



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

**Tropical Cyclone Forecast Programme  
Report Dated 24<sup>th</sup> November 2024**

**Time of Issue: 1000 UTC**

**Synoptic features (based on 0300 UTC analysis):**

Yesterday's **low pressure area** over east Equatorial Indian Ocean and adjoining Southeast Bay of Bengal moved west-northwestwards, became **Well marked low pressure area** and lay centered at 0300 UTC of today, the 24<sup>th</sup> November 2024 over southeast Bay of Bengal and adjoining east Equatorial Indian Ocean. It is likely to move west-northwestwards and intensify into a **depression** over central parts of south Bay of Bengal on 25<sup>th</sup> November. Thereafter, it is likely to move northwestwards towards Tamil Nadu-Sri Lanka coasts during subsequent 2 days.

**Environmental Features:**

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
<b>Sea Surface Temperature (SST) °C</b>	➤ 29-30°C over BoB.	➤ 29-30°C over most parts of Arabian Sea. ➤ 26-28°C over southwest Arabian Sea along and off Somalia coast and parts of westcentral AS.
<b>Tropical Cyclone Heat Potential (TCHP) kJ/cm<sup>2</sup></b>	➤ 120-160 over northeast, east central BoB and Andaman Sea. ➤ 70-80 over most parts of south BoB.	➤ 70-90 over most parts of central and north AS. ➤ 20-40 over rest of the area.
<b>Cyclonic Relative vorticity (X10<sup>-6</sup>s<sup>-1</sup>)</b>	➤ 20-40 over south BoB and EIO region ➤ 20-30 along South Sri Lanka coast.	➤ 10-20 over eastcentral AS adjoining northeast AS and over extreme South AS along the coast of Somalia.
<b>Low Level convergence (X10<sup>-5</sup> s<sup>-1</sup>)</b>	➤ 10-20 over southwest adjoining southeast BoB.	-
<b>Upper-Level divergence (X10<sup>-5</sup> s<sup>-1</sup>)</b>	➤ 5-10 over south BoB, Andaman Sea, ➤ 15-20 over southwest BoB.	-
<b>Vertical Wind Shear (VWS knots)</b> Low: 05-10 knots Moderate: 10-20 knots High: >20 knots	➤ High over north, central, southwest BoB, north Andaman Sea. ➤ Low-Moderate over rest of BoB, South Andaman Sea.	➤ High over north & adjoining central AS and extreme south AS. ➤ Low-Moderate over rest of AS.
<b>Wind Shear Tendency (knots)</b>	➤ Increasing over Southwest BoB adjoining west central BoB.	➤ Decreasing over southwest AS, near Comorin area along Somalia coast.

	➤ Decreasing over southeast and extreme southwest BoB, south Andaman Sea. Increasing over rest of the parts of BoB,	➤ Increasing over North, East Central and extreme South west AS. Decreasing over rest of the AS
<b>Upper tropospheric Ridge</b>	➤ At 14 <sup>0</sup> N.	➤ At 14 <sup>0</sup> N.

**Satellite observations based on INSAT imagery (0300 UTC):**

**a) Over the BoB & Andaman Sea: -**

Scattered to broken low and medium clouds with embedded intense to very intense convection lay over south Bay of Bengal & Andaman Sea (Minimum Cloud Top Temperature is minus 80-93 degrees Celsius). Scattered low and medium clouds with embedded moderate to intense convection lay over central Bay of Bengal and Isolated weak to moderate convection lay over north Bay of Bengal.

**b) Over the Arabian Sea:**

Scattered low and medium clouds with embedded moderate to intense convection lay over south Arabian Sea, Lakshadweep Island area, Maldives & Comorin area and Isolated weak to moderate convection lay over central Arabian Sea. Scattered low and medium clouds lay over north Arabian Sea.

**c) Outside India:**

Scattered low/med clouds with embedded moderate to intense convection lay over Sri Lanka, Palk strait, Gulf of Mannar, Maldives, Tibet, China, east China Sea, south Myanmar, Thailand, Gulf of Thailand, Cambodia, Vietnam, Sumatra, Strait of Malacca, Malaysia, Borneo, South China Sea, Java Islands & Sea, Celebes Islands & Sea, Philippines, Madagascar, Mozambique channel and over Indian Ocean between Lat 5.0N to 20.0S Long 50.0E to 120.0E.

**M.J.O. Index:**

Madden Julian Oscillation (MJO) is in phase 4 with amplitude more than 1 and will be in the same phase till 30<sup>th</sup> with same amplitude.

