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

Tropical Cyclone Forecast Programme
Report Dated 17th October, 2024

Time of Issue: 1400 UTC

Synoptic features (based on 0300 UTC analysis):

- **Well Marked Low Pressure Area over South Coastal Andhra Pradesh and adjoining North Coastal Tamil Nadu Bay of Bengal**

  Yesterday's Depression over southwest Bay of Bengal moved west-northwestwards and crossed north Tamil Nadu - South Andhra Pradesh coasts between Puducherry and Nellore, close to north of Chennai, near latitude 13.5 N and longitude 80.2 E around 0430 hrs IST of today, the 17th October. Subsequently, it weakened into a Well Marked Low Pressure Area and lay over South coastal Andhra Pradesh and adjoining North coastal Tamil Nadu in the early morning (0530 hrs IST) and lay over Rayalseema and neighbourhood at 1430 hours IST of today, the 17th October, 2024.

- A cyclonic circulation lay over Lakshadweep and neighbourhood at 1730 hours IST of today, the 17th October.

- A fresh cyclonic circulation is likely to form over North Andaman Sea around 20th October. Under its influence, a low-pressure area is likely to form over central Bay of Bengal around 22nd October. It is likely to intensify further and move northwestwards.

Dynamical and thermo-dynamical features

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
Sea Surface Temperature (SST) ºC	28-32°C over entire BoB	➢ 28-30°C over eastern parts of AS. ➢ 27°C over the westcentral and southwest parts of AS
Tropical Cyclone Heat Potential (TCHP) kJ/cm^2	➢ >100 over northeast & adjoining eastcentral, westcentral & adjoining southwest BoB and south Andaman Sea ➢ 80-100 over southeast BoB ➢ <80 over northwest & adjoining westcentral Bob	➢ 60-70 over eastcentral AS ➢ less than 50 over westcentral AS & off Oman coast
Cyclonic Relative vorticity (X10^{-6}s^{-1})	20-30 over Southwest & adjoining westcentral BoB off Tamil Nadu & south Andhra Pradesh Coasts and North Sri Lanka	20-30 over eastcentral AS & adjoining Lakhshadweep Islands area off Kerala-Karnataka coast with vertical extension upto 500 hpa level and 30-40 over westcnetral AS off Oman-Yemen coasts
Low Level	5 over Northwest & adjoining	5-10 over Eastcentral AS

convergence ($X10^{-5}$ s^{-1})	Westcentral BoB off West Bengal-OdishaCoast	
Upper Level divergence ($X10^{-5}$ s^{-1})	10-20 over Central parts of south Bob Another zone of 5 over North Andaman Sea off Thailand coast	5-10 over eastcentral AS
Vertical Wind Shear (VWS knots) **Low: 05-10 knots** **Moderate: 10-20 knots** **High: >20 knots**	low over North & central Bob and high over south BoB and adjoining EIO	low over central AS and high over rest of AS
Wind Shear Tendency (knots)	Increasing tendency over Southwest & adjoining Westcentral Bob off Tamil Nadu-Andra Pradesh coasts Decreasing tendency to the rest of the BoB	Increasing tendency over south AS and adjoining Central AS Decreasing tendency over Eastcentral off Karnataka- goa coasts and West central AS off Oman coasts
Upper tropospheric Ridge	Along 20 .0°N over BoB.	Along 19.0°N over AS.

Satellite observations based on INSAT imagery (0300 UTC):

(a) Over the BoB & Andaman Sea:-

Scattered low and medium clouds with embedded intense to very intense convection lay over south Bay of Bengal and Andaman sea (minimum Cloud Top Temperature minus 70-80 degree Celcius). Scattered low and medium clouds with embedded moderate to intense convection lay over Westcentral Bay of Bengal, gulf of Martaban & Tenasserim coast.

(b) Over the Arabian Sea:-

Scattered to broken low and medium clouds with embedded intense to very intense convection lay over Eastcentral Arabian sea (minimum Cloud Top Temperature minus 80-90 degree Celcius). Scattered low and medium clouds with embedded moderate to intense convection lay over Southeast Arabian sea & Lakshadweep islands area and weak to moderate convection lay over rest Arabian sea & gulf of Cambay.

(c) Convection outside India:

Scattered low & medium clouds with embedded moderate to intense convection lay over North Sri Lanka, palk strait, South Pakistan, Nepal, Tibet, china, yellow sea, east china sea, Myanmar, Thailand, gulf of Thailand, Cambodia, laos, Vietnam, gulf of Tonkin, Hainan, Sumatra, strait of Malacca, Malaysia, Borneo, South china sea, java sea, celebes islands & sea, Philippines, sulu sea, Mozambique channel and over Indian ocean between latitude 5.0^0 N to 18.0^0 S & longitude 50.0^0 E to 110.0^0 E.

M.J.O. Index:

Madden Julian Oscillation (MJO) index is currently in Phase 5 with amplitude greater than 1. It is likely to continue in same phase with amplitude remaining more than 1 during week 1.

Storms and Depression over South China Sea/ South Indian Ocean:
Nil

Input for FDP Cyclone based on 0000 UTC for the next 7 days

MODEL GUIDANCE	Bay of Bengal (BoB)	Arabian Sea (AS)
IMD-GFS	IMD GFS is indicating emergence of a cyclonic circulation into North Andaman Sea on 20th Oct. It is indicated to become low pressure area over eastcentral BoB on 21st, depression over eastcentral BoB (15/89) around 23/12 and move further northwestwards & cross South Odisha-North Andhra Pradesh coasts (18/83) as a depression around 24/12 UTC.	IMD GFS is indicating cyclonic circulation over Lakshadweep Islands to move west-northwestwards till 22nd October.
IMD-GEFS	GEFS is indicating a low pressure area over eastcentral BoB (14/91.5) around 21/12 UTC, depression over westcentral BoB (14.8/87) around 23/12 UTC and crossing over South Odisha-North Andhra Pradesh coasts (18/83) around 24/12 UTC.	Model is indicating cyclonic circulation over Lakshadweep Islands to move west-northwestwards till 22nd October.
IMD-WRF	No significant system is indicated over Bay of Bengal during next three days.	No significant system during next 3 days.
NCMRWF-NCUM	It is indicating emergence of cyclonic circulation into North Andaman Sea (13/96) on 27/00 UTC.	Cyclonic circulation over Rayalseema on 17th, over eastcentral AS on 18th and west-northwestwards movement towards Gulf of Aden till 22nd Oct.
NCMRWF-NEPS	It is indicating emergence of cyclonic circulation into North Andaman Sea (13/96) on 27/00 UTC.	Cyclonic circulation over Rayalseema on 17th, over eastcentral AS on 18th and west-northwestwards movement towards Gulf of Aden till 22nd Oct.
ECMWF	It is indicating cyclonic circulations over North Andaman Sea on 20th, low pressure area over Eastcentral Bay of Bengal (14/91) around 21/00 UTC, Depression over Westcentral BoB (15.3/88.4) around 22/12 UTC and movement towards Odisha coast as a depression.	No significant cyclonic circulation is indicated during next 7 days.
NCEP-GFS	NCEP GFS is indicating a cyclonic circulation to emerge into North Andamman Sea on 20th, low pressure area on 21st (13/94), depression over eastcentral BoB on 21/06 and intensification of system into a very	NCEP GFS is indicating cyclonic circulation over eastcentral AS to move west-northwestwards till 22nd October.

