

**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 2 with amplitude less than 1. It would move across phase 3 and 4 during first half of week 1. Thereafter, it would move across phases 5, 6 and 7 during week 2. Hence, MJO is likely to support the enhancement of convective activity and cyclogenesis over the Bay of Bengal (BoB) during week 1 and Arabian Sea (AS) during first half of week 1. During first half of week 2, it would favour enhancement of convective cloud over north & central Bay of Bengal. During week 1 and week 2, westerly winds (3-5 mps) along with Equatorial Rossby Waves (ERW) are likely to prevail over south and central Arabian Sea. Therefore, MJO and equatorial waves would support sustenance of convective activity over the Arabian Sea during first half of week 1 and over Bay of Bengal during week 1 and first half of week 2.

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

#### **Arabian Sea:**

Various deterministic models including ECMWF, IMD GFS, NCEP GFS and NCUM are indicating very severe cyclonic storm to intensify further. There is large variation among various models wrt movement of the system after 3 days. NCEP GFS is indicating movement towards Oman, ECMWF towards Pakistan & adjoining north Gujarat coasts, IMD GFS over Iran-Pakistan coasts, NCUM towards Gujarat coast, IMD MME towards Pakistan-Iran coasts and IMD HWRF towards westcentral Arabian Sea. The multi model ensemble of IMD indicates north-northwestwards movement over the Arabian Sea during next five days.

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, following inferences are drawn:

- (i) Very Severe Cyclonic Storm “BIPARJOY” is likely to move north-northwestwards towards north Arabian Sea during week 1.
- (ii) No further intensification of the cyclonic circulation over the Bay of Bengal is likely. No cyclogenesis is likely over the Bay of Bengal and Arabian Sea during week 2.

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

The forecast issued on 25<sup>th</sup> May, 2023 for week 2 (02.06.2023– 08.06.2023) indicated low probability of cyclogenesis over eastcentral Bay of Bengal off Myanmar coast during week 2. The forecast issued on 1<sup>st</sup> June for week 1 (02.06.2023– 08.06.2023) indicated moderate probability of cyclogenesis over (a) eastcentral Bay of Bengal off Myanmar coast and also moderate probability of cyclogenesis over southeast Arabian Sea during later part of week 1. Actually, a cyclonic circulation formed over North Andaman Sea and adjoining eastcentral BoB on 30<sup>th</sup> May. It is still persisting over the same region. Over the Arabian Sea, depression formed over southeast Arabian Sea on 6<sup>th</sup> June. It intensified into cyclonic storm “BIPARJOY” in the same evening. Currently, it is over eastcentral Arabian Sea as a very severe cyclonic storm. Thus, over the Bay of Bengal, cyclonic circulation formed over eastcentral Bay of Bengal. However, it didn’t intensify into a depression. Over the Arabian Sea, cyclogenesis could be well captured in week 1 forecast.

The realized rainfall during 1<sup>st</sup> June, 2023 – 7<sup>th</sup> June, 2023 from satellite-gauge merged data is presented in Fig.2

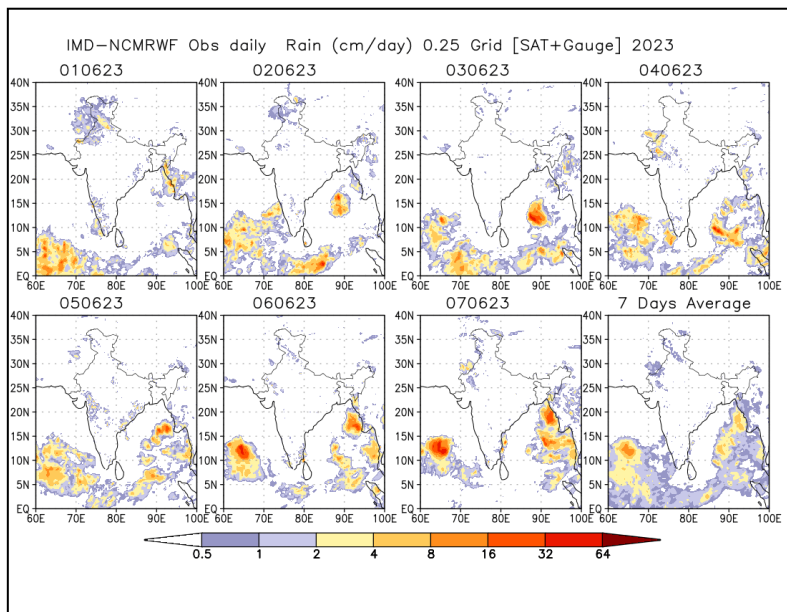


Fig.2: Rain gauge and satellite merged rainfall plots during 01<sup>st</sup> June– 07<sup>th</sup> June, 2023