



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

DEMS-RSMC SPECIAL TROPICAL CYCLONES NEW DELHI DATED 10.06.2023

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. 29 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0310 UTC OF 10.06.2023 BASED ON 0000 UTC OF 10.06.2023

**SUB: A) VERY SEVERE CYCLONIC STORM “BIPARJOY” (PRONOUNCED AS “BIPORJOY”) OVER EASTCENTRAL ARABIAN SEA
B) WELL MARKED LOW PRESSURE AREA OVER NORTHEAST BAY OF BENGAL**

A) VERY SEVERE CYCLONIC STORM “BIPARJOY” (PRONOUNCED AS “BIPORJOY”) OVER EASTCENTRAL ARABIAN SEA

THE VERY SEVERE CYCLONIC STORM “BIPARJOY” (PRONOUNCED AS “BIPORJOY”) OVER EASTCENTRAL ARABIAN SEA MOVED NEARLY NORTHWARDS WITH A SPEED OF 09 KMPH DURING PAST 6-HOURS AND LAY CENTERED AT 0000 UTC OF 10TH JUNE, 2023 OVER THE SAME REGION NEAR LATITUDE 16.5°N AND LONGITUDE 67.4°E, ABOUT 700 KM WEST OF GOA(43192), 630 KM WEST-SOUTHWEST OF MUMBAI(43057), 620 KM SOUTH-SOUTHWEST OF PORBANDAR(42830) AND 930 KM SOUTH OF KARACHI(41780).

IT IS VERY LIKELY TO INTENSIFY FURTHER AND MOVE NORTH-NORTHEASTWARDS GRADUALLY DURING NEXT 24 HOURS. THEN IT WOULD MOVE GRADUALLY NORTH-NORTHWESTWARDS DURING SUBSEQUENT 3 DAYS.

FORECAST TRACK AND INTENSITY ARE GIVEN BELOW:

| DATE/TIME(UTC) | POSITION (LAT. °N/ LONG. °E) | MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH) | CATEGORY OF CYCLONIC DISTURBANCE |
|----------------|------------------------------------|---|-------------------------------------|
| 10.06.23/0000 | 16.5/67.4 | 135-145 GUSTING TO 160 | VERY SEVERE CYCLONIC STORM |
| 10.06.23/0600 | 17.0/67.5 | 140-150 GUSTING TO 165 | VERY SEVERE CYCLONIC STORM |
| 10.06.23/1200 | 17.4/67.6 | 145-155 GUSTING TO 170 | VERY SEVERE CYCLONIC STORM |
| 10.06.23/1800 | 17.8/67.7 | 150-160 GUSTING TO 175 | VERY SEVERE CYCLONIC STORM |
| 11.06.23/0000 | 18.1/67.8 | 155-165 GUSTING TO 180 | VERY SEVERE CYCLONIC STORM |
| 11.06.23/1200 | 18.8/67.8 | 145-155 GUSTING TO 170 | VERY SEVERE CYCLONIC STORM |
| 12.06.23/0000 | 19.5/67.7 | 140-150 GUSTING TO 165 | VERY SEVERE CYCLONIC STORM |
| 12.06.23/1200 | 20.1/67.6 | 135-145 GUSTING TO 160 | VERY SEVERE CYCLONIC STORM |
| 13.06.23/0000 | 20.7/67.4 | 135-145 GUSTING TO 160 | VERY SEVERE CYCLONIC STORM |
| 13.06.23/1200 | 21.3/67.2 | 125-135 GUSTING TO 150 | VERY SEVERE CYCLONIC STORM |
| 14.06.23/0000 | 22.0/67.0 | 115-125 GUSTING TO 140 | VERY SEVERE CYCLONIC STORM |
| 14.06.23/1200 | 22.6/66.9 | 105-115 GUSTING TO 125 | SEVERE CYCLONIC STORM |
| 15.06.23/0000 | 23.2/66.8 | 95-105 GUSTING TO 115 | SEVERE CYCLONIC STORM |

AS PER INSAT 3D IMAGERY INTENSITY OF THE SYSTEM IS T 4.5/4.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER CENTRAL ARABIAN SEA BETWEEN LATITUDE 12.5°N & 19.0°N LONGITUDE 60.0°E & 68.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS 75 KNOTS GUSTING TO 85 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 976 HPA. SEA CONDITION IS LIKELY TO BE PHENOMENAL OVER EASTCENTRAL AND ADJOINING WESTCENTRAL ARABIAN SEA.

