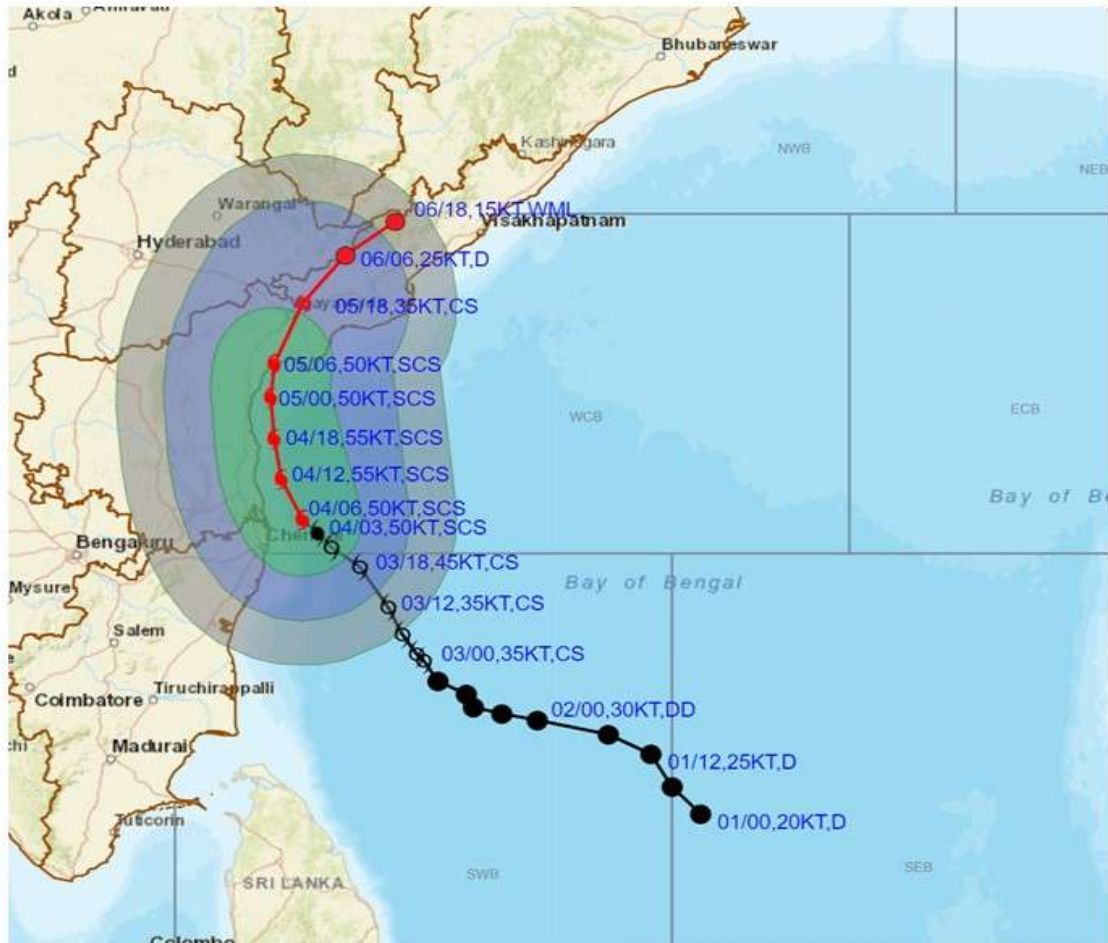
DATE/TIME IN UTC
 IST=UTC + 0530
 L: LOW PRESSURE AREA
 WML: WELL MARKED LOW PRESSURE AREA
 D: DEPRESSION (17-27 KT)
 DD: DEEP DEPRESSION (28-33 KT)
 CS: CYCLONIC STORM (34-47 KT)
 SCS: SEVERE CYCLONIC STORM (48-63KT)
 VSCS: VERY SEVERE CYCLONIC STORM (64-89 KT)
 ESCS: EXTREMELY SEVERE CYCLONIC STORM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

