



**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. 33 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1530 UTC OF 10.06.2023 BASED ON 1200 UTC OF 10.06.2023**

**SUB: A) VERY SEVERE CYCLONIC STORM “BIPARJOY” (PRONOUNCED AS “BIPORJOY”) OVER EASTCENTRAL ARABIAN SEA AND B) Low Pressure Area over Southeast Bangladesh & neighbourhood**

**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 6 KMPH DURING PAST 6-HOURS AND LAY CENTERED AT 1200 UTC OF TODAY, THE 10TH JUNE, 2023 OVER THE SAME REGION NEAR LATITUDE 17.1°N AND LONGITUDE 67.3°E, ABOUT 620 KM WEST-SOUTHWEST OF MUMBAI (43057), 560 KM SOUTH-SOUTHWEST OF PORBANDAR (42830), 620 km SOUTH-SOUTHWEST OF DWARAKA (42731) AND 870 KM SOUTH OF KARACHI (41780).

IT IS LIKELY TO INTENSIFY FURTHER INTO AN EXTREMELY SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS AND REACH NEAR PAKISTAN COAST AROUND EVENING OF 15TH JUNE, 2023.

**FORECAST TRACK AND INTENSITY ARE GIVEN BELOW:**

<b>DATE/TIME(UTC)</b>	<b>POSITION (LAT. °N/ LONG. °E)</b>	<b>MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)</b>	<b>CATEGORY OF CYCLONIC DISTURBANCE</b>
10.06.23/1200	17.1/67.3	155-165 Gusting To 180	Very Severe Cyclonic Storm
10.06.23/1800	17.5/67.3	165-175 Gusting To 195	Extremely Severe Cyclonic Storm
11.06.23/0000	17.9/67.4	165-175 Gusting To 195	Extremely Severe Cyclonic Storm
11.06.23/0600	18.3/67.5	155-165 Gusting To 180	Very Severe Cyclonic Storm
11.06.23/1200	18.7/67.6	155-165 Gusting To 180	Very Severe Cyclonic Storm

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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12.06.23/0000	19.3/67.6	145-155 Gusting To 170	Very Severe Cyclonic Storm
12.06.23/1200	20.0/67.5	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	21.3/67.3	125-135 Gusting To 150	Very Severe Cyclonic Storm
14.06.23/0000	22.0/67.1	115-125 Gusting To 140	Very Severe Cyclonic Storm
14.06.23/1200	22.6/67.0	115-125 Gusting To 140	Very Severe Cyclonic Storm
15.06.23/0000	23.3/67.0	95-105 Gusting To 115	Severe Cyclonic Storm
15.06.23/1200	24.1/67.2	90-100 Gusting To 110	Severe Cyclonic Storm
16.06.23/0000	24.9/67.4	85-95 Gusting To 105	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 13.0°N & 19.0°N AND LONGITUDE 61.5°E & 69.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

ASSOCIATED MAXIMUM SUSTAINED WIND SPEED IS 80 KNOTS GUSTING TO 90 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 972 HPA. SEA CONDITION IS LIKELY TO BE PHENOMENAL OVER EASTCENTRAL AND ADJOINING WESTCENTRAL ARABIAN SEA.

### **B) LOW PRESSURE AREA OVER SOUTHEAST BANGLADESH AND NEIGHBOURHOOD**

THE WELL MARKED LOW PRESSURE AREA OVER SOUTHEAST BANGLADESH AND NEIGHBOURHOOD WEAKENED INTO A LOW PRESSURE AREA AND LAY OVER THE SAME REGION AT 1200 UTC OF TODAY, THE 10TH JUNE, 2023.

### **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  $20 \times 10^{-5} \text{ S}^{-1}$  TO THE SOUTH-SOUTHWEST OF SYSTEM CENTRE. WIND SHEAR IS MODERATE (15-20 KNOTS) OVER SYSTEM AREA AND IS LOW (10-15 KNOTS) ALONG THE FORECAST TRACK.

