



**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. 36 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 2230 UTC OF 10.06.2023 BASED ON 2100 UTC OF 10.06.2023

SUB: 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 5 KMPH DURING PAST 6-HOURS AND LAY CENTERED AT 2100 UTC OF 10TH JUNE, 2023 OVER THE SAME REGION NEAR LATITUDE 17.6°N AND LONGITUDE 67.3°E, ABOUT 600 KM WEST-SOUTHWEST OF MUMBAI (43057), 510 KM SOUTH-SOUTHWEST OF PORBANDAR (42830), 560 KM SOUTH-SOUTHWEST OF DWARKA (42731) , 650 KM SOUTH-SOUTHWEST OF NALIYA (42631) AND 810 KM SOUTH OF KARACHI (41780).

IT IS LIKELY TO INTENSIFY INTO AN EXTREMELY SEVERE CYCLONIC STORM DURING NEXT 06 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS AND REACH NEAR PAKISTAN AND ADJOINING SAURASHTRA & KUTCH COASTS AROUND 10 UTC OF 15TH JUNE, 2023 AS A VERY SEVERE CYCLONIC STORM.

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
10.06.23/2100	17.6/67.3	155-165 Gusting To 180	Very Severe Cyclonic Storm
11.06.23/0000	17.9/67.3	165-175 Gusting To 195	Extremely Severe Cyclonic Storm
11.06.23/0600	18.3/67.4	165-175 Gusting To 195	Extremely Severe Cyclonic Storm
11.06.23/1200	18.7/67.5	155-165 Gusting To 180	Very Severe Cyclonic Storm
11.06.23/1800	19.0/67.6	145-155 Gusting To 170	Very Severe Cyclonic Storm
12.06.23/0600	19.5/67.6	145-155 Gusting To 170	Very Severe Cyclonic Storm
12.06.23/1800	20.2/67.6	135-145 Gusting To 160	Very Severe Cyclonic Storm
13.06.23/0600	20.9/67.5	135-145 Gusting To 160	Very Severe Cyclonic Storm
13.06.23/1800	21.5/67.4	125-135 Gusting To 150	Very Severe Cyclonic Storm
14.06.23/0600	22.2/67.3	125-135 Gusting To 150	Very Severe Cyclonic Storm
14.06.23/1800	22.9/67.4	120-130 Gusting To 145	Very Severe Cyclonic Storm
15.06.23/0600	23.6/67.6	120-130 Gusting To 145	Very Severe Cyclonic Storm
15.06.23/1800	24.4/67.9	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 14.0°N & 19.0°N AND LONGITUDE 63.0°E & 69.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS 85 KNOTS GUSTING TO 95 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 970 HPA. SEA CONDITION IS LIKELY TO BE PHENOMENAL OVER EASTCENTRAL AND ADJOINING WESTCENTRAL ARABIAN SEA.

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 2 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 ENVIROMENT. POSITIVE LOW LEVEL VORTICITY IS AROUND $300 \times 10^{-6} \text{ S}^{-1}$ TO THE SOUTH-SOUTHWEST OF THE SYSTEM CENTRE, LOW LEVEL CONVERGENCE HAS INCREASED AND IS ABOUT $50 \times 10^{-5} \text{ S}^{-1}$ TO THE WEST OF THE SYSTEM CENTRE AND UPPER LEVEL DIVERGENCE IS ABOUT $30 \times 10^{-5} \text{ S}^{-1}$ TO THE SOUTH-SOUTHWEST OF SYSTEM CENTRE. WIND SHEAR IS MODERATE (25-20 KNOTS) OVER SYSTEM AREA AND IS LOW (20-15 KNOTS) ALONG THE FORECAST TRACK.