● LESS THAN 34 KT
 Ⓞ 34-47 KT
 Ⓢ ≥ 48 KT
 — OBSERVED TRACK
 — FORECAST TRACK
 ▲ CONE OF UNCERTAINTY

Forecast	DISTANCE (KM) AND DIRECTION FROM STATIONS				
Date and Time (UTC)	CHENNAI/MINAMB AKKAM	NELLORE	MO PONDICHERRY	BAPATLA	MACHILIPATNAM/ FRANCHPET
04.12.23/0600	90, NE	140, SE	210, NNE	260, S	300, S
05.12.23/0600	320, N	160, NNE	440, N	20, SSW	100, WSW
06.12.23/0600	510, NNE	370, NNE	630, NNE	200, NNE	140, N



OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND IN ASSOCIATION WITH SEVERE CYCLONIC STORM "MICHAUNG" OVER WESTCENTRAL & ADJOINING SOUTHWEST BAY OF BENGAL BASED ON 0600 UTC (1130 IST) OF 4TH DECEMBER 2023.



DATE/TIME IN UTC
IST=UTC + 0530

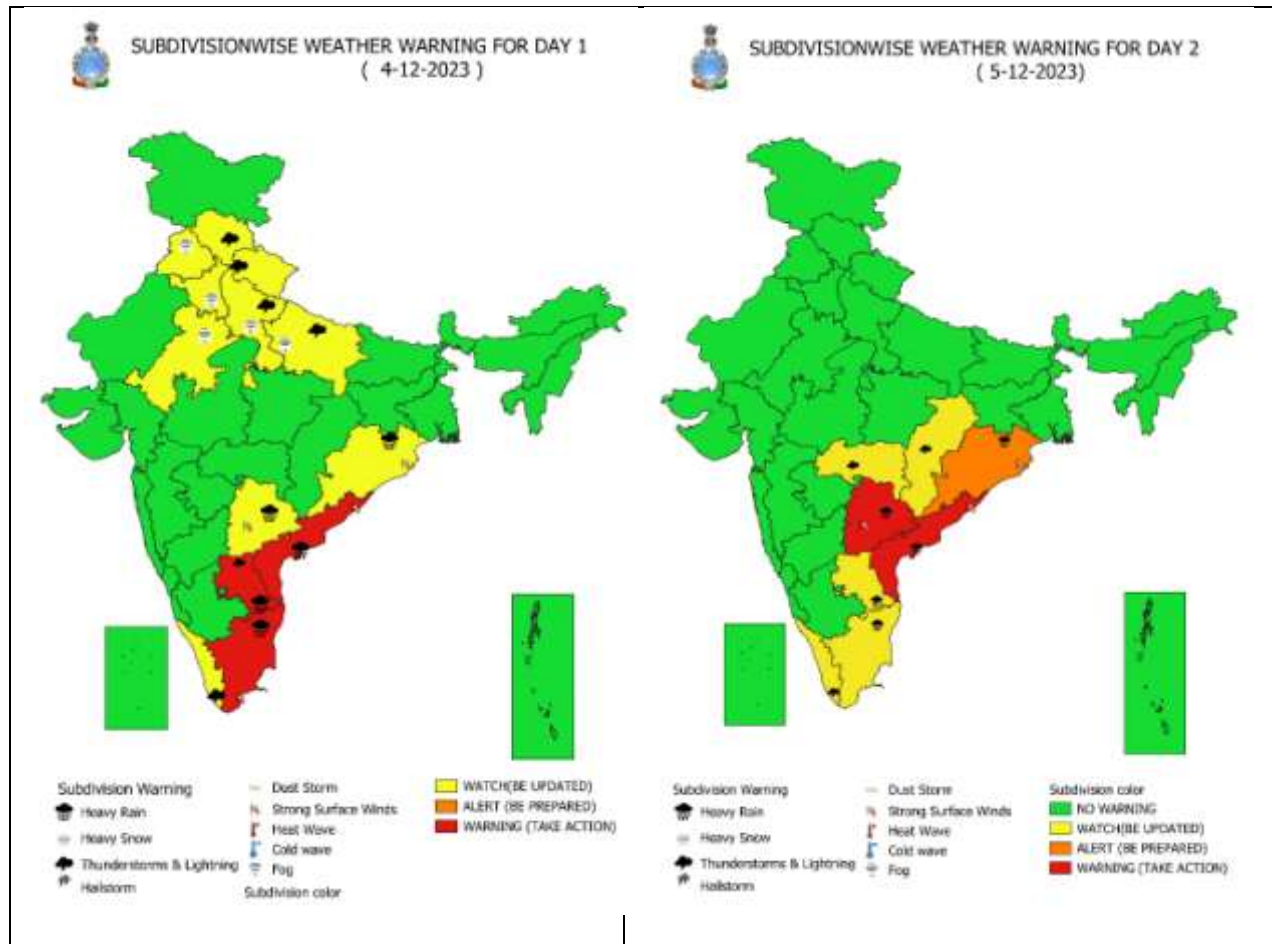
L: LOW PRESSURE AREA
WML: WELL MARKED LOW PRESSURE AREA
D: DEPRESSION (17-27 KT)
DD: DEEP DEPRESSION (28-33 KT)
CS: CYCLONIC STORM (34-47 KT)
SCS: SEVERE CYCLONIC STORM (48-63KT)
VSCS: VERY SEVERE CYCLONIC STORM (64-89 KT)
ESCS: EXTREMELY SEVERE CYCLONIC STORM (90-119 KT)
SuCS: SUPER CYCLONIC STORM (≥ 120 KT)

