



REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
SPECIAL TROPICAL WEATHER OUTLOOK

DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 01.12.2023

SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND THE ARABIAN SEA) VALID FOR NEXT 168 HOURS ISSUED AT 1530 UTC OF 01.12.2023 BASED ON 1200 UTC OF 01.12.2023.

SUB: DEPRESSION OVER SOUTHWEST BAY OF BENGAL

THE DEPRESSION OVER SOUTHWEST AND ADJOINING SOUTHWEST BAY OF BENGAL MOVED WEST-NORTHWESTWARDS WITH A SPEED OF 11 KMPH DURING PAST 06 HOURS AND LAY CENTERED AT 1200 UTC OF TODAY, THE 01ST DECEMBER, 2023 OVER SOUTHWEST BAY OF BENGAL NEAR LATITUDE 10.0°N AND LONGITUDE 85.7°E, ABOUT 680 KM EAST-SOUTHEAST OF PUDUCHERRY (43331), 680 KM EAST-SOUTHEAST OF CHENNAI (43279), 790 KM SOUTHEAST OF NELLORE (43245), 860 KM SOUTH-SOUTHEAST OF BAPATLA (43220) AND 850 KM SOUTH-SOUTHEAST OF MACHILIPATNAM (43185).

IT IS LIKELY TO MOVE WEST-NORTHWESTWARDS, INTENSIFY INTO A DEEP DEPRESSION BY 2ND DECEMBER AND FURTHER INTO A CYCLONIC STORM OVER SOUTHWEST BAY OF BENGAL AROUND 3RD DECEMBER. THEREAFTER, IT WOULD MOVE NORTHWESTWARDS AND REACH NEAR SOUTH ANDHRA PRADESH AND ADJOINING NORTH TAMILNADU COASTS BY 0600 UTC OF 4TH DECEMBER. THEREAFTER, IT WOULD MOVE NEARLY NORTHWARDS ALMOST PARALLEL AND CLOSE TO SOUTH ANDHRA PRADESH COAST AND CROSS SOUTH ANDHRA PRADESH BETWEEN NELLORE AND MACHILIPATNAM AROUND 0600 UTC OF 5TH DECEMBER AS A **CYCLONIC STORM** WITH A MAXIMUM SUSTAINED WIND SPEED OF 80-90 KMPH GUSTING TO 100 KMPH.

TRACK & INTENSITY FORECASTS:

DATE/TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
01.12.23/1200	10.0/85.7	45-55 KMPH GUSTING TO 65 KMPH	DEPRESSION
02.12.23/0000	10.6/84.9	50-60 KMPH GUSTING TO 70 KMPH	DEEP DEPRESSION
02.12.23/1200	11.2/83.7	55-65 KMPH GUSTING TO 75 KMPH	DEEP DEPRESSION
03.12.23/0000	11.9/82.5	60-70 KMPH GUSTING TO 80 KMPH	CYCLONIC STORM
03.12.23/1200	12.6/81.5	70-80 KMPH GUSTING TO 90 KMPH	CYCLONIC STORM
04.12.23/0000	13.5/80.8	75-85 KMPH GUSTING TO 95 KMPH	CYCLONIC STORM
04.12.23/1200	14.4/80.4	80-90 KMPH GUSTING TO 100 KMPH	CYCLONIC STORM
05.12.23/0000	15.4/80.4	80-90 KMPH GUSTING TO 100 KMPH	CYCLONIC STORM
05.12.23/1200	16.3/80.9	65-75 KMPH GUSTING TO 85 KMPH	CYCLONIC STORM
06.12.23/0000	17.4/81.9	55-65 KMPH GUSTING TO 75 KMPH	DEEP DEPRESSION
06.12.23/1200	18.5/83.4	45-55 KMPH GUSTING TO 65 KMPH	DEPRESSION

Cloud distribution: (a) Isolated: <25%, Scattered:25-50%, Broken: 51-75%, Solid:>75%, Convection Intensity: (a) Weak: Cloud Top Temperature (CTT) >-25°C, (b) Moderate: CTT: - 25°C to -40°C, (c) Intense: CTT: - 41°C to -70°C and (d) Very Intense: : Less than -70°C
PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION):NIL: 0%, LOW: 1-33%, , MODERATE: 34-66% AND HIGH: 67-100%
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INSAT -3D IMAGERY AT 1200 UTC, INDICATES VORTEX OVER SOUTHEAST BAY OF BENGAL AND NEIGHBOURHOOD NOW LAY CENTERED WITHIN HALF A DEGREE OF 10.1°N/86.0°E WITH ASSOCIATED INTENSITY OF T1.5. ASSOCIATED SCATTERED TO BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTH AND ADJOINING CENTRAL BAY OF BENGAL BETWEEN LATITUDE 5.0°N TO 15.0°N LONGITUDE 80.0E TO 91.0E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93 DEGREE CELSIUS.

ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS 25 KNOTS GUSTING TO 35 KNOTS. ESTIMATED CENTRAL PRESSURE IS 1000 HPA. SEA CONDITION IS LIKELY TO BE ROUGH TO VERY ROUGH OVER THE SOUTHWEST & ADJOINING SOUTHEAST BAY OF BENGAL.

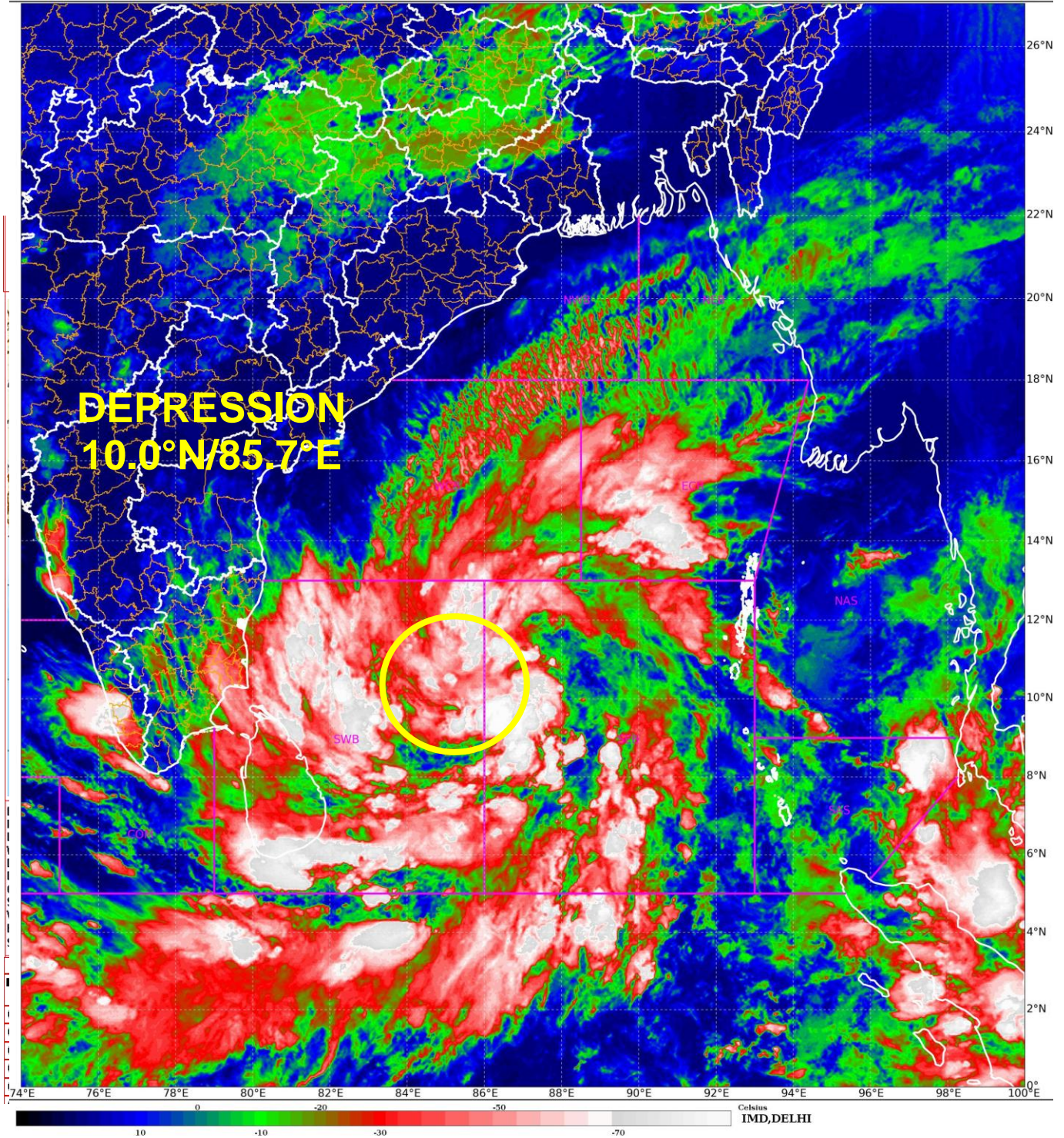
MADDEN JULIAN OSCILLATION (MJO) IS CURRENTLY IN PHASE 3 WITH AMPLITUDE GREATER THAN 1. IT WOULD MOVE ACROSS PHASES 3 AND 4 WITH AMPLITUDE GREATER THAN 1 DURING 1ST TO 6TH DECEMBER. THUS, MJO WOULD SUPPORT CYCLOGENESIS OVER THE BAY OF BENGAL (BOB) REGION TILL 6TH DECEMBER. SEA SURFACE TEMPERATURE IS 28-30°C OVER MAJOR PARTS OF BOB. TROPICAL CYCLONE HEAT POTENTIAL IS 60-70 KJ/CM² OVER SOUTHEAST BOB. THE NCICS BASED FORECASTS FOR EQUATORIAL WAVES INDICATE STRENGTHENING OF WESTERLY WINDS ALONGWITH PRESENCE OF EQUATORIAL ROSSBY WAVES & MJO OVER SOUTH BOB AND EASTERLY WINDS OVER CENTRAL BOB DURING 01 – 4TH DECEMBER. ALL THESE LARGE SCALE FEATURES ARE FAVOURABLE FOR CYCLOGENESIS (INTENSIFICATION INTO A CYCLONIC STORM) OVER SOUTHWEST BOB.