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

<b>MODEL GUIDANCE</b>	<b>Bay of Bengal (BoB)</b>	<b>Arabian Sea (AS)</b>
<b>IMD-GFS</b>	Model is indicating LPA over southeast BoB adjoining east Equatorial Indian Ocean (EIO) as on today, moving west-northwestwards and lay as depression over southwest BoB on 25 <sup>th</sup> , moving then northwestwards and lay as SCS over southwest BoB close to Sri Lanka coast on 26 <sup>th</sup> , it then weaken into DD/CS over southwest BoB on 27 <sup>th</sup> . Recurve then and move northeastwards and lay over southwest and adjoining westcentral BoB as DD on 28 <sup>th</sup> , it will then continue move in same direction towards Myanmar-Bangladesh coasts	No significant circulation over AS.

	without changing in intensity.	
<b>IMD-GEFS</b>	Model is indicating well marked low pressure area (WML) over east EIO & adjoining southeast BoB on 24 <sup>th</sup> with nearly west-northwestwards movement and intensification into depression(D)/deep depression (DD) over southwest BoB & adjoining east EIO on 24/1200 and cyclonic storm (CS) on 26/0000 over southwest BoB close to Sri Lanka coast. Thereafter, the model is indicating northeastwards recurvature towards Myanmar- Bangladesh coasts.	No Significant circulation over AS.
<b>IMD-WRF</b>	LPA over southeast and adjoining southwest BoB on 25 <sup>th</sup> , moving west-northwestwards and lay over southwest BoB as depression on 26 <sup>th</sup> , moving in the same direction and lay close to north Sri Lanka coast as SCS on 27 <sup>th</sup> .	No Significant circulation over AS.
<b>NCMRWF-NCUM(G)</b>	Model is indicating a low pressure area over southwest BoB on 24/0000 UTC. It is indicating depression over southwest BoB on 26/0000 UTC and crossing over Tamil Nadu coast near Puducherry around 28/1800 UTC.	No Significant circulation over AS.
<b>NCMRWF-NCUM(R)</b>	LPA over southeast and adjoining southwest BoB on 25 <sup>th</sup> , moving west-northwestwards and lay over southwest BoB as depression on 26 <sup>th</sup> , moving in the same direction and lay close to north Sri Lanka coast as SCS on 27 <sup>th</sup> .	No Significant circulation over AS.
<b>NCMRWF-NEPS</b>	Model is indicating a low pressure area over southwest BoB on 24/0000 UTC. It is indicating depression over southwest BoB on 26/0000 UTC and crossing over Tamil Nadu coast near Puducherry around 28/1800 UTC.	No Significant cyclonic circulation over AS.
<b>ECMWF</b>	Model is indicating low pressure area (LPA) over east EIO & adjoining southeast BoB on 24 <sup>th</sup> with nearly westwards movement till 26/0000 UTC. Thereafter, it is likely to move north-northwestwards with marginal intensification becoming depression (D) over westcentral BoB on 28/0000 UTC. Thereafter, it is indicating weakening trend and also crossing over Andhra Pradesh coast on 30/1800 UTC.	No Significant cyclonic circulation over AS.
<b>NCEP-GFS</b>	Model is indicating LPA over southeast BoB adjoining east Equatorial Indian Ocean (EIO) as on today, moving west-northwestwards and lay as depression over southwest BoB on 25 <sup>th</sup> , moving	No Significant cyclonic circulation over AS.

	then northwestwards and lay as SCS over southwest BoB close to Sri Lanka coast on 26 <sup>th</sup> , it then weaken into DD/CS over southwest BoB on 27 <sup>th</sup> . Recurve then and move northeastwards and lay over southwest and adjoining westcentral BoB as DD on 28 <sup>th</sup> , it will then continue move in same direction towards Myanmar-Bangladesh coasts without changing in intensity.	
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**Summary:**

**(a) Bay of Bengal:**

Thus, guidance from various models indicates that, there is large variation among various models with respect to track and intensification. Some of the models are indicating steering of system in northeastwards direction under the influence of trough in westerlies from 28<sup>th</sup> November onwards.

**(b) Arabian Sea**

Most of the models are indicating no significant cyclonic circulation over Arabian Sea for the next seven days.

**Inference:**

**Considering various environmental conditions and model guidance, it is inferred that:**

Considering all the above, it is inferred that the **well marked low pressure area** over Southeast Bay of Bengal and adjoining East EIO is likely to move west-northwestwards and intensify into a **depression** over central parts of south Bay of Bengal on 25<sup>th</sup> November. Thereafter, it is likely to move northwestwards towards Tamil Nadu-Sri Lanka coasts during subsequent 2 days.

