India Meteorological Department
Ministry of Earth Sciences
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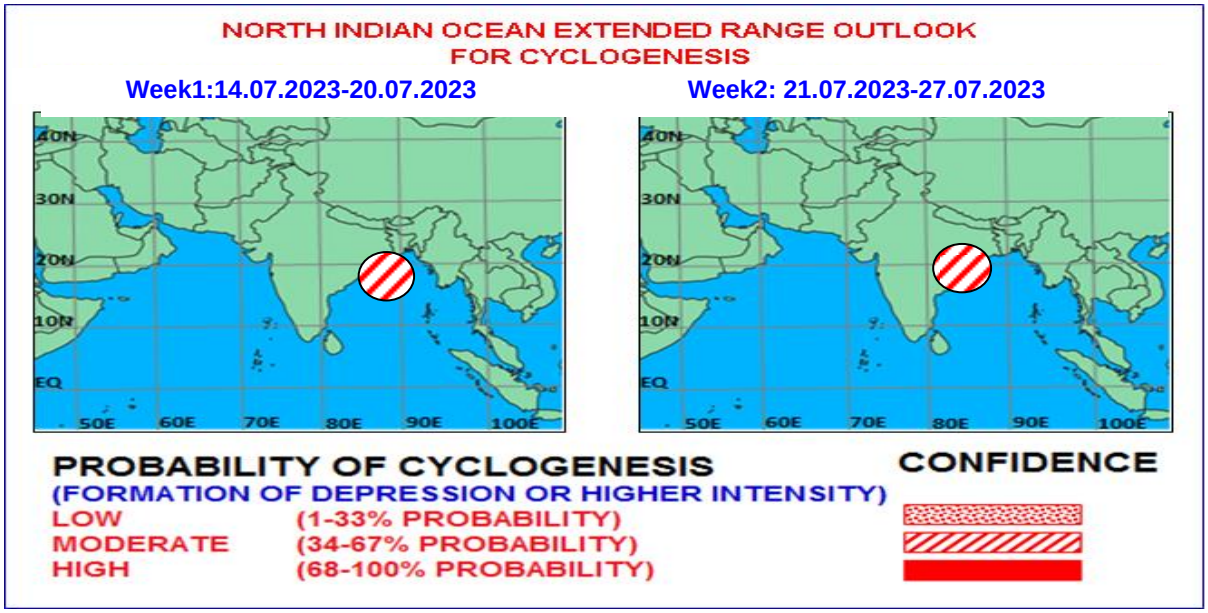

Fig.1: Graphical Cyclogenesis over north Indian Ocean during next two weeks

I. Environmental features:

The Madden–Julian Oscillation (MJO) Index is currently in Phase 3 (quasi-stationary over Indian Ocean) with amplitude less than 1. It would move slowly to phase 4 during next 2 days. Thereafter, it would move to phase 5 during the latter part of week 1 with amplitude remaining less than 1. During start of week 2 MJO index will be in phase 5 before it migrates into phase 6 at the end of week 2. Hence, MJO is likely to be favourable for enhancement of convective activity of monsoon over north Bay of Bengal (BoB) and Indian region during week 1. Along with MJO, the Equatorial Rossby Wave (ERW) would be present over northern parts of India during the whole week 1 whereas Kelvin waves activity is likely over northeast India during first half of week 1. As per the tropical monitoring products of North Carolina Institute for Climate Studies, USA the easterly winds are likely to prevail over entire south Arabian Sea (AS) with peak wind (5-7 mps) over southeast AS and over north & central BoB with peak wind (7-9 mps) over eastcentral BoB during first half of week 1 which would weaken (1-3 mps) gradually during later part of the week. The easterly winds are likely over entire north BoB (1-3 mps) and south AS (3-5 mps) during week 2 as well. The MJO, other equatorial wave activities and presence easterly would support enhancement of monsoon rainfall activity over north BoB and over east & central India during week 1 and continue during first half of week 2.

II. Model Guidance:

Various deterministic models including ECMWF, IMD GFS, NCEP GFS, NCUM, NEPS and GEFS are indicating no cyclogenesis over both the basins i.e., BoB and AS during week 1. But these deterministic models are indicating likely development of a low pressure area (LPA) over northwest BoB & adjoining areas at the end of week 1 (around 19th July). IMD GPP is also not indicating any cyclogenesis during week 1 except with a zone of maximum GPP on 20th July. All models suggest that the LPA is likely to intensify into a depression and move west-northwestwards during subsequent 48 hours. IMD extended range forecast (ERF) system is also indicating 30-40% probability zone of cyclogenesis over northwest BoB during week 1 which extends west-northwestwards over Indian landmass during week 2. The ERF system of IMD is predicting easterly anomaly over the entire north BoB and northern parts of India during both the weeks and over southern parts of AS during week 1. Both IMD and NCMRWF ERF models are

forecasting strong westerly anomalies over entire AS during week 2. Therefore, extended range model forecasts are suggesting active monsoon condition during week 2.

