



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

DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 16.11.2023

TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND THE ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1000 UTC OF 16.11.2023 BASED ON 0600 UTC OF 16.11.2023.

BAY OF BENGAL:

SUB: DEEP DEPRESSION OVER WESTCENTRAL BAY OF BENGAL

THE DEEP DEPRESSION OVER WESTCENTRAL BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 20 KMPH DURING PAST 6 HOURS AND LAY CENTRED AT 0600 UTC OF TODAY, THE 16TH NOVEMBER OVER WESTCENTRAL BAY OF BENGAL NEAR LATITUDE 17.9°N AND LONGITUDE 87.3°E, ABOUT 420 KM EAST OF VISAKHAPATNAM (43149), 270 KM SOUTH-SOUTHEAST OF PARADIP (42976), 410 KM SOUTH OF DIGHA (42901) AND 540 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984).

IT IS LIKELY TO CONTINUE TO MOVE NORTH-NORTHEASTWARDS, INTENSIFY FURTHER INTO A CYCLONIC STORM DURING NEXT 24 HOURS AND CROSS BANGLADESH COAST BETWEEN MONGLA AND KHEPUPARA WITH WIND SPEED OF 60-70 KMPH GUSTING TO 80 KMPH AROUND 2100 UTC OF 17TH NOVEMBER, 2023.

FORECAST TRACK & INTENSITY IS GIVEN BELOW:

DATE/TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
16.11.23/0600	17.9/87.3	50-60 KMPH GUSTING TO 70 KMPH	DEEP DEPRESSION
16.11.23/1200	18.6/87.7	55-65 KMPH GUSTING TO 75 KMPH	DEEP DEPRESSION
16.11.23/1800	19.2/88.0	60-70 KMPH GUSTING TO 80 KMPH	CYCLONIC STORM
17.11.23/0000	19.8/88.3	70-80 KMPH GUSTING TO 90 KMPH	CYCLONIC STORM
17.11.23/0600	20.5/88.7	70-80 KMPH GUSTING TO 90 KMPH	CYCLONIC STORM
17.11.23/1800	21.6/89.5	60-70 KMPH GUSTING TO 80 KMPH	CYCLONIC STORM
18.11.23/0600	23.3/90.3	55-65 KMPH GUSTING TO 75 KMPH	DEEP DEPRESSION
18.11.23/1800	24.5/90.6	40-50 KMPH GUSTING TO 60 KMPH	DEPRESSION

THE ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. THE WINDS ARE RELATIVELY STRONGER IN NORTHEAST SECTOR DUE TO NORTHEAST MONSOON CONDITIONS. THE ESTIMATED CENTRAL PRESSURE IS 1004 HPA. SEA CONDITIONS ARE LIKELY TO BE ROUGH TO VERY ROUGH OVER WESTCENTRAL BAY OF BENGAL DURING 16TH-17TH, OVER NORTH BAY OF BENGAL TILL 16TH MID NIGHT BECOMING VERY ROUGH TO HIGH THEREAFTER TILL 18TH MORNING. SEA CONDITION WOULD BE ROUGH TO VERY ROUGH ALONG AND OFF NORTH ANDHRA PRADESH COAST ON 16TH, ODISHA COAST DURING 16TH-17TH, WEST BENGAL AND BANGLADESH COASTS DURING 16TH - 18TH NOVEMBER 2023.

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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INTENSITY OF THE SYSTEM IS CHARACTERISED AS T2.0. CLOUDS ASSOCIATED WITH THE DEEP DEPRESSION ARE ORGANISED IN SHEAR PATTERN. BROKEN LOW & MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER CENTRAL & ADJOINING NORTH BAY OF BENGAL BETWEEN 15.0N & 22.0N AND LONGITUDE 86.0E & 93.0E, AND MODERATE TO INTENSE CONVECTION OVER NORTHEAST ODISHA, GANGETIC WEST BENGAL, SOUTH BANGLADESH, MIZORAM AND TRIPURA. MINIMUM CLOUD TOP TEMPERATURE IS -92°C.

STORM SURGE GUIDANCE:

STORM SURGE OF ABOUT 1-2 METER HEIGHT ABOVE THE ASTRONOMICAL TIDE IS LIKE TO INUNDATE OVER LOW LYING AREAS OF BANGLADESH NEAR THE LANDFALL POINT AT THE TIME OF LANDFALL.