CURRENT ENVIRONMENTAL FEATURES INDICATE, POSITIVE LOW LEVEL VORTICITY OF $50 \times 10^{-6} \text{S}^{-1}$ AROUND SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. POSITIVE LOW LEVEL CONVERGENCE IS ABOUT $5-10 \times 10^{-5} \text{S}^{-1}$ TO THE SOUTHEAST OF SYSTEM CENTRE. POSITIVE UPPER LEVEL DIVERGENCE IS ABOUT $30 \times 10^{-5} \text{S}^{-1}$ TO THE SOUTHWEST OF THE SYSTEM CENTRE. WIND SHEAR IS ABOUT 5-10 KNOTS OVER SOUTH BOB AND UPTO 12°N. LOW TO MODERATE CLOCKWISE DEEP LAYER WIND SHEAR IS SUPPORTING INTENSIFICATION OF THE SYSTEM.

GUIDANCE FROM VARIOUS NUMERICAL MODELS IS INDICATING INITIAL NORTHWESTWARDS MOVEMENT TOWARDS ANDHRA PRADESH AND ADJOINING NORTH TAMIL NADU COASTS, WITH CROSSING OVER SOUTH ANDHRA PRADESH COAST AND NORTHEASTWARDS MOVEMENT ALONG THE COAST. THERE IS GOOD CONSENSUS AMONG THE MODELS WITH RESPECT TO MOVEMENT. WITH RESPECT TO INTENSIFICATION, MOST OF THE MODELS ARE INDICATING THE SYSTEM TO INTENSIFY INTO A CYCLONIC STORM. PEAK INTENSIFICATION OF 45 KNOTS IS SUGGESTED. HOWEVER, ECMWF IS INDICATING INTENSIFICATION UPTO DEEP DEPRESSION STAGE. IMD GFS IS INDICATING INTENSIFICATION UPTO VERY SEVERE CYCLONIC STORM. IMD MME IS INDICATING INTENSIFICATION UPTO 45 KNOTS (CYCLONIC STORM CATEGORY).

CONSIDERING ALL THE ABOVE, THE DEPRESSION OVER SOUTHWEST BAY OF BENGAL IS LIKELY TO MOVE WEST-NORTHWESTWARDS AND INTENSIFY INTO A DEEP DEPRESSION BY 2ND DECEMBER AND FURTHER INTO A CYCLONIC STORM OVER SOUTHWEST BAY OF BENGAL AROUND 3RD DECEMBER. THEREAFTER, IT WOULD MOVE NORTHWESTWARDS AND CROSS SOUTH ANDHRA PRADESH COASTS BETWEEN NELLORE (43245) AND MACHILIPATNAM (43185) AROUND 0600 UTC OF 5TH DECEMBER AS A CYCLONIC STORM.

