



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

BULLETIN NO.48 (ARB/01/2023)

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Sub: Extremely Severe Cyclonic Storm “Biparjoy” (pronounced as “Biporjoy”) over eastcentral and adjoining northeast Arabian Sea:

Cyclone Warning for Saurashtra & Kutch Coasts (Orange Message)

The extremely severe cyclonic storm “Biparjoy” (pronounced as “Biporjoy”) over eastcentral Arabian Sea moved northwards with a speed of 05 kmph during past 6-hours and lay centered at 0530 hours IST of today, the 12th June, 2023 over the eastcentral and adjoining northeast Arabian Sea near latitude 19.2°N and longitude 67.7°E, about 340 km southwest of Porbandar, 380 km south-southwest of Devbhumi Dwarka, 460 km south of Jakhau Port, 470 km south-southwest of Naliya and 640 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) near Jakhau Port (Gujarat) 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
12.06.23/0530	19.2/67.7	165-175 Gusting To 195	Extremely Severe Cyclonic Storm
12.06.23/1130	19.5/67.6	160-170 Gusting To 190	Extremely Severe Cyclonic Storm
12.06.23/1730	20.0/67.5	155-165 Gusting To 185	Very Severe Cyclonic Storm
12.06.23/2330	20.5/67.4	145-155 Gusting To 175	Very Severe Cyclonic Storm
13.06.23/0530	20.7/67.4	145-155 Gusting To 175	Very Severe Cyclonic Storm
13.06.23/1730	21.2/67.3	140-150 Gusting To 165	Very Severe Cyclonic Storm
14.06.23/0530	21.8/67.4	135-145 Gusting To 160	Very Severe Cyclonic Storm
14.06.23/1730	22.4/67.7	130-140 Gusting To 155	Very Severe Cyclonic Storm
15.06.23/0530	23.0/68.3	125-135 Gusting To 150	Very Severe Cyclonic Storm
15.06.23/1730	23.5/69.0	90-100 Gusting To 110	Severe Cyclonic Storm
16.06.23/0530	24.1/69.9	50-60 Gusting To 70	Deep Depression
16.06.23/1730	24.7/70.9	30-40 Gusting To 50	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.
- Light to moderate rainfall at most places with heavy to very heavy rainfall at isolated places very likely over north Gujarat and adjoining south Rajasthan on 16th June.

(ii) Wind warning:

12th June: Gale wind speed reaching 165-175 kmph gusting to 195 kmph is likely to prevail over northeast and adjoining eastcentral Arabian Sea becoming 145-155 kmph gusting to 175 kmph from night. 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 145-155 kmph gusting to 175 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 135-145 kmph gusting to 160 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 125-135 kmph gusting to 150 kmph is likely to prevail over northeast Arabian Sea and likely to decrease becoming 90-100 kmph gusting to 110 kmph from evening. 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 45-55 kmph gusting to 65 kmph on 12th and becoming 50-60 kmph gusting to 70 kmph from 13th to evening to 14th June.
- Gale wind speed reaching 65-75 kmph gusting to 85 kmph very likely to prevail from 14th June evening and becoming 125-135 kmph gusting to 150 kmph from 15th early morning for subsequent 12 hours. It would decrease gradually becoming 45-55 kmph gusting to 65 kmph over north Gujarat and adjoining south Rajasthan from 16th morning to evening.
- 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 and 30-40 kmph gusting to 50 kmph during 16th morning to evening.

(iii) Sea condition

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 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 morning 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 1130 hours IST of 12th June, 2023.

