



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

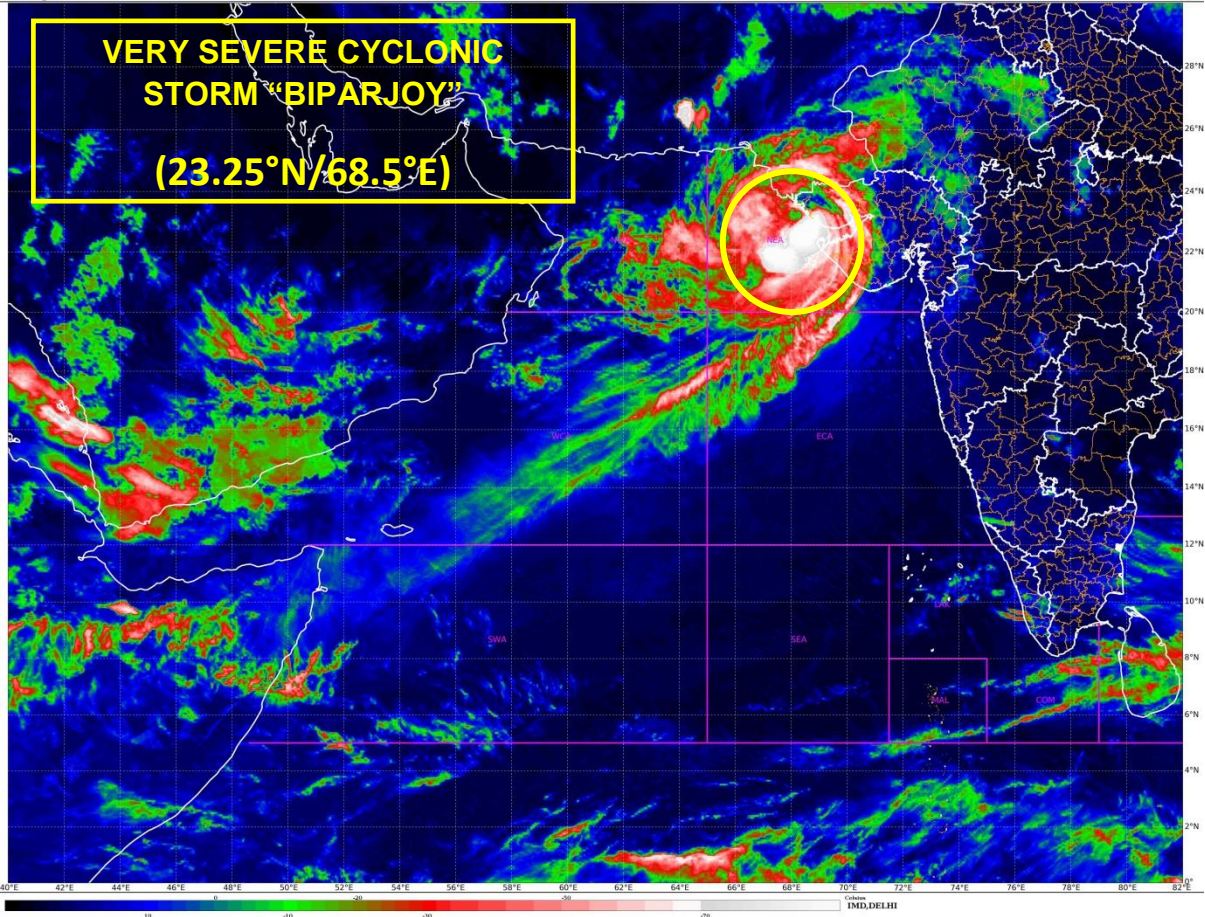
HOURLY UPDATE ON VERY SEVERE CYCLONIC STORM 'BIPARJOY'

