



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

BULLETIN NO. 45 (ARB/01/2023)

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Sub: Extremely Severe Cyclonic Storm “Biparjoy” (pronounced as “Biporjoy”) over eastcentral Arabian Sea: Cyclone Alert for Saurashtra & Kutch Coasts (Yellow Message)

The extremely severe cyclonic storm “Biparjoy” (pronounced as “Biporjoy”) over eastcentral Arabian Sea moved slowly northwards with a speed of 02 kmph during past 6-hours and lay centered at 2030 hours IST of today, the 11th June, 2023 over the same region near latitude 18.7°N and longitude 67.7°E, about 540 km west of Mumbai, 390 km south-southwest of Porbandar, 430 km south-southwest of Devbhumi Dwarka, 520 km south-southwest of Naliya and 690 km south of Karachi (Pakistan).

It is very likely to move nearly northward till 14th morning, then move north-northeastwards and cross Saurashtra & Kutch and adjoining Pakistan coasts between Mandvi (Gujarat) and Karachi (Pakistan) by noon of 15th June as a very severe cyclonic storm with maximum sustained wind speed of 125-135 kmph gusting to 150 kmph.

Forecast track and intensity are given below:

Date/Time(IST)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
11.06.23/2030	18.7/67.7	165-175 Gusting To 195	Extremely Severe Cyclonic Storm
11.06.23/2330	18.8/67.7	160-170 Gusting To 190	Extremely Severe Cyclonic Storm
12.06.23/0530	19.1/67.6	155-165 Gusting To 185	Very Severe Cyclonic Storm
12.06.23/1130	19.4/67.5	150-160 Gusting To 180	Very Severe Cyclonic Storm
12.06.23/1730	19.9/67.4	145-155 Gusting To 175	Very Severe Cyclonic Storm
13.06.23/0530	20.5/67.3	140-150 Gusting To 165	Very Severe Cyclonic Storm
13.06.23/1730	21.2/67.3	135-145 Gusting To 160	Very Severe Cyclonic Storm
14.06.23/0530	21.8/67.4	130-140 Gusting To 155	Very Severe Cyclonic Storm
14.06.23/1730	22.4/67.8	125-135 Gusting To 150	Very Severe Cyclonic Storm
15.06.23/0530	23.1/68.5	120-130 Gusting To 145	Very Severe Cyclonic Storm
15.06.23/1730	23.7/69.2	95-105 Gusting To 115	Severe Cyclonic Storm
16.06.23/0530	24.3/69.9	50-60 Gusting to 70	Deep Depression
16.06.23/1730	24.9/70.6	25-35 Gusting to 45	Well Marked Low Pressure Area

(i) Heavy Rainfall warning for Gujarat (Kutch, Devbhumi Dwarka, Porbandar, Jamnagar, Rajkot, Junagarh and Morbi districts):

- Light to moderate rainfall at most places with heavy to very heavy rainfall at isolated places very likely over Kutch, Devbhumi Dwarka, Porbandar, Jamnagar, Rajkot, Junagarh and Morbi districts of Saurashtra & Kutch on 14th June.
- The intensity of rainfall would increase with heavy to very heavy rainfall at a few places and extremely heavy falls at isolated places very likely over Kutch, Devbhumi Dwarka & Jamnagar and heavy to very heavy rainfall at a few places over Porbandar, Rajkot, Morbi & Junagarh districts of Gujarat on 15th June.
- Isolated heavy rainfall is very likely over remaining districts of Saurashtra and north Gujarat region on 15th June.

(ii) Wind warning:

11th June: Gale wind speed reaching 165-175 kmph gusting to 195 kmph is prevailing over eastcentral Arabian Sea. Squally wind speed reaching 40-50 kmph gusting to 60 kmph is likely over adjoining areas of westcentral Arabian Sea.

12th June: Gale wind speed reaching 155-165 kmph gusting to 185 kmph is likely to prevail over northeast and adjoining eastcentral Arabian Sea. Squally wind speed reaching 40-50 kmph gusting to 60 kmph is likely over adjoining areas of westcentral Arabian Sea.

13th June: Gale wind speed reaching 140-150 kmph gusting to 165 kmph is likely to prevail over northeast Arabian Sea. Gale wind speed reaching 80-90 kmph gusting to 100 kmph is likely to prevail over adjoining areas of eastcentral Arabian Sea. Squally wind speed reaching 40-50 kmph gusting to 60 kmph is likely over adjoining areas of northwest Arabian Sea.

