India Meteorological Department
Ministry of Earth Sciences
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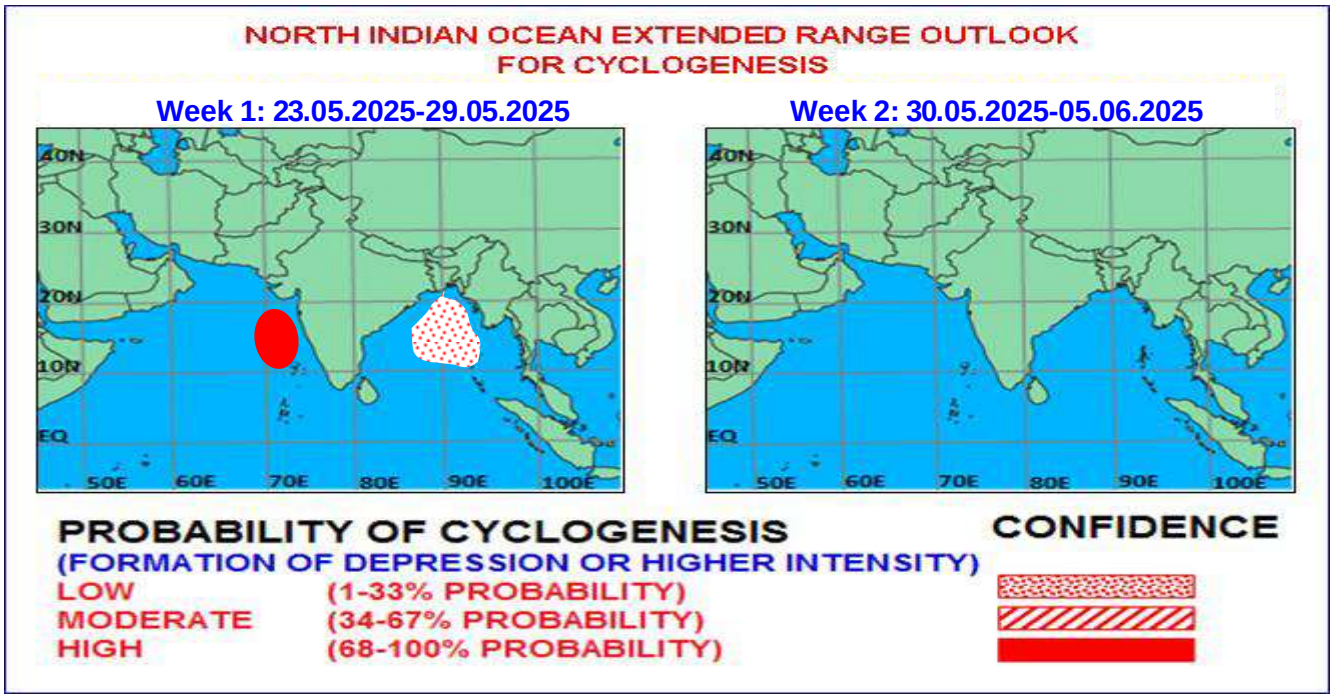

Fig. 1: Graphical Cyclogenesis over the north Indian Ocean during next two weeks

I. Environmental features:

The guidance from the ECMM model indicates that the Madden Julian Oscillation (MJO) is currently in phase 4 with amplitude close to 1. It is likely to move across phase 4 during first half of week 1. Thereafter, it would move across phase 5 with amplitude remaining more than 1 till first half of week 2. It would then move across phase 6 during later half week 2. Similar features are indicated by NCEP and ECMWF also. However, NOAA CFS V2 is indicating prevalence of MJO over West Equatorial Indian Ocean (WEIO) and adjoining south Arabian Sea (AS) during 1st half of week 1. The MJO is indicated to extend upto South China Sea thereafter during remaining part of the forecast period. Thus, MJO would support enhancement of convective activity over the AS during first half of week 1 and over the Bay of Bengal till middle of week 2.