	severe cyclonic storm with crossing over Odisha coast around 24/06 UTC.	
IMD extended range model	IMD CFS V2, 850 hPa anomaly field is indicating a cyclonic anomaly over central BoB during week 1 and another over Odisha during beginning of week 2. The IMD ERF model indicates a low to moderate probability (30-40%) of cyclogenesis over central and adjoining south BoB with an extension towards northwest BoB during week 1.	The low pressure area over eastcentral Arabian Sea on 19th Oct to move nearly westwards towards Gulf of Aden till 22nd Oct.
NCMRWF Extended Range Model	The week 1 forecast of the NCMRWF ERF model also portrays similar features in the mean wind field.	No significant system over AS
ECMWF Multi model	The ECMWF ensemble forecast Model also indicates moderate probability of cyclogenesis (40-50%) over the westcentral and adjoining northwest BoB during week 1.	No significant system over AS

Summary:

(a)Bay of Bengal:

Most of the deterministic models (IMD GFS, GEFS, NCEP GFS, ECMWF, ECAI, NCUM-G, NEPS) are indicating emergence of a cyclonic circulation into North Andaman Sea around 20th October. Models (IMD GFS, GEFS, NCEP GFS, ECMWF, ECAI) are indicating intensification of this cyclonic circulation into a low pressure area over central BoB around 22nd October and depression by 24th October. However, there is variation among models regarding peak intensification with ECMWF & GFS indicating depression intensity & NCEP is indicating intensification upto severe cyclonic storm. These models are also indicating movement of the system towards Odisha coast. NCUM group of models is not indicating any cyclogenesis over the BoB during next 10 days.

(b) Arabian Sea

Most of the numerical models are indicating low/cyclonic circulation over eastcentral AS to move West-Northwestwards without any significant intensification. Extended range models area also not indicating any cyclogenesis over the Arabian Sea during the period.

Inference:

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

- **There is high probability of cyclogenesis (formation of depression) over central Bay of Bengal during 23rd to 24th October.**
- **The existing cyclonic circulation over North Lakshadweep is likely to move west-northwestwards during next 3-5 days without any significant intensification.**

Probability of cyclogenesis (formation of depression and above intensity systems) over the BAY OF BENGAL of Bengal and Andaman 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	LOW	MOD

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

"-" indicate genesis has already occurred.
Probabiliy is indicated as NIL for 0%, LOW for 1-33%, MOD for 34-67% and HIGh for 68-100%.

Advisory:

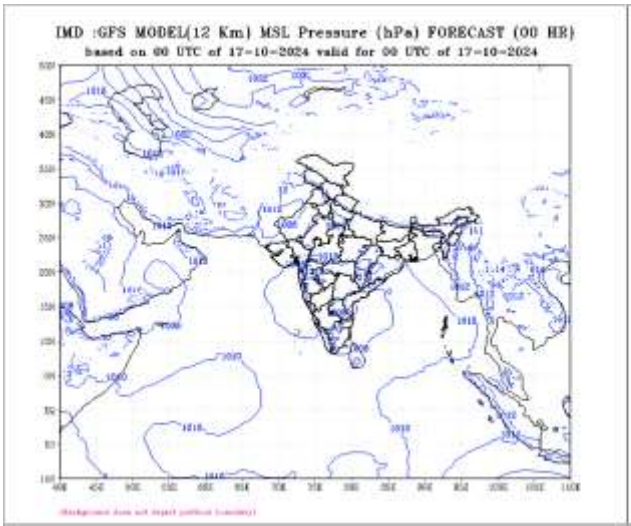
Development/Emergence of Cyclonic circulation over North Andaman Sea around 20th October, it's movement and further intensification need to be monitored critically.

Intense Observation Period (IOP) is suggested for:

Andaman Sea during 21st to 23rd,

Odisha, West Bengal, Andhra Pradesh, Bangladesh and Myanmar during 24th – 26th

Annexure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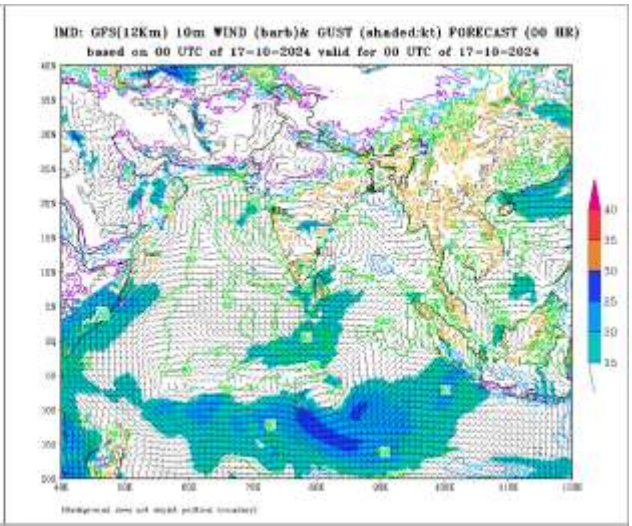
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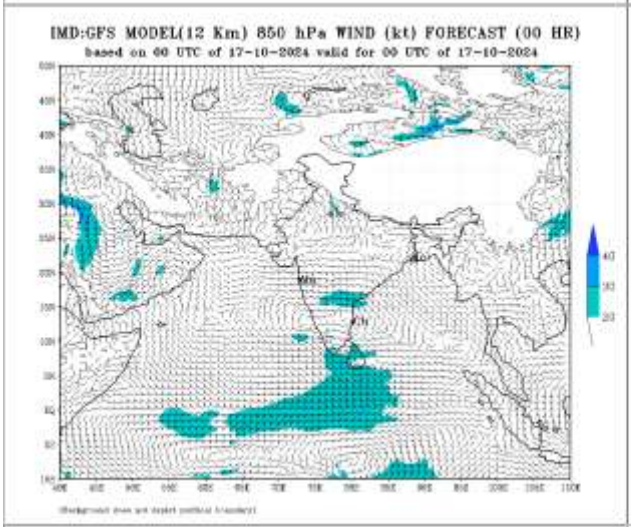
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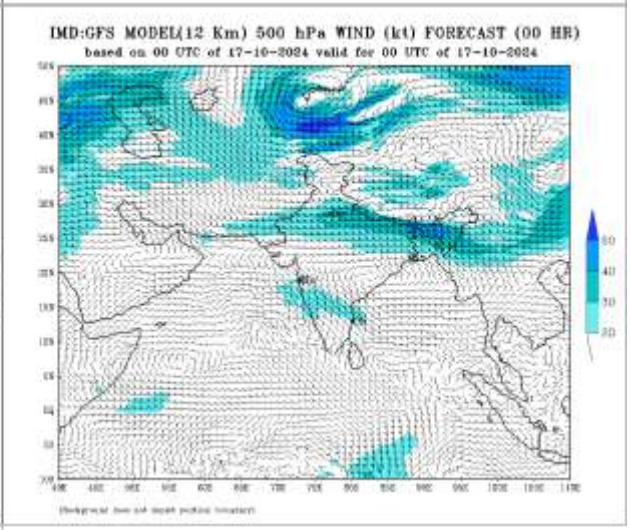
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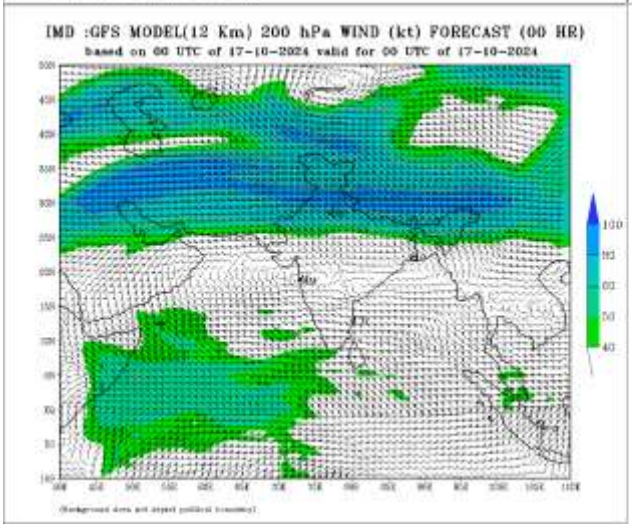
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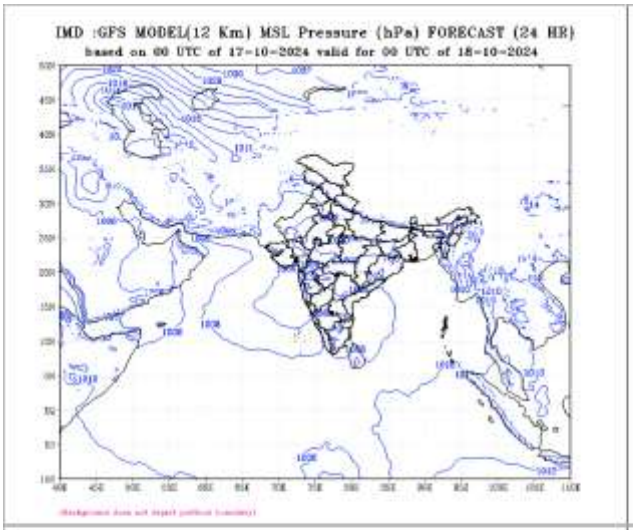
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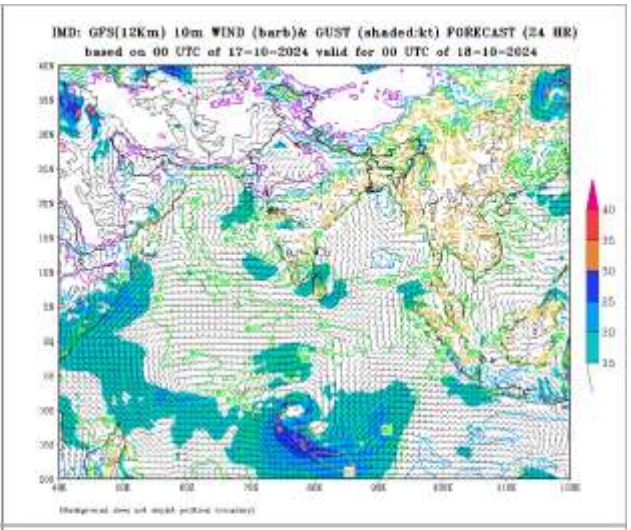
