India Meteorological Department
Ministry of Earth Sciences
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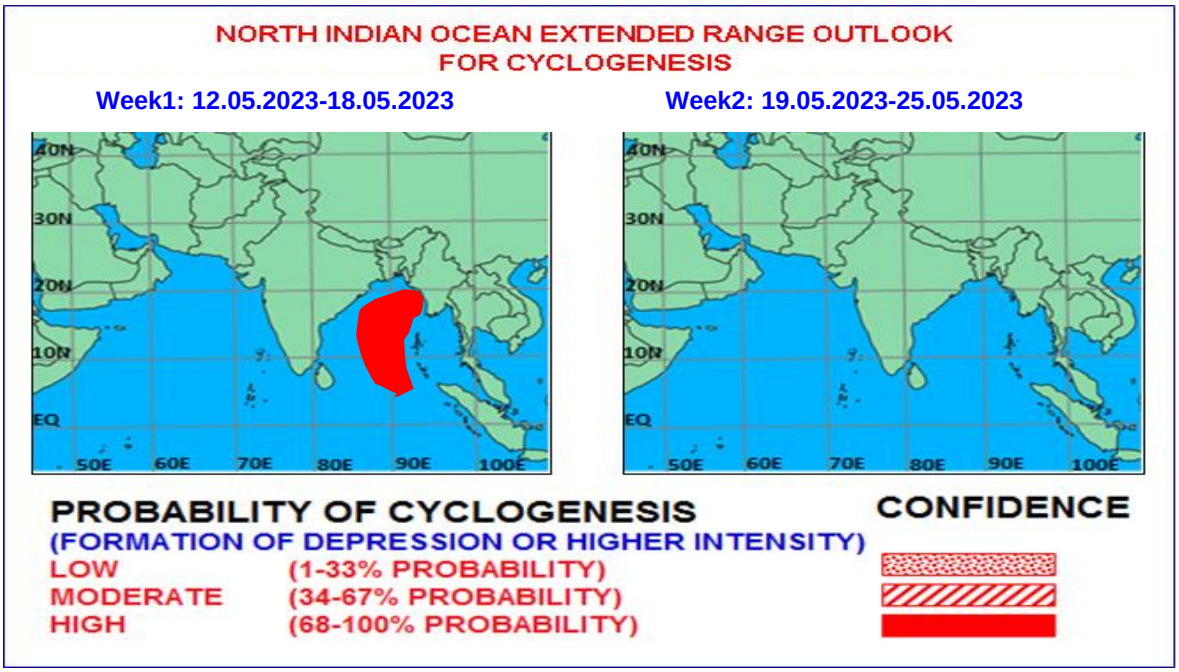

Fig.1: Graphical Cyclogenesis over north Indian Ocean during next two weeks

I. Environmental features:

The Madden Julian Oscillation (MJO) Index is currently in Phase 6 with amplitude more than 1. It would continue in same phase during the entire forecast period. Hence, MJO is not likely to support cyclogenesis over the North Indian Ocean during entire forecast period. During week 1, westerly winds (1-3 mps) over South Arabian Sea (AS) and South Bay of Bengal (BoB) are likely to prevail with easterly winds (1-3 mps) in the northern parts of BoB and AS. During week 2, strengthening of westerly winds is indicated over the southern parts of AS and BoB with presence of Rossby waves over the BoB. Thus, enhanced cross equatorial flow is indicated during next 2 weeks.

II. Model Guidance:

Various models including IMD GFS, NCUM, ECMWF, ECMM, NEPS and GEFS are indicating that the Severe Cyclonic Storm “MOCHA” pronounced as “MOKHA” is likely to move nearly northwards during next 12 hours, intensify into a very severe cyclonic storm and gradually recurve north-northeastwards around 0000 UTC of 12th May with further intensification. It is likely to cross Southeast Bangladesh and North Myanmar coasts near Sittwe (Myanmar) around noon of 14th May.

IMD’s Coupled Forecast System Version 2 (IMD CFS V2) is indicating a probable zone for cyclogenesis over westcentral AS during week 1 which is seen over westcentral & northwest AS during week 2, but with lower probability. This is also supported by IMD GFS model for development of cyclogenesis over westcentral AS and adjoining Gulf of Aden. It could be due to enhanced cross equatorial flow. A low/cyclonic circulation may develop over the region.

