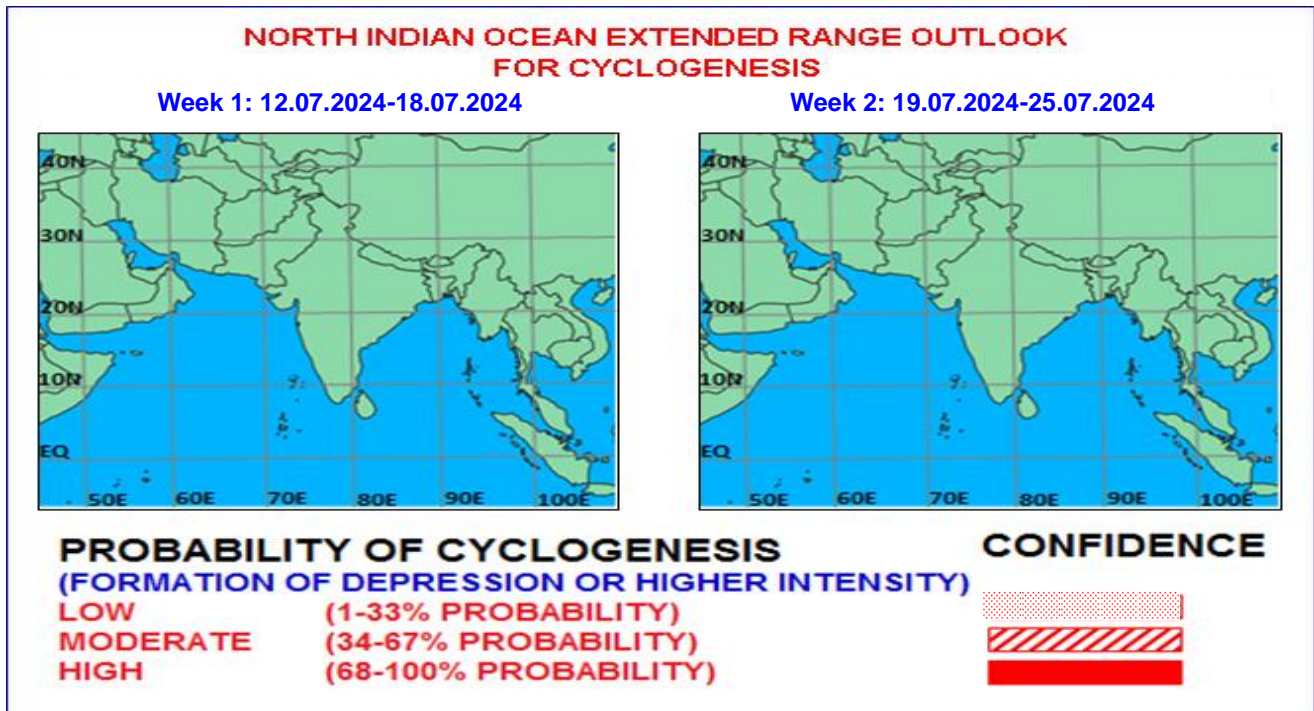




Issued on 11.07.2024



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

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

The Madden Julian Oscillation (MJO) index is currently located in phase 5 with amplitude more than 1. It is likely to continue in same phase with amplitude gradually becoming less than 1 in week 2. Thus, MJO phase and amplitude is favourable for enhancement of convective activity over the north Bay of Bengal (BoB) during the forecast period.

The NCICS based forecast for zonal winds indicate weak westerly winds (~ 1 to 3 mps) over central BoB, southern peninsular India and central Arabian Sea and easterly winds (2-3 mps) over North India during week 1. However, during week 2 enhanced westerly winds (5-7 mps) over south BoB alongwith Equatorial Rossby waves (ERW) and MJO are likely over south BoB and enhanced easterly winds (5-7 mps) are likely over north BoB. Thus, equatorial waves are likely to contribute to cyclogenesis over north BoB during week 2.

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

Most of the numerical models (GFS group of models, ECMWF, NCUM Group) indicate likely development of a cyclonic circulation over northwest & adjoining westcentral Bay of Bengal during middle of week 1 (around 14<sup>th</sup> July) and another during beginning of week 2 (around 19<sup>th</sup> July) with northwestwards movement and no significant intensification. ECMM is also indicating 10-20% probability of cyclogenesis over northwest & adjoining westcentral BoB during the middle of week 1 and the beginning of week 2. IMD GPP does not indicate any significant potential zone for cyclogenesis over BoB and AS during the entire forecast period.

