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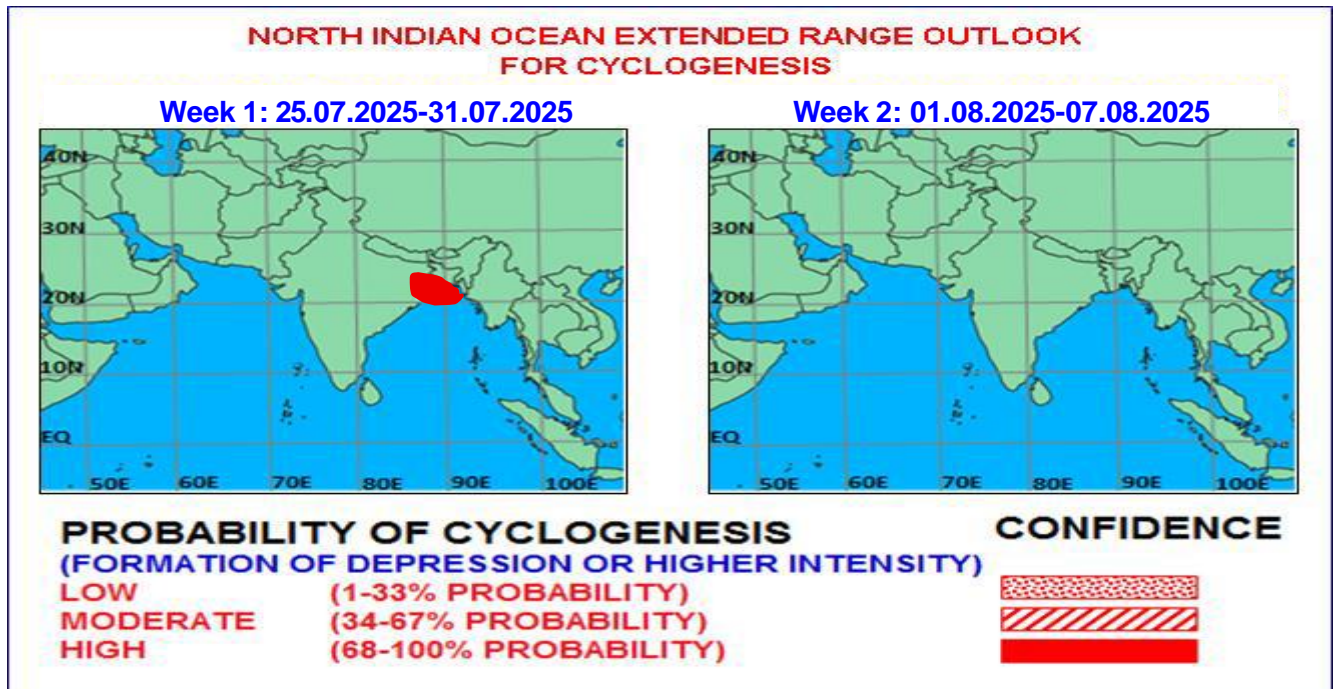


Fig. 1: Graphical Cyclogenesis over the north Indian Ocean during the next two weeks

I. Environmental features:

The guidance from various models (NCPE, NCPB, GMON, NCFS, CMET, ECMF, ECOMM, EMON, EMOM) indicates that Madden Julian Oscillation (MJO) is currently in phase 6 with an amplitude greater than 1. Most of the model forecasts have a consensus and suggest that the MJO is likely to propagate eastwards across phase 7 with decreasing amplitude and enter into phase 8 at the end of week 1. Thereafter, it is likely to propagate eastwards across phases 8 and 1 during the remaining part of the forecast period. Hence, MJO is likely to support the enhancement of convective activity over the Arabian Sea (AS) and more specifically the western coasts of India during the first half of week 1. Thereafter, it is likely to support the enhancement of convective activity over the North Indian Ocean (NIO), mainly over south AS during the first half of the second week and gradually over Bay of Bengal (BoB) thereafter.

