REGIONALSPECIALISED METEOROLOGICALCENTRE-TROPICALCYCLONES,NEW DELHI
TROPICAL CYCLONE ADVISORY

DEMS-RSMCSPECIAL 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. 71 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 48 HOURS ISSUED AT 0830 UTC OF 15.06.2023 BASED ON 0600 UTC OF 15.06.2023

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

THE VERY SEVERE CYCLONIC STORM "BIPARJOY" (PRONOUNCED AS "BIPORJOY") OVER NORTHEAST ARABIAN SEA MOVED NORTHEASTWARD WITH A SPEED OF 8 KMPH DURING PAST 6-HOURS AND LAY CENTERED AT 0600 UTC OF 15TH JUNE, 2023 OVER THE SAME REGION NEAR LATITUDE 22.8°N AND LONGITUDE 67.3°E, ABOUT 140 KM WEST-SOUTHWEST OF JAKHAU PORT (GUJARAT), 190 KM WEST-NORTHWEST OF DEVBHUMI DWARKA (42731), 170 KM WEST-SOUTHWEST OF NALIYA (42631), 280 KM WEST-NORTHWEST OF PORBANDAR (42830), AND 230 KM SOUTH OF KARACHI (PAKISTAN, 41780).

IT IS VERY LIKELY TO MOVE NORTHEASTWARDS AND CROSS SAURASHTRA & KUTCH AND ADJOINING PAKISTAN COASTS BETWEEN MANDVI (GUJARAT, 42729) AND KARACHI (PAKISTAN, 41780) NEAR JAKHAU PORT (GUJARAT) AROUND 1500 UTC OF 15TH JUNE AS A VERY SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED WIND SPEED OF 115-125 KMPH GUSTING TO 140 KMPH. THE LANDFALL PROCESS WILL COMMENCE FROM 1200 UTC OF TODAY, THE 15TH JUNE AND CONTINUE TILL 1800 UTC.

FORECAST TRACK AND INTENSITY ARE GIVEN BELOW:

DATE/TIME (UTC)	POSITION (LAT. ^{0}N/ LONG. ^{0}E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
15.06.23/0600	22.8/67.3	120-130 Gusting To 145	Very Severe Cyclonic Storm
15.06.23/1200	23.2/67.8	115-125 Gusting To 140	Very Severe Cyclonic Storm
15.06.23/1800	23.7/68.7	105-115 Gusting To 125	Severe Cyclonic Storm
15.06.23/0000	24.2/69.4	75-85 Gusting To 95	Cyclonic Storm
16.06.23/0600	24.7/70.2	50-60 Gusting To 70	Deep Depression
16.06.23/1800	25.6/71.5	35-45 Gusting To 55	Well Marked Low Pressure Area

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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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 MAINLY OVER NORTH ARABIAN SEA BETWEEN LATITUDE 20.0°N & 24.0°N AND LONGITUDE 63.0°E & 69°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. MAJOR CONVECTION AREA IS SEEN IN SOUTHWEST SECTOR. MULTISAT WINDS INDICATE STRONGER WINDS ARE SEEN IN THE SOUTHEAST SECTOR. ANIMATION OF SATELLITE AND RADAR IMAGERIES INDICATE REORGANISATION OF CLOUDS DURING PAST 3 HOURS.

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.

AT 0600 UTC, NALIYA(42631) REPORTED MEAN SEA LEVEL PRESSURE (MSLP) OF 994.2 HPA, PRESSURE FALL DURING PAST 24 HOURS (P24) OF -3.7 HPA AND MAXIMUM SUSTAINED WIND SPEED (MSW) OF 140°/14KT. DWARKA (42731) REPORTED MSLP OF 992.5 HPA, P24 OF -0.5 HPA AND MSW OF 180°/18KT. BHUJ (42634) REPORTED MSLP OF 997.2 HPA, P24 OF -3.6 HPA AND MSW OF 140°/13KT. OKHA (42730) REPORTED MSLP OF 994.0 HPA, P24 OF -5.0 HPA AND MSW OF 160°/15KT. KARACHI (41780) REPORTED MSLP OF 997.5 HPA, P24 OF -1.1 HPA AND MSW OF 50°/16KT.

STORM SURGE GUIDANCE:

STROM SURGE HEIGHT OF ABOUT 2-3 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.