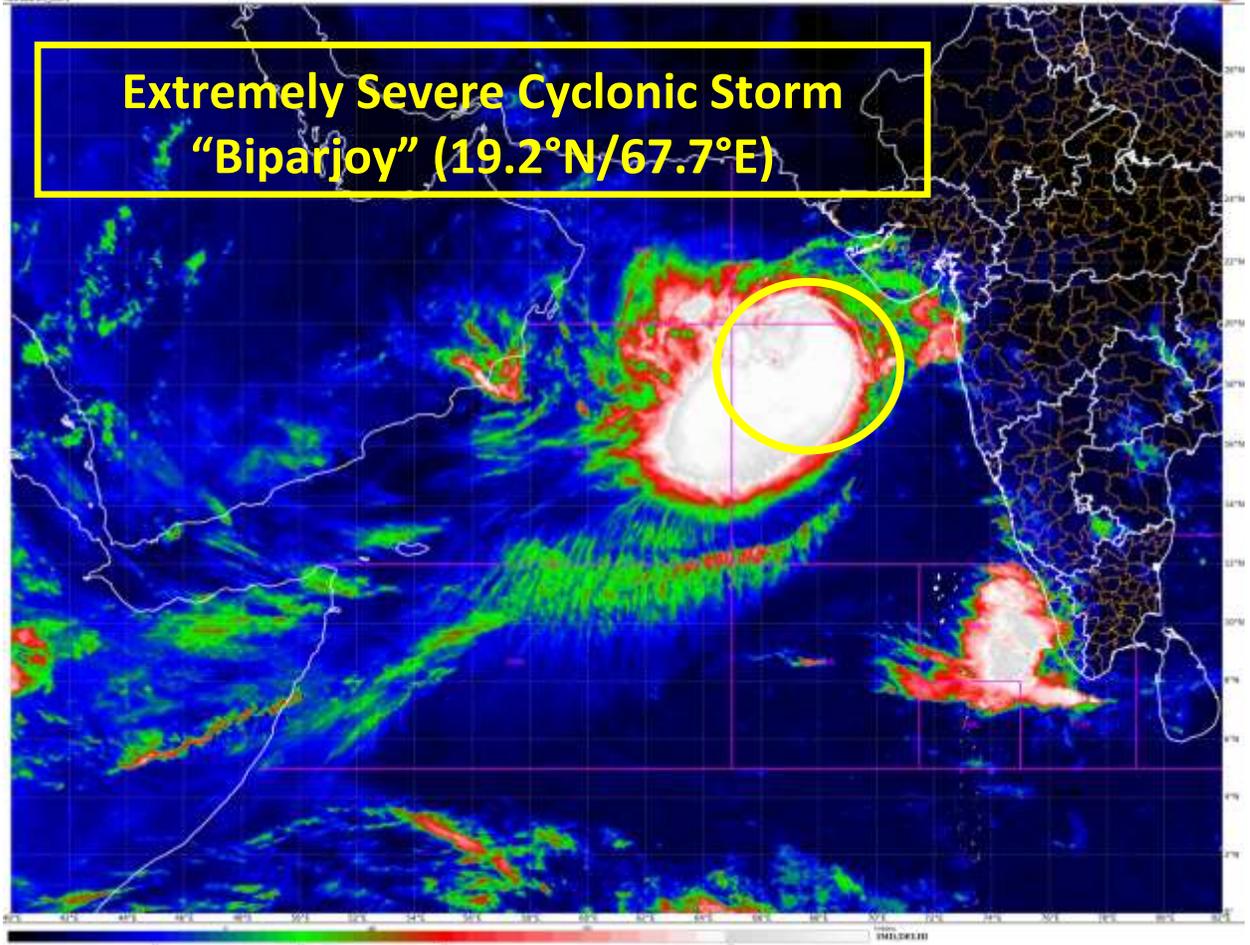
(Ananda Kumar Das)
Scientist F, Cyclone Warning Division, New Delhi

Copy to: ACWC Kolkata/ ACWC Chennai/ CWC Bhubaneswar/CWCVisakhapatnam/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

