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

**TROPICAL WEATHER OUTLOOK**

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## 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. 01 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND THE ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0300 UTC OF 21.10.2023 BASED ON 0700 UTC OF 21.10.2023.**

**SUB: (A) CYCLONIC STORM "TEJ" (PRONOUNCED AS TEJ) OVER SOUTHWEST ARABIAN SEA AND (B) WELL MARKED LOW PRESSURE AREA OVER SOUTHEAST AND ADJOINING CENTRAL BAY OF BENGAL**

### (A) CYCLONIC STORM "TEJ" (PRONOUNCED AS TEJ) OVER SOUTHWEST ARABIAN SEA

THE CYCLONIC STORM "TEJ" (PRONOUNCED AS TEJ) OVER SOUTHWEST ARABIAN SEA MOVED WEST-NORTHWESTWRADS WITH A SPEED OF 23 KMPH DURING PAST 6 HOURS AND LAY CENTERED AT 0300 UTC OF 21$^{ST}$ OCTOBER OVER THE SAME REGION, NEAR LATITUDE 10.1°N AND LONGITUDE 58.8°E ABOUT 600 KM EAST-SOUTHEAST OF SOCOTRA (YEMEN, 41494), 920 KM SOUTH-SOUTHEAST OF SALALAH (OMAN, 41316) AND 980 KM SOUTHEAST OF AL GHAIDAH (YEMEN, 41398).

IT IS VERY LIKELY TO INTENSIFY INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS AND FURTHER INTO A VERY SEVERE CYCLONIC STORM DURING SUBSEQUENT 24 HOURS. IT IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS TILL 22$^{ND}$ MORNING (0000 UTC), NORTHWESTWARDS THEREAFTER TILL 24$^{TH}$ MORNING (0000 UTC) & THEN NORTH-NORTHWESTWARDS. IT IS LIKELY TO CROSS YEMEN-OMAN COASTS BETWEEN AL GHAIDAH (YEMEN) & SALALAH (OMAN) AROUND EARLY MORNING OF 25$^{TH}$ OCTOBER (AROUND 0000 UTC).

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**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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FORECAST TRACK AND INTENSITY OF THE SYSTEM IS GIVEN BELOW:

| DATE/TIME(UTC) | POSITION (LAT. $^0$N/ LONG. $^0$E) | MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH) | CATEGORY OF CYCLONIC DISTURBANCE |
|---|---|---|---|
| 21.10.23/0300 | 10.1/58.8 | 75-85 GUSTING TO 95 | CYCLONIC STORM |
| 21.10.23/0600 | 10.3/58.2 | 80-90 GUSTING TO 100 | CYCLONIC STORM |
| 21.10.23/1200 | 10.6/57.5 | 90-100 GUSTING TO 110 | 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 |
| 22.10.23/1200 | 12.7/55.4 | 135-145 GUSTING TO 160 | VERY SEVERE CYCLONIC STORM |
| 23.10.23/0000 | 13.6/54.5 | 150-160 GUSTING TO 175 | VERY SEVERE CYCLONIC STORM |
| 23.10.23/1200 | 14.3/53.9 | 145-155 GUSTING TO 170 | VERY SEVERE CYCLONIC STORM |
| 24.10.23/0000 | 15.0/53.4 | 135-145 GUSTING TO 160 | VERY SEVERE CYCLONIC STORM |
| 24.10.23/1200 | 15.9/53.1 | 125-135 GUSTING TO 150 | VERY SEVER CYCLONIC STORM |
| 25.10.23/0000 | 16.6/52.9 | 100-110 GUSTING TO 120 | SEVERE CYCLONIC STORM |
| 25.10.23/1200 | 17.3/52.7 | 60-70 GUSTING TO 80 | CYCLONIC STORM |
| 26.10.23/0000 | 18.0/52.7 | 40-50 GUSTING TO 60 | DEPRESSION |

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 7 ADJOINING WESTCENTRAL ARABIAN SEA BETWEEN LAT 6.0N TO 15.0N LONG 52.5E TO 65.0.E. MINIMUM CTT MINUS 93 DEG CEL.

ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS 45 KNOTS GUSTING TO 55 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 997 HPA. SEA CONDITION IS HIGH OVER SOUTHWEST ARABIAN SEA AND ADJOINING WESTCENTRAL ARABIAN SEA. MULTISATELLITE WINDS INDICATE STRONGER WINDS IN NORTHWEST SECTOR. TOTAL PRECIPITABLE WATER IMAGERY INDICATES WARM MOIST AIR INCURSION INTO THE SYSTEM CORE.

**(B) WELL MARKED LOW PRESSURE AREA OVER SOUTHEAST AND ADJOINING CENTRAL BAY OF BENGAL**

THE LOW PRESSURE AREA OVER SOUTHEAST & ADJOINING EASTCENTRAL BAY OF BENGAL MOVED NORTHWESTWARDS, BECAME WELL MARKED LOW PRESSURE AREA AND LAY CENTERED OVER SOUTHEAST AND ADJOINING CENTRAL BAY OF BENGAL AT 0300 UTC OF 21$^{ST}$ OCTOBER, 2023. IT IS VERY LIKELY TO MOVE NORTHWESTWARDS AND INTENSIFY INTO A DEPRESSION OVER WESTCENTRAL BAY OF BENGAL BY 22$^{ND}$ OCTOBER. THEREAFTER, IT IS LIKELY TO MOVE NORTH-NORTHEASTWARDS TOWARDS BANGLADESH AND ADJOINING WEST BENGAL COASTS AND INTENSIFY FURTHER DURING SUBSEQUENT 3 DAYS.

SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER CENTRAL AND ADJOINING SOUTH BAY OF BENGAL BETWEEN LATTITUDE 9.0 & 18.0 N AND LONGITUDE 81.5 E & 90.0 E. MINIMUM CLOUD TOP TEMPRATURE IS MINUS 85$^0$C.

**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 |
|---|---|---|---|---|---|---|
| MOD | HIGH | - | - | - | - | - |

**"-" INDICATE THAT CYCLOGENESIS HAS ALREADY OCCURRED. THE ABOVE TABLE INDICATES PROBABILITY OF CYCLOGENESIS ONLY (FORMATION OF 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%**

**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 29-30°C OVER SOUTH & WESTCENTRAL ARABIAN SEA. THE TROPICAL CYCLONE HEAT POTENTIAL IS 60-80KJ/CM$^2$ OVER SOUTHEAST & ADJOINING SOUTHWEST ARABIAN SEA. IT WOULD DECREASE BECOMING 20-30 KJ/CM$^2$ OVER SOUTHWEST & WESTCENTRAL ARABIAN SEA.

THE LOW LEVEL POSITIVE IS AROUND 150 X10$^{-6}$S$^{-1}$ TO THE SOUTHWEST OF SYSTEM CENTER WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE POSITIVE LOW LEVEL CONVERGENCE IS ABOUT 20X10$^{-5}$S$^{-1}$ 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 10$^0$N. 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 CYCLONIC STORM “TEJ” (PRONOUNCED AS TEJ) IS VERY LIKELY TO INTENSIFY INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS AND 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 GHAIDAH (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 22$^{ND}$. HENCE MODERATE TO HIGH PROBABILITY OF FORMATION OF DEPRESSION IS ASSIGNED