Remarks:

MADDEN JULIAN OSCILLATION INDEX IS IN PHASE 1 WITH AMPLITUDE CLOSE TO 1. IT WOULD MOVE TO PHASE 2 FROM 19TH NOVEMBER ONWARDS, WITH AMPLITUDE BECOMING MORE THAN 1. SEA SURFACE TEMPERATURE IS AROUND 30°C OVER THE SYSTEM AREA. THE TROPICAL CYCLONE HEAT POTENTIAL IS 70-80 KJ/CM² OVER SYSTEM AREAS AND TOWARDS THE TRACK OVER NORTH BAY OF BANGAL. THE LOW LEVEL RELATIVE POSITIVE VORTICITY IS AROUND $150 \times 10^{-6} \text{ S}^{-1}$ AROUND SYSTEM AREA WITH VERTICAL EXTENSION UPTO 500 HPA LEVEL. THE POSITIVE LOW LEVEL CONVERGENCE IS ABOUT $40 \times 10^{-5} \text{ S}^{-1}$ TO THE EAST OF SYSTEM AREA. POSITIVE UPPER LEVEL DIVERGENCE REMAINS SAME AND IS ABOUT $40 \times 10^{-5} \text{ S}^{-1}$ TO THE NORTHEAST OF SYSTEM AREA. WIND SHEAR IS MODERATE (15-25 KNOTS) OVER SYSTEM AREA AND WIND SHEAR IS HIGH OVER NORTH BOB AND ALSO ALONG & OFF WEST BENGAL-BANGLADESH COASTS. UPPER TROPOSPHERIC RIDGE RUNS ALONG 15°N.

A TROUGH IN MIDDLE TROPOSPHERIC LEVELS RUN ALONG LONGITUDE 78°E TO THE NORTH OF LATITUDE 18°N LEADING TO COLD & DRY AIR INCURSION IN THE NORTH BAY OF BENGAL. AN ANTICYCLONIC CIRCULATION IN LOWER TO MIDDLE TROPOSPHERIC LEVELS LIES OVER SOUTH MYANMAR AND ADJOINING THAILAND COAST LEADING TO WARM MOIST AIR INCURSION IN NORTH BAY OF BENGAL. THUS, THERE IS CONFLUENCE OF COLD AND DRY AIR FROM THE WEST WITH WARM AND MOIST AIR FROM THE SOUTHEAST OVER NORTH BAY OF BENGAL. IT WOULD SUPPORT DEVELOPMENT OF DEEP CONVECTION OVER THE REGION AND HENCE INTENSIFICATION OF THE SYSTEM. THIS CONFLUENCE WOULD ALSO LEAD TO INCREASE IN WIND SHEAR OVER THE NORTH BAY OF BENGAL AND MAY LEAD TO WEAKENING OF THE SYSTEM. INTENSIFICATION/WEAKENING OF THE SYSTEM MAY DEPEND UPON WHICH FACTOR (WIND SHEAR OR UPPER LEVEL DIVERGENCE) IS PROMINENT.