14th June: Gale wind speed reaching 130-140 kmph gusting to 155 kmph is likely to prevail over northeast Arabian Sea. Squally wind speed reaching 40-50 kmph gusting to 60 kmph is likely over adjoining areas of eastcentral Arabian Sea.

15th June: Gale wind speed reaching 120-130 kmph gusting to 145 kmph is likely to prevail over northeast Arabian Sea and likely to decrease becoming 70-80 kmph gusting to 90 kmph from night over the region. Squally wind speed reaching 40-50 kmph gusting to 60 kmph is likely over adjoining areas of eastcentral Arabian Sea.

Wind warning along & off Saurashtra& Kutch coasts (Kutch, Devbhumi Dwarka, Porbandar, Jamnagar, Rajkot, Junagarh and Morbi districts) including Gulf of Kutch:

- Squally wind speed reaching 40-50 kmph gusting to 60 kmph on 11th June, 45-55 kmph gusting to 65 kmph during 12th and becoming 50-60 kmph gusting to 70 kmph from 13th to evening of 14th June.
- Gale wind speed reaching 65-75 kmph gusting to 85 kmph very likely to prevail from 14th June evening and becoming 120-130 kmph gusting to 145 kmph from 15th morning for subsequent 12 hours.
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph very likely to prevail along & off remaining districts Saurashtra coast on 14th & 15th June.

(iii) Sea condition

11th June: Sea condition is likely to be phenomenal over eastcentral and rough over adjoining westcentral & northeast Arabian Sea.

12th June: Sea condition is likely to be phenomenal over northeast and adjoining eastcentral Arabian Sea and rough over adjoining westcentral Arabian Sea.

13th June: Sea condition is likely to be phenomenal over northeast and adjoining eastcentral Arabian Sea and rough over adjoining northwest Arabian Sea

14th June: Sea condition is likely to be phenomenal over northeast Arabian Sea and rough to very rough sea condition is likely over adjoining areas of eastcentral Arabian Sea.

15th June: Sea condition is likely to be phenomenal to very high over northeast Arabian Sea and very rough to rough over adjoining eastcentral Arabian Sea till 15th June noon and improve thereafter.

Along & off Saurashtra& Kutch coasts:

Sea conditions likely to be rough to very rough till 14th evening and high to phenomenal thereafter till 15th June noon and improve thereafter.

(iv) Storm Surge Warning (Kutch, Devbhumi Dwarka, Porbandar, Jamnagarh and Morbi districts)

Storm surge of about 2 -3 m above the astronomical tide is likely to inundate the low lying areas of above districts during the time of landfall.

(v) Damage expected over Kutch, Devbhumi Dwarka, Porbandar, Jamnagar, Morbi & Junagarh & Rajkot districts of Gujarat on 15th June:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Some damage to Pucca houses.
- Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Flooding of escape routes. Disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.
- Visibility severely affected due to salt spray.

(vi) Fishermen Warning & Action Suggested (Kutch, Devbhumi Dwarka, Porbandar, Jamnagar, Rajkot, Junagarh and Morbi districts) and for Offshore & Onshore Industries (Graphics Attached):

- Total suspension of fishing operations over
 - Eastcentral and adjoining Westcentral Arabian Sea till 15th June.
 - Northeast Arabian Sea during 12th -15th June
- Those out at sea are advised to return to coast.
- Judicious regulation of offshore and onshore activities.
- Ports along the west coast of India may take necessary precautions.
- Naval base operations may maintain necessary precautions.
- Movement in motor boats and small ships all & off these coasts to be avoided.
- Mobilise evacuation from coastal areas of Saurashtra and Kutch (Kutch, Devbhumi Dwarka, Porbandar, Jamnagar, Rajkot, Junagarh and Morbi districts).
- Judicious regulation of rail and road traffic.
- People in affected areas to remain indoors.
- Tourism activities may be restricted over these areas.
- Preparatory actions before the cyclones.

The systems are under continuous surveillance and the next message will be issued at 0230 hours IST of 12th June, 2023.

