India Meteorological Department
Ministry of Earth Sciences
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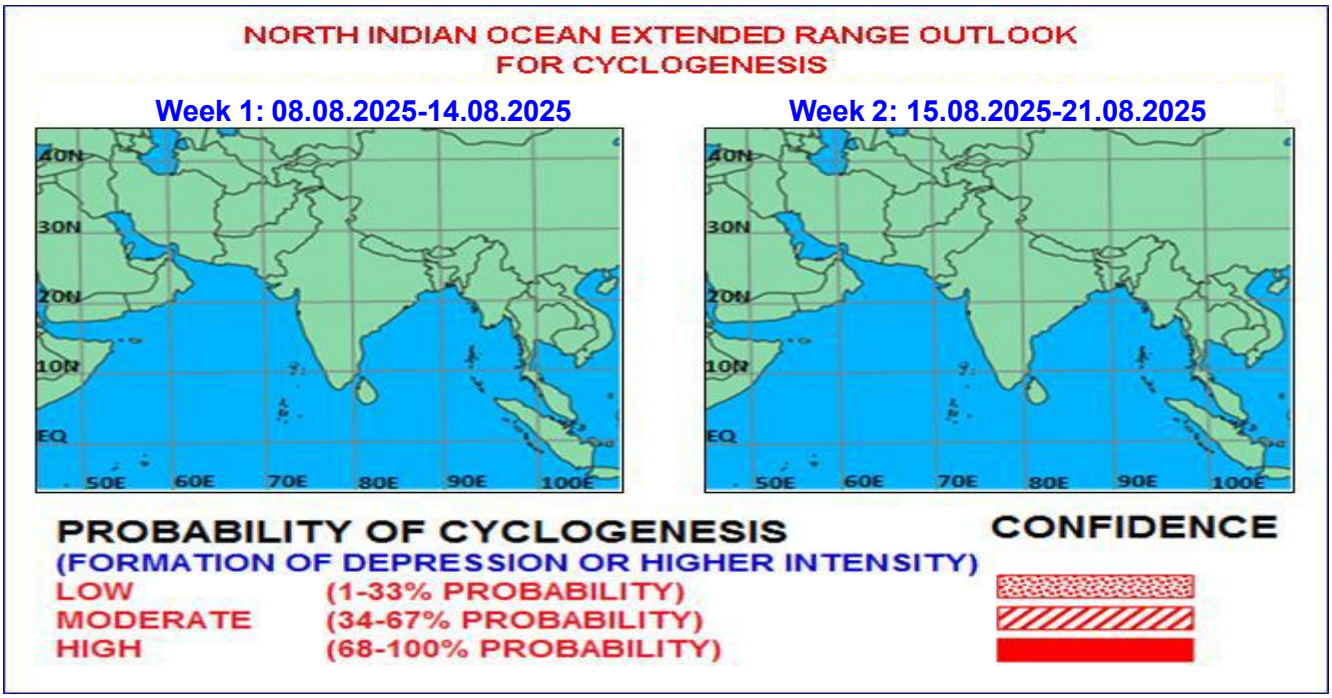

Fig. 1: Graphical Cyclogenesis over the north Indian Ocean during the next two weeks

I. Environmental features:

The guidance from various models indicates that Madden Julian Oscillation (MJO) is currently in phase 2 with an amplitude greater than 1. Most of the model forecasts have a consensus and suggest that the MJO is very likely to slowly propagate eastwards across phase 2 with the amplitude close to 1, and enter into phase 3 at the end of week 1. Thereafter, it is likely to remain in phase 3 during the remaining days of the forecast period. Most of the models predict the amplitude to remain close to 1, but they are not in agreement about the amplitude of the MJO signal during week 2. Moreover, the models and their associated ensemble members have large spreads to represent the MJO propagation and amplitude during both weeks. Hence, MJO is likely to support the enhancement of convective activity over the North Indian Ocean (NIO) region during the entire forecast period.

