India Meteorological Department
Ministry of Earth Sciences
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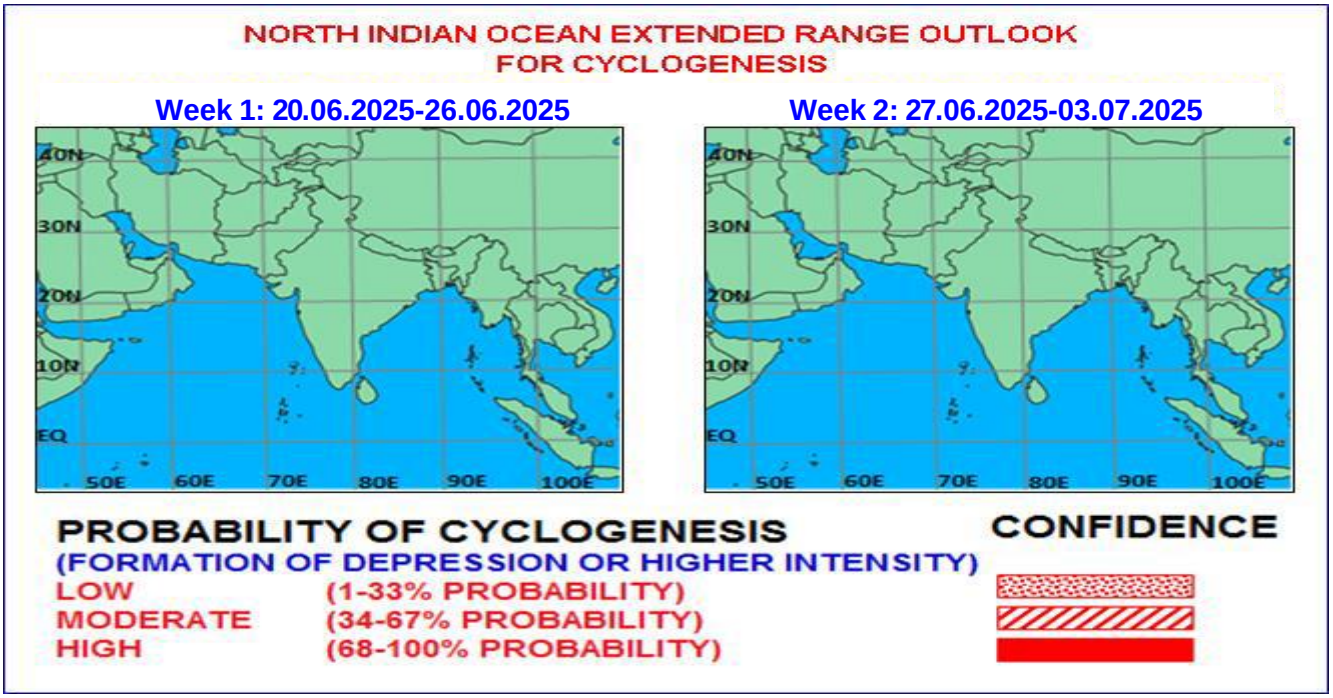

Fig. 1: Graphical Cyclogenesis over the north Indian Ocean during next two weeks

I. Environmental features:

The guidance from various models (ECMF, ECMM, NCEP, JMA, BOMA) indicates that Madden-Julian Oscillation (MJO) is currently in phase 3 with amplitude less than 1. The MJO is very likely to move across phases 3, 4 and 5 with amplitude remaining less than 1 during week 1. Thereafter it will move across phases 7, 8 and 1 with amplitude remaining less than 1 during week 2. Thus, MJO is likely to support the enhancement of convective activity over the north Bay of Bengal (BoB) during week 1.

The guidance from the NCICS CFS model indicates the prevalence of westerly wind anomaly (3-7mps) over central Arabian Sea (AS), Central India and westcentral BoB, alongwith prevalence of Equatorial Rossby wave (ERW) during week 1. The model is also suggesting the prevalence of easterly wind anomaly (1-3 mps) over northeastern parts of India during week 1. Similar features are likely to continue in first half of week 2 but with slightly decreasing intensity of wind anomaly. During week 2, model is also supporting westwards passage of ERW towards AS and African coast. Thus, Equatorial waves are likely to support development of cyclonic circulation over north BoB during week 1 and first half of week 2.