The guidance from the NCICS CFS model indicates the prevalence of strong westerly wind anomaly (5-7 mps) over the south & adjoining central AS and similarly over south BoB. The easterly wind anomaly (3-5 mps) is likely over the northern parts BoB and east India. The model shows that the westerly wind anomaly is likely to weaken (3-5 mps) and spread over the entire AS and BoB during the second half of week 2. According to the model prediction, the westerly wind anomaly is getting replaced by a weak easterly wind anomaly, covering gradually the western part of AS up to the entire south & central BoB till the middle of the second week. There is an intermittent superposition of Equatorial Rossby Wave (ERW) activities over south BoB and southeast AS during the first half of week 1 and over the entire BoB and eastcentral AS in the first half of week 2. There are frequency waves over south BoB and adjoining North Equatorial Indian Ocean (NEIO) during the entire forecast period. Therefore, although the MJO is neutral towards the convective activities over NIO during the first week, the equatorial waves and zonal wind characteristics are supportive during the first week.

II. Model Guidance:

Most of the numerical models, including IMD GFS, BFS, NCUM, ECMWF, NCEP GFS, ECAI are indicating an existing low pressure area (LPA) over the north Bay of Bengal. The model forecasts suggest that the LPA is very likely to move west-northwestwards, become a well marked low pressure area (WML) over northwest BoB and adjoining Bangladesh & West Bengal coasts during the next 24 hours. It is likely to move towards West Bengal & adjoining Odisha coasts during the subsequent 24 hours. A few models are suggesting further intensification into a depression over Gangetic West Bengal and adjoining areas around 25th July 2025. Thereafter, it will continue to move in the same direction across Jharkhand and adjoining north Chhattisgarh & east Madhya Pradesh. Another upper-air cyclonic circulation is likely to form over the coastal areas of West Bengal and Bangladesh around 28th July, 2025.

The 850 hPa mean wind field of IMD ERF Model indicates a seasonal monsoon trough in its normal position with an embedded cyclonic circulation over coastal areas of north Odisha and Gangetic West Bengal during week 1. The 850 hPa mean wind anomaly field indicates a cyclonic circulation over coastal areas of north Odisha and Gangetic West Bengal, along with an east-west trough and a feeble cyclonic circulation over northeast AS off Gujarat coast during week 1. The model is also indicating a moderate to high probability (60-80%) of cyclogenesis over north BoB and adjoining coastal areas of West Bengal and north Odisha during week 1. The mean wind at 850 hPa indicates a cyclonic circulation over Bangladesh and neighbourhood during week 2. However, during week 2, the wind anomaly shows an anticyclone over central India with an associated east-west oriented ridge line along latitude 20°N. No significant probability of cyclogenesis over the North Indian Ocean (NIO) region is noticed during week 2 forecast. Similar features are indicated by NCMRWF extended range model also. ECMWF Ensemble model is also indicating 30-40% probability of cyclogenesis over Gangetic West Bengal and adjoining areas during 26-27 July. ECMWF sub-seasonal forecast model is indicating 20-30% probability of cyclogenesis over Northwest BoB and adjoining areas during week 1, but no cyclogenesis during week 2.

III. Inference:

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

- (i) The low pressure area over the north Bay of Bengal is likely to move slowly west-northwestwards and become more marked over the same region in the evening of today, the 24th July, 2025. It is very likely to move west-northwestwards and intensify into a depression over coastal areas of West Bengal and Bangladesh during the subsequent 24 hours. Thereafter, it is likely to continue to move west-northwestwards across Gangetic West Bengal, north Odisha, and Jharkhand & adjoining north Chhattisgarh during the subsequent 24 hours.
- (ii) There is no probability of cyclogenesis during week 2. However, there is a probability for the 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.

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

The forecast issued on **10th July** for week 2 (18th -24th July) indicated likelihood of the formation of an upper-air cyclonic circulation over North Bay of Bengal and adjoining coastal West Bengal & Bangladesh around 18th July.

The forecast issued on **17th July** for the week 1 (18th -24th July) indicated the formation of a fresh low pressure area over North Bay of Bengal and adjoining coastal Bangladesh & West Bengal towards the end of week 1 or beginning of week 2 (around 24th/25th July) with low probability of its intensification into a depression in the beginning of week 2.

Realized: Actually, an upper air cyclonic circulation formed over westcentral & adjoining northwest Bay of Bengal off south Odisha, north Coastal Andhra Pradesh on 20th July, 2025. It persisted over the same region till 23rd July 2025. Thus, development of an upper-air cyclonic circulation over the northwest Bay of Bengal and adjoining coastal Bangladesh & West Bengal around 18th July was predicted in week 2 forecast but with some spatial and temporal variation. Another upper air cyclonic circulation (remnant of WIPHA) emerged into the North Bay of Bengal at 0000 UTC and it intensified into a low pressure area over the same region at 0300 UTC of 24th July 2025. The formation of low pressure area around 24th July was well predicted in the week 1 forecast.

