India Meteorological Department
Ministry of Earth Sciences
Mausam Bhawan, Lodhi Road, New Delhi-110003

Issued on 17.07.2025

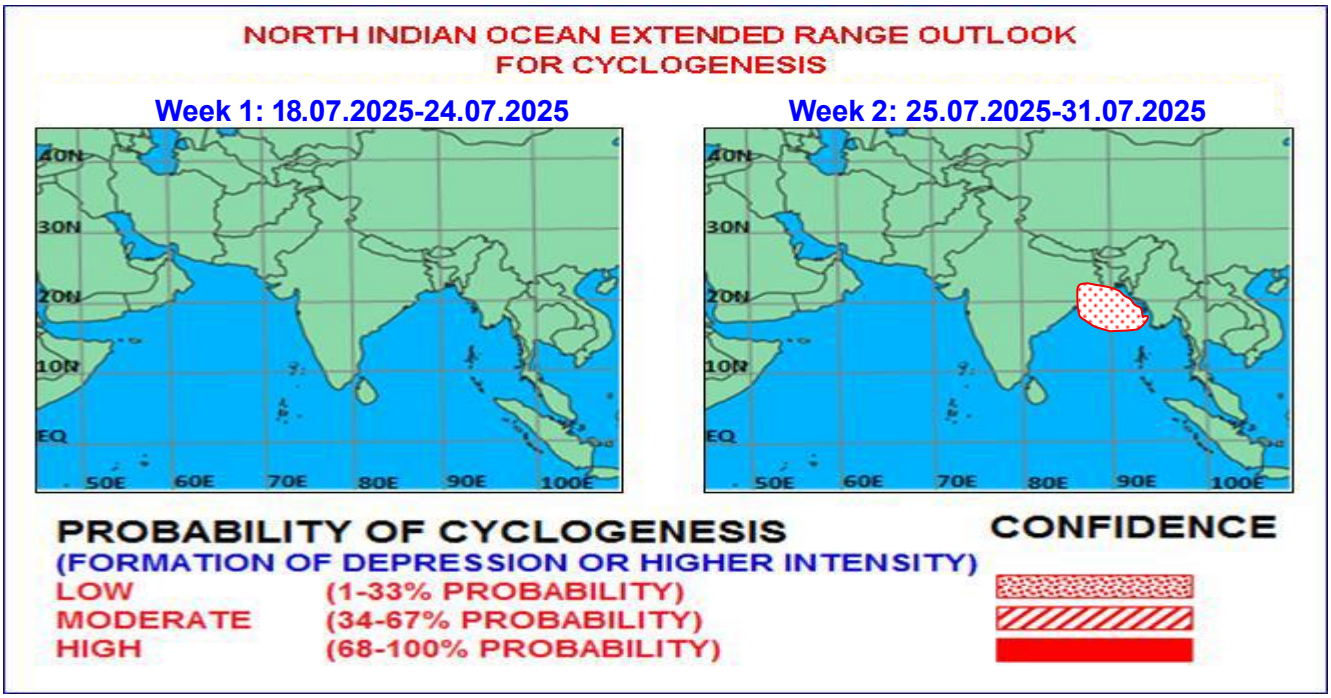

Fig. 1: Graphical Cyclogenesis over the north Indian Ocean during next two weeks

I. Environmental features:

The guidance from various models (NCPE, NCPB, GMON, NCFS, CMET, ECMF, ECMM, EMON, EMOM) indicates that Madden Julian Oscillation (MJO) is currently in phase 5 with an amplitude greater than 1. Most of the model forecasts have a consensus and suggest that the MJO is likely to continue in phase 5 during the first half of week 1, with the amplitude remaining greater than 1. Thereafter, it is likely to propagate eastwards across phases 6 and 7 during remaining part of the forecast period. Hence, MJO is likely to support enhancement of convective activity over the North Bay of Bengal (BoB) and land areas of eastern parts of India during first half of week 1. Thereafter, it is not likely to support the enhancement of convective activity over the North Indian Ocean (NIO) including the BoB and the Arabian Sea (AS) from second half of week 1.