II. Model Guidance:

The guidance from various Numerical models including IMD GFS, NCEP-GFS, NCUM and ECMWF is indicating development of a fresh cyclonic circulation over North BoB during end of week 1 (around 26th June). The models are also indicating the existing well marked low pressure area over northeast Jharkhand and adjoining Gangetic West Bengal to move northwestwards and weaken gradually during next 2 days.

The 850 hPa mean wind field of IMD ERF Model indicates westerly winds over entire BoB and

AS during next 2 weeks. The model is also indicating a cyclonic circulation over eastern parts of India during week 1 and another over north BoB during beginning of week 2. The anomaly field is also indicating similar features with cyclonic wind anomaly over eastern parts of India (Jharkhand and neighbourhood) during week 1 and another over northwest BoB during beginning of week 2. The model is also indicating above normal rainfall activity over northern plains of India during week 1 and over north BoB and northern plains of India during week 2. The model is indicating a probable cyclogenesis zone over the northern plains of India during both the weeks (30-40%).

The ECMWF ensemble model is indicating 20% probability of cyclogenesis during week 1 over Gangetic West Bengal and adjoining northwest BoB. The ECMWF ERF model is also suggesting similar probability during week 1 over the same region and 20-30% probability of cyclogenesis over northwest BoB and neighborhood during week 2.

Therefore, the guidance from various numerical models is indicating likelihood of formation of a fresh upper-air cyclonic circulation over north BoB and adjoining Bangladesh and West Bengal during end of week 1 (around 26th June). The models are also indicating existing well marked low pressure area over Northeast Jharkhand and adjoining Gangetic West Bengal to move northwestwards and weaken gradually during next two days.

III. Inference:

Considering large-scale environmental features and model guidance, it is inferred that,

1. the existing well marked low pressure area over northeast Jharkhand and adjoining Gangetic West Bengal is likely to move northwestwards and weaken gradually during next two days.
2. there is a likelihood of the formation of an upper-air cyclonic circulation over North Bay of Bengal and adjoining West Bengal & Bangladesh towards end of week 1 (around 26th June). Under its influence, a low-pressure area is likely to form over the same region in the beginning of week 2 (around 27th June). However, it is not likely to intensify further into a depression.

IV. Verification of forecast issued during the previous two weeks:

The forecast issued on 5th June for week 2 (13th June–19th June) indicated likelihood of the formation of a cyclonic circulation/low pressure area over north and adjoining central BoB during first half of week 2.

The forecast issued on 12th June for week 1 (13th June–19th June) indicated likelihood of the formation of an upper-air cyclonic circulation over the northwest BoB and northeast AS towards the middle of week 1.

Realized:

A cyclonic circulation formed over westcentral BoB off north Coastal Andhra Pradesh coast on 14th June, 2025. It merged with the upper air cyclonic circulation over Northwest BoB & neighborhood on 15th June, 2025. Under its influence, a low-pressure area formed over Southwest Bangladesh and adjoining Gangetic West Bengal on 17th June 2025. It further intensified as a well-marked low pressure area over Gangetic West Bengal on 18th June 2025. It lay over Jharkhand on 19th June 2025. Thus, likely formation of cyclonic circulation and low pressure area over BoB was predicted correctly two weeks ahead.

Another upper air cyclonic circulation formed over central parts of Konkan and adjoining eastcentral AS on 15th June 2025. Under its influence, a low-pressure area formed over Gujarat region & neighborhood on 17th June 2025. It moved nearly northwards and became less marked over south Rajasthan on 19th June 2025.

Hence, likely formation of cyclonic circulation over eastcentral Arabian Sea was captured in week 1 forecast. However, formation of low pressure area was not predicted.

NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from, 12th to 18th June, 2025 are presented in **Fig. 2**.