**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
MOD	HIGH	-	-	-	-	-

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

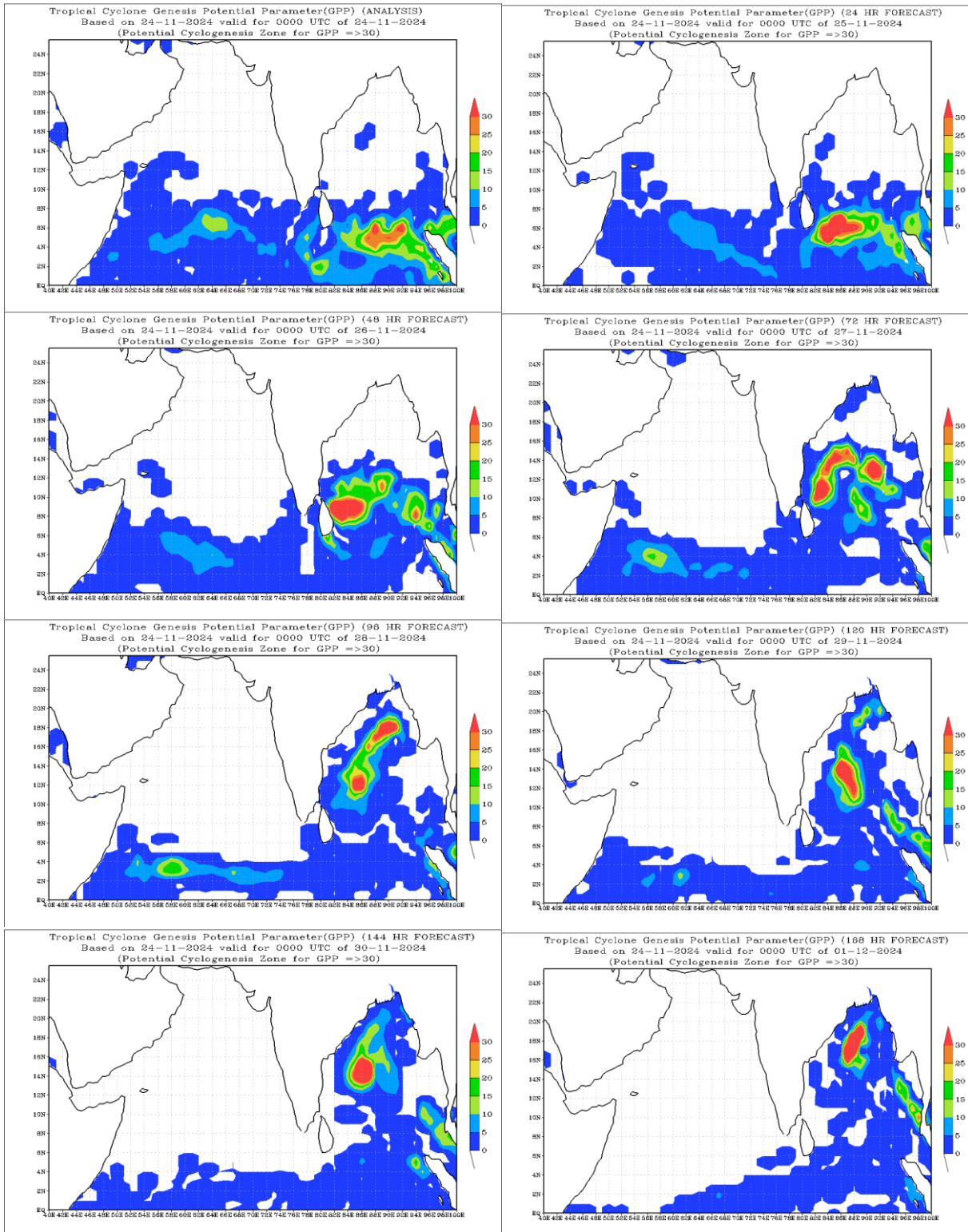
24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

“- “indicates genesis has already occurred.