The guidance from NCICS, CFS model indicates prevalence of westerly wind anomaly (1-3 mps) over South Andaman Sea and easterly wind anomaly (3-5 mps) over major parts of BoB during beginning of week1. During the later half of week 1, the model is indicating prevalence of westerly wind anomaly (5-7 mps) over South BoB alongwith MJO & ERW and easterly wind anomaly (3-5 mps) alongwith KW over north BoB during later part of week 1. Thus, over the north BoB, though there could be development of a low pressure area, the equatorial waves are not likely to favour further intensification. During week 2, the model is indicating similar features over south BoB, however, the easterly wind anomaly is seen over East India. These features indicate a favourable environment for the formation of low pressure area/ depression over the central & adjoining north BoB during end of week 1 or beginning of week 2 with no further intensification.

Over the AS, the model is also indicating enhanced westerly wind anomaly (3-5 mps) over the south AS alongwith prevalence of Equatorial Rossby wave (ERW), Kelvin wave (KW) & MJO and strong eaterly wind anomaly (5-7 mps) over eastcentral AS during week 1. Thereafter, similar features are likely over the south AS but the easterly wind anomaly is seen over northwest India & adjoining Pakistan during week 2. These features indicate a favourable environment for cyclogenesis (formation of depression over eastcentral AS during week 1.

II. Model Guidance:

Most of the models including IMD GFS, NCUM, UKMO, ECMWF and NCEP-GFS are in consensus about the development of depression over eastcentral AS off Maharashtra coast during first half of week 1. However, there is large variation among various models wrt movement of the system and its further intensification. Models are also indicating slow intensification and longer life period.

Similarly, over the BoB various deterministic models are indicating development of depression over westcentral BoB during end of week 1. However, there is again large variation among various models wrt track of the system.

The 850 hPa mean wind field of IMD ERF Model indicates a cyclonic circulation over northwest AS during week 1 and another over Bangladesh & adjoining West Bengal during week 2. The 850 hPa mean wind anomaly indicates a cyclonic circulation over eastcentral & adjoining northeast AS and another over southeast BoB during week 1. The model is also indicating a cyclonic circulation over notrtheast & adjoining northwest AS and another over northwest BoB during week 2. The model is indicating high probability of cyclogenesis over eastcentral AS and low-moderate probability of cyclogenesis over north BoB during week 1. During week 2, moderate probability of cyclogenesis is indicated over northwest AS and another zone with moderate probability is indicated over Bangladesh & adjoining West Bengal which could be due to the remnant of the respective systems of week 1.

III. Climatology:

The details of the statistics in the month of May for Cyclonic disturbances and Cyclonic Storms over NIO, BoB and AS are presented in the Table 1 and tracks are presented in Fig.2.

Table 1. Climatology of Cyclonic disturbances and cyclonic storms for the month of May (1961-2024)

For month of May (from 1961 to 2024)	North Indian Ocean	Bay of Bengal	Arabian Sea
Cyclonic disturbances formed (maximum sustained wind speed (MSW) ≥31 kmph)	73	52	21
Cyclonic Storm formed (MSW≥63 kmph)	55	39	16
Crossed coast as Cyclone (coasts)	43	36 (Bangladesh-18, Myanmar-7, Andhra Pradesh -4, West Bengal -3 , Odisha-3, Tamil Nadu-1)	7 (Gujarat-2, Pakistan-1 Konkan and Goa-1, Iran-Arabia-Africa-3)
Dissipated over Sea	-	3	4