● LESS THAN 34 KT
○ 34-47 KT
● ≥ 48 KT
— OBSERVED TRACK
— FORECAST TRACK
— CONE OF UNCERTAINTY
AREA OF MAXIMUM SUSTAINED WIND SPEED:
28-33 KT (52-61 KMPH)
34-49 KT (62-91 KMPH)
50-63 KT (92-117 KMPH)
≥ 64 KT (≥118 KMPH)

IMPACT OVER THE SEA

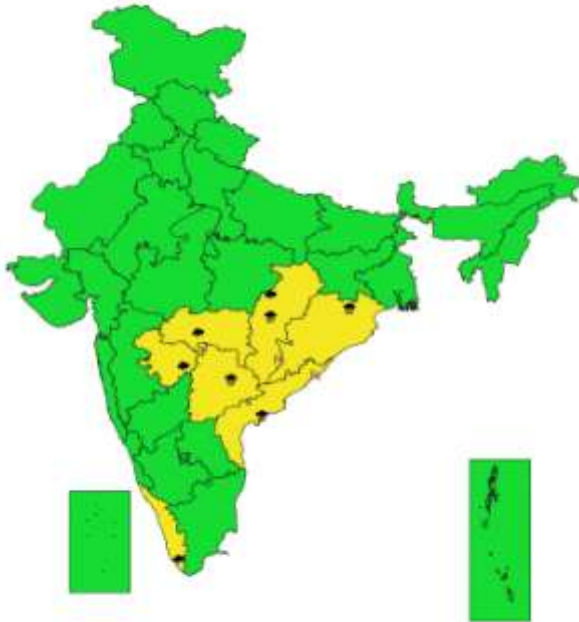
MSW (knot/kmph)	Impact	Action
28-33 (52-61)	Very rough seas	Total suspension of fishing operations
34-49 (62-91)	High to very high seas	Total suspension of fishing operations
50-63 (92-117)	Very high seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

Weather Warning Graphics





SUBDIVISIONWISE WEATHER WARNING FOR DAY 3 (6-12-2023)



- | | | |
|-----------------------------|------------------------|--------------------------|
| Subdivision Warning | Dust Storm | Subdivision color |
| ☁ Heavy Rain | ⚡ Strong Surface Winds | 🟢 NO WARNING |
| ❄ Heavy Snow | 🔥 Heat Wave | 🟡 WATCH (BE UPDATED) |
| ⚡ Thunderstorms & Lightning | ❄ Cold wave | 🟠 ALERT (BE PREPARED) |
| ⚡ Hailstorm | 🌫 Fog | 🔴 WARNING (TAKE ACTION) |



SUBDIVISIONWISE WEATHER WARNING FOR DAY 4 (7-12-2023)



- | | | |
|-----------------------------|------------------------|--------------------------|
| Subdivision Warning | Dust Storm | Subdivision color |
| ☁ Heavy Rain | ⚡ Strong Surface Winds | 🟢 NO WARNING |
| ❄ Heavy Snow | 🔥 Heat Wave | 🟡 WATCH (BE UPDATED) |
| ⚡ Thunderstorms & Lightning | ❄ Cold wave | 🟠 ALERT (BE PREPARED) |
| ⚡ Hailstorm | 🌫 Fog | 🔴 WARNING (TAKE ACTION) |