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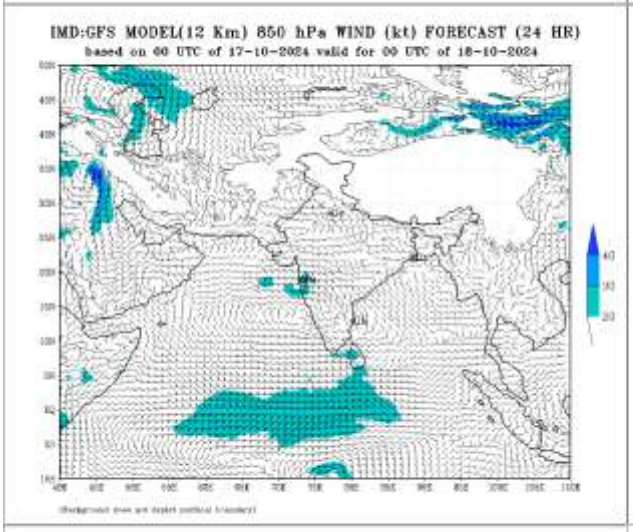
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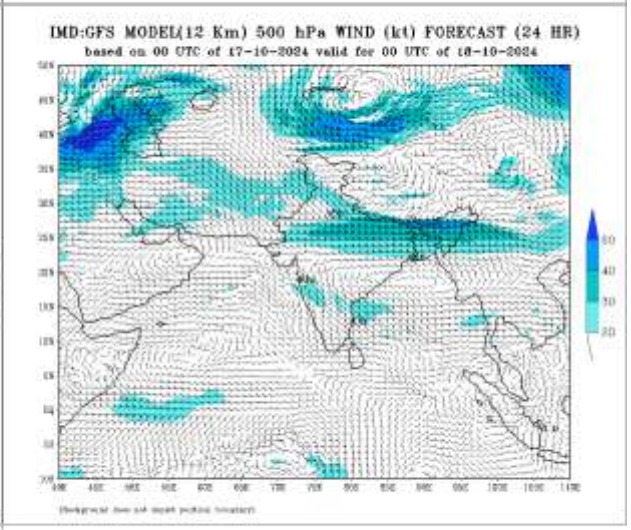
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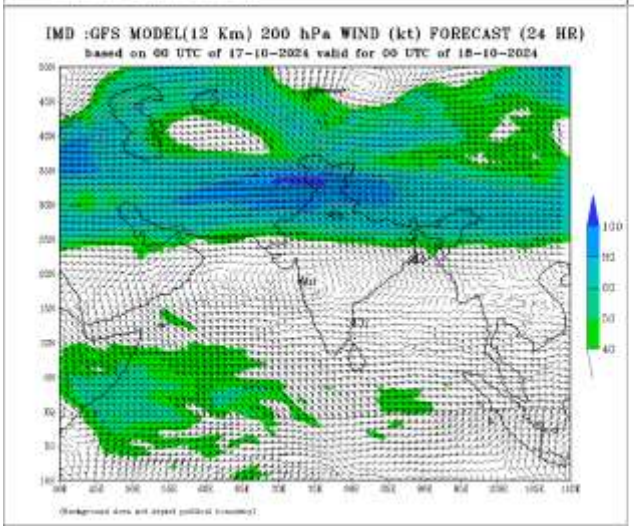
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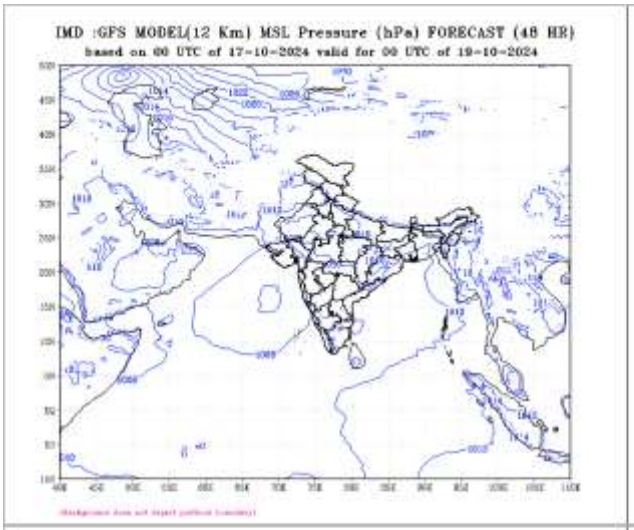
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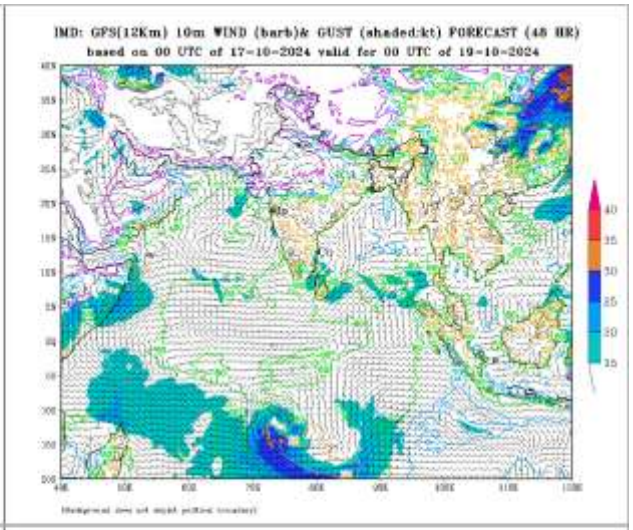
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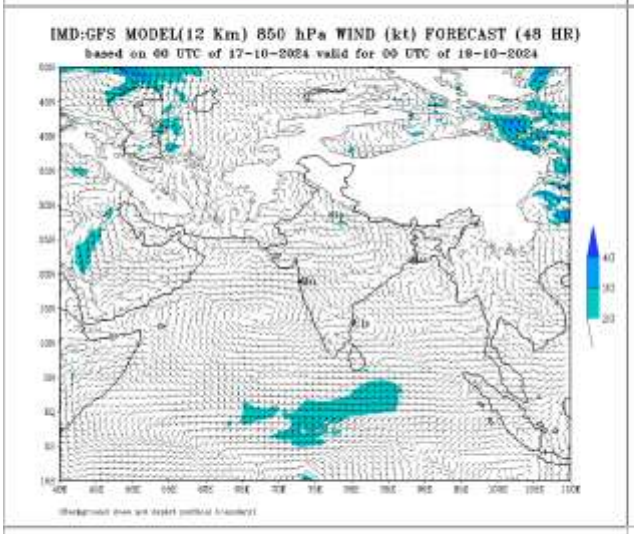
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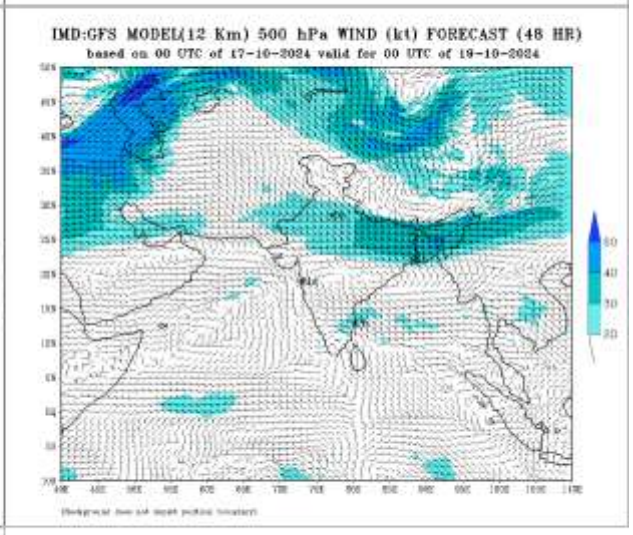