(Ananda K. Das)

Scientist F, Cyclone Warning Division, New Delhi

Copy to: ACWC Kolkata/ ACWC Chennai/ CWC Bhubaneswar/CWC Visakhapatnam/CWC Ahmedabad/ MO Port Blair/MC Raipur/MC Bhopal/MC Hyderabad/RMC Nagpur

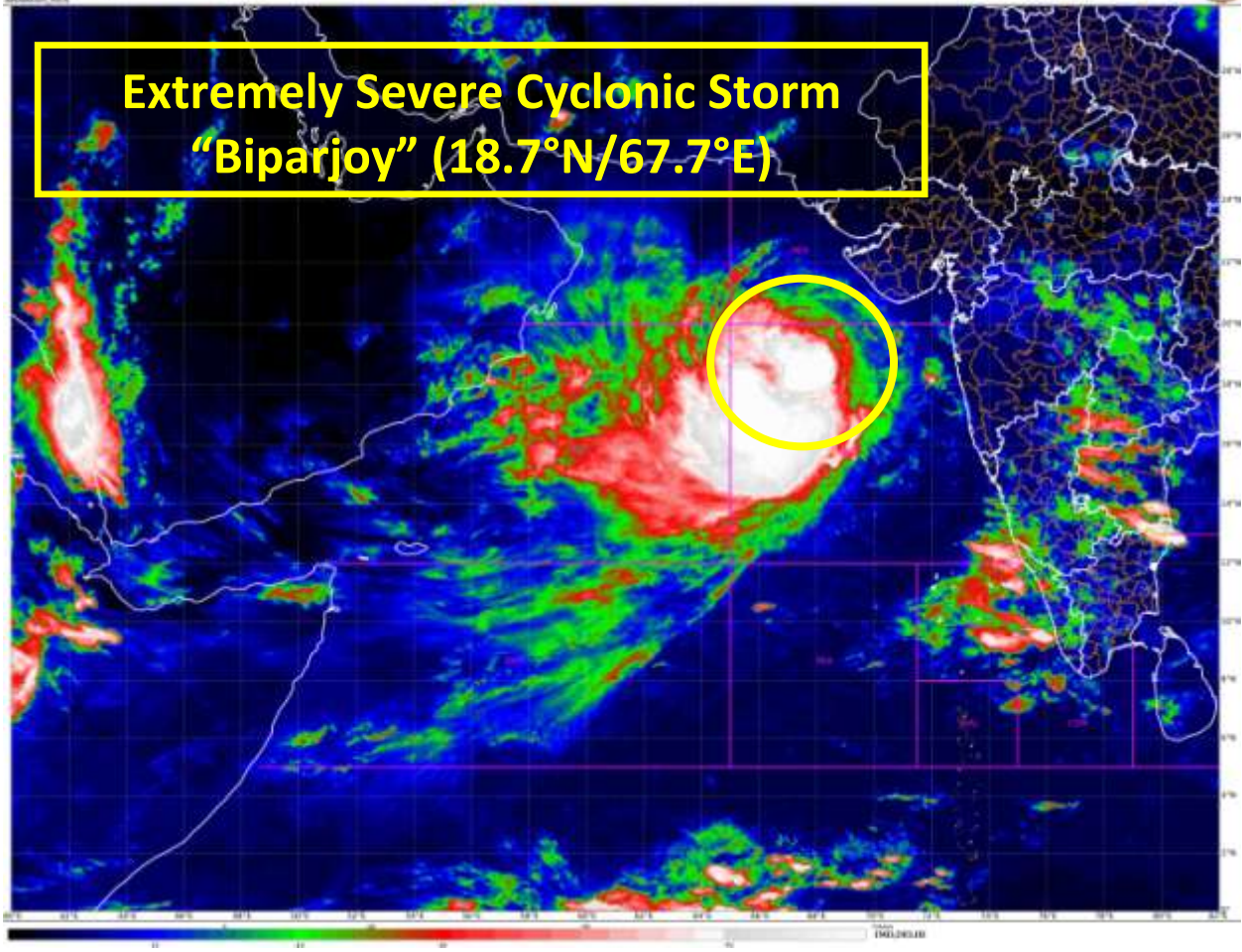
LEGEND: Heavy Rainfall: 64.5 to 115.5mm, **Very Heavy Rainfall:** 115.6 to 204.4mm **Most Places:** more than 76% of total stations, **Isolated Places:** Less than 25% of total

