



Issued on 24.04.2025

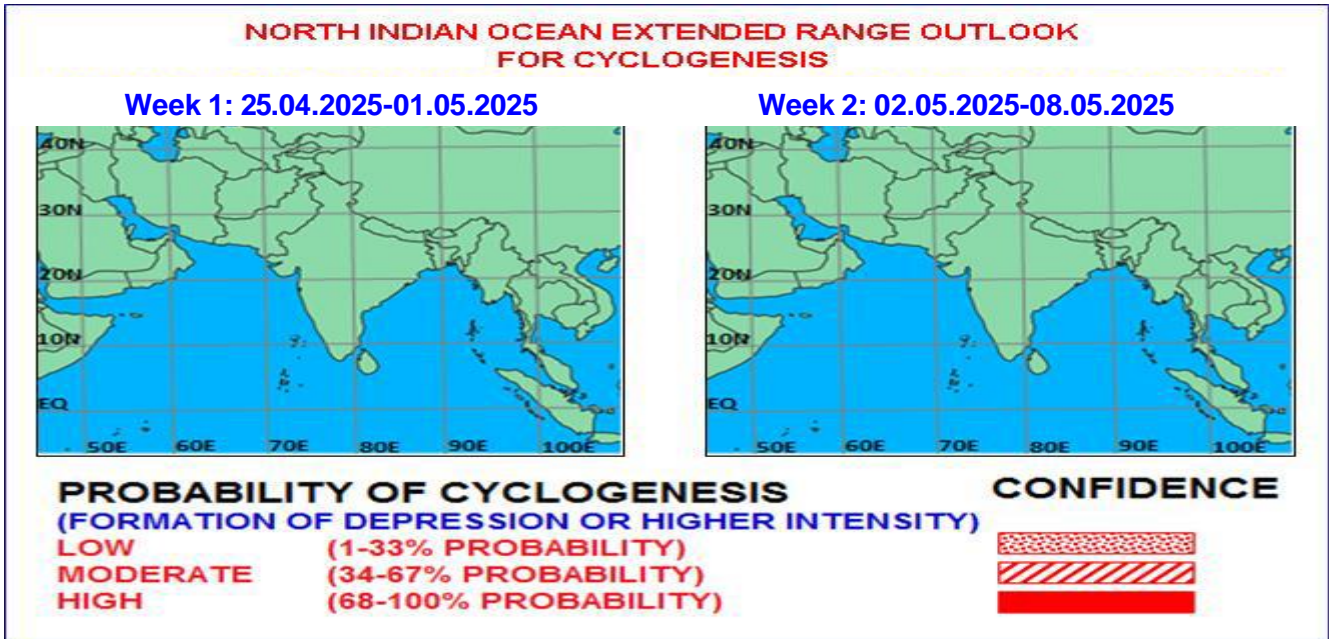


Fig. 1: Graphical Cyclogenesis over the north Indian Ocean during next two weeks

### I. Environmental features:

The guidance from the monitoring and various model forecasts indicates that the Madden Julian Oscillation (MJO) is currently in phase 7 with amplitude marginally higher than 1. The forecasts of MJO signal by various models (GEFS, CFS, ECMF, ECMM and etc.) differs between each other about its eastward propagation due to large ensemble spread as well as meandering within the unit circle during next 2 weeks. However, in general two types of evolution of MJO are noticed. One group depicts a strengthening MJO propagating eastward within phase 8 and shortly in phase 1 (over the Western Hemisphere) during the next two weeks and shifting back to the Indian Ocean thereafter. Another group maintains a weak MJO within phase 7 and looping within both phases 7 and 8 during the entire forecast period. Thus, the MJO is not supportive to the cyclogenesis and not likely to enhance convective activity over North Indian Ocean (NIO) region during both week 1 and 2.

The NCICS CFS model indicates weak westerly wind anomaly (1-3 mps) over south and central Arabian Sea (AS) and a moderate easterly wind anomaly (3-5 mps) over south Bay of Bengal (BoB) during first half of the week 1. The westerly wind anomaly is likely to disappear over the region and easterly wind anomaly prevails over entire NIO region during rest of the forecast period except over a little portion of north AS during week 2. The low-frequency background waves are likely to be present over southeast AS and adjoining Comorin region during the entire forecast period. The Equatorial Rossby Wave (ERW) prevailing over southeast AS and adjoining Comorin area is likely to move slowly westwards across south AS to reach near Somali coast in the beginning of week 2 before it disappears from the region thereafter. No other equatorial waves are likely over NIO region. Therefore, the zonal wind scenario along with MJO and other equatorial waves may not likely to support the cyclogenesis over NIO region during the forecast period. However, the environmental condition may support convective activity over Comorin and adjoining areas during week 1.

### II. Model Guidance:

All models including ECMWF, NCEP-GFS, IMD-GFS and NCUM-G models indicate that the seasonal anti-cyclonic wind patterns are most likely to prevails over AS and BoB during entire 10 days

of the forecast duration. There is likely formation of the north-south trough over peninsular region of India during this period along with westerly over southeast AS and adjoining Comorin area. The upper-air cyclonic circulation embedded within the southern end of the north-south trough may likely to persist during next 3-4 days. Therefore, all the models are not showing any significant development of low pressure system or cyclogenesis over the region during next 10 days.