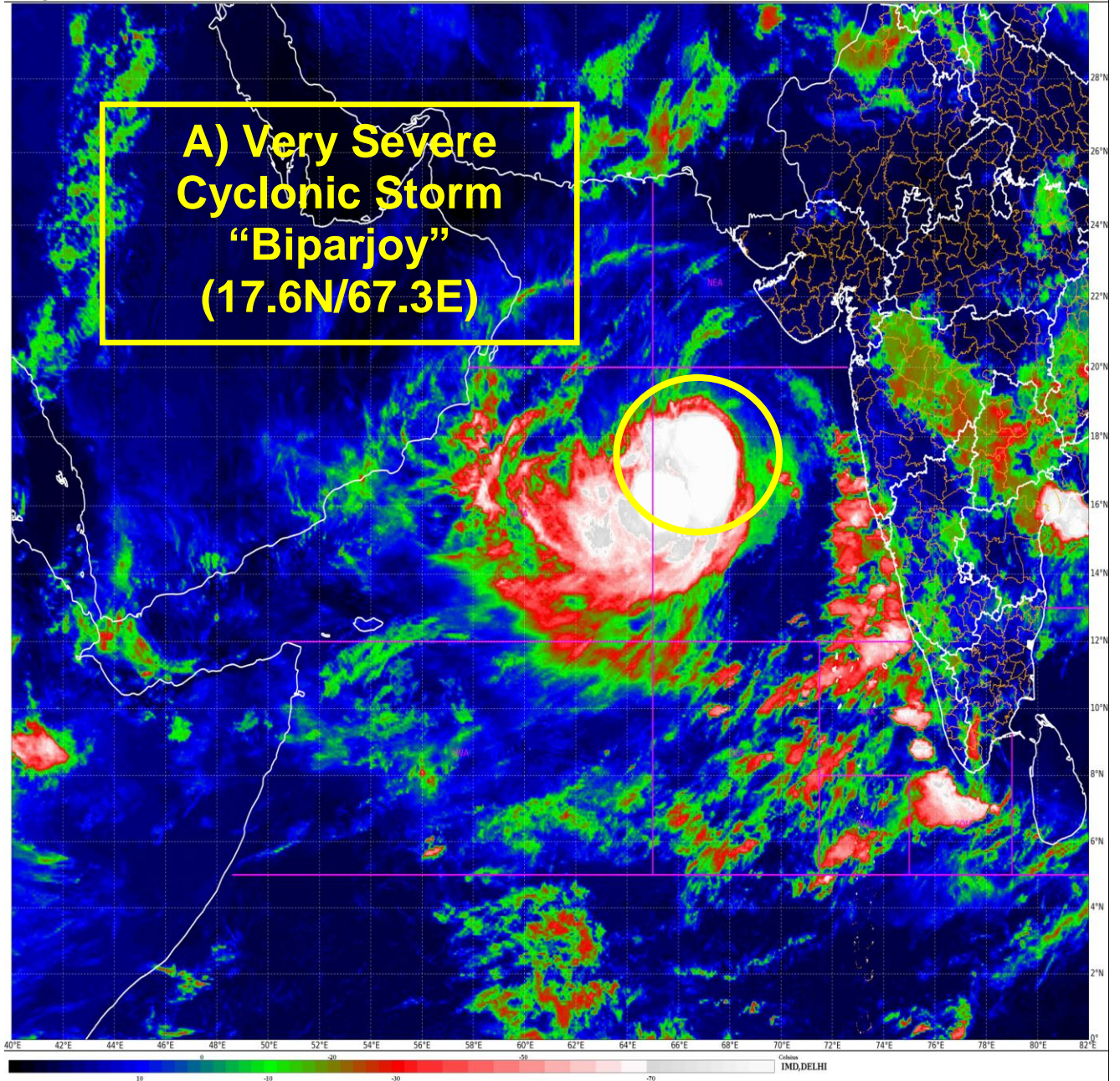
Cloud distribution: (a) Isolated: <25%, Scattered:25-50%, Broken: 51-75%, Solid:>75%, Convection Intensity: (a) Weak: Cloud Top Temperature (CTT) >-25°C, (b) Moderate: CTT: - 25°C to -40°C, (c) Intense: CTT: - 41°C to -70°C and (d) Very Intense: : Less than -70°C
PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION): NIL: 0%, LOW: 1-33%, , MODERATE: 34-66% AND HIGH: 67-100%
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CURRENTLY, THE SYSTEM IS MOVING NEARLY NORTHWARDS UNDER THE INFLUENCE OF 2 ACTIVE ANTICYCLONIC CIRCULATIONS, ONE LOCATED OVER WEST INDIA TO THE EAST-NORTHEAST OF SYSTEM CENTRE AND ANOTHER LOCATED OVER ARABIAN PENINSULAR AND ADJOINING WESTCENTRAL ARABIAN SEA TO THE WEST-NORTHWEST OF SYSTEM CENTRE. DUE TO THE VARIATION IN THE STRENGTH OF