REF : IMG000 000
IMG : IMG1_TEMP 16.0 cm
DATE/TIME : 00

FROM: 000000000 to 000000000
TO: 000000000 to 000000000

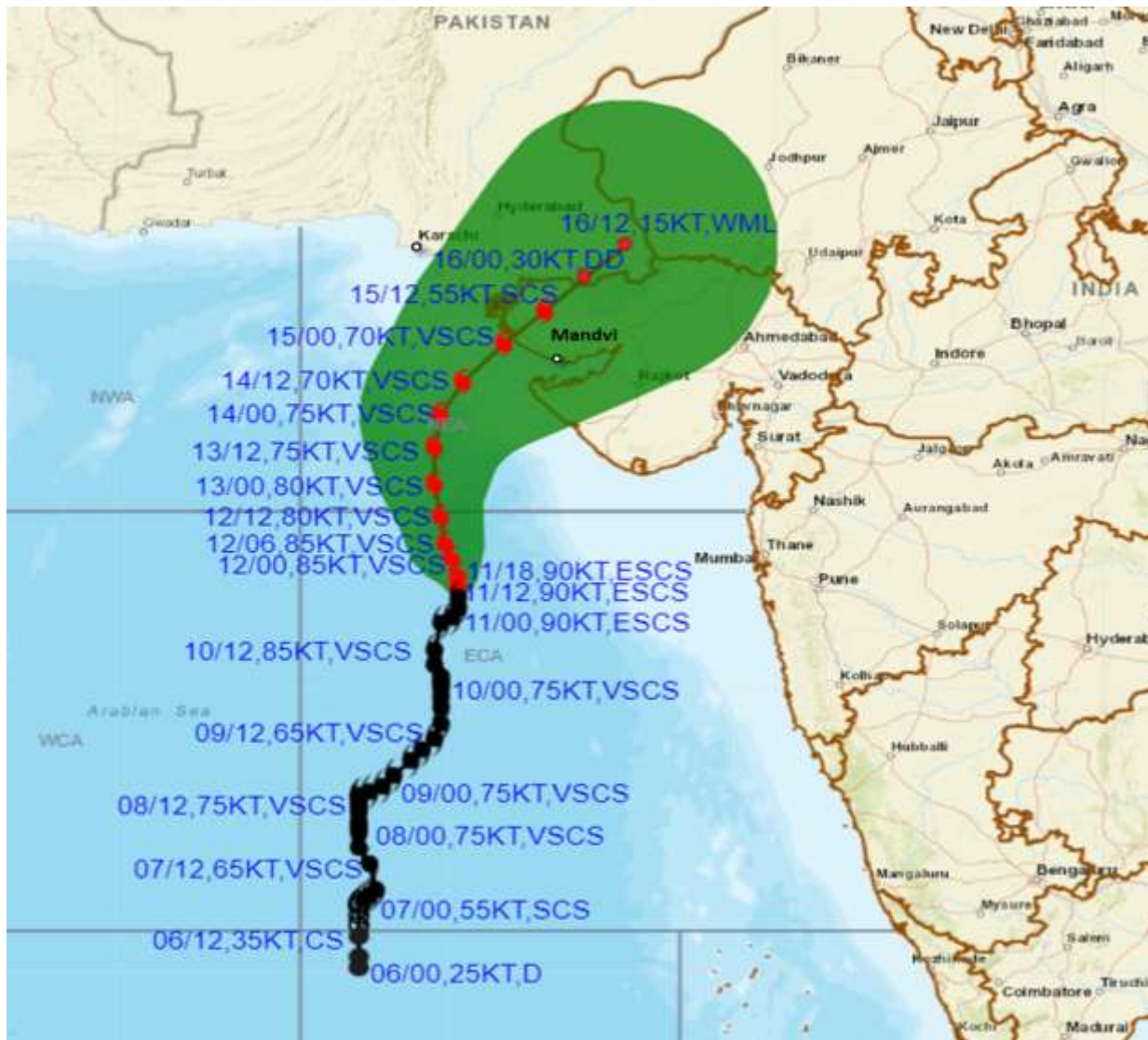


**Extremely Severe Cyclonic Storm
"Biparjoy" (18.7°N/67.7°E)**





OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF EXTREMELY SEVERE CYCLONIC STORM "BIPARJOY" OVER EASTCENTRAL ARABIAN SEA BASED ON 1200 UTC (1730 IST) OF 11TH JUNE 2023.