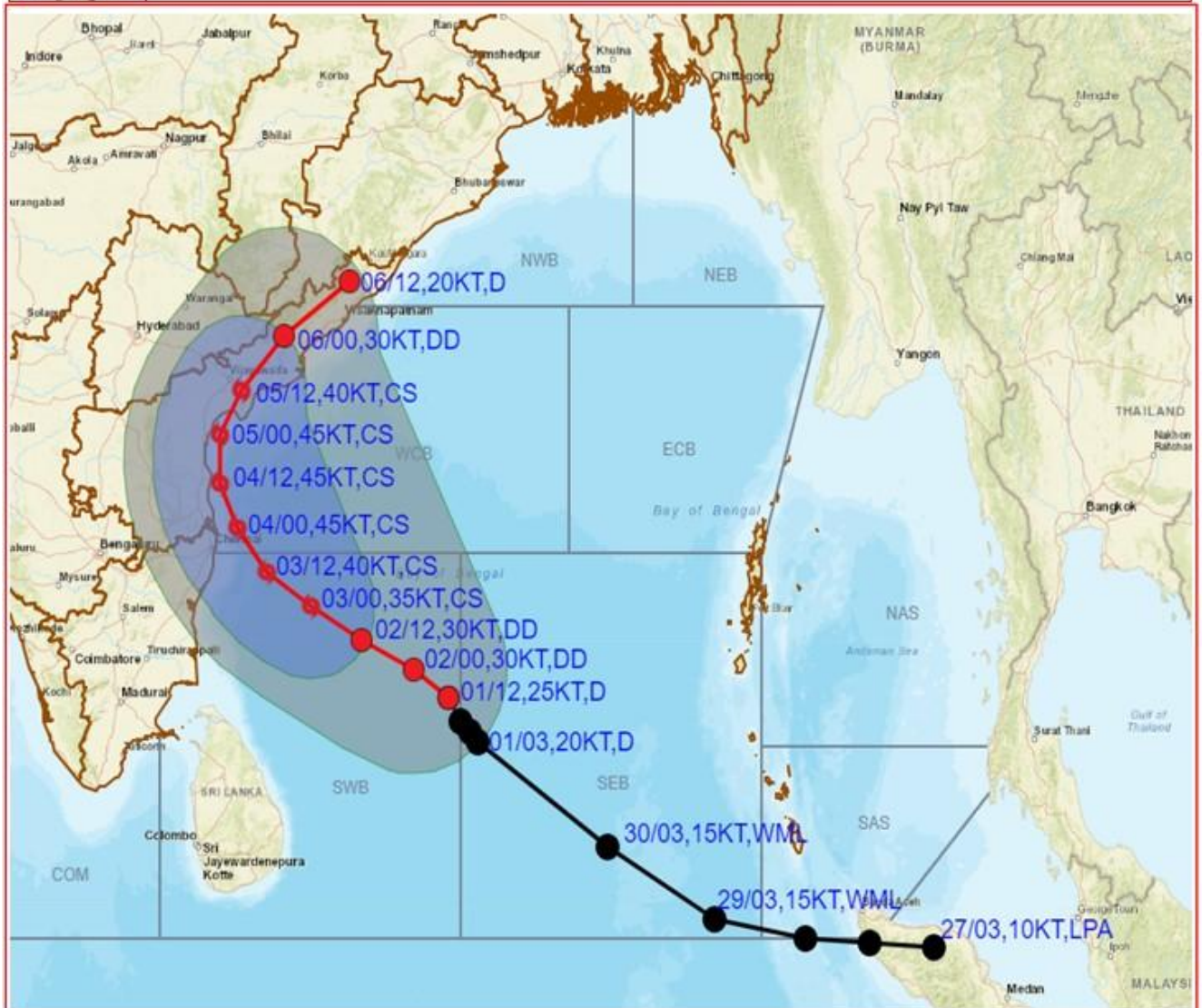
(S. P. SINGH)
RSMC NEW DELHI



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OBSERVED AND FORECAST TRACK ALONG WITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH DEPRESSION OVER SOUTHWEST BAY OF BENGAL BASED ON 1200 UTC (1730 IST) OF 01ST 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)