**BULLETIN NO. 12**

DATE: 15-06-2023

TIME OF ISSUE: 2330 HRS IST

<b>DATE/TIME (IST) OF OBSERVATION</b>	<b>BASED ON 15-06-2023 (2230 HRS IST)</b>
CURRENT LOCATION (LATITUDE/LONGITUDE)	NORTHEAST ARABIAN SEA NEAR <b>LATITUDE 23.25°N AND LONGITUDE 68.5°E</b> , CLOSE TO SAURASHTRA-KUTCH COAST <ul style="list-style-type: none"><li>• 10 KM WEST OF JAKHAU PORT (GUJARAT),</li><li>• 120 KM NORTH-NORTHWEST OF DEVBHUMI DWARKA,</li><li>• 40 KM WEST OF NALIYA,</li><li>• <b>LANDFALL PROCESS IS CONTINUING.</b></li></ul>
CURRENT INTENSITY NEAR CENTRE	115-125 KMPH GUSTING TO 140 KMPH
CURRENT WIND SPEED ESTIMATED ALONG SAURASHTRA & KUTCH (KMPH)	115-125 KMPH GUSTING TO 140 KMPH
REALIZED RAINFALL FROM 0830 HRS IST OF 15 <sup>TH</sup> JUNE (MM)	DWARKA-34; OKHA-23; NALIYA-33; BHUJ-73; PORBANDAR-20; KANDLA-14;
PAST MOVEMENT	MOVED EAST-NORTHEASTWARDS WITH A SPEED OF 12 KMPH DURING PAST 06 HOURS.
LANDFALL FORECAST	<ul style="list-style-type: none"><li>• LANDFALL AREA: SAURASHTRA &amp; KUTCH AND ADJOINING PAKISTAN COASTS.</li><li>• LANDFALL POINT: BETWEEN MANDVI AND KARACHI NEAR JAKHAU PORT</li><li>• LANDFALL TIME: LANDFALL PROCESS IS CONTINUING AND BY MIDNIGHT IT WILL BE COMPLETELY OVER THE LAND. PART OF THE EYE IS OVER THE LAND.</li><li>• WIND DURING LANDFALL: 115-125 KMPH GUSTING TO 140 KMPH</li></ul>
FORECAST STORM SURGE	<ul style="list-style-type: none"><li>• 2M ABOVE THE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE THE LOW LYING AREAS DURING THE TIME OF LANDFALL DURING NEXT 3 HOURS AND REDUCE THEREAFTER.</li></ul>



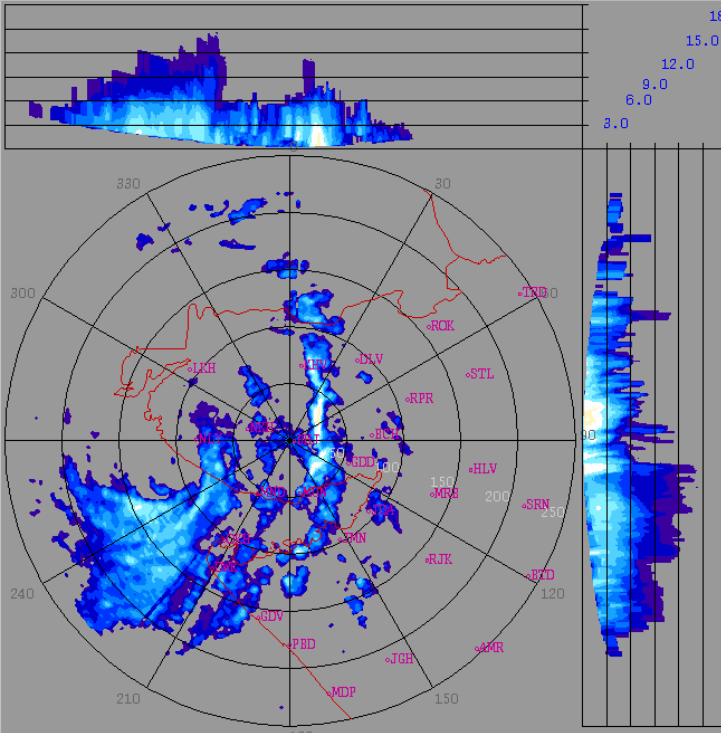
bhuj\_weather\_2023\_06\_15\_17\_21\_39\_hsfimd-b-bel.dwr

2023/06/15

17:21:39 (UTC)