SUBDIVISIONWISE RAINFALL FORECAST FOR DAY 5 (8-12-2023)



- | | | |
|-----------------------------|------------------------|--------------------------|
| Subdivision Warning | Dust Storm | Subdivision color |
| ☁ Heavy Rain | ⚡ Strong Surface Winds | 🟢 NO WARNING |
| ❄ Heavy Snow | 🔥 Heat Wave | 🟡 WATCH (BE UPDATED) |
| ⚡ Thunderstorms & Lightning | ❄ Cold wave | 🟠 ALERT (BE PREPARED) |
| ⚡ Hailstorm | 🌫 Fog | 🔴 WARNING (TAKE ACTION) |

WARNING



- | | | | |
|----------------|--------------|----------------|----------------|
| ☁ Heavy Rain | ❄ Heavy Snow | ⚡ Thunderstorm | 🌫 Dust Storm |
| ⚡ Strong Winds | 👁 Visibility | 🌀 Cyclone | ⚡ Squall/ Hail |
| ❄ Frost | ❄ Cold Wave | 🔥 Heat Wave | 🌊 Sea State |

Fishermen Warning Graphics

Day 1: 04.12.2023/02:30PM to 05.12.2023/05:30AM



Day 2: 05.12.2023/05:30AM to 06.12.2023/05:30AM



Day 3: 06.12.2023/05:30AM to 07.12.2023/05:30AM



Day 4: 07.12.2023/05:30AM to 08.12.2023/05:30AM



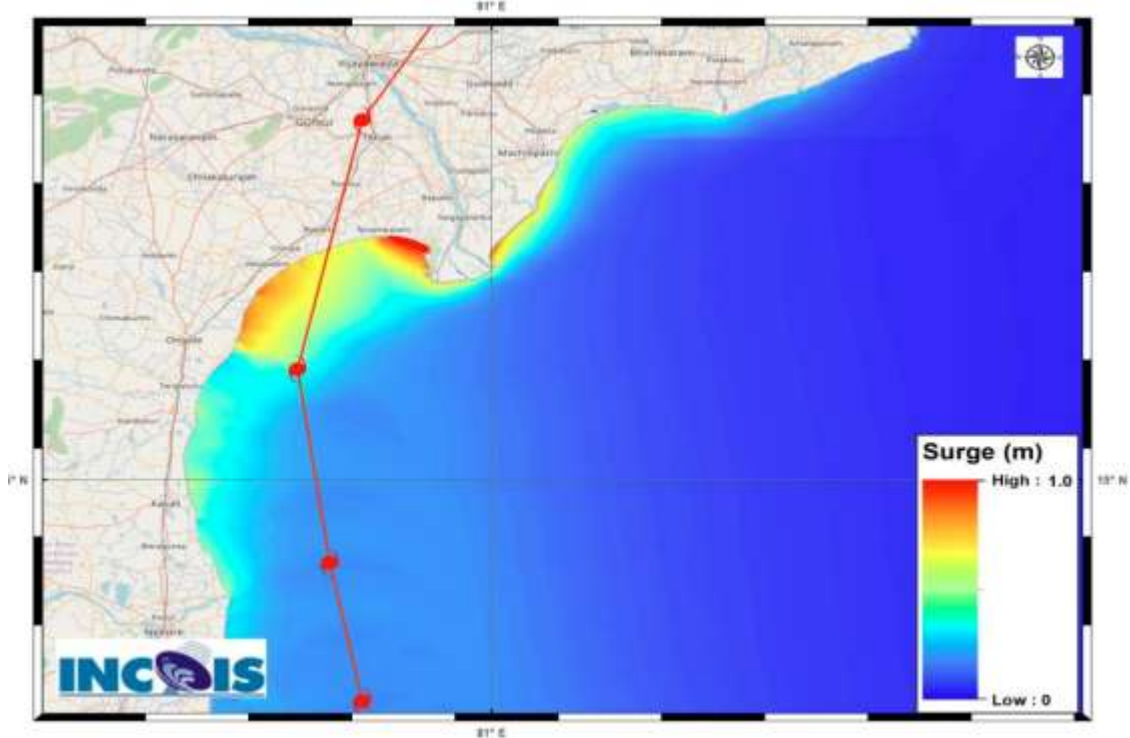
Day 5: 08.12.2023/05:30AM to 09.12.2023/05:30AM



	Squally Weather with wind speed 40-45 kmph gusting to 55 kmph
	Squally wind speed with wind speed 45-55 kmph gusting to 65 kmph
	Squally wind speed with wind speed 50-60 kmph gusting to 70 kmph
	CS with gale wind speed 60-90 kmph gusting to 110 kmph
	SCS with gale wind speed 90-110 kmph gusting to 120 kmph

Fishermen are advised not to venture into the marked areas.