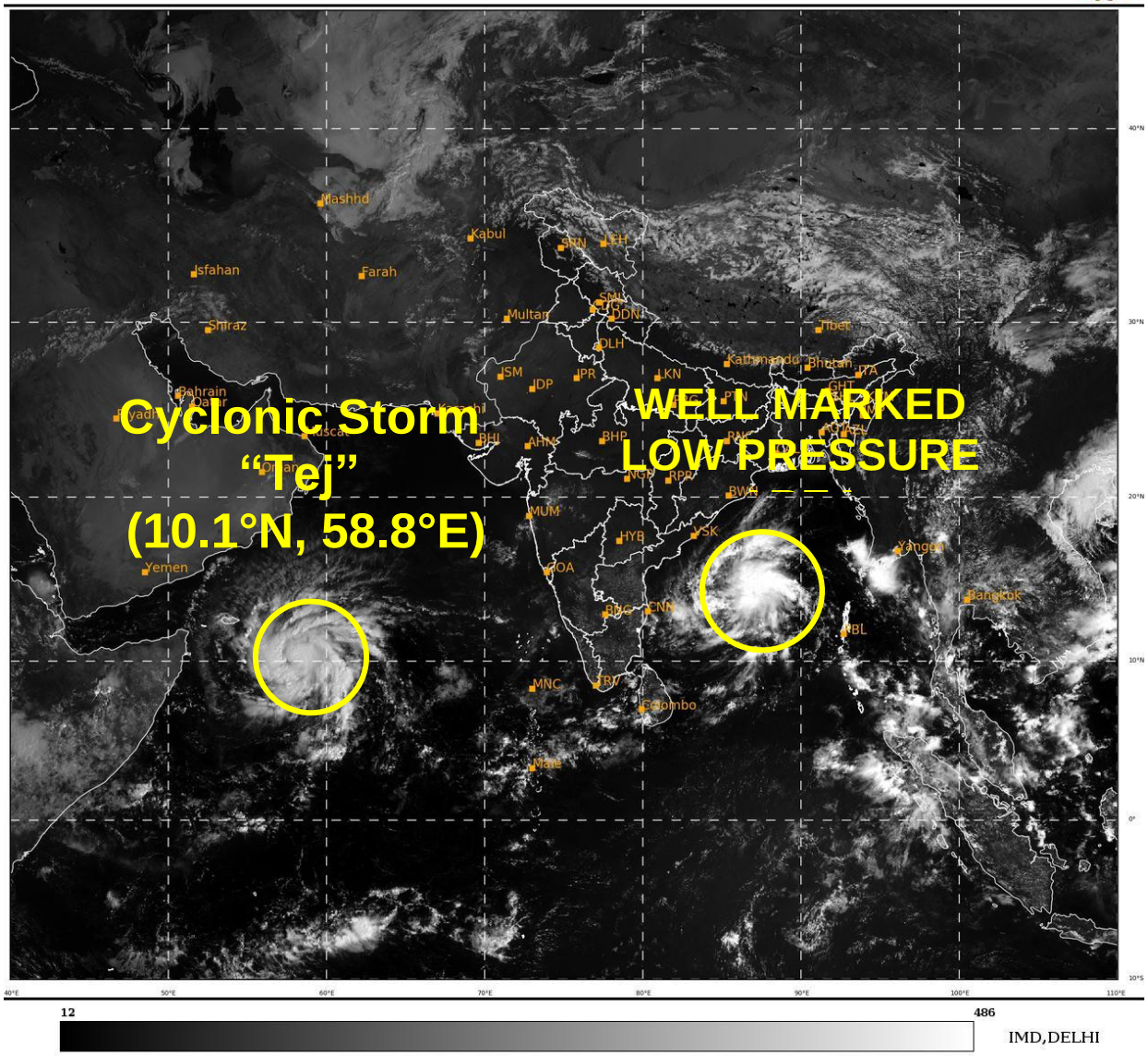
TO FORMATION OF DEPRESSION OVER BOB DURING 22$^{ND}$ – 23$^{RD}$ OCTOBER. THERE IS CONSENSUS AMONG VARIOUS MODELS WRT MOVEMENT TOWARDS BANGLADESH COAST. MOST OF THE MODELS ARE INDICATING INTENSIFICATION UPTO DEPRESSION/DEEP DEPRESSION STAGE, HOWEVER NCEP GFS IS INDICATING HIGHER INTENSITY.