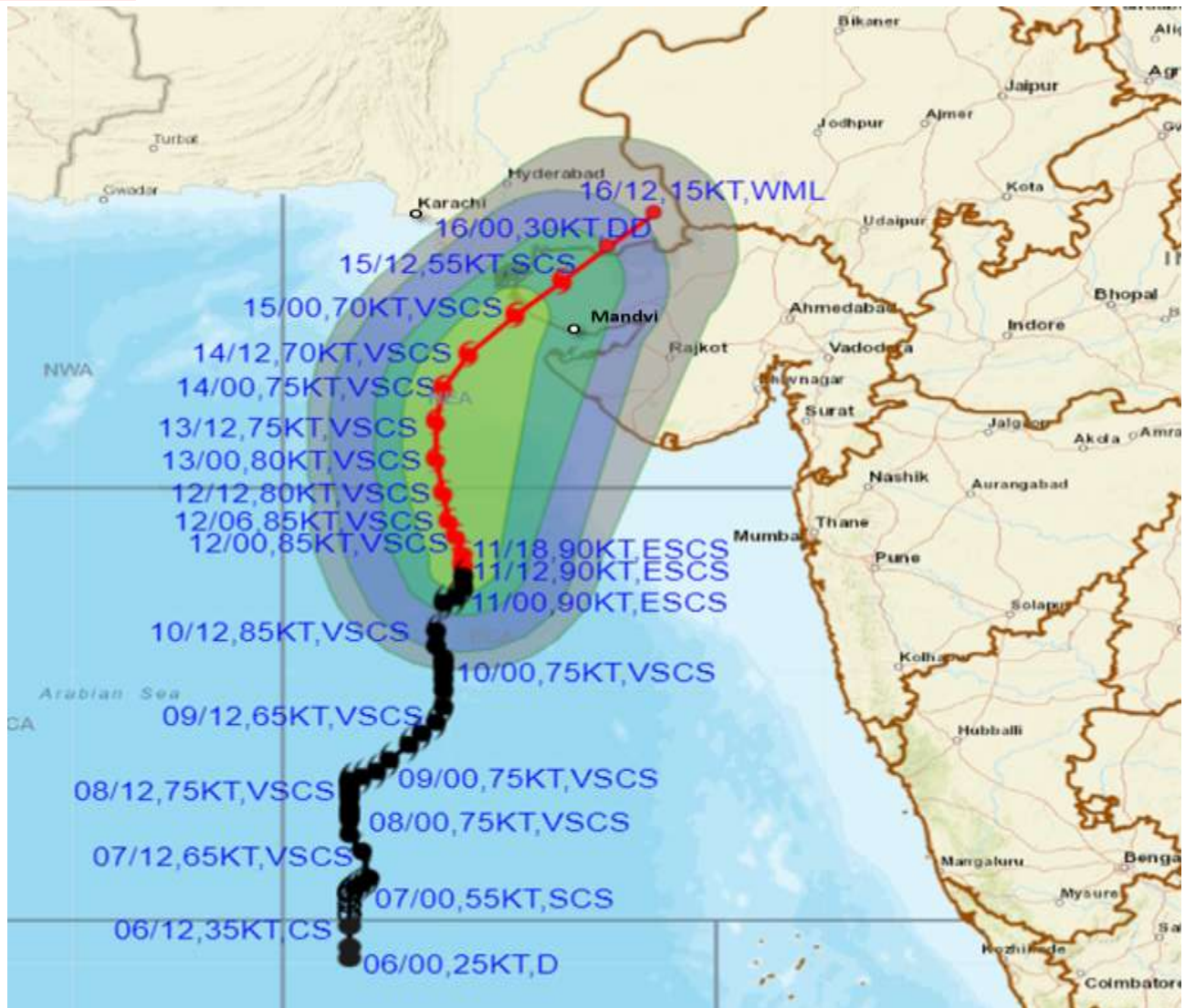
DATE/TIME IN UTC
 IST=UTC + 0530
 L: LOW PRESSURE AREA
 WML: WELL MARKED LOW PRESSURE AREA
 D: DEPRESSION (17-27 KT)
 DD: DEEP DEPRESSION (28-33 KT)
 CS: CYCLONIC STORM (34-47 KT)
 SCS: SEVERE CYCLONIC STORM (48-63KT)
 VSCS: VERY SEVERE CYCLONIC STORM (64-89 KT)
 ESCS: EXTREMELY SEVERE CYCLONIC STORM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

Forecast	DISTANCE(KM) AND DIRECTION FROM STATIONS				
Date and Time	PORBANDAR	BOMBAY / COLABA	GOA/PANJIM	KARACHI AIRPORT	MASIRAH
12.06.23/1200	300, SW	580, WNW	840, NW	550, S	890, E
13.06.23/1200	250, W	640, WNW	940, NW	410, S	880, E
14.06.23/1200	210, WNW	660, NW	1000, NW	280, SSE	950, ENE
15.06.23/1200	240, NNW	660, NW	1040, NNW	250, ESE	1120, ENE
16.06.23/1200	370, NNE	700, NNW	1100, NNW	350, E	1280, ENE



OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF EXTREMELY SEVERE CYCLONIC STORM "BIPARJOY" OVER EASTCENTRAL ARABIAN SEA BASED ON 1200 UTC (1730 IST) OF 11TH JUNE 2023.