B) WELL MARKED LOW PRESSURE AREA OVER NORTHEAST BAY OF BENGAL

THE WELL MARKED LOW PRESSURE AREA OVER NORTHEAST BAY OF BENGAL LAY OVER NORTHEAST BAY OF BENGAL AND ADJOINING AREA OF SOUTHEAST BANGLADESH-NORTH MYANMAR COASTS AT 0000 UTC OF TODAY, THE 10TH JUNE, 2023.

AS PER INSAT 3D IMAGERY, THE WELL MARKED LOW PRESSURE AREA IS CENTERED WITHIN HALF A DEG OF 20.4N°/91.9°E. INTENSITY OF THE SYSTEM IS T1.0. ASSOCIATED SCATERED TO BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER NORTH BAY OF BEGNAL BETWEEN LATITUDE 17.7°N TO 22.5°N LONGITUDE 86.7°E TO 92.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

REMARKS:

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE LESS THAN 1. IT WOULD MOVE ACROSS PHASE 4 DURING NEXT 3 DAYS. THEREAFTER, IT WOULD MOVE ACROSS PHASES 5 AND 6 DURING SUBSEQUENT 3 DAYS. HENCE, MJO IS LIKELY TO SUPPORT THE ENHANCEMENT OF CONVECTIVE ACTIVITY AND CYCLOGENESIS OVER THE BAY OF BENGAL (BOB) DURING THE WEEK1 AND ARABIAN SEA (AS) DURING NEXT 3 DAYS. WESTERLY WINDS (3-5 MPS) ALONG WITH EQUATORIAL ROSSBY WAVES (ERW) ARE LIKELY TO PREVAIL OVER SOUTH AND CENTRAL ARABIAN SEA DURING NEXT 3 DAYS.

(A) ARABIAN SEA:

SEA SURFACE TEMPERATURE IS AROUND 30-31°C OVER CENTRAL & ADJOINING SOUTH ARABIAN SEA. THE CYCLONIC STORM "BIPARJOY" IS CURRENTLY IN A VERY FAVOURABLE ENVIRONMENT WITH POSITIVE LOW LEVEL VORTICITY IS AROUND $250 \times 10^{-6} \text{S}^{-1}$ WEST OF THE SYSTEM CENTRE, LOW LEVEL CONVERGENCE IS ABOUT $40 \times 10^{-5} \text{S}^{-1}$ TO THE SOUTHWEST OF THE SYSTEM CENTRE AND UPPER LEVEL DIVERGENCE IS ABOUT $40 \times 10^{-5} \text{S}^{-1}$ TO THE SOUTHWEST OF SYSTEM CENTRE. WIND SHEAR IS MODERATE OVER SYSTEM AREA (15-20 KNOTS) AND IS WEAK 10-15 KTS ALONG THE FORECAST TRACK.

