



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

#### DEMS-RSMC SPECIAL TROPICAL CYCLONES NEW DELHI DATED 22.10.2023

FROM: RSMC -TROPICAL CYCLONES, NEW DELHI

TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR) STORM WARNING CENTRE, BANGKOK (THAILAND) STORM WARNING CENTRE, COLOMBO (SRILANKA) STORM WARNING CENTRE, DHAKA (BANGLADESH) STORM WARNING CENTRE, KARACHI (PAKISTAN) METEOROLOGICAL OFFICE, MALE (MALDIVES) OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH) YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH) PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH) IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH) QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)

TROPICAL CYCLONE ADVISORY NO. 09 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND THE AR ABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0330 UTC OF 22.10.2023 BASED ON 0000 UTC OF 22.10.2023.

SUB: (A) VERY SEVERE CYCLONIC STORM "TEJ" (PRONOUNCED AS TEJ) OVER WEST CENTRAL AND ADJOINING SOUTHWEST ARABIAN SEA AND (B) DEPRESSION OVER WESTCENTRAL BAY OF BENGAL

#### (A) VERY SEVERE CYCLONIC STORM "TEJ" (PRONOUNCED AS TEJ) OVER WEST CENTRAL AND ADJOINING SOUTHWEST AR ABIAN SEA

THE VERY SEVERE CYCLONIC STORM "TEJ" (PRONOUNCED AS TEJ) OVER SOUTHWEST ARABIAN SEA MOVED NORTH-WESTWARDS WITH A SPEED OF 16 KMPH DURING PAST 6 HOURS, AND LAY CENTERED AT 0000 UTC OF 22<sup>ND</sup> OCTOBER OVER WEST CENTRAL AND ADJOINING SOUTHWEST ARABIAN SEA, NEAR LATITUDE 12.0°N AND LONGITUDE 56.0°E ABOUT 240 KM EAST-SOUTHEAST OF SOCOTRA (YEMEN, 41494), 600 KM SOUTH-SOUTHEAST OF SALALAH (OMAN, 41316) AND 620 KM SOUTHEAST OF AL GHAIDAH (YEMEN, 41398).

IT IS VERY LIKELY TO INTENSIFY FURTHER INTO AN EXTREMELY SEVERE CYCLONIC STORM IN THE 0600 UTC OF 22<sup>ND</sup> OCTOBER. IT IS VERY LIKELY TO MOVE NORTHWESTWARDS TILL 0000UTC OF 24<sup>TH</sup> & THEN NORTH-NORTHWESTWARDS. IT IS LIKELY TO CROSS YEMEN-OMAN COASTS BETWEEN AL GHAIDAH (YEMEN, 41398) & SALALAH (OMAN, 41316), CLOSE TO EAST OF AL GHAIDAH (YEMEN, 41398) AROUND 0600 UTC OF 24<sup>TH</sup> OCTOBER.

FORECAST TRACK AND INTENSITY OF THE SYSTEM IS GIVEN BELOW:

DATE/TIME(UTC)	POSITION (LAT. <sup>®</sup> N/LONG. <sup>®</sup> E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
22.10.23/0000	12.0/56.0	150-160 GUSTING TO 175	VERY SEVERE CYCLONIC STORM
22.10.23/0600	12.6/55.5	165-175 GUSTING TO 195	EXTREMELY SEVERE CYCLONIC STORM
22.10.23/1200	13.2/55.0	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
22.10.23/1800	13.8/54.5	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
23.10.23/0000	14.3/54.0	165-175 GUSTING TO 195	EXTREMELY SEVERE CYCLONIC STORM
23.10.23/1200	15.1/53.1	145-155 GUSTING TO 170	VERY SEVERE CYCLONIC STORM
24.10.23/0000	16.0/52.5	125-135 GUSTING TO 150	VERY SEVERE CYCLONIC STORM
24.10.23/1200	16.8/52.0	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
25.10.23/0000	17.6/51.6	60-70 GUSTING TO 80	CYCLONIC STORM
25.10.23/1200	18.6/51.1	30-40 GUSTING TO 50	DEPRESSION

AS PER INSAT 3D IMAGERY, INTENSITY OF THE SYSTEM IS CHARACTERISED AS T 4.5 AND RAGGED EYE IS SEEN IN INFRARED IMAGERY. ASSOCIATED SCATTERED TO BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHWEST & ADJOINING WESTCENTRAL ARABIAN SEA BETWEEN LAT 9.0N TO 16.0N LONG 53.0E TO 60.0E. MINIMUM CLOUD TOP TEMPRATURE IS MINUS 90°C. MULTISATELLITE WINDS INDICATE STRONGER WINDS IN NORTHEAST & ADJOINING NORTHWEST SECTOR. TOTAL PRECIPITABLE WATER IMAGERY INDICATES WARM MOIST AIR INCURSION INTO THE SYSTEM CORE.

ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS 85 KNOTS GUSTING TO 95 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 974 HPA.

# **SEA CONDITION:**

- SOUTHWEST ARABIAN SEA: PHENOMENAL SEA CONDITION IS PREVAILING AND WILL CONTINUE TILL 0000 UTC OF 23<sup>RD</sup> OCTOBER. IT IS LIKELY TO IMPROVE GRADUALLY BECOMING VERY HIGH FROM 0000 UTC OF 24<sup>TH</sup> AND CONTINUE TILL 0000 UTC OF 25<sup>TH</sup>. THEREAFTER, IT WOULD IMPROVE GRADUALLY.
- WESTCENTRAL ARABIAN SEA:

**PHENOMENAL** SEA CONDITION IS PREVAILING AND WILL CONTINUE TILL 1200 UTC OF 24<sup>TH</sup> OCTOBER. IT WOULD IMPROVE GRADUALLY THEREAFTER BECOMING **VERY HIGH TO HIGH** FROM 1800 UTC OF 24<sup>TH</sup>. THEREAFTER, IT WOULD IMPROVE GRADUALLY.

• STORM SURGE GUIDANCE:

STORM SURGE ABOOUT 2 METER HEIGHT ABOVE THE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREA NEAR THE LANDFALL POINT AT THE TIME OF LANDFALL.

# (B) DEPRESSION OVER WESTCENTRAL BAY OF BENGAL

THE DEPRESSION OVER WESTCENTRAL BAY OF BENGAL MOVED WEST-NORTHWESTWARDS WITH A SPEED OF 06 KMPH DURING PAST 6 HOURS, AND LAY CENTERED AT 0000 UTC OF 22<sup>ND</sup> OCTOBER OVER THE SAME REGION, NEAR LATITUDE 14.9°N AND LONGITUDE 86.1°E ABOUT 600 KM SOUTH OF PARADIP (INDIA, 42976), 760 KM SOUTH OF DIGHA (INDIA, 42901), AND 900 KM SOUTH-SOUTHWEST OF KHEPUPARA (BANGLADESH, 41984).

IT IS LIKELY TO FURTHER INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 24 HOURS. IT IS LIKELY TO MOVE NORTHWESTWARDS DURING NEXT 12 HOURS, THEN RECURVE AND MOVE NORTH-NORTHEASTWARDS DURING SUBSEQUENT 3 DAYS TOWARDS BANGLADESH AND ADJOINING WEST BENGAL COASTS.

AS PER INSAT 3D IMAGERY, INTENSITY OF THE SYSTEM IS CHARACTERISED AS T 1.5. ASSOCIATED SCATTERED TO BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER CENTRAL BAY OF BENGAL BETWEEN LAT 14.0N TO 20.0N LONG 84.0E TO 90.0E. MINIMUM CLOUD TOP TEMPRATURE IS MINUS 85°C. MULTISATELLITE WINDS INDICATE STRONGER WINDS IN NORTHEAST & ADJOINING NORTHWEST SECTOR. TOTAL PRECIPITABLE WATER IMAGERY INDICATES WARM MOIST AIR INCURSION INTO THE SYSTEM CORE.

ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS 25 KNOTS GUSTING TO 35 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 1006 HPA.

DATE/TIME(UTC)	POSITION	MAXIMUM SUSTAINED SURFACE	CATEGORY OF CYCLONIC
	(LAT. <sup>°</sup> N/LONG. <sup>°</sup> E)	WIND SPEED (KMPH)	DISTURBANCE
22.10.23/0000	14.9/86.1	40-50 GUSTING TO 60	DEPRESSION
22.10.23/1200	15.4/85.7	45-55 GUSTING TO 65	DEPRESSION
23.10.23/0000	16.0/85.7	50-60 GUSTING TO 70	DEEP DEPRESSION
23.10.23/1200	17.1/86.3	55-65 GUSTING TO 75	DEEP DEPRESSION
24.10.23/0000	18.4/87.1	60-70 GUSTING TO 80	CYCLONIC STORM
24.10.23/1200	19.5/88.0	60-70 GUSTING TO 80	CYCLONIC STORM
25.10.23/0000	20.6/88.9	60-70 GUSTING TO 80	CYCLONIC STORM

