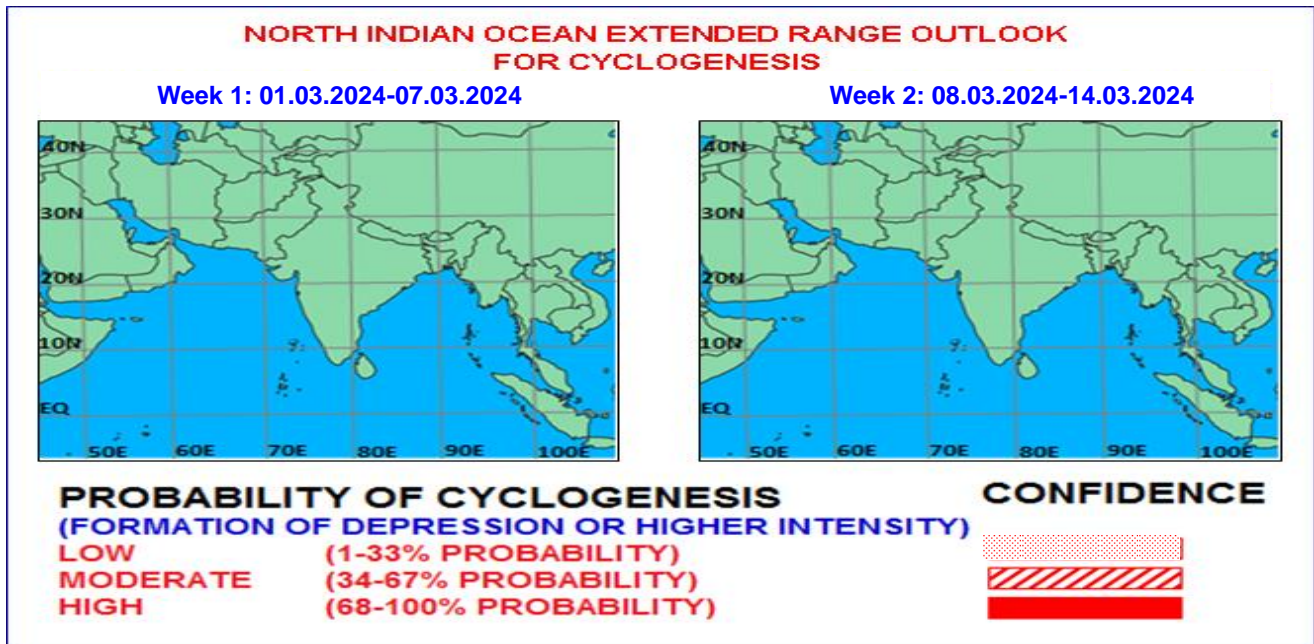




Issued on 29.02.2024



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

### I. Environmental features:

Madden Julian Oscillation (MJO) index in the phase diagram currently in phase 3 with amplitude more than 1. In the forecast of GEFS model, the MJO signal show incoherent eastward propagation towards phase 4 during next 4-5 days as the ensemble members are showing a large spread within the first week. The GEFS model predicts that the MJO signal is likely to move steadily in phase 4 during second week with amplitude more than one and reach phase 5 at the end of the week. On the other hand, ECMWF model indicates that the MJO signal is likely to enter imminently in phase 4 with amplitude more than 1. The ensemble members of the model favour an MJO to remain within phase 4 during the entire first week and in the beginning of second week. The ECMWF forecasts suggest that the MJO is likely to enter in phase 5 in the first half of week 2 and remain in the same phase during rest of the forecast period. Accordingly, The MJO is less likely to favour any cyclogenesis over Bay of Bengal (BoB) and Arabian Sea (AS). However, there is little probability to support the convective activity over Andaman Sea and adjoining southeast Bay of Bengal (BoB) during week 1.

NCICS based forecasts for equatorial waves represent easterly winds (3-5 mps) over Andaman Sea, BoB, south & central parts of AS during first half of the first week. During the same period, westerly winds (1-3 mps) is likely to prevail over north AS. The easterly winds over Andaman Sea region and southeast AS are likely to be gradually replaced by westerly winds during second half of week 1. The weak easterlies (1-3 mps) are likely to sustain over south & central BoB till the end of the forecast period. The westerly winds (3-5 mps) are likely over AS during the period from second half of week 1 to first half of week 2. At the end of second week westerly (1-3 mps) winds are likely remain over southeast AS. Equatorial Rossby Wave (ERW) activities are likely over southwest BoB, southeast AS and adjoining parts of Equatorial Indian Ocean (EIO) from second half of week 1 up to the end of forecast period. The Kelvin wave is likely to propagate eastward across northern parts AS, northern India and northern parts of BoB starting during the week 1. Therefore, the zonal winds and equatorial waves are likely to support the enhancement of convective activity over south BoB and adjoining areas of EIO during week 1.

