

The Madden Julian Oscillation Index (MJO) currently lies in phase 8 with negligibly small amplitude. It is likely to move across phases 7 & 6 during first half of week 1. It will move across phase 5 during later part of week 1 with gradually increasing amplitude. Thereafter during week 2, it will move across phase 6 with amplitude close to 1. Hence, MJO will support enhancement of convective activity over the Bay of Bengal (BoB) during later part of week 1. Based on CFS forecast, 1-3 mps easterly winds are likely to prevail over central and north BoB & eastcentral Arabian Sea (AS), westerly winds (3-5 mps) are likely over southeast AS & adjoining southwest BoB and Equatorial Rossby waves (ERW) are likely over Equatorial Indian Ocean (EIO) & adjoining south BoB during first half of week 1. During later part of week 1, 3-5 mps westerly winds are likely to prevail over EIO & adjoining southeast AS with weak easterly winds (1-3 mps) over eastcentral AS. Over the BoB, Kelvin Waves (KW) are likely to prevail over south BoB & adjoining EIO alongwith weak easterly winds (1-3 mps) over central BoB and weak westerly winds (1-3 mps) over south BoB. During first half of week 2, increase in spatial coverage of westerly winds is likely over both AS and BoB. During later part of week 2, strengthening of westerly winds (3-5 mps) is likely over EIO & adjoining southeast BoB alongwith presence of ERW over the same region with easterly winds remaining 1-3 mps over central BoB. Thus, equatorial waves are likely to contribute marginally towards enhancement of convective activity over the BoB during later part of week 1 and also during later part of week 2.

Considering the sea conditions, sea surface temperature (SST) is around 29-30⁰C over south & adjoining eastcentral BoB and southeast AS. The ocean heat content (OHC) is >100 KJ/cm² over major parts of south BoB & adjoining EIO and 60-80 KJ/cm² over remaining parts of BoB & Andaman Sea. Over the AS, OHC is >100 KJ/cm² over southeast and adjoining eastcentral AS.

The guidance available from various deterministic and ensemble models is indicating no cyclogenesis over the region during next 2 weeks. However, NCMRWF Unified Coupled model and IMD GFS are indicating a cyclonic circulation over southeast AS/Comorin Area extending upto 500 hPa level during week 1 with westwards movement during first half of week 1 and weakening thereafter.

Climatologically, during the period 1891-2020, there have been 44 cyclonic disturbances (CDs) (maximum sustained wind speed (MSW) \geq 17 kt) over the NIO (Fig.1a). Out of these, about 26 developed during later part of the month (22nd-30th April) (Fig. 1 b).

Hence, considering various environmental features and model guidance, it is concluded that there is likelihood of formation of a cyclonic circulation over Comorin area/ southeast Arabian Sea during first half of week 1 with gradual westwards movement. There is no likelihood of cyclogenesis (formation of depression) over the north Indian Ocean during next 2 weeks.

Verification of forecast issued during last two weeks:

The forecast issued on 7th April for week 2 (15.04.2022-21.04.2022) indicated no likelihood of formation of a cyclonic circulation/low pressure area over NIO. The forecast issued on 14th April for week 1 (15.04.2022-21.04.2022) indicated that the cyclonic circulation over southeast Arabia Sea and adjoining Lakshadweep would move west-northwestwards with enhanced convective activity over the region during first half of week 1 without significant intensification. Actually, the cyclonic circulation over southeast Arabia Sea and adjoining Lakshadweep area moved west-northwestwards over central parts of Arabian Sea and became

less marked on 19th April. Hence, the movement of the cyclonic circulation and no cyclogenesis were well predicted correctly one week in advance. The realised rainfall during 14th to 20th April, 2022 from satellite-gauge merged data is presented in Fig.2.

