

## I. Environmental features:

The Madden Julian Oscillation (MJO) Index is currently in Phase 2 with amplitude less than 1. It will continue in phase 2 till middle of week 1 with gradually increasing amplitude. Thereafter, it would move across phases 3 and 4 till middle of week 2 with amplitude remaining close to 1. Thereafter, it would move to phase 5 with decreasing trend in amplitude during later half of week 2. Thus, MJO will be favourable for enhancement of convective activity over the north Indian Ocean (NIO) during the forecast period.

Based on CFS forecast for equatorial waves, during beginning of week 1, westerly winds (5-7 mps) alongwith equatorial Rossby Waves (ERW) are likely over south Arabian Sea and easterly winds (1-3 mps) over central Arabian Sea. Westerly winds (1-3 mps) over south BoB & areas of south Andaman Sea & adjoining Equatorial Indian Ocean (EIO) and easterly winds (1-3 mps) are likely over eastcentral BoB are likely during first half of week 1. During later part of week 1, weak easterly winds (1-3 mps) are likely over central BoB and weak westerly winds (1-3 mps) are likely over central & north BoB. During week 2, weak easterly winds (1-3 mps) are likely over north & adjoining central BoB and westerly wind (3-5 mps) over south Andaman Sea and south BoB are likely to prevail. Similar conditions will continue over the BoB during first half of week 2. During later part of week 2, easterly winds (1-3 mps) would prevail over central Arabian Sea. Thus equatorial waves are likely to support convective activity over central & south Arabian Sea during first half of week 1 and over south Bay of Bengal during entire week 1.

## II. Model Guidance:

- Most of the models indicate that the existing deep depression over the eastcentral Arabian Sea would maintain it's intensity till 16<sup>th</sup> morning and weaken gradually

thereafter. Models are also suggesting the system to move nearly westwards till 17<sup>th</sup> morning and recurve southwestwards thereafter.

- Most of the models are indicating existing low pressure area over southeast Bay of Bengal to move nearly westwards with slight intensification till 17<sup>th</sup> morning and weaken thereafter over the sea.
- Some of the deterministic models are indicating likely development of a cyclonic circulation over south Andaman Sea and adjoining East Equatorial Indian Ocean during beginning of week 2 with westwards movement and no significant intensification.
- NCMRWF Coupled Extended Range Model (CNCUM) and IMD coupled extended range forecast model are also indicating development of fresh cyclonic circulation over South Andaman Sea during middle of week 2.
- Most of the models are indicating enhanced easterly winds over the central and adjoining south Bay of Bengal during week 1 and week 2 but restricted to lower latitudes (South of 15°N).

### III. Inference:

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

- ❖ Deep depression over eastcentral Arabian Sea is very likely to move nearly westwards and maintain the intensity of deep depression till early hours of tomorrow, the 16<sup>th</sup> December and weaken gradually thereafter.
- ❖ The Low Pressure Area over Southeast Bay of Bengal & adjoining East Equatorial Indian Ocean is likely to move gradually westwards and intensify marginally into a well marked low pressure area over the same region during next 12 hours. Continuing to move westwards, it would maintain its intensity over South Bay of Bengal till morning of 17<sup>th</sup> December 2022 and weaken thereafter.
- ❖ Another cyclonic circulation is likely to develop over the south Andaman Sea during first half of week 2 with west-northwestwards movement and no significant intensification.

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

**Forecast System:** The forecast issued on 1<sup>st</sup> December for week 2 (09.12.2022–15.12.2022) indicated development of a low pressure area over southeast BoB during middle of week.

