



**India Meteorological Department
(Ministry of Earth Sciences)**

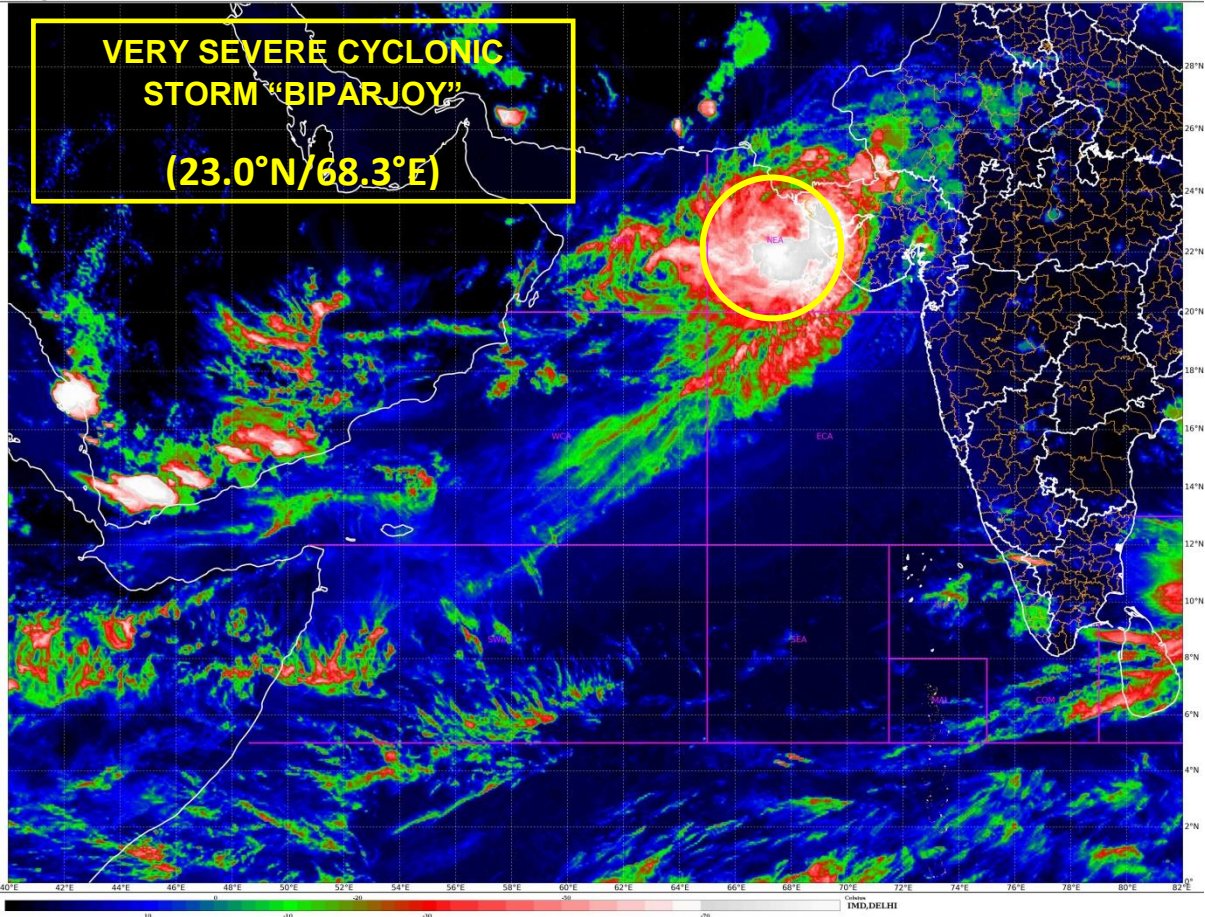
HOURLY UPDATE ON VERY SEVERE CYCLONIC STORM 'BIPARJOY'

