India Meteorological Department
Ministry of Earth Sciences
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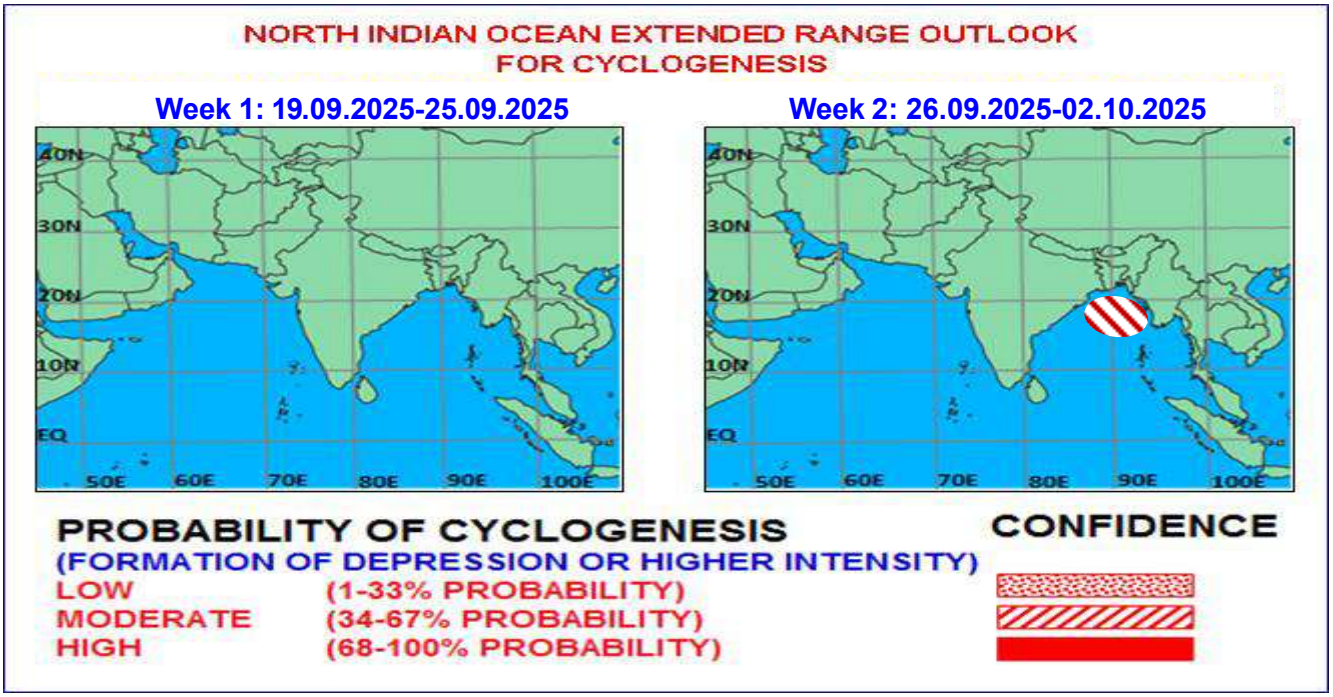

Fig. 1: Graphical Cyclogenesis over the north Indian Ocean during the next two weeks

I. **Environmental features:**

The guidance from various numerical models indicates that Madden Julian Oscillation (MJO) is currently in phase 1 with amplitude less than 1, indicating a very weak MJO. It is likely to move in phases 2, 3 & 4 with amplitude remaining less than 1 during week 1. Thereafter, it is likely to loop back into phase 3 during first half and subsequently into phase 2 during later half of the second week with increasing amplitude to more than 1. Thus, MJO would contribute to cyclogenesis and enhancement of convective activity over the North Indian Ocean (NIO) region including Bay of Bengal (BoB) and Arabian Sea (AS) from later half of week 1 onwards.

