



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

DEMS-RSMC SPECIAL TROPICAL CYCLONES NEW DELHI DATED 15.06.2023

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. 74 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 48 HOURS ISSUED AT 1730 UTC OF 15.06.2023 BASED ON 1500 UTC OF 15.06.2023

SUB: VERY SEVERE CYCLONIC STORM “BIPARJOY” (PRONOUNCED AS “BIPORJOY”) OVER NORTHEAST ARABIAN SEA CLOSE TO SAURASHTRA & KUTCH COASTS (CYCLONE WARNING FOR SAURASHTRA & KUTCH COASTS (RED MESSAGE))

THE VERY SEVERE CYCLONIC STORM “BIPARJOY” (PRONOUNCED AS “BIPORJOY”) OVER NORTHEAST ARABIAN SEA MOVED NEARLY EAST-NORTHEASTWARDS WITH A SPEED OF 13 KMPH DURING PAST 6-HOURS AND LAY CENTERED AT 1500 UTC OF TODAY, THE 15TH JUNE, 2023 OVER NORTHEAST ARABIAN SEA CLOSE TO SAURASHTRA & KUTCH COASTS NEAR LATITUDE 23.1°N AND LONGITUDE 68.3°E, ABOUT 30 KM WEST-SOUTHWEST OF JAKHAU PORT (GUJARAT), 60 KM WEST-SOUTHWEST OF NALIYA (42631), 110 KM NORTHWEST OF DEVBHUMI DWARKA (42731) AND 230 KM SOUTH-SOUTHEAST OF KARACHI (PAKISTAN, 41780).

IT IS VERY LIKELY TO MOVE NEARLY NORTHEASTWARDS AND CROSS SAURASHTRA & KUTCH AND ADJOINING PAKISTAN COASTS BETWEEN MANDVI (GUJARAT, 42729) AND KARACHI (PAKISTAN, 41780) NEAR JAKHAU PORT (GUJARAT) DURING NEXT FEW HOURS AS A VERY SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED WIND SPEED OF 115-125 KMPH GUSTING TO 140 KMPH. THE LANDFALL PROCESS COMMENCED DURING 1300 TO 1400 UTC OF 15TH JUNE AND WOULD CONTINUE TILL 1800 UTC OF 15TH JUNE 2023.

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
15.06.23/1500	23.1/68.3	115-125 Gusting To 140	Very Severe Cyclonic Storm
15.06.23/1800	23.4/68.7	105-115 Gusting To 125	Severe Cyclonic Storm
16.06.23/0000	23.9/69.5	80-90 Gusting To 100	Cyclonic Storm
16.06.23/0600	24.5/70.4	50-60 Gusting To 70	Deep Depression
16.06.23/1200	25.2/71.4	35-45 Gusting To 55	Depression

AS PER INSAT 3D IMAGERY, INTENSITY OF THE SYSTEM IS T4.0/C.I.4.0. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER NORTH ARABIAN SEA BETWEEN LATITUDE 19.0°N & 24.5°N AND LONGITUDE 64.0°E & 70.0°E AND WEAK TO MODERATE CONVECTION LAY OVER SOUTHEAST PAKISTAN, GULF OF KUTCH AND ENTIRE GUJARAT STATE. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 90°C.

ASSOCIATED MAXIMUM SUSTAINED WIND SPEED (MSW) IS 65 KNOTS GUSTING TO 75 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS 977 HPA. SEA CONDITION IS LIKELY TO BE PHENOMENAL OVER NORTHEAST ARABIAN SEA AND ROUGH TO VERY ROUGH OVER ADJOINING EASTCENTRAL ARABIAN SEA.

STORM SURGE GUIDANCE:

STROM SURGE HEIGHT OF ABOUT 2 METER ABOVE THE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF KACHCHH, DEVBHUMI DWARKA, PORBANDAR, JAMNAGAR AND MORBI DISTRICTS OF SUARASHTRA & KUTCH DURING THE TIME OF LANDFALL DURING NEXT 3 HOURS AND REDUCE THEREAFTER.