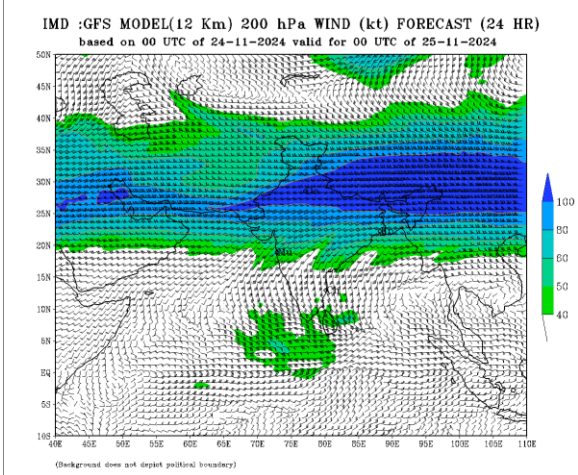
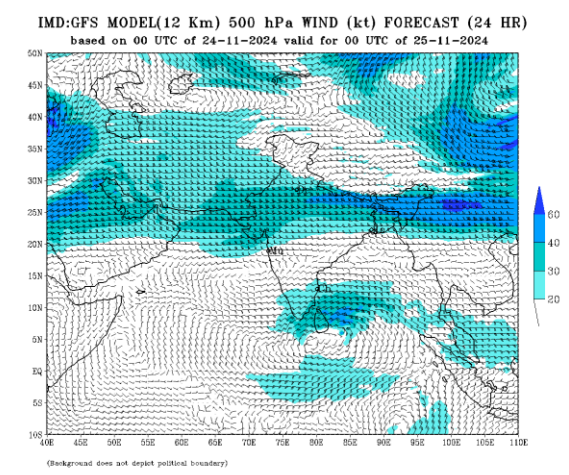
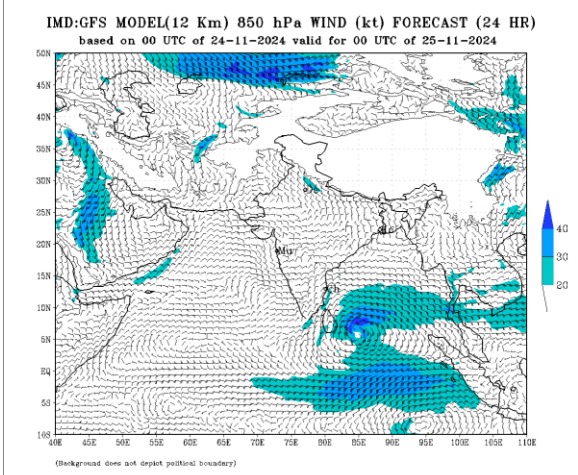
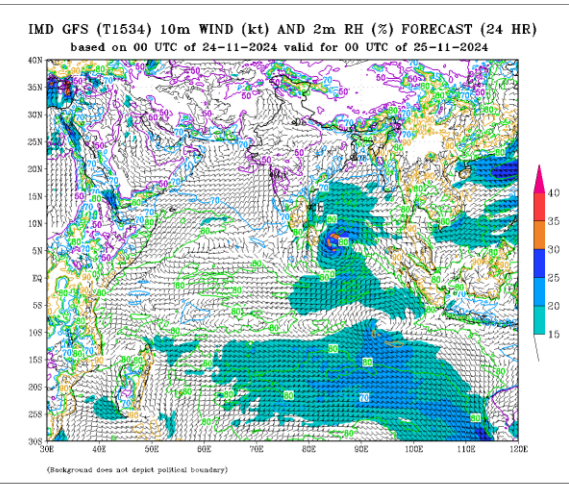
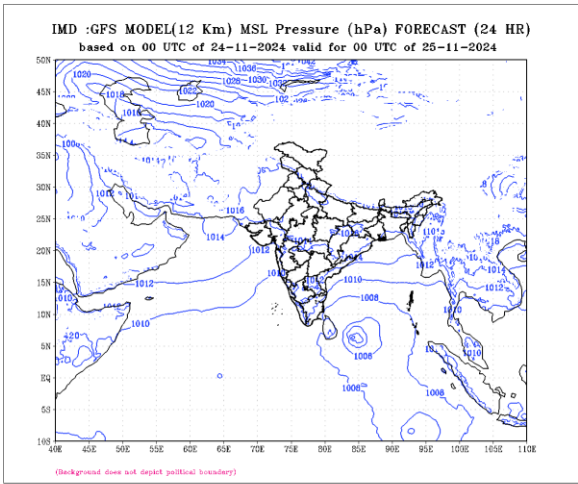
Probability is indicated as NIL for 0%, LOW for 1-33%, MOD for 34-67% and High for 68-100%.

