India Meteorological Department
Ministry of Earth Sciences
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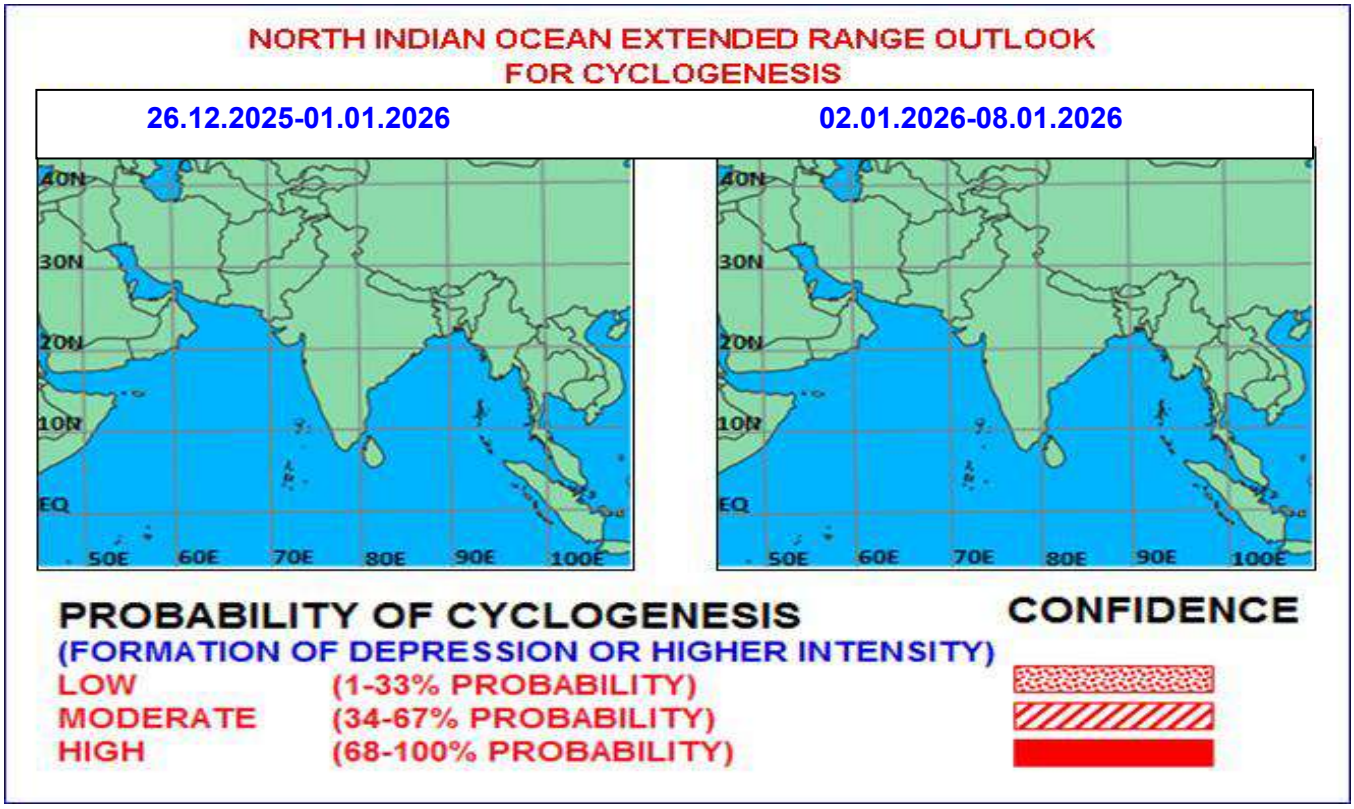

Fig. 1: Graphical Cyclogenesis over the north Indian Ocean during the next two weeks

I. Environmental features:

The guidance from ECMM models indicates that the Madden Julian Oscillation (MJO) index is presently in phase 8 with an amplitude less than 1. It is very likely to meander in the same phase with amplitude remaining less than 1 during the first half of week 1. Thereafter, it is likely to move rapidly across phases 1, 2, 3 & 4 and move to phase 5 with amplitude remaining less than 1 during the later part of week 1. Thereafter, it is likely to move across phases 6,7 and 8 with amplitude remaining less than 1 during week 2. MJO is indicated to move very fast across various phases during the entire forecast period. Thus, the phase, amplitude and propagation speed indicate that MJO is likely to contribute feebly to the enhancement of convective activity over the North Indian Ocean, including the Bay of Bengal (BoB) and the Arabian Sea (AS) during the latter half of week 1 only.

