

Issued on 27.06.2024

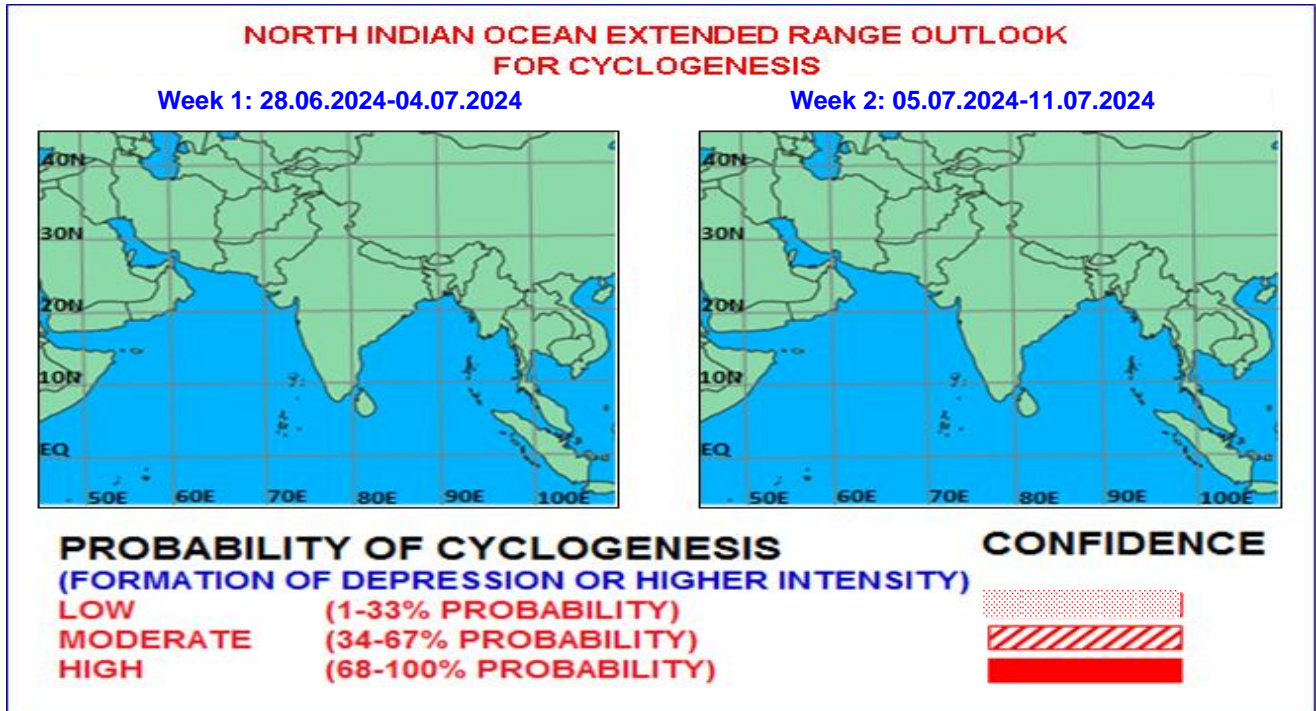


Fig. 1: Graphical Cyclogenesis over north Indian Ocean during next two weeks

I. Environmental features:

The Madden Julian Oscillation (MJO) index is currently located in phase 3 with amplitude close to 1 and would continue in same phase during first half of week 1. Thereafter, it would move across phase 4 with amplitude remaining close to 1 during remaining part of the forecast period. Hence, MJO phase and amplitude are conducive for enhancement of convective activity over the Arabian Sea (AS) during first half of week 1 and over the Bay of Bengal (BoB) during the entire forecast period.

The NCICS based forecast for zonal winds indicate westerly winds (~ 3 to 5 mps) over central parts of AS, central India & north & adjoining central BoB during middle of week 1. Equatorial Rossby Waves (ERW) and Kelvin Waves (KW) are also likely over the north BoB and central India during this period. The presence of westerly winds, ERW & KW over north & adjoining central BoB and central India indicate a favourable environment for enhanced convective activity over the region in association with a feeble low-pressure area/ cyclonic circulation during middle of week 1. Similarly, in the beginning of week 2, enhanced westerly winds (~ 3 to 5 mps) are likely to prevail over south BoB alongwith ERW & KW and easterly winds (~ 3 to 5 mps) are likely over north BoB. These features are favourable for cyclogenesis over the BoB during first half of week 2.

The sea surface temperatures prevailing over major parts of BoB and AS are around ~27°C. It is likely to be a little higher (~30°C) over southern parts of BoB & AS. The guidance from INCOIS HYCOM model indicates, tropical cyclone heat potential (TCHP) is likely to be more than 100 KJ/cm² over entire BoB and higher (~140 KJ/cm²) over westcentral BoB. Similarly, higher values of TCHP (~100 KJ/cm²) are indicated over AS except over parts of west AS & southeast AS near Lakshadweep and off Kerala & Karnataka Coasts.

