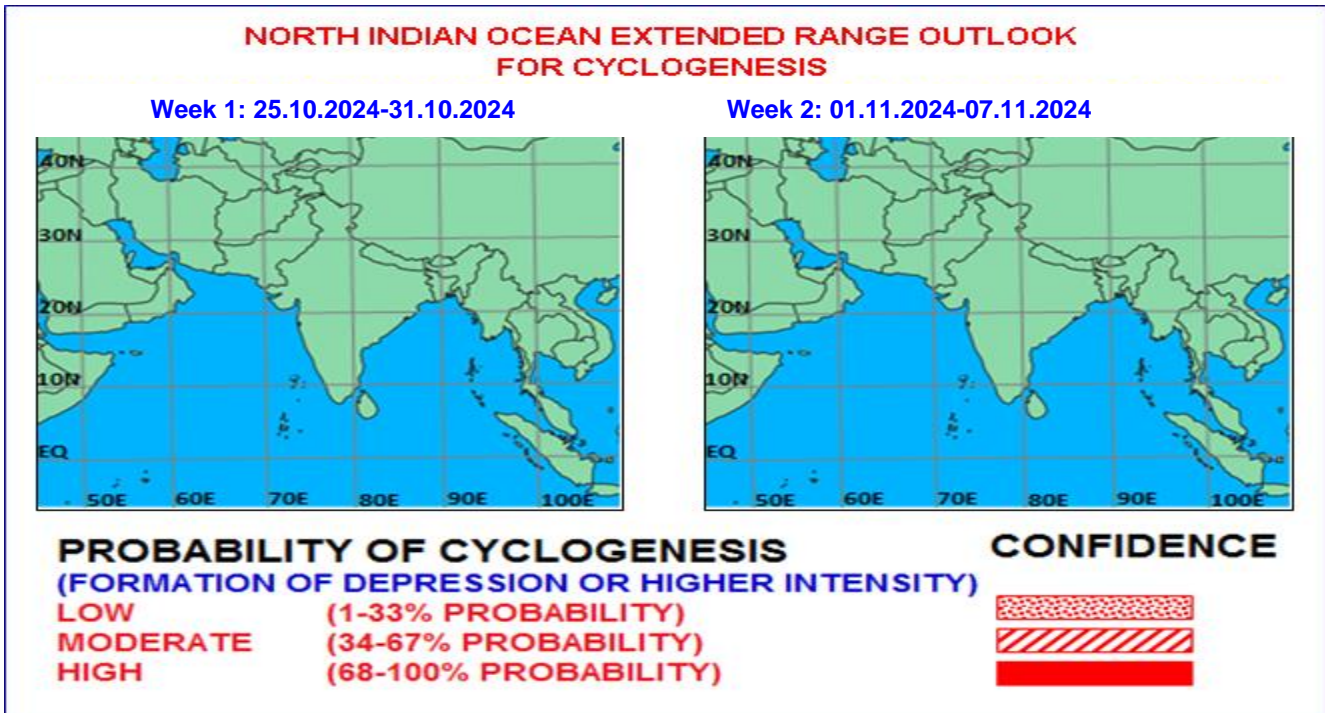




Issued on 24.10.2024



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

**I. Environmental features:**

ECMM based forecast indicates that Madden Julian Oscillation (MJO) index is currently in Phase 5 with amplitude greater than 1. It is likely to continue in the same phase during next 2 days and thereafter, it would move eastwards across phases 6, 7 & 8 during remaining parts of forecast period. Thus, MJO would support enhancement of convective activity over the North Bay of Bengal during next 2 days.

The El Niño–Southern Oscillation (ENSO) is neutral, with both sea surface temperatures (SSTs) in the central equatorial Pacific Ocean and atmospheric patterns at ENSO-neutral levels. The Indian Ocean Dipole (IOD) is likely to remain neutral, but weakly negative, during next 2 months. These broadscale features (transition towards LaNina and slightly negative IOD conditions) indicate a favourable environment for enhancement of convective activity/cyclogenesis over the BoB.

The CFS-NCICS model forecast indicates, during first half of week 1, strong westerly wind anomaly (> 9 mps) over central and adjoining south Bay of Bengal (BoB) and strong easterly wind anomaly (7-9 mps) over eastern parts of India. In addition, there are equatorial Rossby Waves (ERWs), Kelvin Waves (KW) and MJO over the central BoB during first half of week 1. During later part of week 1, weakening of above features are indicated with MJO moving eastwards and Rossby waves gradually moving westward. During week 2, westerly wind anomaly (3-5 mps) is seen over south BoB along with ERW and during later part of week 2, easterly winds are seen over the entire region. Thus, equatorial waves will contribute to enhancement of convective activity over the eastern parts of India and northwest BoB during next 2 days.

## II. Model Guidance:

Most of the models are indicating SCS 'Dana' to cross North Odisha and West Bengal coasts during 24<sup>th</sup> mid-night to 25<sup>th</sup> early morning. Models are also indicating southwestwards movement of its remnant till 30<sup>th</sup> October across central & Southern Peninsular India and its emergence into eastcentral Arabian Sea on 31<sup>st</sup> October with nearly westwards movement thereafter and no further intensification. The 850 hPa wind anomaly field by IMD-ERF model indicates cyclonic anomaly over Odisha coast during first half of week 1 (i.e. indicating the presence of DANA). It is also indicating cyclonic anomaly during week 2 over North Andaman Sea and adjoining Eastcentral BoB. ECMM is also not indicating any significant system over the region during next two weeks.