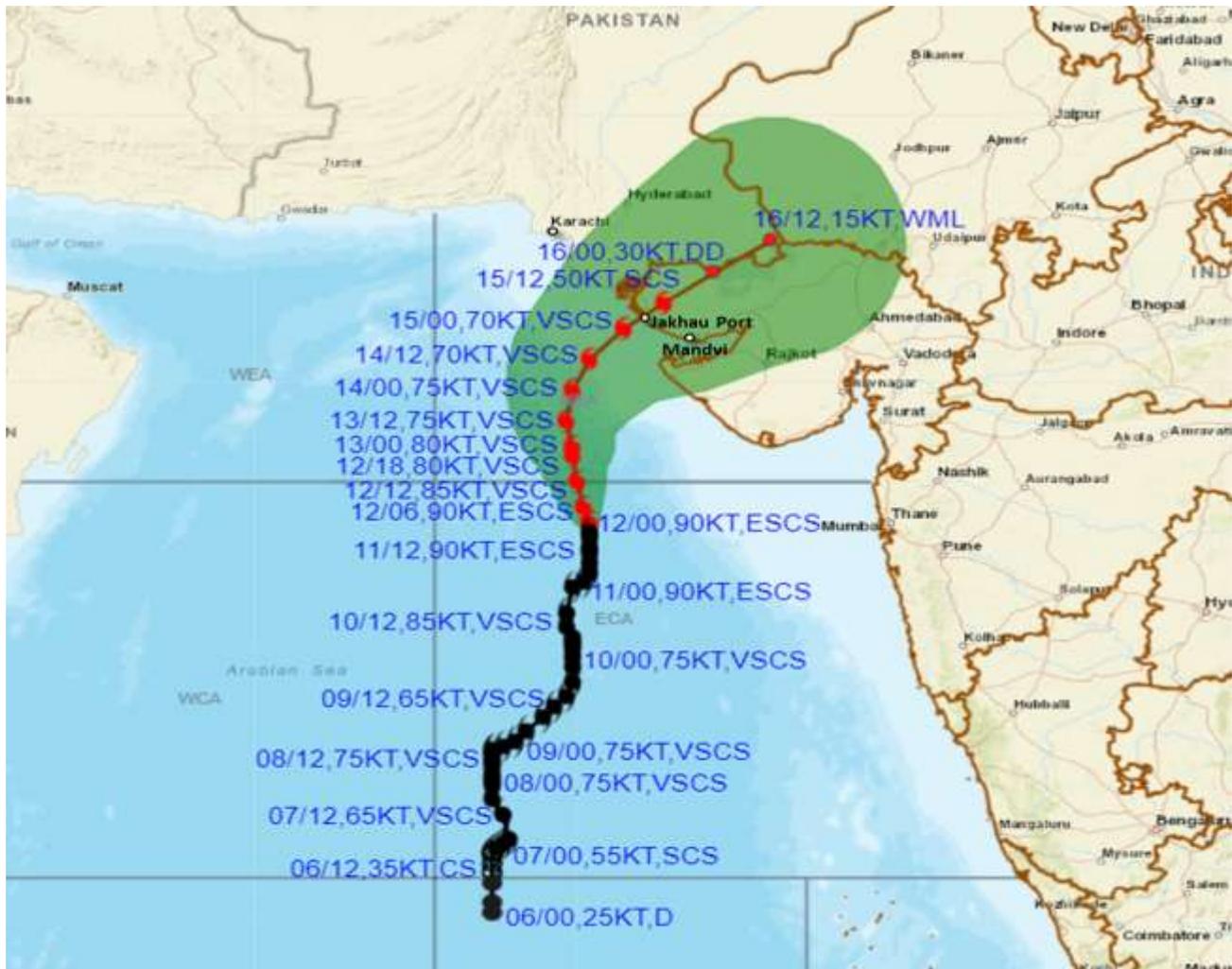


**Extremely Severe Cyclonic Storm
"Biparjoy" (19.2°N/67.7°E)**





OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF EXTREMELY SEVERE CYCLONIC STORM "BIPARJOY" OVER EASTCENTRAL AND ADJOINING NORTHEAST ARABIAN SEA BASED ON 0000 UTC (0530 IST) OF 12TH JUNE 2023