NCMRWF-IMD satellite gauge merged data plots of realized 24-hour accumulated rainfall from, 17th to 23rd July, 2025 are presented in Fig. 2.

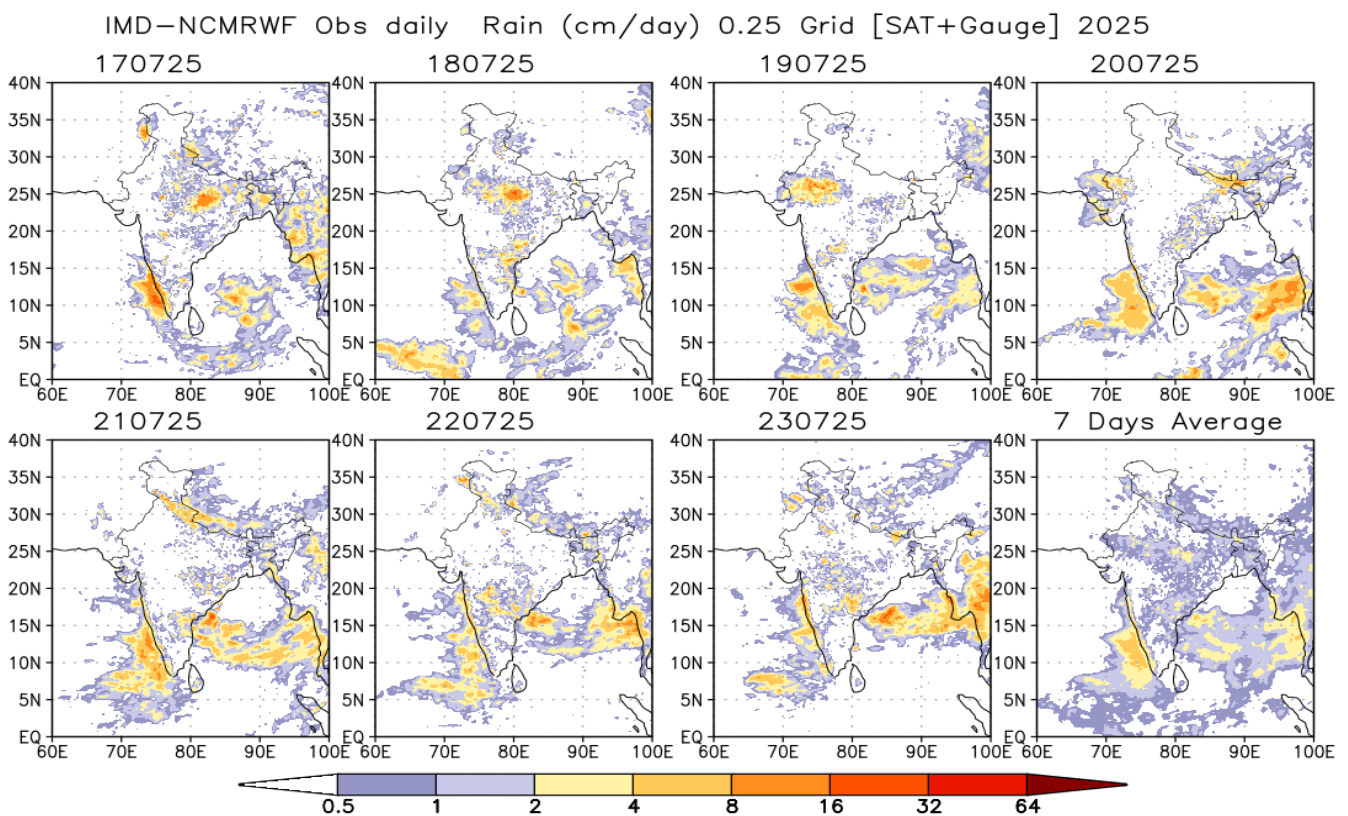


Fig.2: NCMRWF-IMD satellite gauge merged data plots of realized 24-hour accumulated rainfall from 17th to 23rd July, 2025.

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: 31.07.2025