II. Model Guidance:

Various models (GFS group of models, ECMWF, NCUM Group) are indicating enhancement of southwesterly winds over AS and BoB during the next two weeks. IMD GFS and GEFS are indicating existing cyclonic circulation to move west-northwestwards and intensify into a low pressure area over northwest & adjoining westcentral BoB during first half of week 1. ECMWF also shows a cyclonic circulation over northwest & adjoining westcentral BoB with nearly northwestwards movement during first half of week 1. NCUMG is showing a cyclonic circulation over northwest BoB with west-northwestwards movement. NCEP GFS is indicating a low pressure area over westcentral BoB with slight intensification and west-northwestwards movement during middle of week 2. ECMM model is not indicating any potential zone for cyclogenesis over both the basins. IMD GPP is not indicating any significant potential zone for cyclogenesis over BoB and AS during entire forecast period.

IMD extended range model CFSV2 is indicating established southwesterly winds of monsoon at 850 hPa level over entire AS and BoB during both the weeks. The wind anomaly field is indicating a cyclonic circulation over northeast AS off Saurashtra Coast and feeble cyclonic circulation over northwest BoB during week 2. The model is also indicating 30-40% probability of cyclogenesis over northwest BoB with west-northwestwards extension of this zone during both the 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, INCOIS: Indian National Centre for Ocean Information Services.

III. Inference:

Considering various environmental conditions and model guidance, it is inferred that there is no probability of cyclogenesis during the entire forecast period. However, there is:

- (a) low probability of formation of a feeble low-pressure area over northwest & adjoining westcentral Bay of Bengal with northwestwards movement during first half of week 1.
- (b) low probability of formation of another low-pressure area over north Bay of Bengal with northwestwards movement during week 2.

IV. Verification of forecast issued during last two weeks:

Forecast issued on 13th June for second week (21.06.2024-27.06.2024) indicated no probability of cyclogenesis. The forecast issued on 20th June for first week (21.06.2024-27.06.2024) also predicted no cyclogenesis over both BoB and AS during the period. Actually, no depression and above intensity system developed over the NIO region. Hence, non-occurrence of cyclogenesis (formation of depression) was correctly predicted.

NCMRWF-IMD satellite gauge merged data plots of 24 hours accumulated realized rainfall during 20th June to 26th June, 2024 are presented in **Fig. 2**.

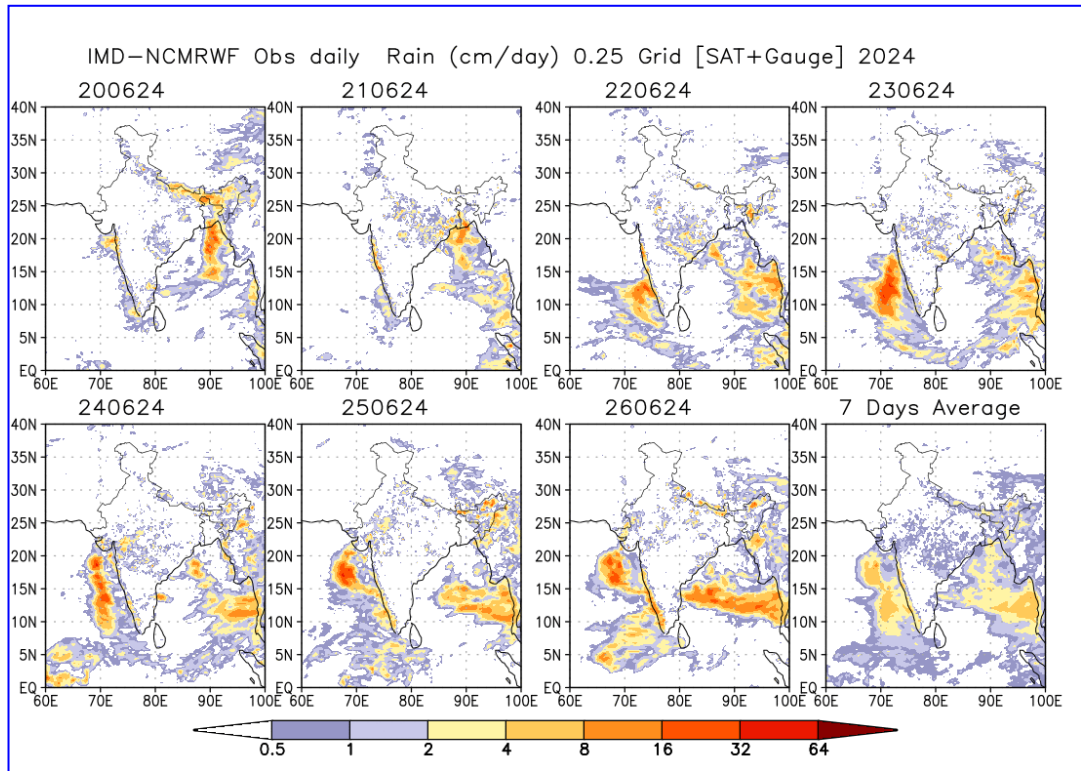


Fig. 2: NCMRWF-IMD satellite gauge merged data plots of 24 hours accumulated realized rainfall during 20th June to 26th June, 2024.

Next update: 04.07.2024