



Issued on 27.04.2023

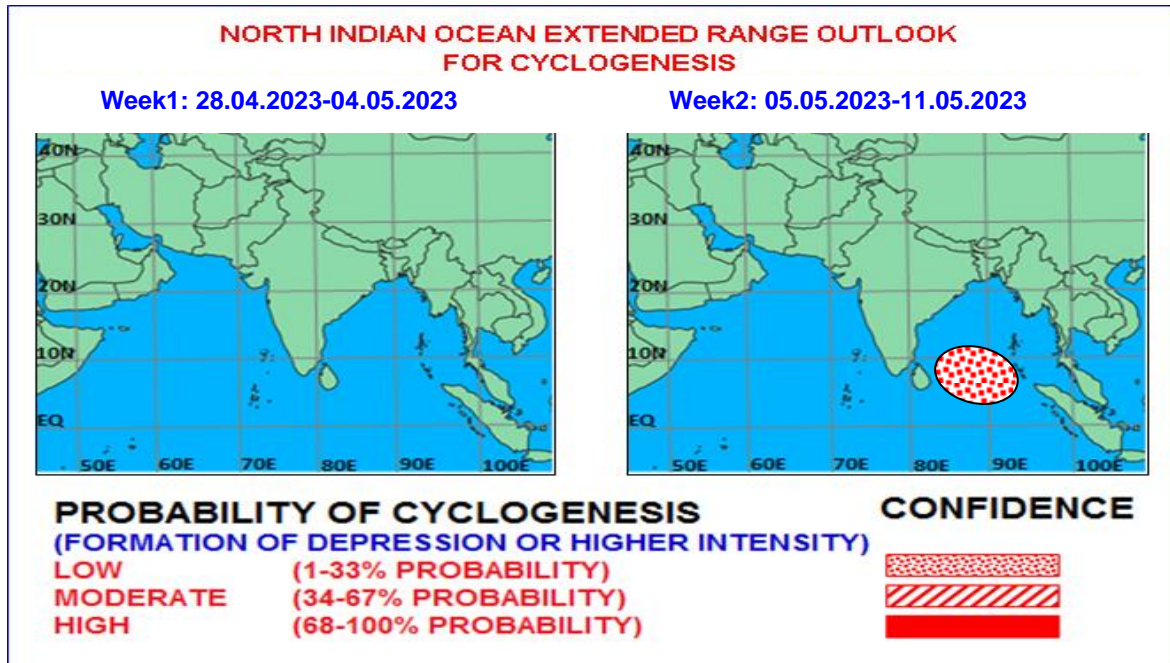


Fig.1: Graphical Cyclogenesis over north Indian Ocean during next two weeks

I. Environmental features:

The Madden Julian Oscillation (MJO) Index is currently in Phase 1 with amplitude between 1 and 2. According to the dynamical forecasts by the model, the MJO will change the phase immediately at the start of week 1 and enter in phase 2. Thereafter, it will move across phases 2, 3 and 4 during later part of week 1, start of week 2 respectively with amplitude less than 1. During the later part of week 2 the MJO will be in phase 5. Hence, MJO will support enhancement of convective activity over the North Indian Ocean (NIO) during week 1 onwards but the genesis of cyclonic disturbances (CDs) is more favored during week 2. In the forecast, the amplitude of MJO in phase 3 and 4 is very close to 1 and not very much ideal for the enhanced intensification of CDs.

During first half week 1, easterly winds (1-3 mps) over Bay of Bengal (BoB) and East Equatorial Indian Ocean (EIO) whereas the very weak westerly is likely over central Arabian Sea (AS) and adjoining areas. The wind scenario is very likely to change during the later half of week 1 and weak (1-3 mps) westerly wind is likely to dominate over whole NIO.

The Kelvin waves are likely to become prominent over southern part of BoB & adjoining equatorial Indian Ocean and over north AS during week 1 with gradual propagation towards east. As the Kelvin waves are likely to disappear over the region during week 2, the Equatorial Rossby Waves (ERW) is likely to appear over adjoining south Bay of Bengal (BoB) and adjoining East EIO. Considering collectively during week 1, zonal winds and all modes including MJO will support enhanced convection but chance of contribution towards any cyclogenesis over the region is less due to strong zonal shear. However, during first half of week 2, westerly winds, Equatorial Rossby Waves (ERW) and MJO have a possibility to overlap over south BoB and adjoining areas.

II. Model Guidance:

Various models including IMD GFS, NCUM, ECMWF, ECMM, NEPS and GEFS are not indicating any cyclogenesis over the region during next 7-10 days. Whereas NCEP-GFS and IMD GPP forecasts are indicating the formation of low pressure area during 2nd half of week 1 over southwest BoB and adjoining areas near Sri Lanka and Tamil Nadu coast.