MAX(Z)

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



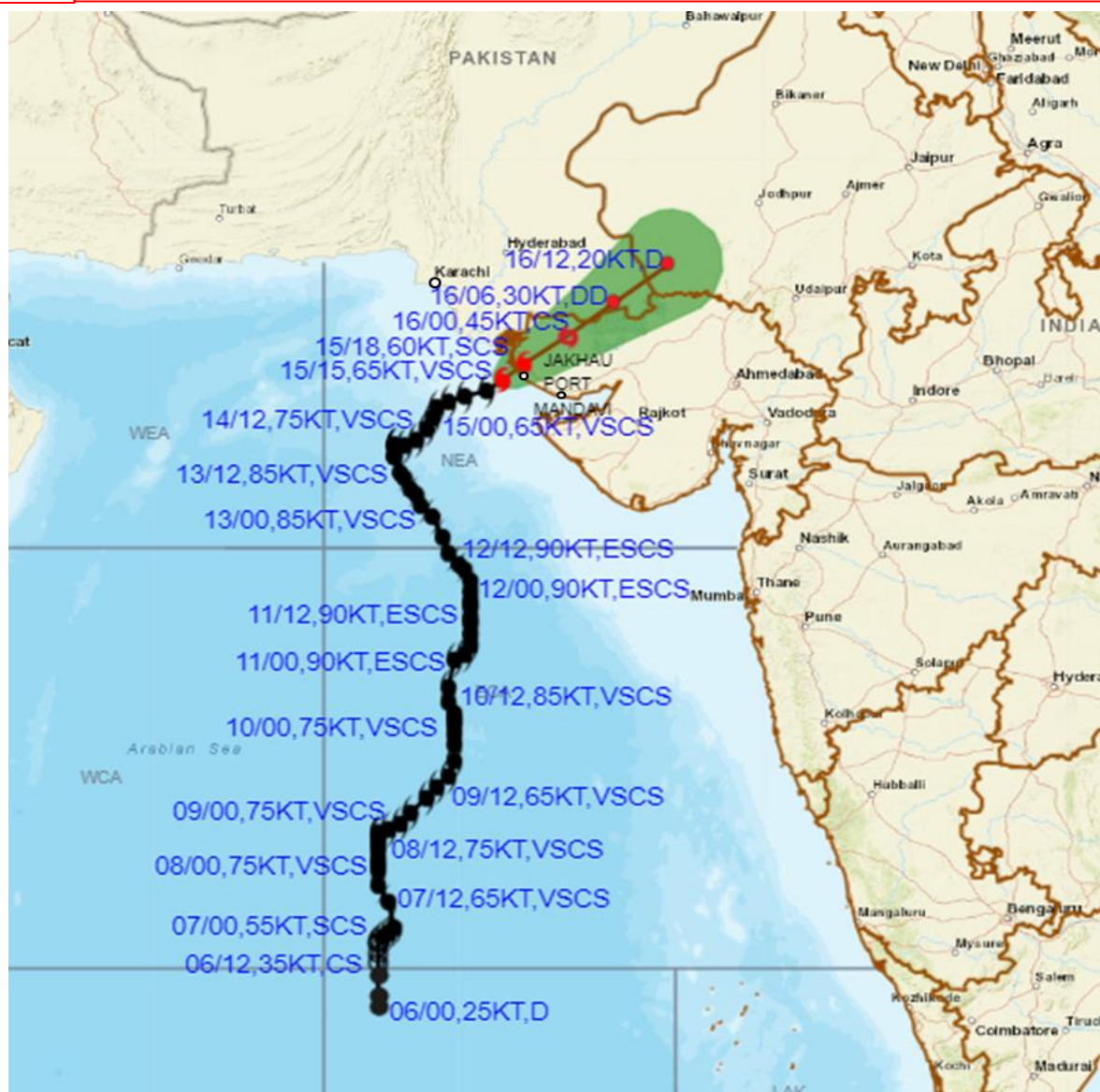
Height	: 18.0 Km
Layer Spacing	: 0.100 Km
Z (Lo, Hi)	: -32.0, 95.0 dBZ
Grid size	: 1 Km
Display Range	: 250 Km
Display Res	: 1.0 Km/Pix
DDR Enable	: Yes
Scan Elev (Lo, Hi)	: 0.2, 21.0 Deg
PRF (Lo, Hi)	: 450, 600 Hz
Scan Res	: 150 mts
Scan RPM	: 2.0
Log Threshold	: 4 dB
DTP	: 42
Pulse Width	: 1.0
Notch 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 2250 hrs IST of 15<sup>th</sup> June 2023.