FORECAST TRACK AND INTENSITY OF THE SYSTEM IS GIVEN BELOW:

#### Warnings:

# REMARKS:

# ARABIAN SEA:

MADDEN JULIAN OSCILLATION INDEX IS IN PHASE 8 WITH AMPLITUDE LESS THAN 1. IT WOULD CONTINUE IN SAME PHASE DURING NEXT 5 DAYS. SEA SURFACE TEMPERATURE IS 28-30°C OVER SOUTH & WESTCENTRAL ARABIAN SEA. THE TROPICAL CYCLONE HEAT POTENTIAL IS AROUND 75 KJ/CM<sup>2</sup> OVER SOUTHWEST ARABIAN SEA NEAR THE SYSTEM LOCATION. IT WOULD DECREASE GRADUALLY BECOMING 15-35 KJ/CM<sup>2</sup> OVER WESTCENTRAL ARABIAN SEA & ALONG & OFF OMAN-YEMEN COASTS.

THE LOW LEVEL POSITIVE IS AROUND 150 X10<sup>-6</sup>S<sup>-1</sup> TO THE SOUTHWEST OF SYSTEM CENTER WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE POSITIVE LOW LEVEL CONVERGENCE IS ABOUT 30X10<sup>-5</sup>S<sup>-1</sup> TO THE SOUTHEAST OF SYSTEM AREA. POSITIVE UPPER LEVEL DIVERGENCE IS ABOUT 50 X10<sup>-5</sup> S<sup>-1</sup> TO THE SOUTHWEST OF THE SYSTEM AREA. STRONG OUTFLOW IS SEEN IN UPPER LEVELS. WIND SHEAR IS MODERATE (10-15 KNOTS) OVER SYSTEM AREA AND ALONG THE EXPECTED TRACK AND IT IS MODERATE TO HIGH OVER WSTERN PARTS OF WESTCENTRAL ARABIAN SEA. UPPER TROPOSPHERIC RIDGE RUNS NEAR 14<sup>0</sup>N IN ASSOCIATION WITH ANTICYCLONIC CIRCULATION OVER SOUTHEAST & ADJOINING EASTCENTRAL ARABIAN SEA. AS SUCH, TC TEJ LIES ON THE PERIPHERY OF THIS ANTICYCLONE AND HENCE, ACCORDINGLY SHOWS WEST-NORTHWESTWARDS MOVEMENT. AS IT MOVES AWAY FROM THIS ANTICYCLONE, ALONG THE PERIPHERY, IT'S DIRECTION OF MOVEMENT WOULD GRADUALLY CHANGE FROM WEST-NORTHWESTWARDS ΤO NORTHWESTWARDS TO NORTH-NORTHWESTWARDS LEADING TO LANDFALL OVER YEMEN AND ADJOINING OMAN.

FURTHER DURING NEXT 24 HOURS, HIGHER SST, HIGHER OCEAN THERMAL ENERGY, LOW-MODERATE VERTICAL WIND SHEAR, STRONG OUTFLOW IN UPPER LEVELS WOULD MAKE CONDITIONS FAVOURABLE FOR RAPID INTENSIFICATION. TEMPORARILY, IT MAY ALSO INTENSIFY INTO AN EXTREMELY SEVERE CYCLONIC STORM OVER WESTCENTRAL ARABIAN SEA WITH WIND SPEED REACHING UP TO 90-95 KNOTS AROUND 0600 UTC OF 22<sup>ND</sup> OCTOBER. AS IT MOVES CLOSER TO COAST, IT WILL ENCOUNTER DRY AIR INCURSION AND COLDER SST AND HENCE MAY EXHIBIT WEAKENING PRIOR TO LANDFALL.