(Legends: IMD GFS: India Meteorological Department Global Forecast System, NCUM: National Centre for Medium Range Weather Forecasting Centre Unified Model, European Centre for Medium Range Weather Forecasting, GPP: Genesis Potential Parameter, National Centre for Environment Prediction GFS, ECMM: ECMWF multi model, GEFS: GFS ensemble, NEPS: NCUM ensemble prediction system, CNCUM: Coupled NCUM, CPC: Climate Prediction Center, NWS: National Weather Service)

III. Climatological Guidance

Fig. 2 (a) shows that during 1965-2020, about 214 cyclonic storms developed over the Bay of Bengal. May is the peak month wrt cyclonic activity during pre-monsoon season (March-May). Fig, 2(b) shows the frequency of landfalling cyclones over various coastal states during 1965-2020. It shows that during pre-monsoon season, the frequency of landfalling cyclones is highest over Bangladesh followed by Myanmar, West Bengal, Odisha, Andhra Pradesh and Tamil Nadu. About 14 cyclonic storms developed over the Arabian Sea in the month of May during the period.

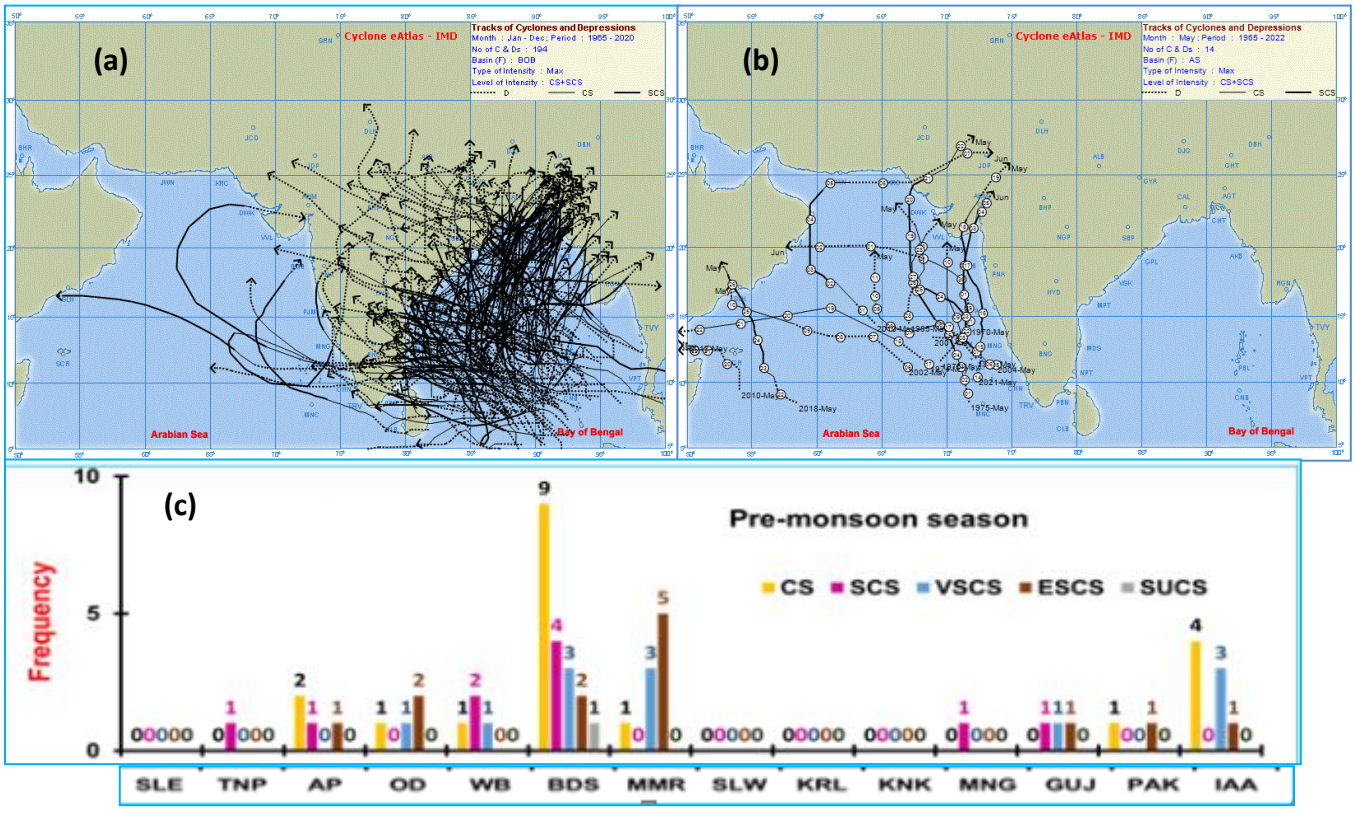

Fig.2: Tracks of cyclonic storms over (a) Bay of Bengal & (b) Arabian Sea during 1961-2022 and (c) Frequency of landfalling cyclones over various coastal states during 1965-2020