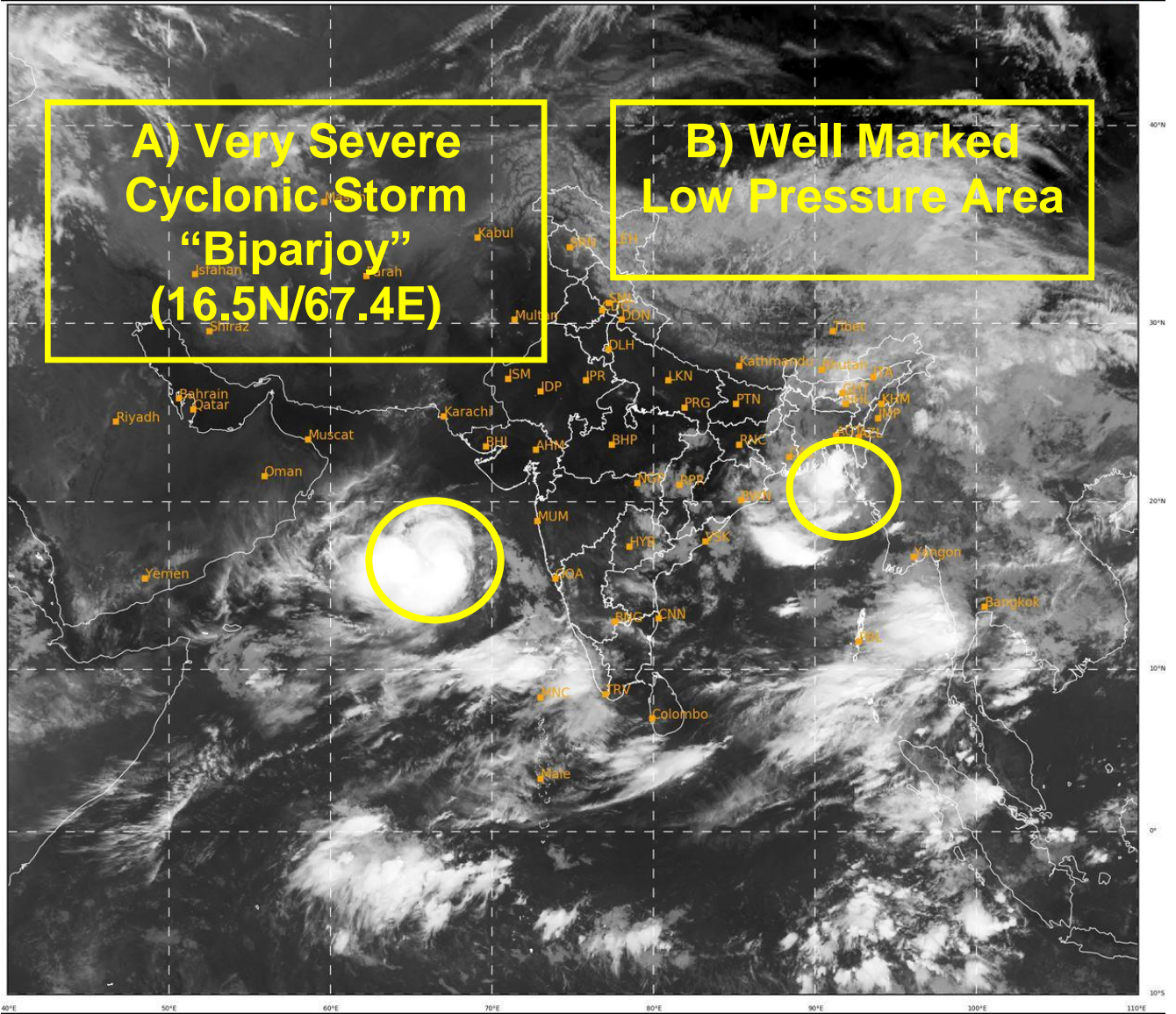
LATEST GUIDANCE FROM VARIOUS MODELS INDICATE INITIAL NEAR NORTHWARDS MOVEMENT TOWARDS PAKISTAN-GUJARAT COASTS. MOST OF THE MODELS ARE INDICATING MOVEMENT TOWARDS PAKISTAN COAST AND UKMO MODEL IS INDICATING MOVEMENT TOWARDS GUJARAT COAST. THE LANDFALL POINT IS VARYING BETWEEN LONGITUDE 64°E-69°E ON 16TH.

CONSIDERING ALL THE ABOVE, VERY SEVERE CYCLONIC STORM "BIPARJOY" IS VERY LIKELY TO INTENSIFY FURTHER AND MOVE NORTH-NORTHEASTWARDS GRADUALLY DURING NEXT 24 HOURS. THEN IT WOULD MOVE GRADUALLY NORTH-NORTHWESTWARDS DURING SUBSEQUENT 3 DAYS.

(B) BAY OF BENGAL:

SEA SURFACE TEMPERATURE IS AROUND 29-30°C OVER EASTCENTRAL AND ADJOINING NORTHEAST BAY OF BENGAL AND ALONG THE MYANMAR COAST. LOW LEVEL VORTICITY IS AROUND $50-100 \times 10^{-6} \text{S}^{-1}$ OVER NORTHEAST BAY OF BENGAL. LOW LEVEL CONVERGENCE IS ABOUT $5-10 \times 10^{-5} \text{S}^{-1}$ OVER CENTAL & ADJOINING SOUTH BAY OF BENGAL. UPPER LEVEL DIVERGENCE IS ABOUT $5-10 \times 10^{-5} \text{S}^{-1}$ OVER EXTREME NORTH OF NORTH BAY OF BENGAL & ADJOINING LAND AREAS OF BANGLADESH. WIND SHEAR IS MODERATE OVER SYSTEM AREA (15-20 KNOTS).