**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 15<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

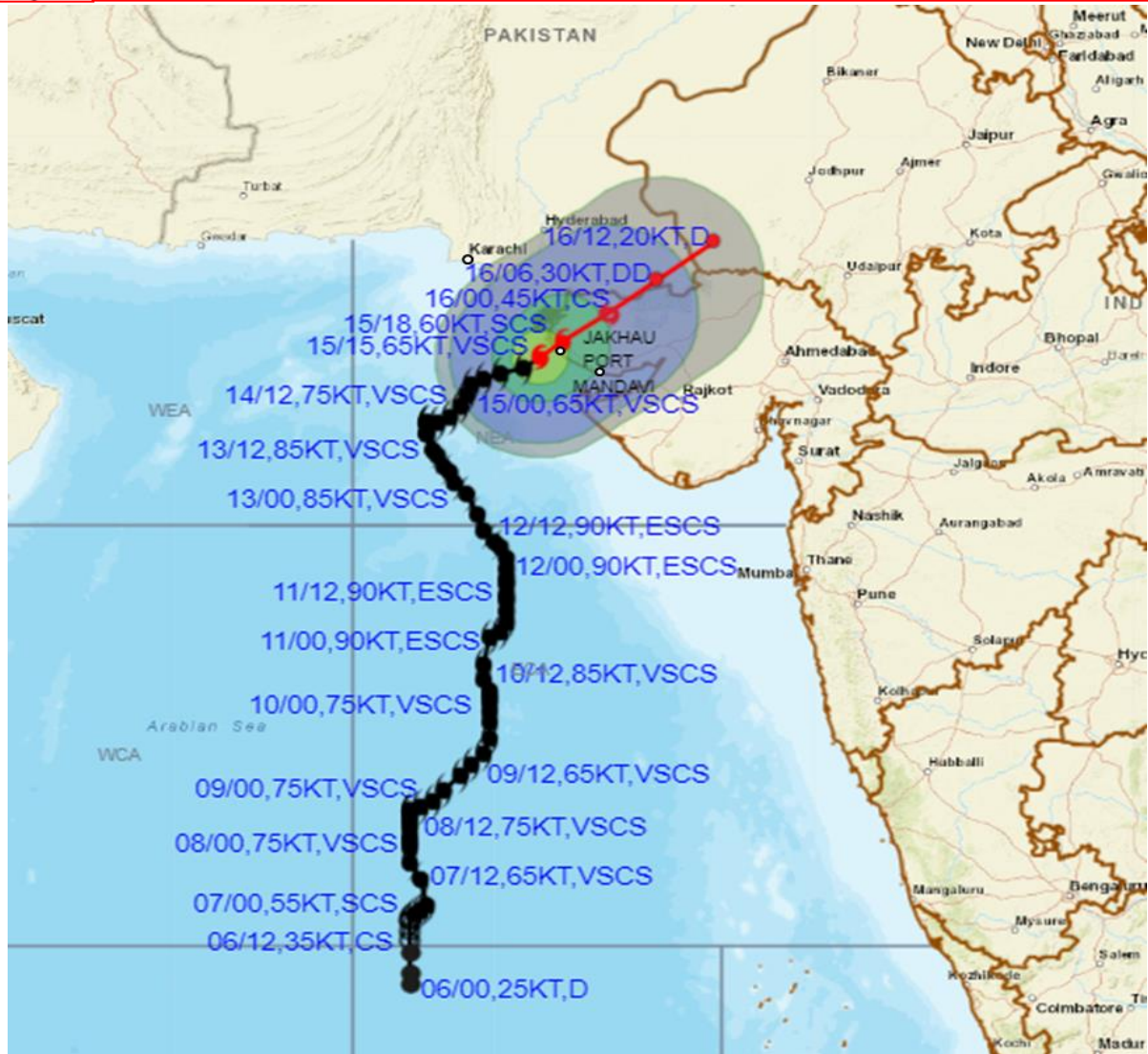
— OBSERVED TRACK

— FORECAST TRACK

▲ CONE OF UNCERTAINTY



