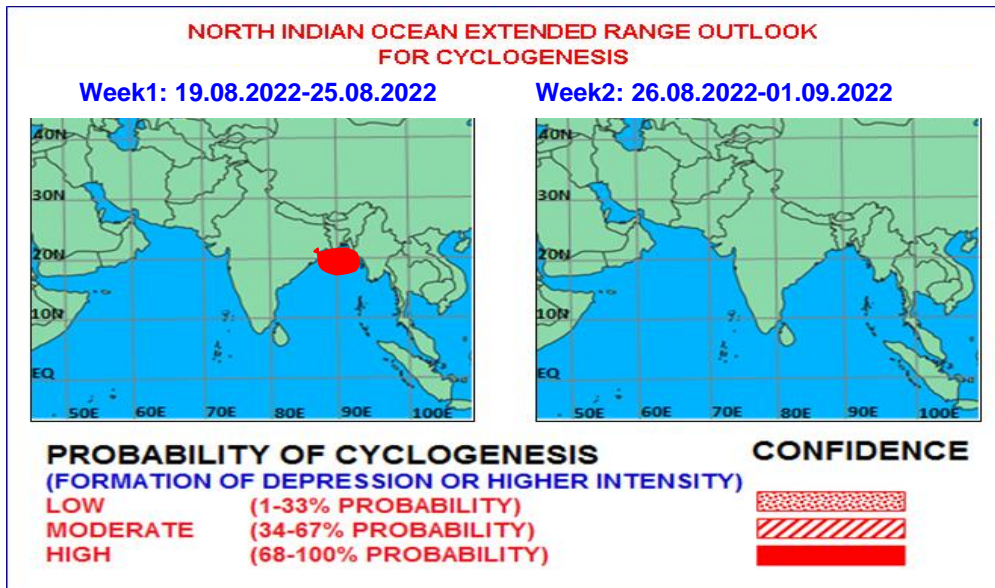




Issued on 18.08.2022



The Madden Julian Oscillation Index (MJO) currently lies in phase 1 with amplitude less than 1 during 1st half of weak 1 and more than 1 thereafter. It would continue in same phase during weak 1 with increasing amplitude. Thereafter, it would move across phases 2 & 3 during weak 2 with amplitude gradually decreasing to less than 1. Hence, MJO phase will support enhancement of convective activity over the Bay of Bengal (BoB) and Arabian Sea (AS) during later part of the weak 1 and entire weak 2.

Based on CFS forecast, during first part of week 1, westerlies (3-5 mps) are likely to prevail over north AS and intervening Indian mainland which will decrease during later part of the week 1. Westerlies (1-3 mps) would prevail over central AS. From latter part of week 1 to middle of week 2, decrease in westerlies is indicated. During this period week easterlies would prevail over south AS and south BoB. In addition, MJO over north BoB and Equatorial Rossby waves (ERW) & Kelvin waves over south BoB are also very likely during later part of week 1. The simultaneous existence of these waves over BoB indicates a favourable environment for cyclogenesis over BoB during first half of week 1. MJO is seen over South China Sea and and intervening Indian mainland during the same period.

However, during later part of week 2, easterlies (3-5 mps) are likely to prevail over entire BoB and north AS. The easterlies (3-5 mps) are predominant over entire BoB and intervening Indian mainland during week 2 over entire AS. Kelvin waves are seen over south AS during first part of week 1 which lies over south BoB in later part of the week 1. ERW is likely over parts of central AS during first part of week 2 and over western part of AS during later part of the week 2. Both waves are absent over entire BoB during week 2, hence becoming unfavorable for cyclogenesis.

Current environmental conditions are also indicating favourable environment for genesis over north BoB with low wind shear, positive vorticity, positive convergence at lower levels and positive divergence at upper levels.

The guidance from various deterministic numerical models IMD GFS, NCEP GFS, NCUM and ECMWF indicates that the existing well marked low pressure area over northeast BoB is very likely to develop into a depression during beginning of week 1. However, NCUM and IMD GFS are indicating the system to intensify further to become a deep depression during first part of the week 1. The ensemble models like ECMWF and NEPS are also supporting the likely formation of a well-marked low over north BoB around 18th with intensification into a depression on 19th over northwest BoB and its west-northwestwards movement. However, GEFS group is not indicating significant intensification of this system. IMD GPP is also indicating potential zone for cyclogenesis over northeast BoB on 18th and probable movement of the significant GPP zone northwestwards over northwest BoB till 20th August.

The guidance of the extended range forecast (ERF) system of ECMWF indicates a low probability for the formation of a low pressure area over west central BoB and adjoining northwest BoB, North Andhra Pradesh & Odisha coasts during week 2. During same period, the ERF based on NCUM is also showing the feeble low pressure area over the same region but the anomaly field of CFS based ERF does not support any system formation.