**R.K. JENAMANI
SCIENTIST-G
RSMC NEW DELHI**



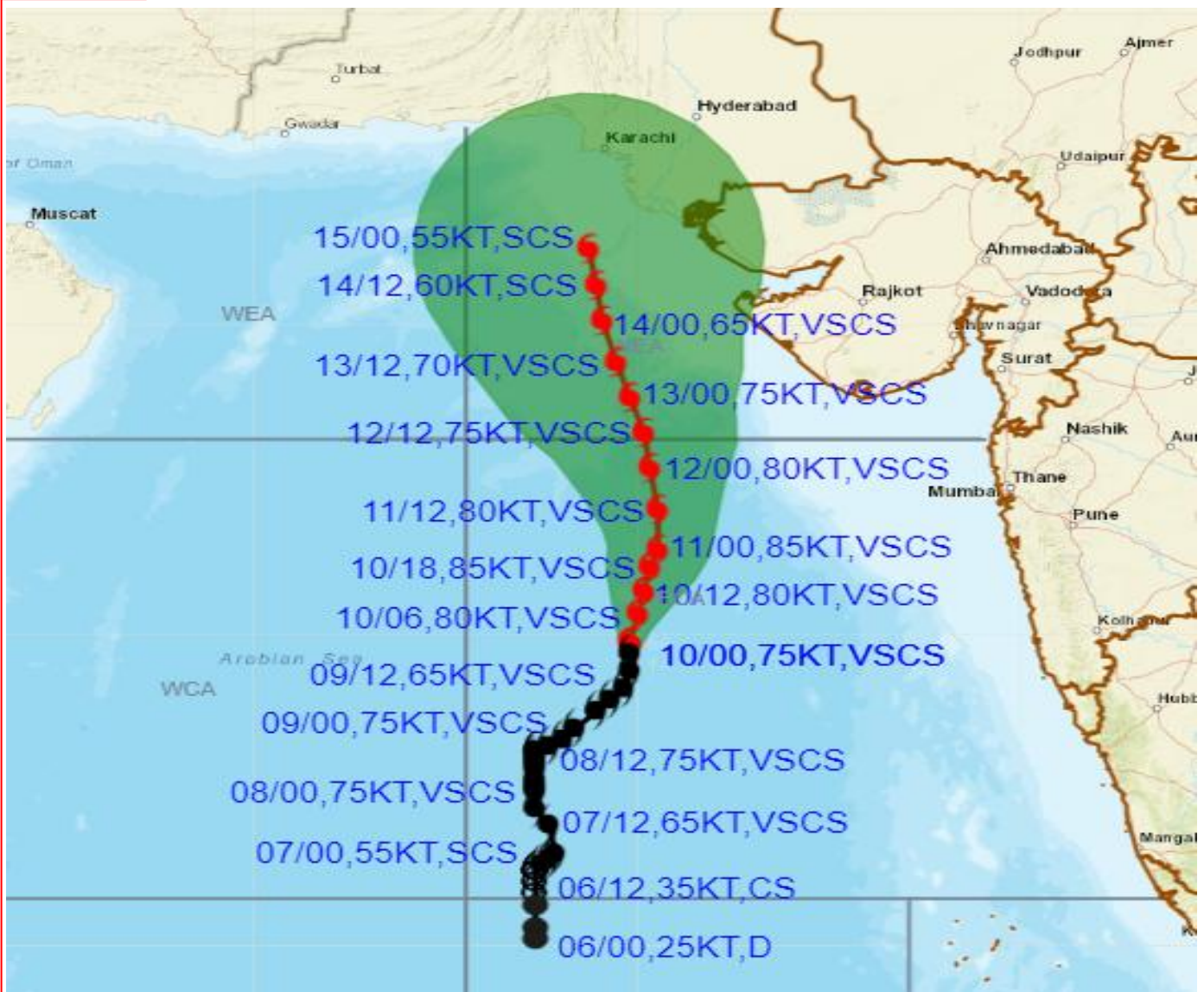
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IMD, DELHI



OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF VERY SEVERE CYCLONIC STORM "BIPARJOY" OVER EASTCENTRAL ARABIAN SEA BASED ON 0000 UTC (0530 IST) OF 10TH JUNE 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 (\geq 120 KT)