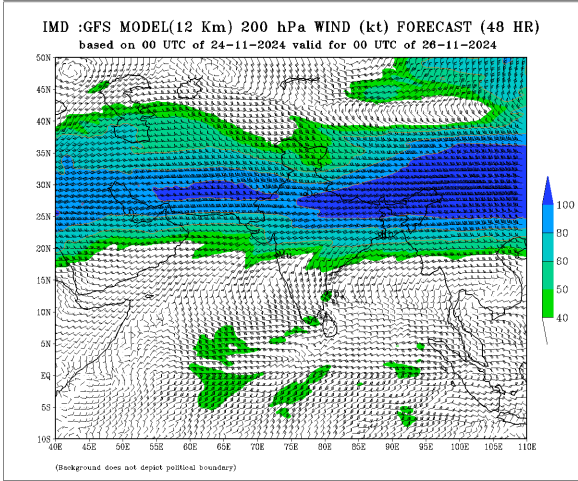
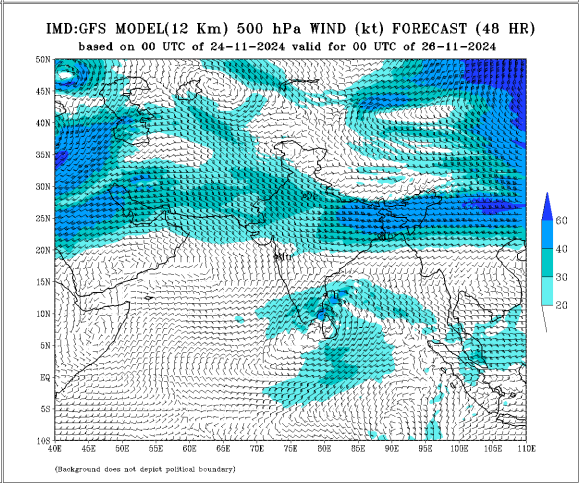
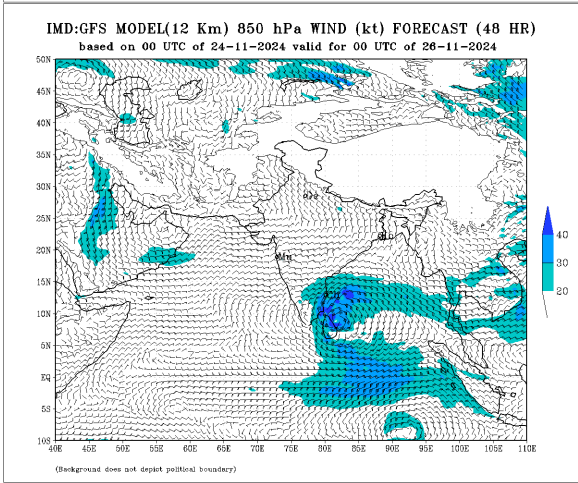
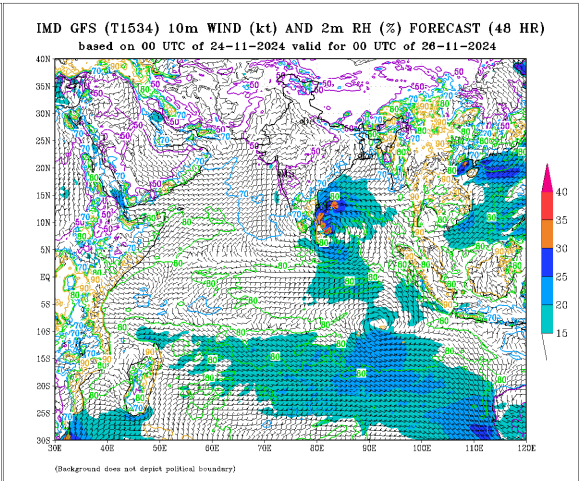
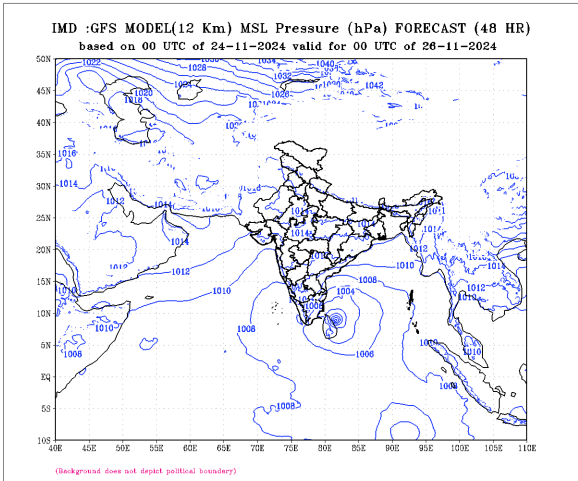
**Intense Observation Period (IOP):** East coast of Sri Lanka during 25<sup>th</sup>-27<sup>th</sup>, Tamil Nadu coast during 24<sup>th</sup>-28<sup>th</sup> November.

