



Issued on 23.01.2025

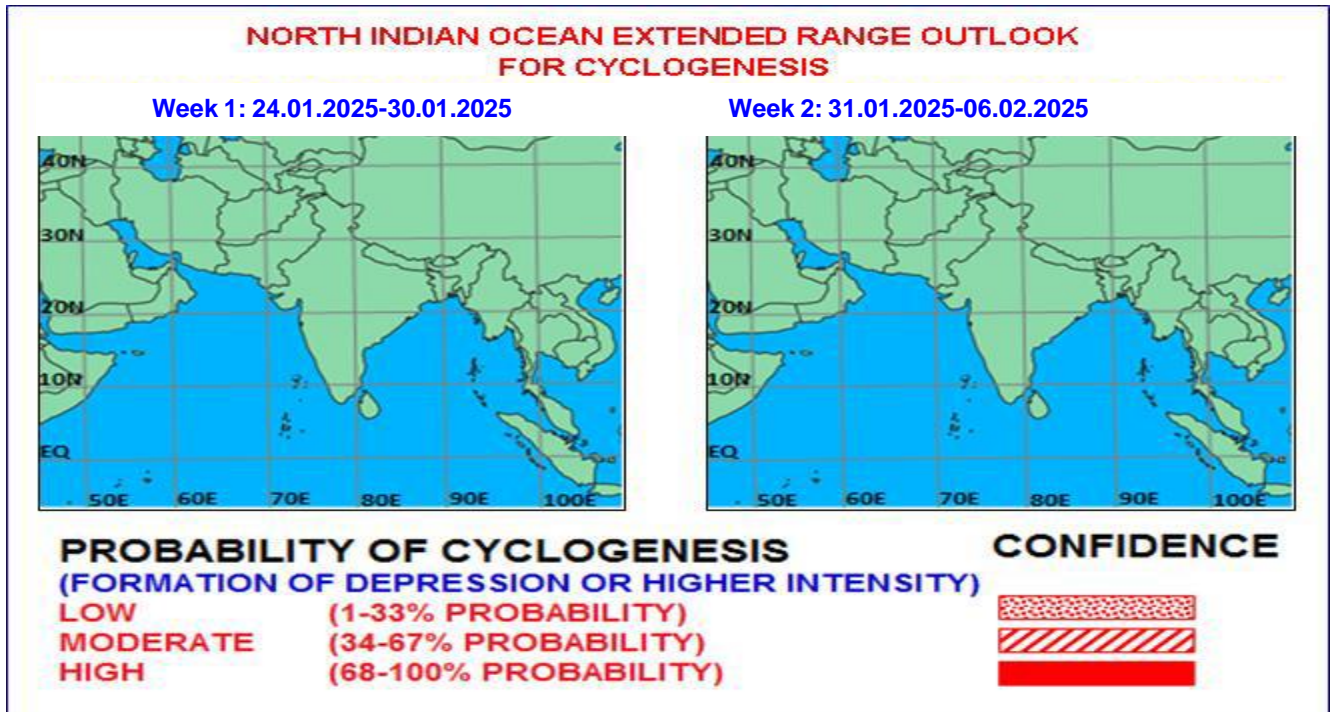


Fig. 1: Graphical Cyclogenesis over the north Indian Ocean during next two weeks

## I. Environmental features:

As per ECMM guidance, Madden Julian Oscillation (MJO) is currently in phase 3 with amplitude close to 2. It would continue in same phase during first half of week 1 with gradually decreasing amplitude. It would move across phase 4 during later half of week 1 with decreasing trend in amplitude but remaining more than 1. Thereafter, it would move across phase 5 during week 2 with amplitude becoming less than 1. Thus, MJO would contribute to enhancement of convective activity over the Bay of Bengal (BoB) during the entire forecast period.

The NCICS CFS model forecast indicates prevalence of MJO, Equatorial Rossby Waves (ERW), Kelvin Waves (KW), enhanced westerly wind anomaly (7-9 mps) over Equatorial Indian Ocean (EIO) and weak easterly wind anomaly (1-3 mps) over southwest BoB during first half of week 1. Thereafter, the model is indicating continued prevalence of MJO, ERW, KW, enhanced westerly wind anomaly (7-9 mps) over EIO and adjoining South BoB during week 2. However, easterly wind anomaly is not seen over south BoB region during this period. Thus, equatorial waves are likely to support enhancement of convective activity/formation of cyclonic circulation over southwest BoB during first half of week 1.

## II. Model Guidance:

IMD GFS is indicating likely formation of a cyclonic circulation over southwest BoB and adjoining EIO around 25<sup>th</sup> with gradual westwards movement till 29<sup>th</sup> January. NCUM global is indicating a cyclonic circulation over southwest BoB and adjoining EIO around 24<sup>th</sup> with gradual

westwards movement till 28<sup>th</sup> January. ECMWF and NCEP GFS are indicating active easterly waves over south BoB during week 1. Thus, various deterministic models are indicating active easterly waves with embedded cyclonic circulation over southwest BoB and adjoining EIO during first half of week 1.