STROM SURGE HEIGHT OF ABOUT 1 METER ABOVE THE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF COASTAL PAKISTAN NEAR LANDFALL POINT DURING THE TIME OF LANDFALL DURING NEXT 3 HOURS AND REDUCE THEREAFTER.

REMARKS:

SEA SURFACE TEMPERATURE IS AROUND 29-30°C OVER NORTHEAST ARABIAN SEA. OCEAN HEAT CONTENT IS 60-70KJ/CM² AND IS EXPECTED TO DECREASE GRADUALLY ALONG THE FORECAST TRACK BECOMING 30-40 KJ/CM² OFF SAURASHTRA & KUTCH COASTS. TOTAL PRECIPITABLE WATER IMAGERY INDICATES CONTINUED COLD AIR INCURSION INTO THE CORE OF SYSTEM. THE GRADIENT WIND ANALYSIS INDICATES THAT DURING PAST 24 HOURS, RADIUS OF GRADIENT WIND HAS INCREASED AND TEMPERATURE ANOMALY AT 300 HPA HAS DECREASED. FURTHER, AS THE SYSTEM MOVED VERY SLOWLY DURING PAST 12 HOURS, THE SURFACE AIR NEAR THE CORE COOLED DOWN, DUE TO UPWELLING IN THE SEA TO THE SOUTHEAST OF SYSTEM CENTRE. ALL THESE FEATURES ARE INDICATING VERY GRADUAL WEAKENING OF THE SYSTEM ALONG ITS PATH.

THE LOW LEVEL VORTICITY IS THE SAME AND IS AROUND $300 \times 10^{-6} \text{S}^{-1}$ NEAR THE SYSTEM CENTRE. LOW LEVEL CONVERGENCE IS SAME AND IS ABOUT $30 \times 10^{-5} \text{S}^{-1}$ TO THE SOUTHWEST OF THE SYSTEM CENTRE AND UPPER LEVEL HAS DECREASED AND IS ABOUT $20 \times 10^{-5} \text{S}^{-1}$ TO THE SOUTH OF SYSTEM CENTRE. VERTICAL WIND SHEAR HAS SLIGHTLY DECREASED AND IS MODERATE TO HIGH (20-25 KNOTS) OVER THE SYSTEM AREA. THE RIDGE RUNS ALONG 21.5°N. THE DEEP LAYER MEAN WINDS, INDICATE A WESTERLY TROUGH ALONG 65.0E TO THE WEST OF SYSTEM CENTRE. THE SYSTEM IS TRACKING NORTHEASTWARDS UNDER THE INFLUENCE OF SOUTHWESTERLY WINDS PREVAILING TO THE NORTH OF THE RIDGE AND THE WESTERLY TROUGH.