The guidance from the NCICS CFS model indicates the prevalence of strong westerly wind anomaly (5-7 mps) initially over south & central AS and spreading over south BoB during most days of week 1. During the same period, a strong easterly anomaly (5-7 mps) is also likely to prevail over the northern parts of the AS, north & central BoB and adjoining north Andaman Sea. Starting from the end of week 1 and during the second week, the core of the strong westerly anomaly is likely to move eastwards and equatorward before its gradual weakening (1-3 mps) in the middle of week 2. The easterly anomaly at its north is also likely to weaken during the same period. The Equatorial Rossby Wave (ERW) activities are likely to be noticed over the south and central AS with their subsequent westward propagation before they become less prominent by the end of week 1. The fresh ERW activities are also likely to enter over central BoB at the end of week 1 and slowly propagate westwards, extending over the entire central and adjoining north BoB during week 2. The low-frequency wave is likely to be present during both weeks over the North Equatorial Indian Ocean (NEIO) and adjoining areas of South AS & BoB. Therefore, the forecast of MJO, ERW, and zonal wind anomaly indicates a favourable environment for enhanced convective activity over NIO during weeks 1 and 2. However, the environmental conditions are likely to be more supportive of convective activities over BoB compared to AS.

II. Model Guidance:

Most of the numerical models, including IMD GFS, BFS, IMD-GEFS, NCUM, ECMWF, ECAIFS indicate that a north-south trough exists over southwest BoB off south Andhra Pradesh and Tamil Nadu coasts and is likely to persist till 9th August. An embedded upper-air circulation is likely to develop over southwest BoB off Tamil Nadu – north Sri Lanka coasts during 8th August, which is likely to move northwestwards to reach south Andhra Pradesh – north Tamil Nadu coasts on 9th August. A fresh upper-air cyclonic circulation is likely to develop over northwest and adjoining westcentral BoB off the Odisha coast around 12th, and under its influence, a low pressure area (LPA) is likely to form over the same region. It is likely to move west-northwestwards and become more marked by 14th August. Accordingly, the model forecasts suggest that the eastern end of the seasonal monsoon trough is likely to remain near its normal position during this period. The NCEP-GFS and ECMWF models are also indicating a probable formation of another low pressure area over northwest BoB off the Odisha coast at the end of week 2.

The IMD ERF extended range model 850 hPa mean wind field indicates a seasonal monsoon trough north of its normal position with an embedded weak upper-air cyclonic circulation over North Bihar and neighbourhood during week 1. However, the corresponding wind anomaly field suggests an anticyclonic circulation over northeast BoB for the week. During week 2, the mean wind at 850 hPa suggests a cyclonic circulation over south Odisha and the adjoining area, with the eastern end of the monsoon trough remaining south of its normal position. The respective anomaly field is also indicating a cyclonic circulation over the south Konkan-Goa coasts and adjoining areas of Maharashtra and Karnataka. The model does not show any zone with significant probability of cyclogenesis during week 1. However, it indicates an area over northwest BoB off Odisha-West Bengal coasts with a low-to-moderate probability (30 - 40 %) of cyclogenesis during week 2. The ECMWF ERF model is indicating low probability (20-30%) of cyclogenesis over northwest BoB off Odisha coast in the middle of week 2. However, the sub-seasonal model forecasts of ECMWF indicate a very low probability (5-10%) of cyclogenesis over northwest BoB off Odisha coast during week 1 and a 10-20 % probability of cyclogenesis over the same during week 2. There is another zone over northeast AS off the Gujarat coast showing low probability of cyclogenesis (10-20%) during both weeks.

III. Inference:

Considering various large-scale environmental features and model guidance, it is inferred that there is no probability of cyclogenesis over the North Indian Ocean region during the entire forecast period. However:

(i) There is a probability for the formation of a low pressure area over the northwest Bay of Bengal off the Odisha coast around 13th August, 2025.

(ii) There is a likely formation of an upper-air cyclonic circulation /low pressure area over the northwest Bay of Bengal off Odisha-West Bengal coasts towards the end of week 2.

IV. Verification of forecast issued during the previous two weeks:

Forecast:

The forecast issued on 24th July for week 2 (01st - 7th August) indicated the probability of formation of an upper-air cyclonic circulation/low pressure area over the north Bay of Bengal and adjoining West Bengal-Bangladesh coasts during the week.

The forecast issued on 31st July for the week 1 (01st - 7th August) indicated the likelihood of formation of an upper-air cyclonic circulation/low pressure area over the southwest Bay of Bengal off

north Tamil Nadu- south Andhra Pradesh coasts towards the end of the first week/in the beginning of the second week.