# ANNEXURE

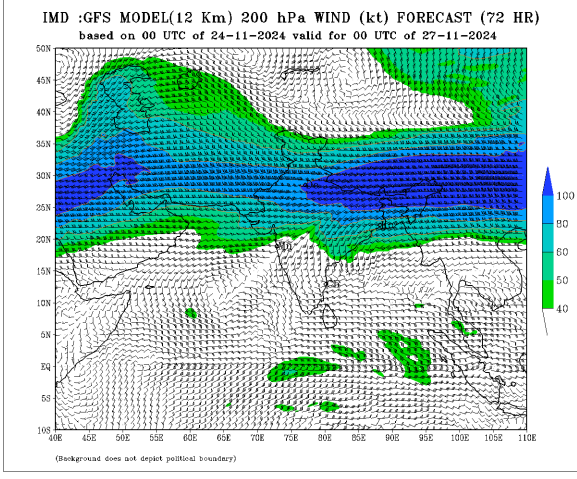
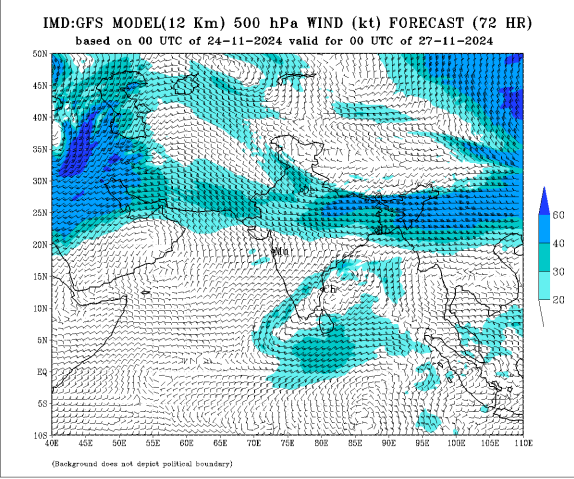
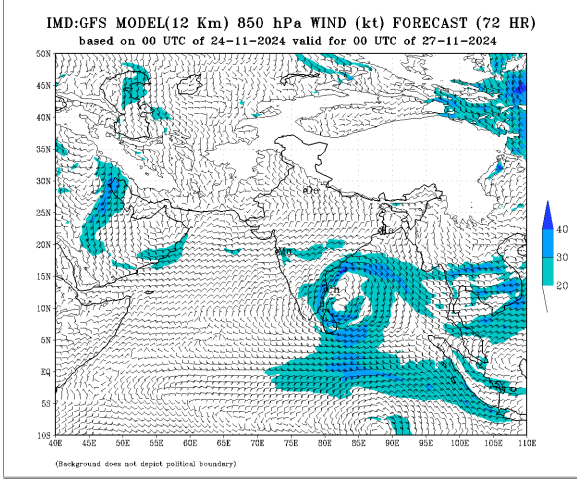
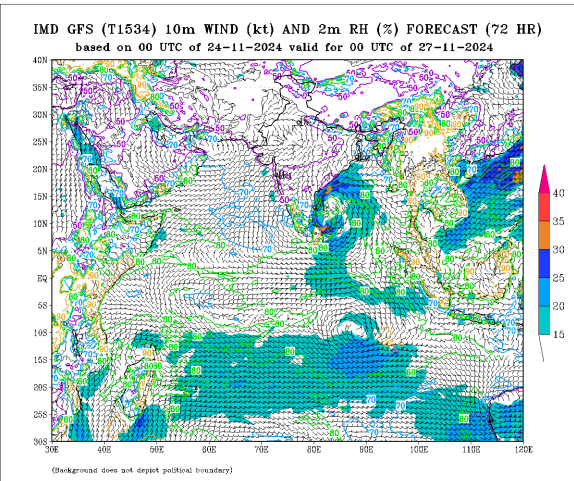
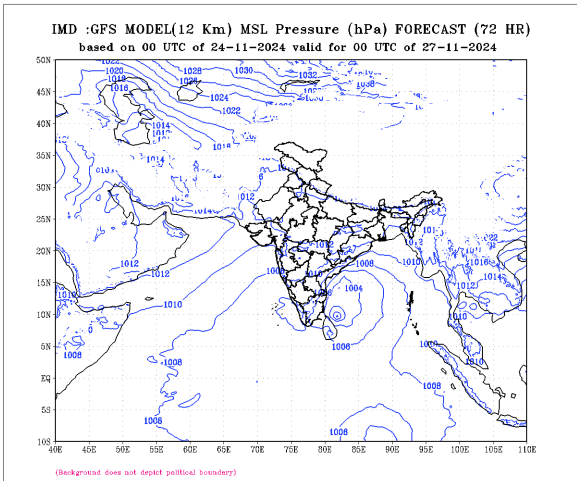


