

Issued on 23.05.2024

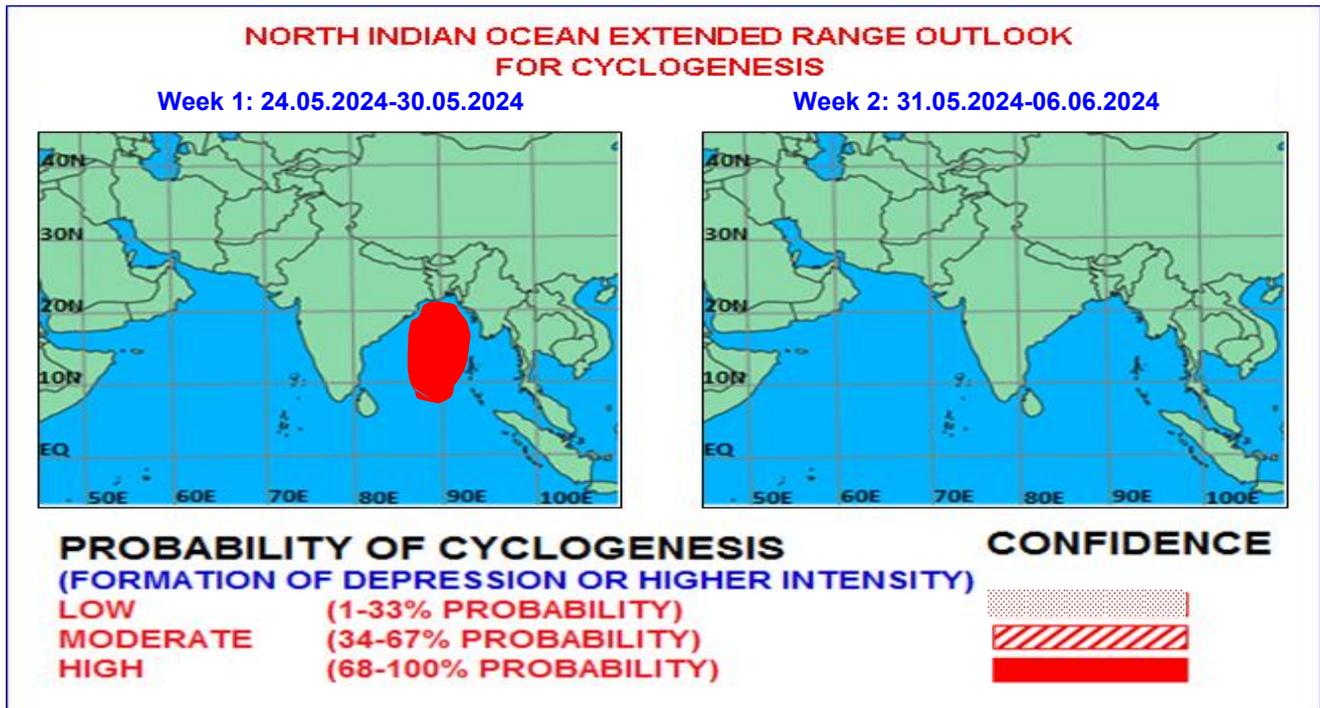


Fig. 1: Graphical Cyclogenesis over north Indian Ocean during next two weeks

I. Environmental features:

Madden Julian Oscillation (MJO) index is currently in Phase 4 with amplitude more than 1. It will continue in same phase 4 with increasing amplitude during week 1. During week 2, it would enter in phase 2 with a decreasing trend in amplitude, but remaining more than 1 throughout the week. Thus MJO, phase and amplitude are highly favourable for enhancement of convective activity and cyclogenesis over the Bay of Bengal (BoB) during the entire forecast period.

The NCICS based forecasts for zonal winds indicate strong westerly winds (5 to 7 mps) over southern & adjoining central parts of both the basins i.e., the Bay of Bengal (BoB) and the Arabian Sea (AS) during week 1 and easterlies to the north. In addition, Equatorial Rossby Waves (ERW) are also prevailing over the southern parts of both the basins. The coupling of MJO and ERW will support cyclogenesis over BoB. During week 2, strong westerly winds (5-7 mps) are likely over south BoB and South Andaman Sea. ERW and strong westerly winds are seen over southwest AS with weak easterlies (3-5 mps) over westcentral AS.

High sea surface temperatures (30-31°C) are prevailing over major parts of BoB and southeast & adjoining eastcentral AS, thereby creating a very conducive environment for cyclogenesis over the region. The guidance from INCOIS HYCOM model indicates, tropical cyclone heat potential of the order of 100-120 KJ/cm² over south BoB and adjoining Equatorial Indian Ocean (EIO) and over southeast & adjoining eastcentral AS. Neutral Indian Ocean Dipole conditions are prevailing currently.

Above environmental conditions are likely to support cyclogenesis over BoB during week 1.

II. Model Guidance:

Various models are indicating formation of depression during 23/1200 UTC to 24/1200 UTC over central parts of Bay of Bengal. Hence high probability has been assigned to formation of depression during next 24-48 hours. There is large variation among various models with respect to movement and intensification of the system. The landfall point is varying from Odisha to Bangladesh coasts. Models like ECAI & NCEP GFS are indicating crossing over Odisha coast, ECMWF over West Bengal coast and IMD GFS, NCUM & MME over Bangladesh coast. Regarding intensification, models like NCEP GFS, IMD GFS and NCUM are indicating intensification upto very severe cyclonic storm category (65-75 kt). Models like IMD MME, ECAI and ECMWF are indicating intensification upto severe cyclonic storm stage (upto 55 kt). The landfall time is varying between 26th/1200-26th/2100 UTC.