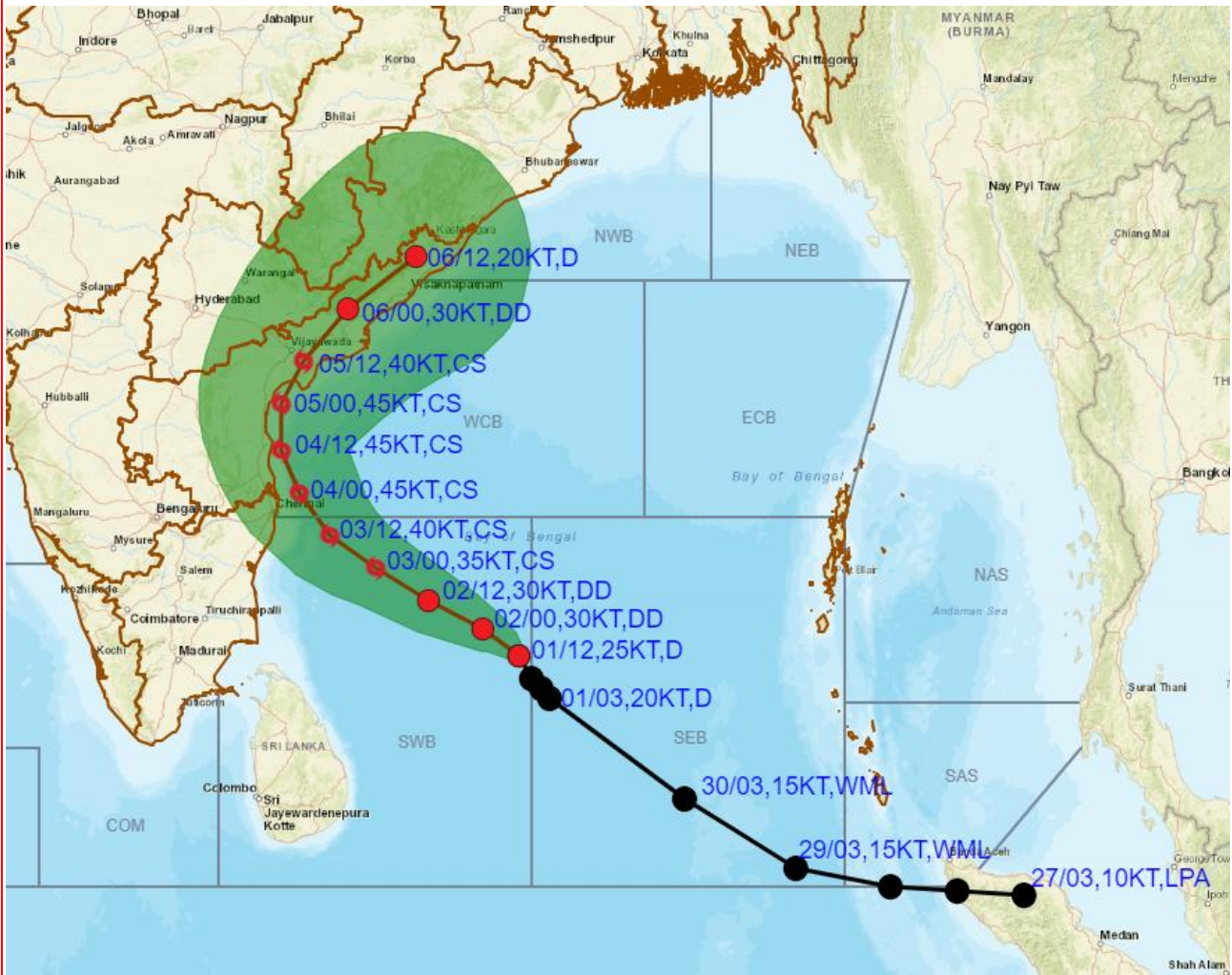
IMPACT OVER THE SEA

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

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OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH DEPRESSION OVER SOUTHWEST BAY OF BENGAL BASED ON 1200 UTC (1730 IST) OF 01ST DECEMBER 2023.