**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 15<sup>TH</sup> JUNE 2023.**



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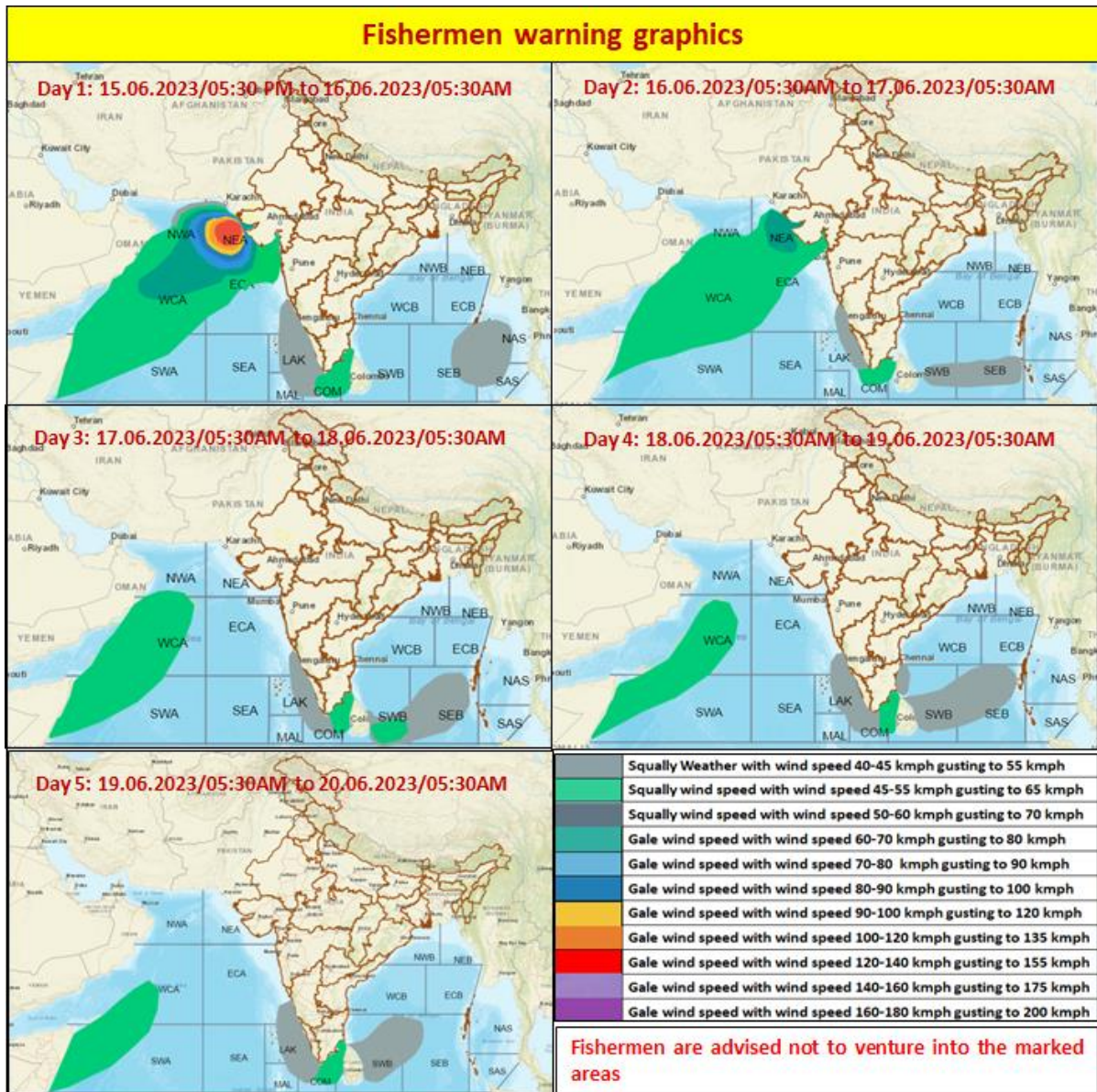
SuCS: SUPER CYCLONIC STORM (≥ 120 KT)