THE MULTI MODEL GUIDANCE IS INDICATING THE SYSTEM TO MOVE NORTHWESTWARDS TILL 0000 UTC OF 24<sup>TH</sup> & THEN NORTH-NORTHWESTWARDS. MOST OF THE MODELS ARE INDICATING THE SYSTEM TO CROSS OMAN – YEMEN COASTS (ECMWF, UKMO, IMD HWRF TOWARDS YEMEN AND IMD MME, NCEP, CMC, NCUM, IMD GFS, SLIGHTLY TOWARDS OMAN) AROUND 1200 UTC OF 24<sup>TH</sup> OCTOBER. BUT THERE IS CONSENSUS THAT CROSSING WOULD BE OVER YEMEN & ADJOINING OMAN COASTS. MODELS ARE ALSO SUGGESTING SLIGHT WEAKENING PRIOR TO LANDFALL. THIS IS SUPPORTED BY DECREASING OCEAN THERMAL ENERGY AND INCREASING WIND SHEAR OVER WESTCENTRAL ARABIAN SEA ALONG & OFF OMAN-YEMEN COASTS.

IN VIEW OF ABOVE, THE VERY SEVERE CYCLONIC STORM "TEJ" (PRONOUNCED AS TEJ) IT IS VERY LIKELY TO INTENSIFY FURTHER INTO AN EXTREMELY SEVERE CYCLONIC STORM IN THE 0600 UTC OF 22<sup>ND</sup> OCTOBER. IT IS VERY LIKELY TO MOVE NORTHWESTWARDS TILL 0000UTC OF 24<sup>TH</sup> & THEN NORTHNORTHWESTWARDS. IT IS LIKELY TO CROSS YEMEN-OMAN COASTS BETWEEN AL GHAIDAH (YEMEN, 41398) & SALALAH (OMAN, 41316) BY 1200 UTC OF 24<sup>TH</sup> OCTOBER 2023.

#### **BAY OF BENGAL:**

MJO IS NOT SUPPORTIVE FOR CYCLOGENESIS OVER BOB. HOWEVER, WARM SST AND LOW TO MODERATE VERTICAL WIND SHEAR OVER SOUTH & CENTRAL BOB ARE LIKELY TO SUPPORT THE DEVELOPMENT OF DEEP DEPRESSION OVER BOB. THE GLOBAL MODELS ARE IN AGREEMENT THAT THE LOW PRESSURE AREA OVER SOUTHEAST BAY OF BENGAL IS LIKELY TO INTENSIFY FURTHER INTO A DEEP DEPRESSION DURING NEXT 24 HOURS. AND FURTHER INTENSIFY INTO A CYCLONIC STORM AROUND 1800 UTC OF 23<sup>RD</sup> OCTOBER 2023.

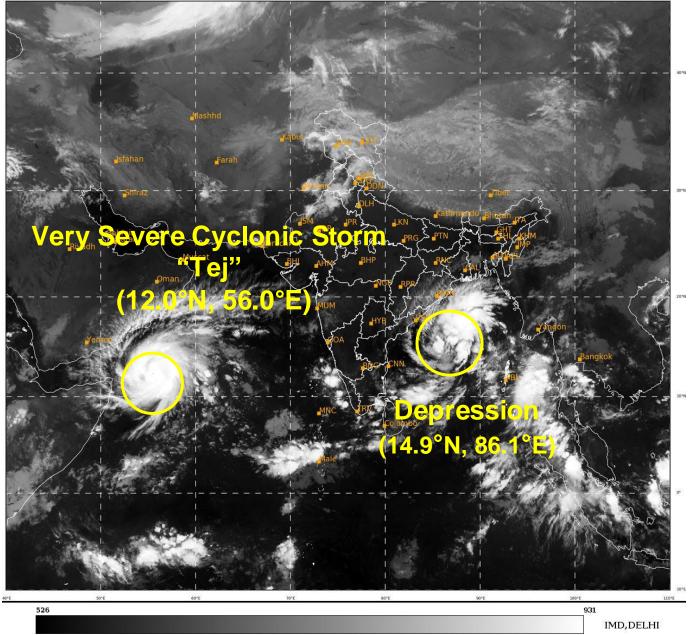
THERE IS CONSENSUS AMONG VARIOUS MODELS WRT MOVEMENT TOWARDS BANGLADESH. MOST OF THE MODELS ARE INDICATING INTENSIFICATION UPTO DEEP DEPRESSION STAGE, HOWEVER CMC AND IMDGEFS IS INDICATING HIGHER INTENSITY.

CONSIDERING ALL THESE, THE DEPRESSION OVER WESTCENTRAL BAY OF BENGAL IS LIKELY TO FURTHER INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 24 HOURS. IT IS LIKELY TO MOVE NORTHWESTWARDS DURING NEXT 12 HOURS, THEN RECURVE AND MOVE NORTH-NORTHEASTWARDS DURING SUBSEQUENT 3 DAYS TOWARDS BANGLADESH AND ADJOINING WEST BENGAL COASTS.