The guidance from the NCICS CFS model indicates the prevalence of westerly wind anomaly (5-7 mps) over the south AS & south BoB alongwith Equatorial Rossby wave (ERW) and easterly wind anomaly (1-3 mps) over central AS and (3-5 mps) over central & north BoB during week 1. The model shows, the westerly wind anomaly (3-5 mps) over entire AS during first half of week 2. Over the BoB, the model is indicating, strong westerly wind anomaly (7-9 mps) alongwith ERW over south BoB and strong easterly wind anomaly (3-5 mps) over north BoB during first half of week 2. Thus, equatorial waves are likely to support enhancement of convective activity over the North BoB during week 1 and also during first half of week 2.

II. Model Guidance:

Most of the numerical models including IMD GFS, BFS, NCUM, ECMWF, NCEP GFS, ECAI are indicating existing depression over eastern parts of India (southeast Uttar Pradesh and adjoining northeast Madhya Pradesh) to move west-northwestwards during next 2 days. The models are also indicating likely formation of a fresh low pressure area over north BoB during first half of week 1

(around 24th/25th July).

The 850 hPa mean wind field of IMD ERF Model indicates seasonal monsoon trough in its normal position during week 1 and a fresh cyclonic circulation over North BoB during week 2. The 850 hPa mean wind anomaly field indicates a cyclonic circulation over eastcentral BoB during week 2. The model is also indicating a low to moderate probability of cyclogenesis over the Gangetic Plains of India (Uttar Pradesh & neighbourhood areas) during week 1 and low probability (10-20%) of cyclogenesis over north BoB during week 2. Similar features are indicated by NCMRWF extended range model also. ECMWF Ensemble model is also indicating low (20-30%) probability of cyclogenesis over North BoB during beginning of week 2. ECMWF sub-seasonal forecast model is indicating 20-30% probability of cyclogenesis over North BoB during week 2.

III. Inference:

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

(i) the existing land depression over Southeast Uttar Pradesh and adjoining northeast Madhya Pradesh is likely to move west-northwestwards across south Uttar Pradesh and adjoining north Madhya Pradesh during next 2 days.

(ii) there is a likelihood of 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. It is likely to move west-northwestwards across Gangetic West Bengal, north Odisha & adjoining Jharkhand and south Chhattisgarh during subsequent 2-3 days.

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

The forecast issued on 03rd July for week 2 (11th -17th July) indicated no probability of cyclogenesis over the NIO region during week 2. However, it indicated likely development of an upper-air cyclonic circulation over the north BoB and adjoining coastal West Bengal-Odisha and Bangladesh during the week.

The forecast issued on 10th July for the week 1 (11th -17th July) indicated likelihood of the formation of another upper-air cyclonic circulation over North BoB and adjoining coastal West Bengal & Bangladesh around 18th July. It was indicated to move west-northwestwards across Gangetic West Bengal, north Odisha & adjoining Jharkhand, and south Chhattisgarh during the subsequent 2-3 days.

Realized:

An upper air cyclonic circulation formed over northwest Bay of Bengal adjoining West Bengal and north Odisha coasts at 1200 UTC of 12th July 2025. Under its influence, a low-pressure area formed over northwest Bay of Bengal and adjoining coastal areas of West Bengal and Odisha at 1200 UTC of 13th July,2025. It concentrated into a depression over the same region and lay centred at 0600 UTC of 14th July 2025. It moved west-northwestwards and weakened into a well-marked low-pressure area over north Jharkhand and adjoining south Bihar at 0300 UTC of 15th July 2025. The well-marked low-pressure area re-intensified and concentrated into a depression over Southeast Uttar Pradesh at 0000 UTC of 17th July, 2025.

Another upper air cyclonic circulation formed over northwest Madhya Pradesh and neighbourhood on 13th July. It lay as a low pressure area over central parts of North Rajasthan and intensified into

a depression on 15th July over the same region. It weakened into a well marked low pressure over northwest Rajasthan & neighbourhood on 16th July.