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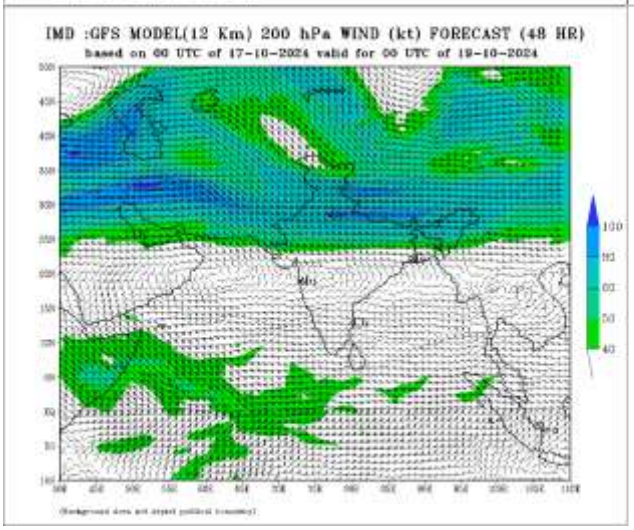
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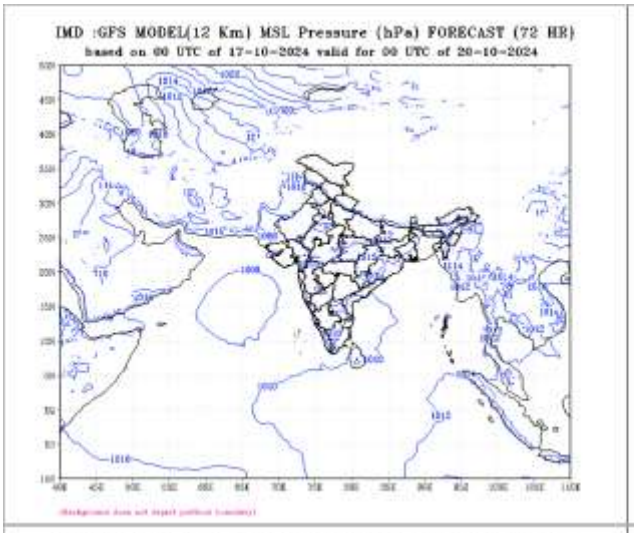
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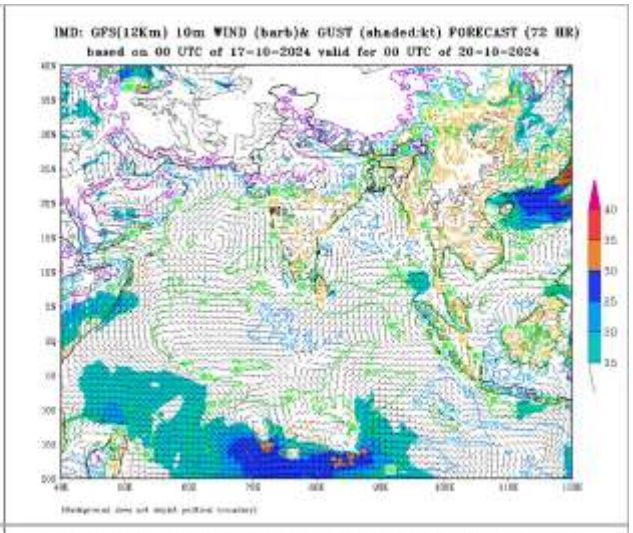
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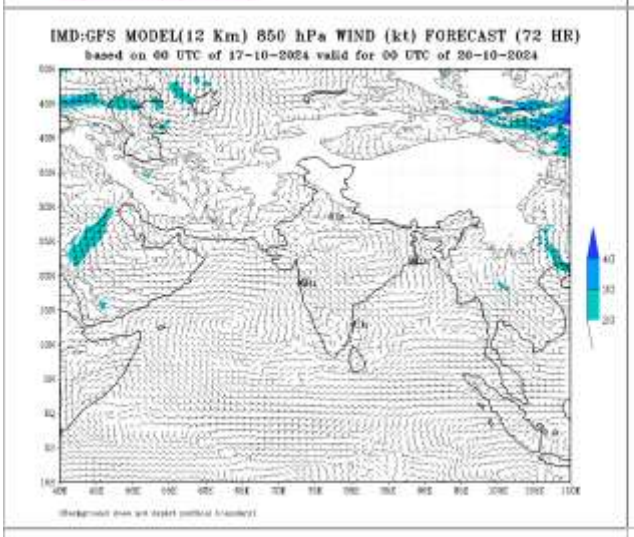
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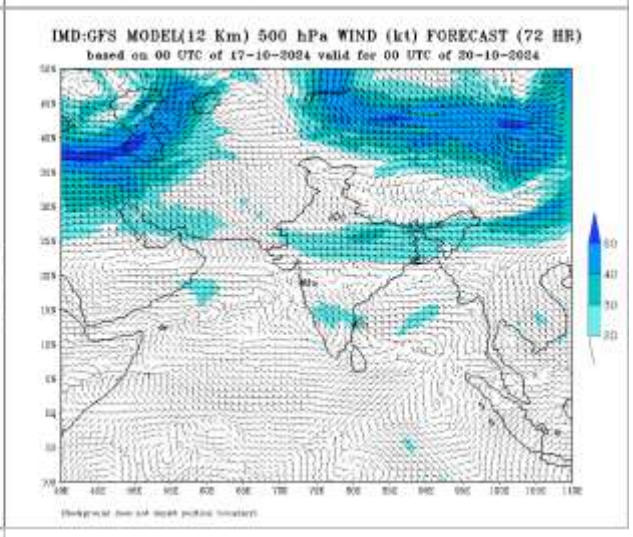
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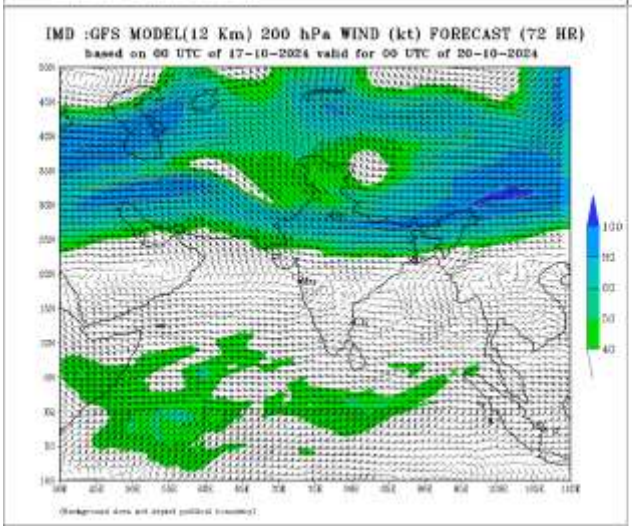
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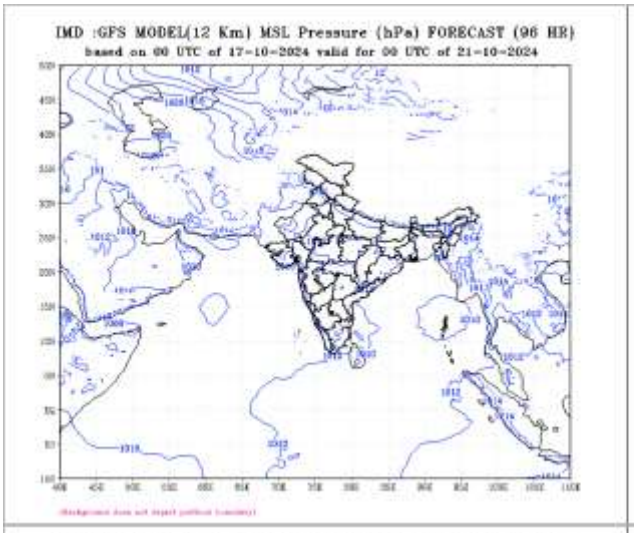
