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

Tropical Cyclone Forecast Programme
Report Dated 23rd December 2024

Time of Issue: 1000 UTC

Synoptic features (based on 0300 UTC analysis):

- Yesterday's well marked low pressure area over westcentral Bay of Bengal moved west- southwestwards and lay over Westcentral and adjoining Southwest Bay of Bengal off South Andhra Pradesh-North Tamil Nadu coasts at 0000 UTC of today, the 23rd December 2024. Continuing to move further west-southwestwards it lay over Southwest and adjoining westcentral Bay of Bengal off South Andhra Pradesh- North Tamil Nadu coasts at 0300UTC of today, the 23rd December, 2024. The associated cyclonic circulation extended upto 3.1 km above mean sea level. It is likely to move further west-southwestwards and reach southwest Bay of Bengal near north Tamil Nadu & south Andhra Pradesh coasts on 24th December.

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 and western coast. ➢ 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. ➢ 25-28°C over rest of AS.
Tropical Cyclone Heat Potential (TCHP) kJ/cm^2	➢ 150-200 over northeast BoB and adjoining parts of northwest BoB and Andaman Sea ➢ 100-150 over and southeast & east central BoB. ➢ 20-30 over some parts of southwest BoB along & off north Sri Lanka coast. ➢ 60-80 over rest of BoB.	➢ 100-120 over southeast AS, Maldives Islands, Lakshadweep Islands and areas of eastcentral AS along Karnataka-Kerala coasts. ➢ 20-60 over rest AS.
Cyclonic Relative - vorticity (X10^{-6}s^{-1})	➢ 50 over system area i.e. Westcentral and adjoining Southwest BoB.	➢ 20-30 over eastcentral AS and adjoining northeast AS.
Low-Level convergence (X10^{-5} s^{-1})	➢ 05-10 over westentral and adjoining southwest BoB. ➢ 30 south Andaman Sea and adjoining EIO	--
Upper-Level divergence	➢ -ve along and off Tamil Nadu, Andhra Pradesh	➢ 20 - 30 over Comorin region adjoining southwest

($X10^{-5}$ s^{-1})	coast. ➢ 5-10 southwest BoB. ➢ 20-30 south Andaman Sea and adjoining EIO	AS
Vertical Wind Shear (VWS knots) **Low: 05-10 knots** **Moderate: 10-20 knots** **High: >20 knots**	➢ Moderate over westentral and adjoining southwest BoB. ➢ High over rest BoB	➢ Low-Moderate over of eastcentral & southwest AS. ➢ High over rest AS
Wind Shear Tendency (knots)	➢ Increasing over north Andaman Sea. ➢ Decreasing over north & central BoB along & off Andhra Pradesh coast.	➢ Increasing over north, central AS. ➢ Decreasing over southwest AS and adjoining EIO.
Upper tropospheric Ridge	13^0N over BoB.	--

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 (minimum CTT minus 69 degree Celsius). Scattered low and medium clouds with embedded moderate to intense convection lay over central Bay of Bengal (minimum CTT minus 70 - 80 degree Celsius). Scattered low and medium clouds with embedded moderate to intense convection lay over south Bay of Bengal & south Andaman Sea and weak to moderate convection lay over north Bay of Bengal and north Andaman Sea.

b) Over the Arabian Sea:

Scattered low and medium clouds with embedded weak to moderate convection lay over south Arabian Sea & Comorin area. Scattered low and medium clouds over Lakshadweep Islands area, Maldives area.

c) Outside India:

Scattered low & medium clouds with embedded moderate to intense convection over Maldives, north Pakistan, Nepal, Tibet China, 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 Islands & Sea, Celebes Islands & Sea, Philippines, Sulu Sea, Madagascar, Mozambique Channel and over Indian Ocean between latitude 5.0N to 16.0S longitude 40.0E to 125.0E.