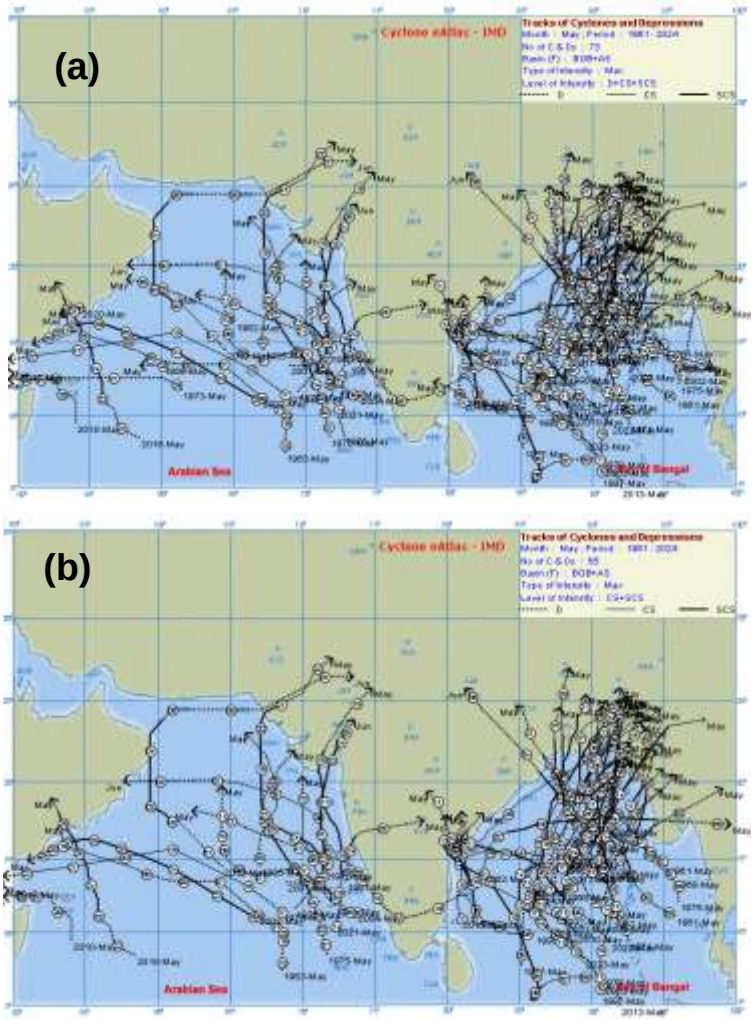

Fig. 2: (a) Cyclonic disturbances over NIO in the month of May during 1961-2024 (Total 73),

(b) Cyclones over NIO in the month of May during 1961-2024 (Total 55)

IV. Inference:

Considering large-scale environmental features and model guidance, it is inferred that:

(a) The existing low-pressure area over Eastcentral Arabian Sea off south Konkan-Goa coasts is likely to move nearly northwards and there is high probability of its further intensification into a depression over the Arabian Sea during first half of week 1.

(b) Another low-pressure area is likely to form over westcentral and adjoining North Bay of Bengal around 27th May. There is low probability of its further intensification into a depression during end of week 1.

V. Anticipatory actions suggested:

Fishermen are advised not to venture into

- Eastcentral & southeast Arabian Sea and along & off Kerala, Karnataka, Konkan, Goa, south Gujarat, Daman & Diu, Dadar & Nagar Haveli coasts and Lakshadweep area during 22nd to 27th May 2025.
- Small ships/shipping activities are to be monitored and regulated during 25th to 27th May 2025.
- Judicious regulation of tourism and recreational activities.

- ❖ Total suspension of fishing operations over Eastcentral and adjoining northeast Arabian Sea during 25th - 27th May.
- ❖ Fishermen out at sea are advised to return to coasts by 23rd May afternoon.

VI. Verification of forecast issued during last two weeks:

The forecast issued on 8th May for week 2 (16th May– 22nd May) indicated low probability of cyclogenesis over eastcentral and adjoining northeast Bay of Bengal. The forecast issued on 15th May for week 1 (16th May– 22nd May) indicated no probability of cyclogenesis over the North Indian Ocean region. It also indicated existing upper air cyclonic circulation over southeast Bay of Bengal to move northwestwards towards westcentral Bay of Bengal without any significant intensification.