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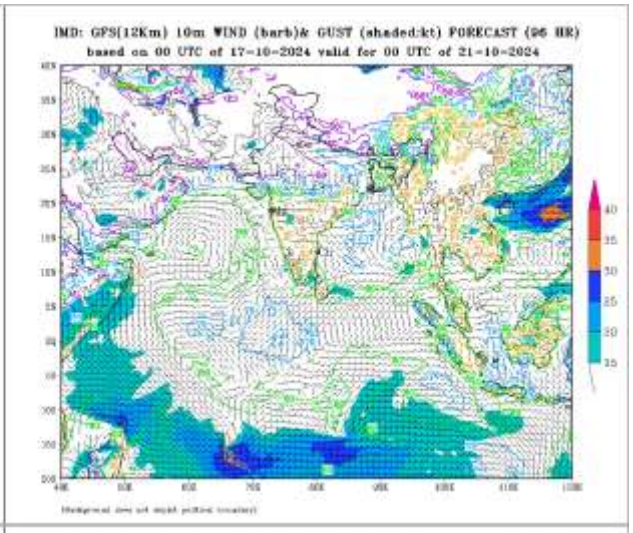
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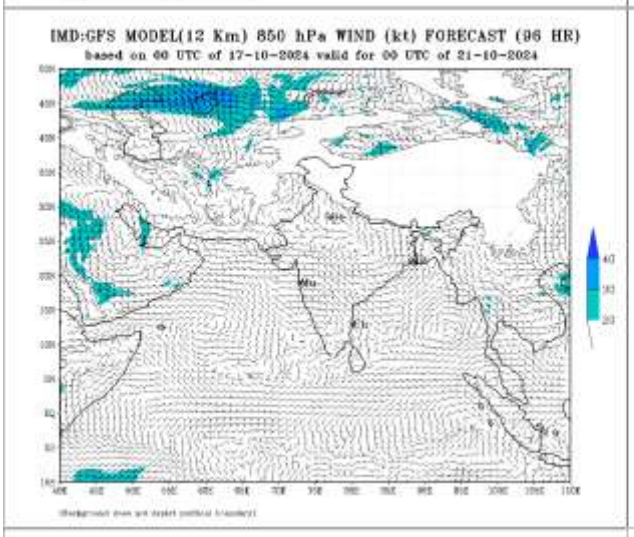
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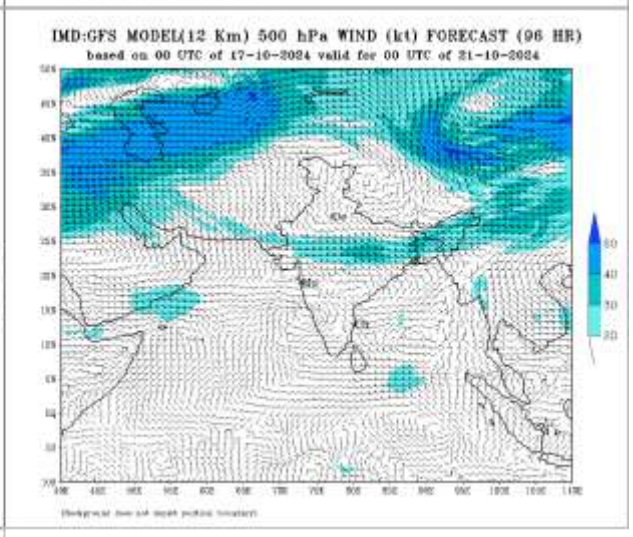
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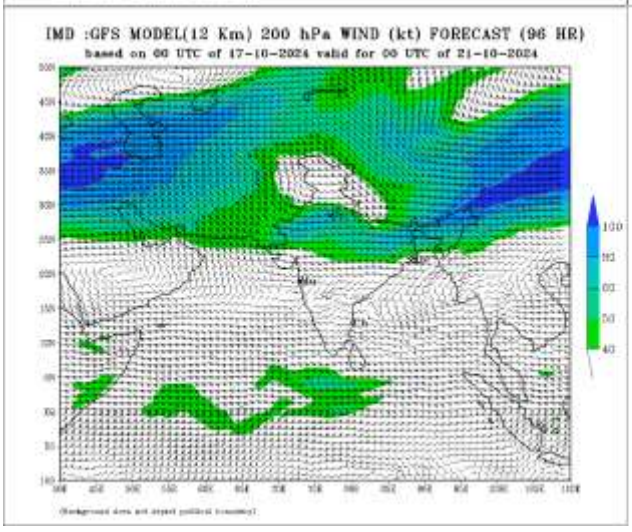
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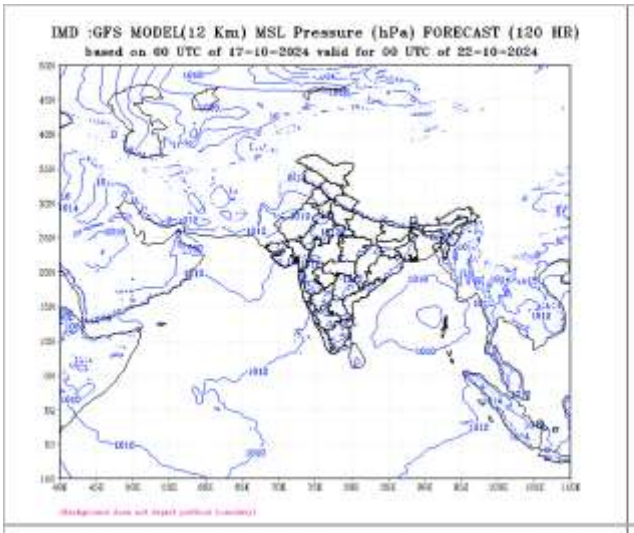
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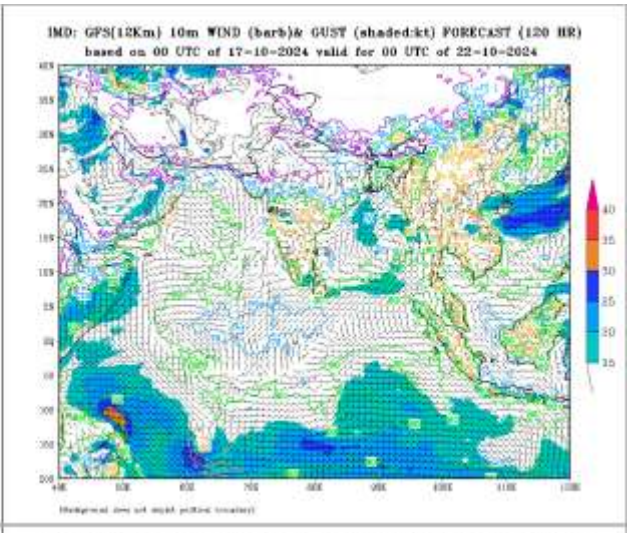
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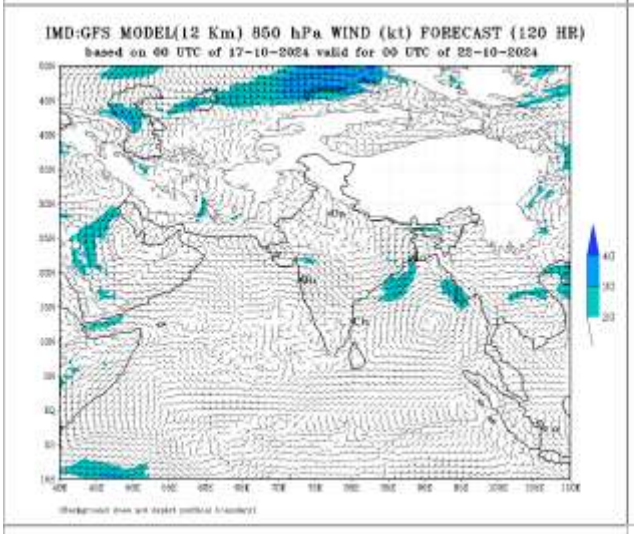