BULLETIN NO. 09

DATE: 15-06-2023

TIME OF ISSUE: 2023 HRS IST

DATE/TIME (IST) OF OBSERVATION	BASED ON 15-06-2023 (1930 HRS IST)
CURRENT LOCATION (LATITUDE/LONGITUDE)	NORTHEAST ARABIAN SEA NEAR LATITUDE 23.0°N AND LONGITUDE 68.3°E , <ul style="list-style-type: none">• 40 KM SOUTHWEST OF JAKHAU PORT (GUJARAT),• 110 KM NORTHWEST OF DEVBHUMI DWARKA,• 60 KM WEST-SOUTHWEST OF NALIYA,• LANDFALL PROCESS IS CONTINUING.
CURRENT INTENSITY NEAR CENTRE	115-125 KMPH GUSTING TO 140 KMPH
REALIZED RAINFALL FROM 0830 HRS IST OF 15 TH JUNE (MM)	DWARAKA-29;OKHA-20; NALIYA-42; BHUJ-74; PORBANDAR-28; KANDLA-30;
CURRENT WIND SPEED OBSERVED ALONG SAURASHTRA & KUTCH (KMPH)	<ul style="list-style-type: none">• DWARAKA – 34; OKHA -43; DIU – 47;• NALIYA - 52; VERAVAL – 45; BHUJ - 15;• PORBANDAR – 37; KANDLA - 41;
PAST MOVEMENT	MOVED EAST-NORTHEASTWARDS WITH A SPEED OF 10 KMPH DURING PAST 06 HOURS.
LANDFALL FORECAST	<ul style="list-style-type: none">• LANDFALL AREA: SAURASHTRA & KUTCH AND ADJOINING PAKISTAN COASTS.• LANDFALL POINT: BETWEEN MANDVI AND KARACHI NEAR JAKHAU PORT• LANDFALL TIME: LANDFALL PROCESS IS CONTINUING AND BY MIDNIGHT IT WILL BE COMPLETELY OVER THE LAND.• WIND DURING LANDFALL: 115-125 KMPH GUSTING TO 140 KMPH
FORECAST STORM SURGE	<ul style="list-style-type: none">• 2-3 M ABOVE THE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE THE LOW LYING AREAS DURING THE TIME OF LANDFALL.• NOTE: ASTRONOMICAL TIDES COULD BE UPTO 3-6 METERS IN DIFFERENT PLACES.



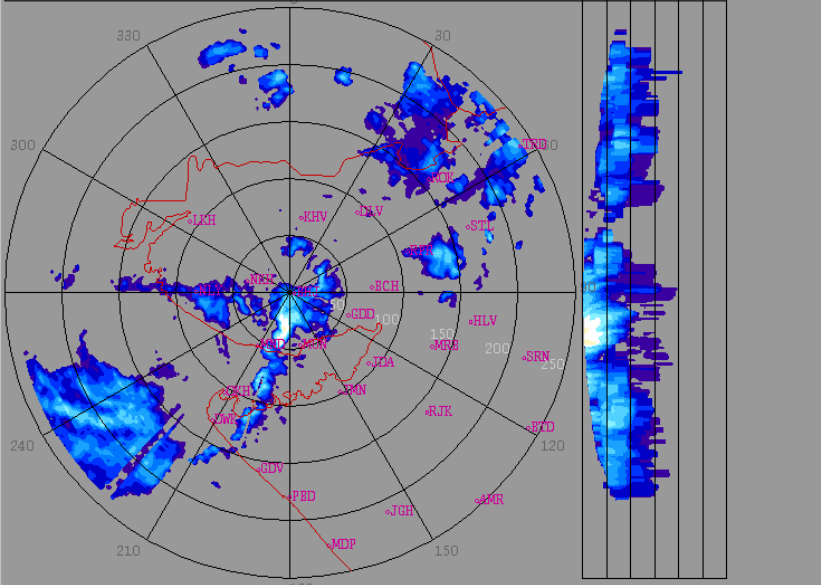
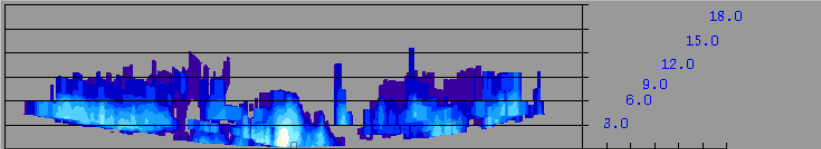
bhuj_weather_2023_06_15_13_21_34_hsfimd-b-bel.dwr

2023/06/15

13:21:34 (UTC)

MAX(Z)

DWR BHUJ
 (23.2416N , 69.6458E , 100.00 mts)