The guidance from the NCICS CFS model indicates, prevalence of MJO over AS & BoB region. The model is indicating westerly wind anomaly (5-7mps) over south Bay of Bengal (BoB) and south BoB & south Andaman Sea along with easterly winds anomaly (1-3mps) over central BoB during week 1. Additionally, the model is also indicating an Equatorial Rossby wave (ERW) passing across Northern parts of India. The model is indicating westerly winds anomaly (1-3mps) over central Arabian Sea & easterly winds anomaly (3-5mps) over south AS. Thus, Equatorial Waves may contribute towards enhancement of convective activities over BoB only during week 1. During week 2, the model is further indicating amplification of westerly wind anomaly (>9mps) over south BoB along with prevalence of ERW, MJO & Low frequency wave (LW) over the south BoB and adjoining equatorial Indian Ocean. Easterly wind anomaly (5-7mps) is also seen over north BoB. Thus, Equatorial Waves are likely to support cyclogenesis over BoB during week 2.

As per Bureau of Meteorology forecast, -ve Indian Ocean Dipole conditions are prevailing, which are likely to increase convective activity and cyclogenesis over the Bay of Bengal.

II. **Model guidance:**

ECMWF Model is indicating development of a cyclonic circulation/ Low pressure area over westcentral and adjoining northwest BoB off north Andhra Pradesh-Odisha coasts around 21st September with nearly northwestward movement towards Gangetic West Bengal. The model is also indicating a fresh low-pressure area over northeast BoB around 26th September with west-northwestwards movement across north BoB and central India upto Saurashtra coasts.

ECMWF AI Model (ECAIFS) is indicating an upper air cyclonic circulation/low-pressure area over North Andaman Sea off Myanmar coast around 20th September. It is indicated to move west-northwestwards across north BoB and reach over northwest BoB around 23rd and likely to move west-northwestwards across east-central/central India upto south Gujarat coasts till 28th September. A fresh low-pressure area is indicated over northwest BoB on 1st October. It is indicated to persist over the same region till 3rd October with no significant intensification.

NCEP GFS model is indicating a low-pressure area over eastcentral BoB around 24th September with intensification upto depression over north BoB around 25th September. Model is indicating further intensification of system into a deep depression/Cyclonic storm and crossing over north Andhra Pradesh coast near Vishakhapatnam around evening of 26th. The model is also indicating a fresh low-pressure area over north Andaman Sea off Myanmar coast (Irrawaddy Delta) on 29th, which is likely to move west-northwestwards and intensify into a depression around 1st October over north BoB.

BharatFS Model is indicating an upper air cyclonic circulation emerging over north Andaman Sea on 20th September. It is indicated to move west-northwestwards across north BoB and reach northwest BoB and under its influence a low-pressure area is likely to form over the same region around 23rd September. Model is also indicating a fresh low-pressure area over northeast BoB on 26th September. It is indicated to intensify into a depression over northwest BoB and cross north Odisha coast around 27th September.

IMD GFS is also indicating similar features like BharatFS model for the emegence of an upper air cyclonic circulation over North Andaman Sea around 20th September. It is likely to move west-northwestwards across north BoB during next 2 days and under its influence a low-pressure area is likely to form over the same region around 23rd September. Model is also indicating emergence of another cyclonic circulation over north Andaman Sea off Myanmar coast around 25th. It is likely to become a low-pressure area over eastcentral BoB on 26th September with west-northwestwards movement & further intensification into a Deep Depression/Cyclonic storm on 27th September. Thereafter, it is likely to move west- northwestwards across central India till 28th September as a Depression.

NCUM is indicating a cyclonic circulation over northwest BoB on 20th September with intensification into low pressure area on 23rd September over the same region.

During week 1, the 850hPa mean wind field of IMD ERF model is indicating westerly winds over the entire NIO region. Model is also indicating a North-South trough extending from south Bihar to south Andhra Pradesh. This may lead to decrease in rainfall activity over Gangetic plains of India, Odisha & Andhra Pradesh during week1. During week 2, the mean wind field is indicating a cyclonic circulation over central parts of BoB. The 850hPa mean anomaly field is indicating cyclonic circulation over south Peninsula and another over North Andaman Sea during week1. During week 2, it is indicating an East-west trough over central parts of BoB. Above average Rainfall activity is indicating over central & north BoB and entire central India & Indo Gangetic plains during week 2. The model is also indicating low probability (10-20%) of cyclogenesis likely in land regions over East India and East Uttar Pradesh during week 1 and moderate probability (60-70%) of cyclogenesis over North and Central BoB during week 2.

