



**Ministry of Earth Sciences
India Meteorological Department
Cyclone Warning Division, New Delhi**

**Tropical Cyclone Forecast Programme
Report Dated 12th December 2024**

Time of Issue: 1200 UTC

Synoptic features (based on 0300 UTC analysis):

Yesterday's well marked low pressure area over the southeast Bay of Bengal & adjoining Equatorial Indian Ocean lay over Gulf of Mannar & neighbourhood at 0300 UTC of today, the 12th December, 2024 with the associated upper air cyclonic circulation extending up to mid-tropospheric levels. The system is very likely to continue to move west-northwestwards towards South Tamil Nadu and weaken gradually during the next 12 hours.

Environmental Features based on 0300 UTC:

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
Sea Surface Temperature (SST) °C	<ul style="list-style-type: none">➤ 28-30°C over southeast BoB➤ 26-28°C over rest of BoB.	<ul style="list-style-type: none">➤ 28-30°C over southeast AS➤ 25-28°C over rest of AS
Tropical Cyclone Heat Potential (TCHP) kJ/cm²	<ul style="list-style-type: none">➤ 100-130 over east BoB, Andaman Sea and extreme southern parts of south BoB.➤ 20-40 over southwest BoB and adjoining parts of westcentral BoB off Sri Lanka, Tamil Nadu and Andhra Pradesh coasts.➤ 60-80 over rest of BoB.	<ul style="list-style-type: none">➤ 100-120 over southeast AS, Maldives Islands, Lakshadweep Islands and adjoining EIO.➤ 20-60 over rest AS.
Cyclonic Relative vorticity (X10⁻⁶s⁻¹)	<ul style="list-style-type: none">➤ 40-50 over Tamil Nadu and north Sri Lanka coast	-
Low-Level convergence (X10⁻⁵ s⁻¹)	<ul style="list-style-type: none">➤ 10-15 over Tamil Nadu and north Sri Lanka coast.	-
Upper-Level divergence (X10⁻⁵ s⁻¹)	<ul style="list-style-type: none">➤ 05-10 Tamil Nadu and north Sri Lanka coast.	<ul style="list-style-type: none">➤ 05-10 over southeast AS
Vertical Wind Shear (VWS knots) Low: 05-10 knots Moderate: 10-20 knots High: >20 knots	<ul style="list-style-type: none">➤ Low-moderate over southwest, southeast and part of central BoB.➤ High over rest of BoB.	<ul style="list-style-type: none">➤ High over entire of AS.

Wind Shear Tendency (knots)	<ul style="list-style-type: none"> ➤ Increasing over parts of central and adjoining southeast BoB. ➤ Decreasing over southwest BoB off Sri Lanka coast. 	<ul style="list-style-type: none"> ➤ Decreasing over extreme southwest AS. ➤ Increasing over rest of AS.
Upper tropospheric Ridge	➤ At 15° N.	➤ At 12° N.

Satellite observations based on INSAT imagery (0300 UTC):

- a) **Over the BoB & Andaman Sea:**
Scattered low and medium clouds with embedded moderate to intense convection lay over west central Bay of Bengal, Andaman Sea & Tenasserim coast.
- b) **Over the Arabian Sea:**
Scattered low and medium clouds with embedded moderate to intense convection lay over south Arabian Sea adjoining & Comorin area. Scattered low and medium clouds with embedded isolated weak to moderate convection lay over west central & Lakshadweep island area.
- c) **Outside India:**
Scattered low & medium clouds with embedded moderate to intense convection lay over Shri Lanka, Palk Strait, Gulf of Mannar, China, Yellow Sea, South Myanmar, Thailand, Gulf of Thailand, Cambodia, Laos, Vietnam, Sumatra, Strait of Malacca, Malaysia, Borneo, South China sea, Java Islands & Sea, Celebes Islands & Sea, Philippines, Sulu Sea, Madagascar, and over Indian Ocean between latitude 5.0N to 20.0S longitude 40.0E to 120.0E.

