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

# Tropical Cyclone Forecast Programme
# Report Dated 25th December 2024

**Time of Issue: 1100 UTC**

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

Yesterday's well marked low pressure area over Southwest & adjoining Westcentral Bay of Bengal off South Andhra Pradesh-North Tamil Nadu coasts moved northwestwards and persisted over the same region at 0300 UTC of today, the 25th December, 2024. It is likely to move further northwestwards and weaken gradually into a low pressure area over Westcentral & adjoining Southwest Bay of Bengal off South Andhra Pradesh-North Tamil Nadu coasts during next 24 hours.

**Environmental Features based on 0300 UTC:**

| Parameter | Bay of Bengal (BoB) | Arabian Sea (AS) |
|---|---|---|
| **Sea Surface Temperature (SST) ºC** | ➢ 26-28°C over north & adjoining central BoB.<br>➢ 28-30°C over rest of BoB. | ➢ 28-30°C over southeast AS & adjoining southwest AS, most parts of eastcentral BoB, Lakshadweep Islands and Maldives.<br>➢ 25-26°C over northern parts of AS. |
| **Tropical Cyclone Heat Potential (TCHP) kJ/cm$^2$** | ➢ 150-200 over northeast BoB and adjoining parts of northwest & eastcentral BoB and Andaman Sea<br>➢ 100-140 over southeast & east central BoB and adjoining southern parts of southwest Bay of Bengal.<br>➢ 20-30 over some parts of southwest BoB along & off north Sri Lanka coast.<br>➢ 60-80 over rest of BoB. | ➢ 100-120 over southeast AS, Maldives Islands, Lakshadweep Islands and areas of eastcentral AS along Karnataka-Kerala coasts.<br>➢ 20-60 over rest AS. |
| **Cyclonic Relative vorticity (X10$^{-6}$s$^{-1}$)** | ➢ 50 over system area i.e. Southwest & adjoining Westcentral Bay of Bengal off South Andhra Pradesh-North Tamil Nadu coasts | ➢ 20-30 over some parts of eastcentral AS and adjoining northeast AS off Gujarat coast. |
| **Low-Level convergence (X10$^{-5}$ s$^{-1}$)** | ➢ 5-10 over westentral and adjoining southwest BoB off Andhra Pradesh coast.<br>➢ 5 over Sumatra coast | -- |

| | | |
|---|---|---|
| | and adjoining EIO | |
| **Upper-Level divergence ($X10^{-5}$ $s^{-1}$)** | ➢ Negative along and off Tamil Nadu & Sri Lanka coast.<br>➢ 5-10 over northeast BoB & adjoining Myanmar coast.<br>➢ 5 over south Andaman Sea. | -- |
| **Vertical Wind Shear (VWS knots)**<br>**Low: 05-10 knots**<br>**Moderate: 10-20 knots**<br>**High: >20 knots** | ➢ High over north, central and extreme south BoB.<br>➢ Low-Moderate over rest of BoB and Andaman Sea. | ➢ Low-Moderate over parts of Lakshadweep Islands, Maldives & Comorin area and southeast AS & adjoining southern parts of southwest AS.<br>➢ High over rest of AS. |
| **Wind Shear Tendency (knots)** | ➢ Decreasing over north, westcentral BoB, southwest & adjoining southeast BoB and Andaman Sea. | ➢ Decreasing over eastern parts of AS. |
| **Upper tropospheric Ridge** | $15^0$N over BoB. | -- |

## 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 central & adjoining northwest & southwest Bay of Bengal. Scattered low and medium clouds with embedded weak to moderate convection lay over north Bay of Bengal and Andaman Sea.

**b) Over the Arabian Sea:**
Scattered low and medium clouds with embedded weak to moderate convection lay over Arabian Sea & Lakshadweep Islands area.

**c) Outside India:**
Scattered low & medium clouds with embedded moderate to intense convection over Nepal, Tibet, China, Gulf of Thailand, east China Sea, Vietnam, Sumatra, Strait of Malacca, Malaysia, Borneo, South China Sea, Sumatra, Java Islands & Sea, Celebes Islands & Sea, Philippines, Sulu Sea, Madagascar, Mozambique Channel and over Indian Ocean between latitude 5.0N to 20.0S longitude 40.0E to 110.0E.

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

MJO is currently in phase 7 with amplitude less than 1. It will be in same phase with amplitude greater than 1 till 1st January 2025.

## NWP Guidance for FDP Cyclone:

| MODEL GUIDANCE | Bay of Bengal (BoB) | Arabian Sea (AS) |
|---|---|---|
| **IMD-GFS** | Model is indicating the Low-Pressure area (LPA) over southwest BoB on 25th Dec., cyclonic circulation over westcentral & adjoining southwest BoB on 26th and less marked thereafter. | The model indicates no significant system over AS. |
| **IMD-GEFS** | Model is indicating the Low-Pressure area (LPA) over southwest BoB on 25th Dec., cyclonic circulation over westcentral & adjoining southwest BoB on 26th and less marked thereafter. | The model indicates no significant system over AS. |
| **IMD-WRF** | Model is indicating the Low-Pressure area (LPA) over southwest BoB on 25th Dec., cyclonic circulation over westcentral & adjoining southwest BoB on 26th and less marked thereafter. | The model indicates no significant system over AS. |
| **NCMRWF-NCUM(G)** | Model is indicating the Low-Pressure area (LPA) over southwest BoB on 25th Dec. and less marked thereafter. | The model indicates no significant system over AS. |
| **NCMRWF-NCUM(R)** | Model is indicating the Low-Pressure area (LPA) over southwest BoB on 25th Dec. To move southwestwards and cross Tamilnadu coast around 26/0300 UTC as an LPA and less marked thereafter. | The model indicates no significant system over AS. |
| **NCMRWF-NEPS** | Model is indicating the Low-Pressure area (LPA) over southwest BoB on 25th Dec. and less marked thereafter. | The model indicates no significant system over AS. |
| **ECMWF** | Model is indicating the Low-Pressure area (LPA) over southwest BoB on 25th Dec, becoming less marked over westcentral & adjoining southwest BoB at 1200 UTC of 25th Dec. | The model indicates no significant system over AS. |
| **NCEP-GFS** | Model is indicating the Low-Pressure area (LPA) over southwest BoB on 25th Dec, moving nearly westwards and crossing Tamil Nadu coast at 0300 UTC of 26th Dec.. | The model indicates no significant system over AS. |

**Summary:**

**(a) Bay of Bengal**:
Most of the models are indicating a low pressure area (LPA) over southwest Bay of Bengal as on 25th December, 2024 with nearly west-northwestwards movement and becoming less marked on 26th. However, NCEP and ECMWF are indicating crossing over Tamilnadu as an LPA/ cyclonic circulation and IMD GFS & NCUM (G) are indicating northwestwards movement towards westcentral & adjoining southwest BoB. By persistence, it is likely to move northwestwards.

