



Issued on 12.06.2025

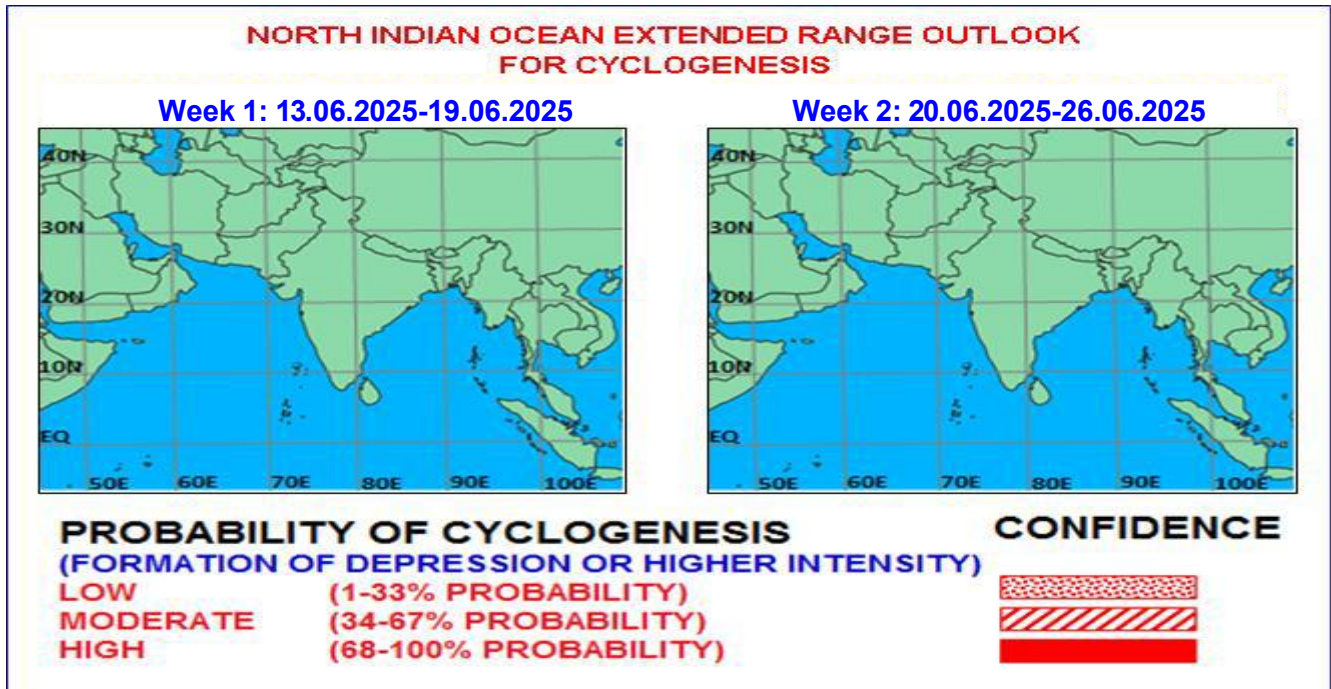


Fig. 1: Graphical Cyclogenesis over the north Indian Ocean during next two weeks

I. Environmental features:

The guidance from the various models (ECMF, ECMM, NCEP, JMA, BOMA) indicates that a very weak Madden-Julian Oscillation (MJO) signal is currently in phase 8 with an amplitude less than 1. The weak MJO is very likely to move quickly across phases 1, 2, and 3 during the first week. It is likely to remain weak and move eastward ambiguously across phases 4, 5 and 6 during week 2. Thus, the phases of MJO are expected to contribute to the enhancement of convective activity over the Arabian Sea (AS) during the second half of the first week and thereafter over both AS and Bay of Bengal (BoB) during the remaining part of the forecast period.