M.J.O. Index:

MJO is currently in phase 5 with amplitude greater than 1. It will be in same phase till 17th December with amplitude greater than 1.

NWP Guidance for FDP Cyclone based on 0000 UTC for the next 7 days:

MODEL GUIDANCE	Bay of Bengal (BoB)	Arabian Sea (AS)
IMD-GFS	The model is indicating a Low-Pressure Area over southeast BoB and adjoining Andaman Sea from 15 th December, it will have west-northwestwards movement and reach north Sri Lanka and Tamil Nadu coast by the 17 th December with moderate intensification.	Model indicates no significant system over AS during next 7 days.
IMD-GEFS	The model is indicating a Low-Pressure Area over southeast BoB and adjoining Andaman Sea from 15 th December, it will have westwards movement and reach off Sri Lanka and Tamil Nadu coast by the 16 th December without intensification.	Model indicates no significant system over AS during next 7 days.

IMD-WRF	The model is indicating an extended low over north Sri Lanka coast – off Tamil Nadu coast as on today the 12 th December, which will become less marked by tomorrow the 13 th December.	Model indicates no significant system over AS during next 3 days.
NCMRWF-NCUM(G)	The model is indicating an extended low over north Sri Lanka coast – off Tamil Nadu coast as on today the 12 th December, which will become less marked by tomorrow the 13 th December. And another Low-Pressure Area over southeast BoB and adjoining Andaman Sea from 15 th December, it will have westwards movement and reach off Sri Lanka and Tamil Nadu coast by the 17 th December without intensification.	Model indicates no significant system over AS during next 7 days.
NCMRWF-NCUM(R)	Model indicates no significant system over BoB during next 3 days.	The model is indicating Low Pressure Area over southeast AS and off Kerala Coast by 13 th December, it will have westwards movement till 15 th December.
NCMRWF-NEPS	Model indicates no significant system over BoB during next 3 days.	Model indicates no significant system over AS during next 3 days.
ECMWF	The model is indicating a Low-Pressure Area over southeast BoB and adjoining Andaman Sea from 14 th December, it will have westwards movement and reach off Sri Lanka and Tamil Nadu coast by the 16 th December without intensification.	Model indicates no significant system over AS during next 7 days.
NCEP-GFS	The model is indicating a Low-Pressure Area over southeast BoB and adjoining Andaman Sea from 15 th December, it will have west-northwestwards movement and reach Andhra Pradesh and Tamil Nadu coast by the 17 th December with moderate intensification.	Model indicates no significant system over AS during next 7 days.

Summary:

(a) Bay of Bengal:

Most of the deterministic models are indicating development of a fresh low-pressure area over southeast Bay of Bengal around 14th December with nearly west-northwestwards movement reaching South Tamil Nadu and Sri Lanka coasts around 16th December.

(b) Arabian Sea

No significant cyclonic disturbance is indicated by any of the models.

Inference:

Considering various environmental conditions and model guidance, it is inferred that there is likelihood of formation of a low-pressure area over southeast Bay of Bengal around 14th December. It is likely to move nearly west-northwestwards, become more marked and reach Tamil Nadu- North Sri Lanka coasts around 16th December.

Probability of cyclogenesis (formation of depression and above intensity systems) over the Bay of Bengal during next 168 hours:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

Probability of cyclogenesis (formation of depression and above intensity systems) over the Arabian Sea during next 168 hours:

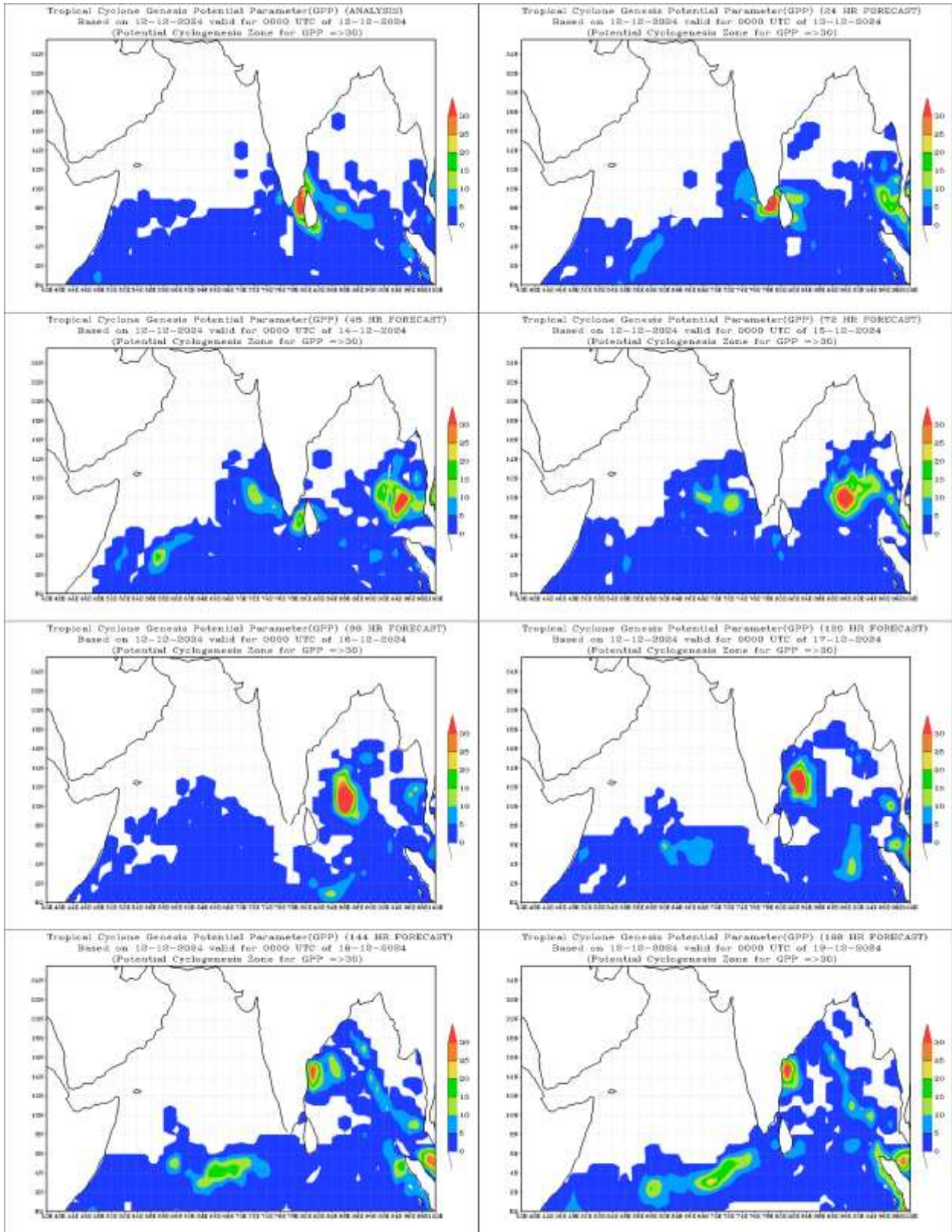
24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

“- “indicates genesis has already occurred.

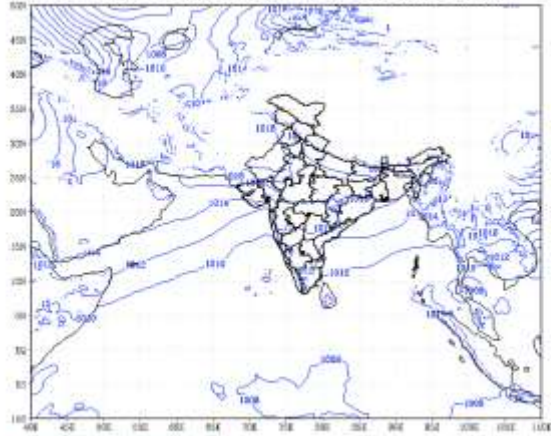
Probability is indicated as NIL for 0%, LOW for 1-33%, MOD for 34-67% and High for 68-100%.