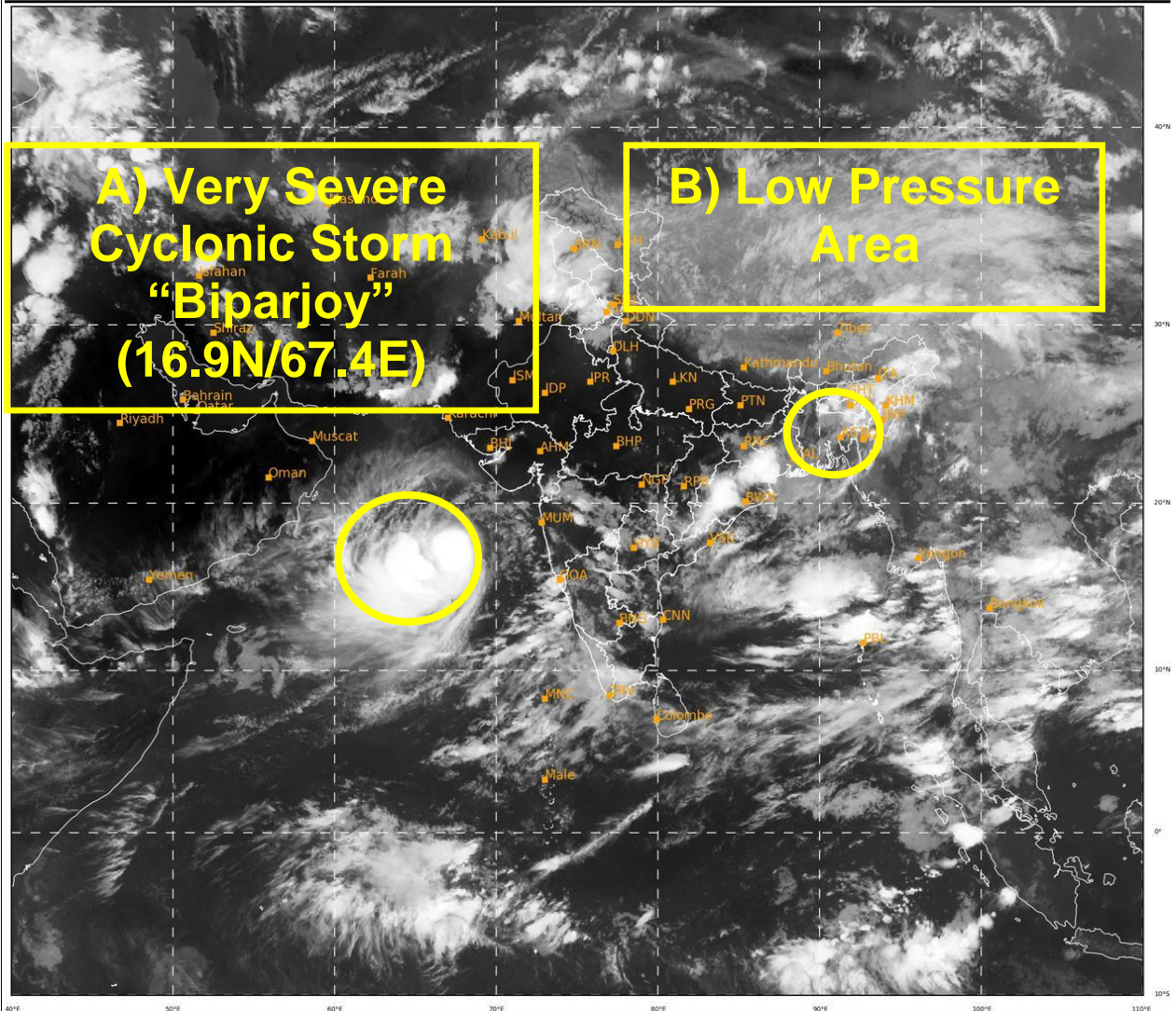
CURRENTLY, THE SYSTEM IS MOVING NEARLY NORTHWARDS UNDER THE INFLUENCE OF 2 ACTIVE ANTICYCLONIC CIRCULATIONS, ONE LOCATED OVER WEST INDIA TO THE EAST-NORTHEAST OF SYSTEM CENTRE AND ANOTHER LOCATED OVER ARABIAN PENINSULAR AND ADJOINING WESTCENTRAL ARABIAN SEA TO THE WEST-NORTHWEST OF SYSTEM CENTRE. DUE 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 9<sup>TH</sup> 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/CM<sup>2</sup>) 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 15<sup>TH</sup> – 16<sup>TH</sup> JUNE.

CONSIDERING ALL THE ABOVE, THE VERY SEVERE CYCLONIC STORM "BIPARJOY" IS VERY LIKELY TO INTENSIFY FURTHER INTO AN EXTREMELY SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. IT IS VERY LIKELY TO MOVE NEARLY NORTHWARDS AND REACH NEAR PAKISTAN COAST AROUND EVENING OF 15TH JUNE, 2023.