The guidance from the NCICS model indicates easterly wind anomaly (3-5 mps) over southeast BoB and adjoining South Andaman Sea during the beginning of week 1. During the same period, westerly wind anomaly (5-7 mps) is indicated over South BoB & adjoining Equatorial Indian Ocean (EIO), southwest BoB, Comorin area and southeast AS along with Low frequency background wave (LW). The model is also indicating MJO and Equatorial Rossby wave (ERW) over South AS during the same period. Thereafter, during the latter half of week 1, similar features but with a weakening trend are indicated. Thus, during week 1, the equatorial waves are likely to support the convective activity over the southeast Arabian Sea and also over the southeast BoB.

Thereafter, during week 2, westerly wind anomaly (3-5 mps) is likely to prevail over south BoB & adjoining EIO, along with MJO and weak easterly wind anomaly (1-3 mps) over northwest BoB off Odisha coast. Over the AS, westerly wind anomaly (1-3 mps) along with MJO is likely over North AS, with feeble easterly wind anomaly over Afghanistan-Pakistan region. Thus, during week 2, equatorial

waves may support convective activity over the Afghanistan-Pakistan region and adjoining Northwest India.

II. Model guidance:

(a) Guidance for Extended Range models:

Mean wind field at 850 hPa of IMD ERF (CFS V-2) model indicates an upper-air cyclonic circulation over southeast BoB and associated easterly winds prevalent over the entire south & central BoB and northeasterly winds over north BoB during week 1. The model also indicates an anticyclone over central India and a prominent Inter-Tropical Convergence Zone (ITCZ) with east-west shear zone over south BoB & adjoining EIO along latitude 6°N during the week. The corresponding anomaly wind field indicates easterly wind dominating over south BoB along with a north-south trough over the southwest BoB off Sri Lanka & Tamil Nadu coasts. The anomaly wind field also indicates the shear zone at the same location during week 1. Thereafter, during week 2, the model indicates that the east-west shear zone persists along latitude 8°N over the South BoB. The corresponding anomaly field indicates an anomalous westerly wind along the south AS and south BoB, with the shear zone shifted a little northward and oriented along latitude 10°N during week 2. The anomaly wind field for week 2 also predicts a feeble upper-air cyclonic circulation over Maharashtra & neighbourhood. The NCMRWF Extended Range Prediction (ERP) model also indicates similar features. Therefore, the wind characteristics show the active ITCZ over the south BoB during both weeks. There is also a possibility of the north-south trough extending over peninsular India, potentially reaching up to coastal Maharashtra along the west coast. This would support northeast monsoon rainfall activity over the Andaman & Nicobar Islands and peninsular India, mainly over Tamil Nadu, and Kerala, during the entire forecast period.

IMD CFS V-2 model indicates an east-west oriented zone over the south BoB and south Andaman Sea with moderate (40-50 %) probability of cyclogenesis during week 1. However, during week 2, a small area with low to moderate probability of cyclogenesis is indicated over southeast BoB. The ECMWF ensemble forecasts, i.e. the ECMM forecasts do not indicate any cyclogenesis over the NIO region during both weeks. The sub-seasonal forecast of ECMWF also does not show any cyclogenesis over NIO during the entire forecast period.

(b) Guidance from Medium-Range NWP models:

Most of the models do not indicate any formation of a low pressure area or cyclogenesis during the next 10 days. Due to active ITCZ, the northeasterly/easterly winds are likely to prevail over the entire Bay of Bengal with a shear zone nearly along latitude 5-6°N. An active spell of Easterly wave is likely with a prominent north-south trough and upper-air cyclonic circulations in the lower tropospheric levels during the later part of week 1. However, there are variations among models about the location, time and amplitude of the easterly wave based on its propagation from the Andaman & Nicobar Islands to Sri Lanka – Tamil Nadu coasts.

III. Inference:

Considering various large-scale environmental features, climatology and model guidance, it is inferred that there is no probability of cyclogenesis during the entire forecast period. However, with the presence of an active Inter-tropical Convergence Zone with easterly wave activity over the south Bay of Bengal, there is a possibility for the formation of an upper-air cyclonic circulation / low pressure area over the south Bay of Bengal during the later part of the first week and another during the second week as well.

Verification of forecast issued during the previous two weeks:

Forecast issued:

The extended range outlook issued on 11th December for week 2 (19.12.2025–25.12.2025) indicated no probability of cyclogenesis during the entire forecast period. The extended range outlook issued on 18th December for week 1 (19.12.2025–25.12.2025) also indicated no probability of cyclogenesis during the forecast period. It, however, indicated an active easterly wave to prevail over the south BoB during the later part of week 1 (22nd–25th December).

Realized weather:

No cyclogenesis occurred over the region during the period. However, an upper air cyclonic circulation lay over the southeast Arabian Sea and adjoining south Kerala coast at 0300 UTC of 19th December, 2025. It lay over the Gulf of Mannar and neighbourhood at 0000 UTC of 20th December, 2025 and became less marked at 0000 UTC of 21st December, 2025. An upper air cyclonic circulation lay over the EIO and adjoining southwest BoB at 0300 UTC of 21st December, 2025. It lay over the Comorin area and neighbourhood at 0300 UTC of 22nd December, and subsequently became less marked at 0300 UTC of 23rd December, 2025. Further, a fresh upper air cyclonic circulation formed over the southeast Arabian Sea adjoining south Kerala, at 0000 UTC of 24th December, 2025, and it persisted over the same region on 24th and 25th December, 2025.