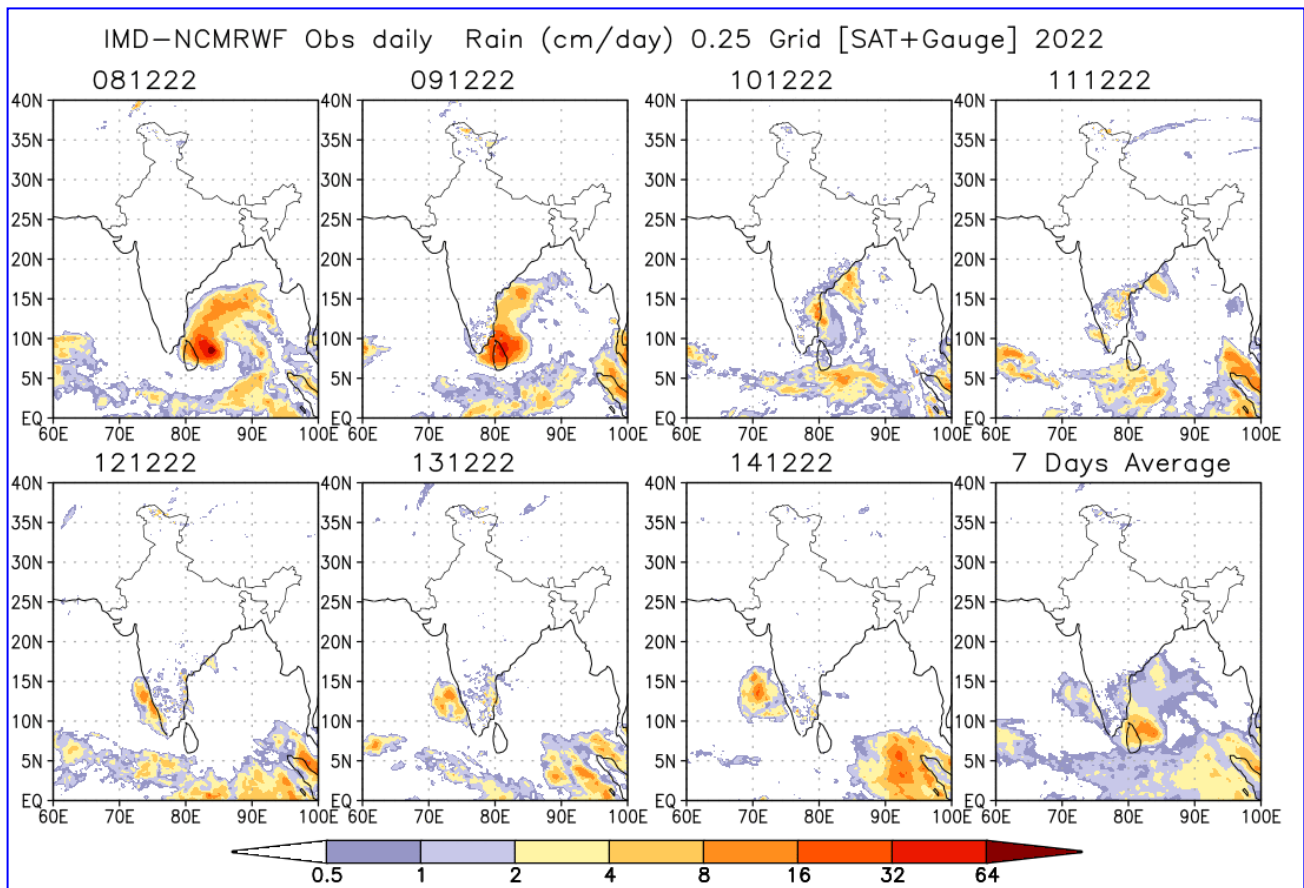
The forecast issued on 8<sup>th</sup> December for week 1 (09.12.2022– 15.12.2022) indicated (a) CS “MAN-DOUS” is likely to cross north Tamilnadu, Puducherry and adjoining south Andhra Pradesh coasts between Puducherry and Sriharikota, around Mahabalipuram with a maximum sustained wind speed of 65-75 kmph gusting to 85 kmph around midnight of 09<sup>th</sup> December and (2) development of a low pressure area over southeast BoB during end of week.

**Realised System:** The movement, intensity and crossing of Mandous was correctly predicted with sufficient lead period, as it crossed north Tamilnadu, Puducherry and adjoining south Andhra Pradesh coasts between Puducherry and Sriharikota, around Mahabalipuram with a maximum sustained wind speed of 65-75 kmph gusting to 85 kmph during 2330 hrs IST of 09<sup>th</sup> December and 0230 hrs IST of 10<sup>th</sup> December.

Also, as predicted two weeks in advance, a cyclonic circulation formed over south Andaman Sea on 13<sup>th</sup> December. It lay as a low pressure area over Equatorial Indian Ocean and adjoining areas of South Andaman Sea & southeast BoB at 1430 hrs IST of 14<sup>th</sup> December.

Hence the development of cyclonic circulation, low pressure area and depression was correctly predicted two weeks in advance both on spatial and temporal scales.

The realized rainfall during 8<sup>th</sup> Dec. – 15<sup>th</sup> Dec., 2022 from satellite-gauge merged data is presented in Fig.1



**Fig.1: Rain gauge and satellite merged rainfall plots during 8<sup>th</sup> – 15<sup>th</sup> Dec, 2022**

**Next update: 22.12.2022**