Intense Observation Period (IOP): NIL

ANNEXURE

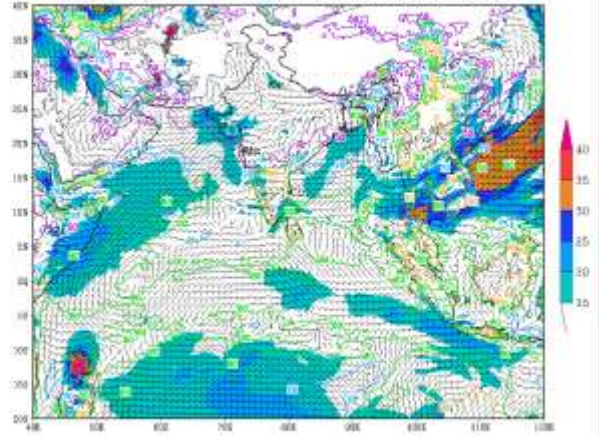


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (48 HR)
based on 00 UTC of 12-12-2024 valid for 00 UTC of 14-12-2024



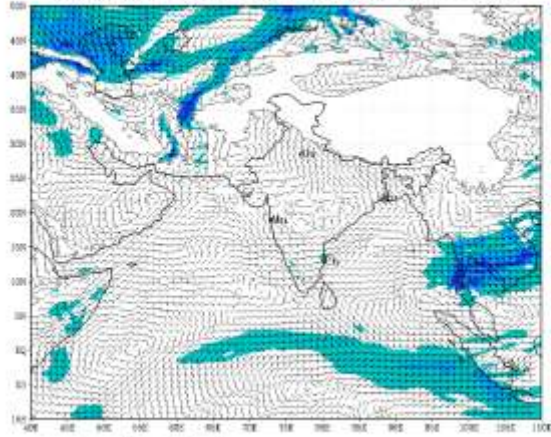
(Background area not depict political boundary)

IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (48 HR)
based on 00 UTC of 12-12-2024 valid for 00 UTC of 14-12-2024



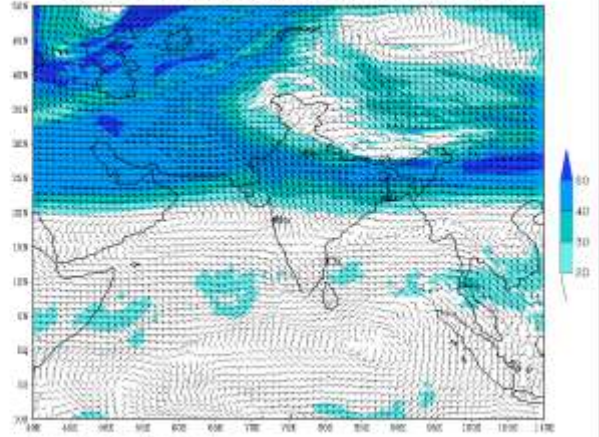
(Background area not depict political boundary)

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (48 HR)
based on 00 UTC of 12-12-2024 valid for 00 UTC of 14-12-2024



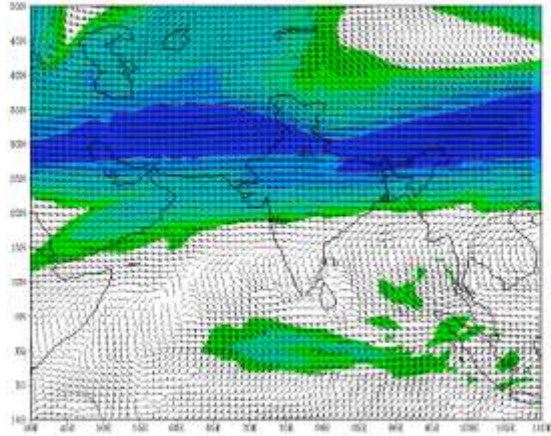
(Background area not depict political boundary)