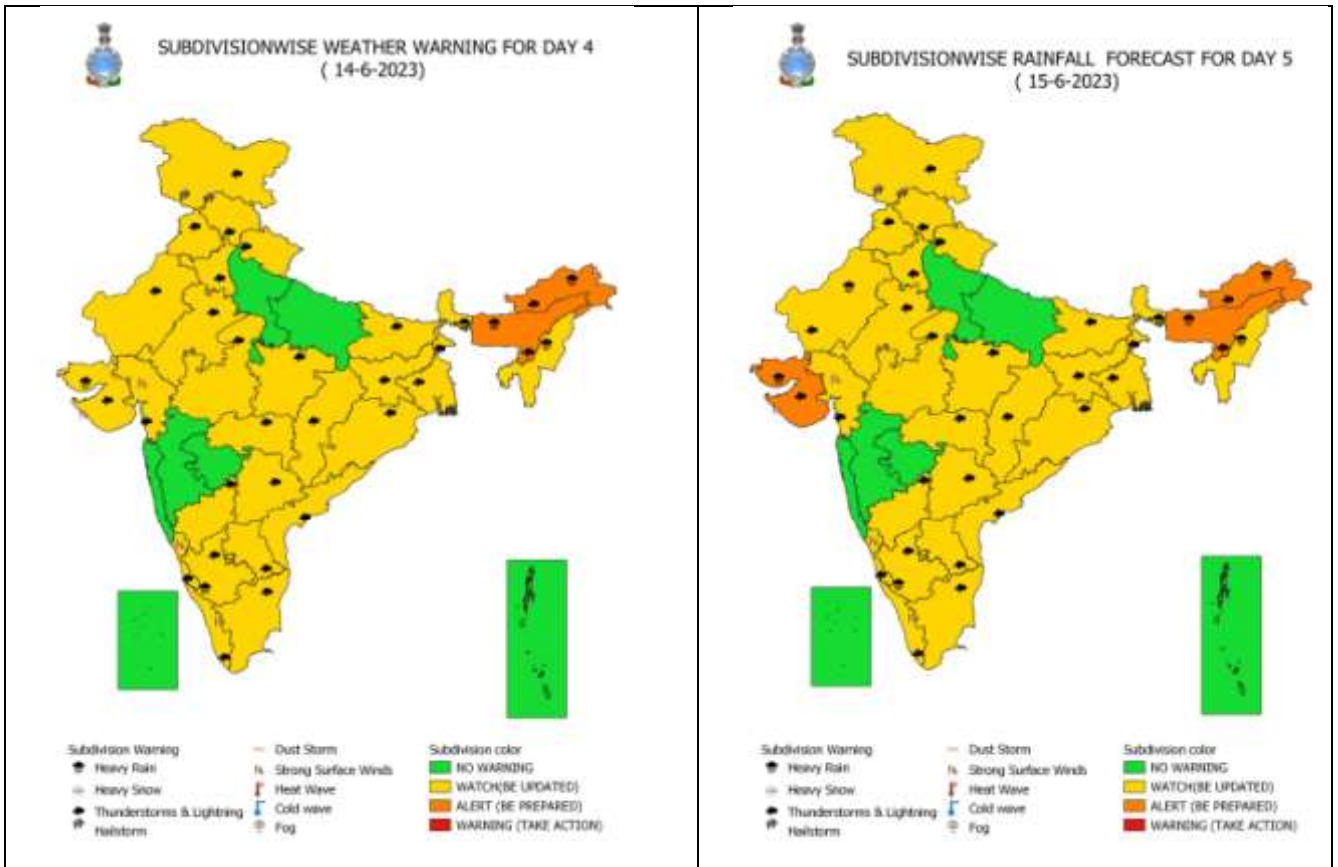
DATE/TIME IN UTC
 IST=UTC + 0530
 L: LOW PRESSURE AREA
 WML: WELL MARKED LOW PRESSURE AREA
 D: DEPRESSION (17-27 KT)
 DD: DEEP DEPRESSION (28-33 KT)
 CS: CYCLONIC STORM (34-47 KT)
 SCS: SEVERE CYCLONIC STORM (48-63KT)
 VSCTS: VERY SEVERE CYCLONIC STORM (64-89 KT)
 ESCS: EXTREMELY SEVERE CYCLONIC STORM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

Heavy Rainfall Warning for 14th & 15th June 2023



District-wise Heavy Rainfall Warning Maps for 14th & 15th June 2023

દિવસ -4 ગુજરાત રાજ્ય માટે ગાજવીજ સાથે તોફાની પવન ની ચેતવણી
 (14-06-2023 ના 0830 કલાક IST થી 15-06-2023 ના 0830 કલાક સુધી માન્ય)



