India Meteorological Department
Ministry of Earth Sciences
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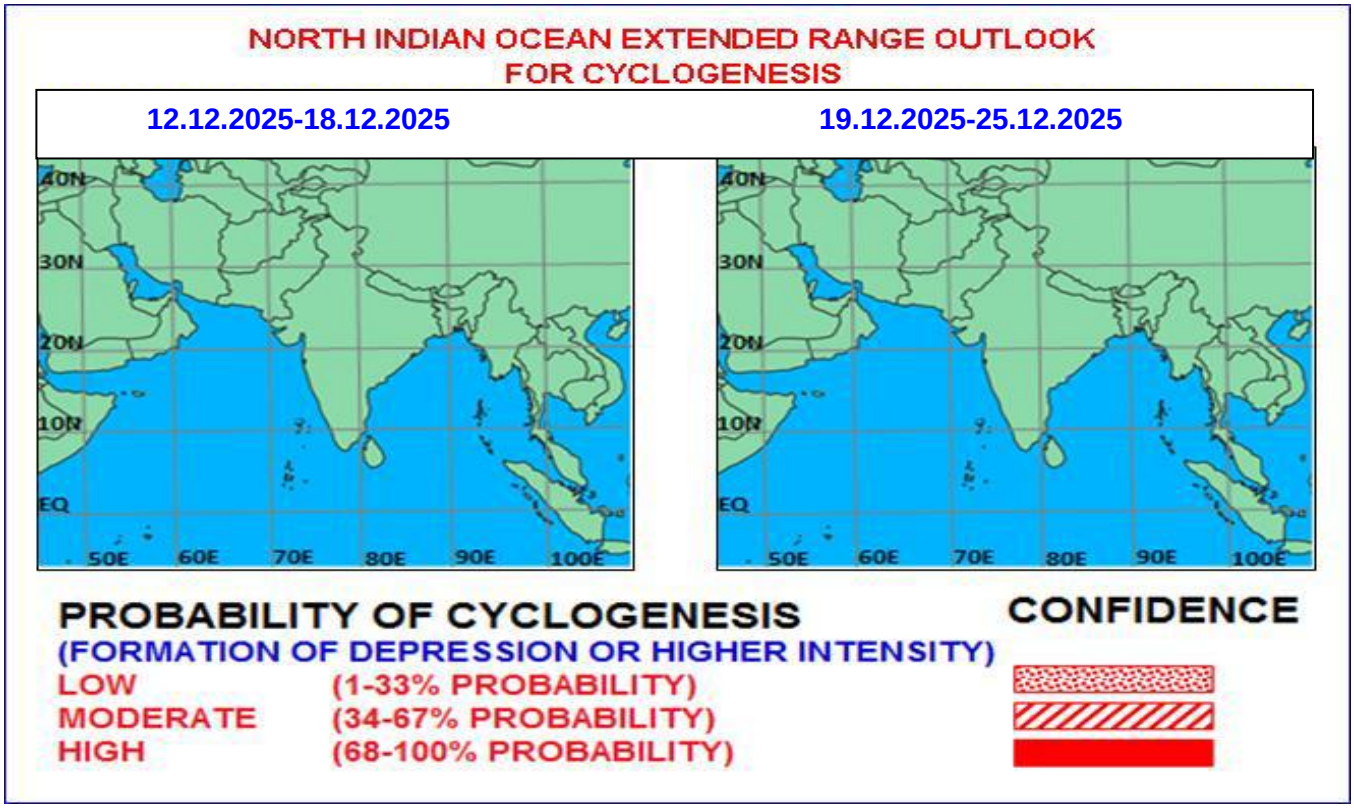

Fig. 1: Graphical Cyclogenesis over the north Indian Ocean during the next two weeks

I. Environmental features:

The guidance from various models indicates that the Madden Julian Oscillation (MJO) index is presently in phase 8 with amplitude less than 1. It is very likely to remain in phase 8 with gradually increasing amplitude during week 1 (till 18th Dec). Thereafter, it will move slowly across phases 8 and 7 with amplitude close to 1 during week 2. Thus, MJO is not likely to contribute towards enhancement of convective activity over the north Indian Ocean (NIO) region including the Bay of Bengal (BoB) and the Arabian Sea (AS).