**(b) Arabian Sea**
Most of the models are indicating no significant system over Arabian Sea.

**Inference:**

Considering various environmental features and model guidance, it is inferred that the well marked low pressure area over Southwest & adjoining Westcentral Bay of Bengal off South Andhra Pradesh-North Tamil Nadu coasts is likely to move northwestwards and weaken gradually into a low pressure area over Westcentral & adjoining Southwest Bay of Bengal off South Andhra Pradesh-North Tamil Nadu coasts during next 24 hours.

**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 |

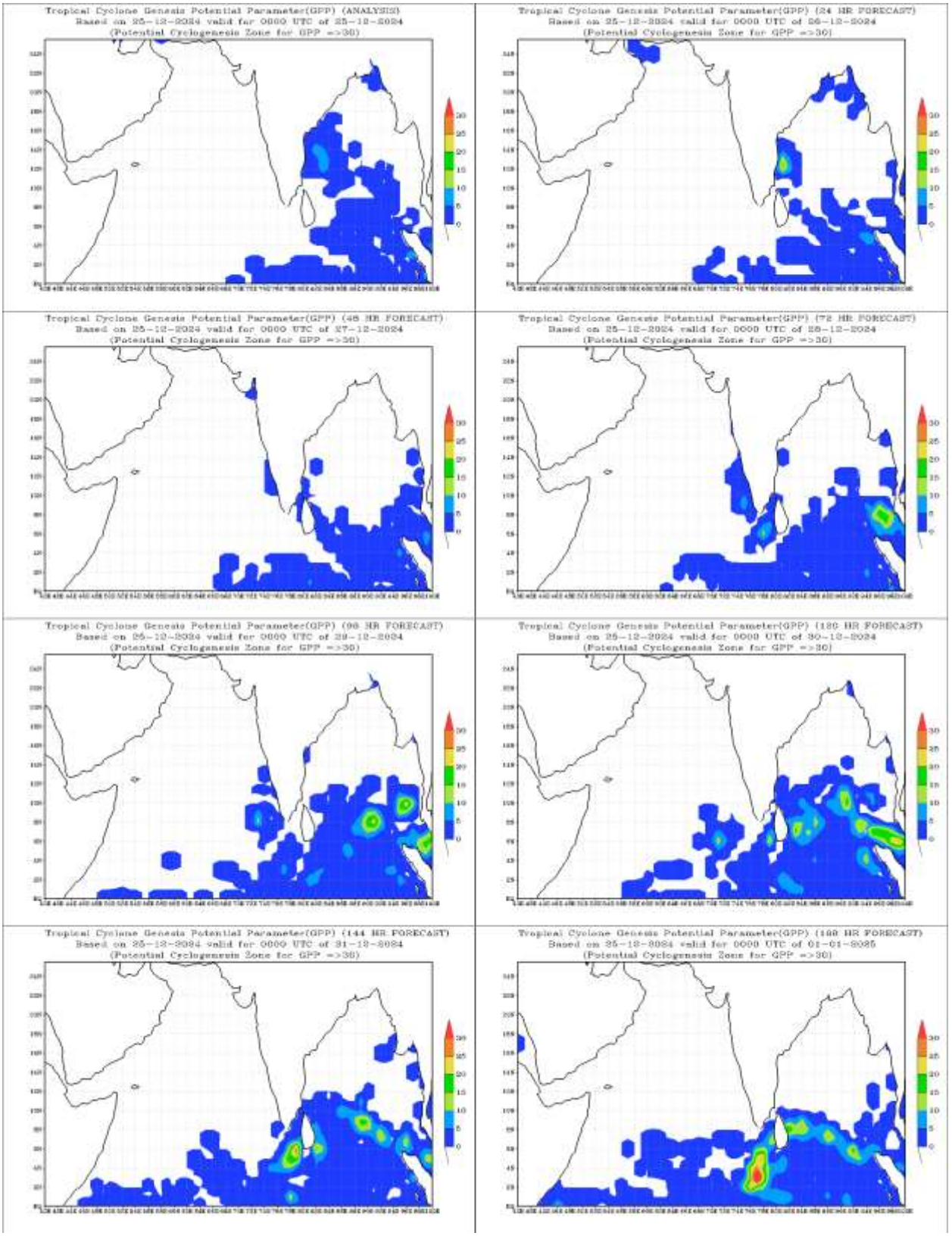
**Probability of cyclogenesis (formation of depression and above intensity systems) over the Arabian Sea during next 168 hours:**

| 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):** South Andhra Pradesh and North Tamil Nadu coasts during 25th and 26th December, 2024.

# ANNEXURE


Tropical Cyclone Genesis Potential Parameter(GPP) (ANALYSIS)
Based on 25-12-2024 valid for 0000 UTC of 25-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (24 HR FORECAST)
Based on 25-12-2024 valid for 0000 UTC of 26-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (48 HR FORECAST)
Based on 25-12-2024 valid for 0000 UTC of 27-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (72 HR FORECAST)
Based on 25-12-2024 valid for 0000 UTC of 28-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (96 HR FORECAST)
Based on 25-12-2024 valid for 0000 UTC of 29-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (120 HR FORECAST)
Based on 25-12-2024 valid for 0000 UTC of 30-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (144 HR FORECAST)
Based on 25-12-2024 valid for 0000 UTC of 31-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
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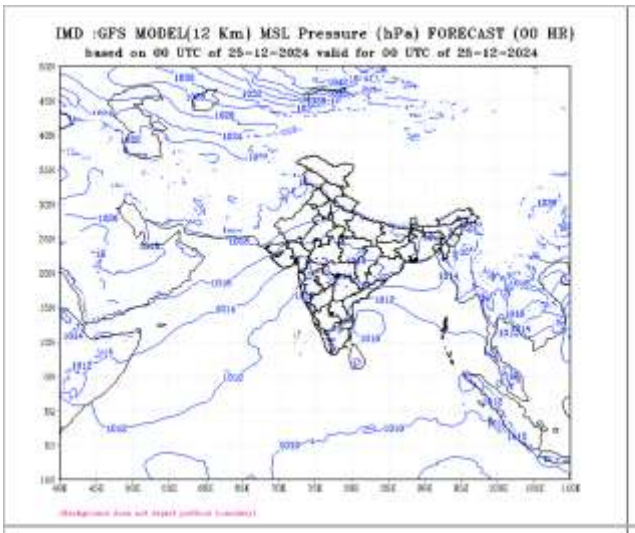
Based on 25-12-2024 valid for 0000 UTC of 01-01-2025
(Potential Cyclogenesis Zone for GPP =>30)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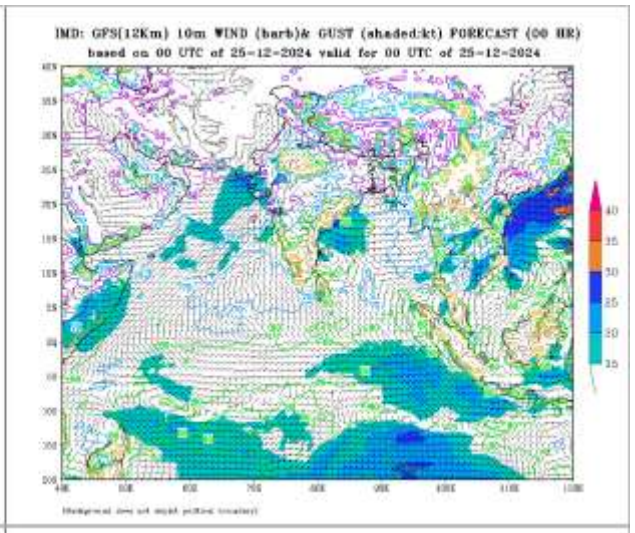
based on 00 UTC of 25-12-2024 valid for 00 UTC of 25-12-2024


IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (00 HR)
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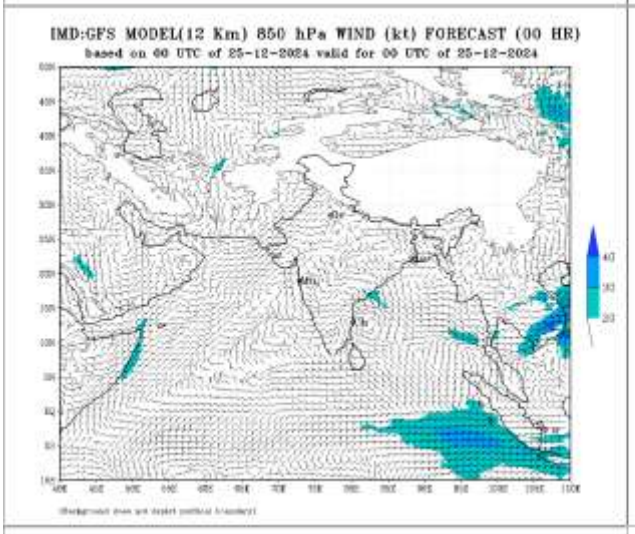
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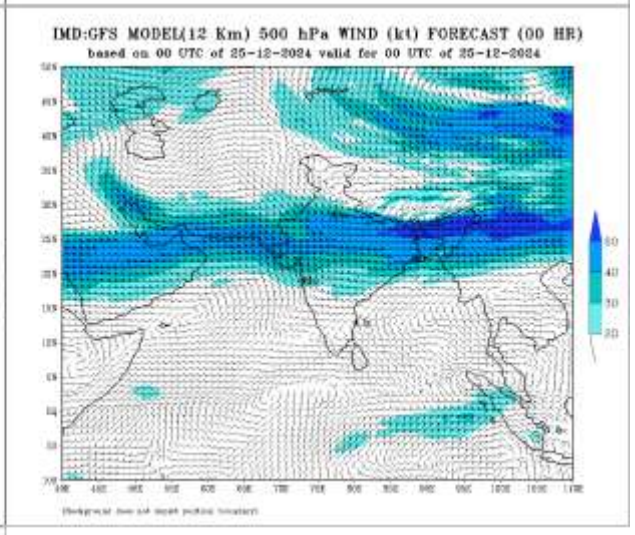
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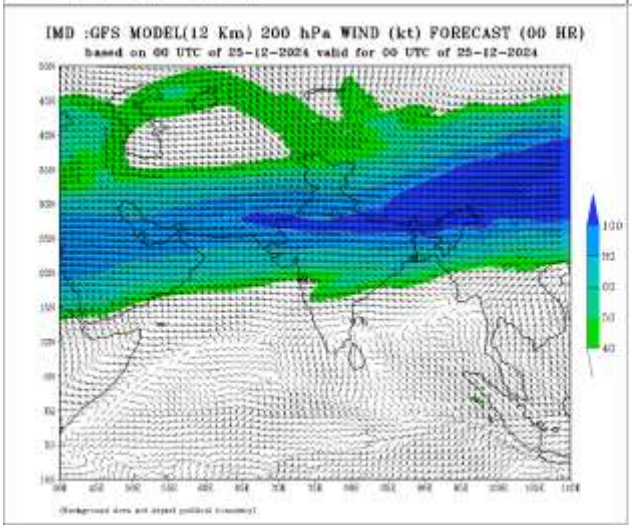
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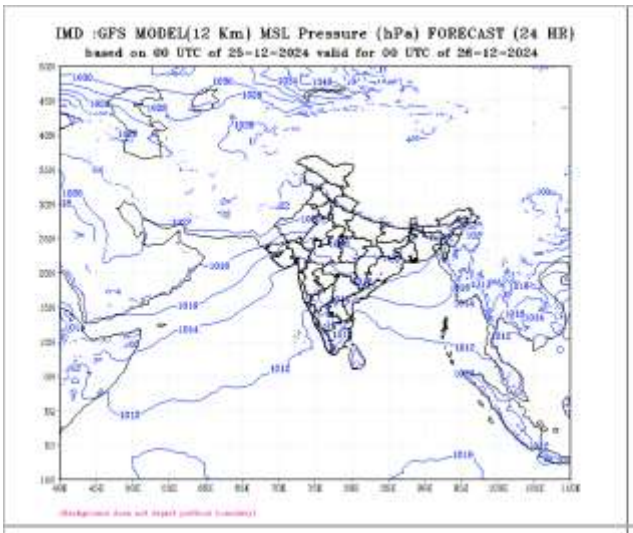
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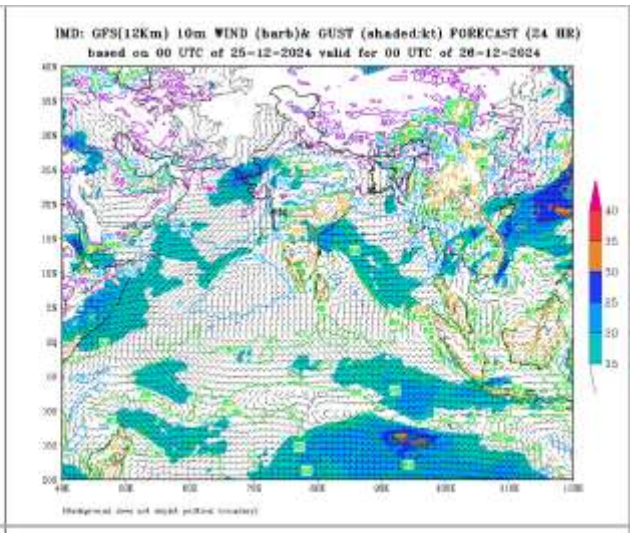
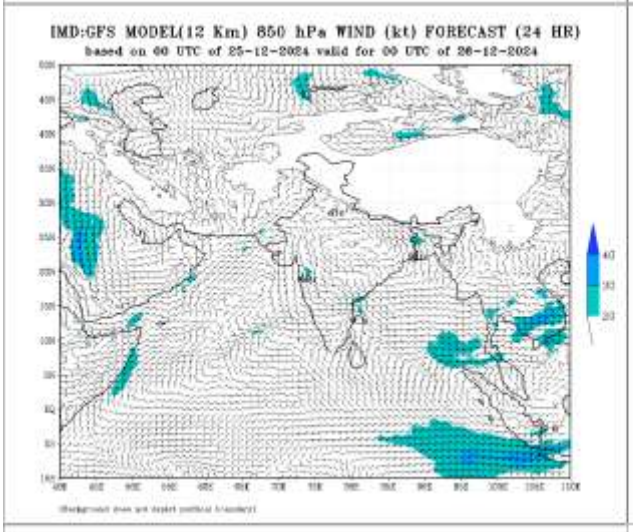

IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (24 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 26-12-2024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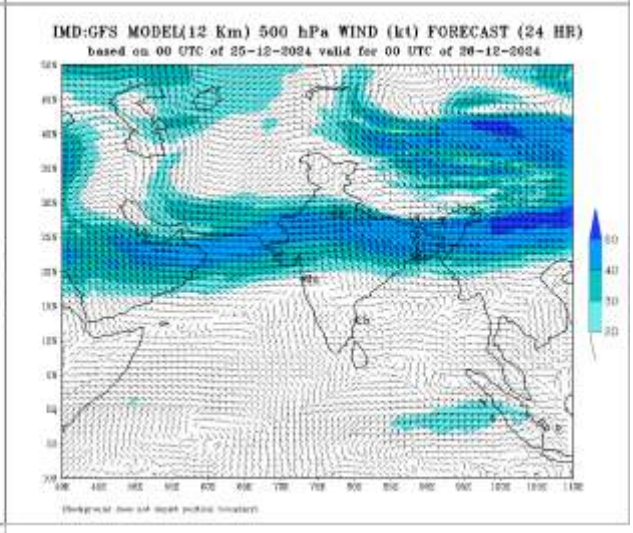
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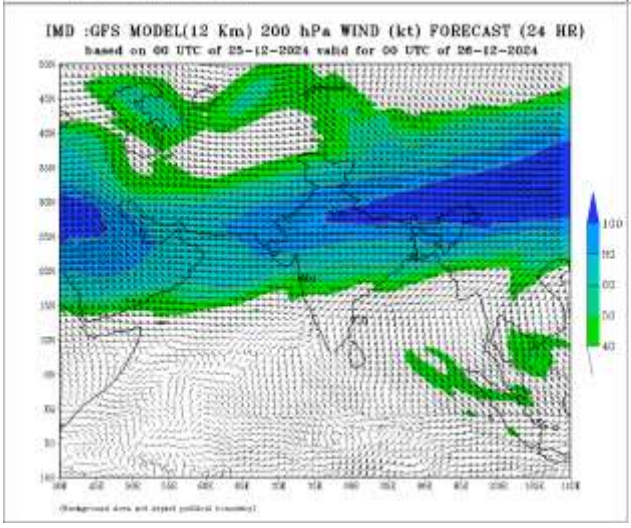
based on 00 UTC of 25-12-2024 valid for 00 UTC of 26-12-2024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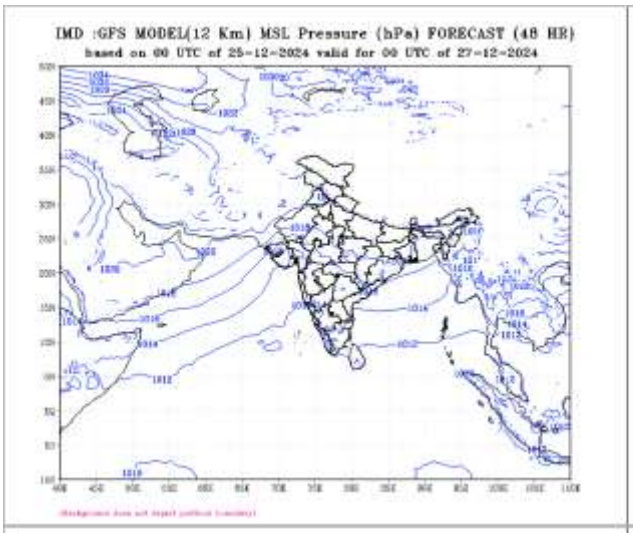
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (48 HR)
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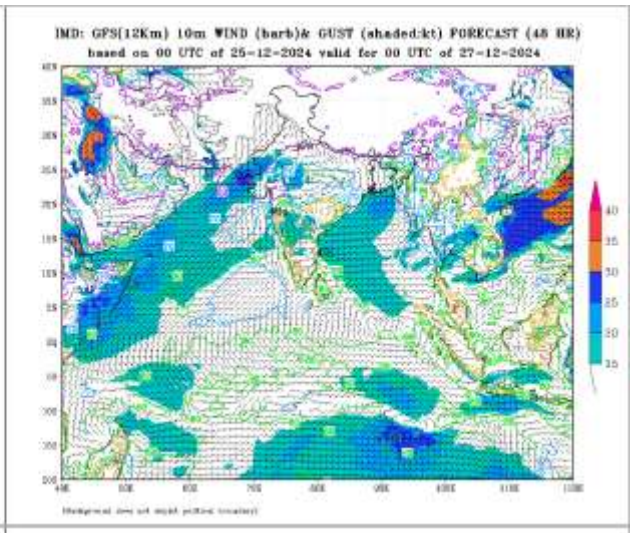
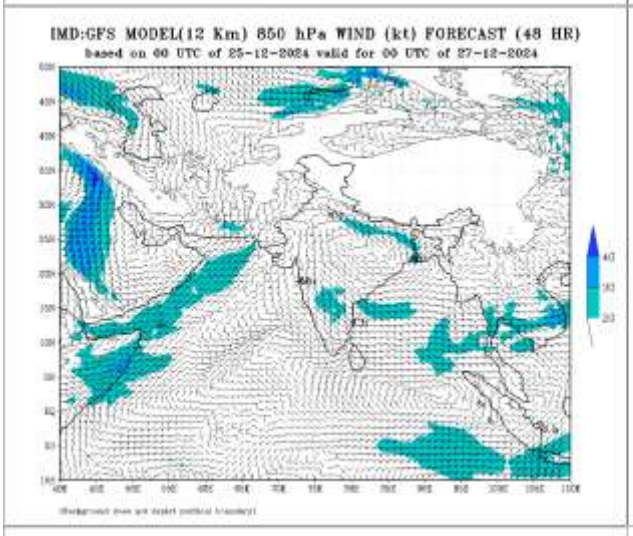

IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (48 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 27-12-2024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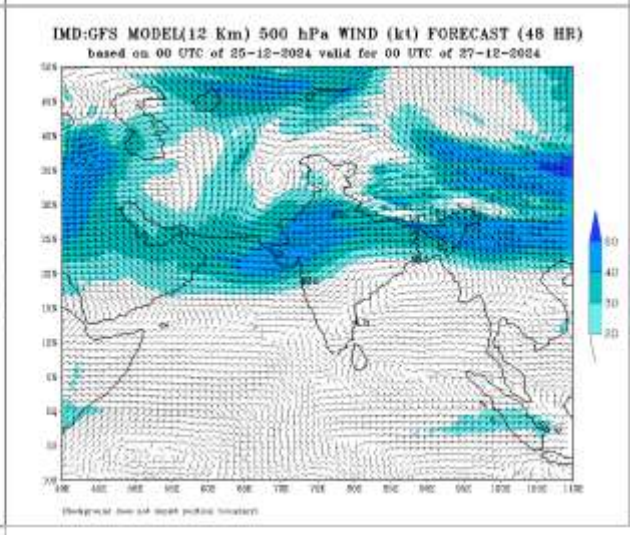
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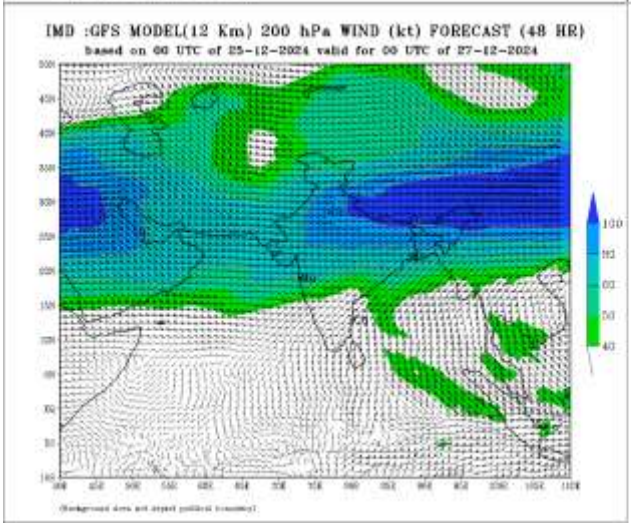
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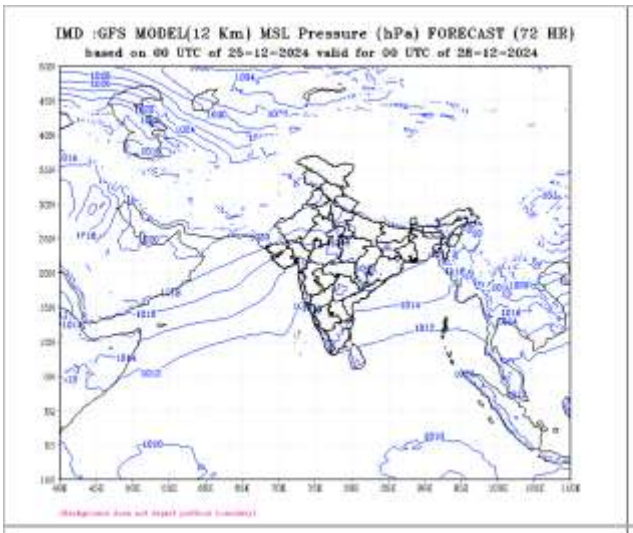
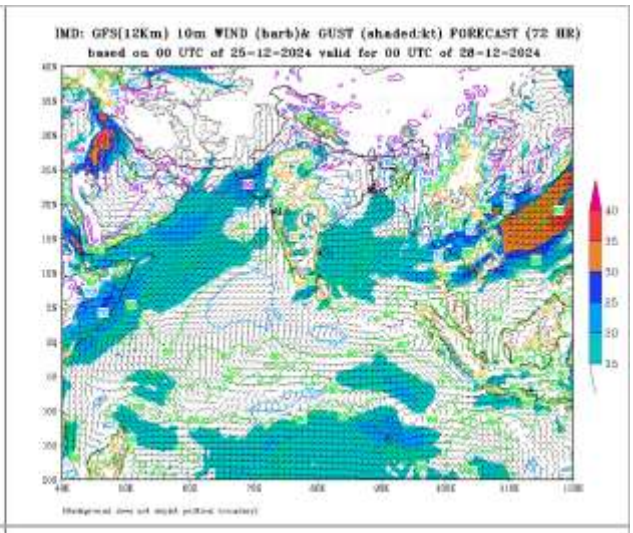
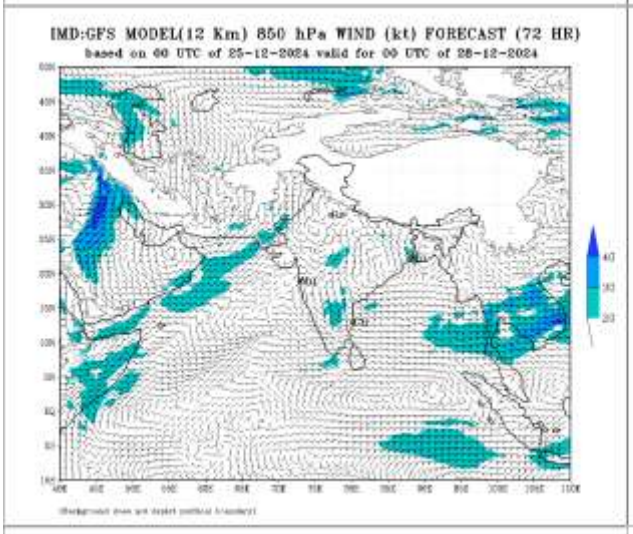

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (72 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 28-12-2024


IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (72 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 28-12-2024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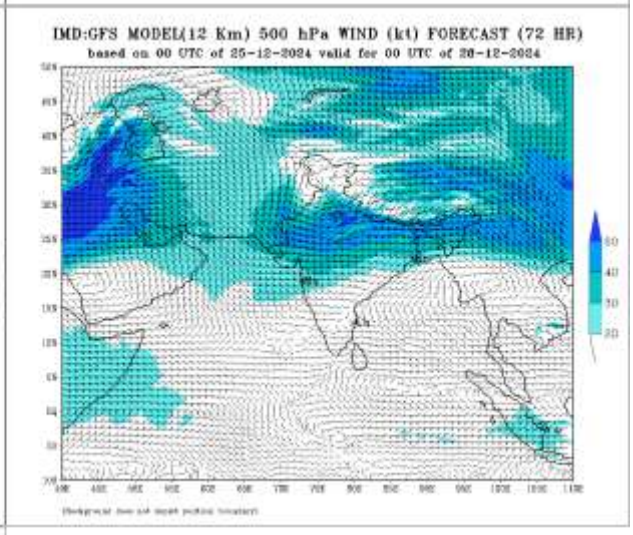
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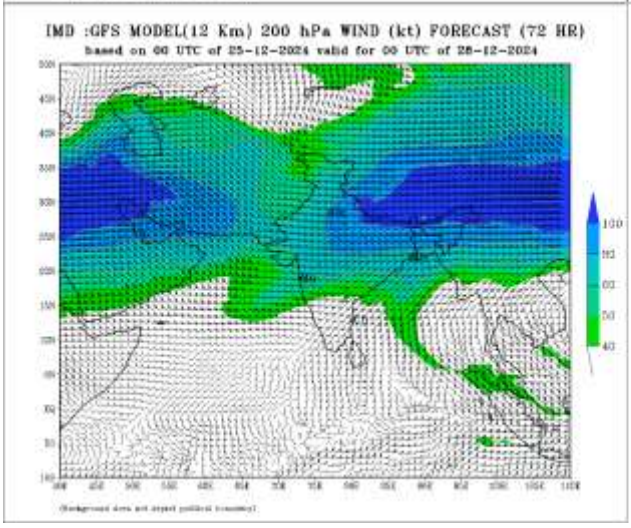
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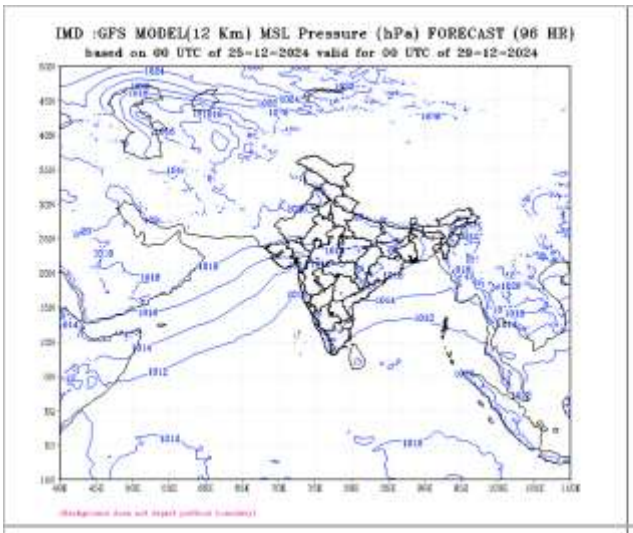
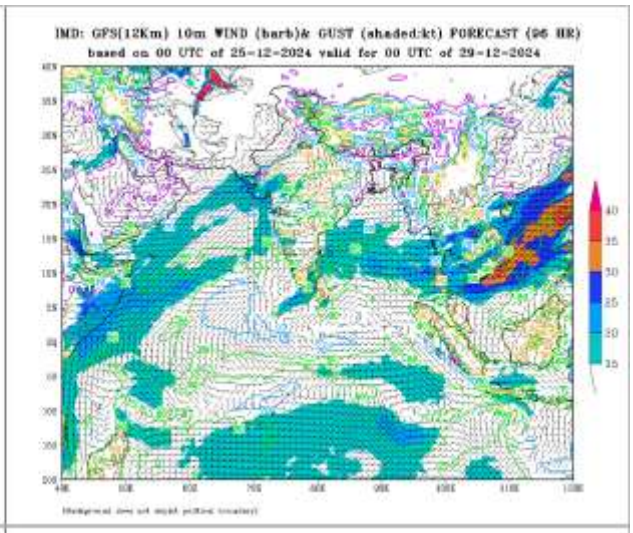
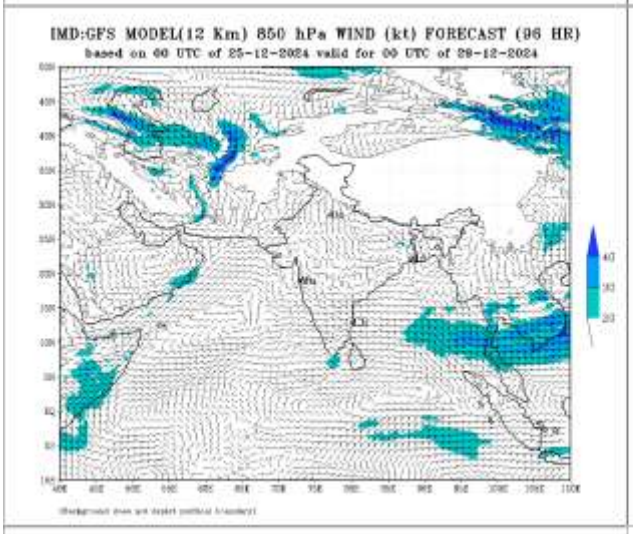
based on 00 UTC of 25-12-2024 valid for 00 UTC of 28-12-2024


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (96 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 29-12-2024


IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (96 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 29-12-2024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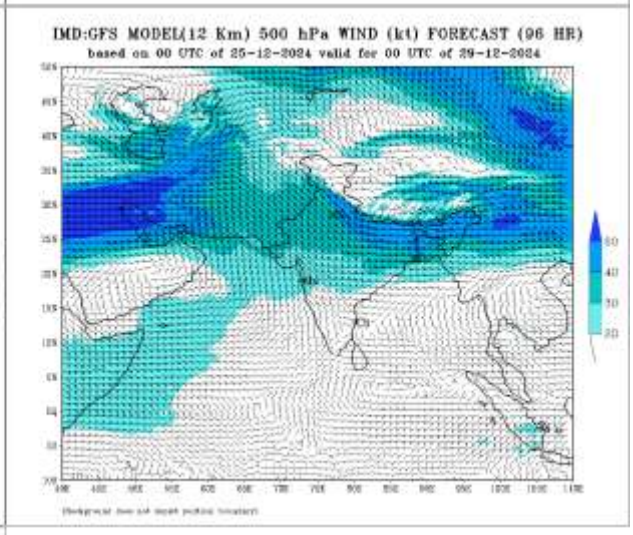
based on 00 UTC of 25-12-2024 valid for 00 UTC of 29-12-2024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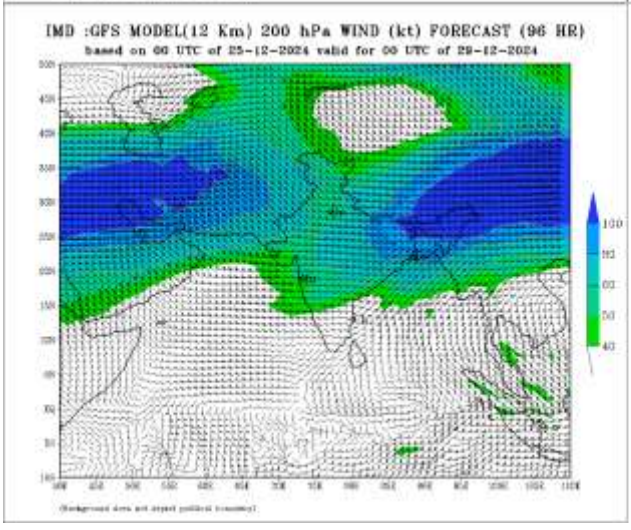
based on 00 UTC of 25-12-2024 valid for 00 UTC of 29-12-2024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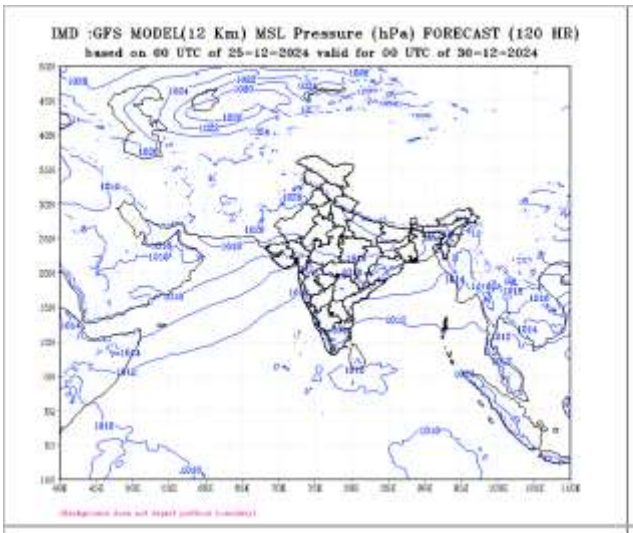
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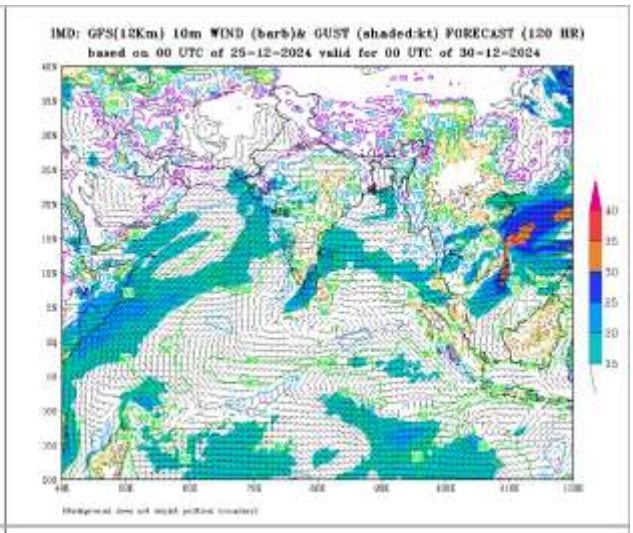
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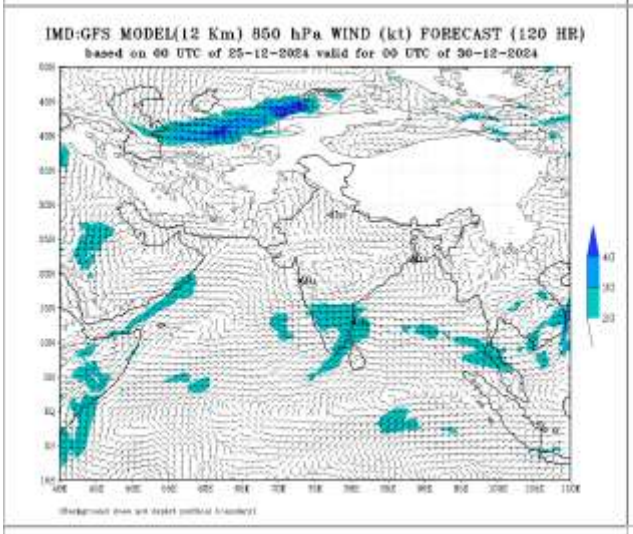
based on 00 UTC of 25-12-2024 valid for 00 UTC of 30-12-2024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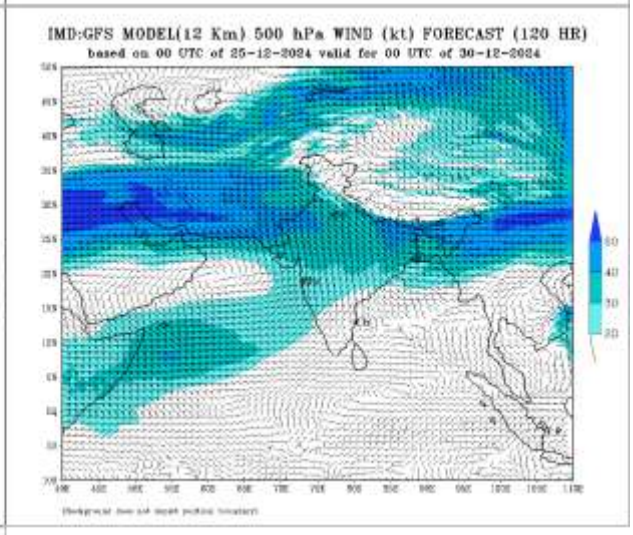
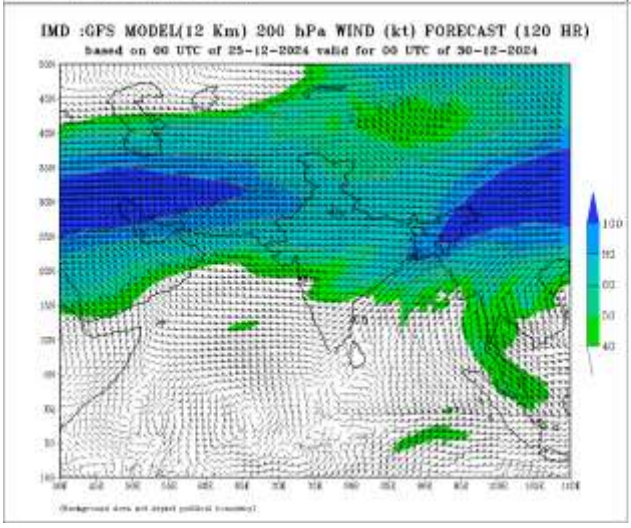
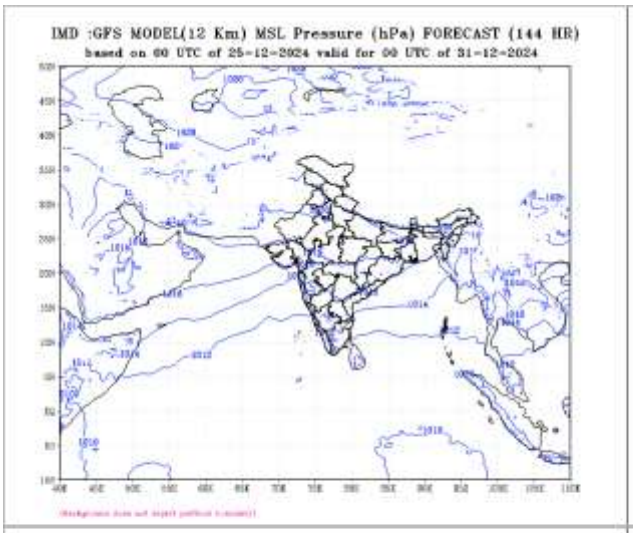
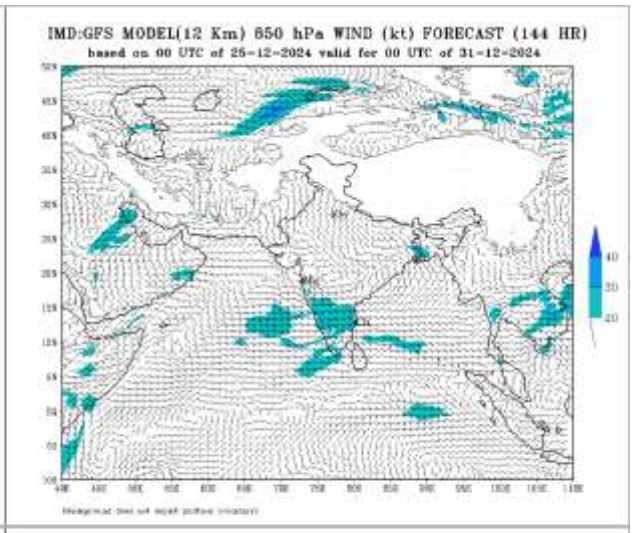
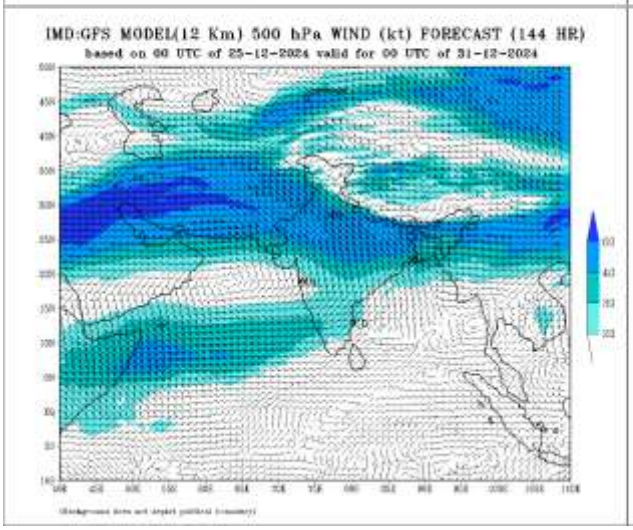
based on 00 UTC of 25-12-2024 valid for 00 UTC of 30-12-2024

