

I. Environmental features:

The Madden Julian Oscillation (MJO) Index is currently in Phase 1 with amplitude less than 1. It will move to Phase 2 on 2nd Dec. Thereafter, it would move across phases 3,4,5, till middle of week 2 with amplitude remaining less than 1. Thereafter, it would move to phase 6. Thus, MJO will be favourable for enhancement of convective activity over the Bay of Bengal (BoB) during week 1 and first half of week 2.

Based on CFS forecast for equatorial waves, during beginning of week 1, westerly winds (3-5 mps) are likely over south BoB, weak easterly winds (1-3 mps) are likely over central BoB alongwith MJO. During later part of week 1, westerly winds (1-3 mps) are likely over south BoB, weak easterly winds (1-3 mps) are likely over central BoB. During first half of week 1, westerly winds (1-3 mps) over south BoB alongwith Kelvin waves are likely. Thus, equatorial waves are likely to support convective activity over the BoB during week 1 and first half of week 2.

II. Model Guidance:

- Most of the models including IMD GFS, IMD GEFS, IMD MME, NCUM (R), NEPS, ECMWF, NCEP GFS, ECMWF EPS are indicating likely emergence of cyclonic circulation into Andaman Sea around 4th Dec, formation of low pressure area over southeast & adjoining south Andaman Sea around 5th Dec. and depression over southeast BoB during end of week 1 (during 6th-7th Dec.). All the models are unanimously indicating west-northwestwards movement of the system towards Tamil Nadu-Puducherry coasts till 8th Dec. Models are also indicating slight weakening of the system before reaching Tamil Nadu coast.
- Most of the models suggest gradual strengthening of easterly winds over Andaman Sea and adjoining Bay of Bengal during middle of week 1 to first half of week 2 and it's

westward propagation thereafter, leading to active easterly waves which may support enhancement of convective activity over the BoB during this period.

- Various extended range models like IMD MME CFS V2 and NCMRWF Coupled Model (CNCUM) are also indicating cyclogenesis over southeast BoB during week 1. These models are also indicating development of fresh low pressure area over southeast BoB during middle of week 2.

III. Inference:

Considering the model guidance and various environmental features, it is inferred that

(1) A cyclonic circulation is likely to emerge into the South Andaman Sea around 4th Dec. Under its influence a low pressure area is likely to form over southeast Bay of Bengal and adjoining south Andaman Sea around 5th Dec. It is likely to move west-northwestwards and concentrate into a depression over southeast Bay of Bengal during next 48 hours. Thereafter, it is likely to continue to move west-northwestwards and reach near Tamil Nadu- Puducherry coasts on 8th December. Hence there is high probability of cyclogenesis (formation of depression) during later part of week 1.

(2) Another low pressure area is likely to develop over southeast BoB during middle of week 2.

IV. Verification of forecast issued during last two weeks:

Forecast: The forecast issued on 17th November for week 2 (25.11.2022– 01.12.2022) indicated emergence of a cyclonic circulation/low over central Andaman Sea on 23rd/24th with northwestwards initially. The forecast issued on 24th November for week 1 (25.11.2022 – 01.12.2022) indicated emergence of a cyclonic circulation (remnant from South China Sea) into North Andaman Sea around 25th with west-northwestwards movement followed by nearly northwards movement thereafter and no significant intensification.

Realised: Actually a cyclonic circulation emerged over north & adjoining south Andaman Sea on 25th. It moved nearly northwestwards and became less marked over central parts of BoB on 30th Nov. Hence the genesis, movement and intensity of the cyclonic circulation was well predicted two weeks in advance.

The realized rainfall during 24th Nov to 01st Dec, 2022 from satellite-gauge merged data is presented in Fig.1

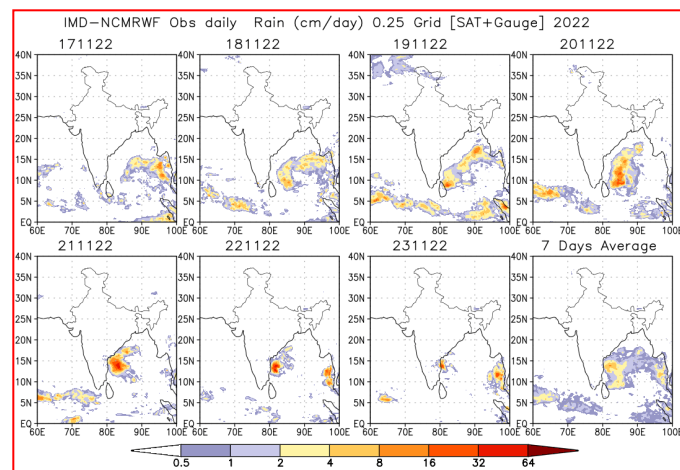


Fig.1: Rain gauge and satellite merged rainfall plots during 24th Nov to 01st Dec, 2022