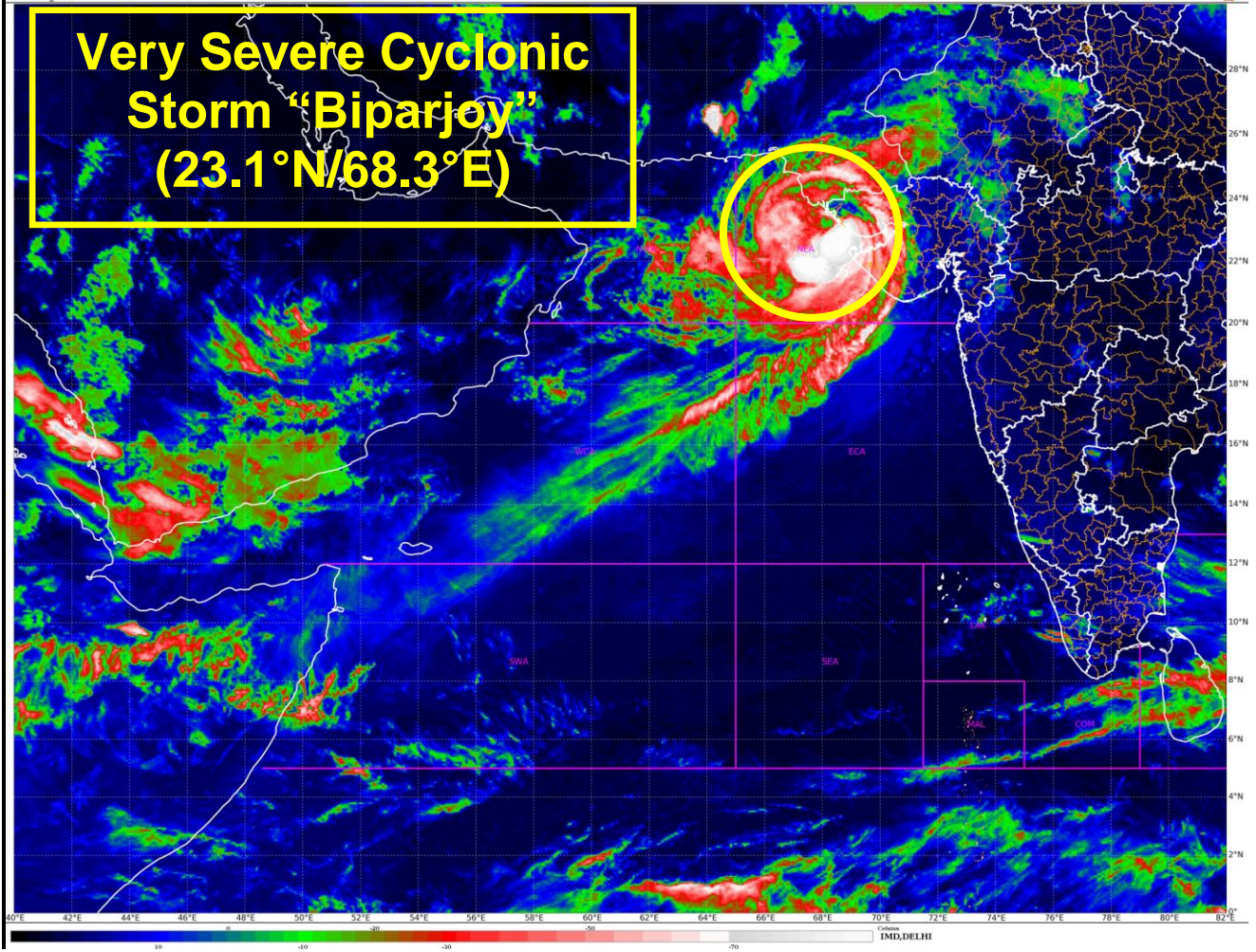
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AS THE SYSTEM WILL APPROACH COAST, IT IS LIKELY TO EXPERIENCE LOWER OCEAN THERMAL ENERGY (40-50 KJ/CM²), DECREASE IN MIDDLE LEVEL HUMIDITY DUE TO DRY COLD AIR INTRUSION AND LAND INTERACTIONS. THEREFORE THE INTENSITY OF THE SYSTEM WEAKENED GRADUALLY AND IT WOULD BECOME A CYCLONIC STORM BY 0000 UTC OF 16TH JUNE.