● LESS THAN 34 KT

○ 34.47 KT

○ \geq 48 KT

■ OBSERVED TRACK

■ FORECAST TRACK

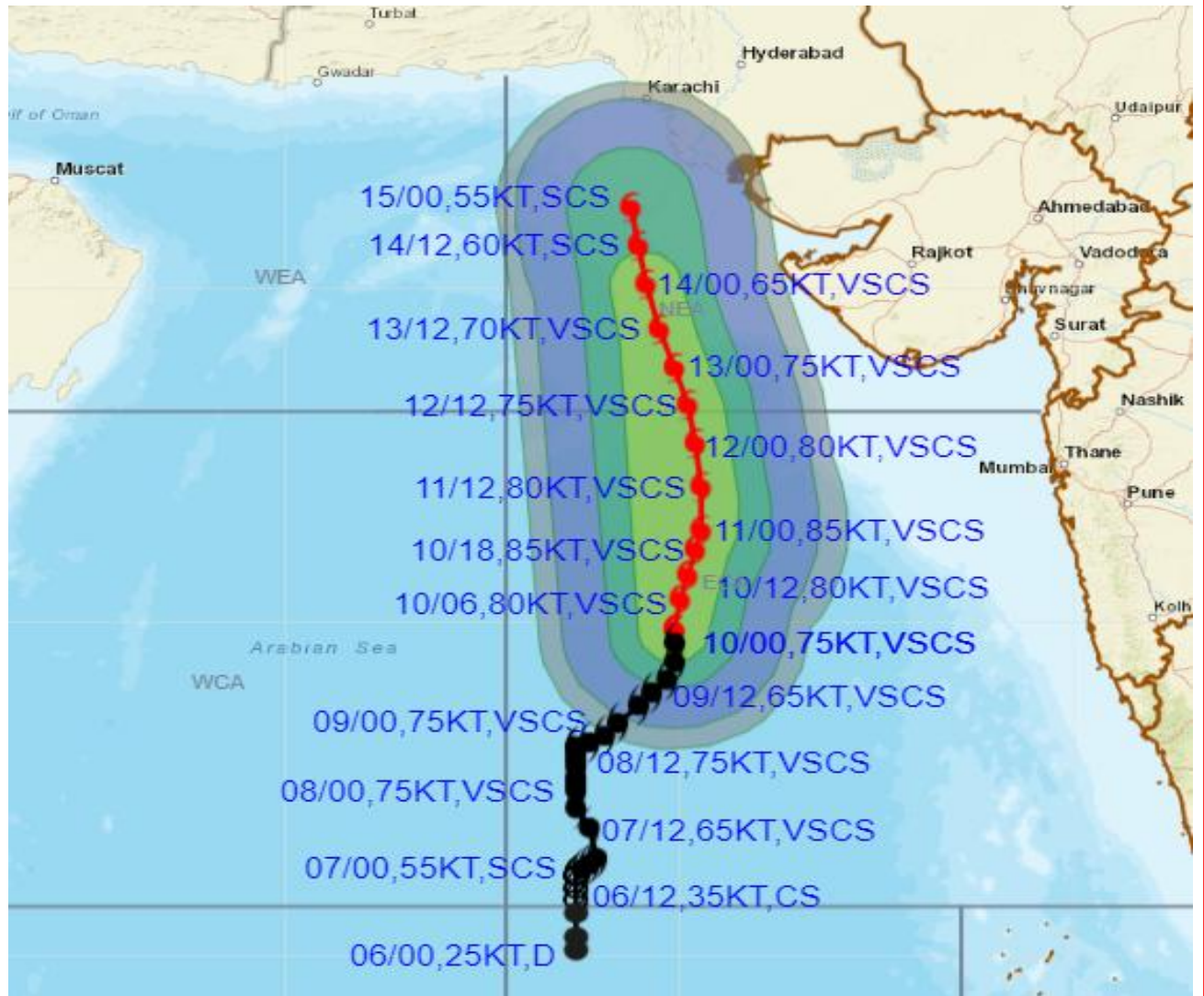
▲ CONE OF UNCERTAINTY

| Forecast | DISTANCE(KM) AND DIRECTION FROM STATIONS | | | | |
|---------------|--|-----------------|------------|-----------------|----------|
| | PORBANDAR | BOMBAY / COLABA | GOA/PANJIM | KARACHI AIRPORT | MASIRAH |
| 11.06.23/0000 | 440, SSW | 540, W | 710, WNW | 760, S | 970, ESE |
| 12.06.23/0000 | 310, SW | 550, W | 790, NW | 600, S | 920, E |
| 13.06.23/0000 | 260, WSW | 610, WNW | 900, NW | 460, S | 880, E |
| 14.06.23/0000 | 280, W | 700, WNW | 1030, NW | 320, S | 860, ENE |
| 15.06.23/0000 | 340, WNW | 780, NW | 1130, NW | 190, S | 860, ENE |

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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OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF VERY SEVERE CYCLONIC STORM "BIPARJOY" OVER EASTCENTRAL ARABIAN SEA BASED ON 0000 UTC (0530 IST) OF 10TH JUNE 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)