- 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

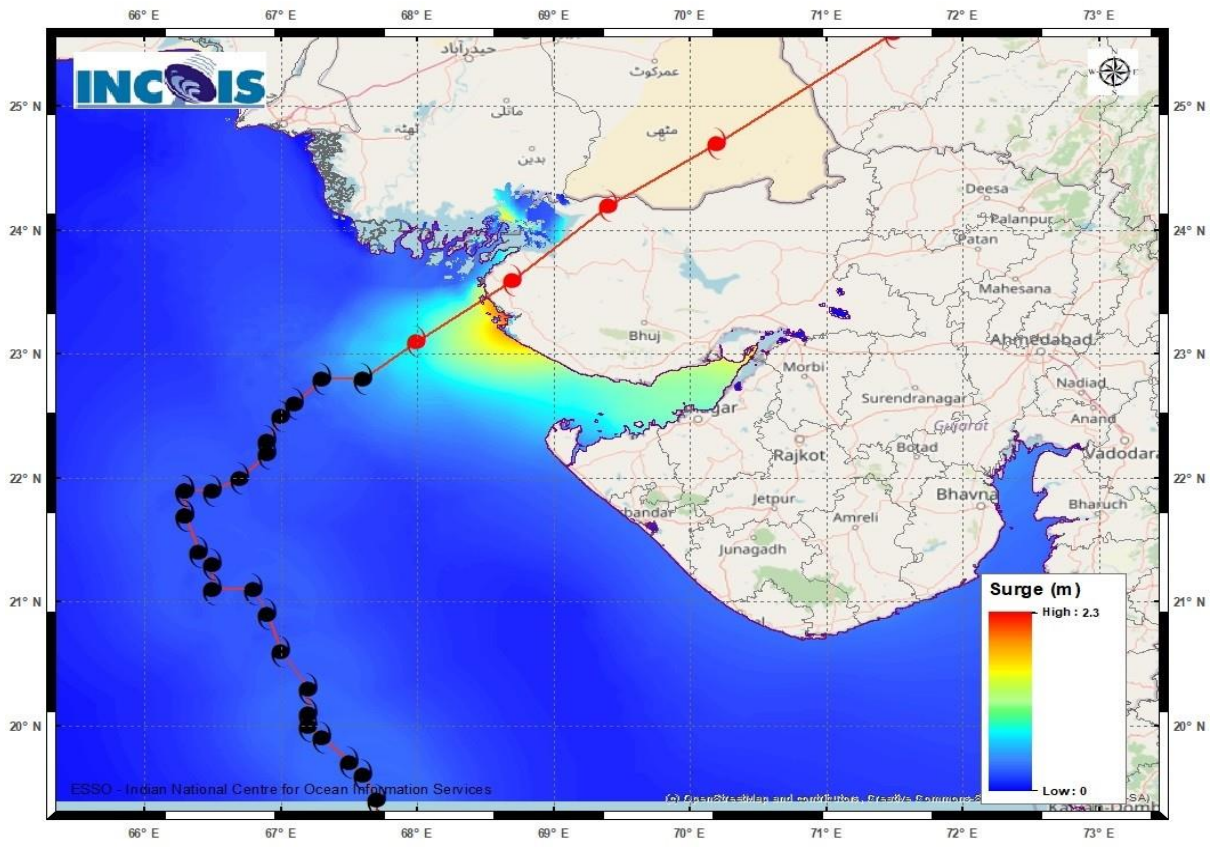
# FISHERMEN WARNING GRAPHICS



## STORM SURGE HEIGHT INFORMATION:

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

<b>Astronomical Tide On 15<sup>th</sup> June 2023</b>		
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