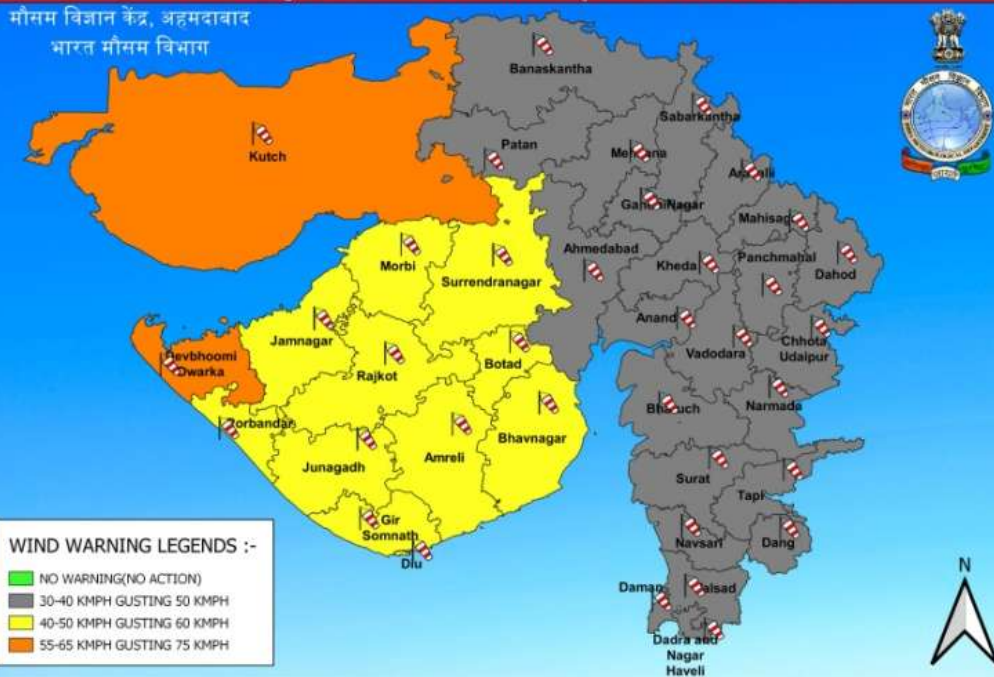
દિવસ -5 ગુજરાત રાજ્ય માટે ગાજવીજ સાથે તોફાની પવન ની ચેતવણી
 (15-06-2023 ના 0830 કલાક IST થી 16-06-2023 ના 0830 કલાક સુધી માન્ય)



District-wise Wind Warning Maps for 14th & 15th June 2023

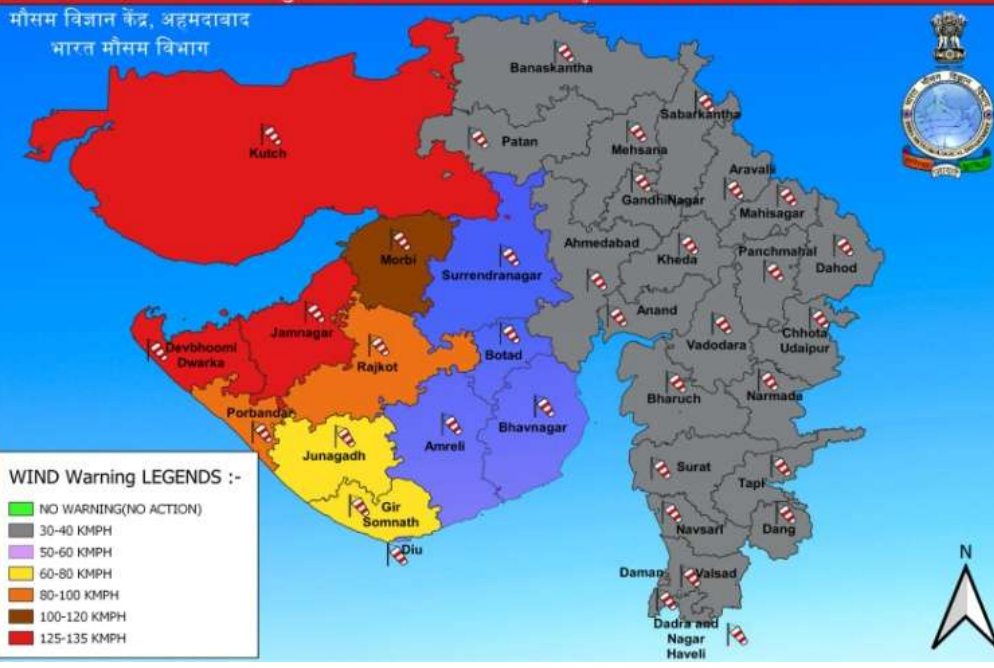
दिवस -4 गुजरात राज्य माटे पवननी चेतवणी तारीख 14-06-2023

