

The Madden Julian Oscillation (MJO) Index currently lies in Phase 3 with amplitude more than 1 and will move across phases 4 and 5 during entire forecast period with amplitude becoming less than 1 during later half of week 2. Thus, MJO phase is conducive for enhancement of convective activity over the Bay of Bengal (BoB) during the entire forecast period.

Based on CFS forecast, strong westerlies, Equatorial Rossby Waves (ERW) and Kelvin waves are likely to prevail over south Bay of Bengal (BoB) during first half of week 1. During week 2, weak westerlies (1-3 mps) are likely to prevail over eastcentral BoB and also stronger westerlies (5-7 mps) alongwith ERW are likely to prevail over southeast Arabian Sea (AS). No other equatorial wave is likely over the North Indian Ocean (NIO) region during the entire forecast period. Considering the sea conditions, sea surface temperatures (SST) is around 29-30°C over south & adjoining eastcentral BoB and Andaman Sea. The ocean heat content is about 60-80 KJ/cm<sup>2</sup> over major parts of south & adjoining eastcentral BoB and Andaman Sea, becoming <50 KJ/cm<sup>2</sup> over northeast BoB. In addition the system is currently lying in favourable environment with low level vorticity ( $50 \times 10^{-6} \text{ S}^{-1}$ ), low level convergence ( $20 \times 10^{-5} \text{ S}^{-1}$ ), upper level divergence ( $30 \times 10^{-5} \text{ S}^{-1}$ ) and moderate vertical wind shear (15-20 kts).

The pressure and wind fields of various models like IMD GFS, ECMWF, ECMWF ensemble, IMD MME, NCUM (Global) and NCUM (Regional) are indicating likely formation of depression over southeast BoB & adjoining south Andaman Sea on 19<sup>th</sup> March with subsequent intensification into a cyclonic storm around 21<sup>st</sup> March. However, there is variation among these models w.r.t. peak intensity with IMD GFS indicating higher intensity and ECMWF & NCUM indicating intensification upto marginal cyclonic storm only. There is good consensus among these models w.r.t. movement of system towards the Bangladesh & north Myanmar coasts.

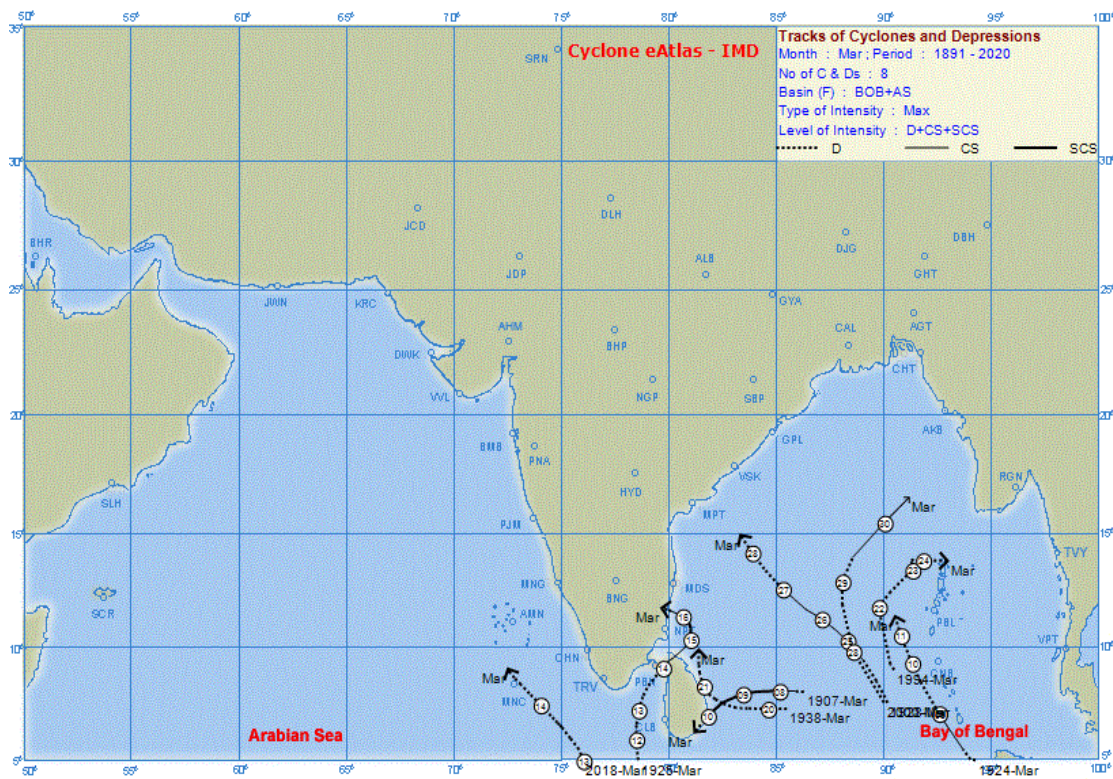
Climatologically, during the period 1891-2020, there has been 8 cyclonic disturbances over the north Indian Ocean with 6 over Bay of Bengal and 2 over Arabian Sea in the month of March. Out of these, 1 crossed TamilNadu coast as a cyclonic storm in the year 1925 and another crossed Sri Lanka coast as a severe cyclonic storm in 1907 (Fig.1).