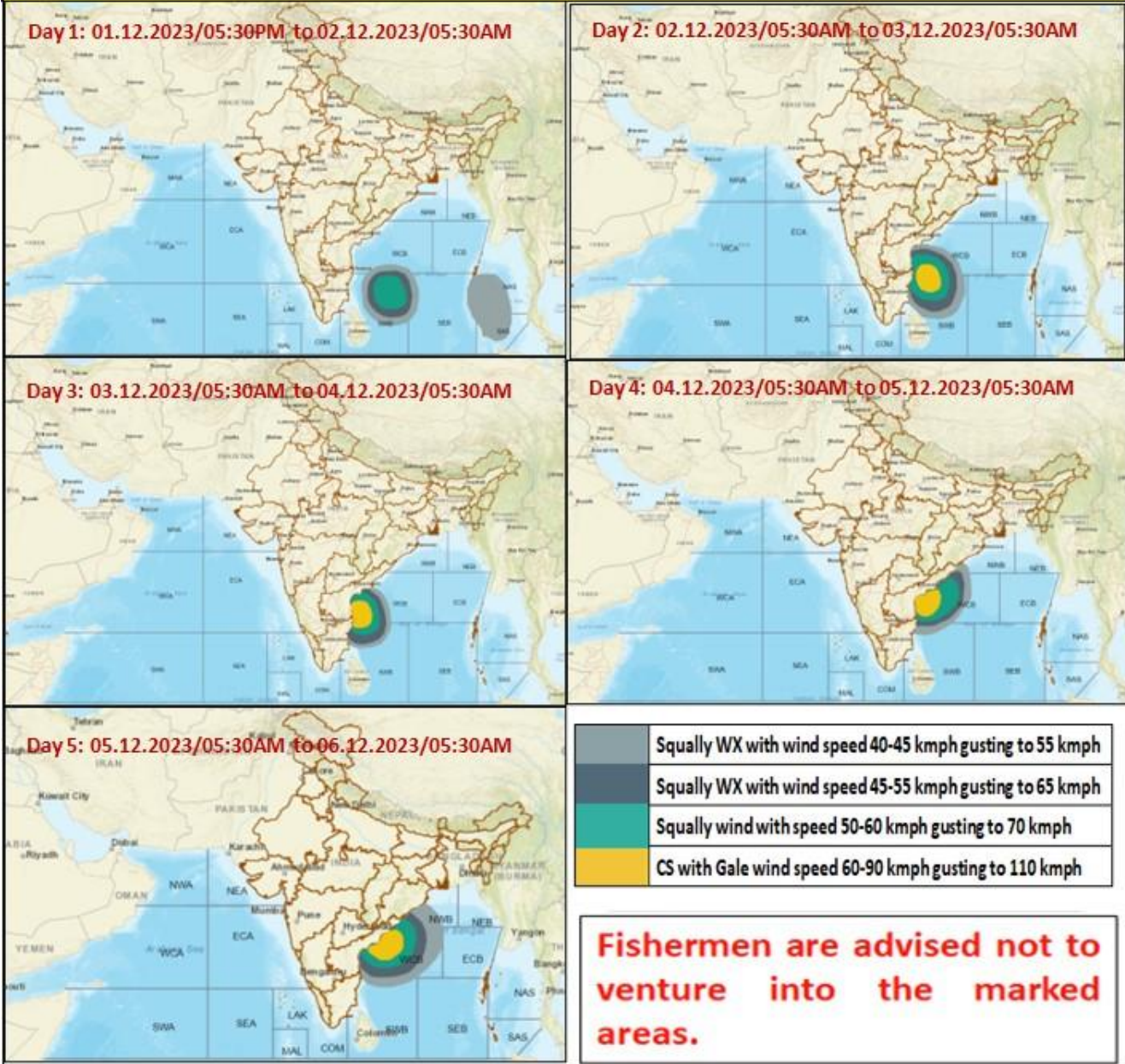
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 SuCS: SUPER CYCLONIC STORM (≥ 120 KT)

- LESS THAN 34 KT
- 34-47 KT
- ≥ 48 KT
- OBSERVED TRACK
- FORECAST TRACK
- ▲ CONE OF UNCERTAINTY

Forecast Date and Time (UTC)	DISTANCE (KM) AND DIRECTION FROM STATIONS				
	MO PONDICHERRY	CHENNAI/MINAMBAKKAM	NELLORE	BAPATLA	MACHILIPATNAM/ FRANCHPET
01.12.23/1200	670, ESE	680, ESE	790, SE	860, SE	840, SE
02.12.23/1200	430, E	430, ESE	540, SE	620, SE	620, SSE
03.12.23/1200	200, ENE	150, ESE	260, SE	380, SSE	400, S
04.12.23/1200	280, NNE	160, N	50, E	160, S	210, SSW
05.12.23/1200	500, NNE	380, NNE	230, NNE	70, NE	30, WNW
06.12.23/1200	820, NNE	700, NNE	570, NE	420, NE	350, NE