The guidance from NCICS model indicates easterly wind anomaly (5-7 mps) over eastcentral Bay of Bengal (BoB) and adjoining north Andaman Sea during first half of week 1. During the same period westerly wind anomaly (7-9 mps) is indicated over south BoB and adjoining Equatorial Indian Ocean (EIO) and southeast AS along with Kelvin wave (KW), Equatorial Rossby Wave (ERW), Low frequency background wave and MJO. Thereafter, during second half of week 1, easterly wind anomaly (5-7 mps) is seen over central parts of India & adjoining eastcentral AS and westerly wind anomaly (7-9 mps) along with ERW, MJO & LW over southeast AS and adjoining areas of EIO. During week 2, weakening of easterly wind flow over the BoB is indicated and no other equatorial wave is prevalent in the region. These features indicate a favorable environment for development of a cyclonic disturbance over south Andaman Sea and adjoining southeast Bay during first half of week 1 and moderately favorable environment maintenance of intensity of the system while it reaches over central parts of India and adjoining eastcentral AS during later part of week 1. During week 2, equatorial waves are not likely to contribute to enhancement of convective activity over the entire NIO region.

Most models indicate La Niña to persist during Dec-Feb before transitioning to ENSO-neutral during January-March 2026. Most models indicate transition of Negative IOD conditions to Neutral IOD conditions during Dec-Feb.

II. Model guidance:

(a) Guidance for Extended Range models:

Mean wind field at 850 hPa of IMD ERF (CFS V-2) model is indicating prevalence of easterly/northeasterly winds over the entire BoB and AS during week 1. Thereafter, the model is indicating a cyclonic circulation over southwest BoB during first half of week 2 and northeasterly flow is indicated over the AS. The 850hPa anomaly field is indicating an anticyclonic circulation over central AS during week 1. However, during week 2, the model is indicating cyclonic anomaly over southwest Bay of Bengal. Thus, ERF model (850 hpa mean wind field and anomaly field) is indicating development of some cyclonic circulation/ low pressure area over southeast BoB during later part of week 1 with nearly westwards movement. The model is also indicating above average rainfall activity over south BoB and Sri Lanka during week 1 and below average rainfall activity over southern Peninsula. During week 2, the model is indicating slightly above average rainfall over south & central BoB and Andaman Sea.

NCMRWF Extended Range Prediction (ERP) model indicates increase in easterly wind flow over BoB during week 1 and establishment of anticyclone over the northwest India during week 1. During week 2, the anticyclone is seen over central parts of India and enhanced northeasterly winds are seen over southwest Bay and Comorin area. Respective anomaly field is indicating westerly wind anomaly over BoB during week 1 leading to weakening of easterly winds over the BoB. Precipitation anomaly charts are indicating slightly above average rainfall over southwest BoB and adjoining north Sri Lanka during week 1.

IMD CFS V-2 model is indicating a low probability of cyclogenesis (30-40 %) over the south BoB and adjoining Comorin area during week 1. During week 2, also low probability (20-30%) is indicated over south BoB and South Andaman Sea. ECMWF extended range model indicates low probability (10-20%) of cyclogenesis over southwest BoB during later part of week 1.

(b) Guidance from Medium-Range NWP models:

IMD GFS is indicating an active easterly wave over the Bay of Bengal during 12th-14th December. Model is also indicating a feeble anticyclonic circulation over south BoB during 14th-16th December. BFS is also indicating an active easterly wave over the BoB during 13th-15th December with embedded upper air cyclonic circulation over south BoB and adjoining EIO during 15th to 17th December. ECMWF is also indicating an active easterly wave over BoB during 14th -17th December leading to enhanced rainfall activity over southern Peninsular India and Sri Lanka during 16th to 18th December. NCEP GFS is also indicating similar features. Thus, various deterministic models are indicating a fresh spell of active easterly wave over the BoB during 13th to 16th Dec. with an embedded cyclonic circulation over central parts of south BoB during 15th-17th Dec and widespread rainfall activity over southern peninsular India and Sri Lanka during 15th-17th Dec.