**S. P. SINGH
SCIENTIST C
RSMC NEW DELHI**

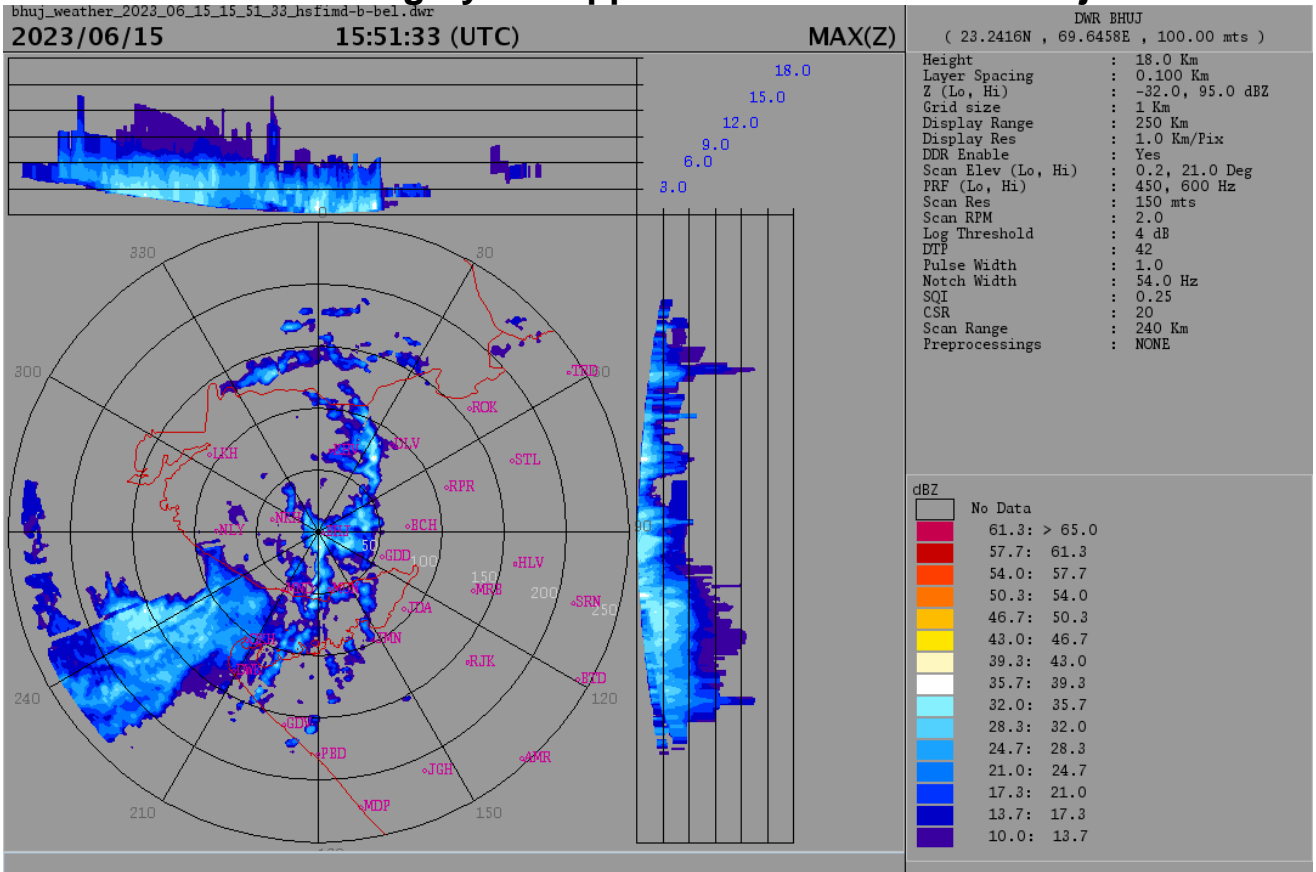


Very Severe Cyclonic Storm "Biparjoy" (23.1°N/68.3°E)