**M. SHARMA  
SCIENTIST-D  
RSMC NEW DELHI**



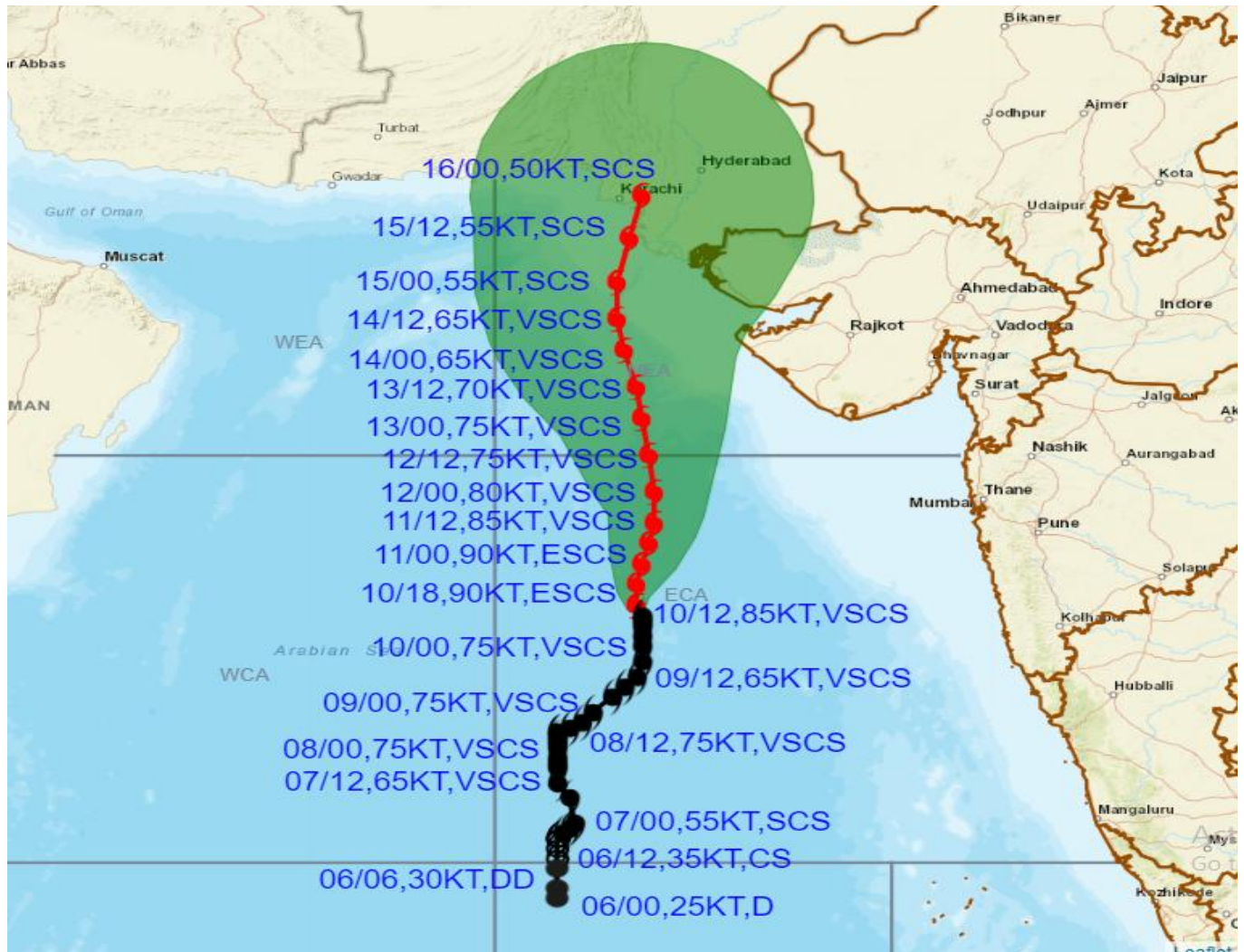
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IMD, DELHI



**OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF VERY SEVERE CYCLONIC STORM "BIPARJOY" OVER EASTCENTRAL ARABIAN SEA BASED ON 1200 UTC (1730 IST) OF 10<sup>TH</sup> 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)

