

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

I. Environmental features:

Madden Julian Oscillation (MJO) index is currently in Phase 4 with amplitude close to 1. In the forecasts of various models, the MJO signal is likely to continue in same phase till end of the week 1 with gradually decreasing amplitude. Thereafter, the different models along with their ensemble members show ambiguity and differ from each other in predicting the eastward propagation while the MJO signal is likely to be very weak during the second week. It is likely to portray slow meandering through phases 5 to 8 till the end of the forecast period. The ECMWF model suggests a quick looping of the MJO index in the phase diagram to enter into phase 3 at the end of week 2. Thus, MJO Phase may support convective over the Bay of Bengal (BoB) during the entire forecast period. However, considering the weakening of MJO signal with quick meandering/looping through various phases, the influence over convective activity may not be very significant over the North Indian Ocean (NIO).

NCICS based forecasts for zonal wind indicate easterly winds (3-7 mps) over south BoB and adjoining southeast Arabian Sea (AS) during first half of the week 1 which is likely to disappear during second half. The forecasts for the second week suggest weak westerly winds (1-3 mps) along with the presence of Equatorial Rossby Waves (ERW) over south BoB and adjoining southeast AS during the first half of the week. However, weak westerly winds with intermittent equatorial waves are not likely to contribute towards the cyclogenesis over NIO region.

II. Model Guidance:

Various deterministic models including IMD GFS, GEFS, NCUM, NEPS, ECMWF and NCEP GFS are predicting persistence of seasonal anticyclone or anticyclonic winds over central BoB and central AS during next 7-10 days and hence not indicating development of any cyclonic disturbances over both the basins of NIO region. The GPP plots are not showing any significant area of cyclogenesis with a few pockets of GPP with values close to 20 over southwest BoB and adjoining north Equatorial Indian Ocean (EIO). The extended range forecast (ERF) of mean

winds by IMD (CFS V2) is indicating an anticyclonic circulation over central AS and another over central BoB and adjoining areas with easterly winds over south & central BoB during week 1 and week 2. The wind anomaly fields with and anticyclonic circulations over peninsular India are also not indicating any cyclonic circulation over the region during entire forecast period. But, IMD ERF is indicating a small area with more than 50% probability of cyclogenesis over southwest BoB and adjoining north EIO south of Sri Lanka during week 1. The IMD GFS model shows the development of feeble cyclonic circulations in lower tropospheric levels over the region during 18-19th April, 2024. Whereas, the ECMWF extended range model is not indicating any cyclogenesis over the region 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 various 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 28th March for second week (05.04.2024-11.04.2024) and forecast issued on 4th April for first week (05.04.2024-11.04.2024) indicated no cyclogenesis over the NIO during the forecast 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, 4th April to 10th April, 2024 are presented in **Fig. 2**.

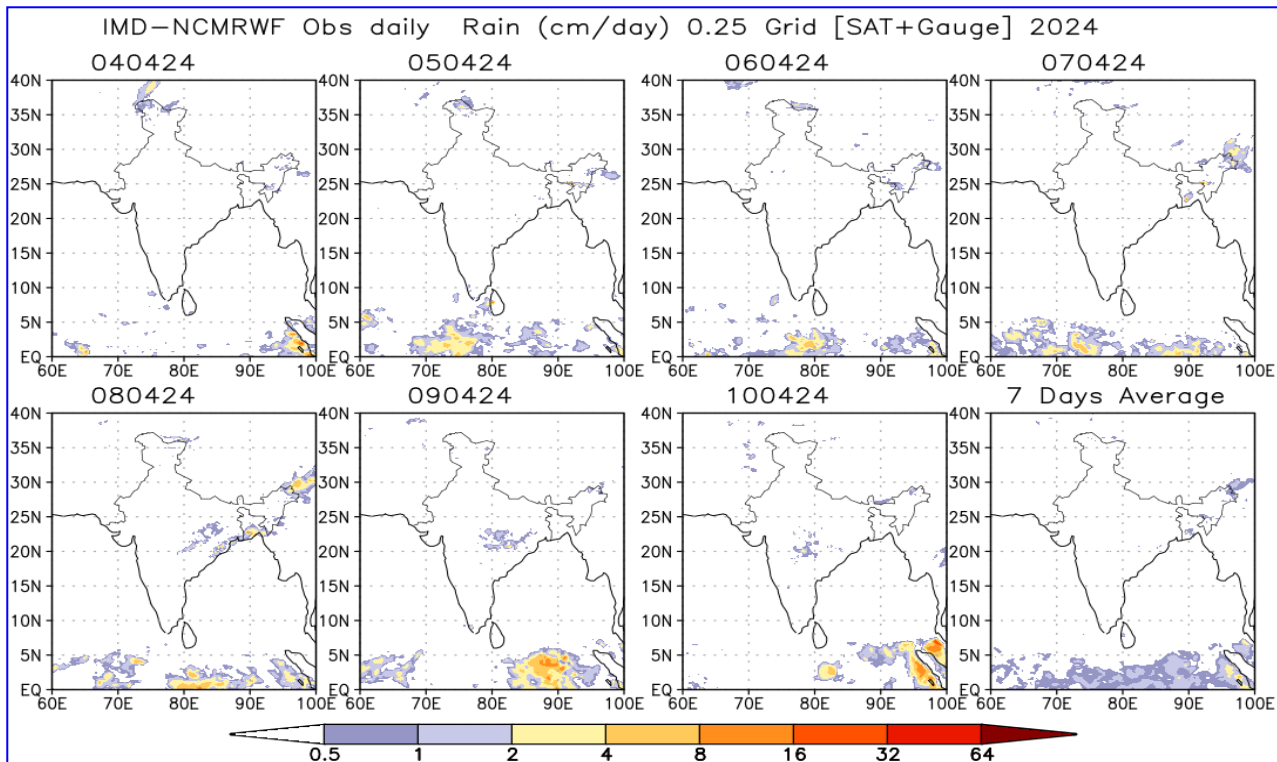


Fig.2: NCMRWF-IMD satellite gauge merged data plots of 24 hours accumulated realized rainfall during 4th to 10th April, 2024.

Next update: 18.04.2024