

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

#### **I. Environmental features:**

Most of the models are indicating that currently, MJO is in phase 2 with amplitude less than 1. It would continue in phase 2 during week 1 and thereafter move across phase 3 during week 2 with amplitude remaining less than 1. Thus, MJO is conducive for enhancement of convective activity over the Arabian Sea during week 1 and over the Bay of Bengal (BoB) during entire forecast period.

NCICS based forecast for equatorial waves over the region indicates presence of westerly winds (3-5 mps) over the central and adjoining north BoB, central parts of Indian mainland and central & adjoining north Arabian Sea (AS). These features indicate enhanced convective activity over these regions during week 1. Further, over the northeast AS, equatorial Rossby waves (ERW) alongwith strong westerly winds (3-5 mps) and MJO waves are indicated during week 1. Thus, the existing low pressure area over North Odisha would move west-northwestwards across central India and cause enhanced rainfall activity over central and peninsular India during week 1. Also, equatorial waves are likely to support cyclogenesis over northeast AS.

During week 2, the forecast of equatorial waves do not indicate any support for enhancement of convective activity over the region.

#### **II. Model Guidance:**

Most of the deterministic models including IMD GFS, NCEP GFS, NCUM and ECMWF are indicating that the existing low pressure area over North Odisha/ its remnant cyclonic circulation would move west-northwestwards across central India towards Gujarat region during next 4-5 days. ECMWF model is indicating, the system to emerge as a low pressure area into northeast & adjoining eastcentral AS with intensification into depression during end of week 1 around 21<sup>st</sup> September and move further westwards. NCUM is also indicating the system to emerge into northeast & adjoining eastcentral AS with intensification into depression around 20<sup>th</sup> September and move further westwards. However, GFS group of models is not indicating any cyclogenesis over AS.

NWP models are also indicating emergence of a fresh cyclonic circulation into eastcentral BoB during later half of week 1 with west-northwestwards movement towards north BoB during week 2.

The mean wind and anomaly of winds forecasts by extended range models viz. IMD CFS (V2) and CNCUM are indicating cyclonic circulation over north Odisha with west-northwestwards movement. These models are indicating above normal rainfall activity over major parts of central India and over northeast AS. The IMD CFS (V2) is also indicating cyclogenesis probability over central parts of India, with indications that the existing low pressure area may intensify over land. During week 2, also above average rainfall activity is indicated over Indian Mainland.

**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:**

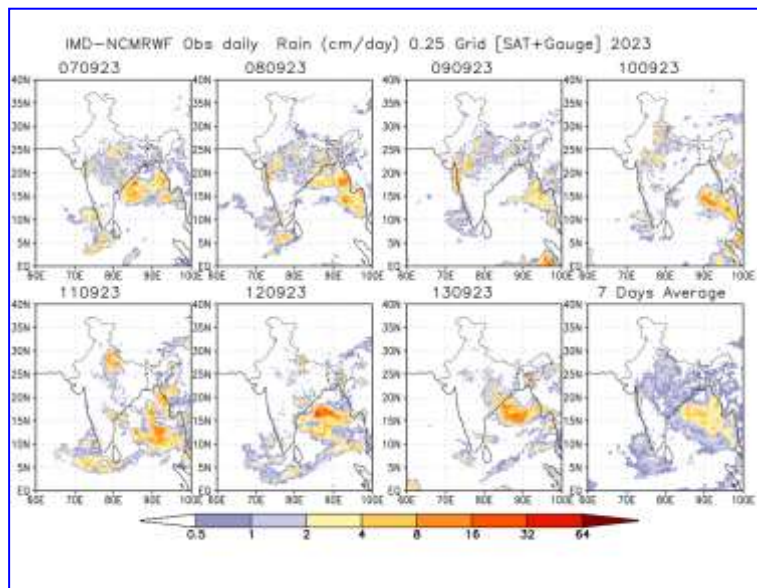
Considering all the above it is inferred that:

- (i) The existing low pressure area over North Odisha / it's remnant cyclonic circulation is likely to move west-northwestwards over central parts of India during next 3-4 days and emerge into northeast & adjoining eastcentral Arabian Sea off Gujarat coast towards the end of week 1. It is likely to intensify marginally into a depression over the same region and move westwards away from Indian coast. Hence, low probability of cyclogenesis is assigned over northeast Arabian Sea & adjoining eastcentral Arabian Sea off Gujarat coast during end of week 1 (Fig.1).
- (ii) There is also a likelihood of formation of another cyclonic circulation over eastcentral Bay of Bengal during later part of week 1 with west-northwestwards movement towards North Bay of Bengal in the beginning of week 2.

**IV. Verification of forecast issued during last two weeks:**

The forecast issued on 31<sup>st</sup> August for week 2 (08.09.2023-14.09.2023) indicated formation of cyclonic circulation over northwest BoB during the period. The forecast issued on 7<sup>th</sup> September for week 1 (08.09.2023-14.09.2023) did not indicate any fresh cyclonic circulation over BoB. However, a cyclonic circulation formed over central parts of BoB on 12<sup>th</sup>. Under it's influence, a low pressure area formed over North BoB on 13<sup>th</sup>. It lay over North Odisha on 14<sup>th</sup> September.

The IMD-NCMRWF satellite-gauge merged data plots during 7<sup>th</sup> – 13<sup>th</sup> September are presented in Fig. 2.



**Fig.2: IMD-NCMRWF satellite-gauge merged data plots during 7<sup>th</sup>-13<sup>th</sup> September, 2023**

**Next update: 21.09.2023**