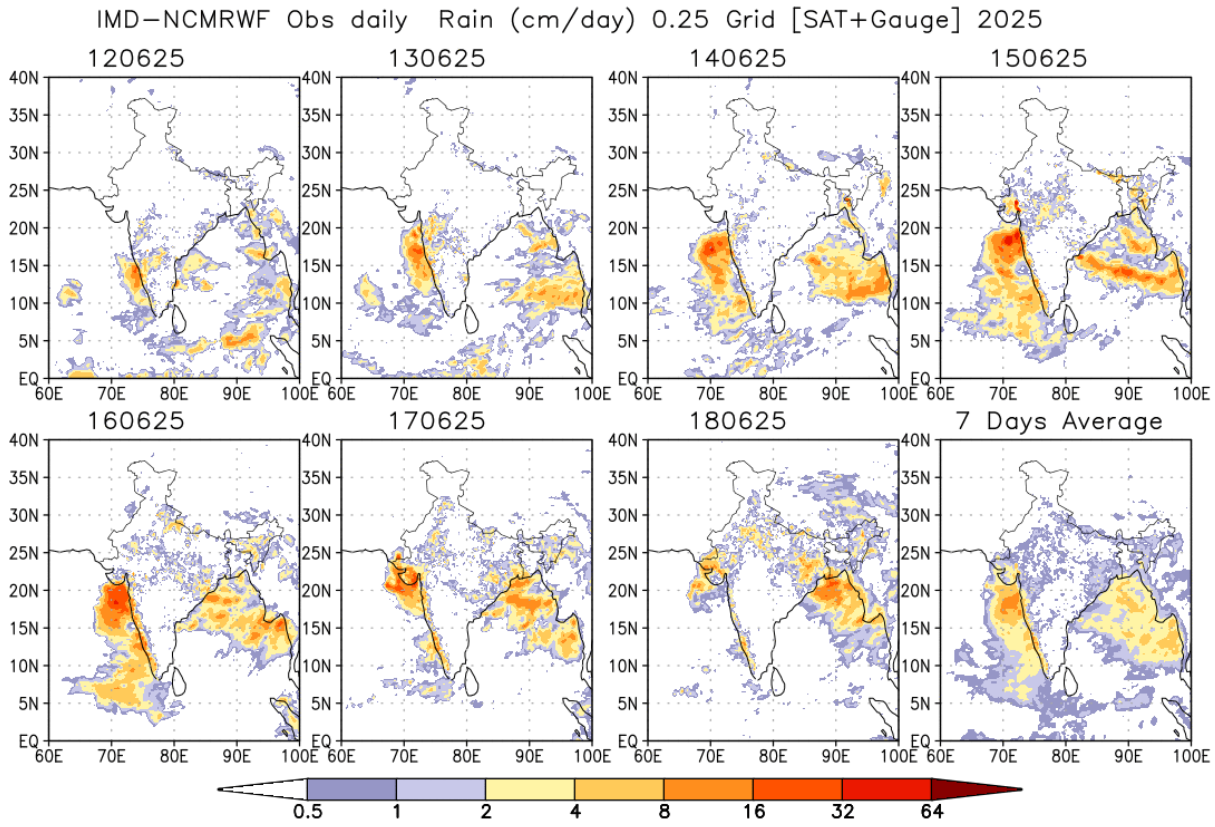

Fig.2: NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from 12th to 18th June, 2025.

Legends: MJO: Madden Julian Oscillation, ERW: Equatorial Rossby Waves, KW: Kelvin Waves, 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, ECMWF: European Centre for Medium-Range Weather Forecasting, EC-AIFS: ECMWF Artificial Intelligence Forecasting System, ECMM: ECMWF-Ensemble System Bias Corrected, GPP: Genesis Potential Parameter, NCEP GFS/GEFS/CFS: National Centre for Environment Prediction GFS/GEFSv12/CFSV2, CPC: Climate Prediction Center (for MJO update), IMD-GEFS: GFS ensemble forecast system of IMD, NEPS: NCUM ensemble prediction system, CNCUM: Coupled NCUM, CPC: Climate Prediction Centre, NWS: National Weather Service, INCOIS: Indian National Centre for Ocean Information Services.

Next update: 26.06.2025