> (ARULALAN T) SCIENTIST-C RSMC, NEW DELHI

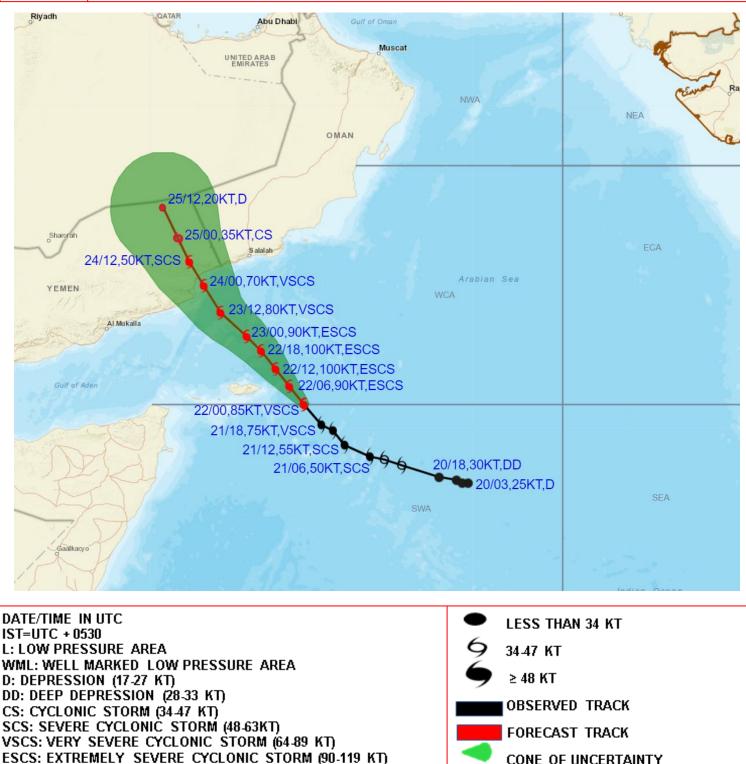
SAT : INSAT-3D IMG IMG\_TIR1 10.8 um L1C Mercator 22-10-2023/(0200 to 0226) GMT 22-10-2023/(0730 to 0756) IST







OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINITY OF VERY SEVERE CYCLONIC STORM "TEJ" OVER WESTCENTRAL & ADJOINING SOUTHWEST ARABIAN SEA BASED ON 0000 UTC (0530 IST) OF 22<sup>ND</sup> OCTOBER 2023.

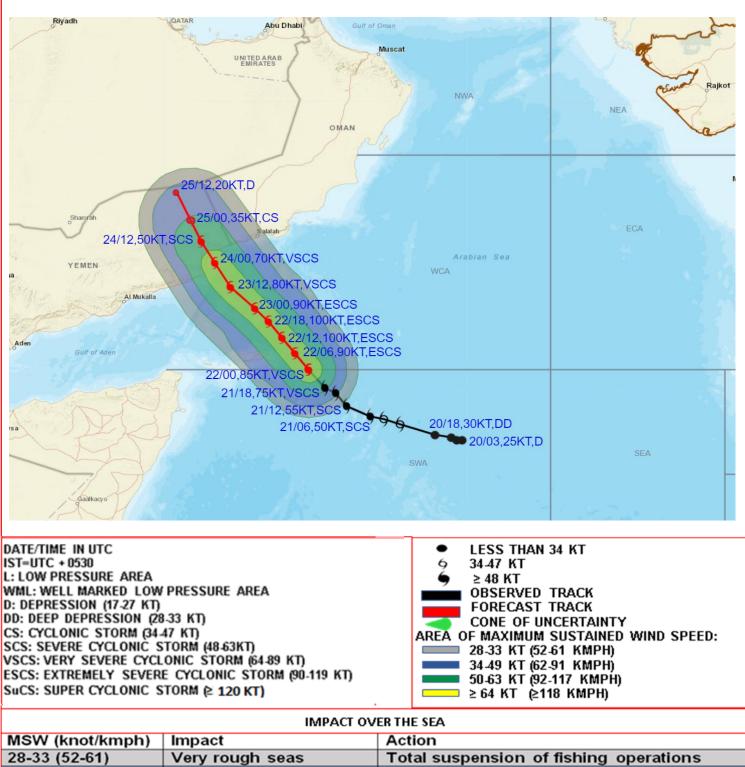


SuCS: SUPER CYCLONIC STORM (2 120 KT)