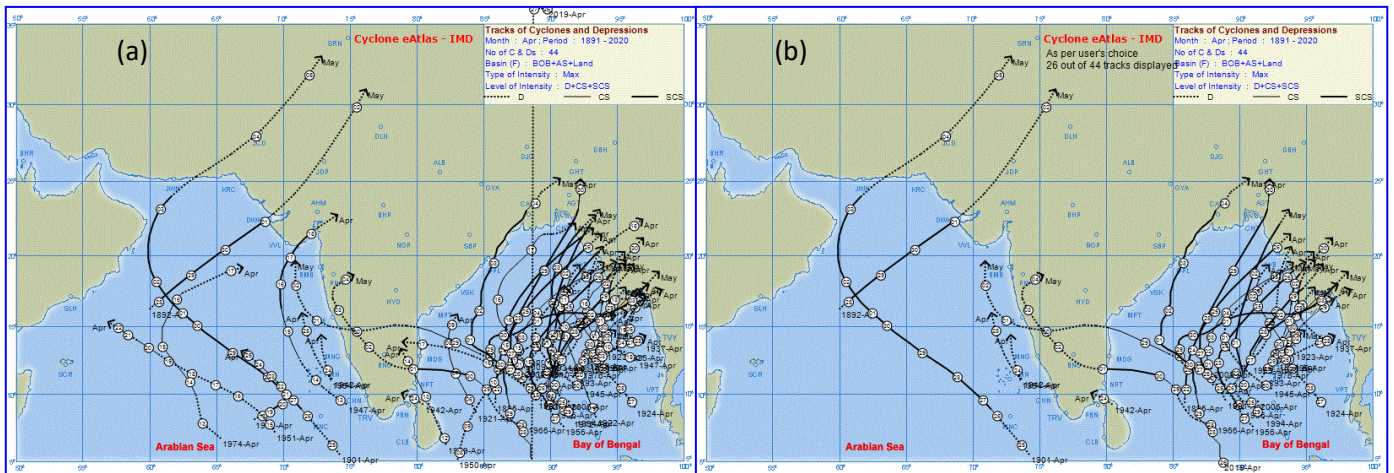


Fig. 1: Tracks of cyclonic disturbances (MSW) ≥ 17 kt in (a) whole April month and (b) later part of month (22nd-30th April) during the period 1891-2020

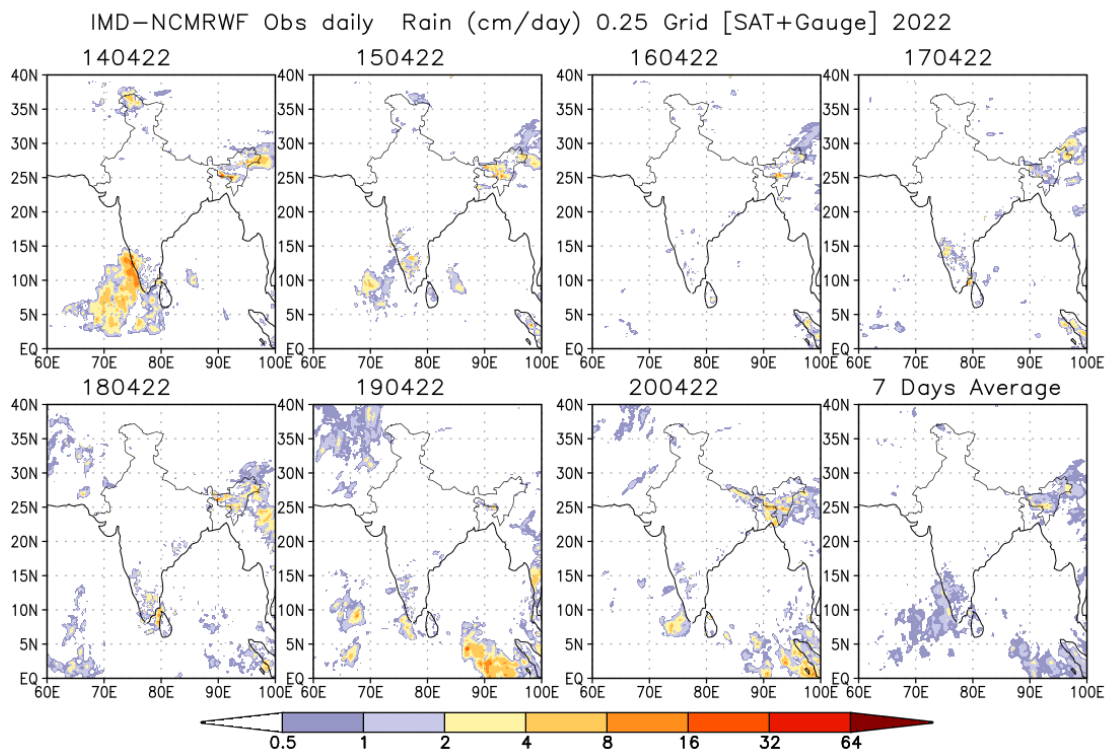


Fig.2: Rain gauge and satellite merged rainfall plots during 14th April to 20th April, 2022

Next update: 28.04.2022