Hence, considering the model guidance and environmental features, it is inferred that:

- (i) The well marked low pressure area formed over northeast BoB on 18th August is likely to intensify into a depression during next 12 hours over north BoB and adjoining West Bengal & Bangladesh coasts.
- (ii) MJO, KW and ERW are also likely to favour genesis over the genesis and intensification of the low pressure system Bay of Bengal during first half of week 1.

Verification of forecast issued during last two weeks:

The forecast issued on 4th August for week 2 (12.08.2022 - 18.08.2022) indicated low probability of cyclogenesis over north Bay of Bengal a during week 2. The forecast issued on 11th August for week 1 (12.08.2022 - 18.08.2022) indicated intensification of WML into a depression during first half of week 1 over northeast Arabian Sea off Saurashtra and adjoining Pakistan. And another low pressure area is likely to form over north Bay of Bengal around 13th August and its likely intensification into a depression over north Bay of Bengal during middle of week 1.

Realized weather:

- The well marked low pressure area over Saurashtra and adjoining northeast Arabian Sea is likely to intensify into a Depression over northeast Arabian Sea 03 UTC of 12th August and weakened into a well marked low pressure area at 12 UTC of 13th August, 2022 over the northeast & adjoining northwest Arabian Sea.
- A Low Pressure Area has formed over North Bay of Bengal at 0830 hrs IST of 13th August, 2022. It intensified into a depression over northwest Bay of Bengal and adjoining coastal areas of West Bengal North Odisha on 14th August. moved west-northwestwards and weaken into WML over central parts of Rajasthan at 12 UTC of 16th August.

Hence, the prediction of the Cyclogenesis was correct.

The realized rainfall during 11th August, 2022 to 17th August 2022 from satellite-gauge merged data is presented in Fig.1.

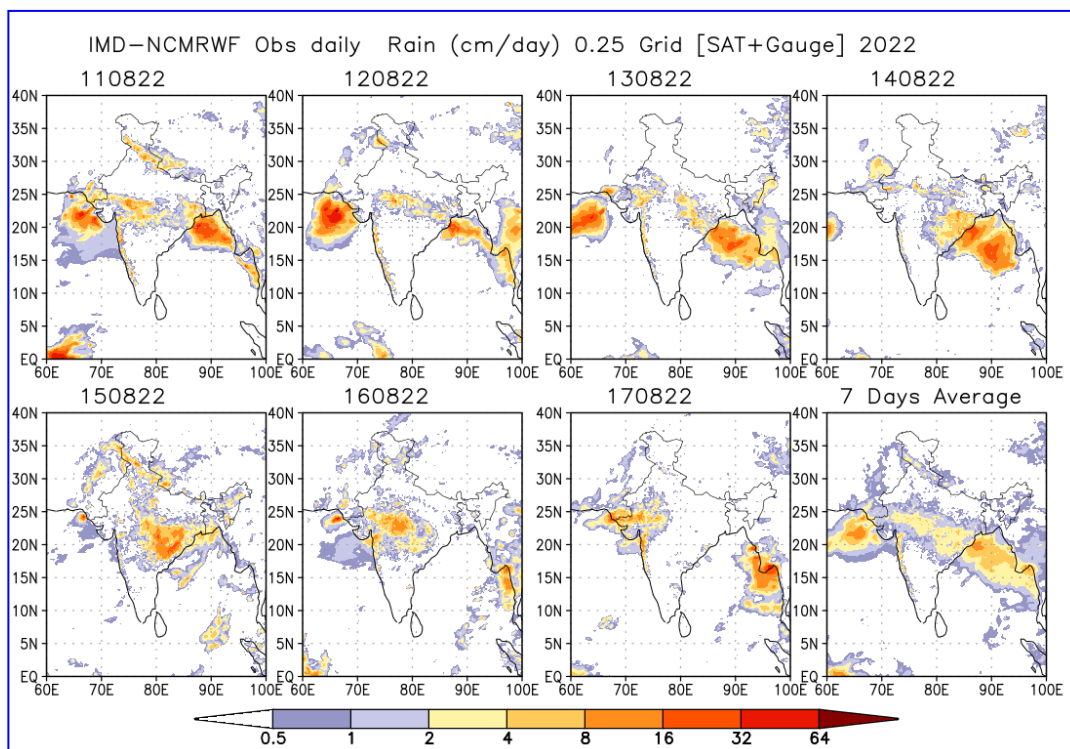


Fig.1: Rain gauge and satellite merged rainfall plots during 11th August to 17th August, 2022