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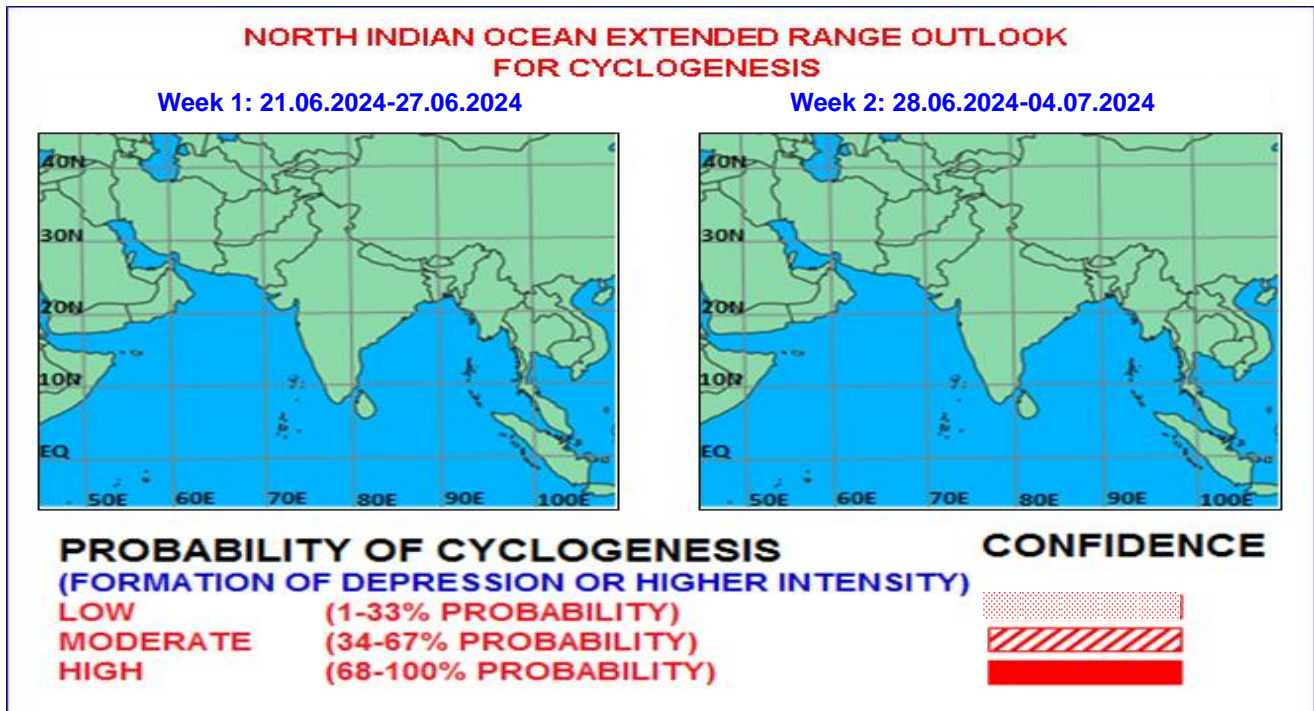


Fig. 1: Graphical Cyclogenesis over north Indian Ocean during next two weeks

I. Environmental features:

The Madden Julian Oscillation (MJO) index is currently located in phase 8 with very weak amplitude less than 1. The forecasts from different models are in general very much incoherent. The GEFS and ECMWF ensemble members are showing lack of consensus amongst them with very large spreads. However, dynamical models predict a very weak MJO signal within phase 1 during first week. Subsequently, there is a sign of gradual amplification, emergence from western hemisphere and propagation towards Indian Ocean during the later part of second week. Thus MJO, phase and amplitude are not favourable for the convective activity and cyclogenesis over the North Indian Ocean region during the entire first week. It is likely to support enhancement of the convective activity over Arabian Sea (AS) and subsequently over Bay of Bengal (BoB) during second week.

The NCICS based forecast for zonal winds indicate westerly winds (~ 3 to 5 mps) prevailing over south & central parts of AS & BoB during entire forecast period. Easterly winds (~ 3 to 5 mps) are likely over northern parts BoB and AS during second half of week 1. The Equatorial Rossby Waves (ERW) is likely to influence northern parts of AS and BoB during first half of week 1. The ERW is likely over south & adjoining central BoB and Andaman Sea at the end of first week. Therefore, the zonal winds and equatorial waves are not likely to support cyclogenesis over the region. However, propagating ERW over south BoB is likely to support enhancement in monsoon activity at the end of week 1.

The sea surface temperatures prevailing over BoB are around ~29°C. Whereas it is likely to be a little higher (~30°C) over western parts of BoB & south Andaman Sea. Similarly, over the AS, temperatures are higher (~30°C) over northeastern parts off Gujarat & Maharashtra coasts. The guidance from INCOIS HYCOM model also indicates, tropical cyclone heat potential (TCHP) is more than 100 KJ/cm² over entire BoB except over parts of

southwest BoB of Sri Lanka coast. Similar values of TCHP 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, NCUMG) are indicating weakening of southwesterly winds over AS and BoB during next 3-4 days. Thereafter, the southwesterly monsoon winds are likely to increase gradually over AS and subsequently over BoB at the end of week 1. The GFS group of deterministic models are indicating formation of a cyclonic circulation/low pressure area over eastcentral and adjoining north BoB at the end of first week due to westward migration of the remnant of low pressure system from the south China Sea into the region. ECMWF model indicates the formation of probable cyclonic circulation /feeble low pressure area over westcentral & adjoining northwest BoB in the beginning of second week. However, NCUMG is not showing any such development over the region. IMD GPP is only indicating a potential zone for cyclogenesis over eastcentral BoB on 27th June.