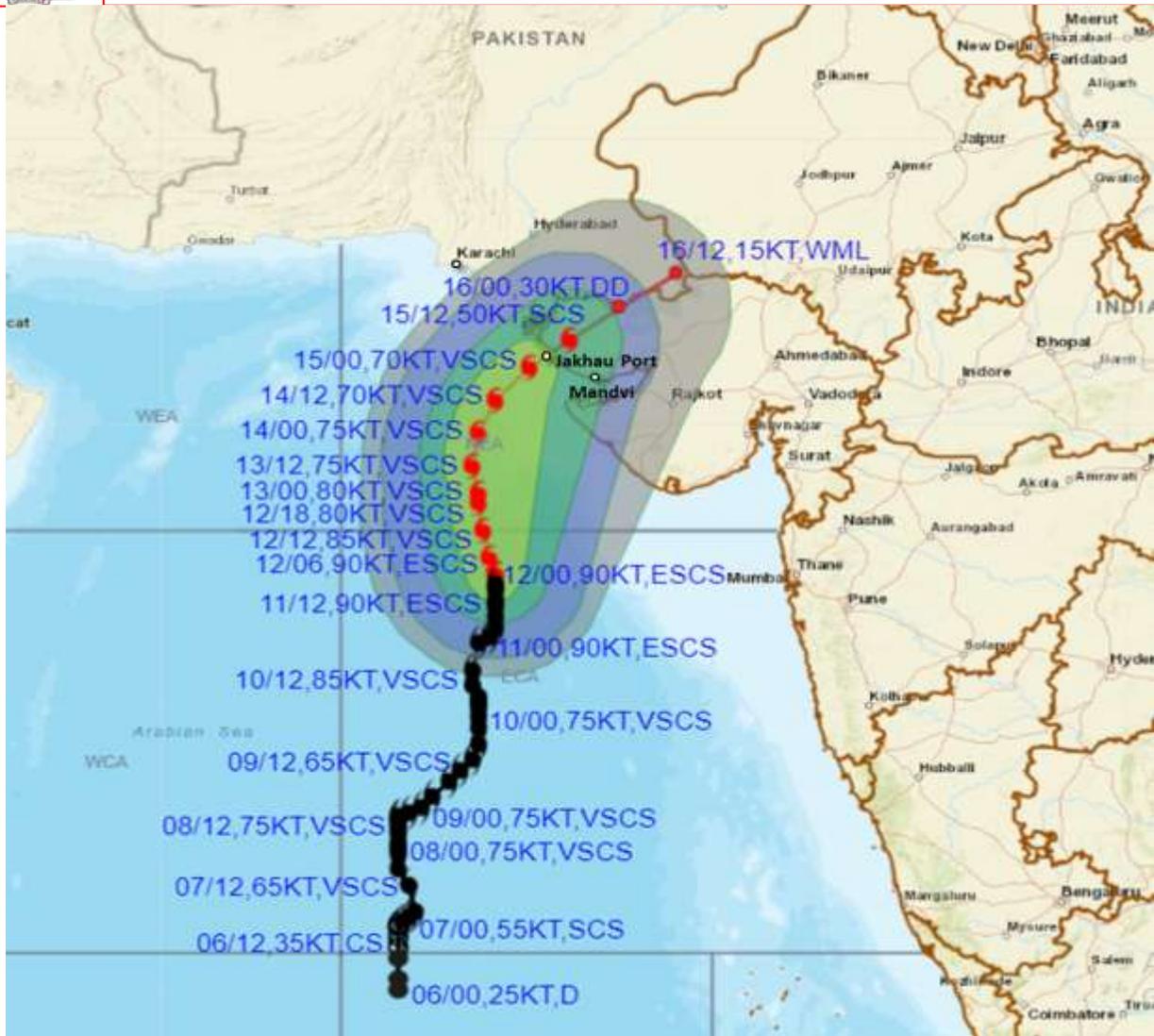
DATE/TIME IN UTC
 IST=UTC + 0530
 L: LOW PRESSURE AREA
 WML: WELL MARKED LOW PRESSURE AREA
 D: DEPRESSION (17-27 KT)
 DD: DEEP DEPRESSION (28-33 KT)
 CS: CYCLONIC STORM (34-47 KT)
 SCS: SEVERE CYCLONIC STORM (48-63KT)
 VSCS: VERY SEVERE CYCLONIC STORM (64-89 KT)
 ESCS: EXTREMELY SEVERE CYCLONIC STORM (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				
	PORBANDAR	DWARKA	JAKHAU PORT	NALIYA	KARACHI AIRPORT
13.06.23/0000	250, WSW	250, SW	300, SSW	320, SSW	460, S
14.06.23/0000	230, W	180, WSW	200, SW	210, SW	340, S
15.06.23/0000	210, NW	110, NW	50, SW	70, WSW	250, SSE
16.06.23/0000	270, N	210, NNE	160, NE	140, NE	290, ESE



OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF EXTREMELY SEVERE CYCLONIC STORM "BIPARJOY" OVER EASTCENTRAL AND ADJOINING NORTHEAST ARABIAN SEA BASED ON 0000 UTC (0530 IST) OF 12TH JUNE 2023.



DATE/TIME IN UTC
IST=UTC + 0530

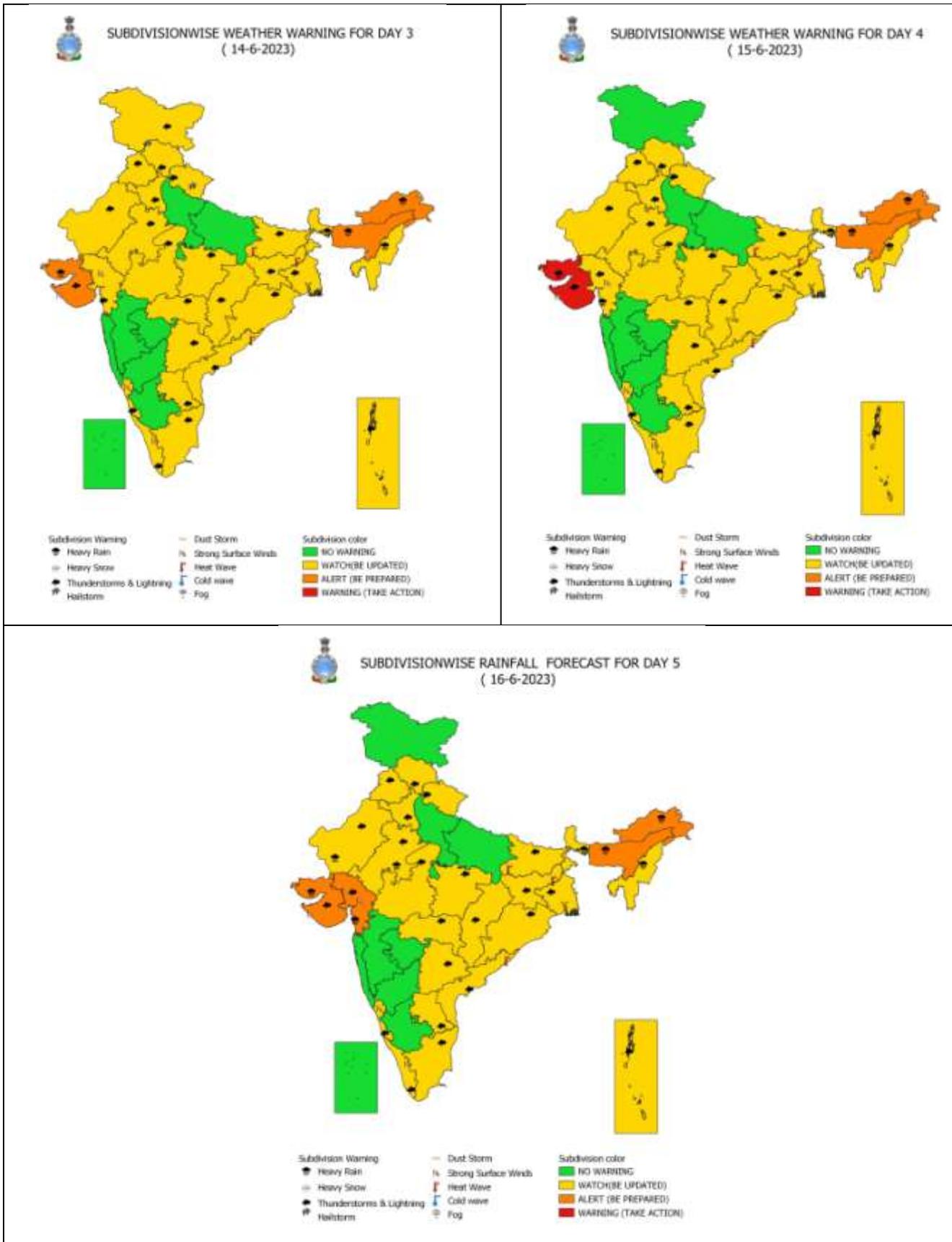
L: LOW PRESSURE AREA
WML: WELL MARKED LOW PRESSURE AREA
D: DEPRESSION (17-27 KT)
DD: DEEP DEPRESSION (28-33 KT)
CS: CYCLONIC STORM (34.47 KT)
SCS: SEVERE CYCLONIC STORM (48-63KT)
VSCS: VERY SEVERE CYCLONIC STORM (64-89 KT)
ESCS: EXTREMELY SEVERE CYCLONIC STORM (90-119 KT)
SuCS: SUPER CYCLONIC STORM (≥ 120 KT)