Actually, no cyclogenesis occurred during this period over NIO region. However, aupper air cyclonic circulation formed over coastal Andhra Pradesh over west central Bay of Bengal & adjoining north Coastal Andhra Pradesh at 1.5 km above mean sea level on 16th May, 2025, and it moved inland and over central parts of Andhra Pradesh & adjoining south Telangana on, the 21st May, 2025. Another upper air cyclonic circulation formed over eastcentral Arabian Sea off Karnataka coast around 21st May. Under its influence, a low pressure area formed over the same region around 22nd May.

NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from, 15th – 21st May, 2025 are presented in **Fig. 2**.

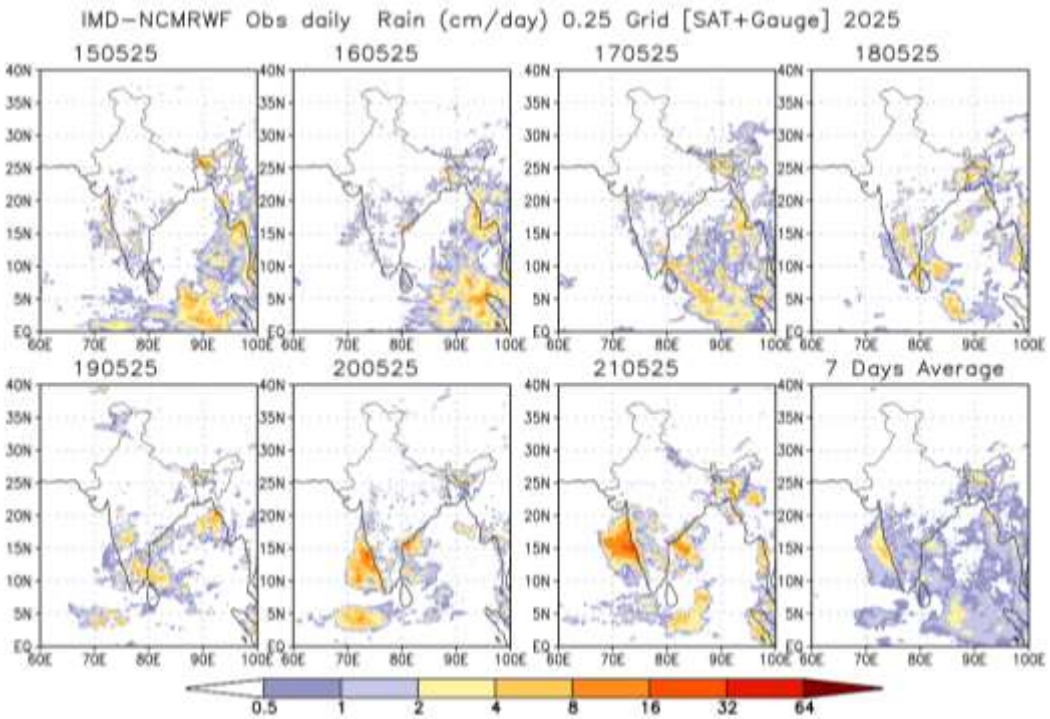

Fig.2: NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from 15th to 21st May, 2025.

Legends: MJO: Madden Julian Oscillation, ERW: Equatorial Rossby Waves, KW: Kelvin Waves, NCICS: North Carolina Institute for Climate Studies (for Equatorial waves Forecast), IMD GFS: India Meteorological Department Global Forecast System, NCUM: National Centre for Medium-Range Weather Forecasting Centre (NCMRWF) Unified Model, ECMWF: European Centre for

Medium-Range Weather Forecasting, EC-AIFS: ECMWF Artificial Intelligence Forecasting System, ECMM: ECMWF-Ensemble System Bias Corrected, GPP: Genesis Potential Parameter, NCEP GFS/GEFS/CFS: National Centre for Environment Prediction GFS/GEFSv12/CFSV2, CPC: Climate Prediction Center (for MJO update), IMD-GEFS: GFS ensemble forecast system of IMD, NEPS: NCUM ensemble prediction system, CNCUM: Coupled NCUM, CPC: Climate Prediction Centre, NWS: National Weather Service, INCOIS: Indian National Centre for Ocean Information Services.

Next update: 29.06.2025