Hence it is concluded that the low pressure area over southeast Bay of Bengal is likely to move east-northeastwards, become a well marked low pressure area and lie over southeast Bay of Bengal and adjoining south Andaman Sea on 19<sup>th</sup> March. Thereafter, it is likely to move northwards initially along & off Andaman & Nicobar Islands and intensify into a depression by 0000 UTC of 20<sup>th</sup> & into a cyclonic storm by 21<sup>st</sup> March morning. It would then continue to move

nearly north-northeastwards and reach near Bangladesh and adjoining north Myanmar coasts on 22<sup>nd</sup> March morning.

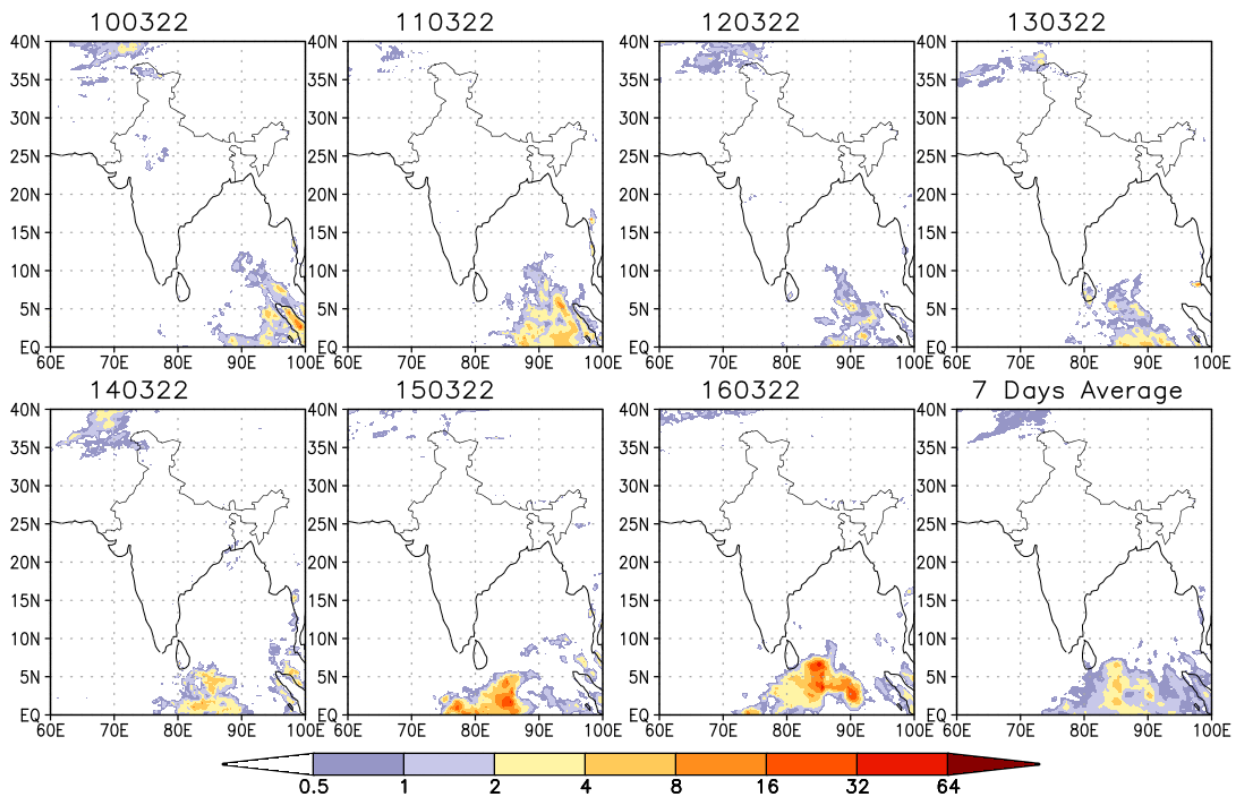
**Verification of forecast issued during last two weeks:**

The forecast issued on 3<sup>rd</sup> March for week 2 (11.03.2022-17.03.2022) indicated no cyclogenesis over the NIO during the period. The forecast issued on 10<sup>th</sup> March for week 1 (11.03.2022-17.03.2022) indicated no cyclogenesis over the region. However, it indicated development of a cyclonic circulation over the central parts of south Bay of Bengal during first half of week 1 leading to enhanced convective activity over the region. Actually, under the influence of a cyclonic circulation over southwest Bay of Bengal, a low pressure area formed over southwest BoB at 1200 UTC of 15<sup>th</sup> March. It lay over central parts of south BoB on 16<sup>th</sup> March and over southeast BoB on 16<sup>th</sup> March. Thus, occurrence of cyclonic circulation and enhanced convective activity over central parts of south BoB could be captured correctly in week 1 forecast.



**Fig. 1: Tracks of cyclonic disturbances in the month of March during 1891-2020**

IMD-NCMRWF Obs daily Rain (cm/day) 0.25 Grid [SAT+Gauge] 2022



**Fig.2: Rain gauge and satellite merged rainfall plots during 10<sup>th</sup> to 16<sup>th</sup> March, 2022**

**Next update: 24.03.2022**