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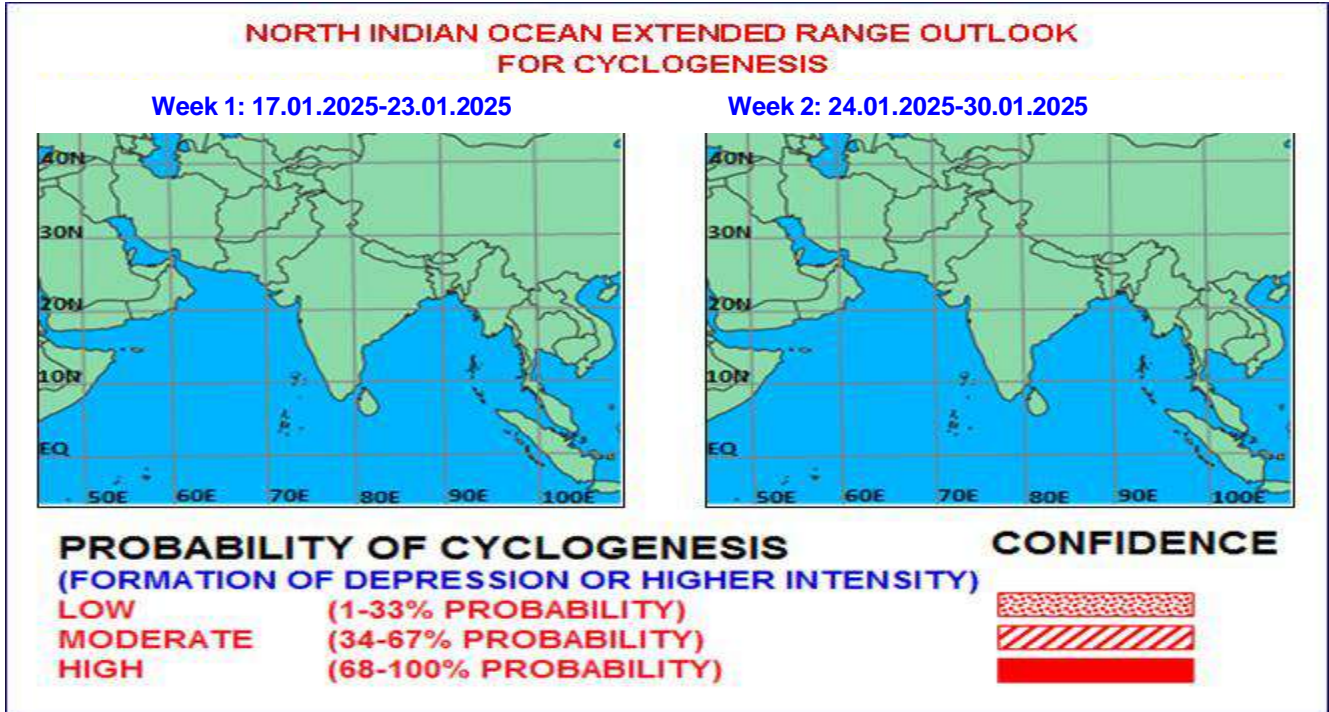


Fig. 1: Graphical Cyclogenesis over the north Indian Ocean during next two weeks

I. Environmental features:

As per ECMM guidance, Madden Julian Oscillation (MJO) is currently in phase 2 with amplitude more than 2. It will continue in same phase during first half of week 1 with amplitude remaining more than 2. It would move across phase 3 during later half of week 1. Thereafter, it would move across phase 4 during week 2 with amplitude becoming less than 1 during later half of week 2. Thus, MJO would contribute to enhancement of convective activity over the Arabian Sea (AS) during first half of week 1 and thereafter over the Bay of Bengal (BoB) during remaining part of the forecast period.

The NCICS CFS model forecast indicates enhanced westerly wind anomaly over Equatorial Indian Ocean (EIO) and adjoining southeast Arabian Sea & South Bay of Bengal till first half of week 2. It also indicates passage of Equatorial Rossby Wave (ERW) over the EIO and adjoining southeast AS & BoB during the same period. Easterly wind anomaly (1-3 mps) is also indicated to its north over both the basins during first half of week 1. Thereafter the easterly wind anomaly is seen drifting northwards. These features indicate that equatorial waves would support the enhancement of convective activity over the southeast AS during first half of week 1 and over the BoB during later part of week 1.

II. Model Guidance:

IMD GFS is indicating likely formation of a cyclonic circulation over southeast BoB and adjoining EIO around 23rd January with gradual westwards movement till 25th January. NCUM (G)

is indicating likely development of a cyclonic circulation over southeast BoB and adjoining EIO around 18th January with gradual westwards movement till 25th January. ECMWF model is not indicating any significant cyclonic circulation over the region during the forecast period. NCEP GFS is indicating cyclonic circulation over southeast BoB around 25th January, with slow west-northwestwards movement towards South Andhra Pradesh-North Tamil Nadu coasts till 31st January.

The GPP guidance products for next 7 days indicate significant potential zone for cyclogenesis (GPP>25) over southeast BoB & adjoining EIO around 20th January with gradual westwards movement.

The NCMRWF extended range model is indicating easterly winds prevailing over the entire region. It is also indicating an extended cyclonic circulation over the south BoB and adjoining EIO towards end of week 1. IMD extended range CFS (V2) is indicating mainly easterly flow over the region. It is also indicating an east-west trough over South BoB and adjoining EIO during week 1. Strengthening of easterlies is indicated during week 2. The 850 hPa wind anomaly is indicating a cyclonic circulation over southeast BoB in the first half of week 2 with nearly west-northwestwards movement. The ECMWF Extended Range model is also indicating low probability of cyclogenesis (10-20%) over south BoB and adjoining EIO during both the weeks.