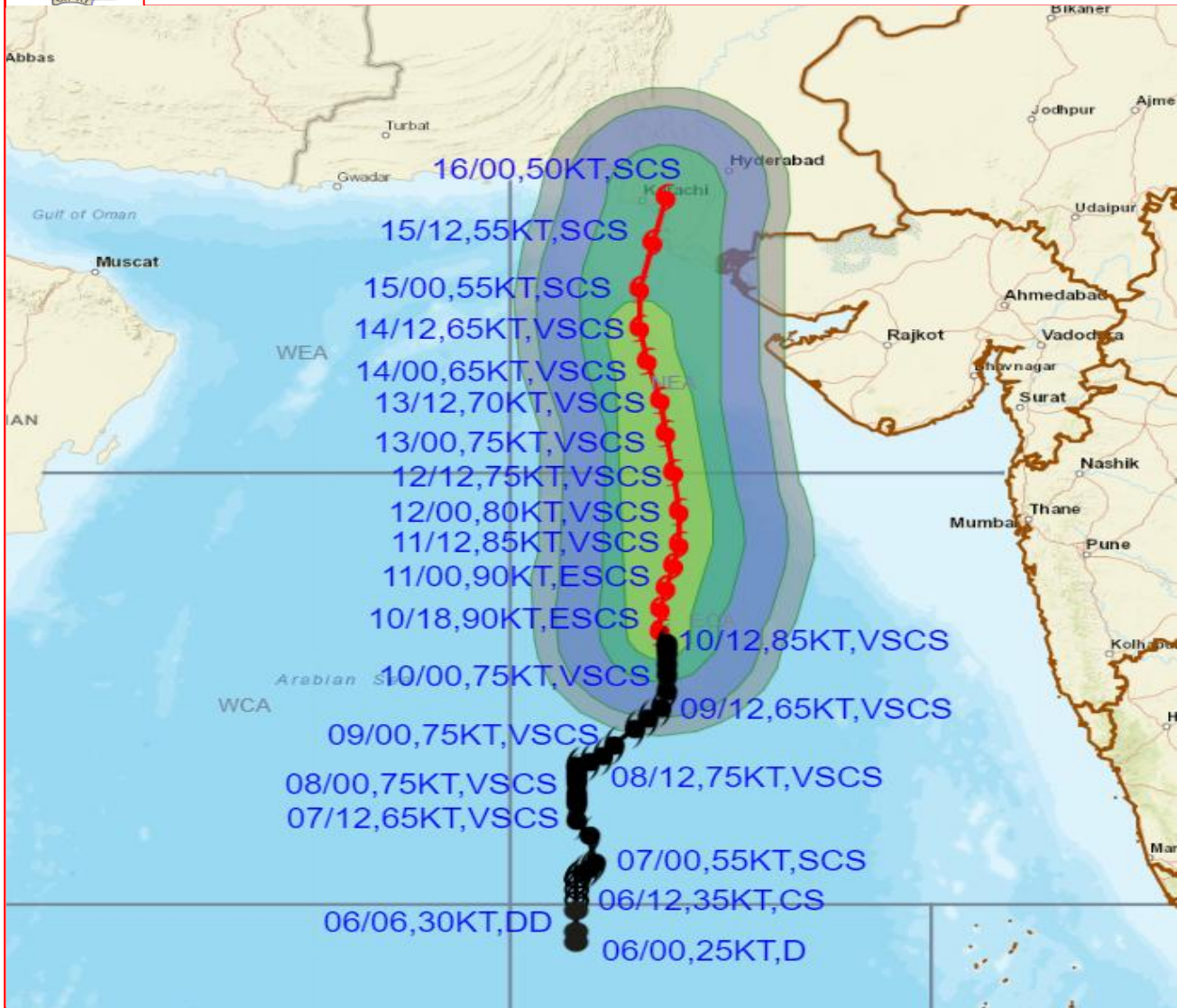
- LESS THAN 34 KT
- 34-47 KT
- $\geq$  48 KT
- OBSERVED TRACK
- FORECAST TRACK
- CONE OF UNCERTAINTY

STATIONS	DISTANCE(KM) AND DIRECTION FROM STATIONS				
	11.06.23/1200	12.06.23/1200	13.06.23/1200	14.06.23/1200	15.06.23/1200
PORBANDAR	390, SSW	290, SW	250, W	300, WNW	370, NW
BOMBAY / COLABA	560, W	580, WNW	640, WNW	740, NW	820, NW
GOA/PANJIM	760, WNW	840, NW	950, NW	1070, NW	1180, NW
KARACHI AIRPORT	690, S	540, S	400, S	250, S	80, S
DWARKA	430, SSW	310, SSW	210, WSW	220, W	270, NW

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 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 1200 UTC (1730 IST) OF 10TH JUNE 2023.**