THESE ANTICYCLONIC CIRCULATIONS IN THE MIDDLE AND UPPER TROPOSPHERIC LEVELS AND DEPENDING UPON THE DOMINANCE OF ONE OF THESE ANTI CYCLONIC CIRCULATIONS OVER THE PERIOD OF TIME, THE SYSTEM HAS CHANGED PATH IN THE PAST AND ALSO, IT IS LIKELY TO CHANGE THE DIRECTION OF MOVEMENT ONCE/TWICE FURTHER DURING THE FORECAST PERIOD. FURTHER, AS THE CYCLONE IS MOVING VERY CLOSE TO THE SOUTH OF THE UPPER TROPOSPHERIC RIDGE IN ASSOCIATION WITH THESE ANTICYCLONIC CIRCULATIONS, THE MOVEMENT OF THE SYSTEM HAS BEEN DOMINANTLY NORTHWARD AND VERY SLOW WITH TRANSLATIONAL SPEED OF < 5 KNOTS EXCEPT FOR A FEW HOURS ON 9TH JUNE, WHEN IT WAS ABOUT 6-7 KNOTS. WHEN THE SYSTEM WILL APPROACH COAST, IT IS LIKELY TO EXPERIENCE LESSER OCEAN THERMAL ENERGY (40-50 KJ/CM²) AND DECREASE IN MIDDLE LEVEL HUMIDITY DUE TO DRY COLD AIR INTRUSION.

