

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

I. Environmental features:

Most of the models are indicating that eastward propagating MJO signal across Indian Ocean and maritime continent is currently situated at the intermediate zone of phase 5 & 6 over maritime continent with amplitude less than 1. ECMWF forecast suggests that MJO index is likely to enter into phase 6 over western Pacific Ocean during next 1-2 days and into phase 7 during later part of week 1. Whereas, the GEFS forecast indicates quick migration from phase 6 to phase 7 during next 2 days and remains in the same phase during week 1. Thereafter, as per ECMWF prediction, MJO index is likely to progress further eastward into phase 1 in the beginning of week 2 with shorter stint across phase 8 keeping amplitude all along less than 1. In GEFS forecast, as the eastward propagation of MJO index is slow, it is likely to spend more time within phase 7 and 8 with amplitude more than 1 and likely to remain in phase 8 during week 2. Thus, MJO is likely to support gradually the enhancement of convective activity from later part of week 1 to week 2 over the North Indian Ocean (NIO) including the Bay of Bengal (BoB) and the Arabian Sea (AS).

NCICS based forecast for equatorial waves over the region indicates very weak easterly winds (1-3 mps) over central and adjoining south BoB during week 1. During the same period, the easterly winds (1-3 mps) is predicted over westcentral AS along with Equatorial Rossby Wave (ERW) activity over the region. ERW is also indicated over south BoB & AS and adjacent Equatorial North Indian Ocean (ENIO) during week 1. The presence of ERW will remain only over southern parts of AS & adjoining areas of westcentral AS and ENIO during week 2. In association with the above-mentioned equatorial waves and wind pattern, the convective activity is expected over south BoB, south peninsular India during second half of week 1 and over southern parts of AS during week 1 and first half of week 2.

II. Model Guidance:

Most of the models are not capturing existing low pressure area over eastcentral AS, except IMD GFS which is indicating, the system to become less marked during next 24 hours. Models

like IMD GFS, GEFS, NCUM (R), NCEP and ECMWF are indicating likely formation of a cyclonic circulation over southwest BoB during later part of week 1 (around 13th-15th Nov.). Models are also indicating likely formation of a low pressure area over southwest & adjoining westcentral BoB during first half of week 2 (between 16th and 20th Nov.) with ECMWF, NCUM and NCEP GFS around 15th, 16th and 20th November respectively. All the models are unanimous that the system will hover over southwest BoB off Tamil Nadu & adjoining North Sri Lanka as a cyclonic circulation/low pressure area, move gradually along the east coast of India. However, ECMWF and NCEP GFS are indicating further gradual intensification of the system into a depression during week 2 (with ECMWF around 17th & NCEP around 20th) but NCUM & GFS do not indicate the same. The IMD GPP is indicating a potential zone for cyclogenesis over eastcentral BoB on 14th with near northwestwards movement of this zone towards westcentral BoB & adjoining northwest BoB. The IMD extended range forecast system (ERFS) is indicating presence of easterly winds over the same region with easterly wind anomaly south BoB & AS with an anticyclone over peninsular India during week 1. The model indicates a prominent trough in easterly with a significant cyclonic anomaly over south BoB during week 2. The model is showing a probability cyclogenesis of (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 model indicates a zone of 10-20% probability of cyclogenesis over southeast BoB from 15th November which gradually increases up to 40 % while extending across central BoB during week 2. There is large variation among the ensemble tracks with area of genesis over south & adjoining central BoB with movement towards Tamil Nadu coast by a few members and gradual northeastwards recurvature towards Bangladesh by others.

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 environmental conditions and model guidance, it is inferred that

1. There is likelihood of 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.
2. There is a low to moderate probability for the formation of depression over southwest & adjoining westcentral Bay of Bengal during first half of week 2.

IV. Verification of forecast issued during last two weeks:

The forecast issued on 26th October for week 2 (03.11.2023-09.11.2023) indicated no probability of cyclogenesis over both BoB & AS basins of North Indian Ocean. The forecast issued on 2nd November for week 1 (03.11.2023-09.11.2023) also indicated no cyclogenesis during the week.