M.J.O. Index:

MJO is currently in phase 6 with amplitude greater than 1. It will be in same phase till 25th December but with amplitude less than 1. Later, it will move to phase 7 and remain there till 1st of 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 westcentral BoB as of today 23rd Dec, moving southwestwards and lay as LPA over southwest BoB on 25th, less marked thereafter.	The model indicates no significant system over AS.
IMD-GEFS	Model is indicating the Low-Pressure area (LPA) over southwest BoB and adjoining westcentral BoB as of today 23rd Dec, moving southwestwards and lay as LPA over southwest BoB on 24th, less marked thereafter.	The model indicates no significant system over AS.
IMD-WRF	Model is indicating the Low-Pressure area (LPA) over southwest ad adjoining westcentral BoB as of today 23rd Dec, moving southwestwards and lay as LPA over southwest BoB on 25th, 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 and adjoining westcentral BoB as of today 23rd Dec, moving southwestwards and lay as LPA over southwest BoB on 25th, less marked thereafter.	The model indicates no significant system over AS.
NCMRWF-NCUM(R)	Model is indicating a cyclonic circulation over southwest and adjoining westcentral BoB as of today, having its southwestward movement and lay over southwest BoB on 25th as cyclonic circulation.	The model indicates no significant system over AS.
NCMRWF-NEPS	Model is indicating the Low-Pressure area (LPA) over southwest BoB and adjoining westcentral BoB as of today 23rd Dec, moving southwestwards and lay as LPA over southwest BoB on 25th, less marked thereafter.	The model indicates no significant system over AS.
ECMWF	Model is indicating the Low-Pressure area (LPA) over southwest BoB and adjoining westcentral BoB as of today 23rd Dec, moving southwestwards and lay as LPA over southwest BoB on 24th/12 UTC, less marked thereafter.	The model indicates no significant system over AS.
NCEP-GFS	Model is indicating the Low-Pressure area (LPA) over southwest BoB and adjoining westcentral BoB as of today 23rd Dec, moving southwestwards and lay as LPA over southwest BoB on 25th/12 UTC, less marked thereafter.	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 and adjoining westcentral Bay of Bengal as of today the 23rd December, 2024. Models are also indicating its West-southwestwards movement towards Tamil Nadu coast till 24th/25th without further intensification and less marked thereafter. There is good convergence among all the models in this regard.

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

Inference:

- Yesterday's well marked low pressure area over westcentral Bay of Bengal moved west- southwestwards and lay over Westcentral and adjoining Southwest Bay of Bengal off South Andhra Pradesh-North Tamil Nadu coasts at 0000 UTC of today, the 23rd December 2024. Continuing to move further west-southwestwards it lay over Southwest and adjoining westcentral Bay of Bengal off South Andhra Pradesh-North Tamil Nadu coasts at 0300UTC of today, the 23rd December, 2024. The associated cyclonic circulation extended upto 3.1 km above mean sea level. It is likely to move further west-southwestwards and reach southwest Bay of Bengal near north Tamil Nadu & south Andhra Pradesh coasts on 24th 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