The guidance from the NCICS CFS model indicates westerly wind anomaly (3-7mps) over south AS and south BoB during the first half the week 1. The westerly wind anomaly is likely to shift gradually northwards and prevail over the entire AS and south & central BoB from the second half of week 1 till the end of week 2. An easterly anomaly (3-5 mps) is also likely to prevail over the northern parts of BoB during the first week. These features indicate the revival of monsoon conditions over the region and enhancement of cross-equatorial flow over the south BoB during week 1 and continue till week 2. The Equatorial Rossby waves (ERW) are likely to be seen over the entire BoB and southeast AS till the end of week 1. The low-frequency waves are likely to prevail over the central part of AS during the entire forecast period.

Thus, zonal wind anomaly and equatorial waves are likely to support the enhancement of convective activity over south AS and south BoB during the first half of week 1 and gradually over the entire BoB and south & central AS during the rest of the forecast period.

II. Model Guidance:

IMD GFS, NCMRWF, ECMWF and NCEP-GFS models are not indicating any development of

low pressure system during the first week. The IMD GFS and NCEP GFS are indicating an upper-air cyclonic circulation over northwest BoB around 16th June. Thereafter, all models are suggesting the development of another upper-air cyclonic circulation extending up to middle tropospheric levels over north BoB around the middle of the second week. Under the influence of the upper-air cyclonic circulation, there is a likelihood for the formation of a low pressure area over north BoB around 22nd June.

The 850 hPa mean wind field of IMD ERF Model indicates enhancement of cross-equatorial monsoonal flow over south BoB and south AS during week 1. The model is also indicating anomalous cyclonic circulation at 850 hPa over south peninsular India and neighborhood during the same period. The mean wind forecast for week 2 suggests an enhancement of westerly flow over the Indian region along with a formation of cyclonic circulation over Gujarat and an east-west trough extending up to westcentral BoB in the anomaly wind field. The model also furnishes a low-to-moderate probability (20-60%) over north BOB region during week 1. There is another zone with a low probability (20-40%) of cyclogenesis over northeast AS off Gujarat coast during week 1. The low probability of cyclogenesis is also indicated by the model over eastern parts of the northern plains during week 2.

The ECMWF ensemble is indicating a probable zone for cyclogenesis (20-30%) over the northwest BoB and another over eastcentral-northeast AS off Maharashtra coast (20-40%) probability during the middle of week 1. The ECMWF sub-seasonal forecasts indicate 20-30% probability of cyclogenesis over northwest BoB and northeast AS off Gujarat coast during week 1 and 10-20% probability over both the regions mentioned above during week 2.

Therefore, the guidance from the various models indicates that there is a likelihood of the formation of upper-air cyclonic circulations over northwest BoB and northeast AS during week 1. There is also likely formation of another upper-air cyclonic circulation /low pressure area over the north and adjoining central BoB during the first half of week 2.

III. Inference:

Considering large-scale environmental features and model guidance, it is inferred that there is a likelihood of the formation of upper-air cyclonic circulations over the northwest Bay of Bengal and northeast AS towards the middle of week 1. Another upper-air cyclonic circulation /low pressure area is also likely to form over the north and adjoining central Bay of Bengal during the first half of week 2.

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

The forecast issued on 29th May for week 2 (6th June – 12th June) indicated that an upper air cyclonic circulation/ low pressure area was likely over the North Bay of Bengal and adjoining areas during the latter part of week 2. It was not likely to intensify further into a depression and no cyclogenesis (formation of depression) was likely during the week.

The forecast issued on 5th June for week 1 (6th June – 12th June) indicated that there was a likelihood of the formation of a cyclonic circulation /low pressure area over the north and adjoining central Bay of Bengal during the first half of week 2.

Realized:

A fresh upper air cyclonic circulation was formed over Southeast & adjoining eastcentral Bay of Bengal at 0300 UTC of 08th June, 2025, and had become less marked at 0300 UTC of

10th June, 2025. Another fresh upper air cyclonic circulation formed over the northwest Bay of Bengal and adjoining north coastal Odisha & south Gangetic West Bengal at 0300 UTC of 09th June, 2025. It moved inland and over north Odisha & neighbourhood at 0300 UTC of 10th June, 2025. No fresh cyclogenesis was indicated during this period.

NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from, 5th to 11th June, 2025 are presented in **Fig. 2**.

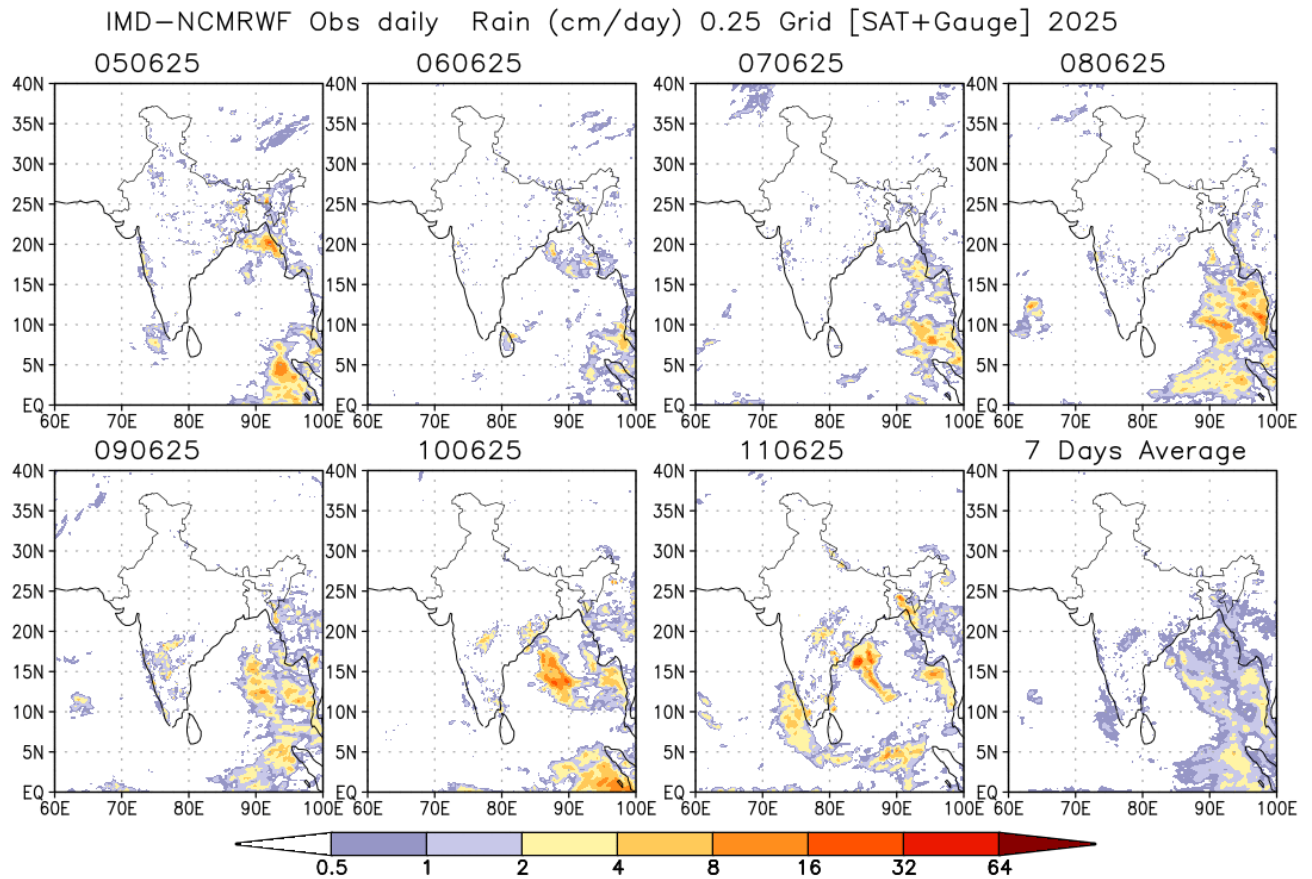


Fig.2: NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from 5th to 11th June, 2025.

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: 19.06.2025