SLE: Sri Lanka East, TNP: Tamilnadu and Puducherry, AP: Andhra Pradesh, OD: Odisha, WB: West Bengal, BDS: Bangladesh, MMR: Myanmar, SLW: Sri Lanka West, KRL: Kerala, KNK: Karnataka, MNG: Maharashtra and Goa, GUJ: Gujarat, PAK: Pakistan, IAA: Iran, Arabia and Africa

IV. Inference:

Considering the environmental features, climatological and model guidance,

(i) there is high probability of north-northeastwards movement and further intensification of Severe Cyclonic Storm "MOCHA" during first half of week 1. (Fig.1).

(ii) a cyclonic circulation may develop towards the end of week 1 or beginning of week 2 over the westcentral Arabian Sea and adjoining Gulf of Aden due to enhanced cross equatorial flow.

V. Advisory for Mariners in Bay of Bengal region, Andaman Sea and Andaman & Nicobar Islands

- Fishermen, ships, boats and trawlers are advised not to venture into southeast Bay of Bengal and adjoining Andaman Sea till 12th May, central Bay of Bengal and north Andaman Sea till 14th May, and into northeast Bay of Bengal during 12th-14th May.
- Those over central Bay of Bengal and north Andaman Sea are advised to return to coast at the earliest.
- Regulation of tourism and offshore activities and shipping near Andaman & Nicobar Islands till 13th May.
- Regulation of shipping activity over the sea areas of southeast Bay of Bengal and Andaman Sea till 12th May, eastcentral Bay of Bengal till 14th May, and westcentral Bay of Bengal till 13th May.
- Regulation of shipping activity over the sea areas of northeast Bay of Bengal during 12th-14th May.

VI. Verification of forecast issued during last two weeks:

The forecast issued on 27th April, 2023 for week 2 (05.05.2023– 11.05.2023) indicated low probability of cyclogenesis over the Bay of Bengal during the week 2. The forecast issued on 4th May, 2023 for week 1 (05.05.2023– 11.05.2023) indicated high probability of cyclogenesis over the Bay of Bengal. Actually depression formed over southeast BoB on 9th May. Hence cyclogenesis was correctly predicted in two week's forecast (about 12 days in advance)

The realized rainfall during 4th May, 2023 – 10th May, 2023 from satellite-gauge merged data is presented in Fig.3

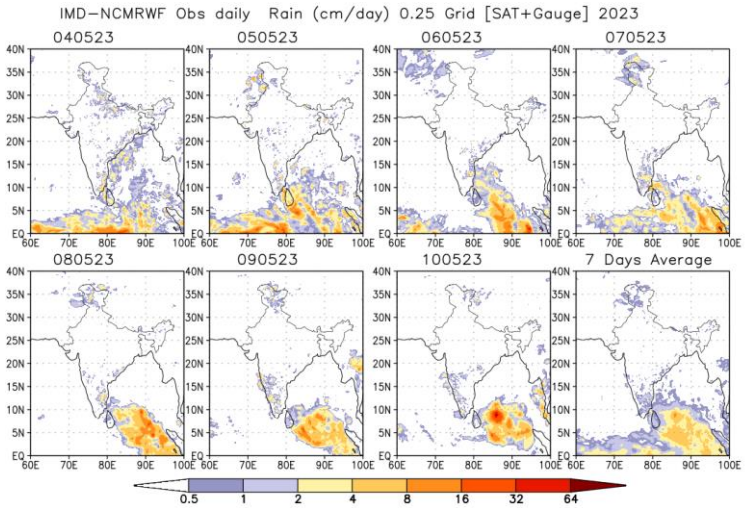

Fig.3: Rain gauge and satellite merged rainfall plots during 4th May– 10th May, 2023

Next update: 18.05.2023