Storm Surge Warning Graphics based on Forecast Track



STORM SURGE HEIGHT INFORMATION:

* The below listed surge heights are over and above astronomical tide.

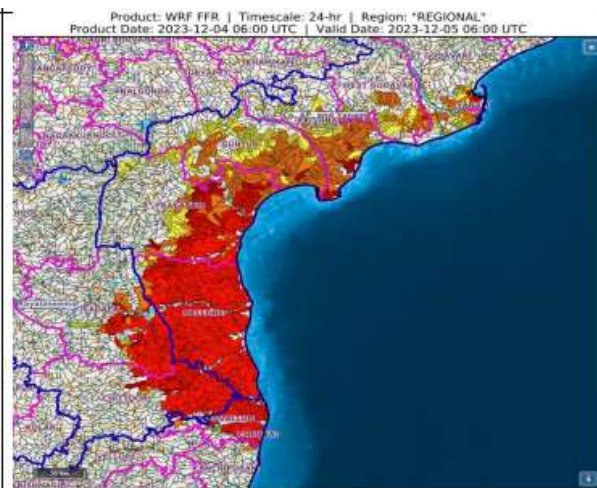
MANDAL/TALUK	DISTRICT	STATE/UNION TERRITORY	NEAREST PLACE OF HABITATION	STORM SURGE (m)	EXPECTED INUNDATION EXTENT (km)
Ponneri	Thiruvallur	Tamil Nadu	Karimanal	0.5-1.0	Upto 0.31
Repalle	Guntur	Andhra Pradesh	Repalle	0.4-1.0	Upto 0.25
Avanigadda	Krishna	Andhra Pradesh	Ramakrishnapuram	0.3-0.8	Upto 0.20
Chirala	Prakasam	Andhra Pradesh	Kotha Peta (Rural)	0.4-0.6	Upto 0.12
Machilipatnam	Krishna	Andhra Pradesh	Perupalem	0.2-0.5	Upto 0.15
Ongole	Prakasam	Andhra Pradesh	Kanuparthi	0.2-0.5	Upto 0.13
Sullurpeta	Nellore	Andhra Pradesh	Duggaraja Patnam	0.2-0.6	Upto 0.18