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (48 HR)
based on 00 UTC of 12-12-2024 valid for 00 UTC of 14-12-2024



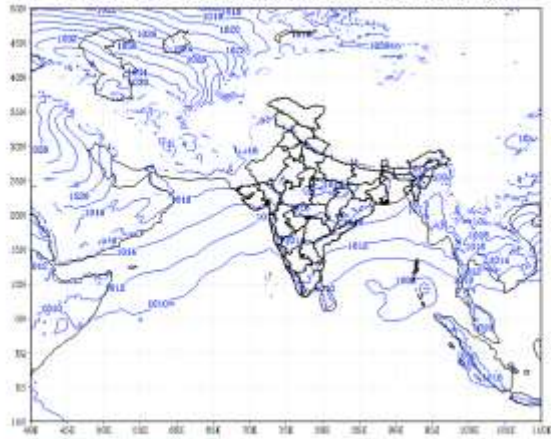
(Background area not depict political boundary)

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (48 HR)
based on 00 UTC of 12-12-2024 valid for 00 UTC of 14-12-2024

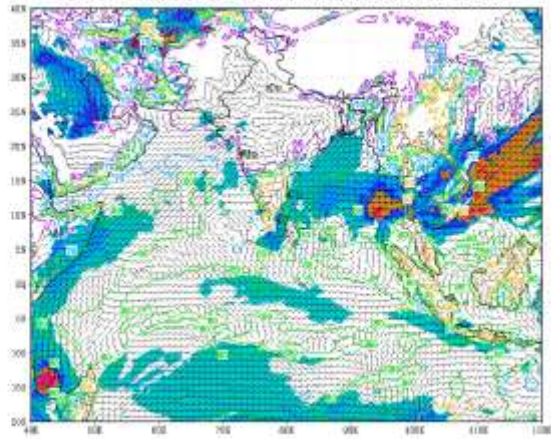


(Background area not depict political boundary)

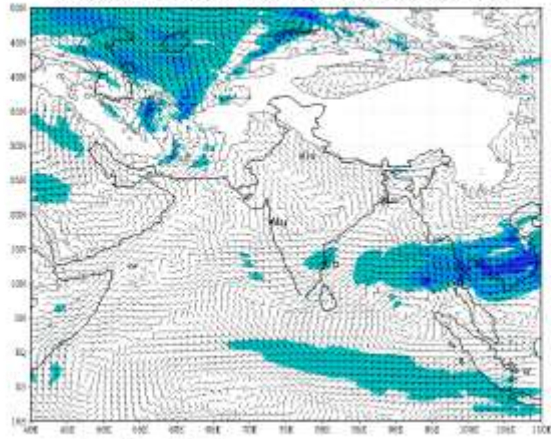
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (72 HR)
based on 00 UTC of 12-12-2024 valid for 00 UTC of 15-12-2024



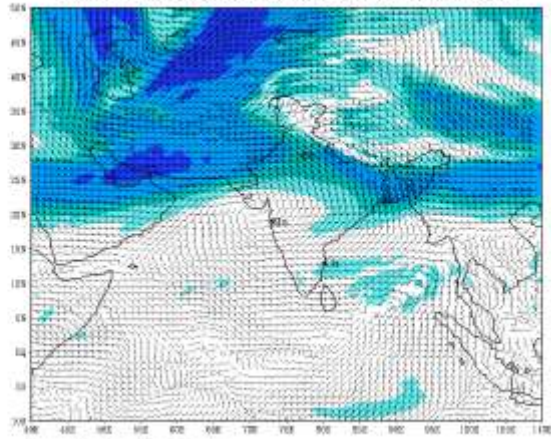
IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (72 HR)
based on 00 UTC of 12-12-2024 valid for 00 UTC of 15-12-2024



IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 12-12-2024 valid for 00 UTC of 15-12-2024



IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 12-12-2024 valid for 00 UTC of 15-12-2024



IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 12-12-2024 valid for 00 UTC of 15-12-2024