The NCMRWF ERFs for mean and anomaly wind field also indicate cyclonic circulation at 850 hPa over Northwest BoB during week 1, which is likely to enter into central India during week 2.

ECMWF Ensemble model indicated low probability (10-20 %) of cyclogenesis over north BoB during the first week and low to moderate probability (20 to 30%) over northwest BoB during first half of week 2. ECMWF Sub-seasonal forecast indicated low to moderate probability (20 to 30%) over northwest BoB during 22 to 29 September, 2025.

III. Inference:

Considering various large-scale environmental features and model guidance, it is inferred that:

(1) Currently, an upper air cyclonic circulation lies over North Andaman Sea and adjoining Myanmar coast. It is likely to move slowly north-northwestwards along Myanmar coast and reach eastcentral & adjoining northeast Bay of Bengal off Myanmar coast by 21st September. Thereafter, it is likely to move northwestwards across north Bay of Bengal and under it's influence, a low pressure area is likely to form over north Bay of Bengal around 23rd September.

(2) Another low-pressure area is likely to form over northeast Bay of Bengal during 1st half of week 2

(around 26th September). There is a moderate probability of its further intensification into a depression over northwest Bay of Bengal around 27th September. It is likely to move west-northwestwards, cross Odisha coast on same day and move across central India during subsequent 2 days.

(3) Another remnant cyclonic circulation from South China Sea is likely to emerge into North Bay of Bengal during 2nd half of week 2 (around 30th September).

Impact expected:

(1) Due to the upper air cyclonic circulation/ low pressure area over north Bay of Bengal during 21st-23rd September, there is likelihood of increase in rainfall activity over northeast India, Bangladesh and adjoining North Myanmar during week 1 leading to landslides/mudslides/ landslips etc. over hilly terrains of the region.

(2) In association with likely low-pressure area/ depression over North Bay of Bengal during 1st half and subsequent cyclonic circulation during 2nd half of week 2, there is likelihood of above normal rainfall activity over central and adjoining north India during week 2.

Anticipatory Actions:

(1) Forecasters may maintain round the clock watch and continuously monitor weather over the region as per Standard Operation Procedures during next 2 weeks.

(2) Disaster managers, media and general public are advised to closely monitor official weather forecasts from India Meteorological Department available on websites, social networking channels, face book, X and mobile Apps.

(3) Fishermen are advised to be cautious while venturing into sea and stay updated.

(4) Judicious regulation of recreational and tourism activities.

(5) Judicious regulation of offshore and onshore activities.

Verification of forecast issued during the previous two weeks:

The forecast issued on 4th September for week 2 (12.09.2025-18.09.2025) indicated likelihood of formation of a fresh low-pressure area over northwest & adjoining westcentral Bay of Bengal during first half of week 2 (around 13th September).

The forecast issued on 11th September for week 1 (12.09.2025-18.09.2025) indicated the existing Well Marked low-pressure area over northwest Arabian Sea and adjoining southwest Pakistan to move westwards and weaken gradually during next 12 hours. It also indicated formation of a low-pressure area over westcentral Bay of Bengal and adjoining areas of north Andhra Pradesh & south Odisha coasts around 13th September.

Realized:

A low-pressure area formed over northwest & adjoining westcentral Bay of Bengal off south Odisha-North Andhra Pradesh coasts at 0300 UTC of 12th September, 2025. It moved west-northwestwards and became less marked over north Telangana & adjoining Vidarbha at 0000 UTC of 15th September, 2025.

The well-marked low-pressure area over northwest Arabian Sea and adjoining southwest Pakistan weakened into a low-pressure area over the same region at 1200 UTC of 11th September, 2025. It became less marked over northwest Arabian Sea at 0000 UTC of 12th September.

Thus, the formation of low-pressure area northwest & adjoining westcentral Bay of Bengal on 12th and weakening of the well-marked low pressure area over northwest Arabian Sea was well predicted in the extended range outlook issued on 4th and 11th September respectively.