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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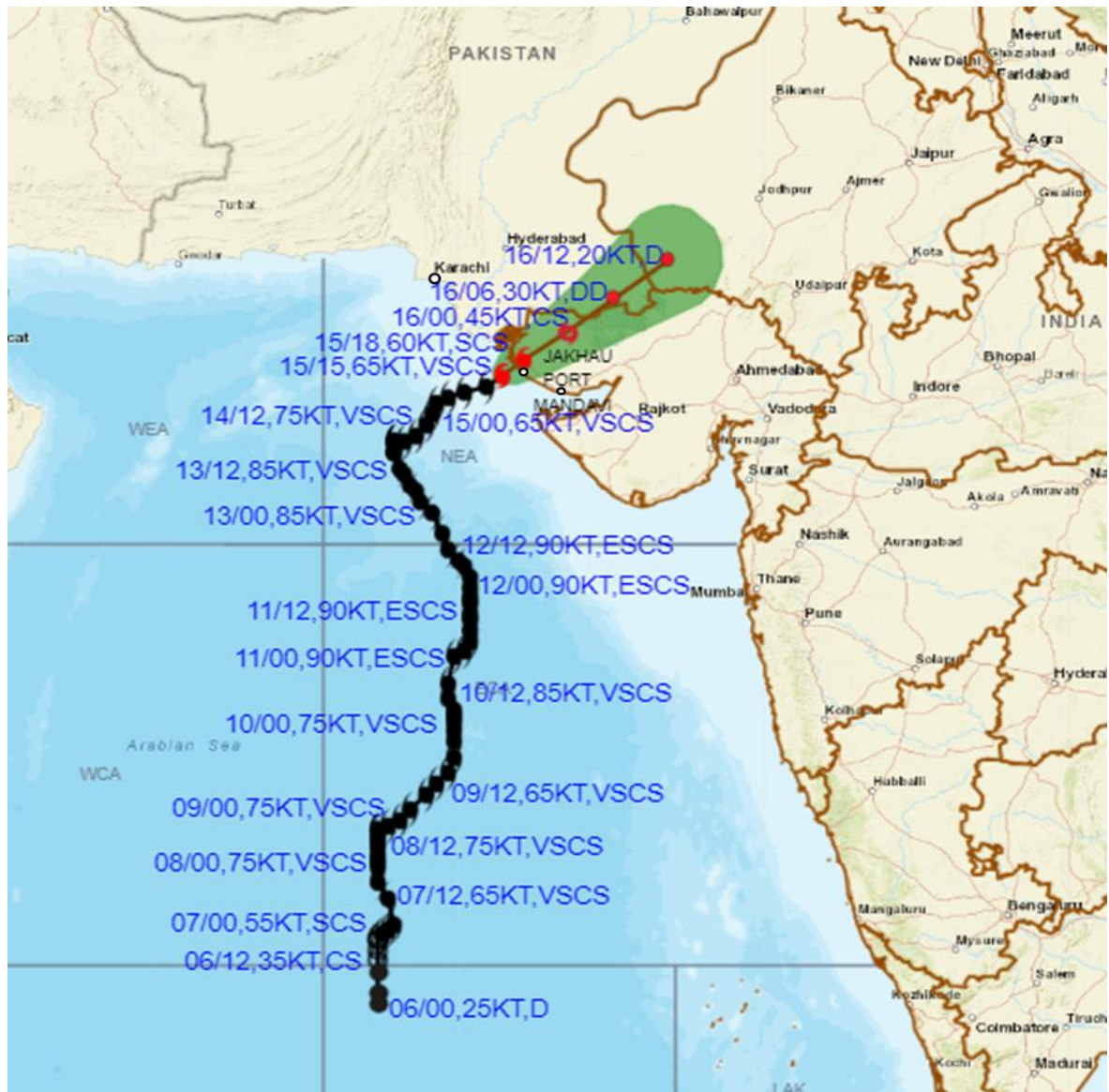
Radar Imagery of Doppler Weather Radar at Bhuj



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OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF VERY SEVERE CYCLONIC STORM “BIPARJOY” OVER NORTHEAST ARABIAN SEA CLOSE TO SAURASHTRA-KUTCH COAST BASED ON 1500 UTC (2030 IST) OF 15TH JUNE 2023.

