



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

DEMS-RSMC SPECIAL TROPICAL CYCLONES NEW DELHI DATED 21.10.2023

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. 04 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND THE ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1200 UTC OF 21.10.2023 BASED ON 0900 UTC OF 21.10.2023.

SUB: (A) CYCLONIC STORM “TEJ” (PRONOUNCED AS TEJ) INTENSIFIED INTO A SEVERE CYCLONIC STORM OVER SOUTHWEST ARABIAN SEA AND (B) WELL MARKED LOW PRESSURE AREA OVER SOUTHEAST AND ADJOINING CENTRAL BAY OF BENGAL

(A) SEVERE CYCLONIC STORM “TEJ” (PRONOUNCED AS TEJ) OVER SOUTHWEST ARABIAN SEA

THE SEVERE CYCLONIC STORM “TEJ” (PRONOUNCED AS TEJ) OVER SOUTHWEST ARABIAN SEA MOVED WEST-NORTHWESTWARDS WITH A SPEED OF 16 KMPH DURING PAST 6 HOURS AND LAY CENTERED AT 0900 UTC OF 21ST OCTOBER OVER THE SAME REGION, NEAR LATITUDE 10.2°N AND LONGITUDE 57.9°E ABOUT 510 KM EAST-SOUTHEAST OF SOCOTRA (YEMEN, 41494), 860 KM SOUTH-SOUTHEAST OF SALALAH (OMAN, 41316) AND 900 KM SOUTHEAST OF AL GHAI DAH (YEMEN, 41398).

IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A VERY SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS TILL 22ND MORNING (0000 UTC), NORTHWESTWARDS THEREAFTER TILL 24TH MORNING (0000 UTC) & THEN NORTH-NORTHWESTWARDS. IT IS LIKELY TO CROSS YEMEN-OMAN COASTS BETWEEN AL GHAI DAH (YEMEN) & SALALAH (OMAN) AROUND EARLY MORNING (0000 UTC) OF 25TH OCTOBER.

FORECAST TRACK AND INTENSITY OF THE SYSTEM IS GIVEN BELOW:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
21.10.23/0900	10.2/57.9	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
21.10.23/1200	10.6/57.5	95-105 GUSTING TO 115	SEVERE CYCLONIC STORM
21.10.23/1800	11.1/56.9	105-115 GUSTING TO 125	SEVERE CYCLONIC STORM
22.10.23/0000	11.7/56.3	110-120 GUSTING TO 135	VERY SEVERE CYCLONIC STORM
22.10.23/0600	12.2/55.8	130-140 GUSTING TO 155	VERY SEVERE CYCLONIC STORM
22.10.23/1800	13.1/54.8	140-150 GUSTING TO 165	VERY SEVERE CYCLONIC STORM
23.10.23/0600	14.0/54.0	150-160 GUSTING TO 175	VERY SEVERE CYCLONIC STORM
23.10.23/1800	14.6/53.6	140-150 GUSTING TO 165	VERY SEVERE CYCLONIC STORM
24.10.23/0600	15.4/53.2	130-140 GUSTING TO 155	VERY SEVERE CYCLONIC STORM
24.10.23/1800	16.3/52.9	115-125 GUSTING TO 140	VERY SEVERE CYCLONIC STORM
25.10.23/0600	17.0/52.8	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
25.10.23/1800	17.7/52.7	50-60 GUSTING TO 70	DEEP DEPRESSION
26.10.23/0600	18.4/52.7	30-40 GUSTING TO 50	WELL MARKED LOW

AS PER INSAT 3D IMAGERY, THE ASSOCIATED CLOUD MASS HAS FURTHER ORGANISED. CURVED BAND PATTERN IS SEEN IN SATELLITE IMAGERY. INTENSITY OF THE SYSTEM IS CHARACTERISED AS T 3.0. ASSOCIATED SCATTERED TO BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHWEST & ADJOINING WESTCENTRAL ARABIAN SEA BETWEEN LAT 6.0N TO 15.0N LONG 54.0E TO 63.5E. MINIMUM CTT MINUS 93 DEG CEL. MULTISATELLITE WINDS INDICATE STRONGER WINDS IN NORTHWEST SECTOR. TOTAL PRECIPITABLE WATER IMAGERY INDICATES WARM MOIST AIR INCURSION INTO THE SYSTEM CORE.

ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS 50 KNOTS GUSTING TO 60 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 995 HPA.

SEA CONDITION:

- **SOUTHWEST ARABIAN SEA:**
HIGH SEA CONDITION IS PREVAILING AND LIKELY TO BECOME **PHENOMENAL** FROM MORNING OF 22ND TO MORNING OF 23RD OCTOBER. IT IS LIKELY TO IMPROVE GRADUALLY BECOMING **VERY HIGH** FROM 24TH MORNING AND CONTINUE TILL 25TH MORNING. THEREAFTER, IT WOULD IMPROVE GRADUALLY.
- **WESTCENTRAL ARABIAN SEA:**
VERY ROUGH TO HIGH SEA CONDITION IS PREVAILING AND IT IS LIKELY TO BECOME **HIGH TO VERY HIGH** FROM EVENING OF TODAY, 21ST OCTOBER. IT IS LIKELY TO BECOME **PHENOMENAL** FROM 22ND MORNING AND LIKELY TO CONTINUE TILL NIGHT OF 24TH OCTOBER. IT WOULD IMPROVE GRADUALLY THEREAFTER BECOMING **VERY HIGH TO HIGH** FROM 25TH MORNING. THEREAFTER, IT WOULD IMPROVE GRADUALLY.

(B) WELL MARKED LOW PRESSURE AREA OVER WESTCENTRAL AND ADJOINING SOUTH BAY OF BENGAL

THE WELL MARKED LOW PRESSURE AREA OVER SOUTHEAST AND ADJOINING CENTRAL BAY OF BENGAL MOVED SLOWLY NORTHWESTWARDS AND LAY OVER WESTCENTRAL AND ADJOINING SOUTH BAY OF BENGAL AT 0900 UTC OF 21ST OCTOBER, 2023. IT IS VERY LIKELY TO MOVE FURTHER NORTHWESTWARDS AND INTENSIFY INTO A DEPRESSION OVER WESTCENTRAL BAY OF BENGAL BY 22ND OCTOBER. THEREAFTER, IT IS LIKELY TO MOVE NORTH-NORTHEASTWARDS TOWARDS BANGLADESH AND ADJOINING WEST BENGAL COASTS AND INTENSIFY FURTHER DURING SUBSEQUENT 3 DAYS.

INTENSITY OF THE SYSTEM IS CHARACTERISED AS T 1.0 SCATTERED TO BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER CENTRAL AND ADJOINING SOUTH BAY OF BENGAL BETWEEN LATTITUDE 10.0 & 18.0 N AND LONGITUDE 81.0 E & 90.5 E. MINIMUM CLOUD TOP TEMPRATURE IS MINUS 80⁰C.

PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION) DURING NEXT 168 HRS:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
HIGH	HIGH	-	-	-	-	-

“-“ INDICATE THAT CYCLOGENESIS HAS ALREADY OCCURRED. THE ABOVE TABLE INDICATES PROBABILITY OF CYCLOGENESIS ONLY (FORMATION OF DEPRESSION).

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 29-30⁰C OVER SOUTH & WESTCENTRAL ARABIAN SEA. THE TROPICAL CYCLONE HEAT POTENTIAL IS 60-80KJ/CM² OVER SOUTHEAST & ADJOINING SOUTHWEST ARABIAN SEA. IT WOULD DECREASE BECOMING 20-30 KJ/CM² OVER SOUTHWEST & WESTCENTRAL ARABIAN SEA.

THE LOW LEVEL POSITIVE IS AROUND 150 X10⁻⁶S⁻¹ TO THE SOUTHWEST OF SYSTEM CENTER WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE POSITIVE LOW LEVEL CONVERGENCE IS ABOUT 20X10⁻⁵S⁻¹ TO THE SOUTHWEST OF SYSTEM AREA. POSITIVE UPPER LEVEL DIVERGENCE IS ABOUT 30 X10⁻⁵ S⁻¹ TO THE SOUTHWEST OF THE SYSTEM AREA. WIND SHEAR IS MODERATE (15--20) 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 10⁰N. EAST-SOUTHEASTERLY WINDS IN THE UPPER TROPOSPHERIC LEVELS ARE STEERING THE SYSTEM WEST-NORTHWESTWARDS.