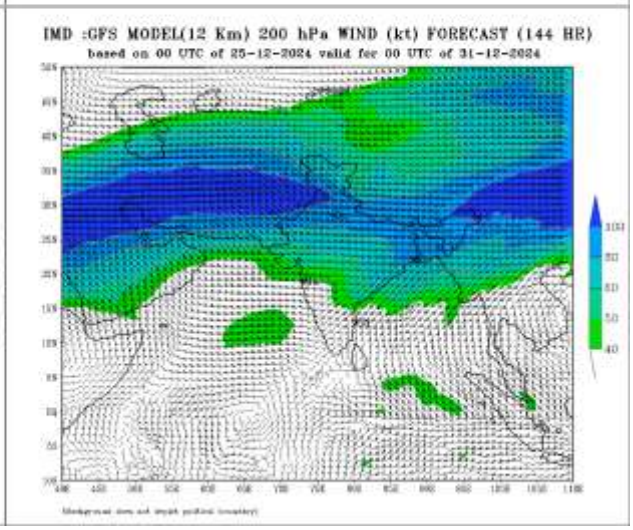

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 30-12-2024

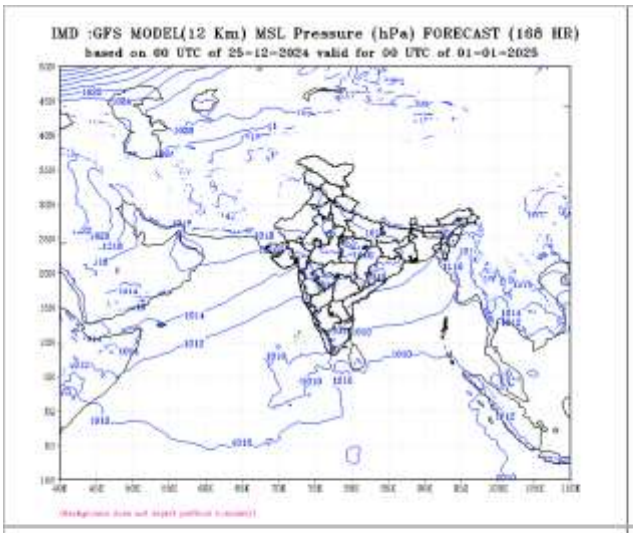

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 30-12-2024

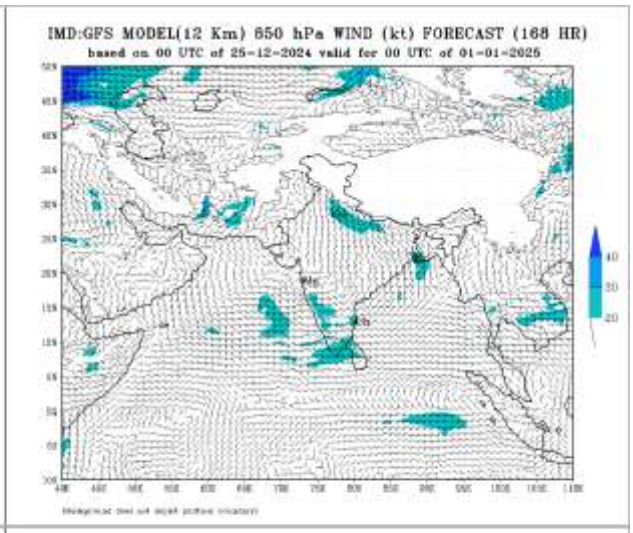

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (144 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 31-12-2024

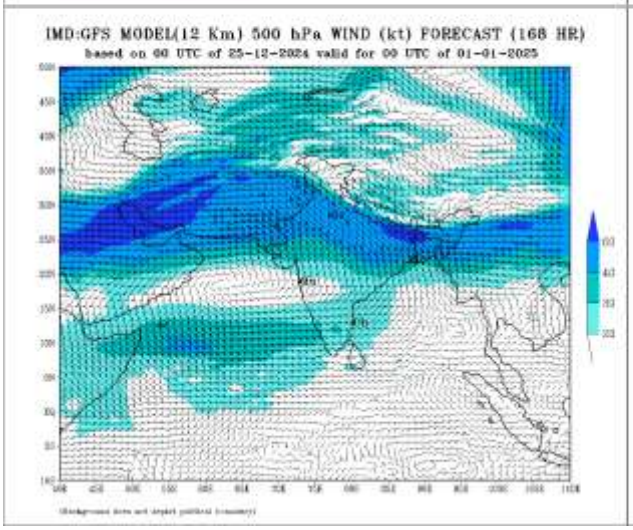

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 31-12-2024

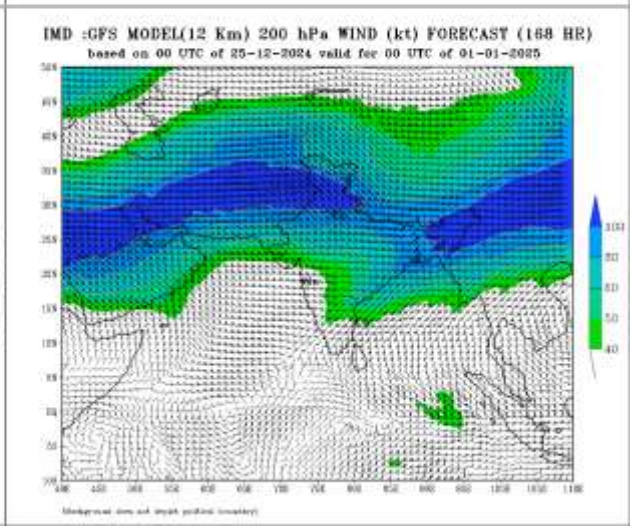

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 31-12-2024


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 31-12-2024


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (168 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 01-01-2025


IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 01-01-2025


IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 01-01-2025


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 25-12-2024 valid for 00 UTC of 01-01-2025