



**Ministry of Earth Sciences
India Meteorological Department
Cyclone Warning Division, New Delhi**

**Tropical Cyclone Forecast Programme
Report Dated 23rd October, 2022**

Time of Issue: 1200 UTC

Synoptic features (based on 0600 UTC analysis):

- ❖ Yesterday's depression over southeast adjoining eastcentral Bay of Bengal moved northwestwards and intensified into a deep depression in the morning (0530 hours IST) of today, the 23rd October, 2022 and lay centered at 0830 hours IST of today, the 23rd October over westcentral & adjoining eastcentral Bay of Bengal near latitude 15.60N and longitude 88.40E, about 640 km northwest of Port Blair, 670 km south of Sagar Island and 820 km south-southwest of Barisal (Bangladesh). It is very likely to move northwestwards during next 12 hrs and intensify into a cyclonic storm over central Bay of Bengal. Thereafter, it would recurve and move north-northeastwards and cross Bangladesh coast between Tinkona Island and Sandwip, close to Barisal around 25th October early morning.
- ❖ The trough now runs from the cyclonic circulation associated with the Deep Depression over westcentral & adjoining eastcentral Bay of Bengal to Comorin area across South Bay of Bengal & north Sri Lanka and extends upto 7.6 km above mean sea level.
- ❖ The Western Disturbance as a trough in mid & upper tropospheric westerlies with its axis at 5.8 km above mean sea level roughly along Long. 82.0° E to the north of Lat. 20.0° N persists.

Dynamical and thermo-dynamical features

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
Sea Surface Temperature (SST) °C	About 29-31°C over entire BoB	30-31°C over eastcentral AS and off Maharashtra-South Gujarat coasts. 27-29°C over eastcentral, westcentral and southwest BoB. Less than 26°C off Oman & Somalia coast.
Tropical Cyclone Heat Potential (TCHP) kJ/cm²	(a) >100 over entire Andaman sea, central bob and southeast BoB. (b) 50-80 over north BoB.	(a) 60-80 over south AS & adjoining eastcentral AS. (b) 30-40 over remaining AS and also off west coast of India.

Cyclonic Relative vorticity ($\times 10^{-6} \text{s}^{-1}$)	Positive vorticity of 120 around the system centre and is extending upto 200 hpa level.	Positive vorticity of 40-50 over south AS,.
Low Level convergence ($\times 10^{-5} \text{s}^{-1}$)	40 to the northeast of system centre.	Small zones of value 05 over eastcentral AS.
Upper Level divergence ($\times 10^{-5} \text{s}^{-1}$)	40 to the north of system centre. Strong poleward outflow is also seen over north BoB.	05-10 over Comorin Area & adjoining EIO. 05-10 over southwest AS.
Vertical Wind Shear (VWS knots)	Moderate (15-20 knots) over eastcentral BoB. High to the north of 18°N .	5-15 over central & adjoining south AS. >30 over north & adjoining central AS.
Wind Shear Tendency (knots)	Decreasing tendency over eastcentral BoB	Decreasing over small zones over south AS.
Upper tropospheric Ridge	Along 18.0°N over the BoB.	Along $19.5.0^{\circ}\text{N}$ over the AS.
Trough in westerlies	Near 82°E upto 20°N	

Satellite observations based on INSAT imagery (0600 UTC):

(a) Over the BoB & Andaman Sea:-

At 0900UTC, intensity of the system T 2.0. Associated broken low/medium clouds with embedded intense to very intense convection lay over area between latitude 12.0N & 22.0N and longitude 84.5E & 93.0E . Minimum cloud top temperature is - 93 degree celsius.

(b) Over the Arabian Sea:-

At 0900UTC, scattered low/medium clouds with embedded isolated moderate to intense convection over south Arabian sea between latitude 5.0N & 13.0N and longitude 54.0E & 64.0E and Comorin area.

M.J.O. Index:

MJO index is currently in Phase 6 with amplitude greater than 1. It will continue in same phase for next 7 days with amplitude remaining greater than 1.

Storms and Depression over South China Sea/ South Indian Ocean:

NIL

Input for FDP Cyclone based on 0000 UTC for the next 7 days

MODEL GUIDANCE	BoB	AS
IMD-GFS	GFS is indicating a cyclonic storm over eastcentral BOB on 23 rd Oct./ 0000 UTC and northeastwards recurvature from 23 rd /1200 UTC. Very severe cyclyonic storm over northwest & adjoining westcentral Bay of Bengal on 24th October. Thereafter, it is likely to move northeastwards and cross Bangladesh coast in the night of 24th October near 21N/90E.	No significant system over AS during next 7 days.
IMD-GEFS	Deep depression over westcentral BoB on 23 rd . It is predicted to recurve northeastwards from 23 rd /1200 UTC & intensify into a cyclonic storm over westcentral & adjoining northwest BoB on 24 th , and cross Bangladesh coast at 0600 UTC of 25 th .	No significant system.
GEFS Probablistic guidance	About 80-90% ensemble members are indicating nearly northwestwards movement during next 12 hours with gradual north-northeastwards recurvature thereafter and crossing over Bangladesh coast on 25 th Oct./0000 UTC near 23.0/91.8.	Not available
IMD WRF	WRF indicates deep depression over eastcentral & adjoining westcentral Bay of Bengal on 23 rd October. It is predicted to move northwards becoming cyclonic storm on 24 th and severe cyclonic storm on 25 th over central parts of north BoB. As per this model, the system would cross Bangladesh coast on 25 th /0300-0600 UTC.	Extended circulation/trough on 23 rd & 24 th over south AS, cyclonic circulation over southwest AS on 25 th , becoming less marked thereafter.
NCMRWF-NCUM	The Deep Depression on 23rd October 2022 over east-central BoB would gradually recurve and will likely to move north-northeast ward and would intensify into cyclonic storm over west-central and adjoining northwest BoB on 24th October 2022. It would maintain the same direction i.e., north-northeast ward towards west Bengal - Bangladesh coast, slightly intensifying further over northwest and adjoining northeast BoB and would cross Bangladesh coast during the night of 24th October 2022 and lay over eastern Bangladesh and adjoining northeast India (Tripura) in the morning of 25th October 2022.	No significant system over AS
NCMRWF-NEPS	The Deep Depression over east-central and adjoining southeast BoB on 23rd Oct 2022 would gradually recurve north-northeastward and would become cyclonic storm over northwest and adjoining westcentral BoB by morning of 24th Oct 2022. It would further move in the same direction towards Bangladesh coast, slightly intensifying further and would cross the Bangladesh coast by night of 24th Oct 2022 and lay over east Bangladesh and adjoining northeast India (Tripura) in the morning of 25th October morning and dissipating thereafter.	No significant system over AS

NCMRWF-UM (Regional)	It is indicating system to cross Bangladesh coast as a severe cyclonic storm on 24 th /1200 UTC near 22N/90E.	No significant system over AS.
ECMWF	Deep depression over westcentral BoB on 23 rd followed by northeastwards recurvature from 23 rd /1200 UTC, intensification into cyclonic storm on 24 th and crossing over Bangladesh coast near 22N/91.8E around 24 th 2100 UTC to 25 th /0000 UTC.	No significant system over AS.
ECMWF-EPS	80-90% models are indicating the system to move initially northwestwards & thereafter recurve north-northeastwards & cross Bangladesh coast. Peak intensification is predicted upto CS stage only.	Model is indicating 10-30% probability of cyclogenesis over southeast AS during next 3-5 days.
NCEP-GFS	Model is indicating severe cyclonic storm over central BoB on 24 th /1800 UTC near 21.5/90.8.	No significant system
IMD MME	IMD MME is indicating initial northwestwards movement till 23/1200 UTC followed by north-northeastwards recurvature and crossing Bangladesh coast on 24 th /1500-1800 UTC near 22.0/90.8. Peak intensification upto marginal severe cyclonic storm is indicated.	No system over AS.
IMD HWRF	IMD HWRF is also indicating initial northwestwards movement till 23/1200 UTC followed by north-northeastwards recurvature and crossing Bangladesh coast on 24 th /1500 UTC near 22.0/90.1. Peak intensification upto severe cyclonic storm is indicated.	No system over AS.
IMD-Genesis Potential Parameter	Potential zone over westcentral BoB on 23 rd , over central BoB & adjoining north BoB on 24 th and no significant zone thereafter.	No significant potential zone over during the forecast period

Summary and conclusion:

1. For the Bay of Bengal:

Most of the models are indicating northeastwards recurvature of the system, intensification upto marginal severe cyclonic storm and crossing over Bangladesh coast during 24th/1800-25th/0000 UTC.

In view of all the above, it is inferred that the deep depression over westcentral Bay of Bengal would move northwestwards during next 06 hrs and intensify into a cyclonic storm over central Bay of Bengal. Thereafter, it would recurve and move north-northeastwards and cross Bangladesh coast between Tinkona Island and Sandwip, close to Barisal around 25th October early morning..

2. For the Arabian Sea:

No significant system is likely to develop over Arabian Sea during next 7 days.

Probability of cyclogenesis (formation of depression and above intensity systems) over the BAY OF BENGAL of Bengal and Andaman Sea during next 168 hours

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
-	-	-	NIL	NIL	NIL	NIL

- indicates Genesis has taken place

Probability of cyclogenesis (formation of depression and above intensity systems) over the Arabian Sea during next 168 hours:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

Advisory:

The development of cyclonic storm over central Bay of Bengal by 24th October morning and its movement towards West Bengal-Bangladesh coasts need to be monitored closely.

IOP is suggested for West Bengal and Bangladesh during 23rd to 25th

