THE MULTI MODEL GUIDANCE IS INDICATING THE SYSTEM TO MOVE WEST-NORTHWESTWARDS TILL AROUND 0000 UTC OF 22ND, NORTHWESTWARDS THEREAFTER TILL 0000 UTC OF 24TH & THEN NORTH-NORTHWESTWARDS. MOST OF THE MODELS ARE INDICATING THE SYSTEM TO CROSS OMAN – YEMEN COASTS (ECMWF, NCEP, CMC, IMD GFS TOWARDS YEMEN AND IMD MME, NCUM, IMD HWRF TOWARDS OMAN). 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 SEVERE CYCLONIC STORM “TEJ” (PRONOUNCED AS TEJ) IS VERY LIKELY TO INTENSIFY FURTHER INTO A VERY SEVERE CYCLONIC STORM DURING SUBSEQUENT 24 HOURS. IT IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS TILL 22ND MORNING (0000 UTC), NORTHWESTWARDS

THEREAFTER TILL 24TH MORNING (0000 UTC) & THEN NORTH-NORTHWESTWARDS. IT IS LIKELY TO CROSS YEMEN-OMAN COASTS BETWEEN AL GHAI DAH (YEMEN) & SALALAH (OMAN) AROUND EARLY MORNING OF 25TH OCTOBER (AROUND 0000 UTC).

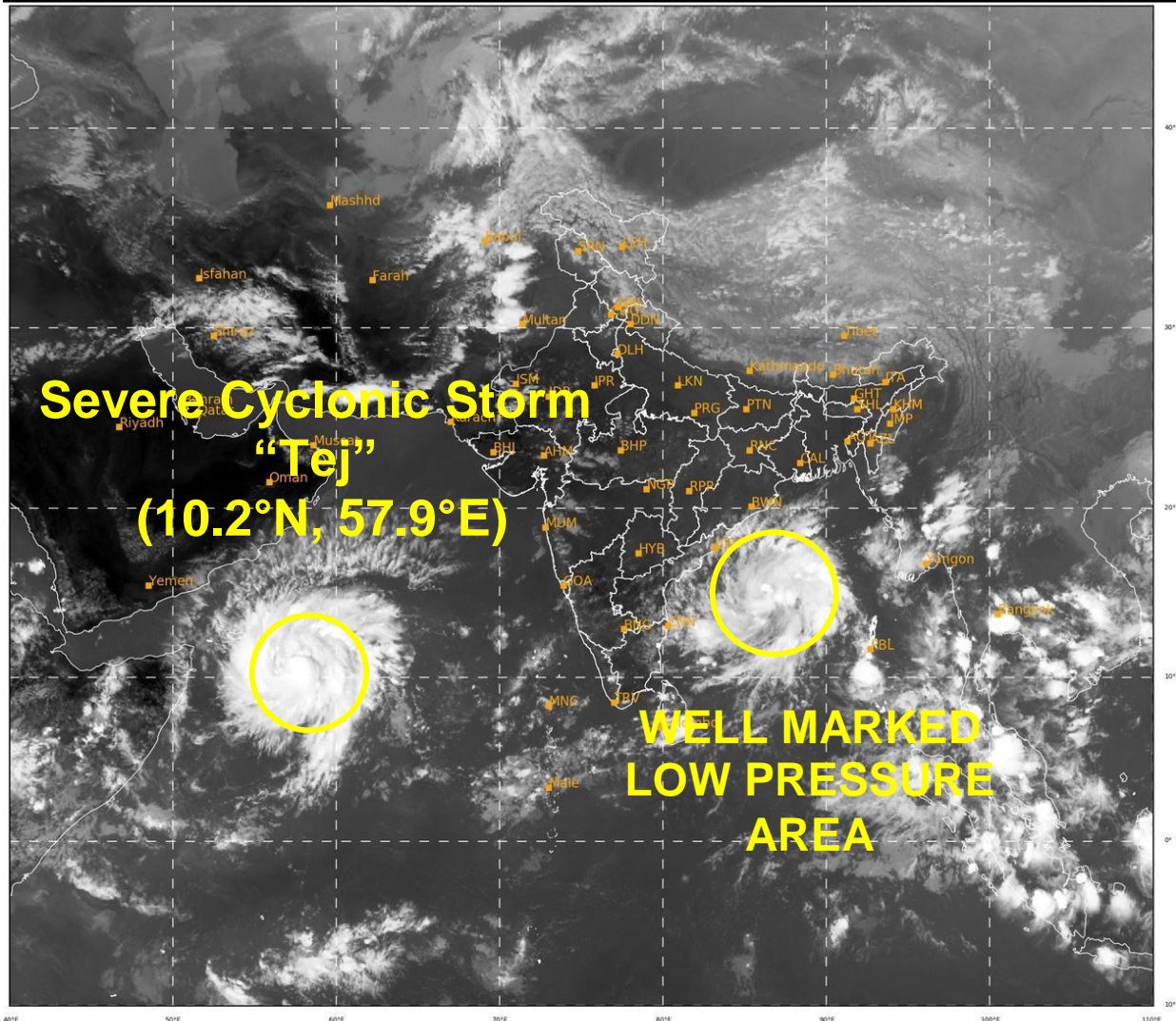
BAY OF BENGAL:

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 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 DEPRESSION OVER WESTCENTRAL BAY OF BENGAL AROUND 22ND. HENCE MODERATE TO HIGH PROBABILITY OF FORMATION OF DEPRESSION IS ASSIGNED TO FORMATION OF DEPRESSION OVER BOB DURING 22ND – 23RD OCTOBER. THERE IS CONSENSUS AMONG VARIOUS MODELS WRT MOVEMENT TOWARDS BANGLADESH COAST. MOST OF THE MODELS ARE INDICATING INTENSIFICATION UPTO DEPRESSION/DEEP DEPRESSION STAGE, HOWEVER NCEP GFS IS INDICATING HIGHER INTENSITY.

CONSIDERING ALL THESE, THE WELL MARKED LOW PRESSURE AREA OVER SOUTHEAST & ADJOINING EASTCENTRAL BAY OF BENGAL MOVED SLOWLY NORTHWESTWARDS AND LAY OVER THE SAME REGION AT 1130 HOURS IST OF 21ST OCTOBER, 2023. IT IS VERY LIKELY TO MOVE FURTHER NORTHWESTWARDS AND INTENSIFY INTO A DEPRESSION OVER WESTCENTRAL BAY OF BENGAL BY 22ND OCTOBER. THEREAFTER, IT IS LIKELY TO MOVE NORTH-NORTHEASTWARDS TOWARDS BANGLADESH AND ADJOINING WEST BENGAL COASTS AND INTENSIFY FURTHER DURING SUBSEQUENT 3 DAYS.