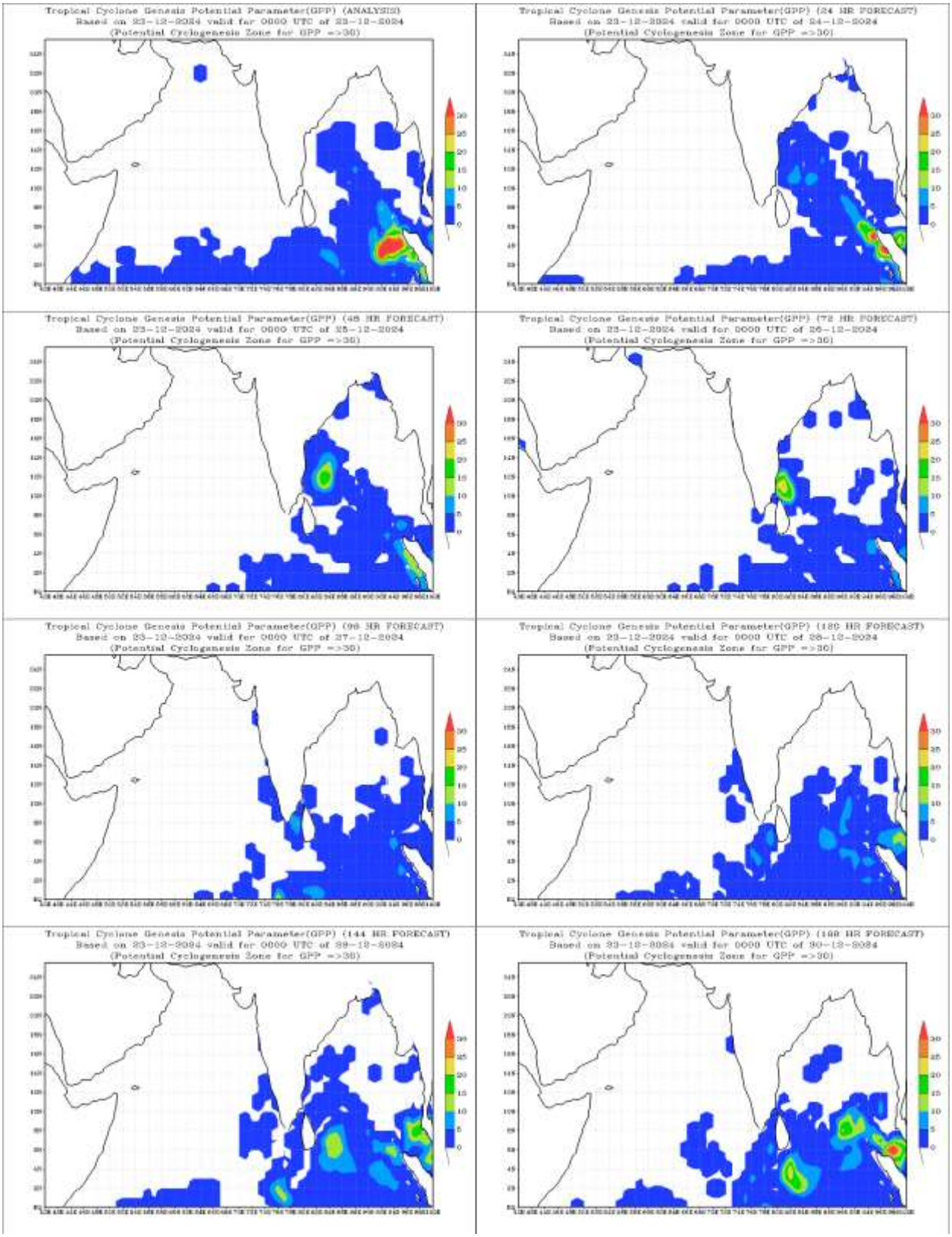
Probability of cyclogenesis (formation of depression and above intensity systems) over the Arabian Sea during next 168 hours:

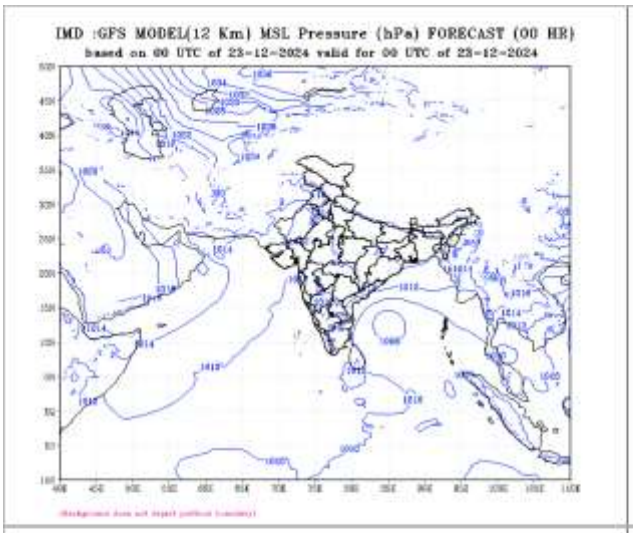
24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

"- "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): Andhra Pradesh and adjoining north Tamil Nadu coasts during 23rd; South Andhra Pradesh and North Tamil Nadu coasts during 24th & 25th December, 2024.