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, an active easterly wave is likely to prevail over south Bay of Bengal during the second half of week 1. There is also a likelihood of development of an upper air cyclonic circulation over central parts of south Bay of Bengal during the later part of week 1 (around 15th December) with nearly westward movement till 17th December.

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

Forecast issued:

The extended range outlook issued on 27th November for week 2(05.12.2025-11.12.2025) indicated low probability of emergence of an upper air cyclonic circulation over south Andaman Sea during middle of week

2. The extended range outlook issued on 04th December for week 1(05.12.2025-11.12.2025) indicated development of (a) an upper-air cyclonic circulation over the southeast Arabian Sea and adjoining Lakshadweep coast is very likely to continue to move westwards and persist over the region during the next 2 days and gradually weaken thereafter and (b) formation of another upper-air cyclonic circulation over the southeast Bay of Bengal around 9th December, 2025.

Realized weather:

The upper air cyclonic circulation over Southeast Arabian Sea and adjoining Lakshadweep Islands became less marked at 0300 UTC of 05th December 2025, as predicted. Another upper air cyclonic circulation formed over south Kerala coast & neighbourhood at 0.9 km above mean sea level at 0000 UTC of 06th became less marked on 07th December 2025 which was not predicted. A fresh upper air cyclonic circulation lay over southwest Bay of Bengal & adjoining areas of east Equatorial Indian Ocean off south Sri Lanka coast at 5.8 km above mean sea level at 0300 UTC of today, the 11th December, 2025 which was predicted over southeast Bay of Bengal (spatio-temporal errors prevailed).

Hence, no fresh cyclogenesis was well predicted two weeks in advance and likely formation of upper air cyclonic circulation over southeast Bay of Bengal was also correctly captured with some spatio – temporal variations.

NCMRWF-IMD satellite gauge merged data plots of 24-hour accumulated rainfall from 04th-10th December 2025 is presented in **Fig. 2**.

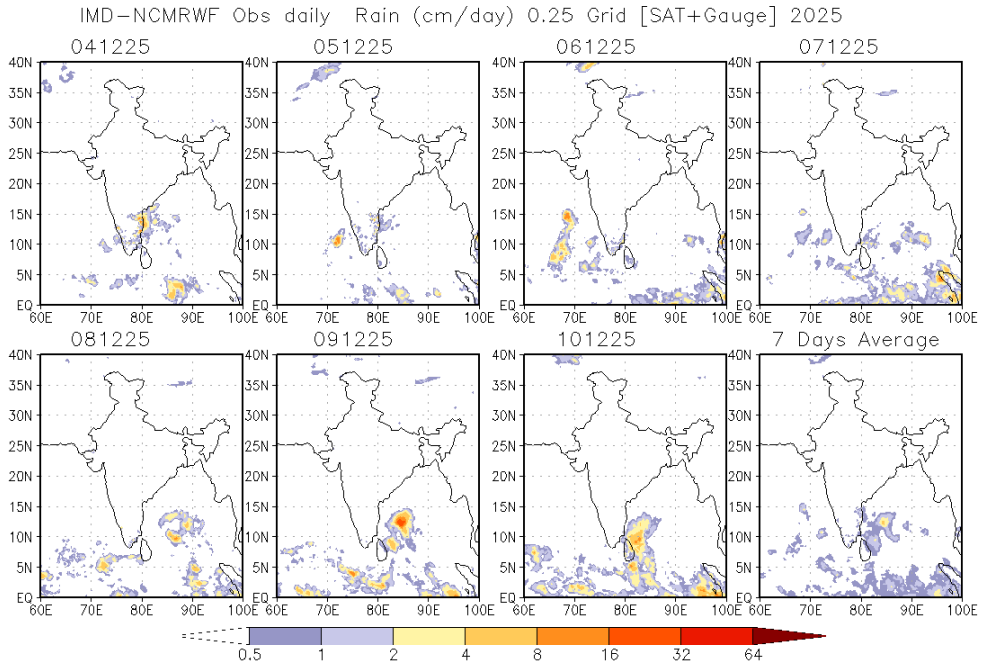

Fig. 2: NCMRWF-IMD satellite gauge merged data plots of 24-hour accumulated rainfall from 04th-10th December 2025

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: 18.12.2025