(M. SHARMA)
SCIENTIST-D
RSMC, NEW DELHI



**Severe Cyclonic Storm
"Tej"
(10.2°N, 57.9°E)**

**WELL MARKED
LOW PRESSURE
AREA**

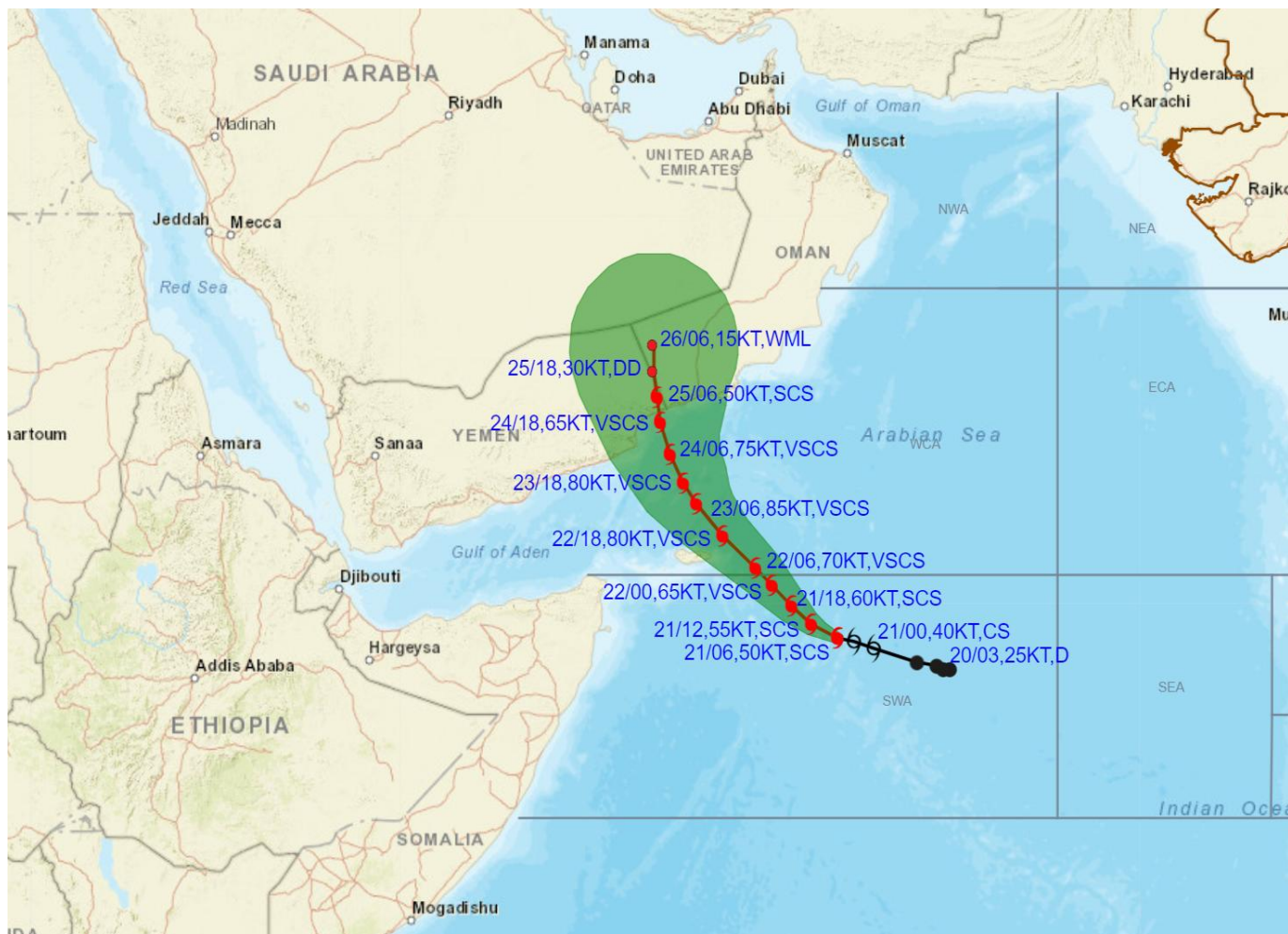
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IMD, DELHI



OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF CYCLONIC STORM "TEJ" OVER SOUTHWEST ARABIAN SEA BASED ON 0600 UTC (1130 IST) OF 21ST OCTOBER 2023.