STROM SURGE HEIGHT OF ABOUT 1-2 METER ABOVE THE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF COASTAL PAKISTAN NEAR LANDFALL POINT DURING THE TIME OF LANDFALL.

REMARKS:

SEA SURFACE TEMPERATURE IS AROUND 29-30°C OVER NORTHEAST ARABIAN SEA. OCEAN HEAT CONTENT IS 60-70KJ/CM^2 AND IS EXPECTED TO DECREASE GRADUALLY ALONG THE FORECAST TRACK BECOMING 30-40 KJ/CM^2 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 HAS DECREASED AND IS AROUND $250X10^{-6}S^{-1}$ TO THE SOUTH OF THE SYSTEM CENTRE. LOW LEVEL CONVERGENCE IS SAME AND IS ABOUT $30X10^{-5}S^{-1}$ TO THE SOUTHWEST OF THE SYSTEM CENTRE AND UPPER LEVEL SAME AND IS ABOUT $20X10^{-5}S^{-1}$ 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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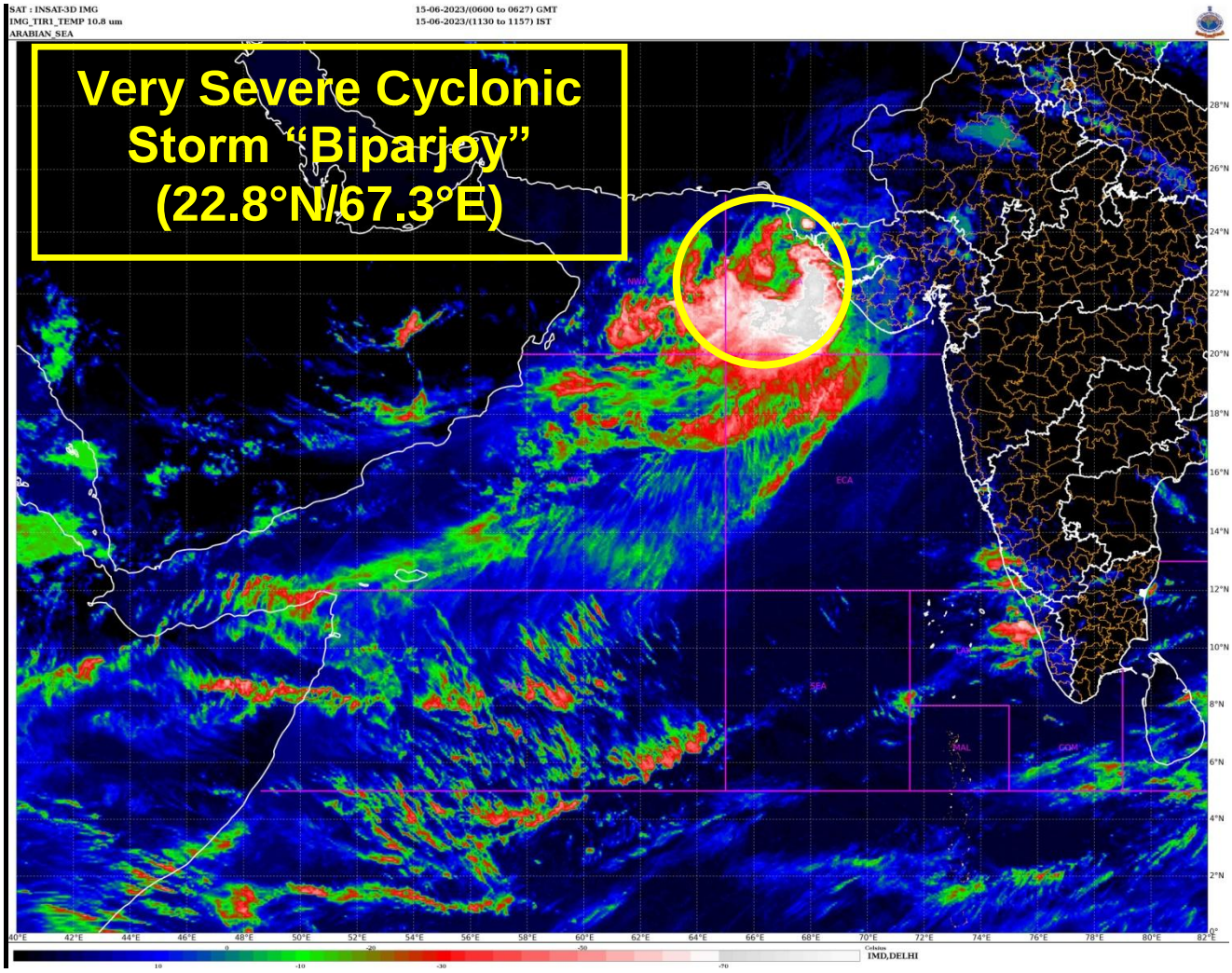
AS THE SYSTEM WILL APPROACH COAST, IT IS LIKELY TO EXPERIENCE LOWER OCEAN THERMAL ENERGY (40-50 KJ/CM^2) AND DECREASE IN MIDDLE LEVEL HUMIDITY DUE TO DRY COLD AIR INTRUSION.