CONSIDERING ALL THESE, THE LOW PRESSURE AREA OVER SOUTHEAST & ADJOINING EASTCENTRAL BAY OF BENGAL MOVED NORTHWESTWARDS, BECAME A WELL MARKED LOW PRESSURE AREA AND LAY CENTERED OVER SOUTHEAST AND ADJOINING CENTRAL BAY OF BENGAL AT 0300 UTC OF 21$^{ST}$ OCTOBER, 2023. IT IS VERY LIKELY TO MOVE NORTHWESTWARDS AND INTENSIFY INTO A DEPRESSION OVER WESTCENTRAL BAY OF BENGAL BY 22$^{ND}$ 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

SAT : INSAT-3D IMG
Visible Count 0.65 um
L1C Mercator

21-10-2023/(0500 to 0526) GMT
21-10-2023/(1030 to 1056) IST

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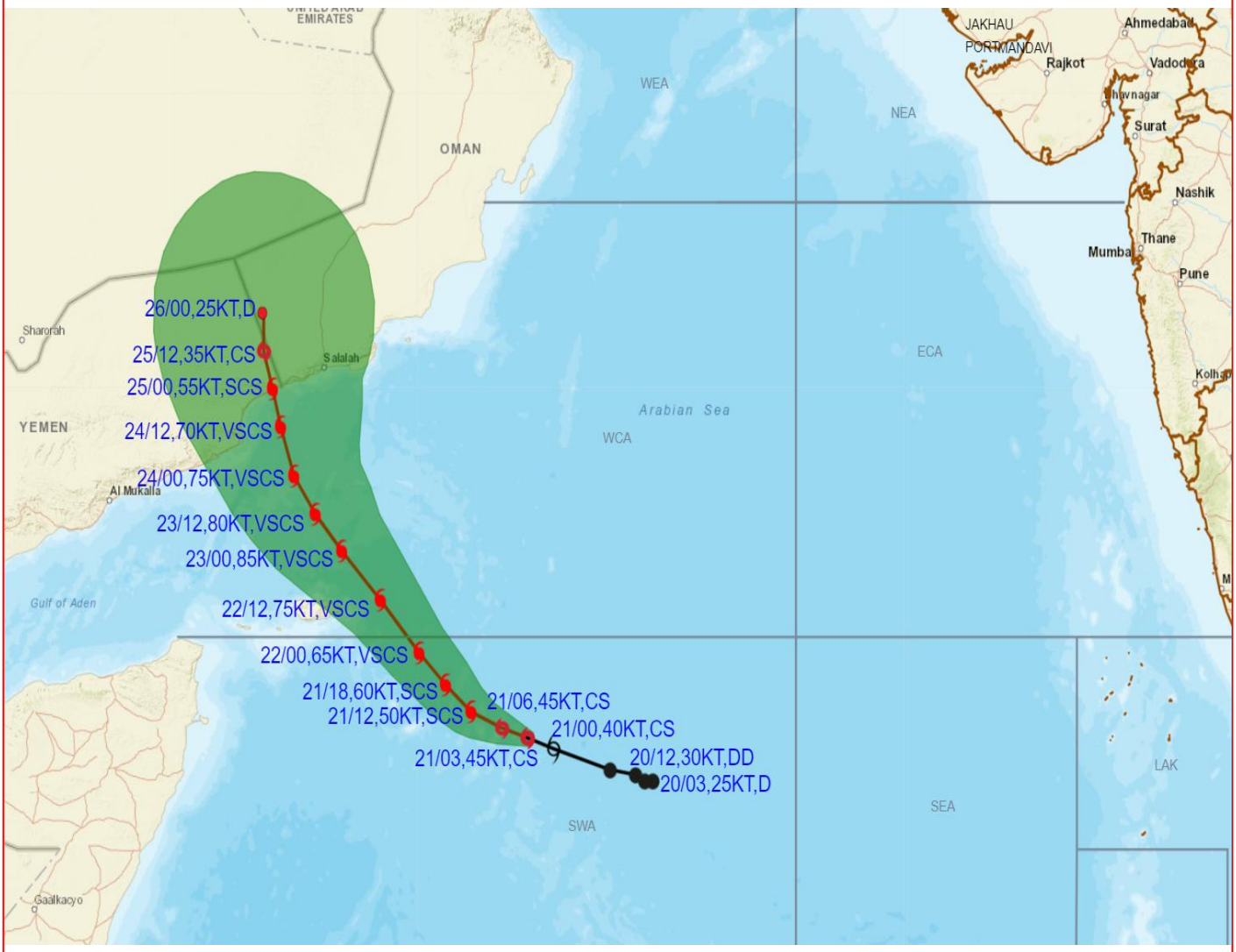
# OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINITY OF CYCLONIC STORM "TEJ" OVER SOUTHWEST ARABIAN SEA BASED ON 0300 UTC (0830 IST) OF 21st OCTOBER 2023.