Flash Flood Guidance

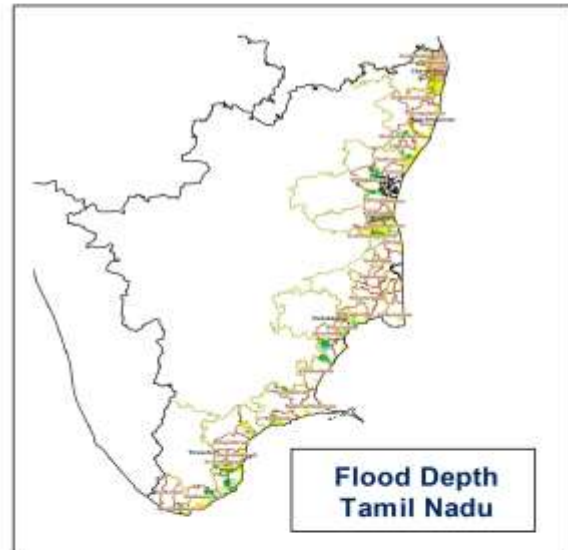
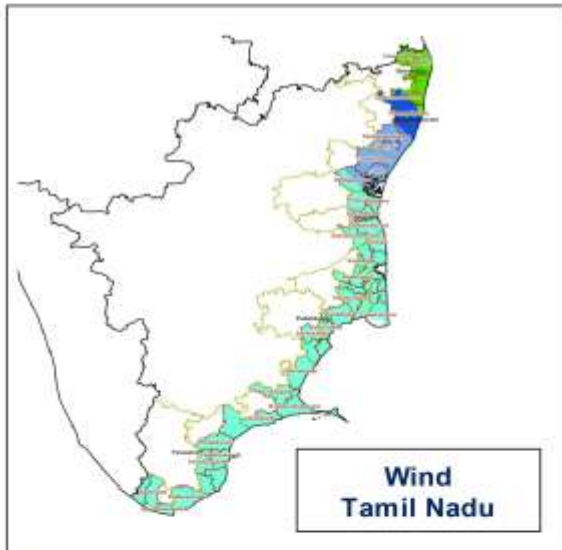
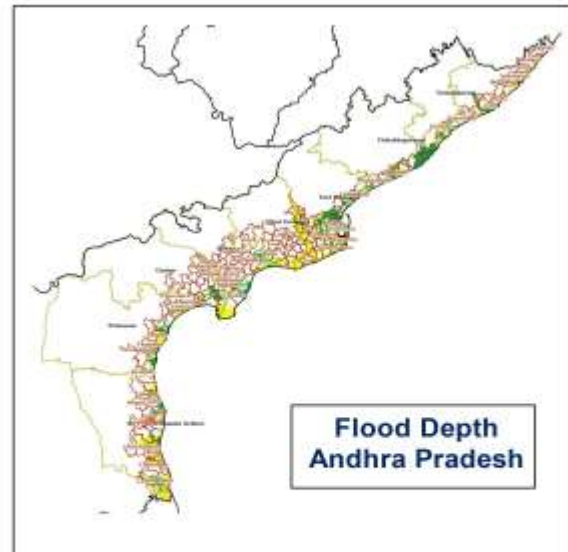
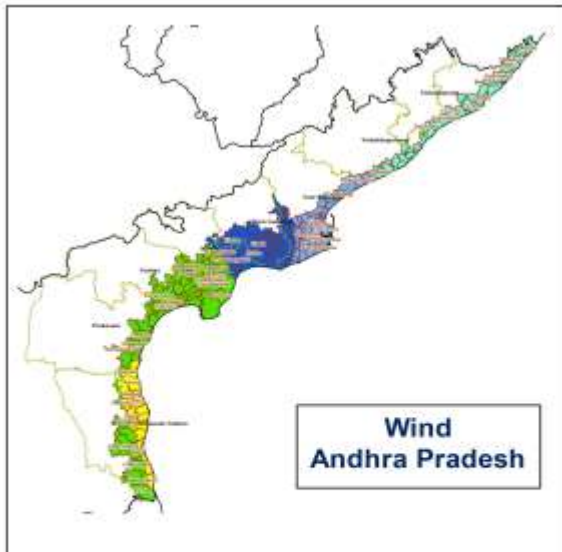
24 hours Outlook for the Flash Flood Risk (FFR) till 1130 IST of 05-12-2023 :

Moderate to High flash flood risk likely over few watersheds & neighbourhoods of Coastal AP & Yanam, Rayalaseema adjoining northern parts of Tamil Nadu - Pudu & Karaikal 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.



Hazard Map with Severe Cyclonic Storm MICHAUNG over Westcentral & adjoining Southwest Bay of Bengal off south Andhra Pradesh and adjoining north Tamilnadu coasts



Realized weather during past 24 hours till 0830 hours IST of today (04.12.2023):