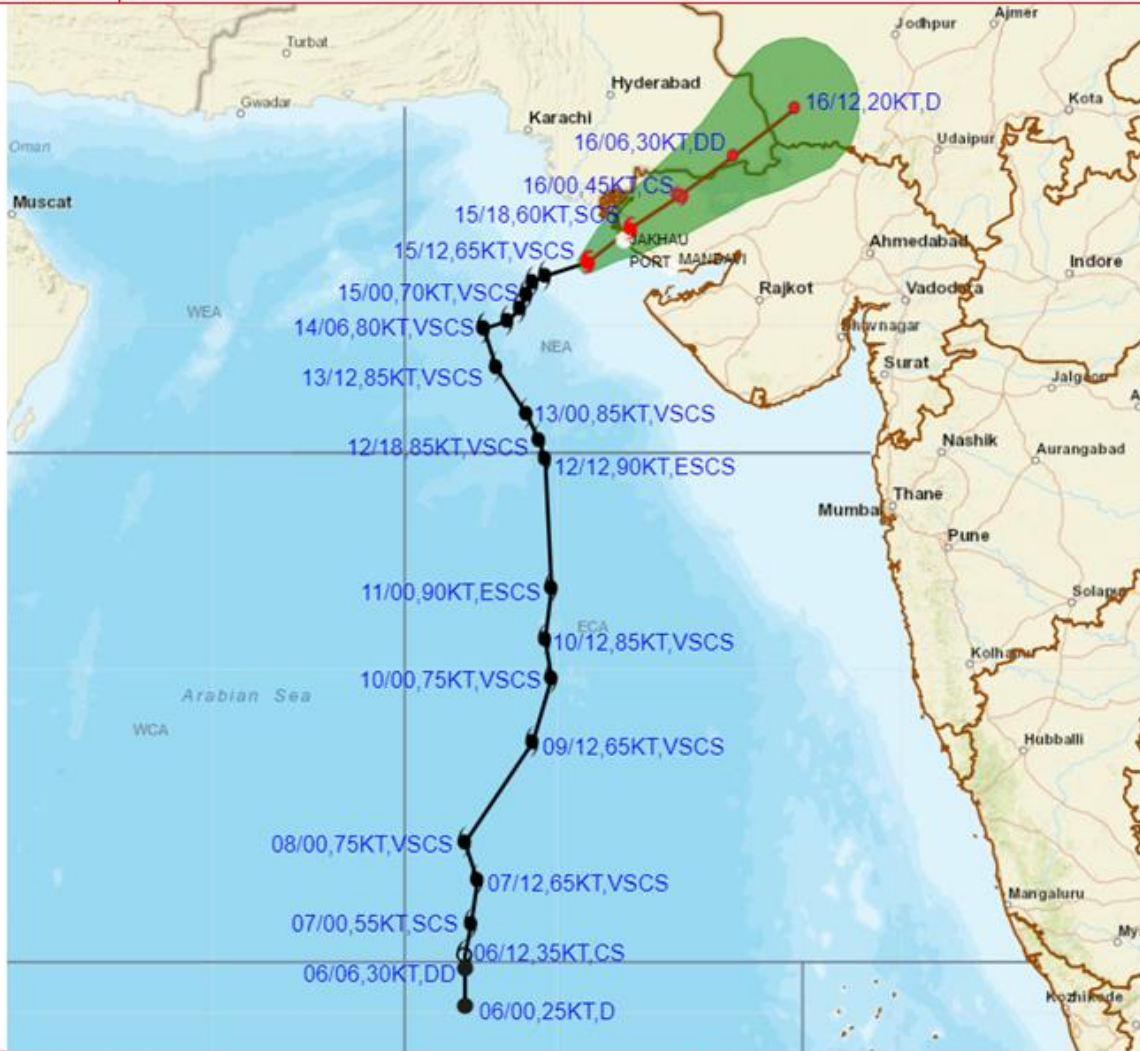
Height	: 18.0 Km
Layer Spacing	: 0.100 Km
Z (Lo, Hi)	: -32.0, 95.0 dBZ
Grid size	: 1 Km
Display Range	: 250 Km
Display Res	: 1.0 Km/Pix
DDR Enable	: Yes
Scan Elev (Lo, Hi)	: 0.2, 21.0 Deg
PRF (Lo, Hi)	: 450, 600 Hz
Scan Res	: 150 mts
Scan RPM	: 2.0
Log Threshold	: 4 dB
DTP	: 42
Pulse Width	: 1.0
Notch Width	: 54.0 Hz
SQI	: 0.25
CSR	: 20
Scan Range	: 240 Km
Preprocessings	: NONE

dBZ	
No Data	
61.3 : > 65.0	
57.7 : 61.3	
54.0 : 57.7	
50.3 : 54.0	
46.7 : 50.3	
43.0 : 46.7	
39.3 : 43.0	
35.7 : 39.3	
32.0 : 35.7	
28.3 : 32.0	
24.7 : 28.3	
21.0 : 24.7	
17.3 : 21.0	
13.7 : 17.3	
10.0 : 13.7	

Reflectivity imagery from Doppler weather Radar -Bhuj based on 1850 hrs IST of 15th June 2023.



OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF VERY SEVERE CYCLONIC STORM "BIPARJOY" OVER NORTHEAST ARABIAN SEA BASED ON 1200 UTC (1730 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

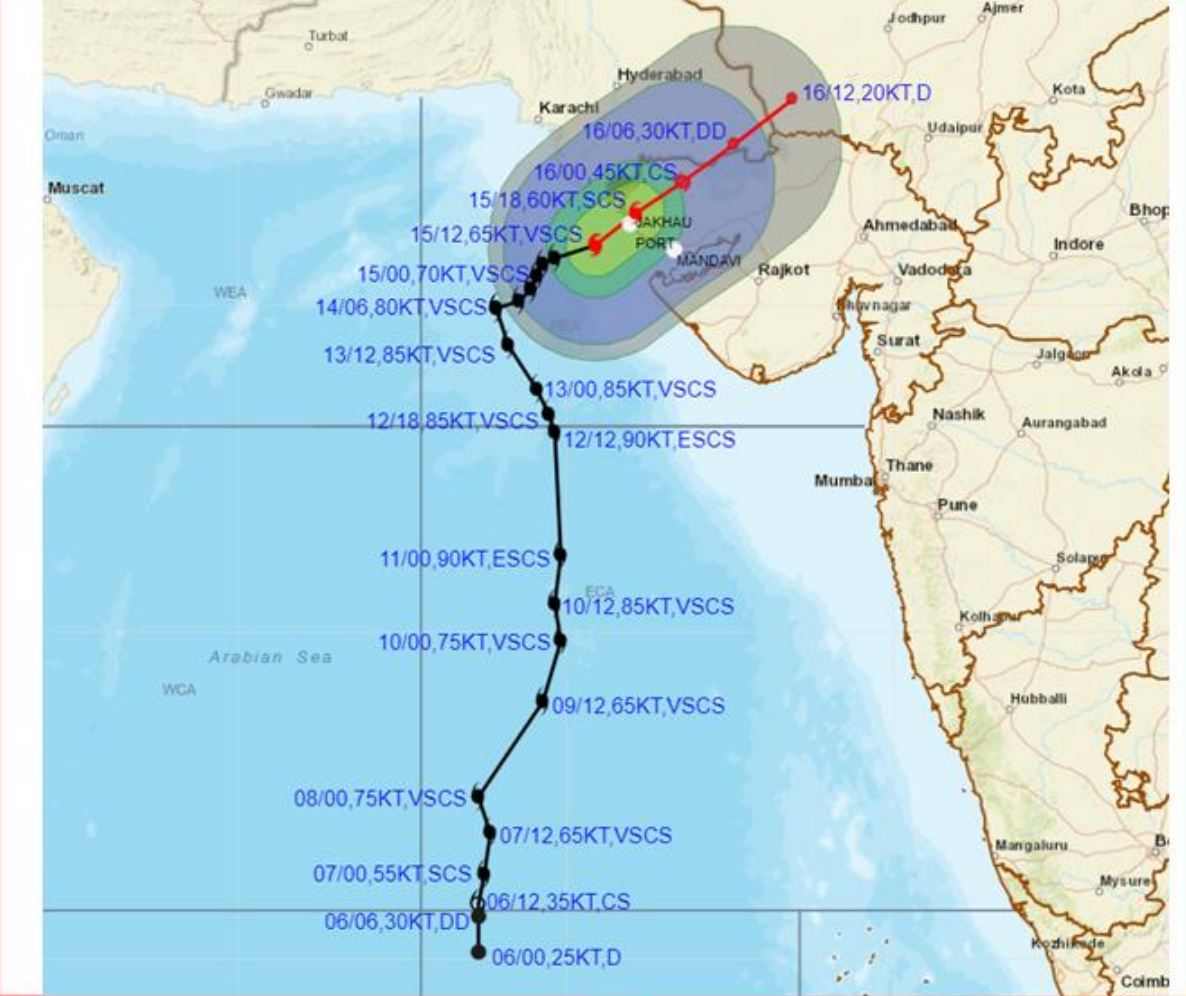
— OBSERVED TRACK

— FORECAST TRACK

▲ CONE OF UNCERTAINTY



OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF VERY SEVERE CYCLONIC STORM "BIPARJOY" OVER NORTHEAST ARABIAN SEA BASED ON 1200 UTC (1730 IST) OF 15TH JUNE 2023.



