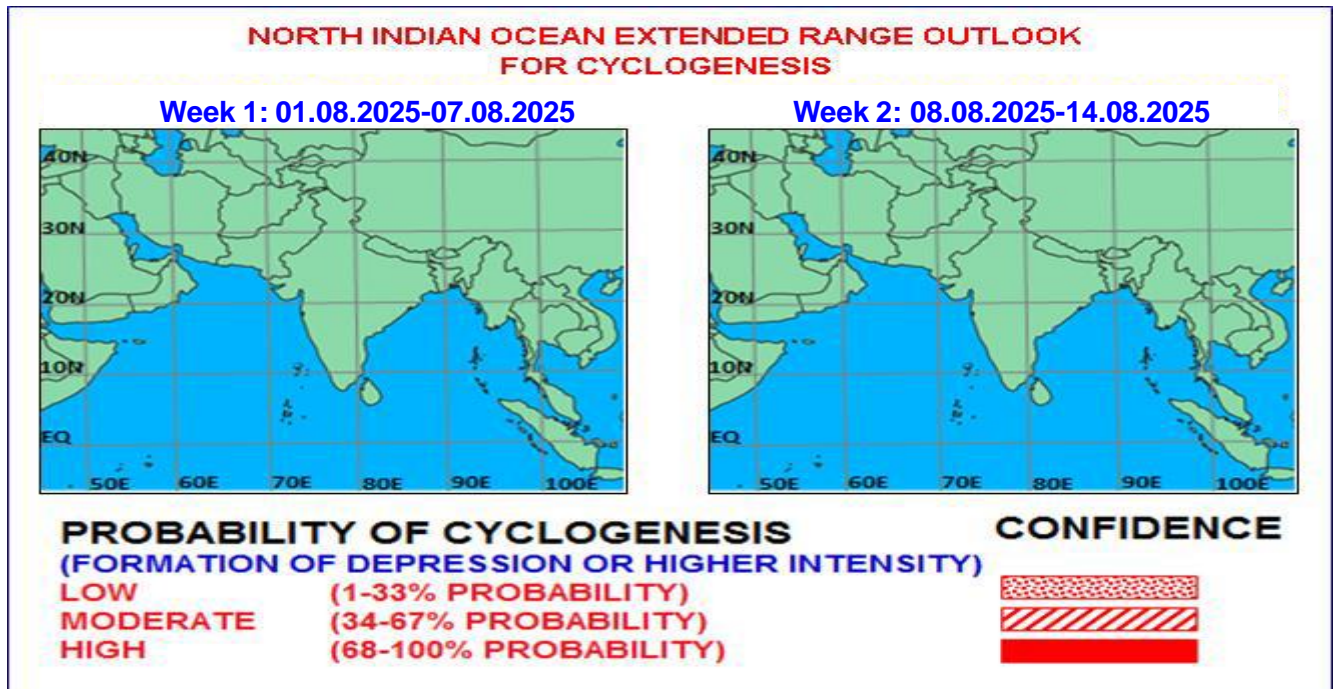




Issued on 31.07.2025



**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 8 with an amplitude close to 1. Most of the model forecasts have a consensus and suggest that the MJO is very likely to propagate very quickly eastwards across phases 8, & 1 with the amplitude close to 1 and enter into phase 2 at the end of week 1. Thereafter, it is likely to remain in phase 2 during the remaining part of the forecast period. However, the models and their associated ensemble members have large spreads to represent the MJO propagation as well as the amplitude during week 2. Hence, MJO is likely to support the enhancement of convective activity initially over south and adjoining central Arabian Sea (AS) during the first half of the first week and gradually over the entire south AS & south Bay of Bengal (BoB) and adjoining areas remaining days of the 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 thereafter spreading over south BoB during week 1. During the same period moderate to strong easterly anomaly (3-7 mps) is likely to prevail over the northern parts of the AS & BoB. In the second week, the maxima of the westerly anomaly is likely to move eastwards and equatorward before weakening gradually (1-5 mps) at the end of week 2. The Equatorial Rossby Wave (ERW) activities are likely to be noticed over the south and central AS and adjoining southwest BoB during week 1. The ERW progresses westwards and becomes less prominent over the North Indian Ocean (NIO) region at the end of week 1. 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 week 1. During week 2, the environmental conditions are likely to remain supportive towards convective activities only over the southern parts of the BoB and adjoining southeast AS.

