



Issued on 21.12.2023

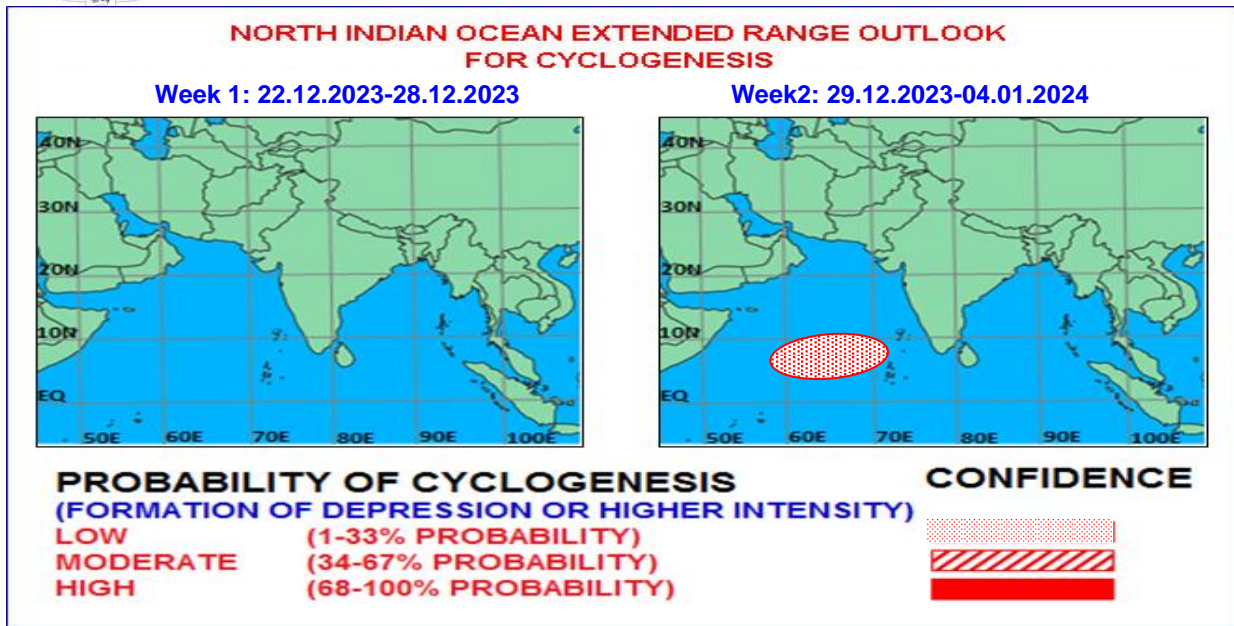


Fig. 1: Graphical Cyclogenesis over north Indian Ocean during next two weeks

I. Environmental features:

Eastward moving Madden Julian Oscillation (MJO) index is currently entered into phase 8 with amplitude less than 1. Both GEFSv12 and ECMWF forecasts suggest that it is likely to move across phases 8 with increasing amplitude and reach into phase 1 during first half of week 1 and remain in the same phase till end of the week. Subsequently, the MJO index is likely to enter into phase 2 in the beginning of week 2 with amplitude greater than 1 and continue to be in the same phase during rest of the forecast period. NCICS based forecast for zonal winds indicates strengthening of westerly winds from 28th December onwards in association with MJO over the south Arabian Sea (AS) and adjoining Equatorial Indian Ocean (EIO). At the same time Equatorial Rossby Wave (ERW) is expected to be active over southeast AS and adjoining areas. It would increase the strength of easterly winds over east central and adjoining southeast AS. Thus, strengthening of both westerly winds to the south and easterly winds to the north will favour increased vorticity and circulation. Hence the environmental features may become favourable for cyclogenesis over south Arabian Sea and adjoining Equatorial Indian Ocean during beginning of second week.

II. Model Guidance:

Most of the models including IMD GFS, NCUM and ECMWF are indicating a cyclonic circulation over southeast AS and EIO on 21st December with nearly westwards movement during next 2 days. The models are indicating an active northern Hemispheric Equatorial Trough and another cyclonic circulation is moving along the trough (south of 5°N) from southwest Bay of Bengal (BoB) & adjoining EIO up to southwest AS from 22nd to 31st December, 2023. All NWP models including IMD GFS suggest cyclogenesis over south AS and adjoining EIO. GPP is also indicating associated feeble potential zone of cyclogenesis over southwest BoB with westwards movement. IMD extended range forecast is indicating that mean winds are easterly/northeasterly over the south peninsula and anticyclonic circulation over central parts of India. A low to moderate probability of cyclogenesis over an area from southeast BoB & adjoining EIO during week 1 extending gradually nearly westwards over southeast and then southwest AS & adjoining EIO during week 2. Thus, most of the models are indicating the formation of cyclonic a cyclonic circulation over south BoB around 22nd December. It likely to move westward to reach over southeast AS & adjoining EIO around 27th and subsequently over southwest AS and adjoining EIO around 31st December. ECMM is also indicating 10-20% probability of cyclogenesis over southeast AS and adjoining EIO during 28th to 31st December, 2023.