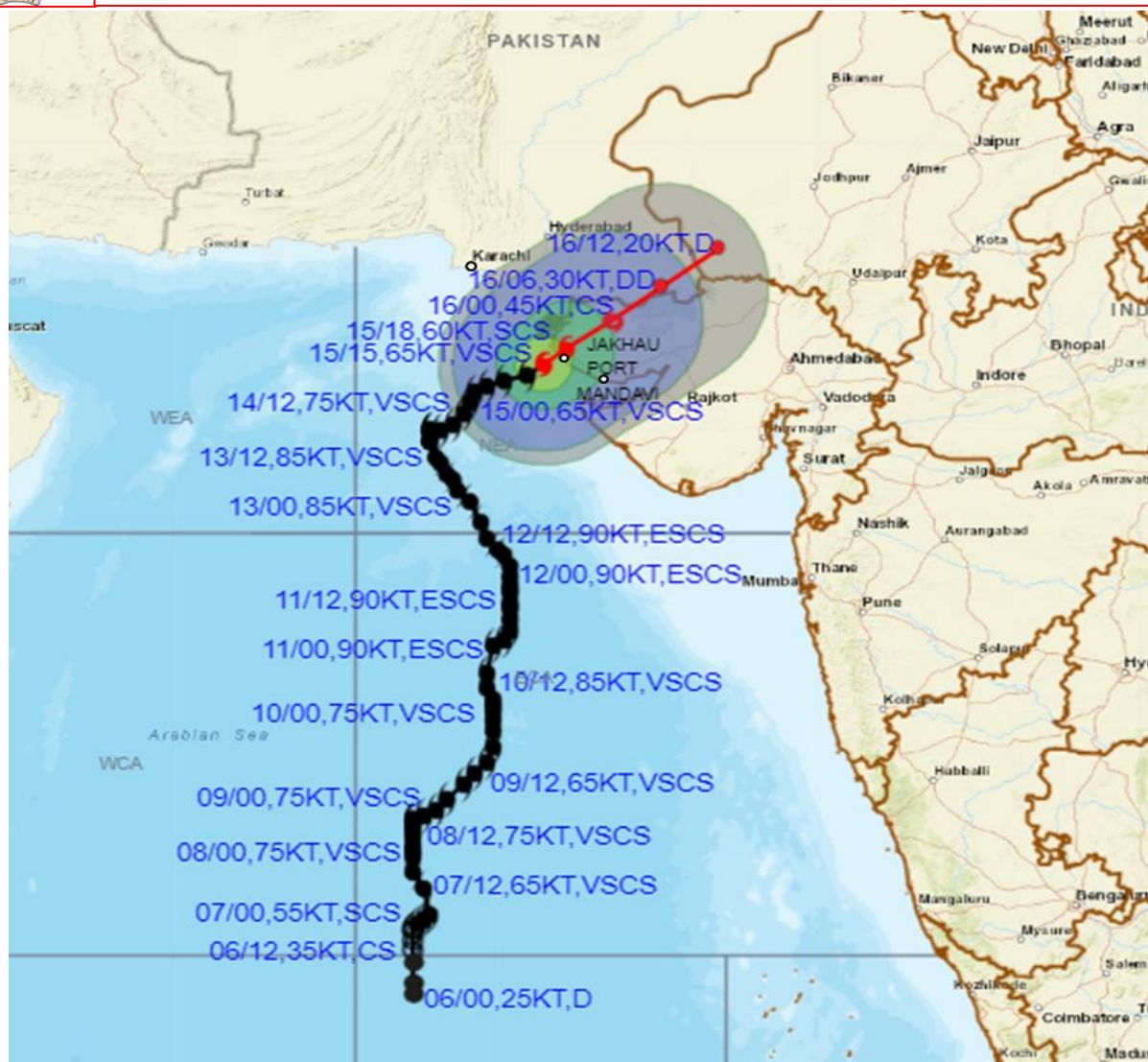


DATE/TIME IN UTC
 IST=UTC + 0530
 L: LOW PRESSURE AREA
 WML: WELL MARKED LOW PRESSURE AREA
 D: DEPRESSION (17-27 KT)
 DD: DEEP DEPRESSION (28-33 KT)
 CS: CYCLONIC STORM (34-47 KT)
 SCS: SEVERE CYCLONIC STORM (48-63KT)
 VSCS: VERY SEVERE CYCLONIC STORM (64-89 KT)
 ESCS: EXTREMELY SEVERE CYCLONIC STORM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



OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF VERY SEVERE CYCLONIC STORM "BIPARJOY" OVER NORTHEAST ARABIAN SEA CLOSE TO SAURASHTRA-KUTCH COAST BASED ON 1500 UTC (2030 IST) OF 15TH JUNE 2023.