**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, ECMF: ECMWF-Ensemble System, ECMM: ECMWF-Ensemble System Bias Corrected, GPP: Genesis Potential Parameter, NCEP GFS: National Centre for Environment Prediction GFS, GEFS: GFS ensemble forecast system, NEPS: NCUM ensemble prediction system, CNCUM: Coupled NCUM, CPC: Climate Prediction Centre, NWS: National Weather Service, INCOIS: Indian National Centre for Ocean Information Services.

## III. Inference:

Considering various environmental conditions and model guidance, it is inferred that:

- (i) The severe cyclonic storm "DANA" is very likely to move north-northwestwards and cross north Odisha and West Bengal coasts between Puri and Sagar Island close to Bhitarkanika and Dhamara (Odisha) during mid-night of 24<sup>th</sup> to morning of 25<sup>th</sup> October, 2024 as a severe Cyclonic Storm with a wind speed of 100-110 kmph gusting 120 kmph.
- (ii) There is likelihood of development of a fresh cyclonic circulation over North Andaman Sea and adjoining eastcentral Bay of Bengal towards end of week 2.
- (iii) No fresh cyclogenesis is likely over both the basins the Bay of Bengal and the Arabian Sea during next two weeks.

## IV. Verification of forecast issued during last two weeks:

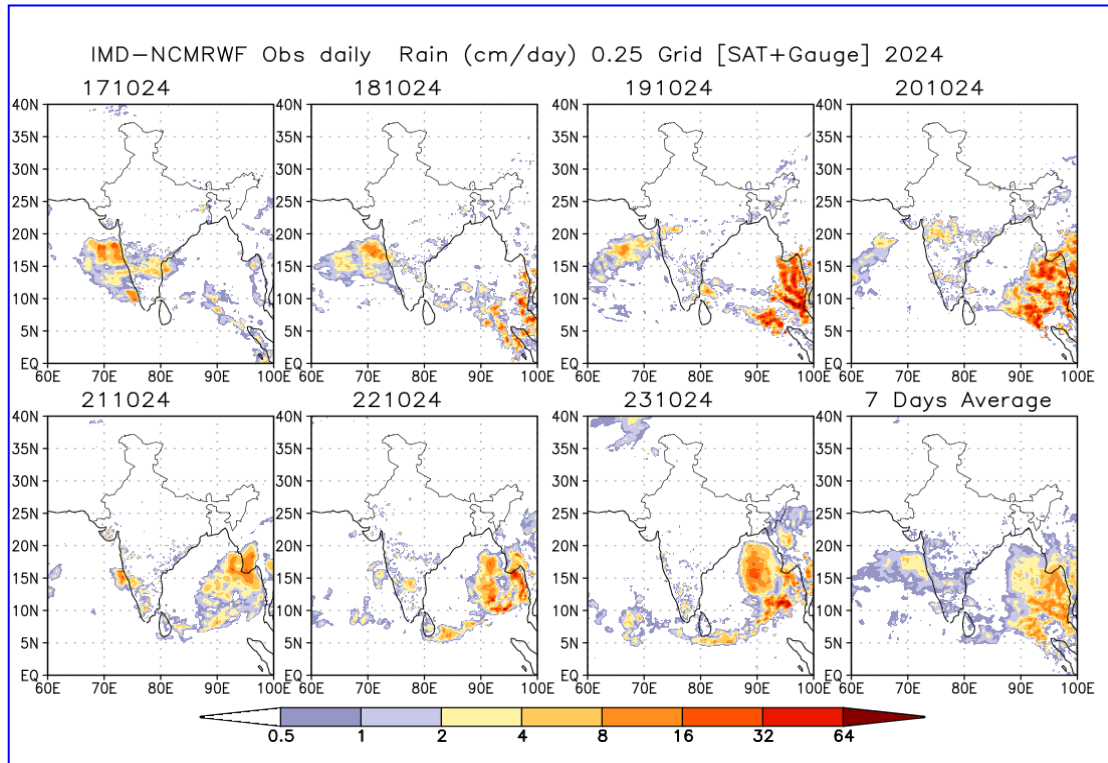
The extended range outlook issued on 10<sup>th</sup> October indicated cyclogenesis over the eastcentral Arabian Sea during week 2 (18-24 Oct) and no cyclogenesis over the Bay of Bengal. The extended range outlook issued on 17<sup>th</sup> October indicated high probability of cyclogenesis (formation of depression) over eastcentral Bay of Bengal during later part of week (18-24 Oct).

Actually,

(1) depression formed over Eastcentral Bay of Bengal on 22<sup>nd</sup> October. Thus, the cyclogenesis over Bay of Bengal could be predicted in week 1.

(2) A cyclonic circulation formed over Lakshadweep on 17<sup>th</sup> October. It became a low pressure area over eastcentral Arabian Sea on 18<sup>th</sup> October and well marked low pressure area over eastcentral & adjoining westcentral Arabian Sea on 19<sup>th</sup> October. It moved west-northwestwards and became less marked over westcentral Arabian Sea near Yemen coast on 23<sup>rd</sup> October. Thus, cyclogenesis over eastcentral Arabian Sea was over-predicted.

The observed satellite-gauge merged analysis of 24 hours accumulated rainfall from 17<sup>th</sup> October to 23<sup>rd</sup> October, 2024 is shown in Fig. 3.



**Fig. 3: NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from 17<sup>th</sup> – 23<sup>rd</sup> October, 2024.**

**Next update: 31.10.2024**