NCMRWF-IMD satellite gauge merged data plots of 24-hour accumulated rainfall from 11th September to 17th September, 2025 is presented in Fig.2.

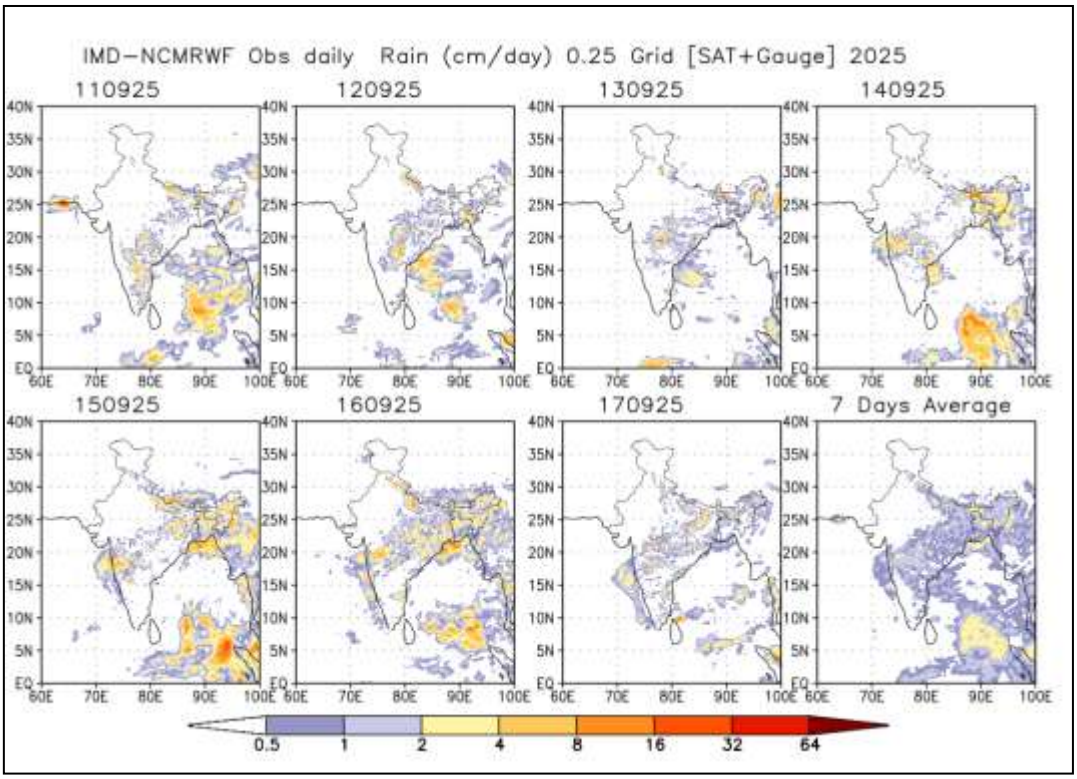

Fig. 2: NCMRWF-IMD satellite gauge merged data plots of 24-hour accumulated rainfall from 11th September to 17th September, 2025

Legends: MJO: Madden Julian Oscillation, ERW: Equatorial Rossby Waves, KW: Kelvin Waves, NCICS: North Carolina Institute for Climate Studies (for Equatorial waves Forecast), IMD GFS: India Meteorological Department Global Forecast System, NCUM: National Centre for Medium-Range Weather Forecasting Centre (NCMRWF) Unified Model, ECMWF: European Centre for Medium-Range Weather Forecasting, EC-AIFS: ECMWF Artificial Intelligence Forecasting System, ECMM: ECMWF-Ensemble System Bias Corrected, BFS: Bharat Forecast System, GPP: Genesis Potential Parameter, NCEP GFS/GEFS/CFS: National Centre for Environment Prediction GFS/GEFSv12/CFSV2, CPC: Climate Prediction Center (for MJO update), IMD-GEFS: GFS ensemble forecast system of IMD, NEPS: NCUM ensemble prediction system, CNCUM: Coupled NCUM, CPC: Climate Prediction Centre, NWS: National Weather Service, INCOIS: Indian National Centre for Ocean Information Services.

Next update: 25.09.2025