## **II. Model Guidance:**

Most of the numerical models, including IMD GFS, BFS, NCUM, ECMWF, ECAIFS are not indicating any low pressure area (LPA) over both BoB and AS. The model forecasts suggest that the seasonal monsoon trough is likely to remain north of its normal position close to foothills of Himalayas during most of the days of the coming 10 days. A few models (IMD GFS, NCEP GFS and ECMWF) are suggesting a probable upper-air cyclonic circulation/feeble low pressure area at the surface over north Bihar and adjoining Sub-Himalayan West Bengal during next 2 days which is likely to merge with the monsoon trough as it moves west-northwestwards during subsequent days. Although no other models except NCEP GFS are showing any formation of low pressure system over both sub-basins of NIO region till the end of the first week. However, there will be likely formation of an upper-air cyclonic circulation over southwest BoB off north Tamil Nadu -south Andhra Pradesh coasts around 6<sup>th</sup> August. According to NCEP-GFS forecasts, there is likely formation of a low pressure area over southwest BoB around 6<sup>th</sup> August and with a west-northwestwards movement it is likely to reach near south Andhra Pradesh coast around 9<sup>th</sup> August. The ECMWF is also indicating a low pressure area over forming over southwest BoB off Tamil Nadu coast around 8<sup>th</sup> August crossing the same coast on 9<sup>th</sup> August. However, IMD GFS shows only an upper-air cyclonic circulation over southwest BoB off north Tamil Nadu-south Andhra Pradesh coasts around 9<sup>th</sup> August.

The IMD ERF extended range model 850 hPa mean wind field is indicating a cyclonic circulation over northwest BoB & adjoining Bangladesh-West Bengal during week 1 and another cyclonic circulation over North Tamil Nadu-South Andhra Pradesh & adjoining southwest BoB during week 2. The 850 hPa anomaly field is also indicating a cyclonic circulation over southwest BoB during beginning of week 2. The model is indicating a low to moderate (20-40%) probability of cyclogenesis over east India during week 1. The 850 hPa mean wind and its anomaly field of NCMRWF ERF model are also indicating similar features. ECMWF ERF model is indicating low probability (5-10%) of cyclogenesis over eastcentral Arabian Sea off Konkan & Goa coast in the middle of week 2. However, the sub-seasonal model forecasts of ECMWF indicate a low probability (10-20%) of cyclogenesis over northwest BoB off south Odisha coast during week 2.

## **III. Inference:**

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

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

### **Forecast:**

The forecast issued on **17th July** for week 2 (25<sup>th</sup> -31<sup>st</sup> July) indicated likelihood of the formation of a low pressure area over North Bay of Bengal and adjoining coastal Bangladesh & West Bengal towards the beginning of week 2 (around 24th/25th July) with low probability of its intensification into a depression in the beginning of week 2 and its likely west-northwestwards during subsequent 2-3 days.