● LESS THAN 34 KT
○ 34.47 KT
● ≥ 48 KT
— OBSERVED TRACK
— FORECAST TRACK
— CONE OF UNCERTAINTY
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

Warning Graphics



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

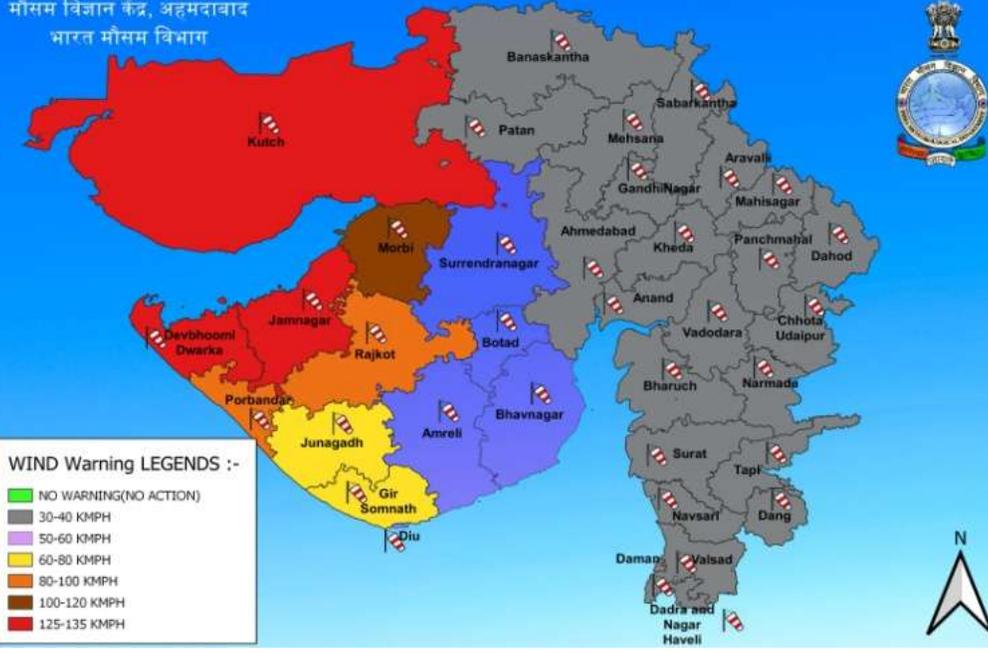
દિવસ -4 ગુજરાત રાજ્ય માટે પવનની ચેતવણી તારીખ 14-06-2023