IMD CFS(V2) is also indicating enhanced rainfall activity over southwest BoB and adjoining EIO and southern parts of Sri Lanka during week 1. The model is also indicating 20-30% probability of cyclogenesis over South BoB and adjoining EIO during week 1. CNCUM is also indicating enhanced rainfall activity over southwest BoB & adjoining EIO and southern parts of Sri Lanka during week 1. IMD GPP is indicating a significant potential zone over southwest BoB and adjoining EIO on 28<sup>th</sup> with westwards movement towards southeast Sri Lanka coast on 29<sup>th</sup> January.

**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. However, there is likelihood of active easterly waves during week 1 with embedded cyclonic circulation over south Bay of Bengal and adjoining Equatorial Indian Ocean during first half of week 1.

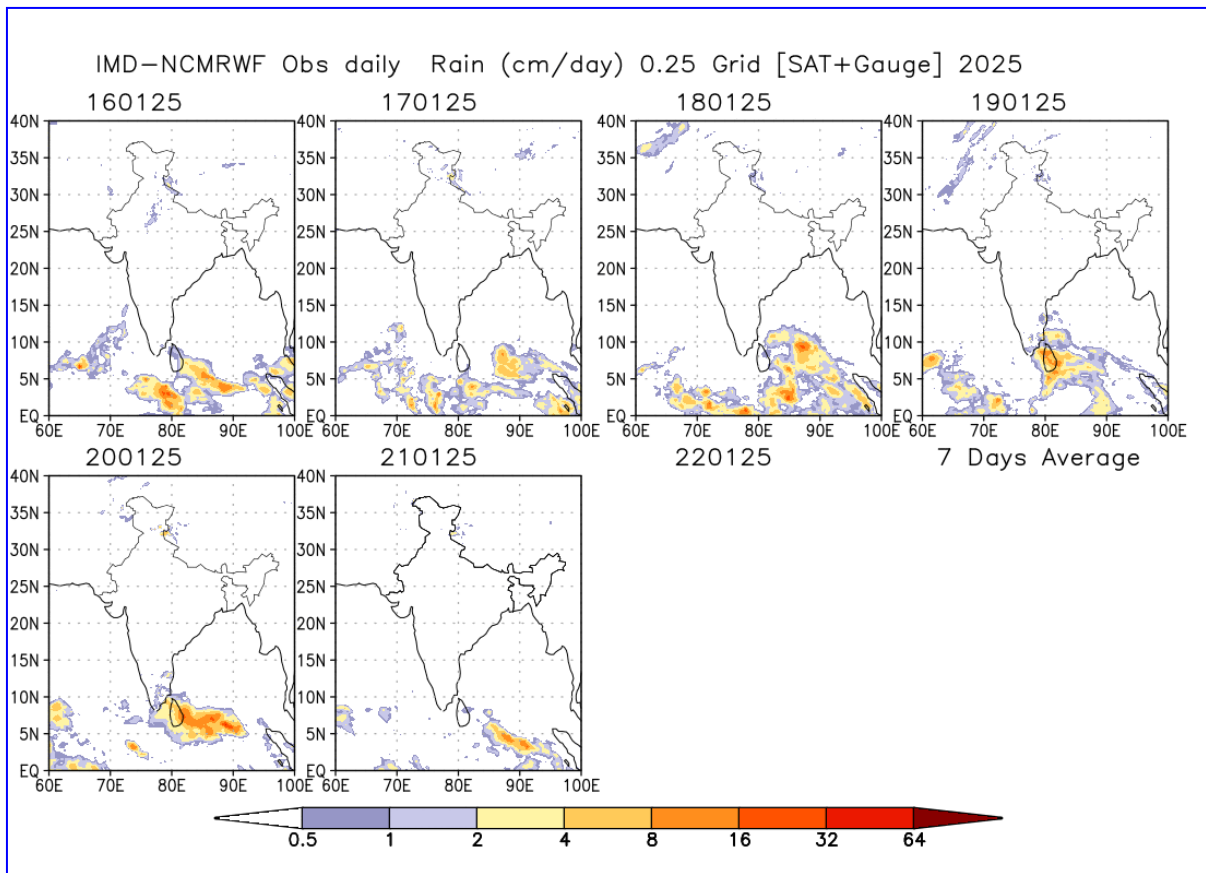
### **IV. Verification of forecast issued during last two weeks:**

The forecast issued on 09<sup>th</sup> January for week 2 (17<sup>th</sup>-23<sup>th</sup> January) indicated no probability of cyclogenesis during week 2. The forecast issued on 16<sup>th</sup> January for week 1 (17<sup>th</sup>-23<sup>rd</sup> Jan) indicated no probability of cyclogenesis during week 1.

It also indicated likelihood of a cyclonic circulation/low pressure area over south BoB and adjoining EIO during the verification period with subsequent westwards movement across southwest Bay of Bengal.

However, as mentioned in the extended-range outlook on 09<sup>th</sup> and 16<sup>th</sup> January, an upper air cyclonic circulation lay over Gulf of Mannar & adjoining Sri Lanka at 5.8 km above mean sea level on 20<sup>th</sup> January, 2025 and became less marked over the same region on 21<sup>st</sup> January, 2025. Hence, likely formation of cyclonic circulation over south BoB was indicated two weeks ahead but with some spatial variations.

NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from, 16<sup>th</sup> January to 21<sup>st</sup> January, 2025 are presented in **Fig. 2**.



**Fig.2: NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from 16<sup>th</sup> January to 21<sup>st</sup> January, 2025.**

Next update: 30.01.2025