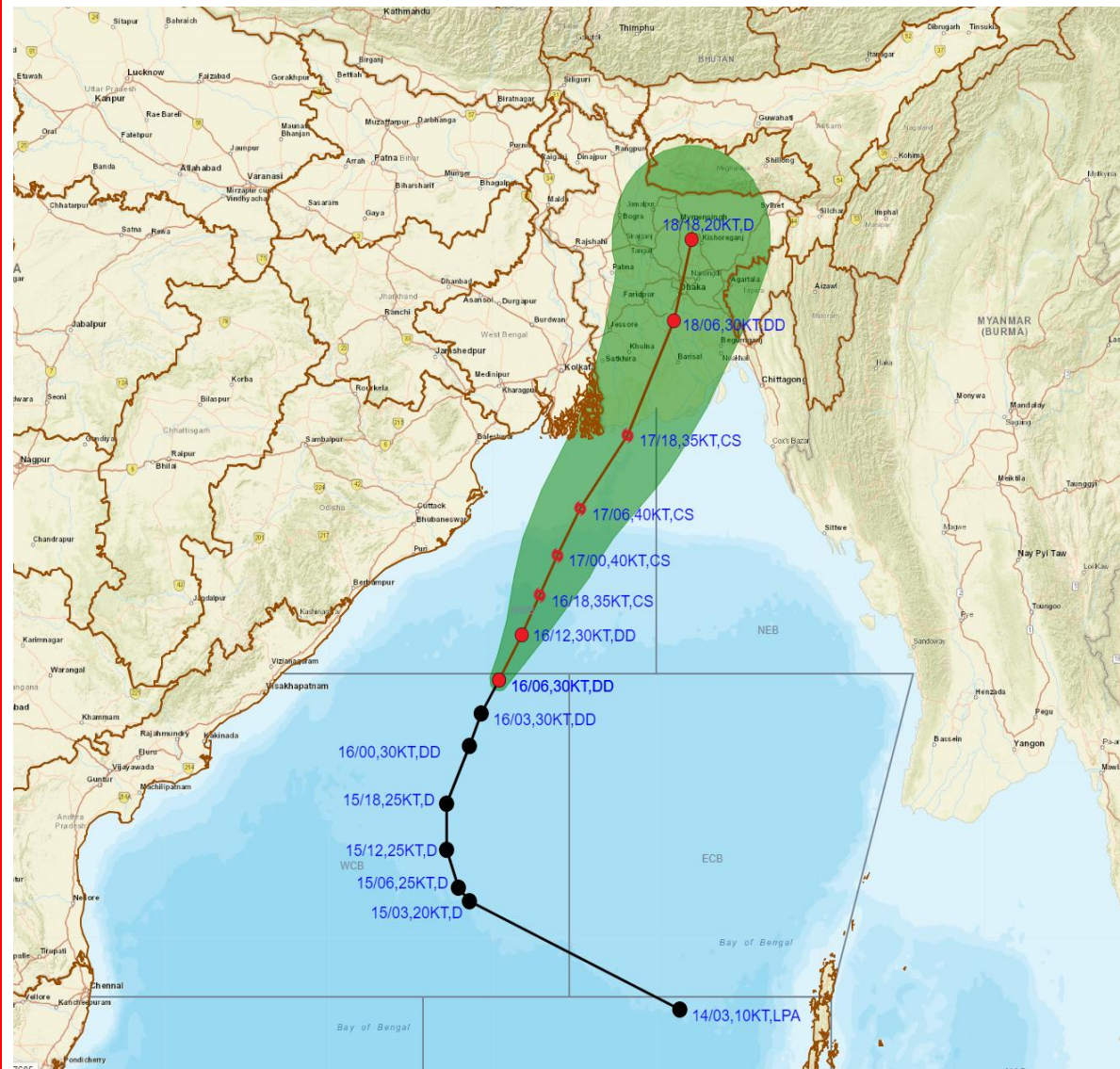
THE GUIDANCE FROM VARIOUS NUMERICAL MODELS (IMD GFS, NCEP GFS, ECMWF AND IMD MME) IS INDICATING NORTH-NORTHEASTWARDS MOVEMENT TOWARDS BANGLADESH COASTS. GRADUAL INTENSIFICATION INTO A CYCLONIC STORM IS LIKELY DURING NEXT 24 HOURS.

CONSIDERING ALL THESE, THE DEEP DEPRESSION OVER WESTCENTRAL BAY OF BENGAL IS LIKELY TO MOVE NORTH-NORTHEASTWARDS AND INTENSIFY FURTHER INTO A CYCLONIC STORM AND CROSS BANGLADESH COAST BETWEEN MONGLA AND KHEPUPARA WITH WIND SPEED 60-70 KMPH GUSTING TO 80 KMPH AROUND 2100 UTC OF 17TH NOVEMBER.

(M SHARMA)
SCIENTIST-D, RSMC



OBSERVED AND FORECAST TRACK AND INTENSITY ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH DEEP DEPRESSION OVER WESTCENTRAL BAY OF BENGAL BASED ON 0600 UTC (1130 IST) OF 16TH NOVEMBER 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)