મૌસમ વિજ્ઞાન કેંદ્ર, અહમદાવાદ
ભારત મૌસમ વિભાગ

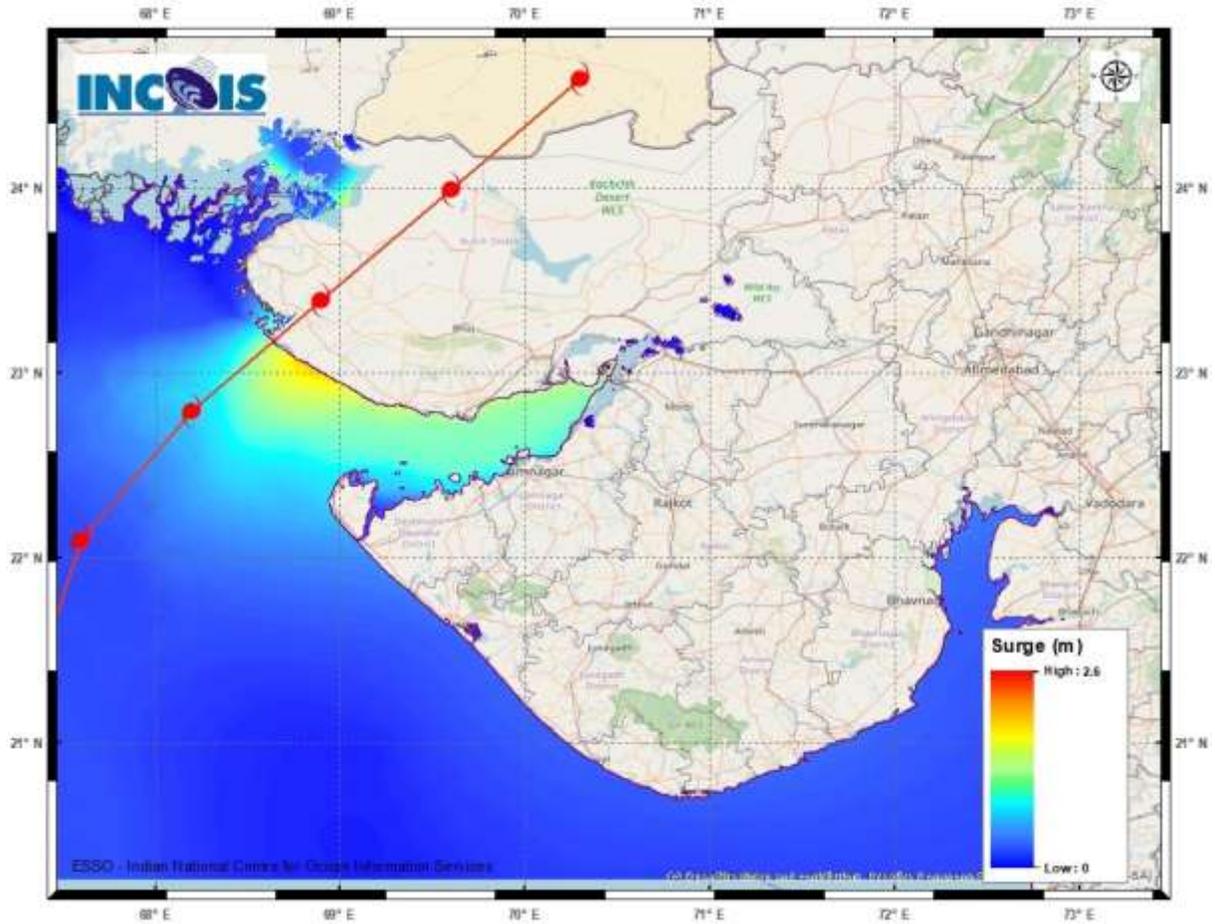


દિવસ -5 ગુજરાત રાજ્ય માટે પવનની ચેતવણી તારીખ 15-06-2023

મૌસમ વિજ્ઞાન કેંદ્ર, અહમદાવાદ
ભારત મૌસમ વિભાગ



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