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, ECMF: ECMWF-Ensemble System, ECMM: ECMWF-Ensemble System Bias Corrected, GPP: Genesis Potential Parameter, NCEP GFS/GEFS/CFS: National Centre for Environment Prediction GFS/GEFSv12/CFSv2, 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.

III. Inference:

Considering various environmental conditions and model guidance it is inferred that there is no likelihood of cyclogenesis over the North Indian Ocean region during the next two weeks. There is likelihood of active easterly waves during both the weeks with embedded cyclonic circulation over south Bay of Bengal and adjoining Equatorial Indian Ocean during week 1 and a cyclonic circulation over southeast Bay of Bengal and adjoining Equatorial Indian Ocean during week 2.

IV. Verification of forecast issued during last two weeks:

The forecast issued on 02nd January for week 2 (10th-16th January, 2025) indicated no probability of cyclogenesis during week 2. The forecast issued on 09th January for week 1 (10 Jan-16 Jan, 2025) indicated no probability of cyclogenesis during week 1. It also indicated likelihood of a cyclonic circulation/low pressure area over southeast Bay of Bengal and

adjoining Equatorial Indian Ocean during beginning of week 2 with subsequent westwards movement across southwest Bay of Bengal during week 2.

Actually, no cyclogenesis occurred over North Indian Ocean region during 10 Jan-16 Jan, 2025. However, as mentioned in the extended-range outlook on 09th January, a cyclonic circulation over Equatorial India Ocean and adjoining Southeast Bay of Bengal formed on 09th January. It moved westwards and became less marked over southwest Bay of Bengal on 15th January, 2025. Hence, non-occurrence of cyclogenesis was correctly predicted 2 weeks in advance. The likely development of cyclonic circulation over southeast Bay of Bengal was also correctly captured in the forecast issued on 9th January.

NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from, 9th January to 15th January, 2025 are presented in **Fig. 2**.

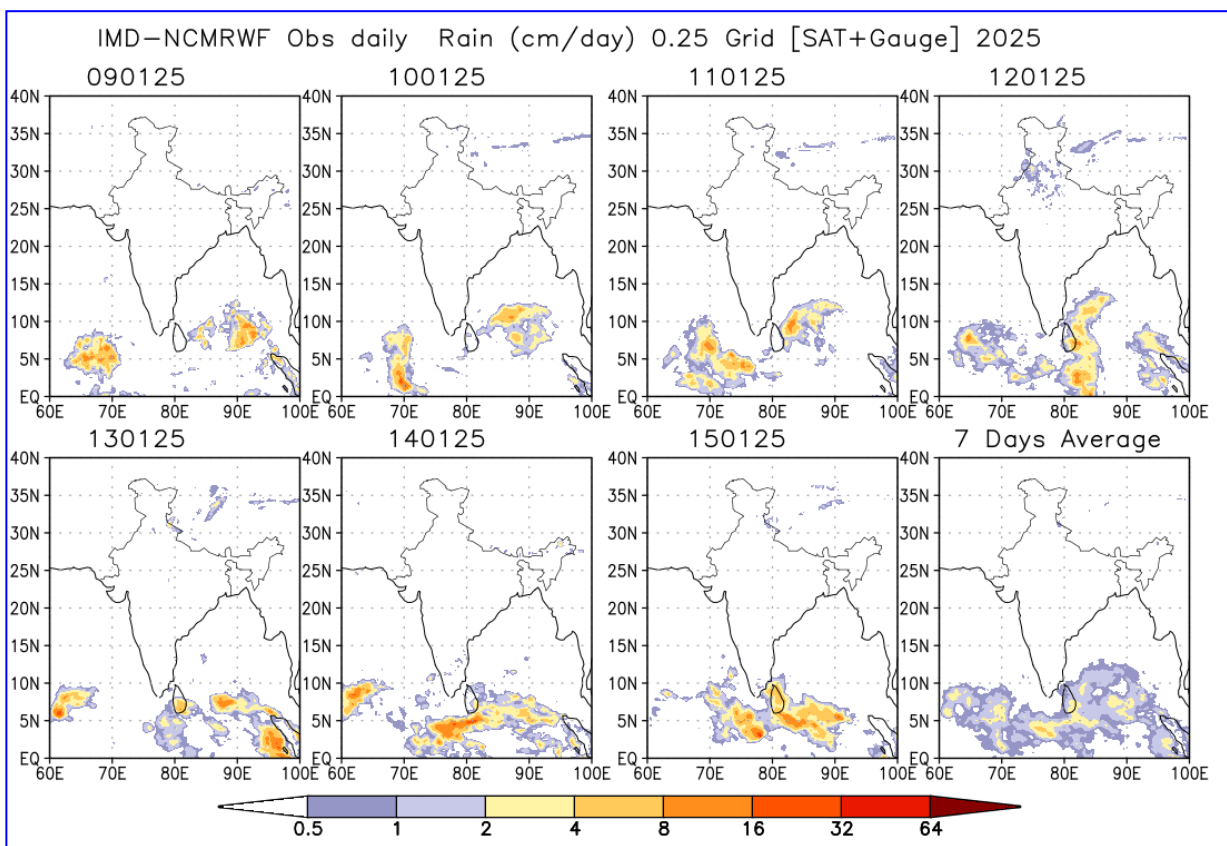


Fig.2: NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from 9th January to 15th January, 2025.

Next update: 23.01.2025