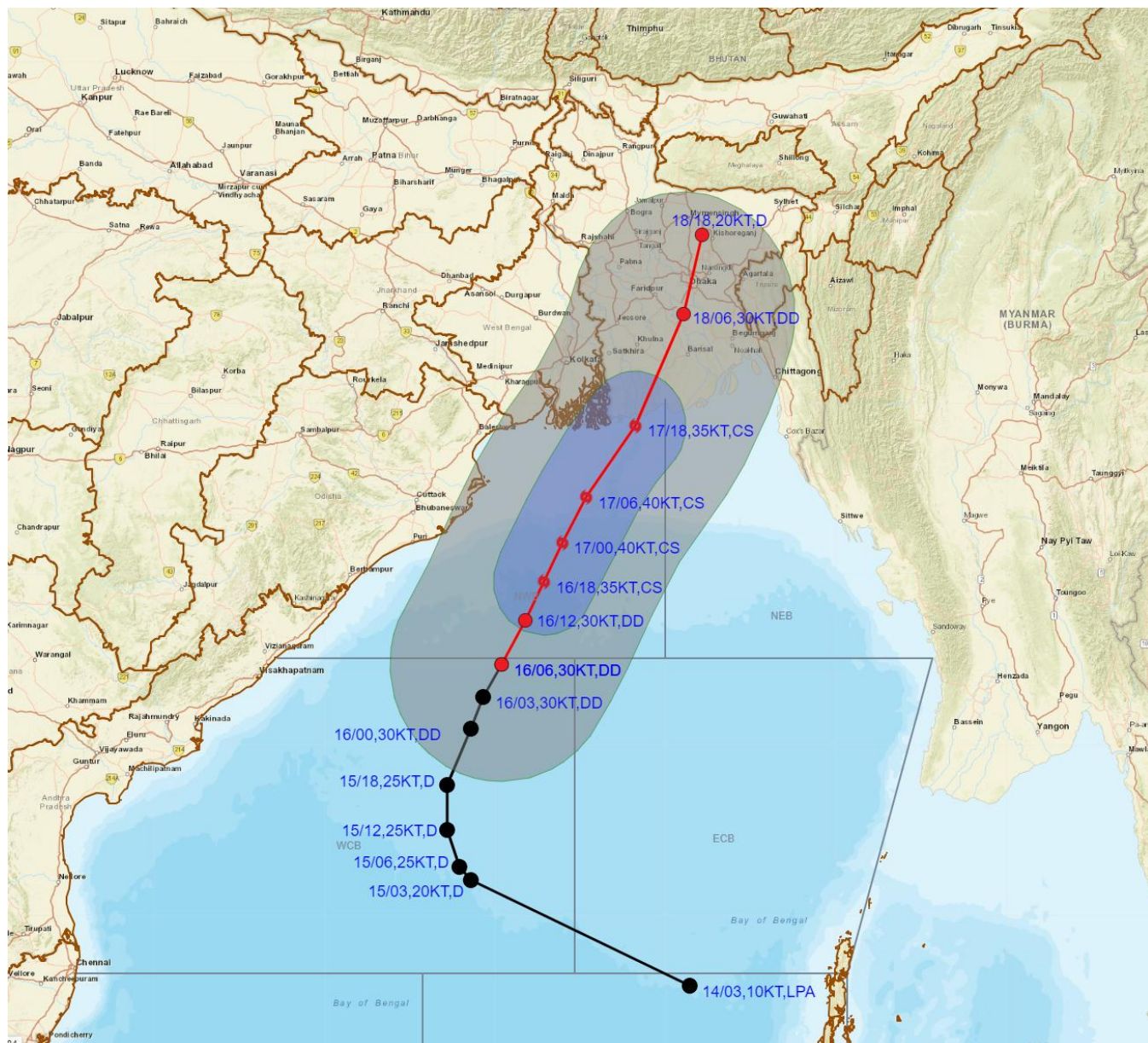
- LESS THAN 34 KT
- 34-47 KT
- ≥ 48 KT
- OBSERVED TRACK
- FORECAST TRACK
- CONE OF UNCERTAINTY

Forecast	DISTANCE(KM) AND DIRECTION FROM STATIONS			
	PARADIP (CWR)	DIGHA	KHEPUPARA	CHITTAGONG (AMBAGAN)
16.11.23/0600	270, SSE	410, S	540, SSW	680 SW
17.11.23/0600	220, E	180, SE	220, SW	380, WSW
17.11.23/1800	330, ENE	210, E	90, WSW	250, WSW
18.11.23/0600	500, NE	340, ENE	150, N	190, NW

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OBSERVED AND FORECAST TRACK AND INTENSITY ALONG WITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH DEEP DEPRESSION OVER WESTCENTRAL BAY OF BENGAL BASED ON 0600 UTC (1130 IST) OF 16TH NOVEMBER 2023.