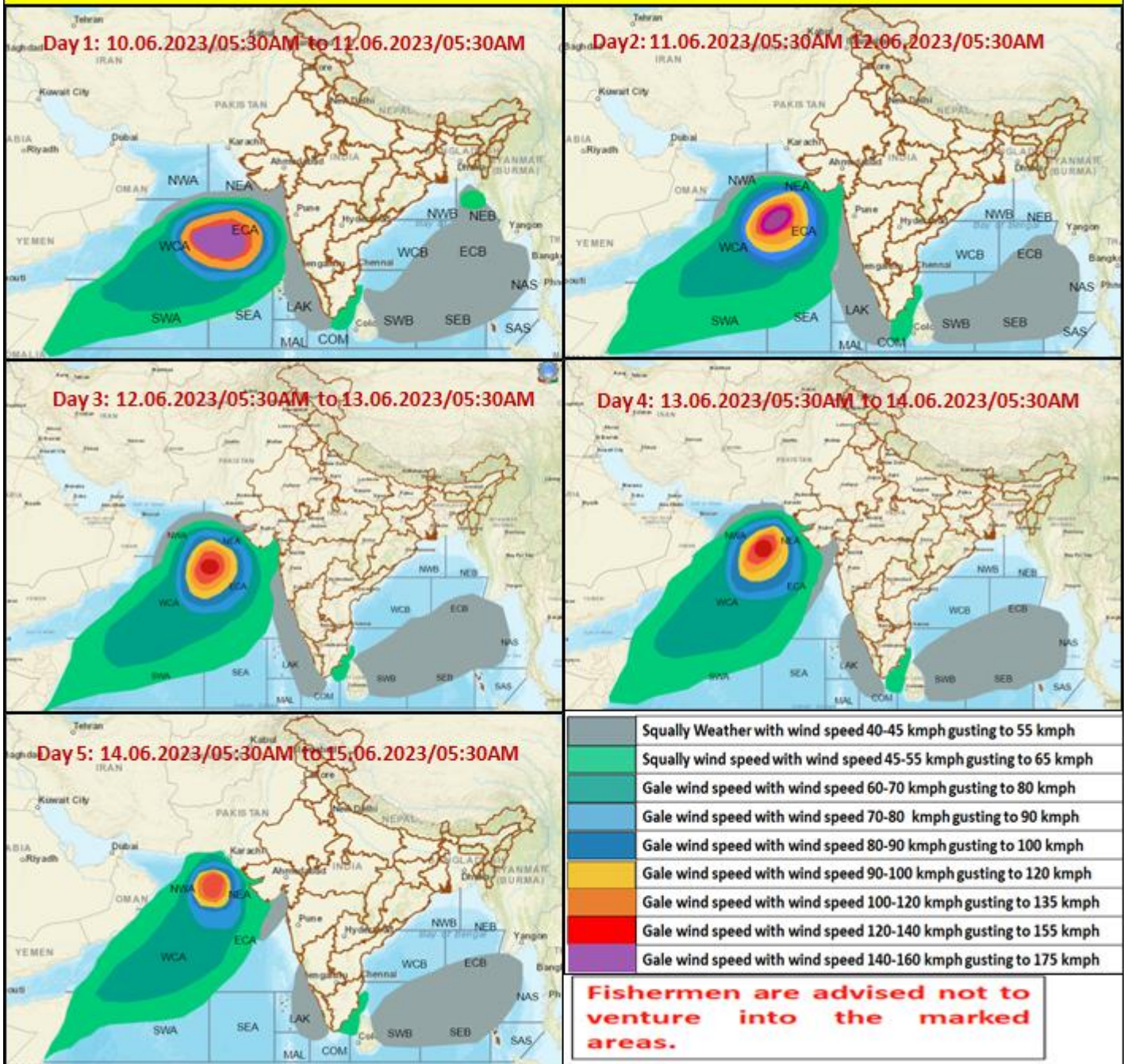
- LESS THAN 34 KT
- 34-47 KT
- ≥ 48 KT
- OBSERVED TRACK
- FORECAST TRACK
- ▲ CONE OF UNCERTAINTY
- AREA OF MAXIMUM SUSTAINED WIND SPEED:
- 28-33 KT (52-61 KMPH)
- 34-49 KT (62-91 KMPH)
- 50-63 KT (92-117 KMPH)
- ≥ 64 KT (≥118 KMPH)

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 |

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
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Fishermen warning graphics



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