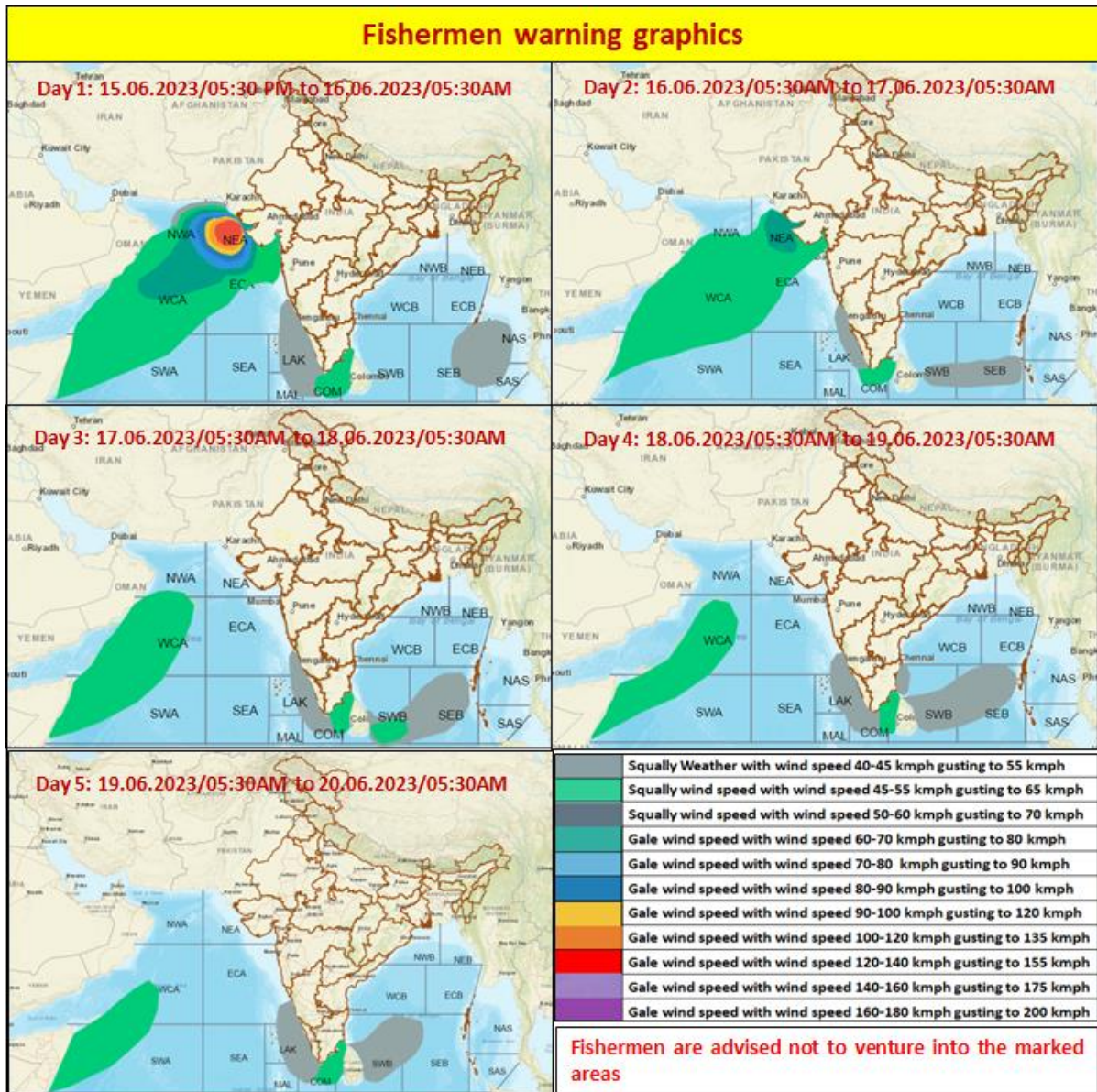
DATE/TIME IN UTC
 IST=UTC +0530
 L: LOW PRESSURE AREA
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 VSCS: VERY SEVERE CYCLONIC STORM (64-89 KT)
 ESCS: EXTREMELY SEVERE CYCLONIC STORM (90-119 KT)
 SuCS: SUPER CYCLONIC STORM (≥ 120 KT)