DATE/TIME IN UTC

IST=UTC + 0530

L: LOW PRESSURE AREA

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D: DEPRESSION (17-27 KT)

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SuCS: SUPER CYCLONIC STORM (\geq 120 KT)

● LESS THAN 34 KT

○ 34.47 KT

● \geq 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)

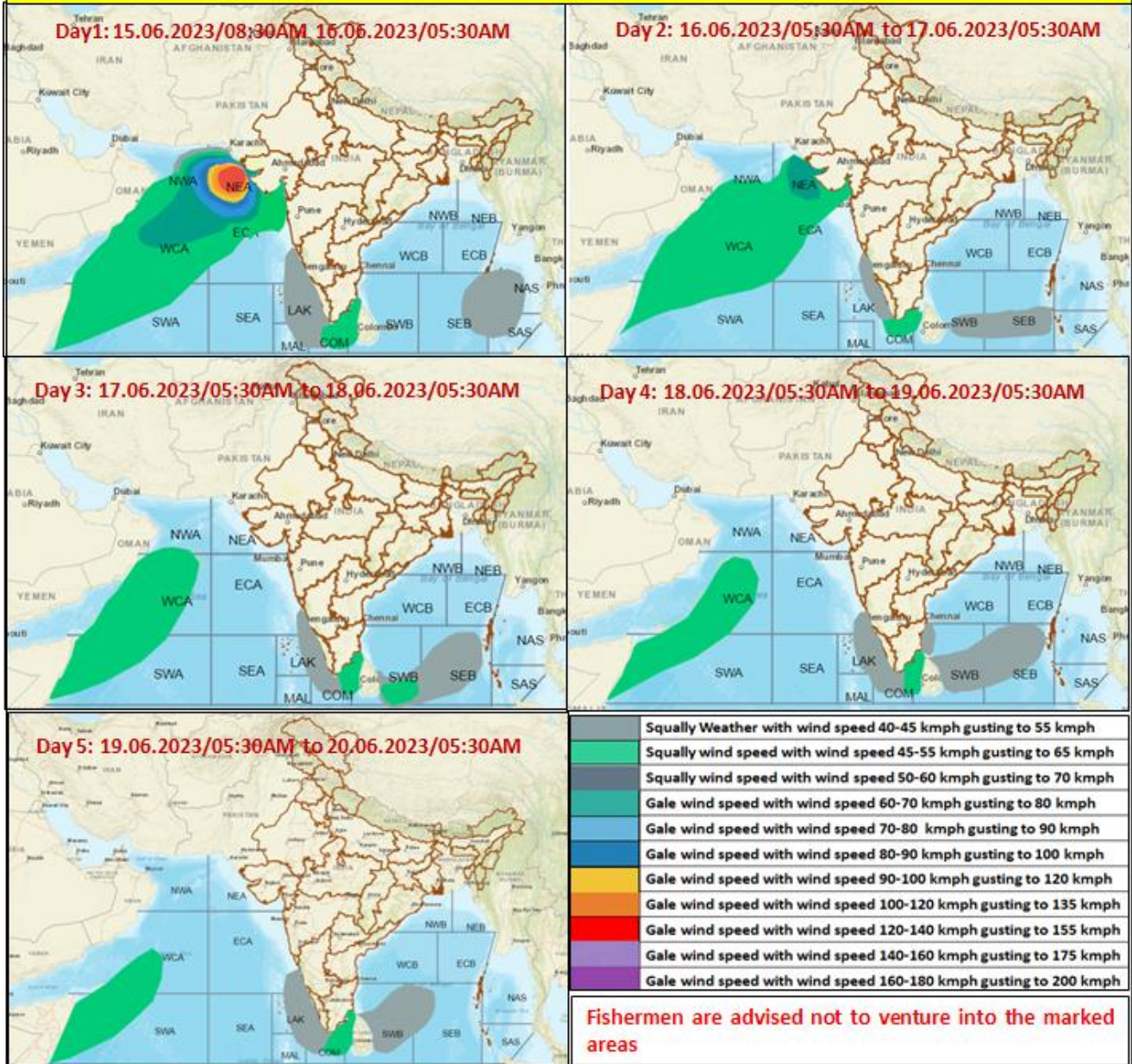
■ \geq 64 KT (\geq 118 KMPH)

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
\geq 64 (\geq 118)	Phenomenal	Total suspension of fishing operations

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Fishermen warning graphics



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