CONSIDERING ALL THE ABOVE, TC BIPARJOY IS VERY LIKELY TO MOVE NORTHEASTWARDS AND CROSS SAURASHTRA & KUTCH AND ADJOINING PAKISTAN COASTS BETWEEN MANDVI (GUJARAT) AND KARACHI (PAKISTAN) NEAR JAKHAU PORT (GUJARAT) AROUND 1200 UTC OF 15TH JUNE AS A VERY SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED WIND SPEED OF 115-125 KMPH GUSTING TO 140 KMPH.

M. SHARMA
SCIENTIST D
RSMC NEW DELHI



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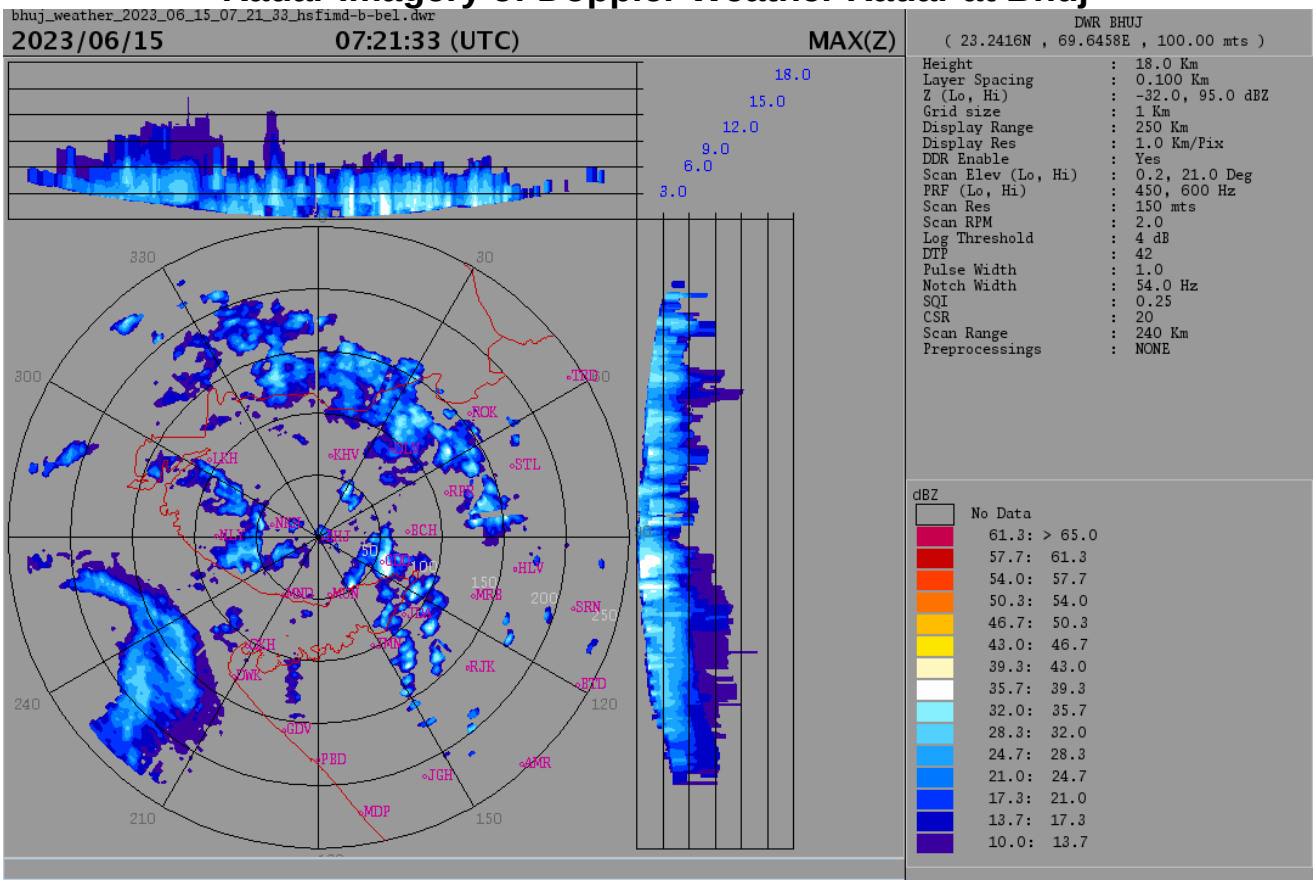
Radar Imagery of Doppler Weather Radar at Bhuj