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

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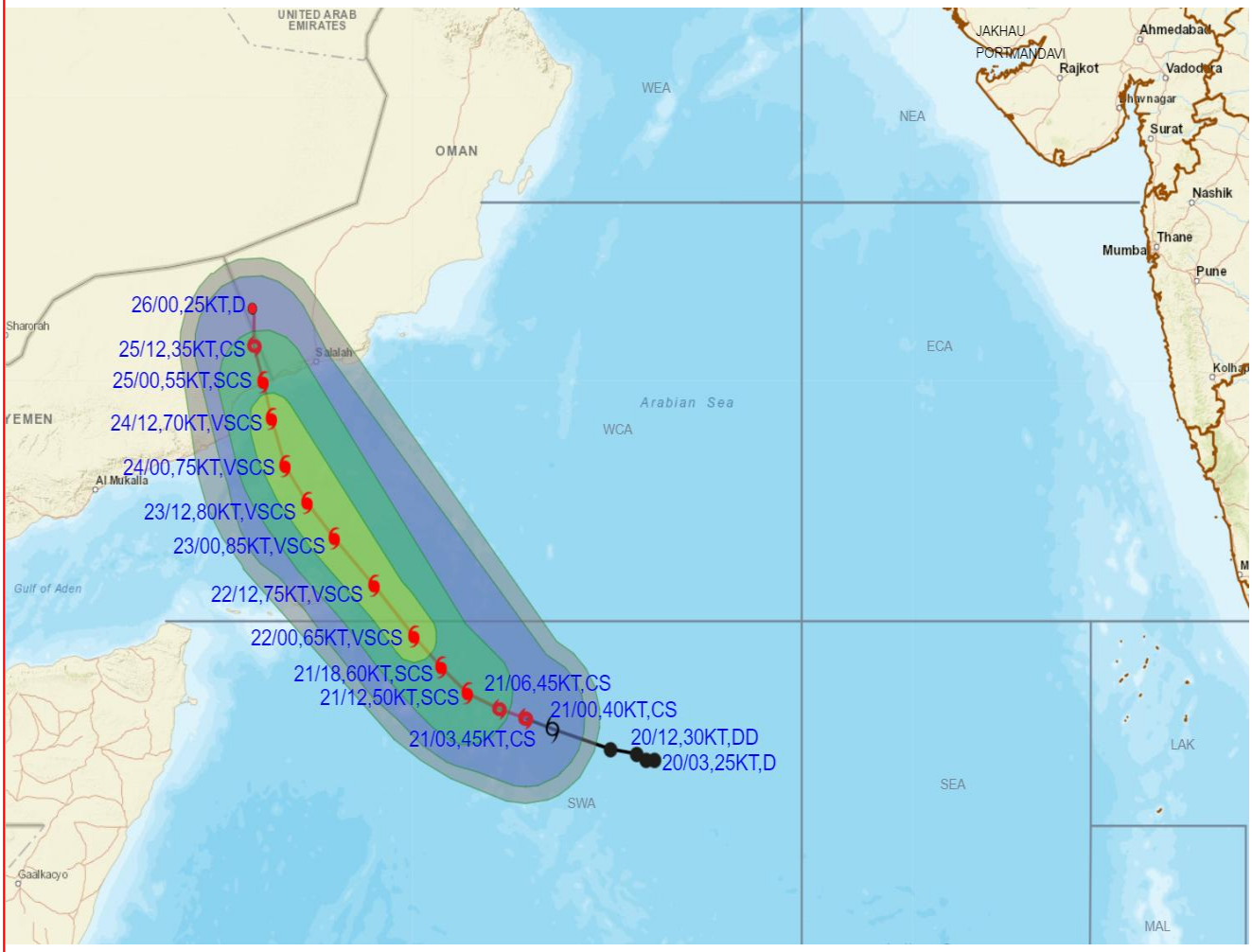
# OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF CYCLONIC STORM "TEJ" OVER SOUTHWEST ARABIAN SEA BASED ON 0300 UTC (0830 IST) OF 21st OCTOBER 2023.