ANNEXURE


Tropical Cyclone Genesis Potential Parameter(GPP) (ANALYSIS)
Based on 23-12-2024 valid for 0000 UTC of 23-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (24 HR FORECAST)
Based on 23-12-2024 valid for 0000 UTC of 24-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (48 HR FORECAST)
Based on 23-12-2024 valid for 0000 UTC of 25-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (72 HR FORECAST)
Based on 23-12-2024 valid for 0000 UTC of 26-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (96 HR FORECAST)
Based on 23-12-2024 valid for 0000 UTC of 27-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (120 HR FORECAST)
Based on 23-12-2024 valid for 0000 UTC of 28-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (144 HR FORECAST)
Based on 23-12-2024 valid for 0000 UTC of 29-12-2024
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (168 HR FORECAST)
Based on 23-12-2024 valid for 0000 UTC of 30-12-2024
(Potential Cyclogenesis Zone for GPP =>30)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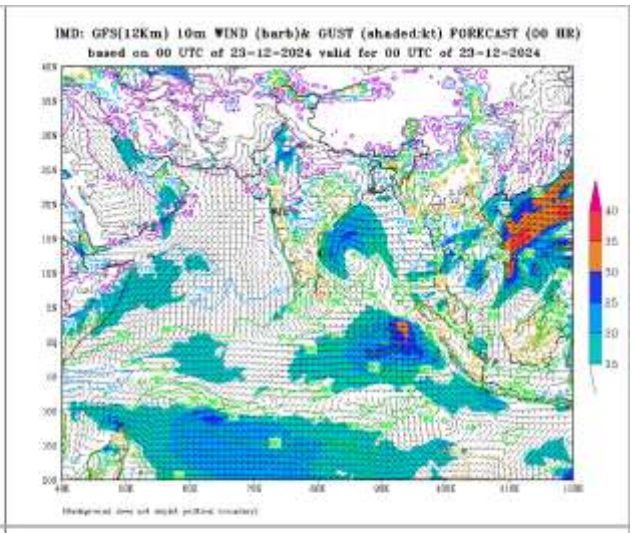
based on 00 UTC of 23-12-2024 valid for 00 UTC of 23-12-2024


IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (00 HR)
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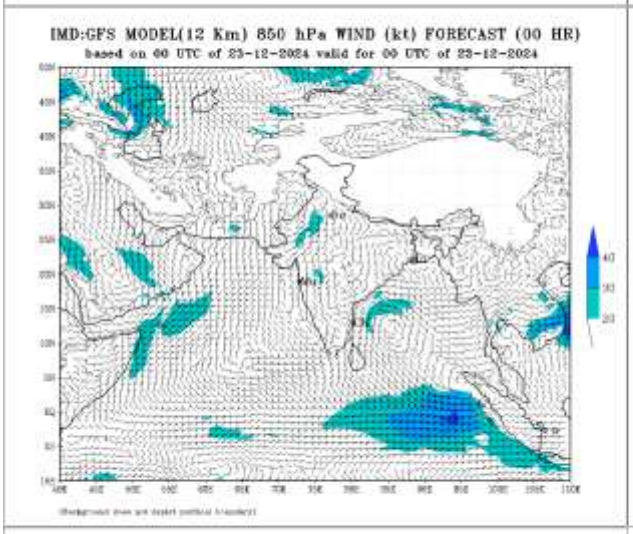
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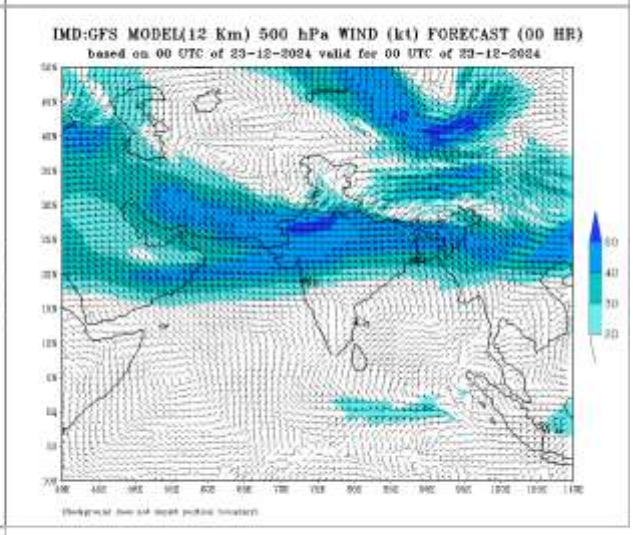
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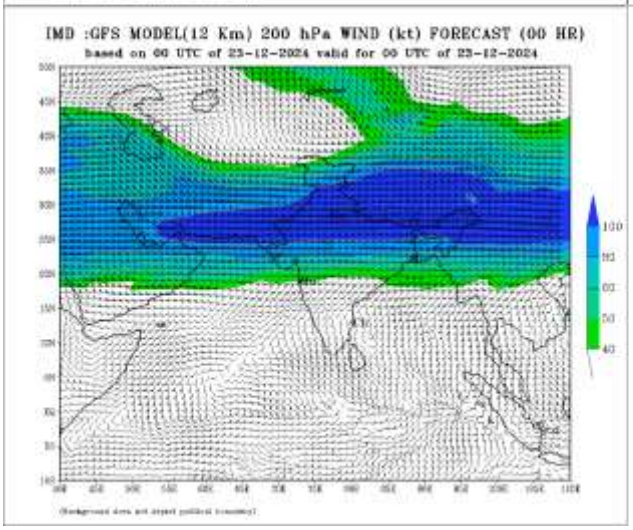
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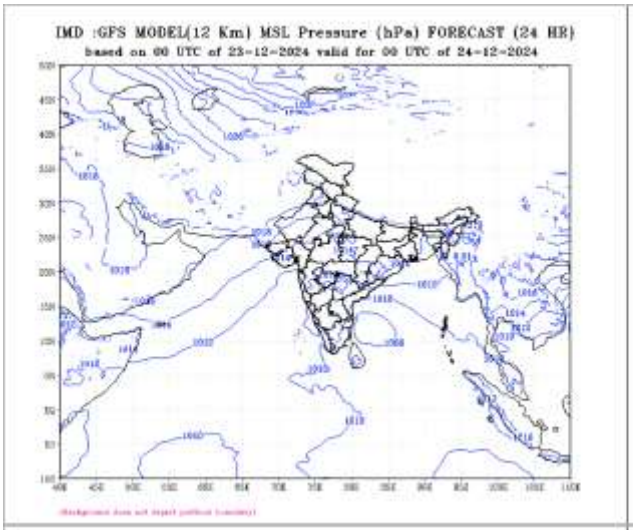
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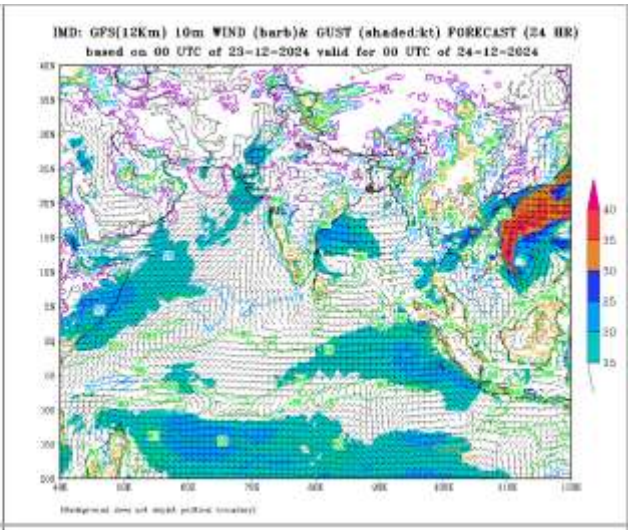