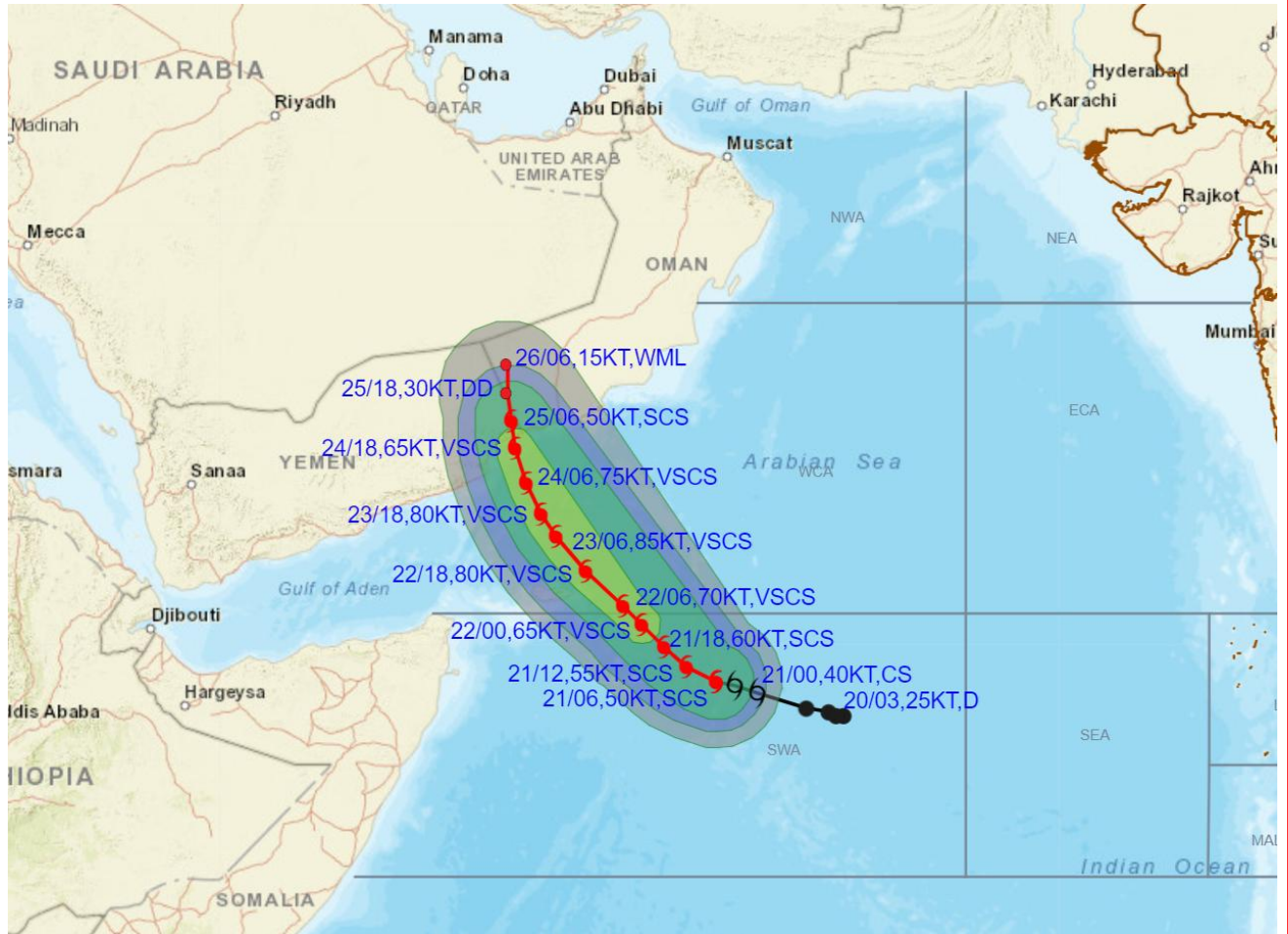


DATE/TIME IN UTC
 IST=UTC + 0530
 L: LOW PRESSURE AREA
 WML: WELL MARKED LOW PRESSURE AREA
 D: DEPRESSION (17-27 KT)
 DD: DEEP DEPRESSION (28-33 KT)
 CS: CYCLONIC STORM (34-47 KT)
 SCS: SEVERE CYCLONIC STORM (48-63KT)
 VSCS: VERY SEVERE CYCLONIC STORM (64-89 KT)
 ESCS: EXTREMELY SEVERE CYCLONIC STORM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



OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF CYCLONIC STORM "TEJ" OVER SOUTHWEST ARABIAN SEA BASED ON 0600 UTC (1130 IST) OF 21st OCTOBER 2023.