Thus, no cyclogenesis during next 2 weeks and active easterly waves over south BoB during 22nd to 25th leading to embedded upper air cyclonic circulations were correctly predicted in the extended range outlook issued on 11th and 18th December.

NCMRWF-IMD satellite gauge merged data plots of 24-hour accumulated rainfall from 18th-24th December 2025 is presented in **Fig. 2**.

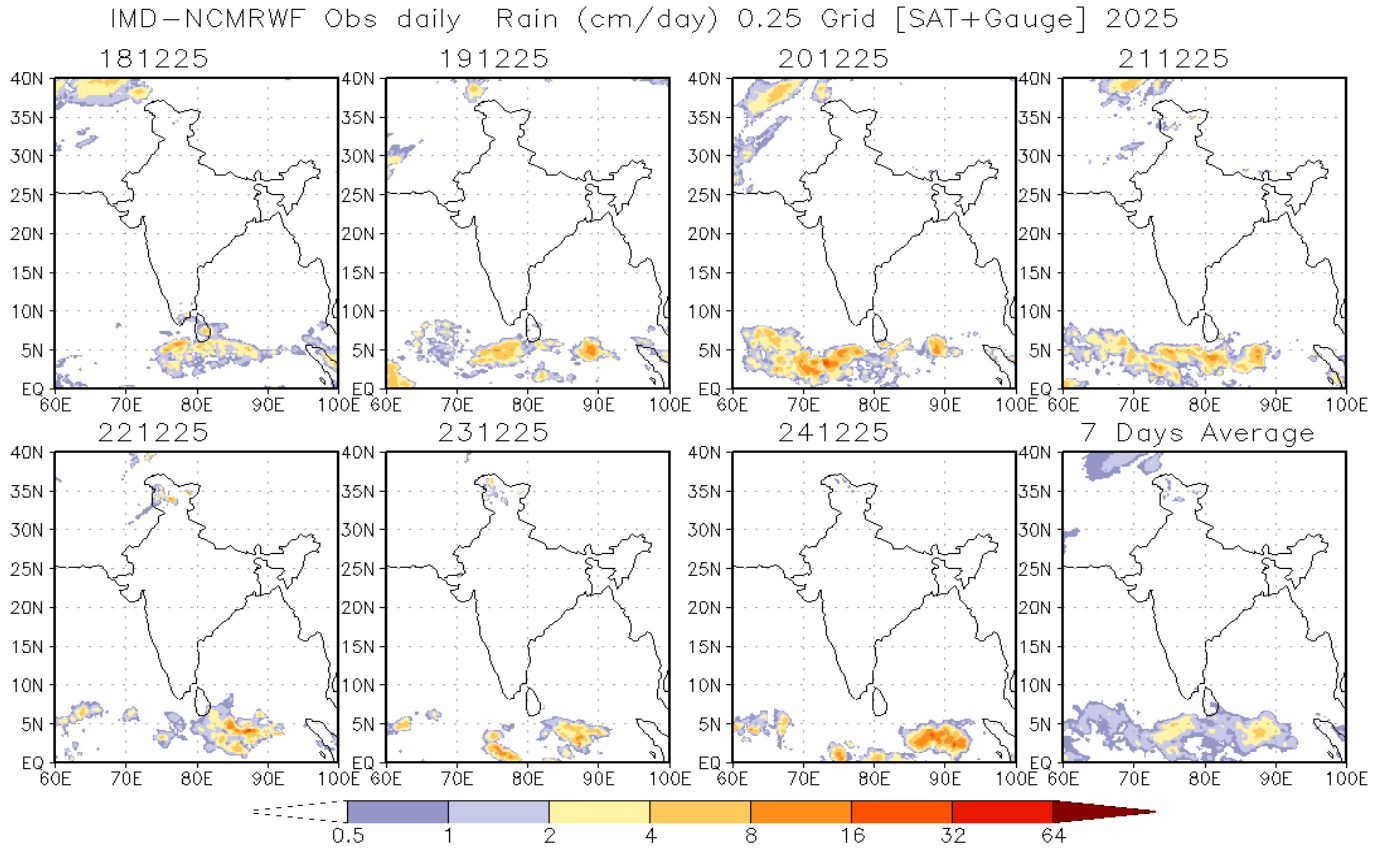

Fig. 2: NCMRWF-IMD satellite gauge merged data plots of 24-hour accumulated rainfall from 18th-24th December 2025

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: 01.01.2026