India Meteorological Department
Ministry of Earth Sciences
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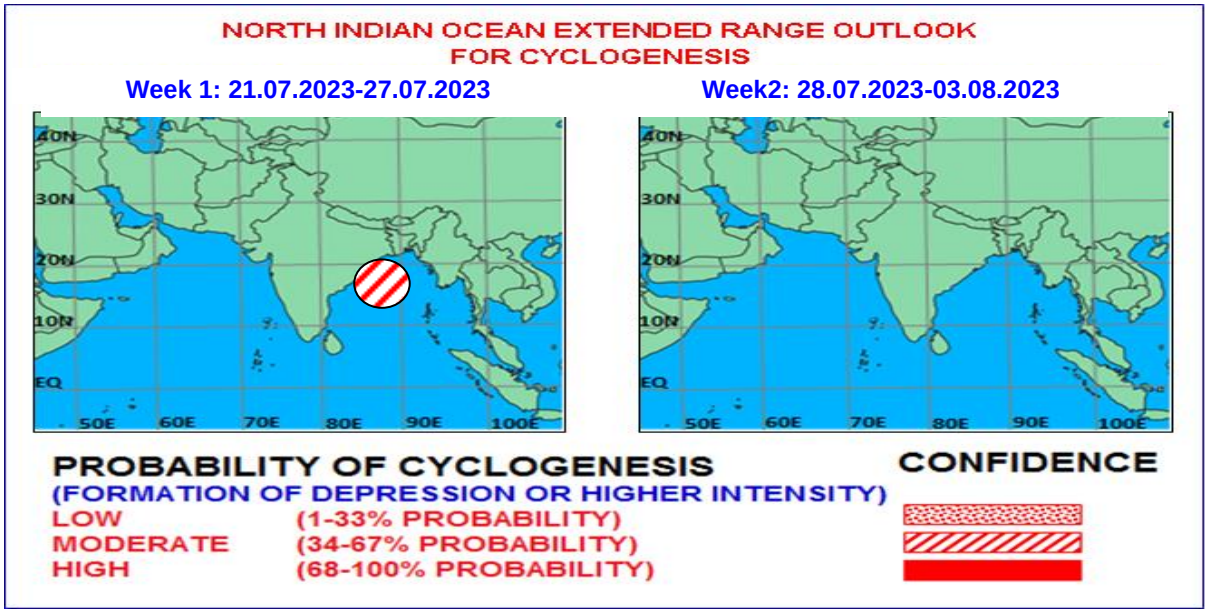

Fig.1: Graphical Cyclogenesis over north Indian Ocean during next two weeks

I. Environmental features:

The Madden–Julian Oscillation (MJO) Index is currently in Phase 4 with amplitude less than 1. It would migrate to and remain in phase 5 during next 4-5 days. Thereafter, it would move to phase 6 during the latter part of week 1 with amplitude remaining less than 1. ECMWF forecast shows that the MJO index will enter into phase 7 in the beginning of week 2 and migrate quickly into phase 1 at the end of the week. Whereas, the GEFS forecast indicate little movement of MJO index in phase 6 during week 2. Hence, MJO is not likely to be very much favourable for enhancement of convective activity of monsoon over north Bay of Bengal (BoB) and Indian region during latter part of week 1 and week 2. The Equatorial Rossby Wave (ERW) would be absent over Indian region during week 1 but appear over south BoB during week 2. As per the CFS forecast products (North Carolina Institute for Climate Studies, USA) the easterly winds (5-7 mps) are likely to prevail over entire north India and northern part of BoB during week 1. The westerly winds (1-5 mps) are likely over south Arabian Sea (AS) and south BoB with peak wind (5 mps) over southeast AS during week 1. Forecast also indicates that the easterly winds over northern parts of India would weaken (1-3 mps) gradually during week 2. The westerly winds over south BOB are likely to strengthen with peak wind over southeast BoB and Andaman Sea (7-9 mps) during week 2. The MJO, other equatorial wave activities and above circulation features would support enhancement of monsoon rainfall activity over north & central BoB and south & central India during week 1. The rainfall activity is likely to reduce over these regions during week 2.