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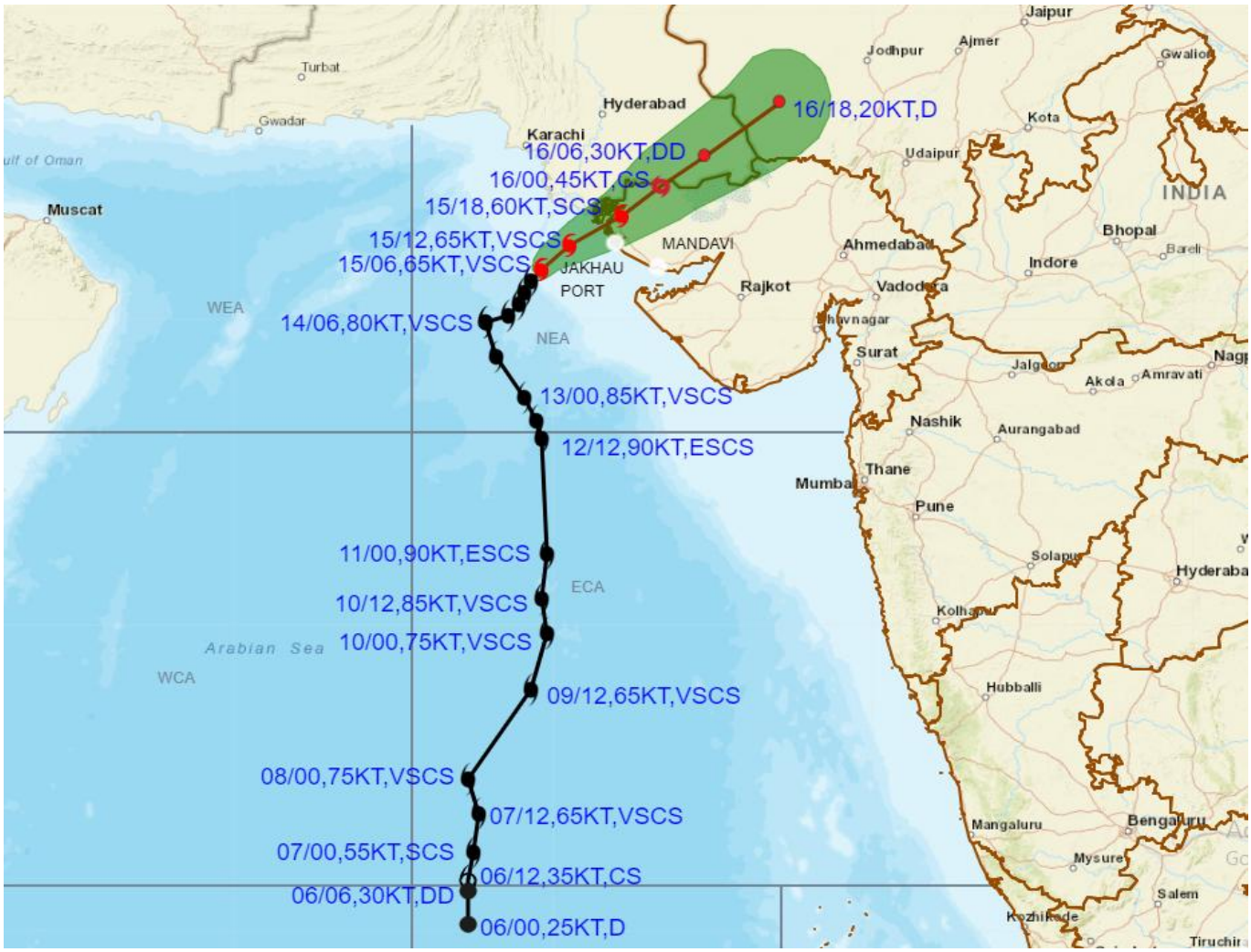
OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINITY OF VERY SEVERE CYCLONIC STORM "BIPARJOY" OVER NORTHEAST ARABIAN SEA BASED ON 0600 UTC (1130 IST) OF 15TH JUNE 2023.