Hence, the development of an upper-air cyclonic circulation over northwest Bay of Bengal and adjoining West Bengal & north Odisha coasts was predicted well, two weeks in advance. However, the formation of depression over northwest Bay of Bengal and adjoining coastal areas of West Bengal and Odisha on 14th July another over central parts of North Rajasthan on 15th July could not be captured.

NCMRWF-IMD satellite gauge merged data plots of realized 24-hour accumulated rainfall from, 10th to 16th July, 2025 are presented in Fig. 2.

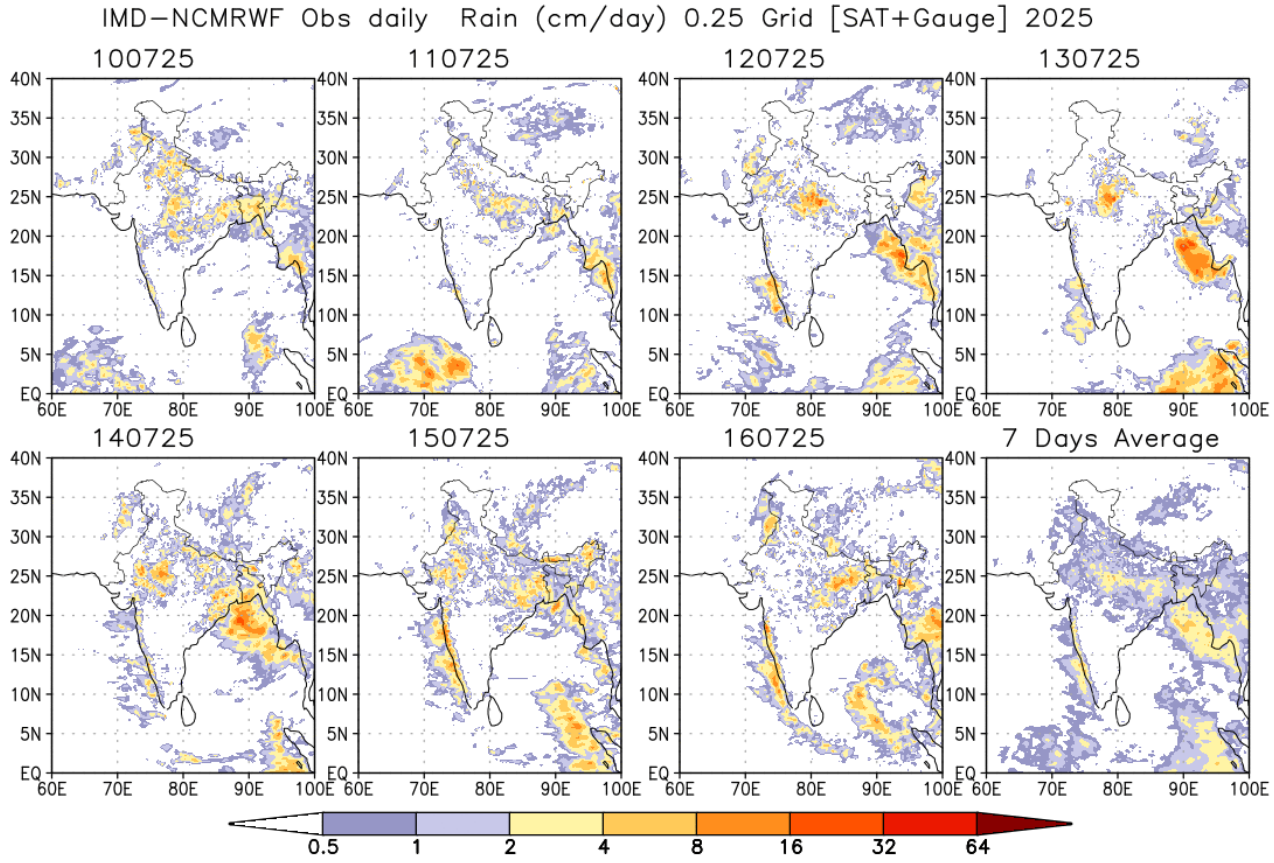

Fig.2: NCMRWF-IMD satellite gauge merged data plots of realized 24-hour accumulated rainfall from 10th to 16th July, 2025.

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: 24.07.2025