● 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

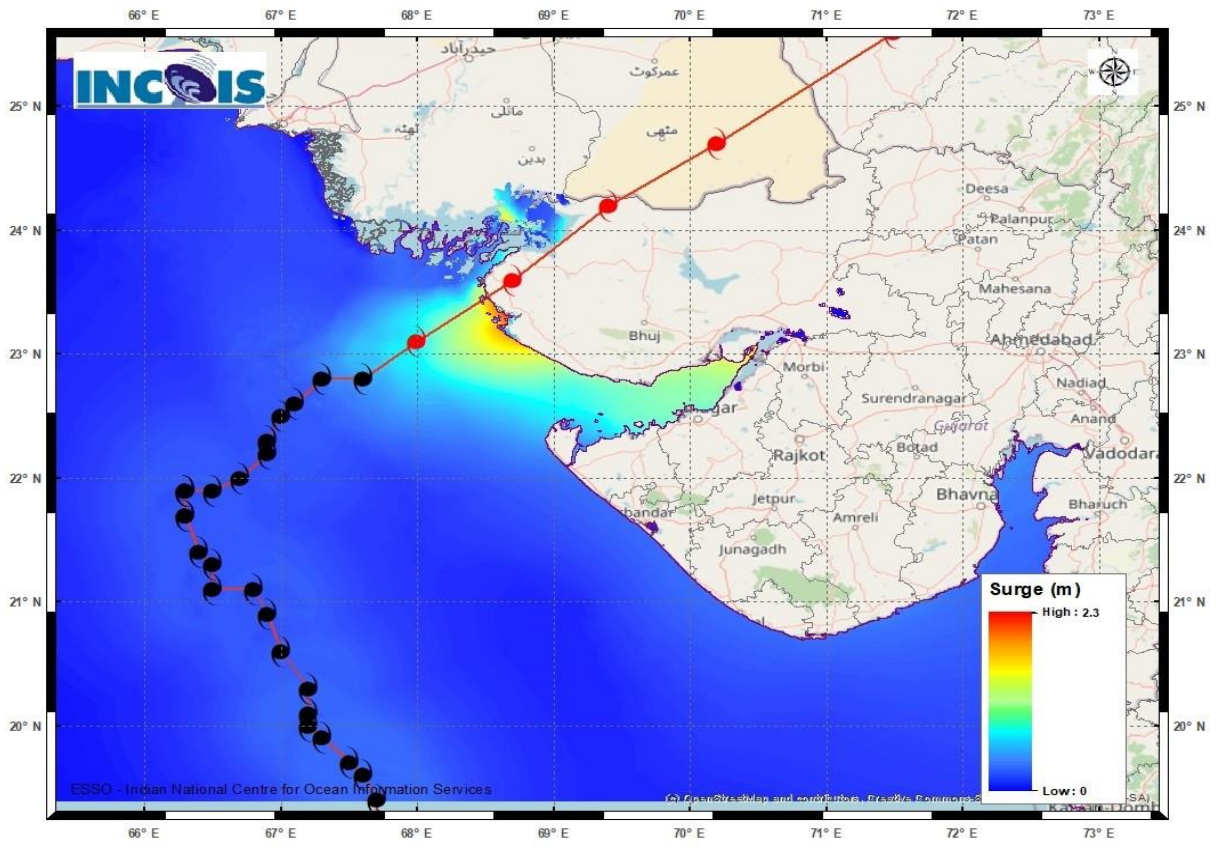
FISHERMEN WARNING GRAPHICS



STORM SURGE HEIGHT INFORMATION:

* The below listed surge heights are over and above astronomical tide.

Astronomical Tide On 15th June 2023		
Station	Time (IST)	Height (M)
Porbandar	09:37	2.61
Navlakhi	13:38	7.54
Okha	11:36	3.74
Deendayal Port (Kandla)	13:02	6.79



Storm surge graphics from INCOIS for VSCS-Biparjoy