LATEST GUIDANCE FROM VARIOUS MODELS INDICATE INTIAL NEAR NORTHWARDS MOVEMENT FOLLOWED BY GRADUAL NORTH-NORTHEASTWARDS MOVEMENT TOWARDS PAKISTAN-SAURASHTRA & KUTCH COASTS. THE LANDFALL POINT IS VARYING BETWEEN LONGITUDE 65°E-69°E DURING 15TH – 16TH JUNE.

CONSIDERING ALL THE ABOVE, IT IS LIKELY TO INTENSIFY INTO AN EXTREMELY SEVERE CYCLONIC STORM DURING NEXT 06 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS AND REACH NEAR PAKISTAN AND ADJOINING SAURASHTRA & KUTCH COASTS AROUND 10 UTC OF 15TH JUNE, 2023 AS A VERY SEVERE CYCLONIC STORM.

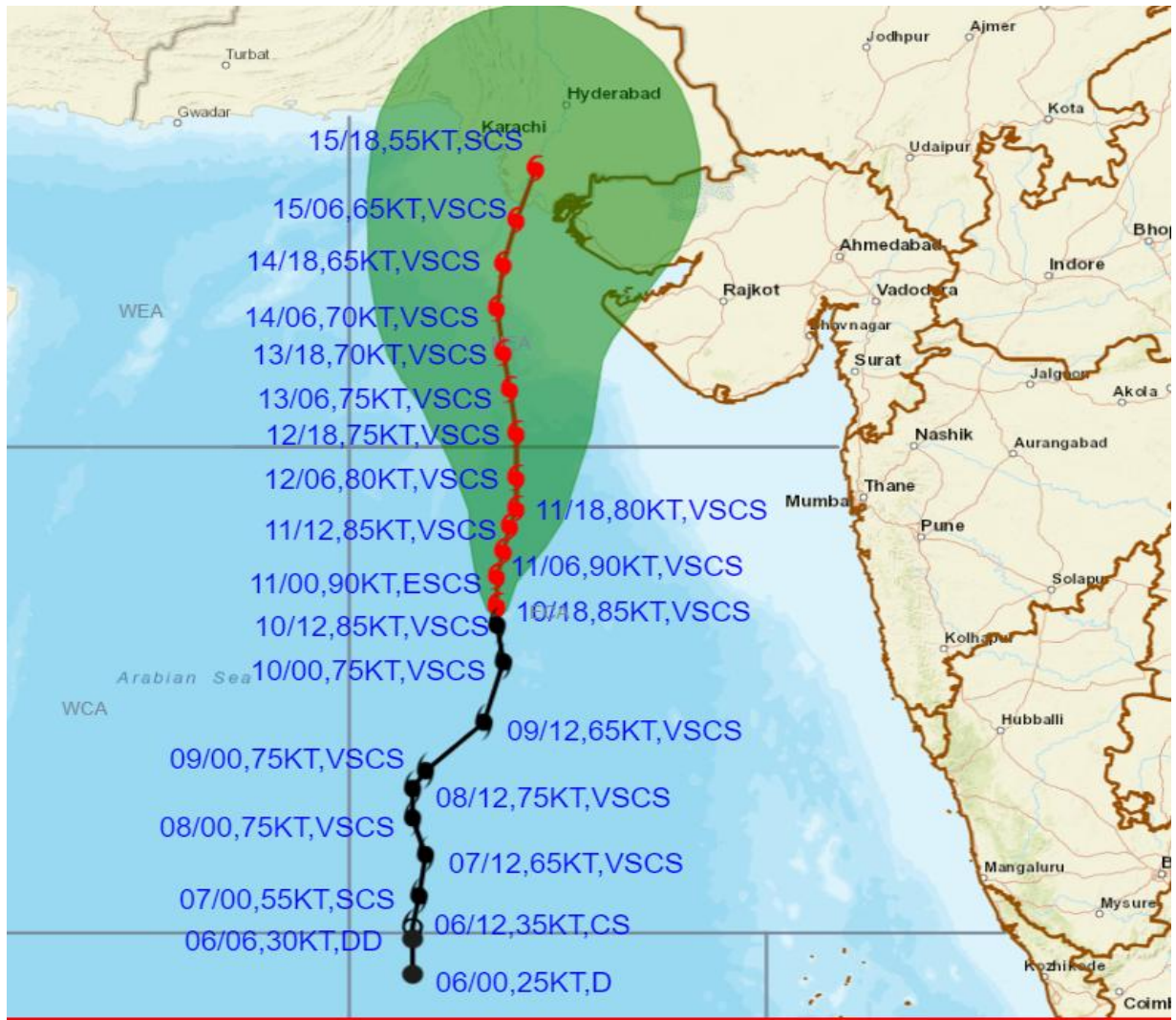
**DR. TRISANU BANIK
SCIENTIST-C
RSMC NEW DELHI**



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OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF VERY SEVERE CYCLONIC STORM "BIPARJOY" OVER EASTCENTRAL ARABIAN SEA BASED ON 1800 UTC (2330 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

