

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

### I. Environmental features:

The Madden–Julian Oscillation (MJO) Index is currently in Phase 3 (Indian Ocean) with amplitude less than 1. It would continue to be in the same phase with weak signal (amplitude less than 1) and looping during week 1 and till first half of week 2. It would then move quickly to phase 4 during later part of week 2. Hence, MJO is likely to be fairly supportive to the convective activity and development of low pressure systems over the north Bay of Bengal (BoB) during later part of week 1 to week 2. During week 1, westerly winds (1-3 mps) are likely to prevail over south and central parts of Bay of Bengal (BoB) and southeast Arabian Sea (AS). The westerly winds are likely to strengthen (3-5 mps) during week 2 over the same region and westerly winds (1-3 mps) covering whole BoB & AS. Equatorial Rossby Waves (ERW) is likely over Northeastern states of India during first half of the week 1. All kinds of equatorial waves activity over North Indian Ocean (NIO) will be absent during week 2 except the MJO. Therefore, MJO will be supporting convective activity over BoB & southeast AS during week 1 along with ERW whereas during week 2 in the absence of other waves.

### II. Model Guidance:

Various deterministic models including ECMWF, IMD GFS, NCEP GFS, NCUM, NEPS and GEFS are indicating no fresh cyclogenesis over both the basins i.e. BoB and Arabian Sea (AS). All models are showing the presence of active monsoon trough with embedded low pressure area (LPA) over northwest India during second half of the week 1. During later part of week 1, the formation of LPA over northwest & adjoining westcentral BoB and coastal areas is likely around 4<sup>th</sup> July. Along with offshore trough the LPA is very likely to cause active monsoon scenario over India. The models also suggest subsequent west-northwestwards movement over land without further intensification.

Legends: IMD GFS: India Meteorological Department Global Forecast System, NCUM: National Centre for Medium Range Weather Forecasting Centre 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 various environmental features and model guidance, it is inferred that no further cyclogenesis is likely over the BoB and AS during next two weeks.

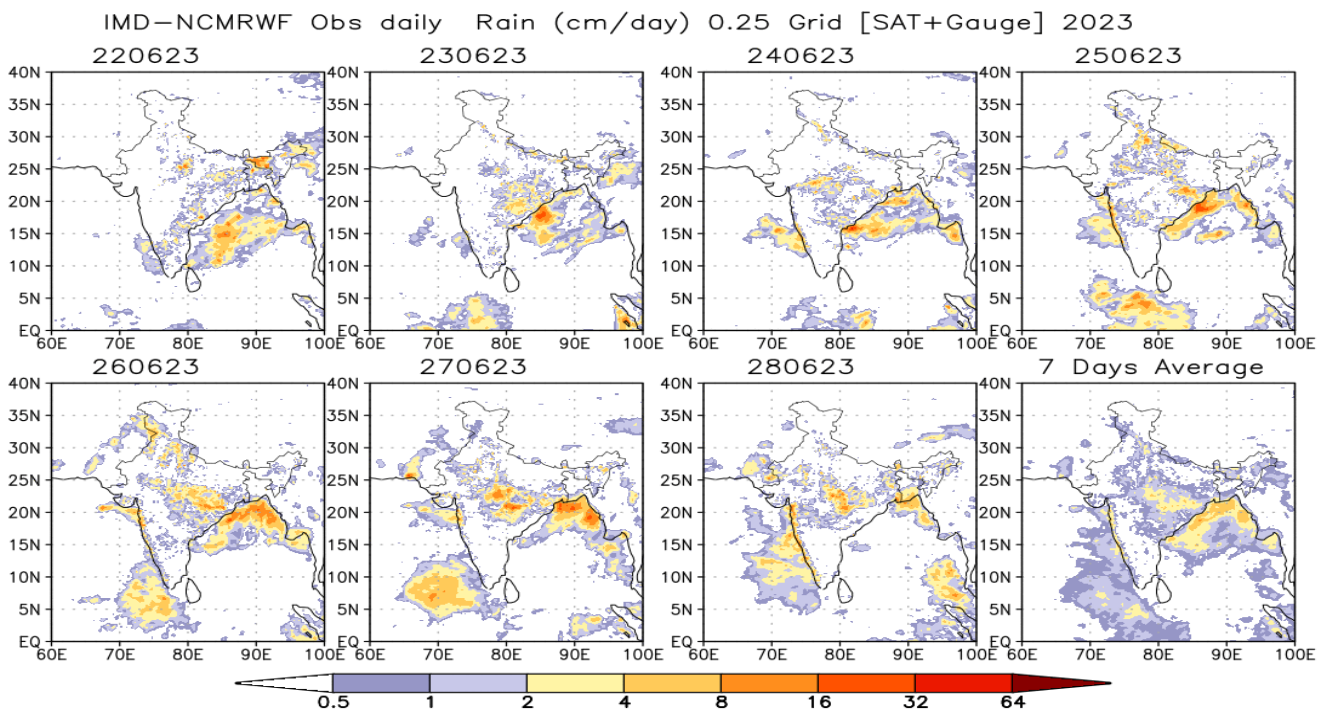
The enhanced convective activity is likely over northern parts of India including northeast India due to the influence of MJO and ERW during first half of week 1. During second half of week 1, a Low Pressure Area is likely to develop over northwest & adjoining westcentral BoB and coastal Odisha embedded in the monsoon trough around 4<sup>th</sup> July, 2023. The system would subsequently move west-northwestwards over land.

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

The forecast issued on 15<sup>th</sup> June 2023 for week 2 (23.06.2023– 29.06.2023) indicated no fresh cyclogenesis over the Bay of Bengal and Arabian Sea. The forecast issued on 22<sup>nd</sup> June for week 1 (23.06.2023– 29.06.2023) also mentioned the absence of cyclogenesis over the North Indian Ocean (NIO). However, there was likely development of an upper-air cyclonic circulation in the lower tropospheric levels over northwest BoB and adjoining coastal Odisha on 25<sup>th</sup> June. Under its influence, a low-pressure area was likely to form over the same region on 26<sup>th</sup> – 27<sup>th</sup> June and move subsequently west-northwestwards over land.

Actually, under the influence of a cyclonic circulation over the Northwest Bay of Bengal and adjoining North-Odisha West Bengal coasts, a low-pressure area formed over the same region at (0000 UTC) 0530 hours IST of 25<sup>th</sup> June and which persisted over the same region and moved inland over north Odisha & neighbourhood at (0300 UTC) 0830 hours IST of the 26<sup>th</sup> June 2023.

The realized rainfall during 22<sup>nd</sup> to 28<sup>th</sup> June, 2023 from satellite-gauge merged data is presented in Fig.2.



**Fig.2: Rain gauge and satellite merged rainfall plots during 22<sup>nd</sup> to 28<sup>th</sup> June, 2023**

**Next update: 06.07.2023**