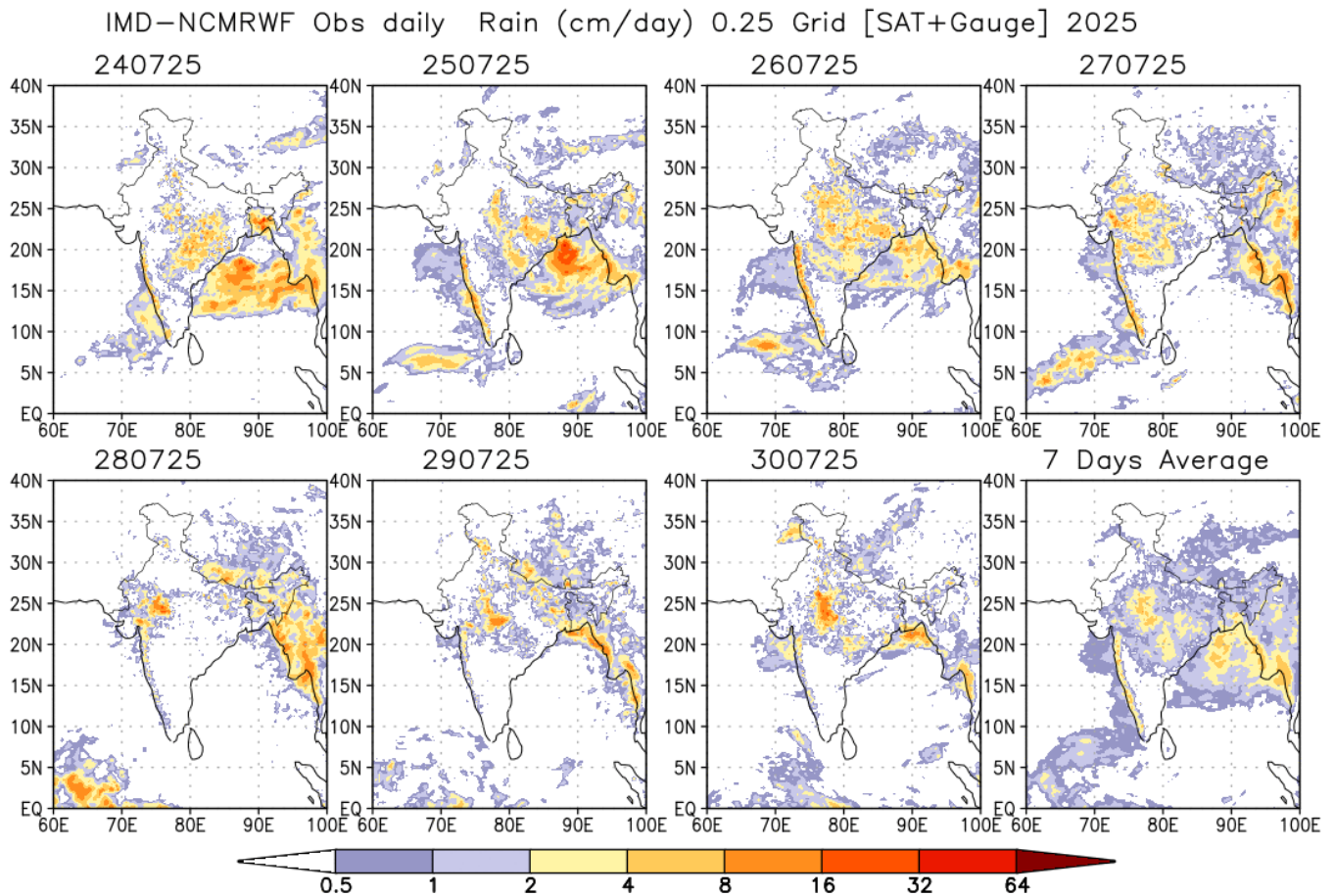
The forecast issued on 24th July for the week 1 (25<sup>th</sup> -31<sup>st</sup> July) indicated west-northwestwards movement of the low pressure area over North Bay of Bengal and its intensification into a depression over coastal areas of West Bengal and Bangladesh on 25<sup>th</sup> July, 2025 .

### Realised:

Actually a Low Pressure Area formed over North BoB at 0530 hrs IST/0000 UTC of 24<sup>th</sup> July. It lay as a Well-Marked Low Pressure Area (WML) over North BoB at 1730 hrs IST/1200 UTC of 24<sup>th</sup> July. It intensified into a Depression over Northwest BoB and adjoining areas of coastal West Bengal and Bangladesh at 0530 hrs IST/0000 UTC of 25<sup>th</sup> July.

Hence, the formation of Depression over northwest Bay of Bengal and adjoining areas of coastal West Bengal and Bangladesh was predicted well, two weeks in advance.

NCMRWF-IMD satellite gauge merged data plots of realized 24-hour accumulated rainfall from, 24<sup>th</sup> to 30<sup>th</sup> July, 2025 are presented in Fig. 2.



**Fig.2: NCMRWF-IMD satellite gauge merged data plots of realized 24-hour accumulated rainfall from 24th to 30th 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: 07.08.2025**