ECMM model is indicating a zone with low probability (10-20 %) of cyclogenesis over northeast AS around 26th June. But no potential zone is predicted for cyclogenesis over BoB during next two weeks. 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 southeast AS off Kerala-Karnataka Coasts during first week, which is likely to advance northward over northeast AS & adjoining Gujarat-Maharashtra coasts during week 2. The model does not indicate any significant probability of cyclogenesis over the region during entire forecast period.

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 for the formation of a cyclonic circulation/low pressure area over westcentral & adjoining northwest Bay of Bengal in the beginning of second week. There is also a low probability for the formation of a cyclonic circulation over northeast Arabian Sea during second half of the first week.

IV. Verification of forecast issued during last two weeks:

Forecast issued on 06th June for second week (14.06.2024-20.06.2024) indicated no probability of cyclogenesis. The forecast issued on 13th June for first week (14.06.2024-20.06.2024) also predicted no cyclogenesis over both BoB and AS during the period. A cyclonic circulation formed over southwest & adjoining westcentral Bay of Bengal on 16th June and another cyclonic circulation formed over southeast Arabian Sea off Kerala coast on the same day. On 18th June another cyclonic circulation formed over northeast Arabian Sea and adjoining Saurashtra. 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 13th June to 19th June, 2024 are presented in **Fig. 2**.

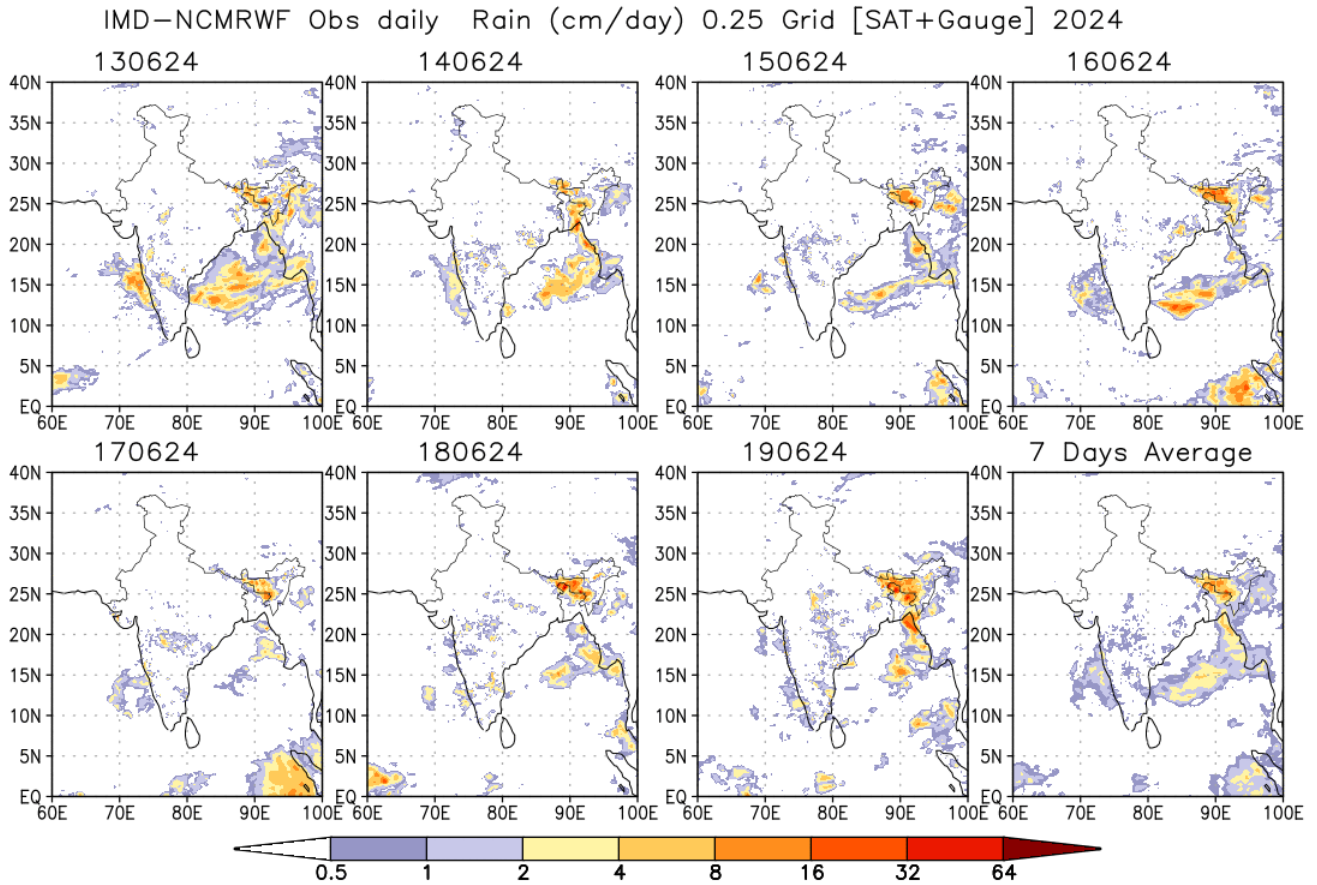


Fig. 2: NCMRWF-IMD satellite gauge merged data plots of 24 hours accumulated realized rainfall during 13th June to 19th June, 2024.

Next update: 27.06.2024