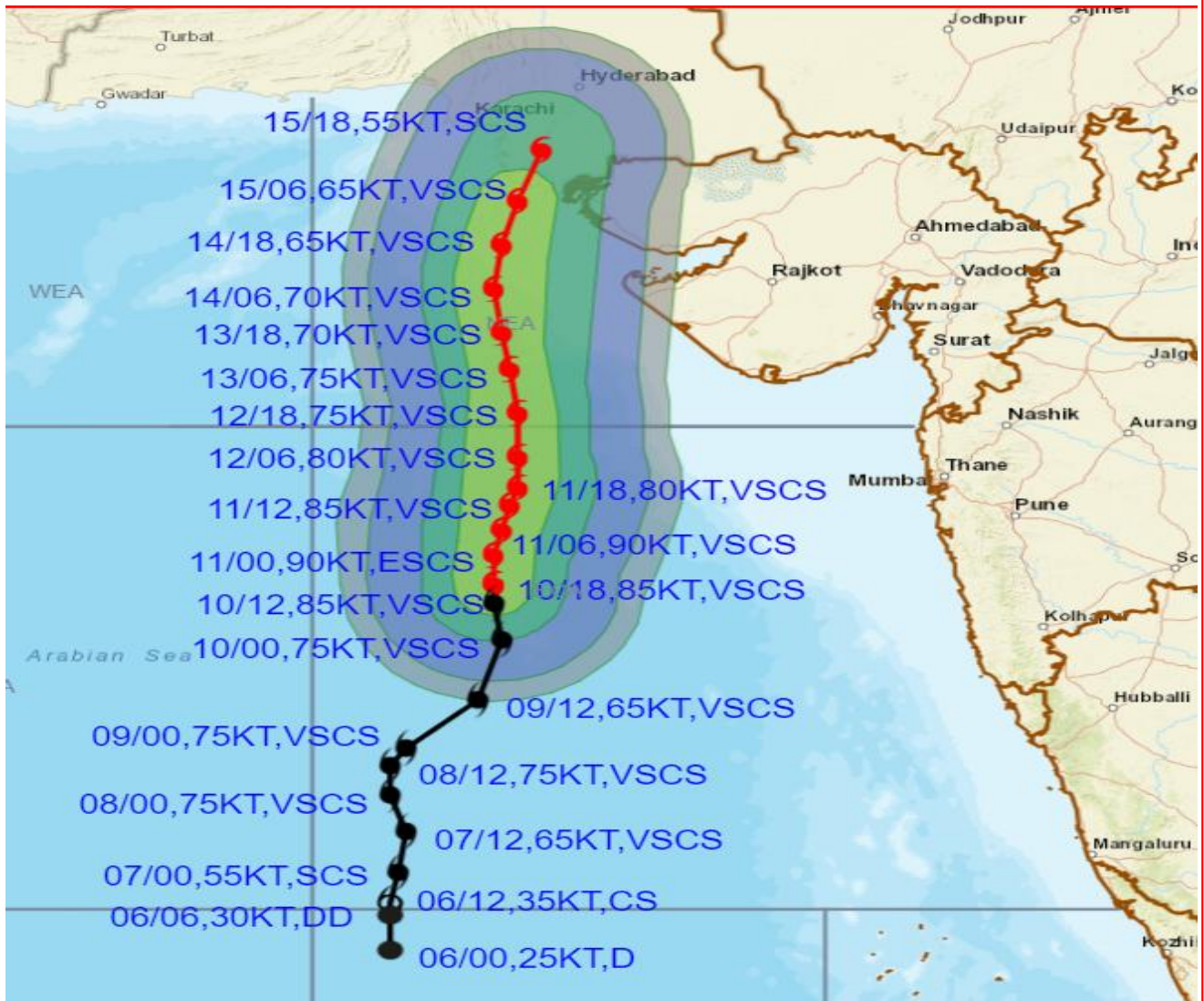
▲ CONE OF UNCERTAINTY

STATIONS	DISTANCE(KM) AND DIRECTION FROM STATIONS				
	11.06.23/1800	12.06.23/1800	13.06.23/1800	14.06.23/1800	15.06.23/1800
PORBANDAR	360, SW	260, SW	240, W	280, WNW	350, NNW
BOMBAY / COLABA	550, W	570, WNW	640, WNW	720, NW	790, NW
GOA/PANJIM	770, WNW	850, NW	960, NW	1070, NW	1160, NNW
KARACHI AIRPORT	650, S	520, S	370, S	220, S	90, SE
DWARKA	400, SSW	280, SSW	190, WSW	190, WNW	250, NNW

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OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF VERY SEVERE CYCLONIC STORM "BIPARJOY" OVER EASTCENTRAL ARABIAN SEA BASED ON 1800 UTC (2330 IST) OF 10TH JUNE 2023.