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

Forecast	DISTANCE(KM) AND DIRECTION FROM STATIONS				
Date and Time	NALIYA	JAKHAU PORT	DWARKA	KARACHI AIRPORT	PORBANDAR
16.06.23/0600	210, NE	230, NE	280, NNE	310, E	340, N

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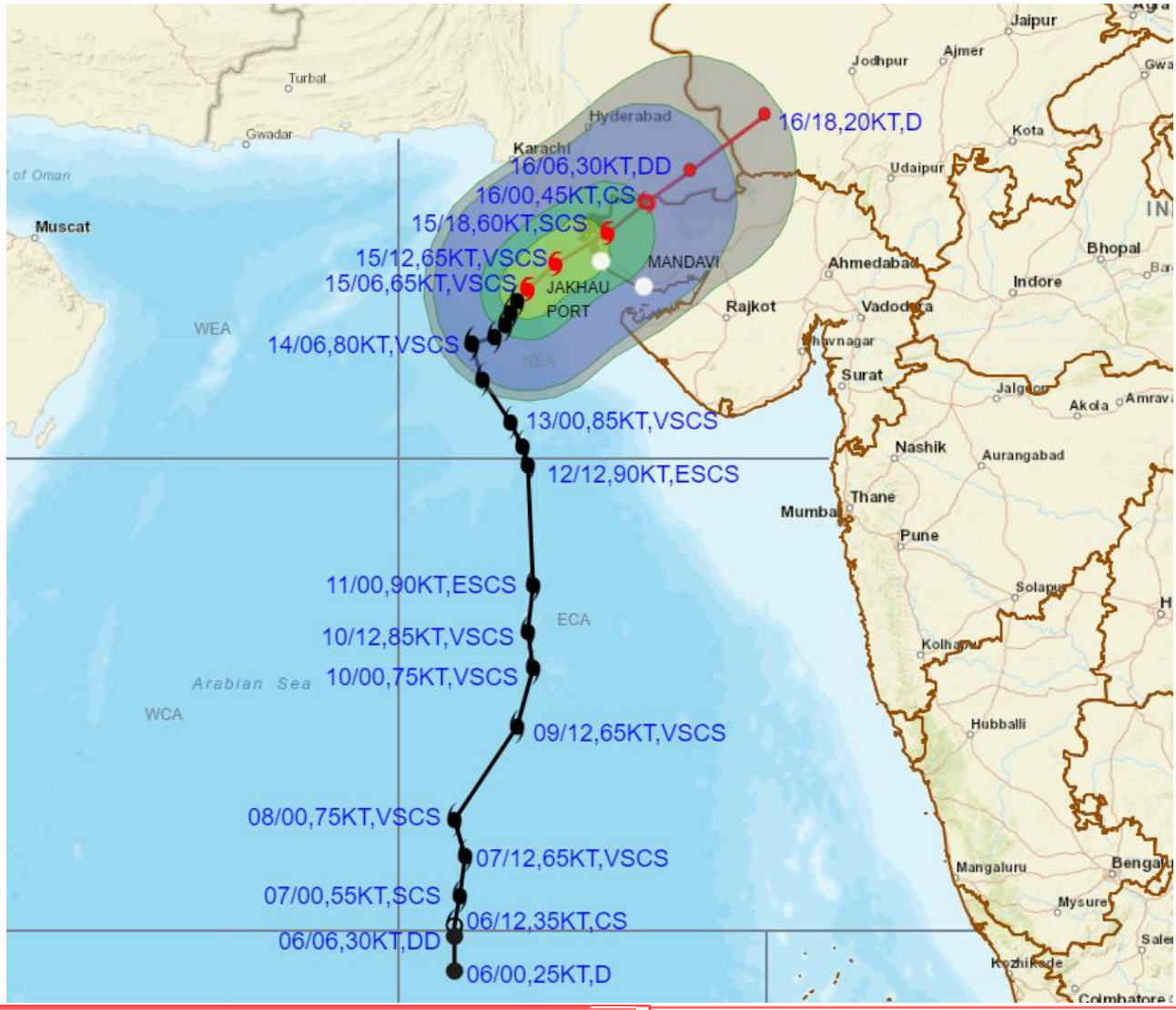
OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF VERY SEVERE CYCLONIC STORM "BIPARJOY" OVER NORTHEAST ARABIAN SEA BASED ON 0600 UTC (1130 IST) OF 15TH JUNE 2023.