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 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)

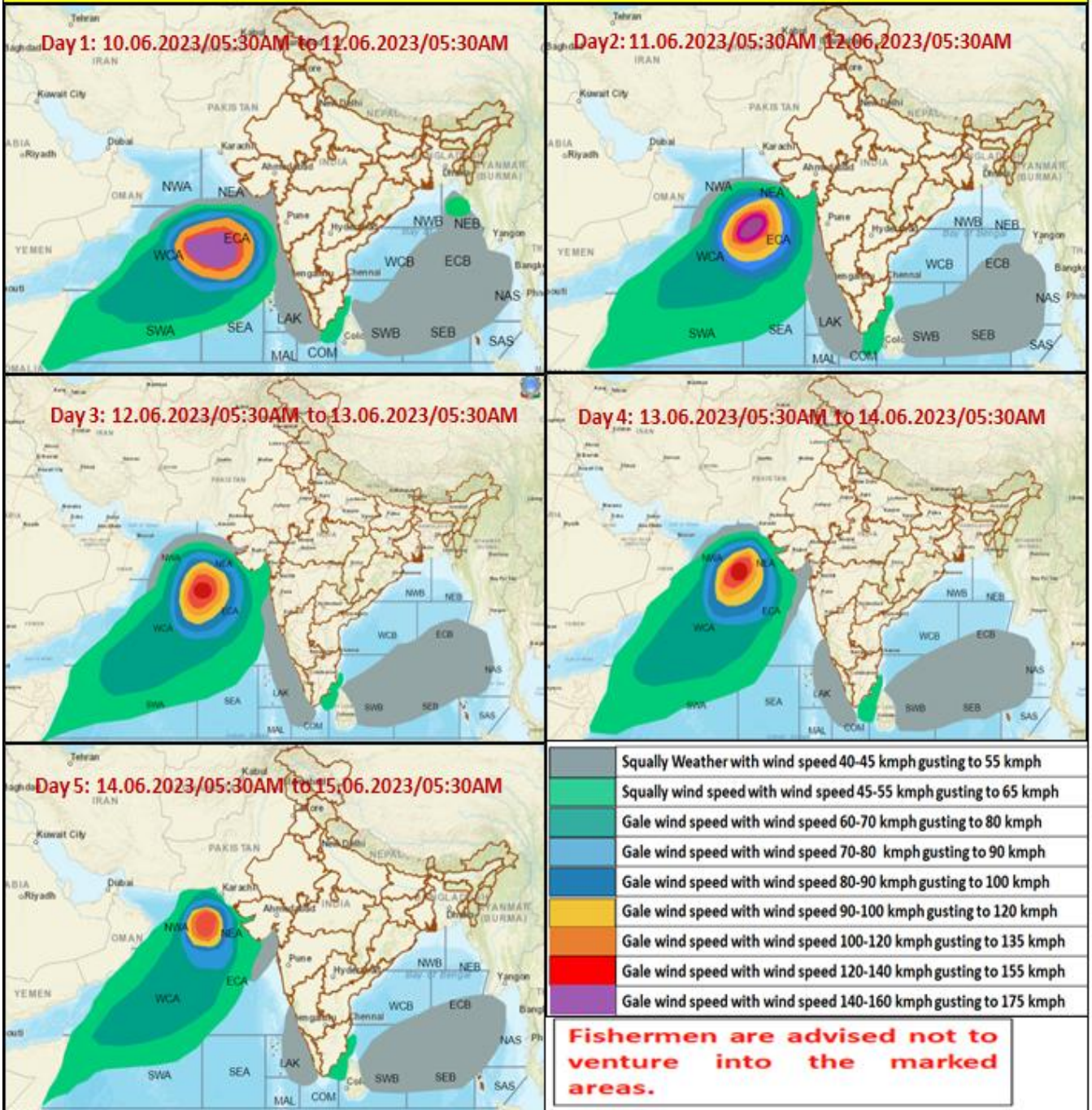
● LESS THAN 34 KT  
 ○ 34.47 KT  
 ● ≥ 48 KT  
 — OBSERVED TRACK  
 — FORECAST TRACK  
 ● CONE OF UNCERTAINTY  
 AREA OF MAXIMUM SUSTAINED WIND SPEED:  
 ■ 28-33 KT (52-61 KMPH)  
 ■ 34-49 KT (62-91 KMPH)  
 ■ 50-63 KT (92-117 KMPH)  
 ■ ≥ 64 KT (≥118 KMPH)

**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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