Legends: 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 various environmental features, model guidance and giving weightage to the extended range model forecasts, it is inferred that

- A low pressure area is likely to form over northwest BoB and adjoining areas during the latter part of week 1 around 19th July. The LPA is likely to intensify into a depression over the same region during next 48 hours and subsequently move west-northwestward towards central India across Odisha & Chhattisgarh.

IV. Verification of forecast issued during last two weeks:

The forecast issued on 29th June 2023 for week 2 (07.07.2023– 13.07.2023) indicated no cyclogenesis over the Bay of Bengal and Arabian Sea. The forecast issued on 6th July for week 1 (07.07.2023– 13.07.2023) also didn't indicate any cyclogenesis over the region. Hence, the no occurrence of cyclogenesis was correctly predicted two weeks in advance.

The realized rainfall during 6th to 12th July, 2023 from satellite-gauge merged data is presented in Fig. 2.

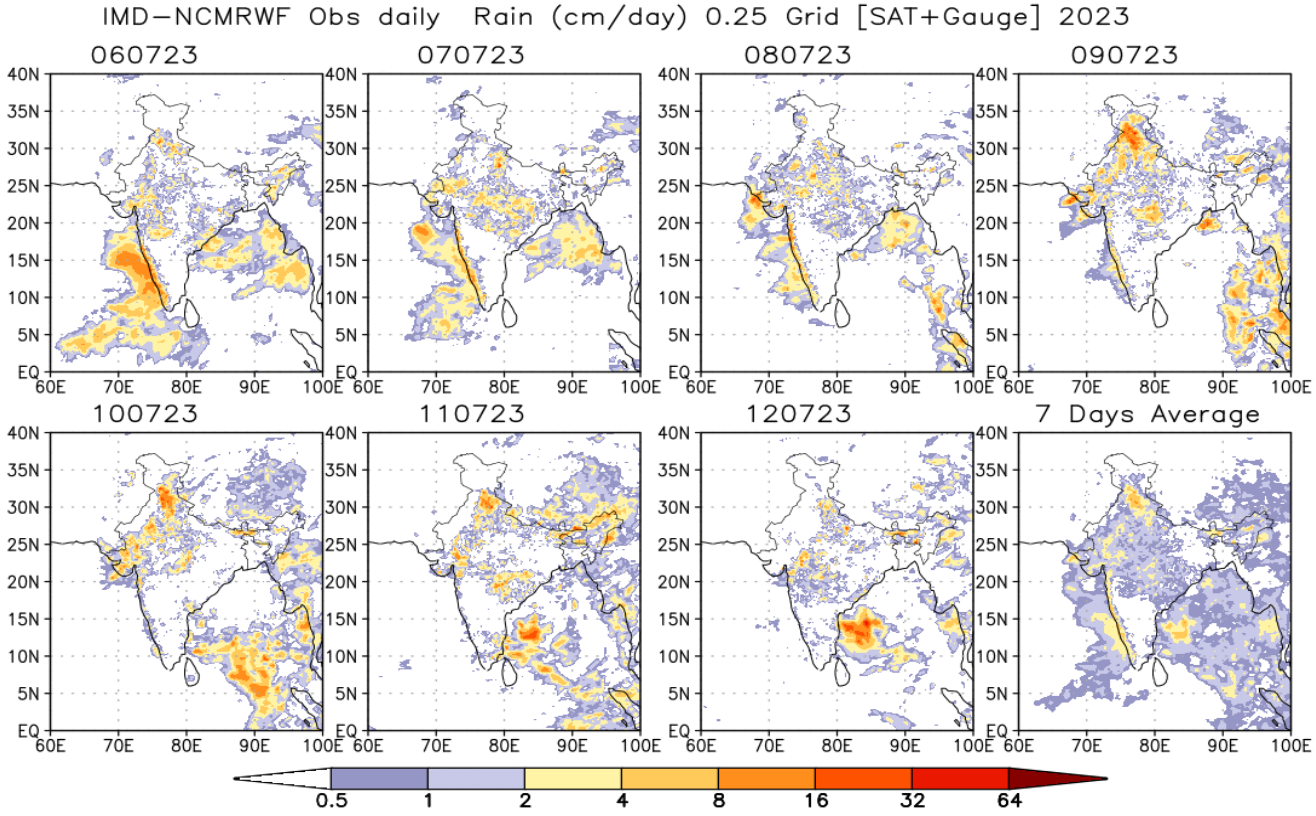

Fig.2: Rain gauge and satellite merged rainfall plots during 6th to 12th July, 2023

Next update: 20.07.2023