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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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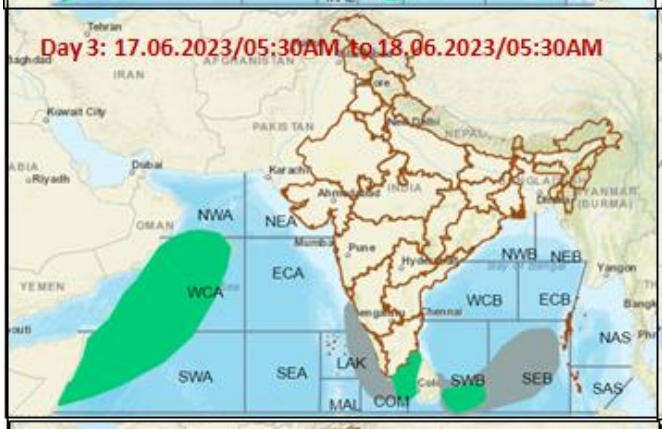
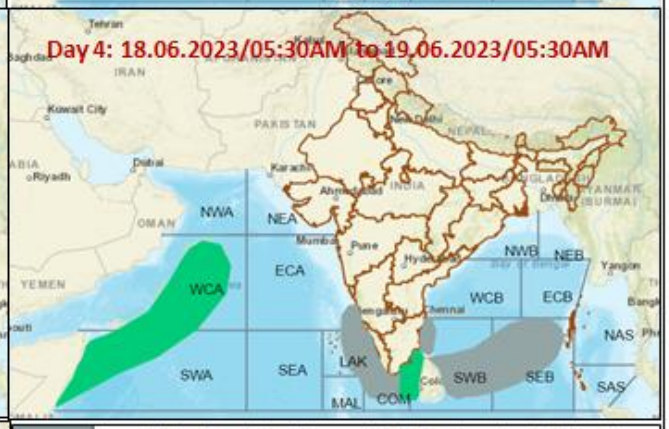
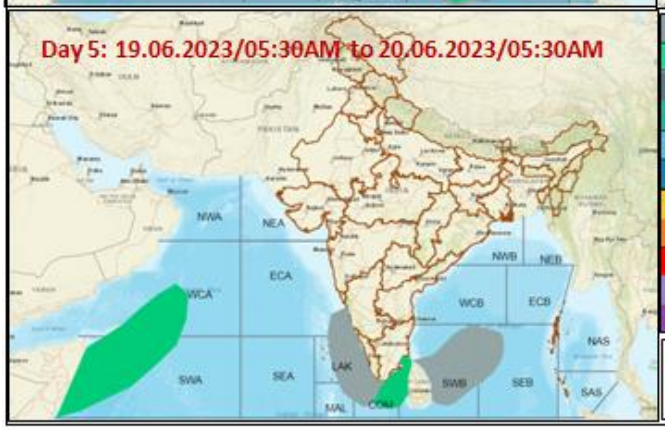
Fishermen warning graphics







Squally Weather with wind speed 40-45 kmph gusting to 55 kmph
Squally wind speed with wind speed 45-55 kmph gusting to 65 kmph
Squally wind speed with wind speed 50-60 kmph gusting to 70 kmph
Gale wind speed with wind speed 60-70 kmph gusting to 80 kmph
Gale wind speed with wind speed 70-80 kmph gusting to 90 kmph
Gale wind speed with wind speed 80-90 kmph gusting to 100 kmph
Gale wind speed with wind speed 90-100 kmph gusting to 120 kmph
Gale wind speed with wind speed 100-120 kmph gusting to 135 kmph
Gale wind speed with wind speed 120-140 kmph gusting to 155 kmph
Gale wind speed with wind speed 140-160 kmph gusting to 175 kmph
Gale wind speed with wind speed 160-180 kmph gusting to 200 kmph

Fishermen are advised not to venture into the marked areas

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