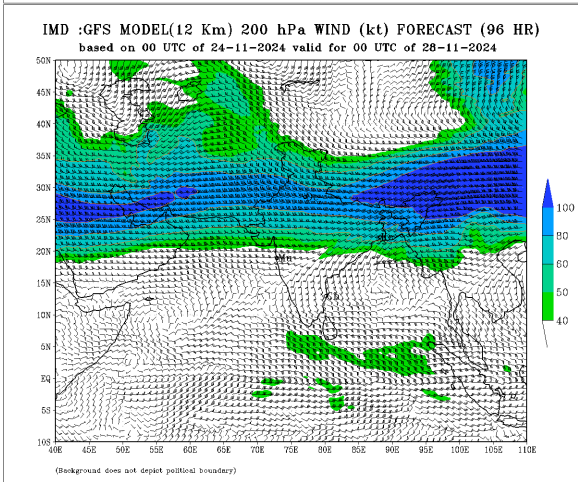
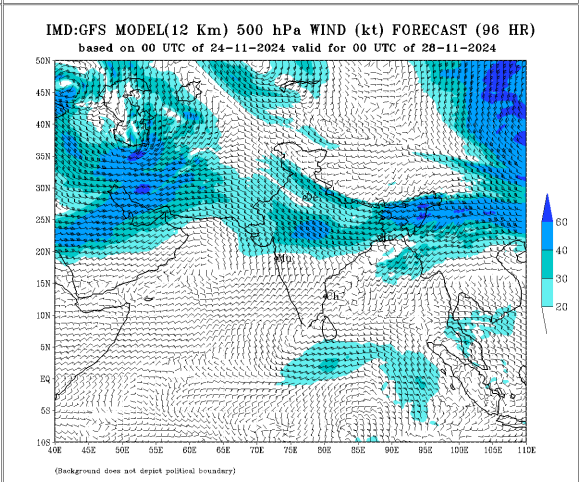
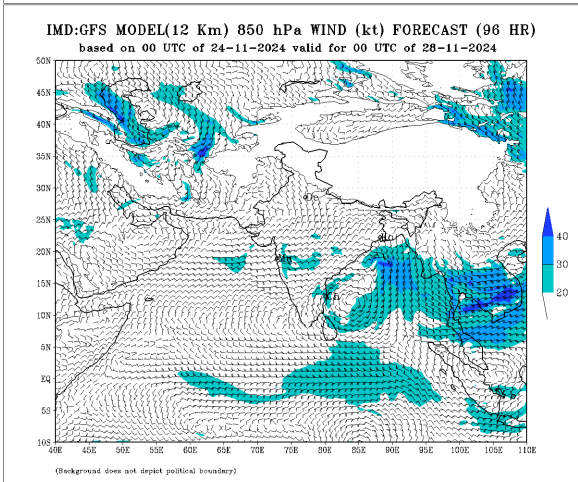
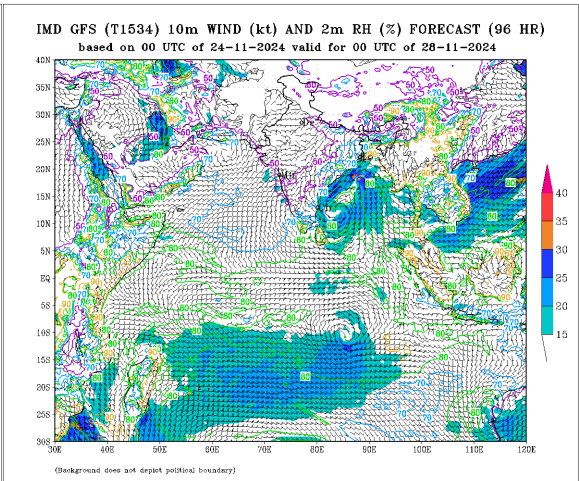
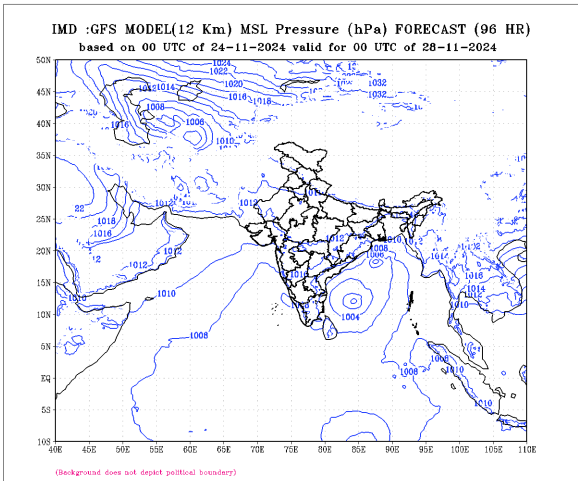