Actually, no cyclogenesis occurred during last two weeks. However, there was formation of a cyclonic circulation over south Tamil Nadu on 4th Nov. which moved gradually west-northwestwards and emerged into southeast Arabian Sea on 6th Nov. Under its influence, a low pressure area formed over eastcentral AS on 8th and persisted over the same region.

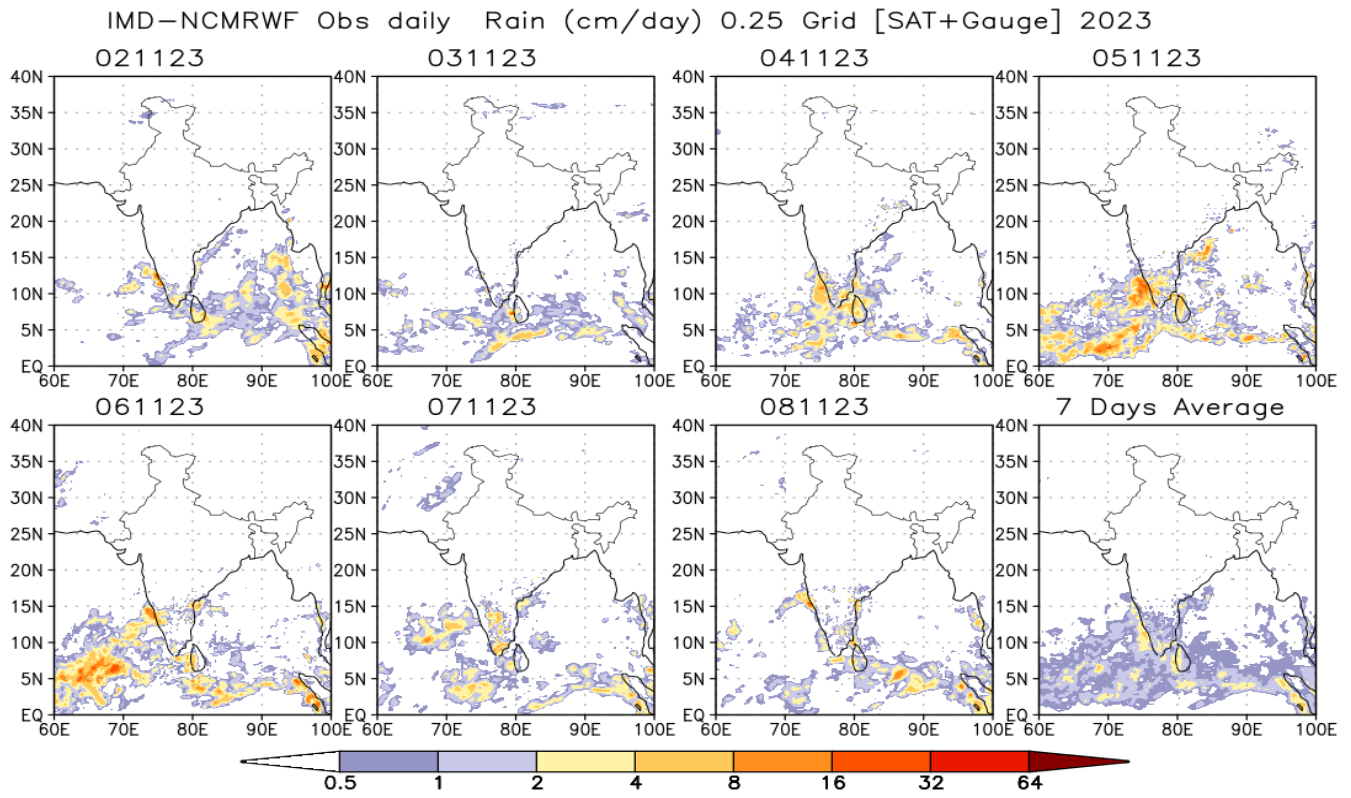


Fig. 2 IMD-NCMRWF satellite-gauge merged data plots during 02nd – 08th November, 2023

Next update: 16.11.2023