

## I. Environmental features:

The Madden Julian Oscillation (MJO) Index is currently in Phase 5 with amplitude more than 1. It will continue in same phase till middle of week 1. Thereafter, it would move across phases 6 and 7 during remaining part of the forecast period. Thus, MJO will be favourable for enhancement of convective activity over the north Indian Ocean (NIO) during first half of week1.

Based on CFS forecast for equatorial waves, strong easterly winds (5-7 mps) over south & adjoining central BoB, strong westerly winds (5-7 mps) over south BoB & adjoining east Equatorial Indian Ocean, low frequency background waves over south BoB are likely during first half of week 1. Thereafter, gradual weakening of westerly winds over south BoB & adjoining east Equatorial Indian Ocean and easterly winds over central BoB is predicted. During week 2, weak easterly winds are likely over central BoB and South Andaman Sea. Thus, equatorial waves are likely to support enhancement of convective activity over the BoB during next 3-4 days.

## II. Model Guidance:

- Most of the models (9GFS group, NCUM group, ECMWF, IMD MME) indicate that the existing depression over southwest Bay of Bengal would move north-northwestwards till 23<sup>rd</sup>/0000 UTC. Thereafter, it would gradually recurve west-southwestwards towards Comorin Area across Sri Lanka during subsequent 48 hours. Thereafter, it is predicted to move west-northwestwards towards southeast Arabian Sea.
- NCMRWF Coupled Extended Range Model (CNCUM) is also indicating cyclonic circulation over southwest Bay of Bengal during week 1. IMD MME CFS V2 indicate 60-70 % cyclogenesis over southwest Bay of Bengal off South Tamil nadu & Sri Lanka

coasts. It is also indicating 10-20 % probability of cyclogenesis over Comorin and adjoining Lakshadweep areas during week 1.

### III. Inference:

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

The existing depression over southwest Bay of Bengal is likely to move north-northwestwards till 23<sup>rd</sup>/0000 UTC and recurve west-southwest thereafter, reaching Comorin around 26<sup>th</sup>/0000 UTC. Thereafter, it is likely to move west-northwestwards over southeast Arabian Sea

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

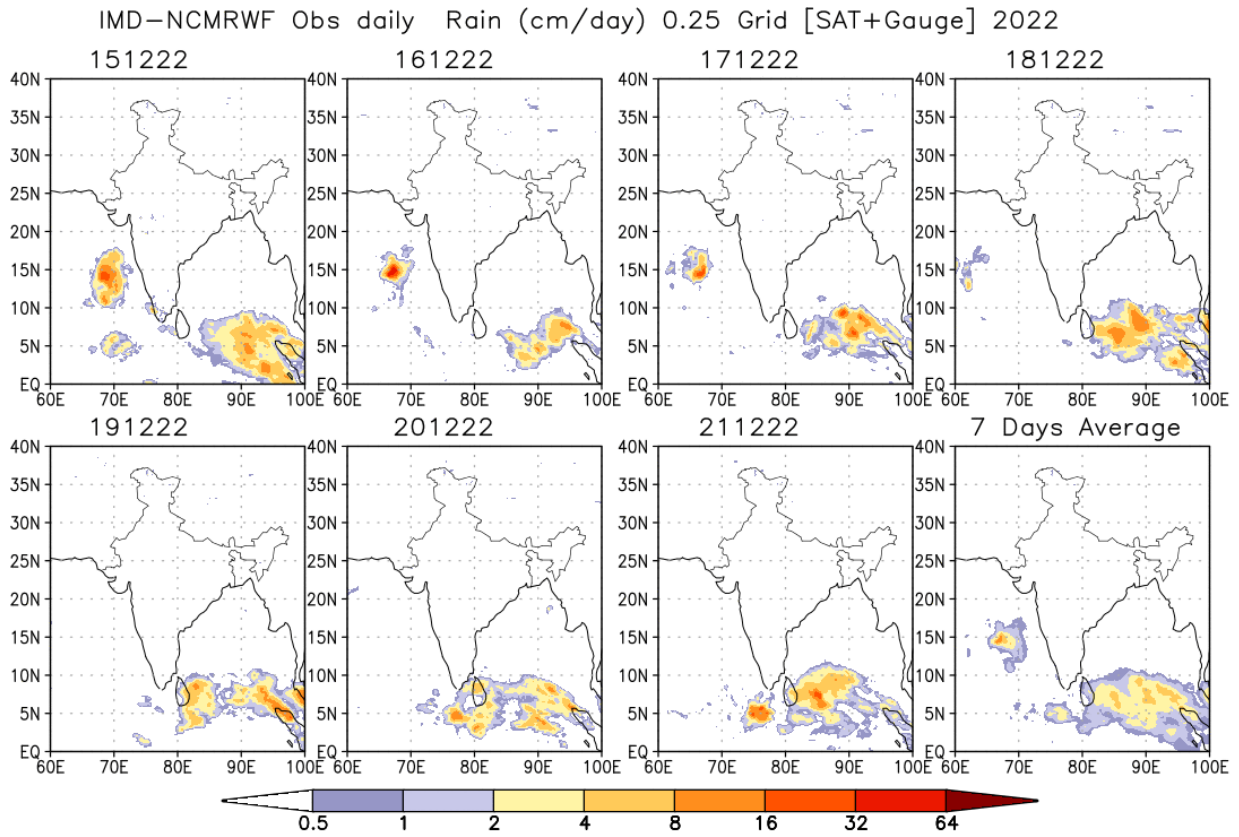
**Forecast System:** The forecast issued on 8<sup>th</sup> December for week 2 (16.12.2022– 22.12.2022) indicated likely to development of a low pressure area over southeast BoB during middle of week.

The forecast issued on 15<sup>th</sup> December for week 1 (16.12.2022– 22.12.2022) indicated (a) Deep Depression over eastcentral Arabian Sea to move nearly westwards and maintain the intensity of deep depression till early hours of 16<sup>th</sup> December and weaken gradually thereafter and (b) the low pressure area over Southeast Bay of Bengal & adjoining East Equatorial Indian Ocean 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.

**Realised System:** (a) the deep depression over eastcentral Arabian Sea moved nearly westwards and weakened into a depression in the midnight (1800 UTC) of 16<sup>th</sup>, into a well marked low pressure area in the evening (1200 UTC) of 17<sup>th</sup> and less marked in the morning (0000 UTC) of 20<sup>th</sup> December. Thus movement, intensification and weakening of deep depression over eastcentral Arabian Sea was correctly captured in the outlook.

(b) A cyclonic circulation emerged into south Andaman Sea and adjoining Strait of Malacca & Sumatra on 13<sup>th</sup> Dec. Under it's influence, a low pressure area formed over southeast Bay of Bengal & adjoining areas of east Equatorial Indian Ocean and south Andaman Sea on 14<sup>th</sup> Dec. It moved gradually westwards and lay as a well marked low pressure over southwest BoB on 21<sup>st</sup> Dec. It further concentrated into a depression over southwest & adjoining southeast BoB on 22<sup>nd</sup> Dec. (0300 UTC). Hence the development of cyclonic circulation over Andaman Sea and low pressure area over southeast bay of Bengal could be picked up correctly two weeks in advance both on spatial and temporal scales. However, development of depression was missed in last week's extended range outlook.

The realized rainfall during 15<sup>th</sup> Dec. – 21<sup>st</sup> Dec., 2022 from satellite-gauge merged data is presented in Fig.1



**Fig.1: Rain gauge and satellite merged rainfall plots during 15<sup>th</sup> – 21<sup>st</sup> Dec, 2022**

**Next update: 29.12.2022**