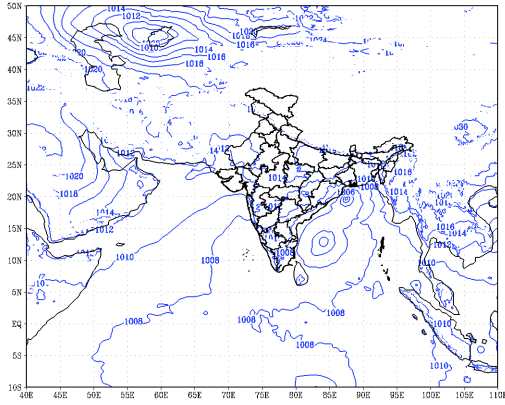




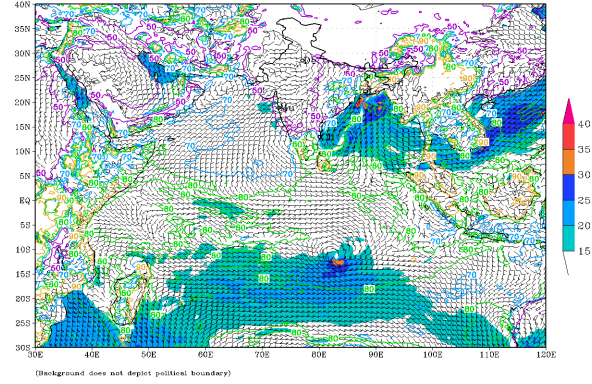




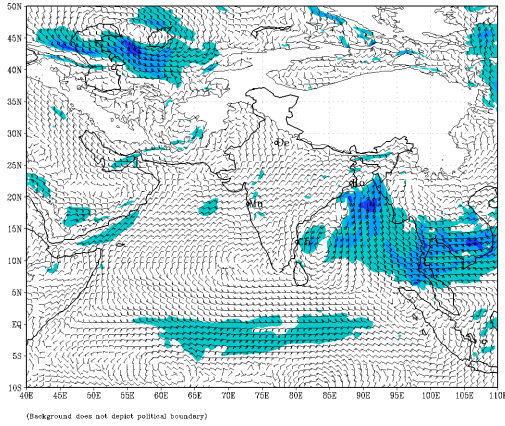
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (120 HR)  
based on 00 UTC of 24-11-2024 valid for 00 UTC of 29-11-2024



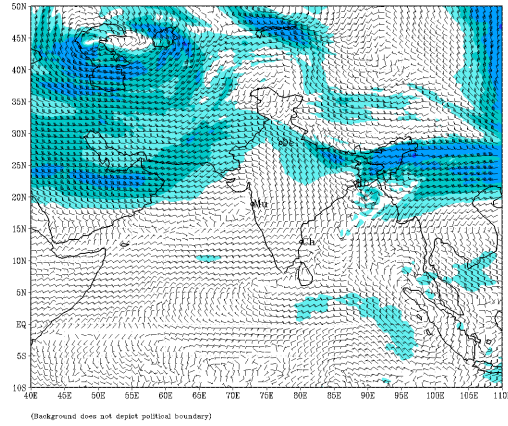
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (120 HR)  
based on 00 UTC of 24-11-2024 valid for 00 UTC of 29-11-2024



IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (120 HR)  
based on 00 UTC of 24-11-2024 valid for 00 UTC of 29-11-2024



IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (120 HR)  
based on 00 UTC of 24-11-2024 valid for 00 UTC of 29-11-2024



IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (120 HR)  
based on 00 UTC of 24-11-2024 valid for 00 UTC of 29-11-2024