The 850 hPa mean wind field of IMD ERF Model indicates an anticyclone over central AS and feeble anticyclone over Andaman Sea associated with westerly winds over south BoB during week 1. However, a cyclonic circulation is likely to persist over Comorin area. Nearly similar circulation features are likely to continue over both AS and BoB except the anticyclonic circulation moving westwards over eastcentral BoB during week 2. The model is not showing any significant probability of cyclogenesis in the region during entire forecast period. The 850hPa mean wind and its anomaly field of NCMRWF ERF model are also indicating similar features during both weeks. ECMWF ensemble model as well as ECMF extended range model does not indicate any probability of cyclogenesis over entire NIO region during both the weeks.

### **III. Inference:**

Considering large-scale environmental features and model guidance, it is inferred that there is no probability of cyclogenesis over North Indian Ocean region during the entire forecast period.

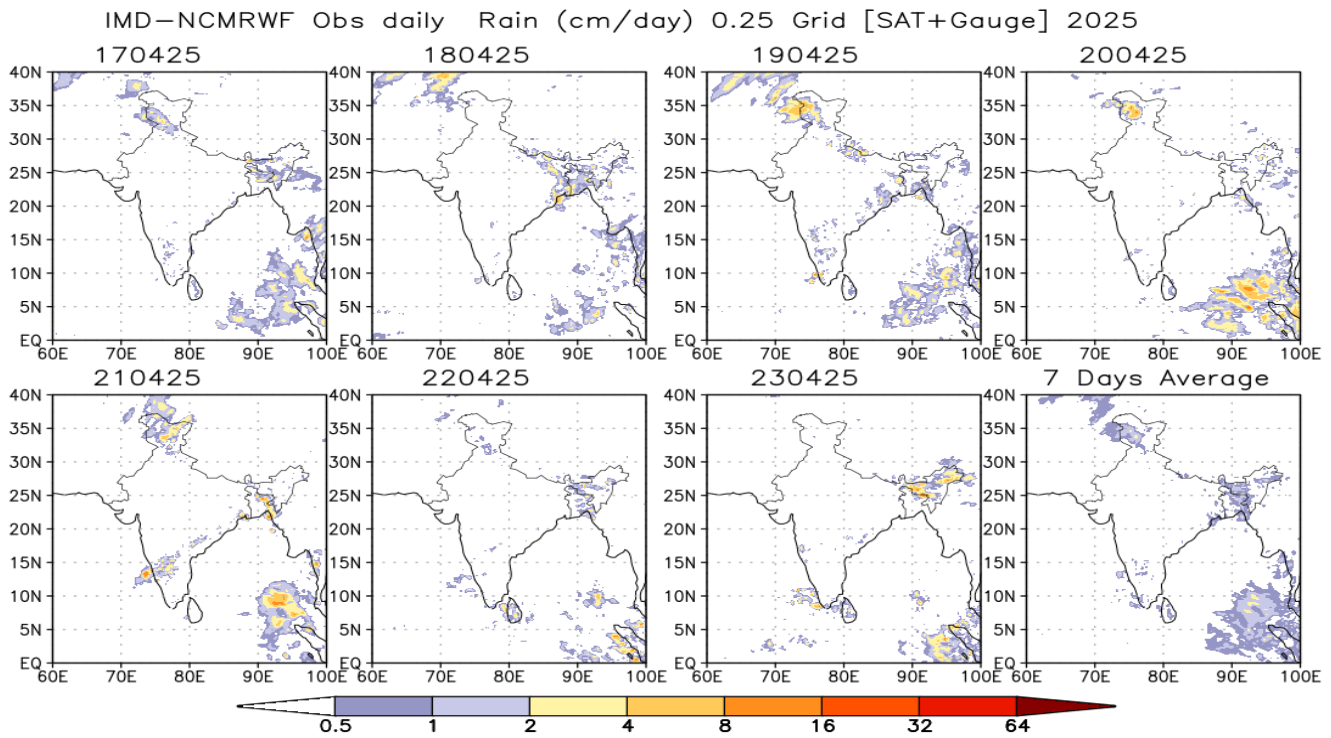
However, an upper-air cyclonic circulation is likely to form during week 1 over Comorin area and adjoining south Tamil Nādu region.

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

The forecast issued on 10th April for week 2 (18<sup>th</sup> - 24<sup>th</sup> April) indicated nil probability of cyclogenesis (formation of depression) over NIO region. And the forecast issued on 17th April for week 1 (18<sup>th</sup> - 24<sup>th</sup> April) also not indicated probability of cyclogenesis (formation of depression) over NIO region. However, cyclonic circulations are likely to form during week 1 with one over southwest Bay of Bengal and adjoining coastal Tamil Nādu and another over Andaman Sea.

Actually, no cyclogenesis has occurred during this period over NIO region.

NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from, 17<sup>th</sup> – 23<sup>rd</sup> April, 2025 are presented in **Fig. 2**.



**Fig.2: NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from 17<sup>th</sup> to 23<sup>rd</sup> April, 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, ECMM: ECMWF-Ensemble System Bias Corrected, 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: 01.05.2025**