DATE/TIME IN UTC

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D: DEPRESSION (17-27 KT)

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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)

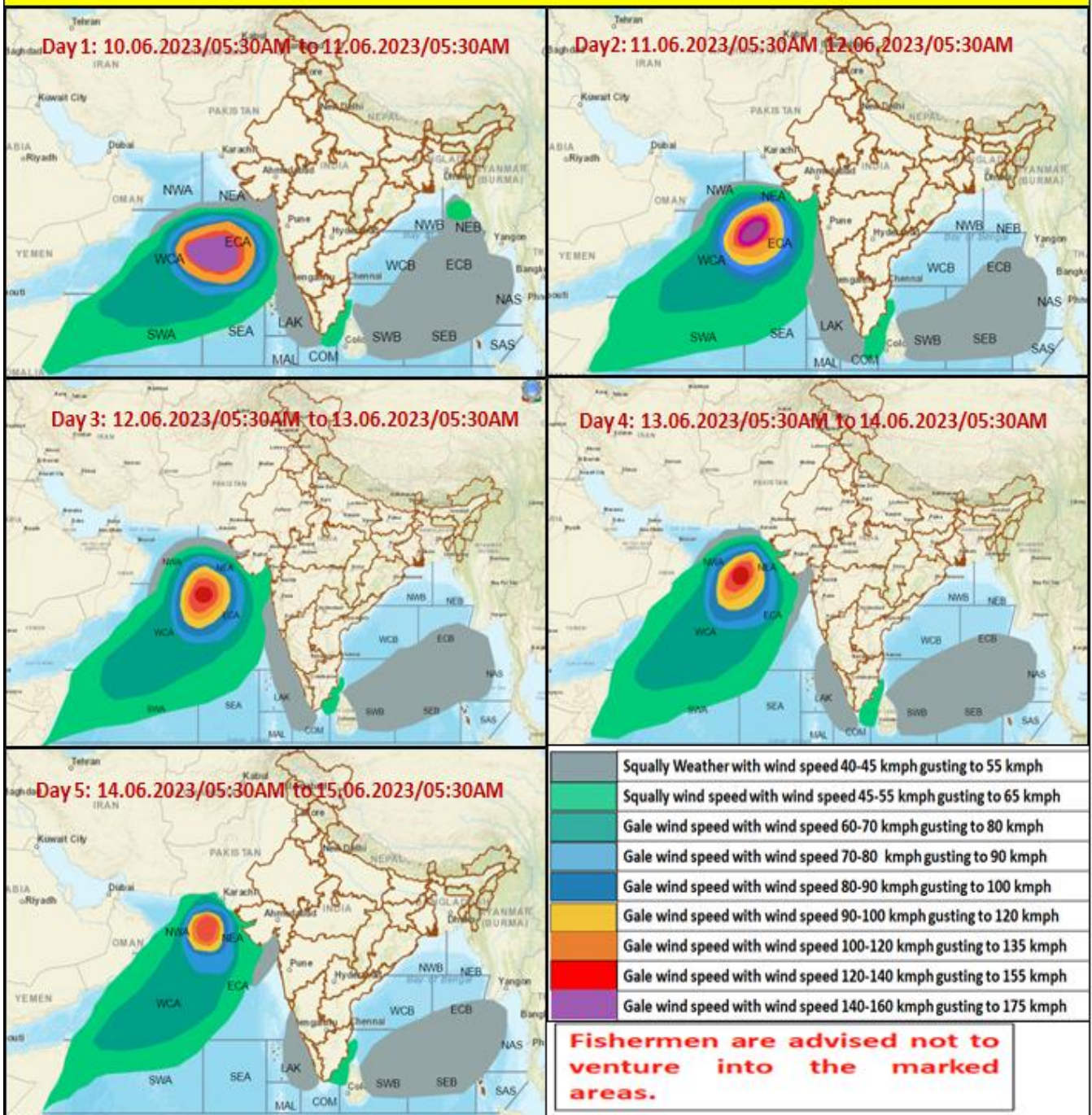
■ ≥ 64 KT (≥118 KMPH)

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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