मौसम विज्ञान केंद्र, अहमदाबाद
भारत मौसम विभाग

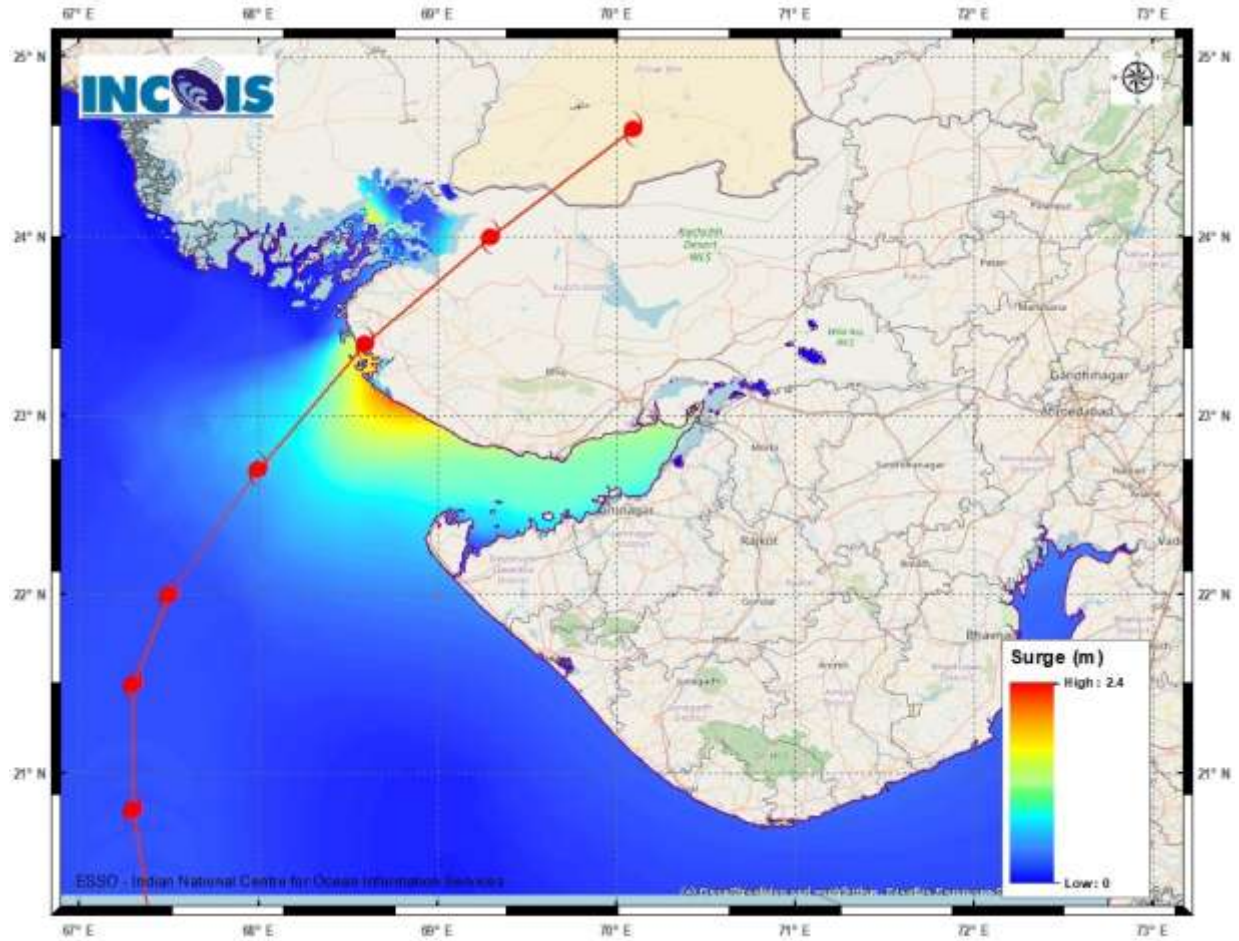


दिवस -5 गुजरात राज्य माटे पवननी चेतवणी तारीख 15-06-2023

मौसम विज्ञान केंद्र, अहमदाबाद
भारत मौसम विभाग



Storm Surge Warning Map based on Forecast Track



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

Fishermen warning graphics