based on 00 UTC of 23-12-2024 valid for 00 UTC of 24-12-2024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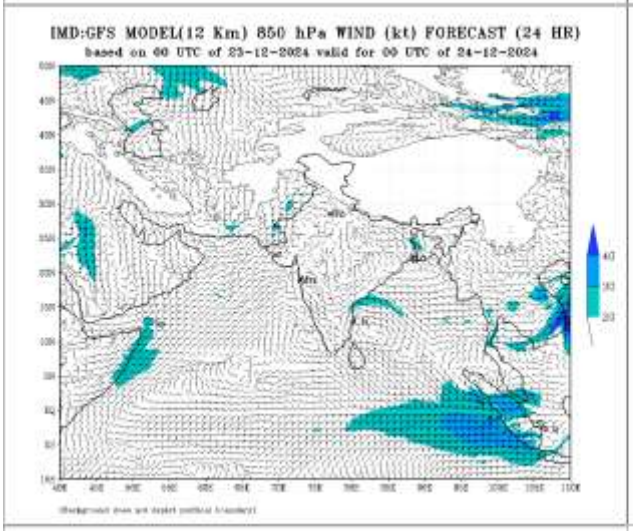
based on 00 UTC of 23-12-2024 valid for 00 UTC of 24-12-2024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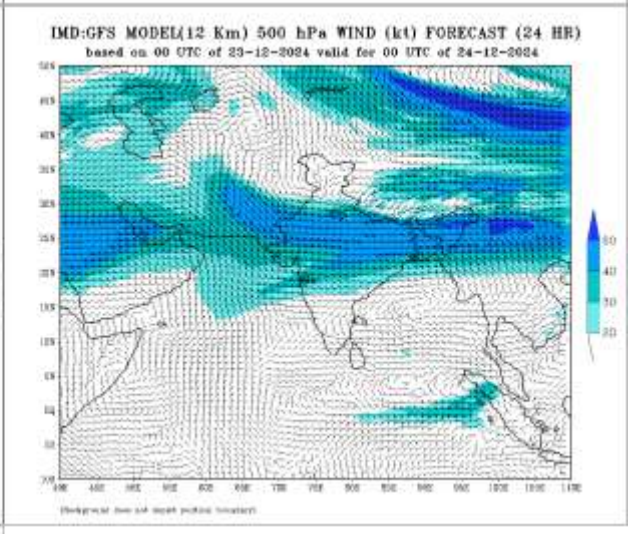
based on 00 UTC of 23-12-2024 valid for 00 UTC of 24-12-2024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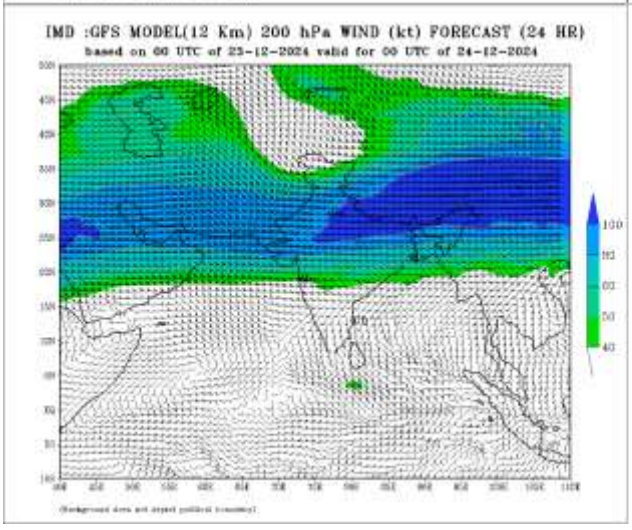
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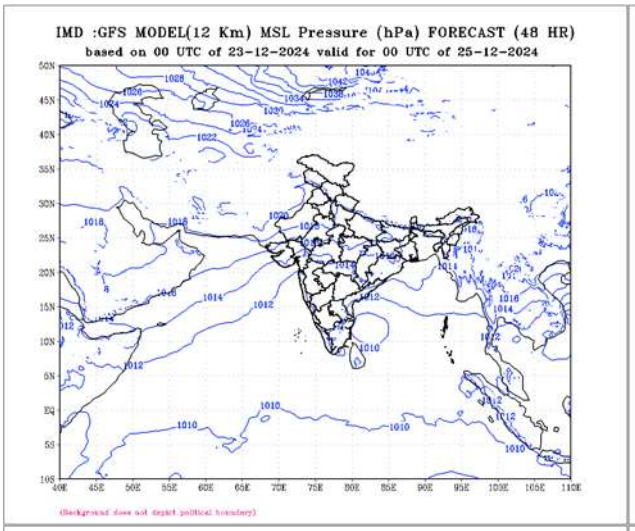
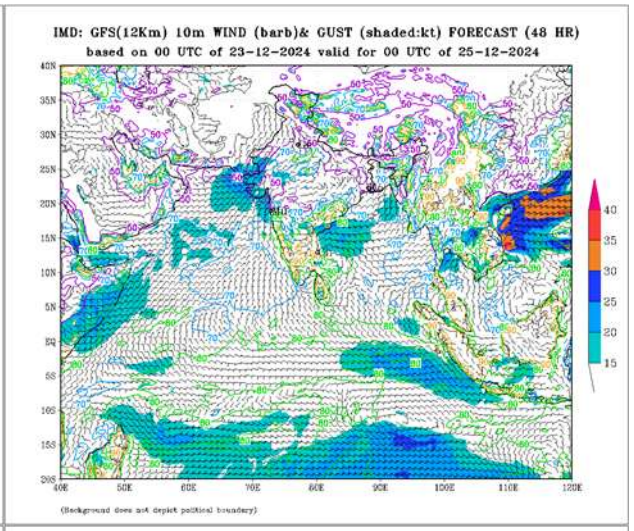