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
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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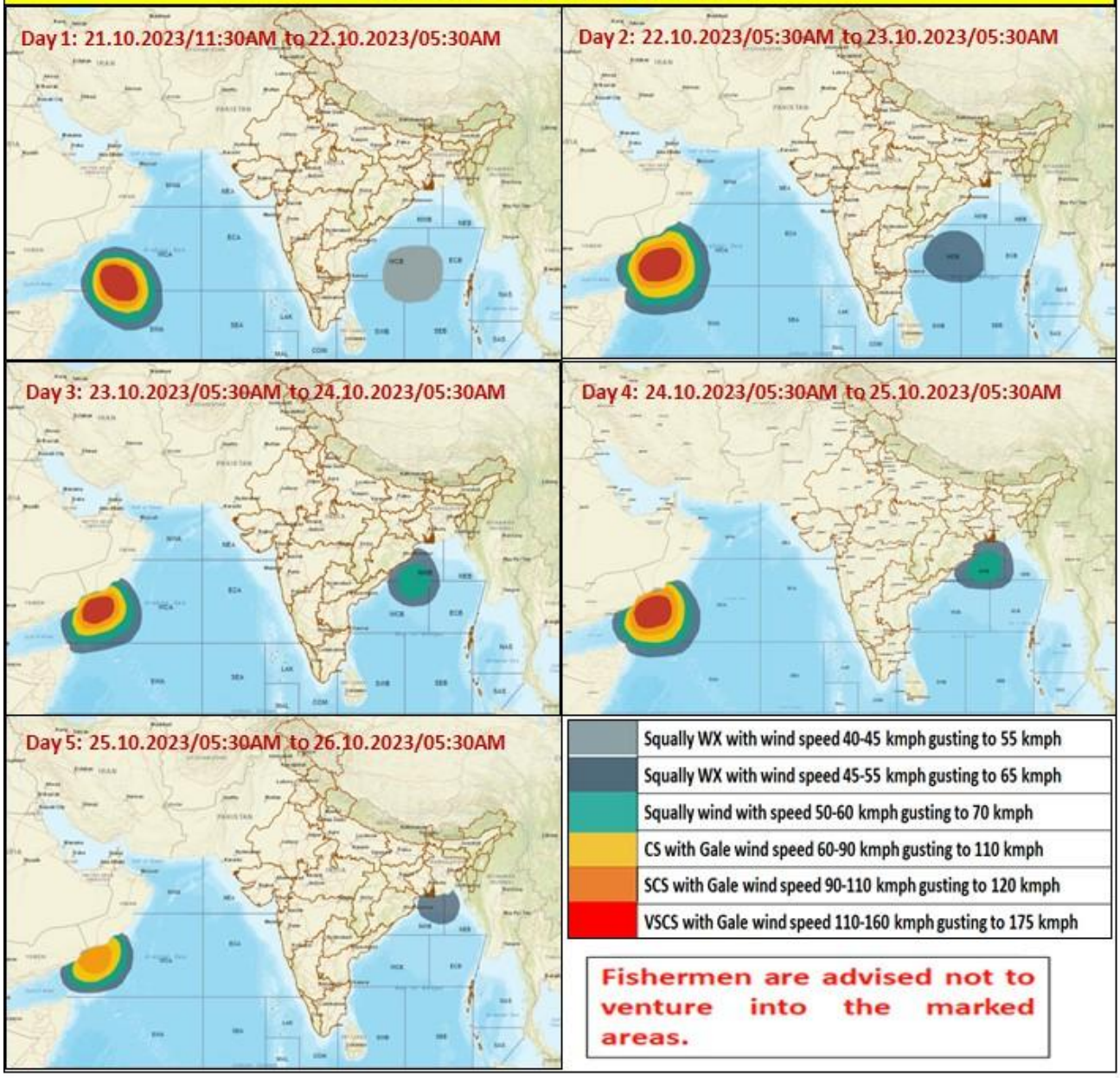
## Fishermen warning graphics

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