- **Heavy to very heavy rainfall with isolated extremely heavy rainfall** reported over Tamil Nadu and **isolated heavy to very heavy rainfall** reported over Rayalaseema and Coastal Andhra Pradesh.
- **Significant Rainfall Amount (in cm):**
- **TAMILNADU, PUDUCHERRY & KARAIKAL:** Chennai Zone 14 and Perungudi (dist Chennai) 29, Avadi (dist Tiruvallur) 28, Alandur (dist Chennai), Chennai (AP) (dist Chennai) 25 each, Zone 13 Adyar (dist Chennai), Meenambakkam AWS (dist Chennai), Zone 12 Meenambakkam (dist Chennai), Chennai (N) (dist Chennai), Puzhal ARG (dist Tiruvallur), Cholavaram (dist Tiruvallur) 23 each, Mahabalipuram (dist Chengalpattu), MGR Nagar (dist Chennai), Zone 10 Kodambakkam (dist Chennai), CD Hospital Tondiarpet (dist Chennai) 22 each, Zone 11 Valasaravakkam (dist Chennai), Zone 15 Sholinganallur (dist Chennai), DGP Office (dist Chennai), NIOT_Pallikaranai ARG (dist Chennai), Chennai (N) AWS (dist Chennai), Anna University (dist Chennai), Ponneri (dist Tiruvallur) 21 each, Zone 03 Puzhal (dist Chennai), Perambur (dist Chennai), Zone 09 Ice House (dist Chennai), Red Hills (dist Tiruvallur) 20 each, Ayanavaram Taluk Office (dist Chennai), Taramani ARG (dist Chennai), SatyabamaUty ARG (dist Kancheepuram), Anna Nagar (dist Chennai), VIT_Chennai AWS (dist Chengalpattu) 19 each, Chennai Collector Office (dist Chennai), Sholinganallur (dist Chennai), Zone 09 Teynampet (dist Chennai), Zone 08 Malar Colony (dist Chennai), Ambattur (dist Chennai), Anna University ARG (dist Chennai), Valasaravakkam (dist Chennai), Good Will School Villivakkam ARG (dist Tiruvallur), YMCA Nandnam ARG (dist Chennai), KVK Kattukuppam AWS (dist Kancheepuram), Thamaraiyakkam (dist Tiruvallur), Kodambakkam (dist Chennai) 18 each, Gummidipoondi (dist Tiruvallur), Tambaram (dist Chengalpattu), Ambathur-2 (dist Chennai), Kelambakkam (dist Chengalpattu) 17 each, Zone 06 T.V.K Nagar (dist Chennai), Zone 04 Tondiarpet (dist Chennai), Chembarapakkam_Rev (dist Kancheepuram), Teynampet (dist Chennai), Tiruvallur (dist Tiruvallur), Zone 01 Kathivakkam (dist Chennai), Thiru-Vi-Ka Nagar (dist Chennai), Zone 03 Madhavaram (dist Chennai) 16 each, Uthukottai (dist Tiruvallur), Zone 08 Anna Nagar (dist Chennai), Sholinganallur (dist Chennai), Tirur KVK AWS (dist Tiruvallur), Zone 06 D65 Kolathur (dist Chennai), Tondairpet (dist Chennai), Zone 14 U41 Perungudi (dist Chennai), Ennore AWS (dist Chennai) 15 each, Zone 07 Ambattur (dist Chennai), Zone 13 Adyar Eco Park (dist Chennai), Zone 05 GCC (dist Chennai), Poonamallee (dist Tiruvallur), Thirukalukundram (dist Chengalpattu), Zone 12 Alandhur (dist Chennai), Koratur (dist Tiruvallur) 14 each, Sriperumbudur (dist Kancheepuram), Thirupporur (dist Chengalpattu), Zone 02 Manali (dist Chennai), Zone U39 Adyar (dist Chennai), Chembarabakkam_CMWSSB (dist Kancheepuram) 13 each, Zone D156 Mugalivakkam (dist Chennai), Kundrathur (dist Kancheepuram), Chengalpattu (dist Chengalpattu), Zone 15 Uthandi (dist Chennai), Royapuram (dist Chennai), Zone 07 U18 D81 Vanagaram (dist Chennai) 12 each, Zone 05 Royapuram (dist Chennai), Zone U32 Maduravoyal

(dist Chennai) 11 each, Poondi (dist Tiruvallur), Tiruttani (dist Tiruvallur) 10 each, Thiruvottiyur (dist Chennai), Maduranthagam (dist Chengalpattu), Thiruvalangadu (dist Tiruvallur), Kancheepuram (dist Kancheepuram), Uthiramerur (dist Kancheepuram), Cheyyur (dist Chengalpattu) 9 each, Walajabad (dist Kancheepuram), Minnal (dist Ranipet), Arakonam (dist Ranipet), Marakkanam (dist Villupuram) 8 each, Zone 01 Thiruvottiyur (dist Chennai) 7 each

- **COASTAL ANDHRA PRADESH**: Nellore (dist Spsr Nellore) 19
- **RAYLASEEMA**: Sullurpeta (dist Tirupati) 20, Tada (dist Tirupati) 19, Gudur (dist Tirupati) 14, Srikalahasti (dist Tirupati) 13, Thottambedu (dist Tirupati) 13, Satyavedu (dist Tirupati) 13, Nagari (dist Chittoor) 12, Tirupati Aero (dist Tirupati) 7