Legends: 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, European Centre for Medium Range Weather Forecasting, GPP: Genesis Potential Parameter, National Centre for Environment Prediction (NCEP) GFS, ECMM: ECMWF multi model, GEFS: GFS ensemble, NEPS: NCUM ensemble prediction system, CNCUM: Coupled NCUM, CPC: Climate Prediction Centre, NWS: National Weather Service.

III. Inference:

Considering all the environmental conditions and model guidance, it is inferred that there is low probability of cyclogenesis over the south Arabian Sea during first half of Second week or towards the end of first week. Thus, there is likelihood of formation of a cyclonic circulation/low pressure area over south Bay of Bengal in the first half of first week which is likely to move westwards across southeast and southwest Arabian Sea & adjoining Equatorial Indian Ocean till the beginning of second week. There is a low probability of cyclogenesis over south Arabian Sea during first half of Second week or towards the end of first week.

IV. Verification of forecast issued during last two weeks:

Forecast issued on 7th December for week 2 (15.12.2023-21.12.2023) and forecast issued on 14th December for week 1 (15.12.2023-21.12.2023) indicated no cyclogenesis over the North Indian Ocean. No cyclogenesis occurred over the region during the week 15.12.2023-21.12.2023.

NCMRWF-IMD satellite gauge merged data plots of 24 hours accumulated realized rainfall during 14th to 20th December, 2023 are presented in Fig.2.

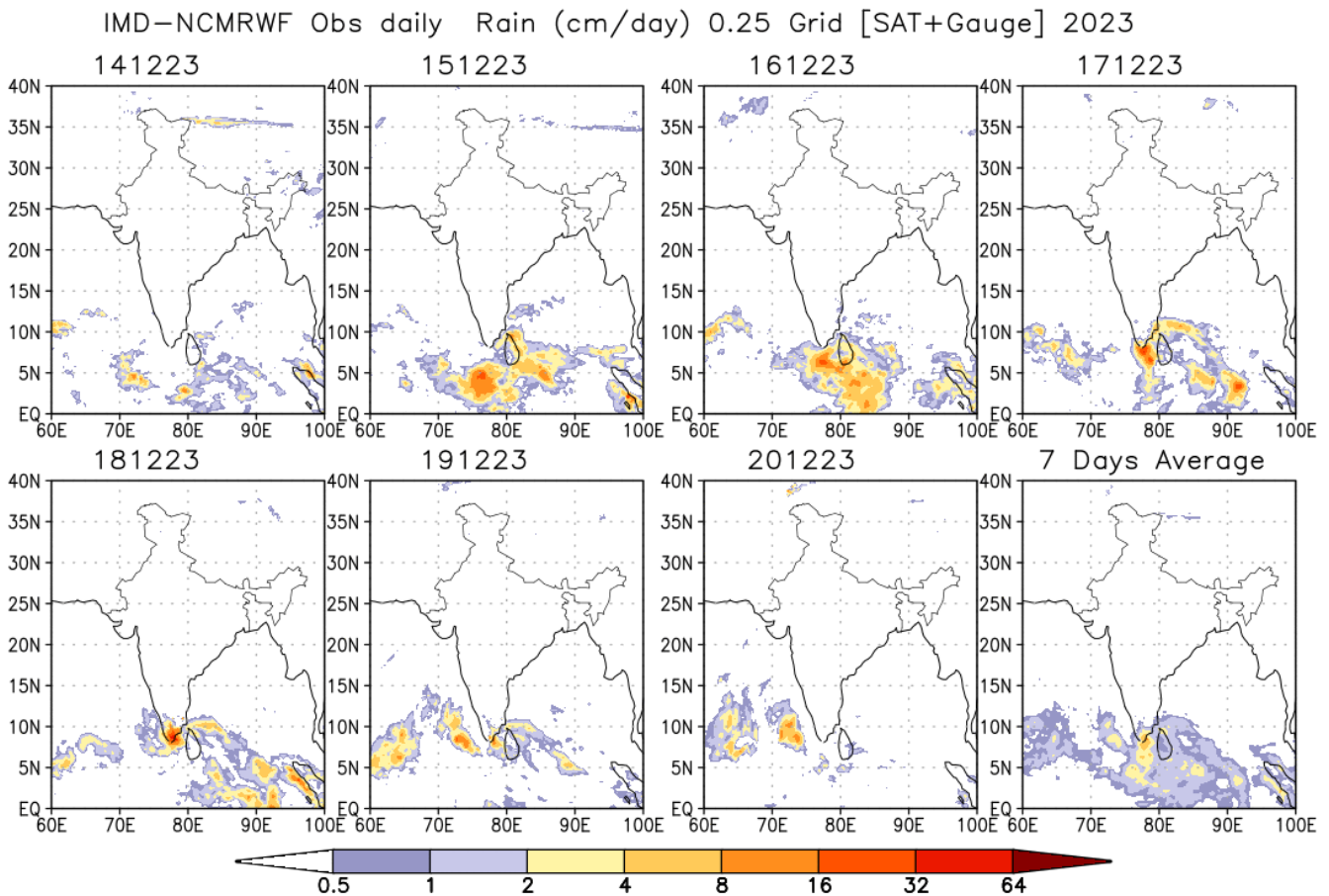


Fig.2: NCMRWF-IMD satellite gauge merged data plots of 24 hours accumulated realized rainfall during 14th to 20th December, 2023.

Next update: 28.12.2023