DATE/TIME IN UTC
IST=UTC + 0530
L: LOW PRESSURE AREA
WML: WELL MARKED LOW PRESSURE AREA
D: DEPRESSION (17-27 KT)
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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)

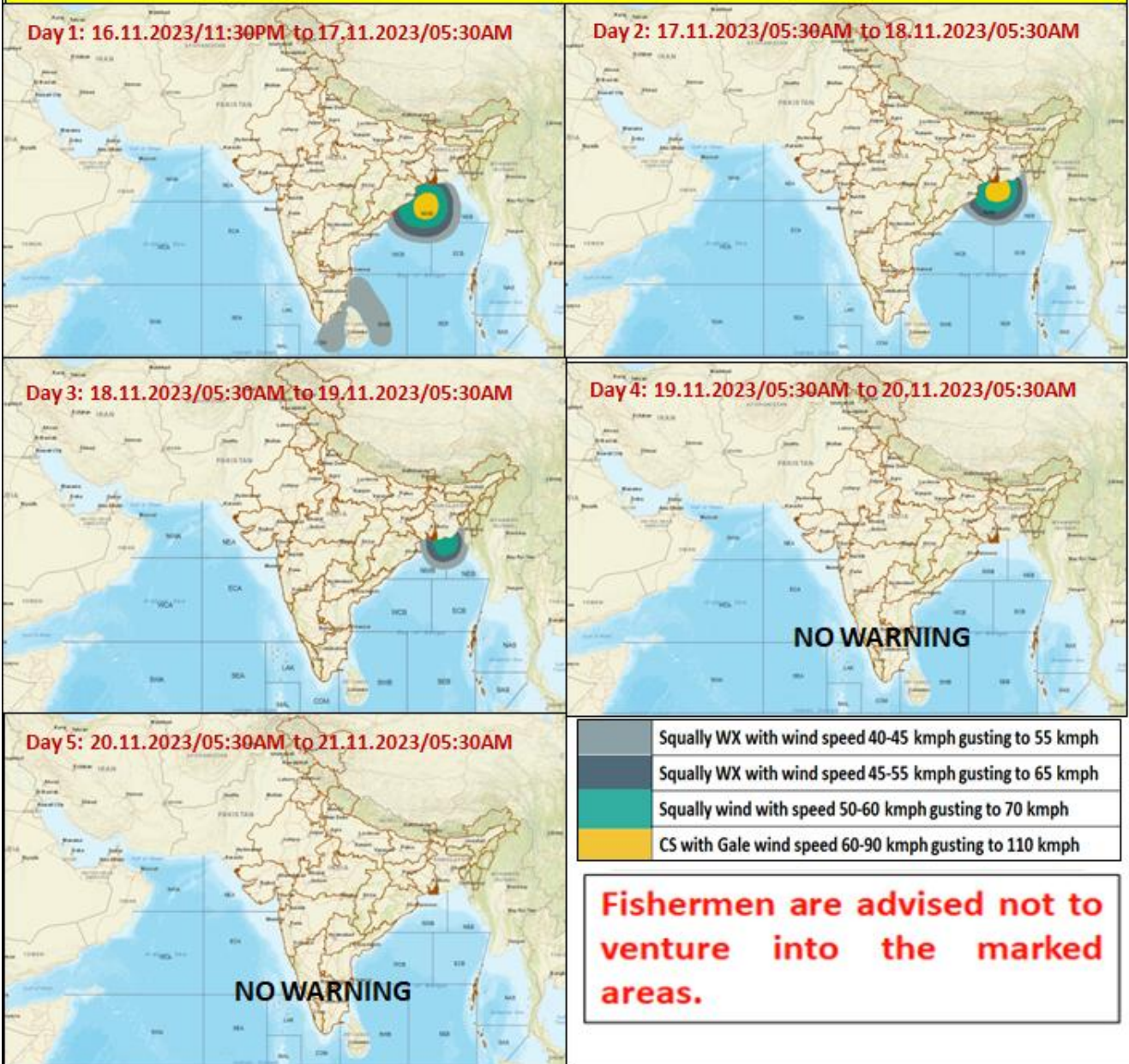
● LESS THAN 34 KT
 ○ 34.47 KT
 ● ≥ 48 KT
 — OBSERVED TRACK
 — FORECAST TRACK
 ● CONE OF UNCERTAINTY
AREA OF MAXIMUM SUSTAINED WIND SPEED:
 ■ 28-33 KT (52-61 KMPH)
 ■ 34.49 KT (62-91 KMPH)
 ■ 50-63 KT (92-117 KMPH)
 ■ ≥ 64 KT (≥118 KMPH)