CONE OF UNCERTAINTY



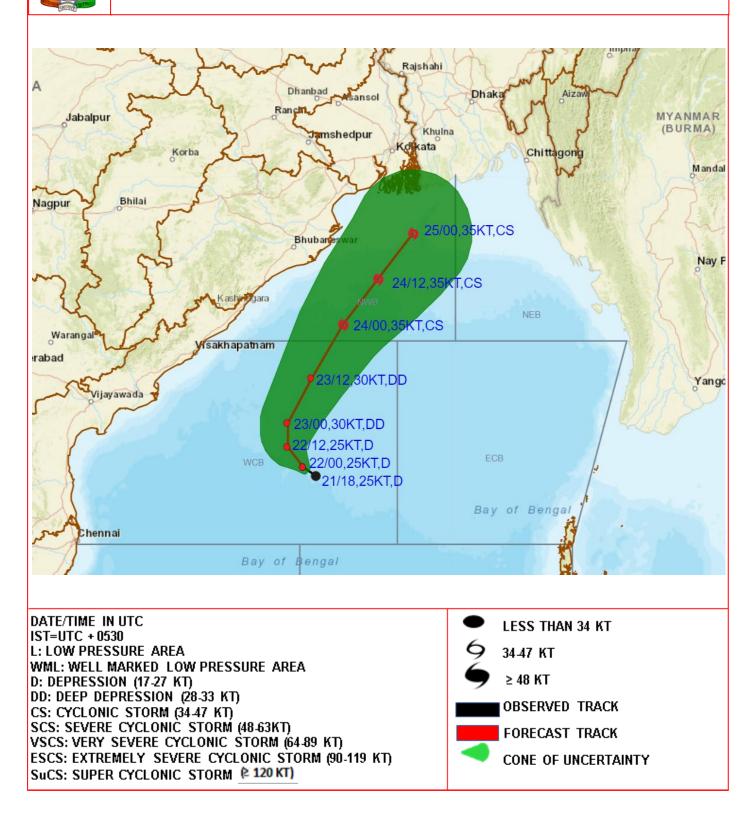
OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF VERY SEVERE CYCLONIC STORM "TEJ" OVER WESTCENTRAL & ADJOINING SOUTHWEST ARABIAN SEA BASED ON 0000 UTC (0530 IST) OF 22<sup>ND</sup> OCTOBER 2023.



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

# OBSERVED AND UNCERTAINITY O BENGAL BASED O

# OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINITY OF DEPRESSION OVER WESTCENTRAL BAY OF BENGAL BASED ON 0000 UTC (0530 IST) OF 22<sup>ND</sup> OCTOBER 2023.



#### **OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT** WIND DISTRIBUTION OF DEPRESSION OVER WESTCENTRAL BAY OF BENGAL BASED ON 0000 UTC (0530 IST) OF 22ND **OCTOBER 2023.** Rajshahi INDIA Dhanbad Dhaka sanso Aiz. Ranch MYANMAR (BURMA) Jabalpur Bareli Khulna mshedpur

Bhuba

Koikata

25/00,35KT,CS

24/12,35KT,CS

24/00.35KT.CS

23/12,30KT,DD

23/00,30KT,DD 22/12,25KT,D 22/00,25KT,D Chittagon

NEB

Mandal

Nay F

Yango

ı

mrav ati

Hyderabad

Waranga

Korba

Visakhapatham

Bhilai

Vijayawada

21/18 ngauru Chennai Bay of Bengal	8,25KT,D Bay of Bengal		
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 (60.119 KT) SuCS: SUPER CYCLONIC STORM (≥ 120 KT)	<ul> <li>LESS THAN 34 KT</li> <li>34.47 KT</li> <li>≥ 48 KT</li> <li>OBSERVED TRACK</li> <li>FORECAST TRACK</li> <li>CONE OF UNCERTAINTY</li> <li>AREA OF MAXIMUM SUSTAINED WIND SPEED:</li> <li>28-33 KT (52-61 KMPH)</li> <li>34.49 KT (62-91 KMPH)</li> <li>50-63 KT (92-117 KMPH)</li> <li>≥ 64 KT (≥118 KMPH)</li> </ul>		

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		