### II. Model Guidance:

Various deterministic models including IMD GFS, GEFS, NCUM, ECMWF and NCEP GFS models are indicating the presence of the anticyclone in lower tropospheric levels over north BoB and north-

easterly winds along east coast of peninsular India and easterly winds over south BoB and south AS till 6<sup>th</sup> March. During this period, another anticyclone is likely to develop over northwest AS and adjoining Oman. Hence, the northerly winds parallel to west coast of India are likely to prevail during entire week. The easterly wind flow pattern over south BoB and south AS is likely to change gradually to become westerly by 8<sup>th</sup> March. There is likelihood for the formation of a cyclonic circulation over southeast BoB around 4<sup>th</sup> March. However, no cyclogenesis (formation of depression) is likely over both BoB and AS during next 10 days. GPP forecasts are not indicating any significant zone of cyclogenesis over the region during next 7 days. The extended range forecast (ERF) of mean winds by IMD (CFS V2) depicts an anticyclonic flow over peninsular India with easterly winds over south BoB and AS during week 1. The anticyclone is likely to shift westward over central AS during week 2. The anomaly wind field represents similar feature along with movement during the forecast period. IMD ERF does not suggest any cyclogenesis over NIO during the entire forecast period. The ECMWF extended range forecast is also not indicating any cyclogenesis during next 2 weeks.

**Legends:** 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, European Centre for Medium Range Weather Forecasting (ECMWF), GPP: Genesis Potential Parameter, National Centre for Environment Prediction (NCEP) GFS, ECMM: ECMWF multi model, GEFS: GFS ensemble, NEPS: NCUM ensemble prediction system, CNCUM: Coupled NCUM, CPC: Climate Prediction Centre, NWS: National Weather Service.

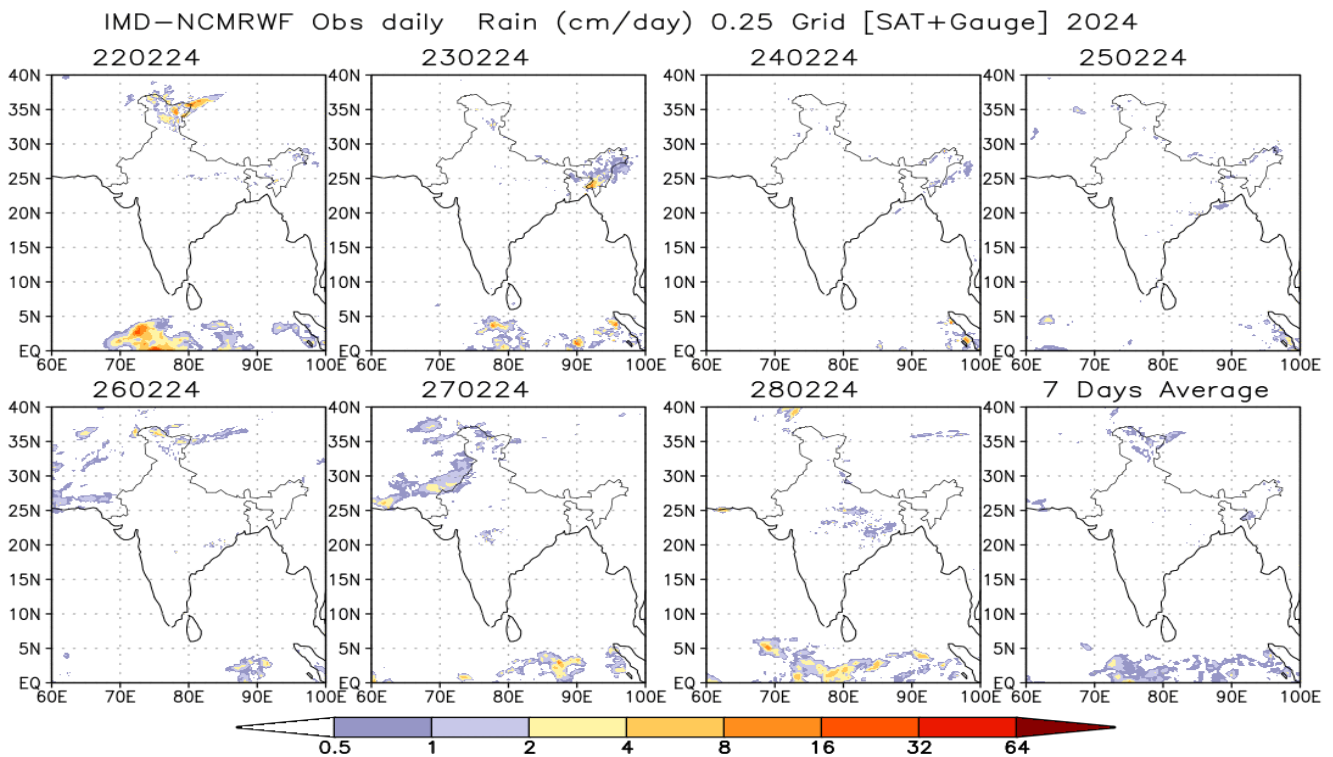
**III. Inference:**

Considering all environmental conditions and model guidance, it is inferred that there is no probability of cyclogenesis over the North Indian Ocean during the entire forecast period.

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

Forecast issued on 15<sup>th</sup> Feb. for second week (23.02.2024-29.02.2024) and forecast issued on 22<sup>nd</sup> Feb. for first week (23.02.2024-29.02.2024) indicated no cyclogenesis over the North Indian Ocean during the period. Actually, no cyclogenesis occurred over the region during the specified week.

NCMRWF-IMD satellite gauge merged data plots of 24 hours accumulated realized rainfall during, 22<sup>nd</sup> to 28<sup>th</sup> February, 2024 are presented in **Fig. 2**.



**Fig.2: NCMRWF-IMD satellite gauge merged data plots of 24 hours accumulated realized rainfall during 22<sup>nd</sup> to 28<sup>th</sup> February, 2024.**

**Next update: 07.03.2024**