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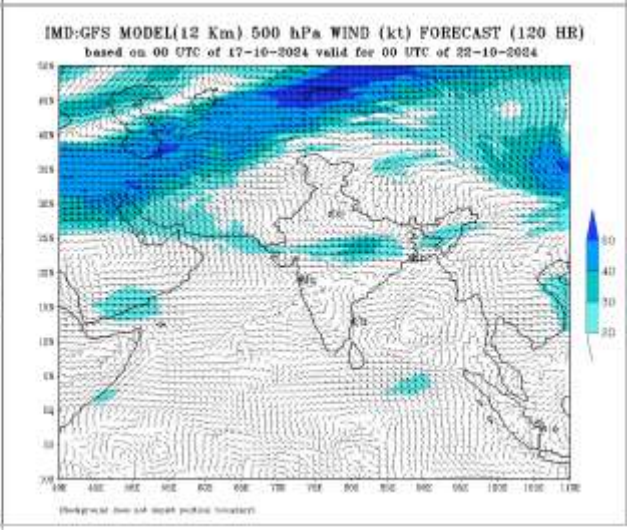
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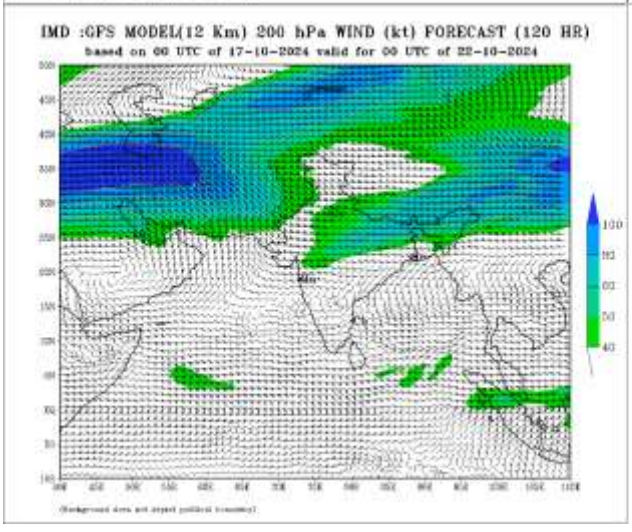
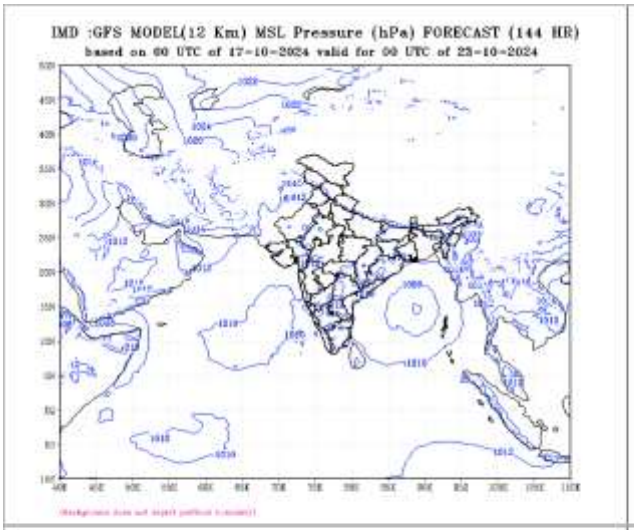
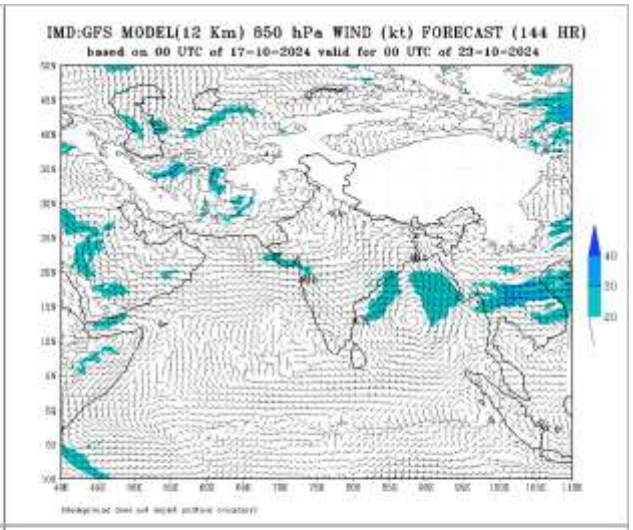
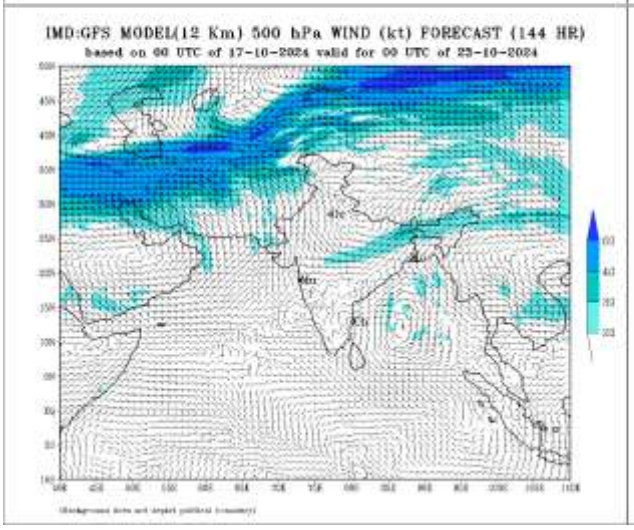
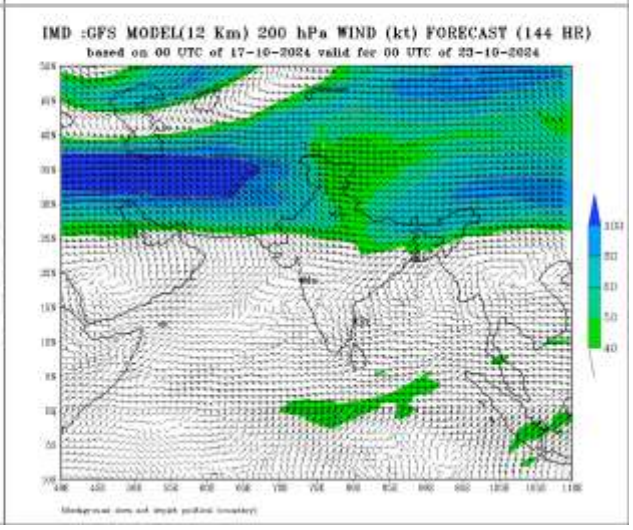
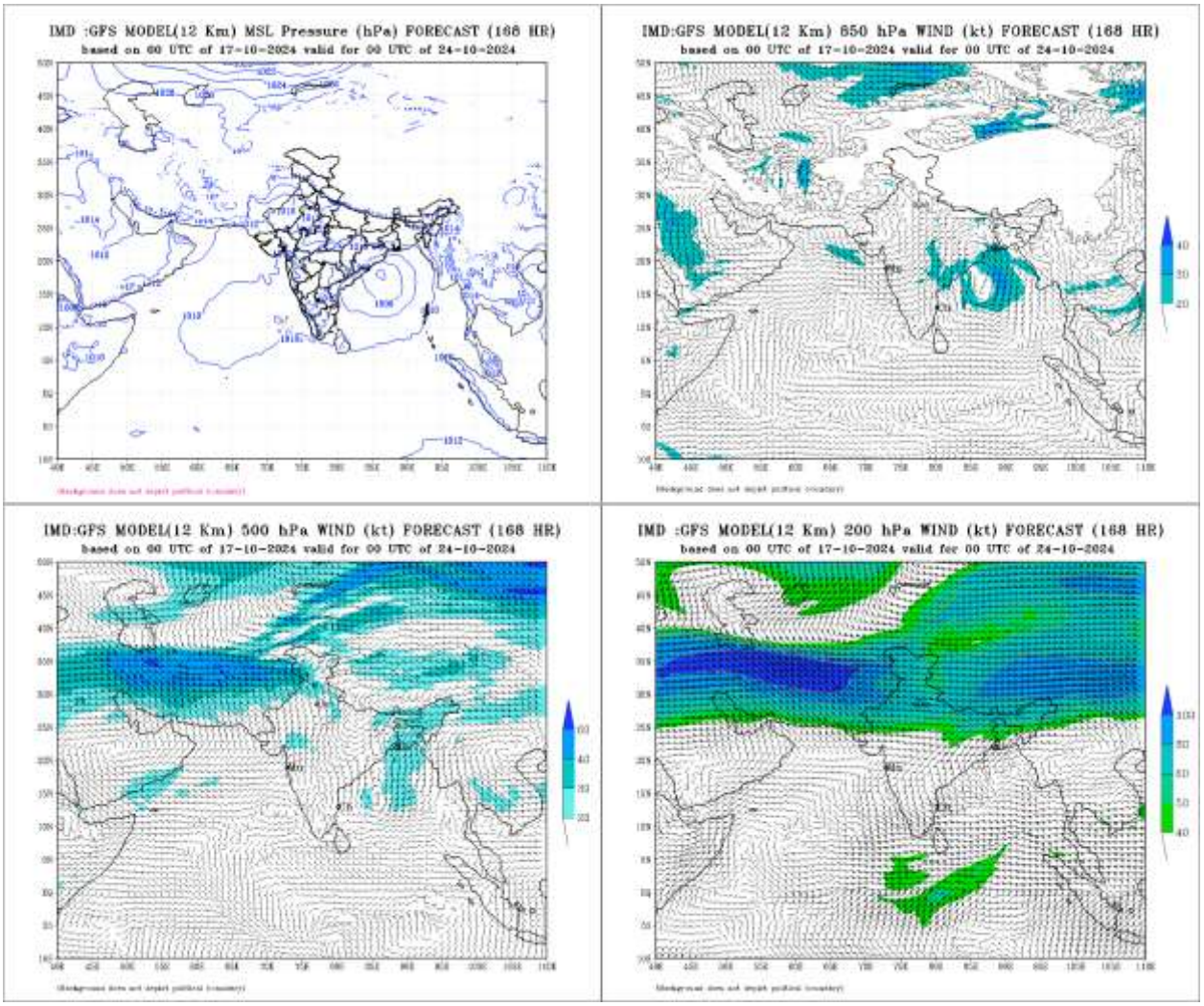

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 17-10-2024 valid for 00 UTC of 22-10-2024


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (144 HR)
based on 00 UTC of 17-10-2024 valid for 00 UTC of 23-10-2024


IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 17-10-2024 valid for 00 UTC of 23-10-2024


IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 17-10-2024 valid for 00 UTC of 23-10-2024


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 17-10-2024 valid for 00 UTC of 23-10-2024


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (168 HR)
based on 00 UTC of 17-10-2024 valid for 00 UTC of 24-10-2024
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 17-10-2024 valid for 00 UTC of 24-10-2024
IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 17-10-2024 valid for 00 UTC of 24-10-2024
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 17-10-2024 valid for 00 UTC of 24-10-2024