

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

I. Environmental features:

Most of the models are indicating that currently the MJO signal entered into phase 8 with amplitude less than 1. Both ECMWF, JMA & GEFS forecasts suggest that MJO index is likely to progress eastward to enter into phase 1 during next 2-3 days with amplitude more than 1 and further into phase 1 at the end of week 1. Other global models including high resolution GFS is also support similar eastward propagation during week 1. The ECMWF and GEFS ensemble indicate that there are comparatively less spread amongst members even during week 2. The model forecasts illustrate that the MJO index would advance eastward further and enter into phase 2 in the beginning of week 2 and remain in the same phase keeping amplitude more than 1 during entire week 2. Thus, MJO is likely to support convective activity gradually starting from south Arabian Sea upto southwest BoB during later part of week 1 and enhancement over entire south Bay of Bengal (BoB) during week 2.

NCICS based forecast for equatorial waves over the region indicates very weak easterly winds (1-3 mps) over central & adjoining north BoB and south AS during week 1. During the same period, the weak westerly winds (1-3 mps) is predicted over central AS and south BoB and adjoining north equatorial Indian Ocean. Equatorial Rossby Wave (ERW) activity is likely over westcentral AS during week 1 which shifts to southwest AS during week 2. Kelvin waves are indicated over a region covering southeast AS, peninsular India and extending eastwards up to South China Sea during first half of week 1. During week 2, the Kelvin wave propagates across northern parts of India. In association with the above-mentioned equatorial waves and wind pattern, the convective activity is expected over southern parts of AS during first half of week 1. Enhanced convective activity is likely over south peninsular India and south BoB during week 2.

II. Model Guidance:

Most of the models are capturing existing deep depression over westcentral and adjoining northwest BoB. According to consensus amongst model, the system is likely to continue to

move north-northeastwards, intensify further into a cyclonic storm by morning of 17th November and cross Bangladesh coast between Mongla and Khepupara with wind speed of 60-70 kmph gusting to 80 kmph by the early hours of 18th November, 2023. Thereafter, the models like IMD GFS, NCUM (R) and ECMWF are not indicating any cyclogenesis except easterly wave activity over southwest BoB during week 1. Whereas NCEP GFS predicts formation of another low pressure system over central parts of BoB which would move northwestwards initially, then recurve northeastwards till morning of 21st November and intensify further into a cyclonic storm over central BoB. The model indicates the system would move east-northeastwards towards north Myanmar-south Bangladesh coasts thereafter. The IMD GPP is indicating a potential zone for cyclogenesis over central BoB on 19th with initial northwestwards movement up to westcentral & adjoining northwest BoB which recurve northeastwards towards north Myanmar coast by 23rd November across north BoB. The IMD extended range forecast system (ERFS) is indicating presence of a easterly winds over entire BoB during week 1 and week 2. The anomaly field of wind furnish convergence zone of easterly and westerly winds over central parts of BoB during week 1 and east-west trough from central AS to southeast BoB across peninsular India. The model is showing a probability of cyclogenesis (10-30 %) over Comorin & southeast AS and over central part of Andaman Sea during week 1 and over southeast BoB & Andaman Sea during week 2. ECMWF ERF model indicates a zone of 10-20% probability of cyclogenesis over southwest and westcentral BoB during 21-23 November during week 1. Another zone with 10-30 % probability of cyclogenesis initiates over south Andaman Sea 25th and move westwards towards Tamil Nadu – Sri Lanka coasts across south till 28th November during 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 (NCEP) 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 environmental conditions and model guidance, it is inferred that

1. There is likelihood of formation of a cyclonic circulation/low pressure system over southwest and adjoining westcentral Bay of Bengal during later part of week 1.
2. There is a low probability of cyclogenesis over southwest Bay of Bengal during first half of week 2.

IV. Verification of forecast issued during last two weeks:

The forecast issued on 2nd November for week 2 (10.11.2023-16.11.2023) indicated formation of a cyclonic circulation / low pressure area over southwest and adjoining westcentral Bay of Bengal during the later part of week 2. The forecast issued on 9th November for week 1 (10.11.2023-16.11.2023) indicated formation of a cyclonic circulation over southeast & adjoining southwest Bay of Bengal during later part of week 1 which would become a low pressure area over southwest Bay of Bengal towards end of week 1 and into a depression during beginning of week 2.