DATE/TIME IN UTC
IST=UTC + 0530
L: LOW PRESSURE AREA
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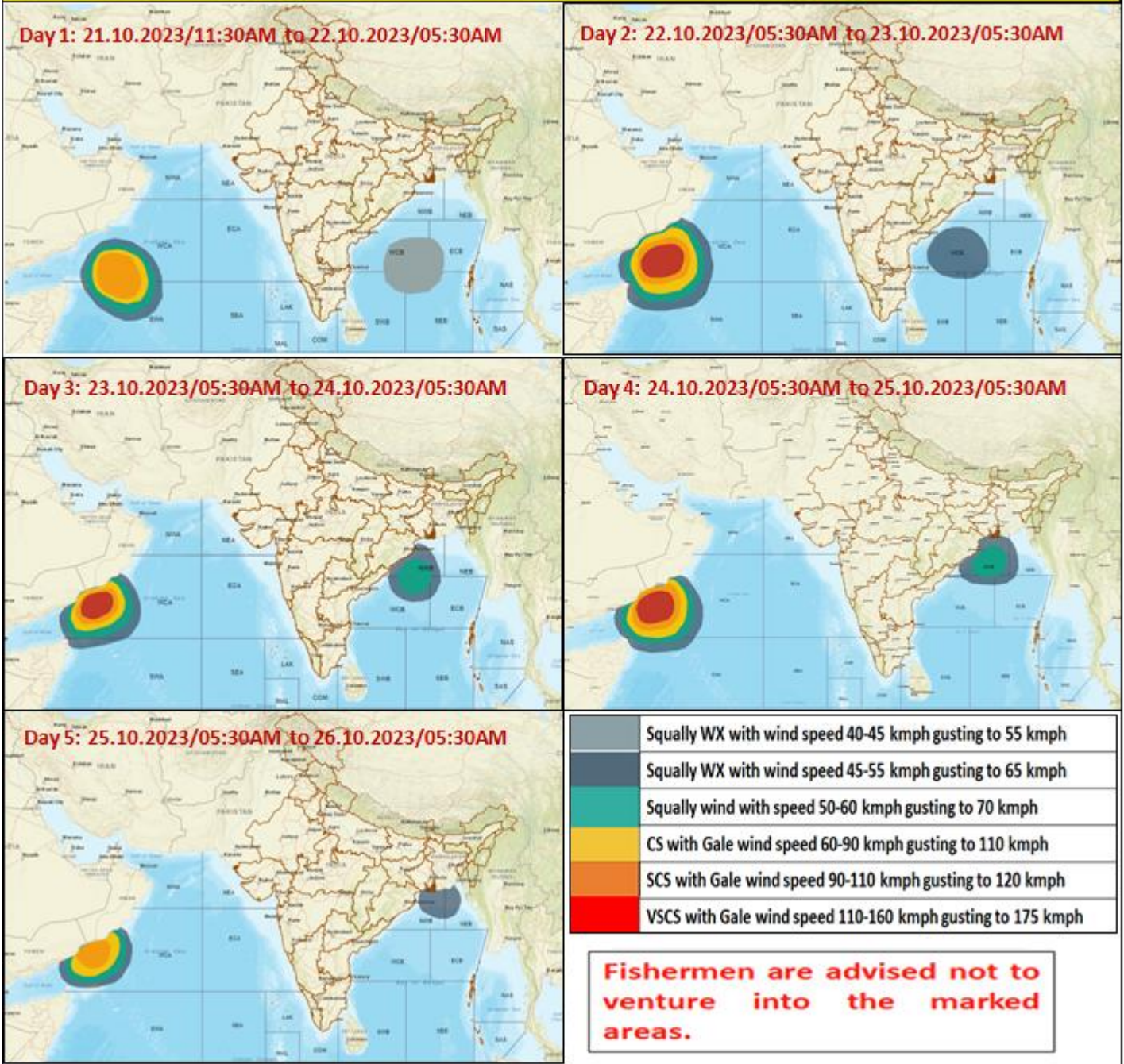
● LESS THAN 34 KT
 6 34-47 KT
 6 ≥ 48 KT
 — OBSERVED TRACK
 — FORECAST TRACK
 — CONE OF UNCERTAINTY
AREA OF MAXIMUM SUSTAINED WIND SPEED:
 — 28-33 KT (52-61 KMPH)
 — 34-49 KT (62-91 KMPH)
 — 50-63 KT (92-117 KMPH)
 — ≥ 64 KT (≥118 KMPH)

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

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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Fishermen warning graphics



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