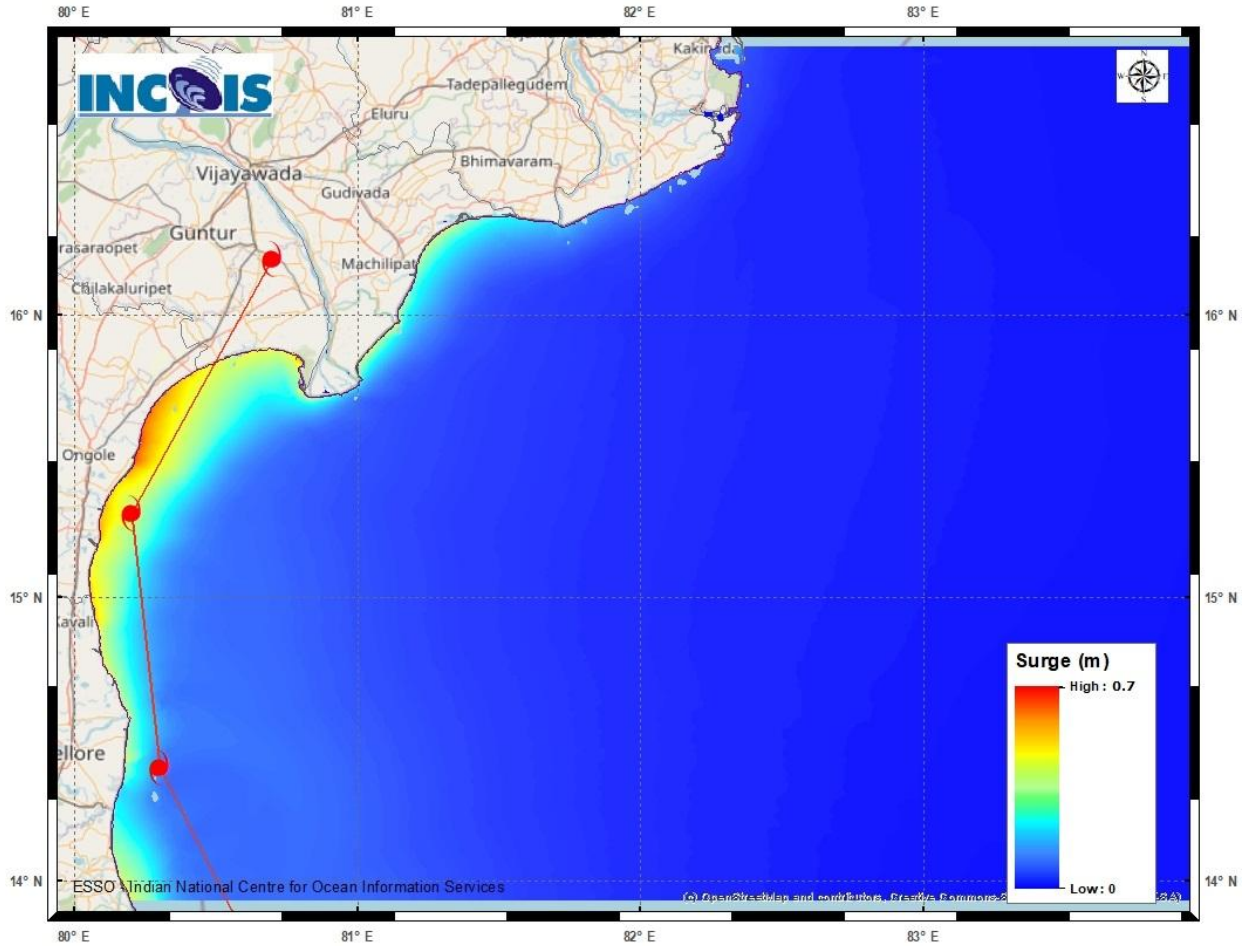
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Fishermen warning graphics



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Storm Surge Warning Graphics based on Forecast Track



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