Actually, a cyclonic circulation emerged into South Andaman Sea on 13th November. Under its influence, a low pressure area formed over southeast Bay of Bengal and adjoining Andaman & Nicobar Islands in the morning (0530 hours IST) of 14th November. It lay as a well marked low pressure area over southeast & adjoining central BoB in the evening (1730 hours IST) of 14th November. It concentrated into a depression over westcentral BoB in the forenoon (0830 hours IST) of today, the 15th November, 2023 and into a deep depression over westcentral BoB on 15th November. Thus, though cyclogenesis was correctly predicted, but it occurred slightly early.

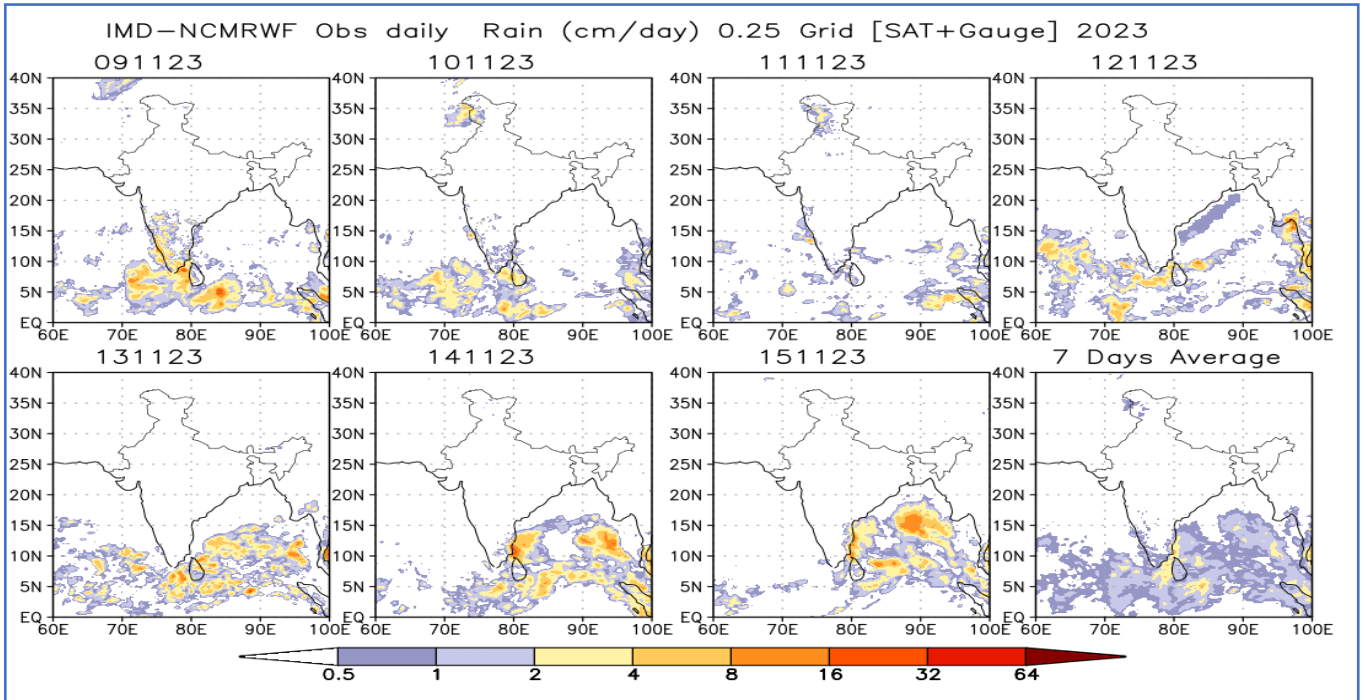


Fig. 2 IMD-NCMRWF satellite-gauge merged data plots during 02nd – 08th November, 2023

Next update: 23.11.2023