

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

I. Environmental features:

As per ECMWF bias corrected ensemble prediction system, the Madden–Julian Oscillation (MJO) Index is currently in Phase 8 with amplitude less than 1. It would continue in same phase during first half of week 1. Thereafter, it is likely to move to phase 1 with amplitude remaining less than 1 during week 2. Hence MJO is not likely to support any cyclogenesis over the North Indian Ocean during entire forecast period.

NCICS based forecast for equatorial waves over the region indicates presence of westerly winds (1-3 mps) alongwith Equatorial Rossby Waves (ERW) over south & adjoining central Bay of Bengal (BoB) and south India during week 1. Weak easterly winds (1-3 mps) are also likely over North Bay of Bengal & East India during week 1. Over the Arabian Sea weak westerlies are likely over central parts of Arabian Sea and easterlies over southern parts of Arabian Sea. During week 2, westerlies (1-3 mps) over south & central Arabian Sea are likely. These features suggest that equatorial waves are likely to support convective activity over North Bay of Bengal and adjoining central India during week 1 and no such support during week 2.

II. Model Guidance:

Various deterministic models including IMD GFS, NCEP GFS, ECMWF and NCUM are indicating the existing cyclonic circulation/low pressure area over northwest Bay of Bengal to move west-northwestwards across Odisha and Chhatisgarh during first half of week 1 and then move northeastwards towards eastern India. ECMWF is also indicating development of another cyclonic circulation over north Bay of Bengal during the first half of week 2. The GPP is not indicating any potential zone for cyclogenesis during next 7 days. The extended range model IMD CFS (V2) is indicating existing low pressure area to move west-northwestwards during next 2-3 days. It is also indicating a fresh cyclonic circulation over North Bay of Bengal during beginning of week 2.

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, GPP: Genesis Potential Parameter, National Centre for Environment Prediction GFS, ECMM: ECMWF multi model, GEFS: GFS ensemble, NEPS:

NCUM ensemble prediction system, CNCUM: Coupled NCUM, CPC: Climate Prediction Center, NWS: National Weather Service).

III. Inference:

Considering all the above it is inferred that:

- (i) The existing low pressure area over northwest bay of Bengal is likely to move west-northwestwards across Odisha and Chhattisgarh during the first half of week 1 and then northeastwards towards eastern India.
- (ii) Another cyclonic circulation is likely to develop over north Bay of Bengal during first half of week 2.
- (iii) However, probability of cyclogenesis (formation of depression) may be treated as NIL over the North Indian Ocean during next two weeks (Fig.1).

IV. Verification of forecast issued during last two weeks:

The forecast issued on 3rd August for week 2 (11.08.2023-17.08.2023) indicated no cyclogenesis over the North Indian Ocean. The forecast issued on 10th August for week 1 (11.08.2023-17.08.2023) indicated moderate probability of formation of a fresh cyclonic circulation over Northwest Bay of Bengal around 18th August. Actually, a cyclonic circulation formed over northeast & adjoining eastcentral Bay of Bengal on 16th. It lay as a low pressure area over northwest Bay of Bengal on 17th August. Thus, the likely formation of cyclonic circulation over North Bay of Bengal could be predicted correctly with some spatial and temporal displacements, one week in advance. Also, NIL cyclogenesis (formation of depression) was correctly predicted two weeks in advance.

The IMD-NCMRWF satellite-gauge merged data plots during 10th august-16th august are presented in Fig. 2.

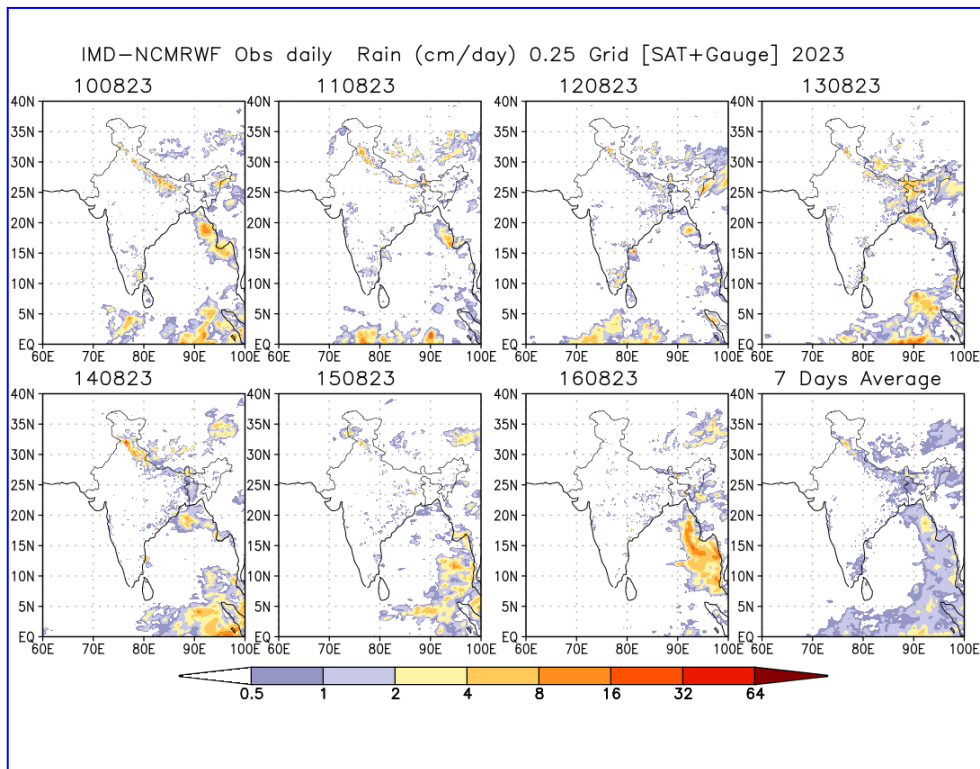


Fig.2: IMD-NCMRWF satellite-gauge merged data plots during 10th -16th August, 2023