IMD extended range forecast (ERF) model is indicating moderate (60-70%) probability of cyclogenesis over central and North Bay of Bengal during week 1. During week 2, model is indicating low probability of cyclogenesis over northeast Bay of Bengal and also over eastcentral AS off eastcentral AS.

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, INCOIS: Indian National Centre for Ocean Information Services.

III. Inference:

Considering various environmental conditions and model guidance, it is inferred that

The well-marked low pressure area over westcentral & adjoining south Bay of Bengal is very likely to continue to move northeastwards and concentrate into a Depression over central parts of Bay of Bengal by morning of 24th May, 2024. Thereafter, it is very likely to continue to move northeastwards, intensify further into a cyclonic storm over eastcentral Bay of Bengal by 25th May morning. Subsequently, it would move nearly northwards and reach near Bangladesh and adjoining West Bengal coasts by 26th May evening as a severe cyclonic storm.

IV. Verification of forecast issued during last two weeks:

Forecast issued on 9th May for second week (17.05.2024-23.05.2024) and forecast issued on 16th May for first week (17.05.2024-23.05.2024) indicated no cyclogenesis over the NIO during the forecast period. Actually, no cyclogenesis occurred over the region during the forecast period week. Thus absence of cyclogenesis was correctly predicted for the forecast period.

NCMRWF-IMD satellite gauge merged data plots of 24 hours accumulated realized rainfall during 16th May to 22nd May, 2024 are presented in **Fig. 2**.

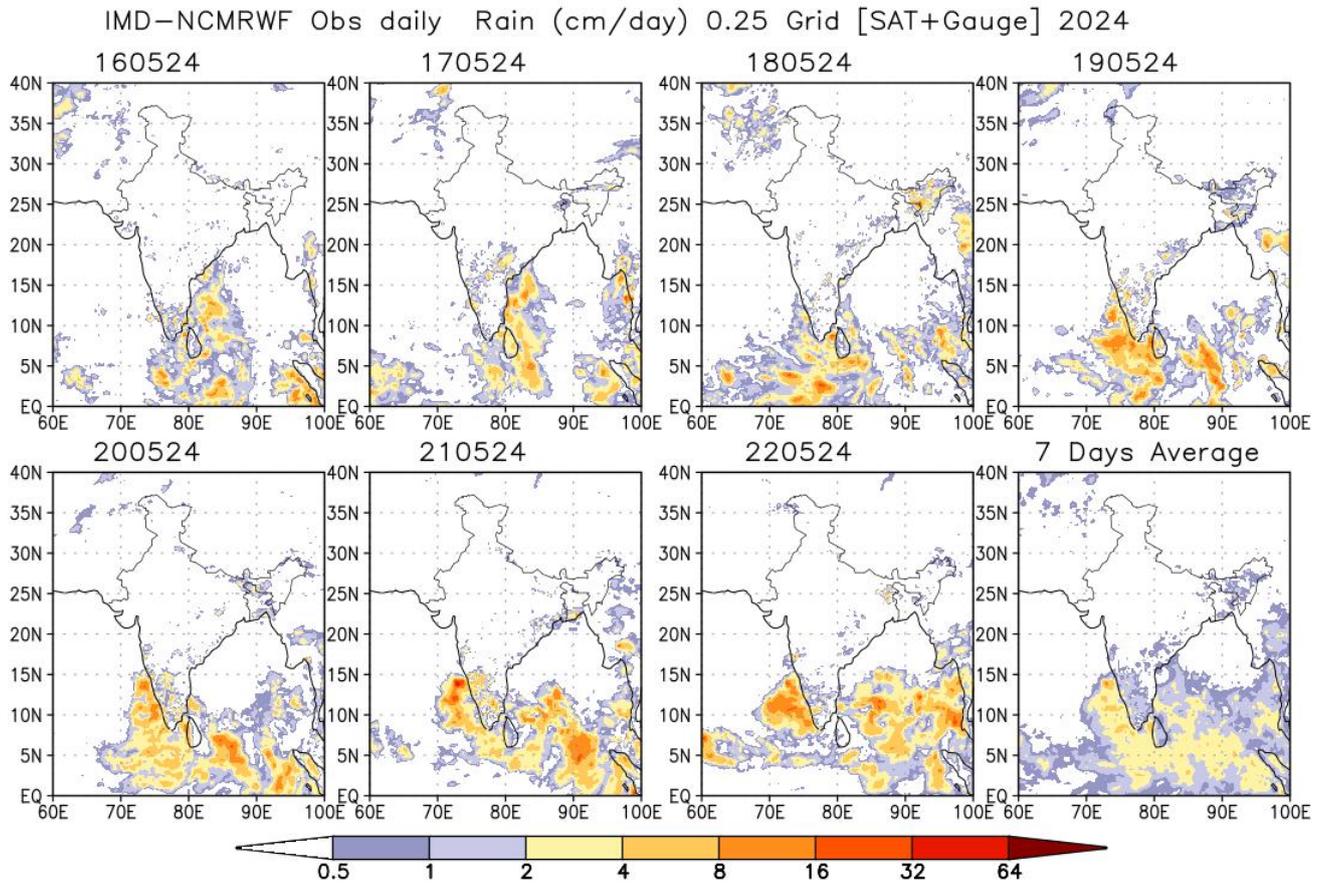


Fig.2: NCMRWF-IMD satellite gauge merged data plots of 24 hours accumulated realized rainfall during 16th May to 22nd May, 2024.

Next update: 30.05.2024