Realized:

Actually, an upper air cyclonic circulation formed over the northwest Bay of Bengal & adjoining Gangetic West Bengal and Odisha on 30th July 2025. Another upper air cyclonic circulation formed over the Gulf of Mannar & adjoining south Tamil Nadu on 2nd August 2025. Thereafter, it slowly moved north-northeastwards and persisted over the southwest Bay of Bengal off the North Tamil Nadu coast till 7th August.

Hence, the forecast for the formation of both the upper air cyclonic circulation over northwest Bay of Bengal & adjoining Gangetic West Bengal & Odisha, and another over southwest Bay of Bengal off the North Tamil Nadu coast was predicted well.

NCMRWF-IMD satellite gauge merged data plots of realized 24-hour accumulated rainfall from 31st July to 6th August, 2025 are presented in Fig. 2.

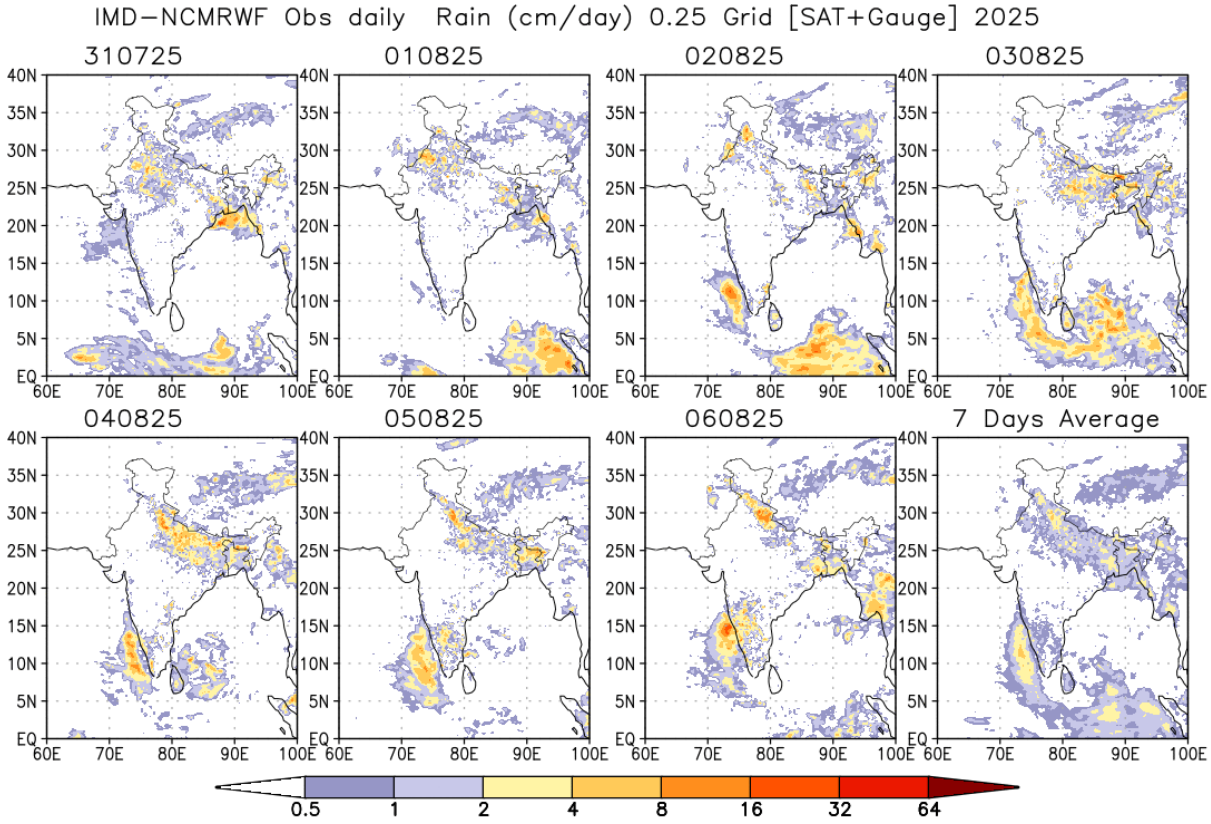

Fig.2: NCMRWF-IMD satellite gauge merged data plots of realized 24-hour accumulated rainfall from 31st July to 6th August, 2025.

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, BFS: Bharat Forecast System, 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: 14.08.2025