IMD's Coupled Forecast System Version 2 (IMD CFS V2) indicating enhanced convection over south BoB during later part of week 1 but with no probability for cyclogenesis during week 1

and 2. Extended range forecast of ECMWF for tropical cyclone activity NIO region indicated very low (less than 20 %) probability of tropical storm over central and adjoining north BoB during 2nd half of week 2. The global tropics hazard outlook of CPC of NWS indicated probability of tropical cyclone hazard is more than 40% over south BoB during week 2.

(Legends: IMD GFS: India Meteorological Department Global Forecast System, NCUM: National Centre for Medium Range Weather Forecasting Centre 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 the environmental features and model guidance, it is inferred that no cyclogenesis (formation of depression) is likely over the North Indian Ocean region during week 1. There is likely low probability of cyclogenesis over south BoB and adjoining areas during week 2. Graphically shown in Fig. 1.

IV. Verification of forecast issued during last two weeks:

The forecast issued on 13th April, 2023 for week 2 (21.04.2023– 27.04.2023) indicated no cyclogenesis over the NIO region. The forecast issued on 20th April, 2023 for week 1 (21.04.2023– 27.04.2023) indicated no cyclogenesis over the NIO region. Thus, nil cyclogenesis was correctly predicted in two weeks forecast.

The realized rainfall during 21st April, 2023 – 26th April, 2023 from satellite-gauge merged data is presented in Fig.2

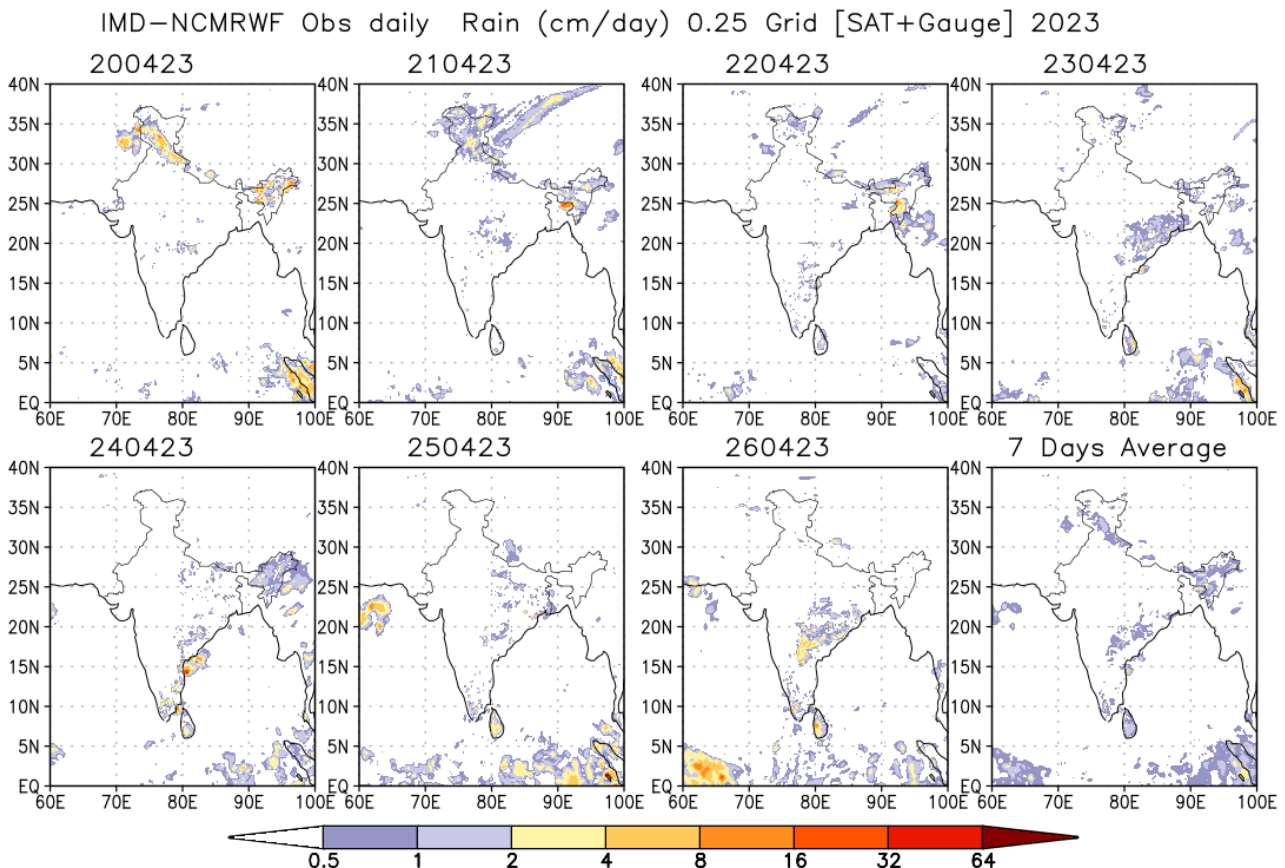


Fig.2: Rain gauge and satellite merged rainfall plots during 20th – 26th April, 2023

Next update: 04.05.2023