II. Model Guidance:

Various deterministic models including ECMWF, IMD GFS, NCEP GFS, NCUM, NEPS and GEFS are indicating existing low pressure area (LPA) over northwest BoB and likely west-northwestward movement across Odisha coast during next 2 days. The models are also predicting likely formation of a fresh LPA over northwest & adjoining westcentral BoB off south Odisha and north Andhra Pradesh coasts around 24th July. The models are also indicating likely west-northwestward movement and further intensification into a depression during subsequent 2 days. IMD Genesis Potential Paramater (GPP) products show the zone of maximum over northwest and adjoining westcentral BoB during 24th to 26th July. The ERF system of IMD is predicting easterly anomaly over the entire north BoB & northern parts of India and westerly anomaly over remaining areas of BoB and south India during both the weeks. But there is

weakening of easterlies over north BoB a little in week 2. Both IMD and NCMRWF ERF models are forecasting strong westerly anomaly over entire AS during week 1 but it weakens in week 2 over entire south AS. Therefore, extended range model forecasts are suggesting active monsoon condition during week 1 and a little decrease in activity 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 and model guidance it is inferred that

A fresh low pressure area is likely to form over northwest and adjoining westcentral Bay of Bengal off south Odisha and north Andhra Pradesh coasts around 24th July. The system is likely to intensify into a depression over the same region and move west-northwestward across south Odisha & north Andhra Pradesh coasts during subsequent 2 days.

IV. Verification of forecast issued during last two weeks:

The forecast issued on 6th July 2023 for week 2 (14.07.2023– 20.07.2023) indicated no cyclogenesis over the Bay of Bengal and Arabian Sea but formation of a Low pressure area over northwest BoB and adjoining coastal Odisha. The forecast issued on 13th July for week 1 (14.07.2023– 20.07.2023) also indicated formation of a low pressure area over the same region around 19th July. Actually, a low-pressure area formed over northwest BoB and adjoining coastal Odisha on 20th July, 2023. Hence, the no occurrence of cyclogenesis along with the formation of LPA was correctly predicted two weeks in advance.

The realized rainfall during 13th to 19th July, 2023 from satellite-gauge merged data is presented in Fig. 2.

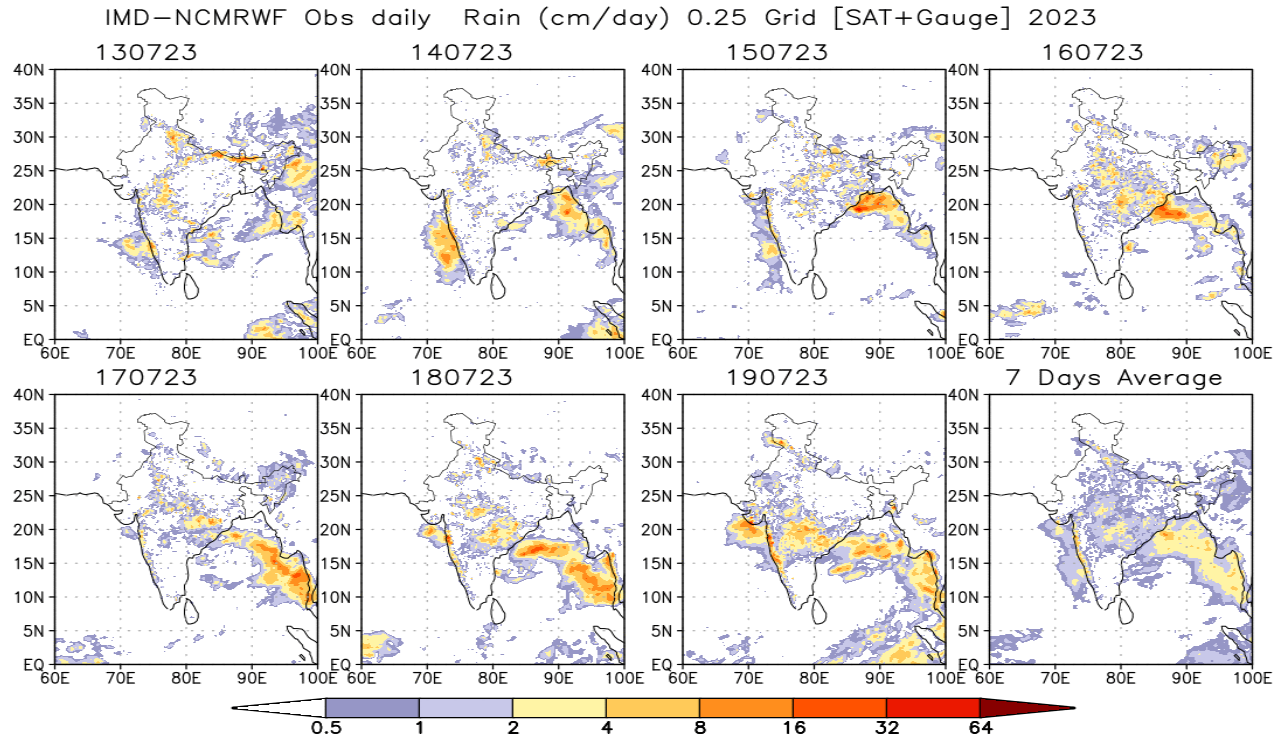

Fig.2: Rain gauge and satellite merged rainfall plots during 13th to 19th July, 2023

Next update: 27.07.2023