IMPACT OVER THE SEA

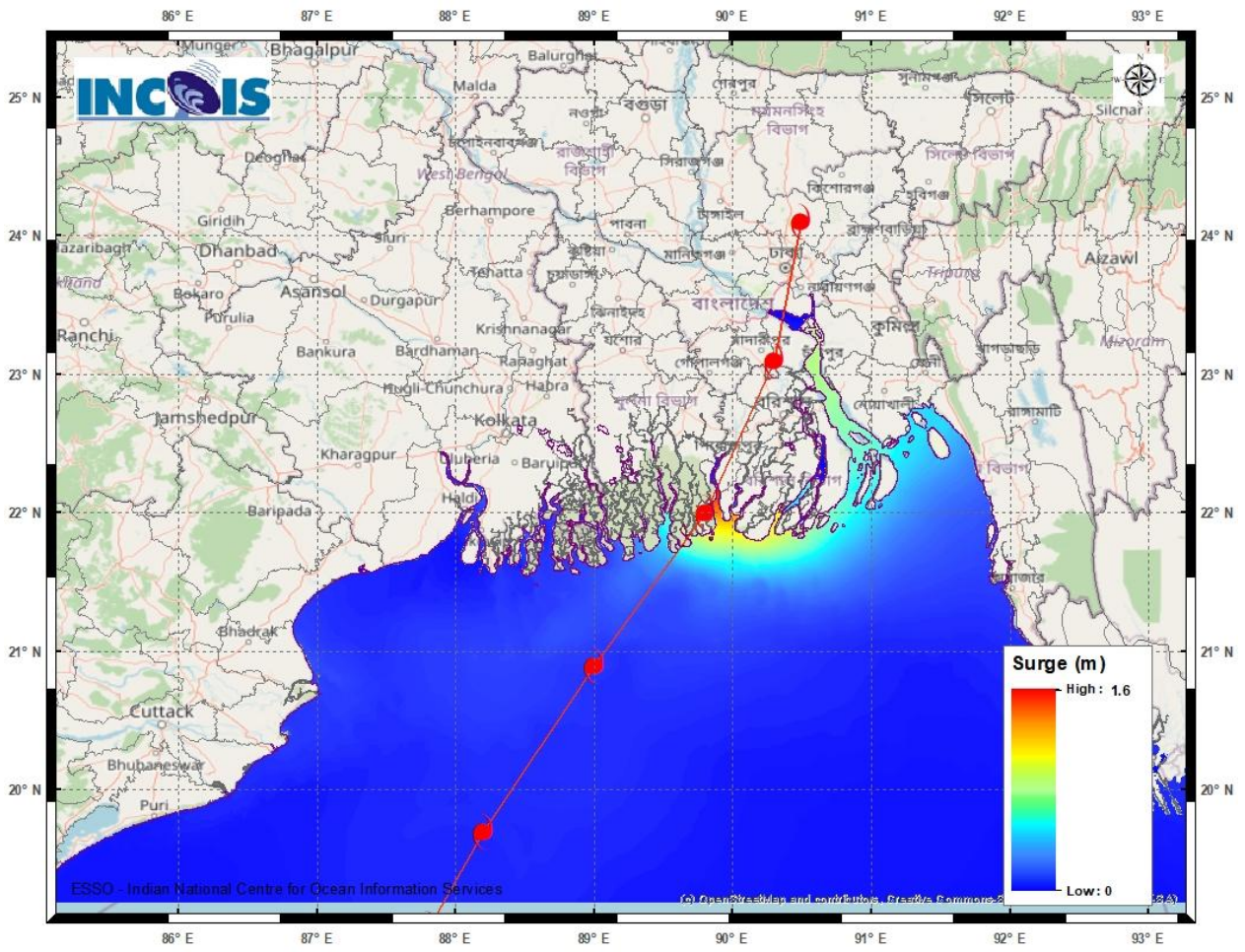
MSW (knot/kmph)	Impact	Action
28-33 (52-61)	Very rough seas	Total suspension of fishing operations
34-49 (62-91)	High to very high seas	Total suspension of fishing operations
50-63 (92-117)	Very high seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

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Fishermen warning graphics



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