IMD extended range model CFSV2 is indicating established southwesterly winds of monsoon at 850 hPa level over both the basins with enhancement during week 2. The wind

anomaly field is indicating a cyclonic circulation over central BoB first half of week 2. The model also indicates 20-30% probability of cyclogenesis over land areas of northwest India during both weeks.

**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 (ECMWF), 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 Centre, NWS: National Weather Service, INCOIS: Indian National Centre for Ocean Information Services.

### III. Inference:

Considering various environmental conditions and model guidance, it is inferred that there is no probability of cyclogenesis during the entire forecast period. However, there are:

- (a) high probability of formation of a cyclonic circulation/low-pressure area over northwest and adjoining westcentral Bay of Bengal with northwestwards movement during middle of week 1.
- (b) high probability of the formation of another low-pressure area over northwest and adjoining westcentral Bay of Bengal with northwestwards movement during the beginning of week 2.

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

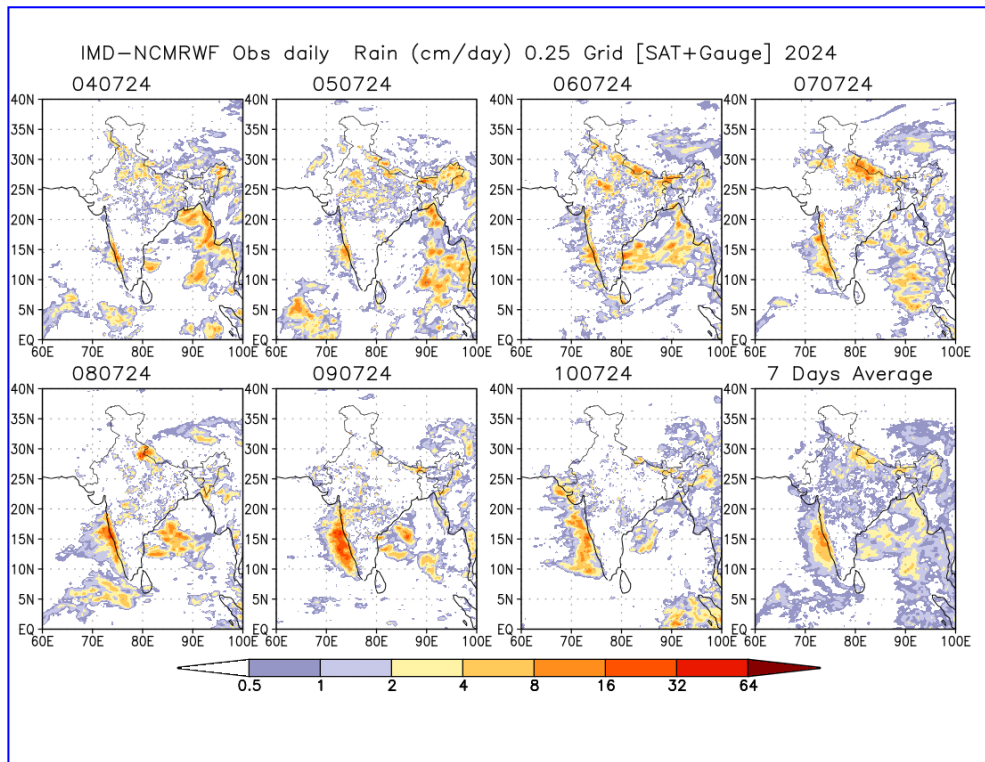
**Forecast:** Forecast issued on 27<sup>th</sup> June for second week (05.07.2024-11.07.2024) indicated a low probability of the formation of a cyclonic circulation/low pressure area over north BoB during week 2. The forecast issued on 4<sup>th</sup> July for first week (05.07.2024-11.07.2024) predicted a moderate probability of the formation of a cyclonic circulation/low-pressure area over westcentral & adjoining northwest Bay of Bengal with subsequent northwestwards movement during the middle of the first week. However, no cyclogenesis (formation of depression) was indicated during both weeks.

#### **Realised:**

A cyclonic circulation lay over eastcentral BoB on 5th July. It moved northwestwards and became less marked on 9th July off North Andhra Pradesh coast.

**Verification:** Hence, the likely formation of a cyclonic circulation over BoB could be captured well two weeks in advance.

NCMRWF-IMD satellite gauge merged data plots of 24 hours accumulated realized rainfall during 4<sup>th</sup> to 10<sup>th</sup> July, 2024 are presented in **Fig. 2**.



**Fig. 2: NCMRWF-IMD satellite gauge merged data plots of 24 hours accumulated realized rainfall during 4<sup>th</sup> to 10<sup>th</sup> July, 2024.**

**Next update: 18.07.2024**