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (48 HR)
based on 00 UTC of 23-12-2024 valid for 00 UTC of 25-12-2024
(Background does not depict political boundary)


IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (48 HR)
based on 00 UTC of 23-12-2024 valid for 00 UTC of 25-12-2024
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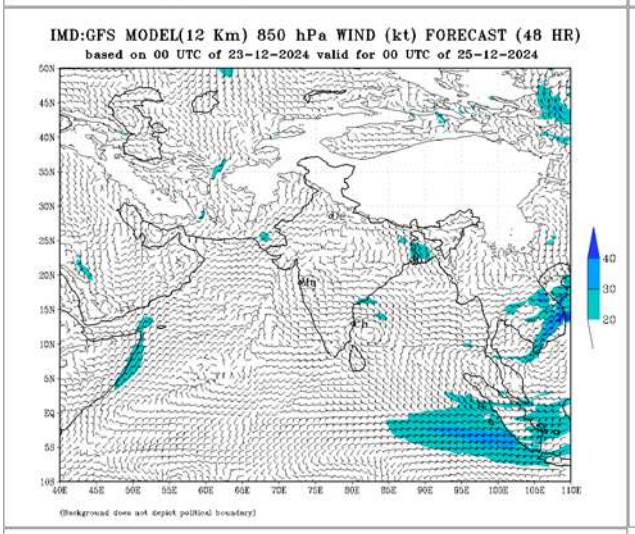
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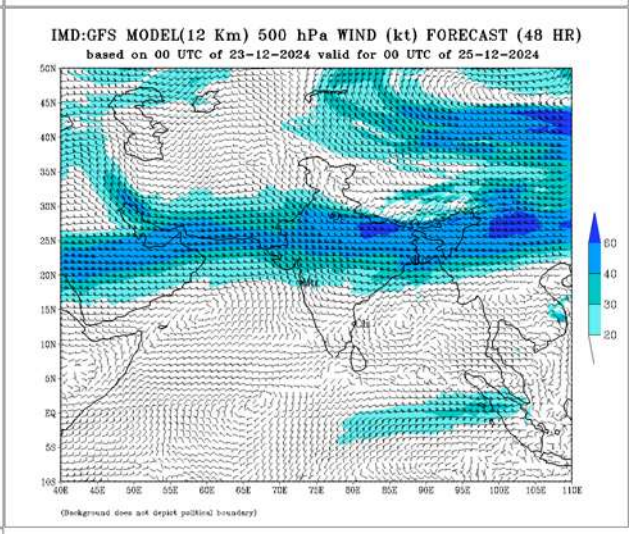
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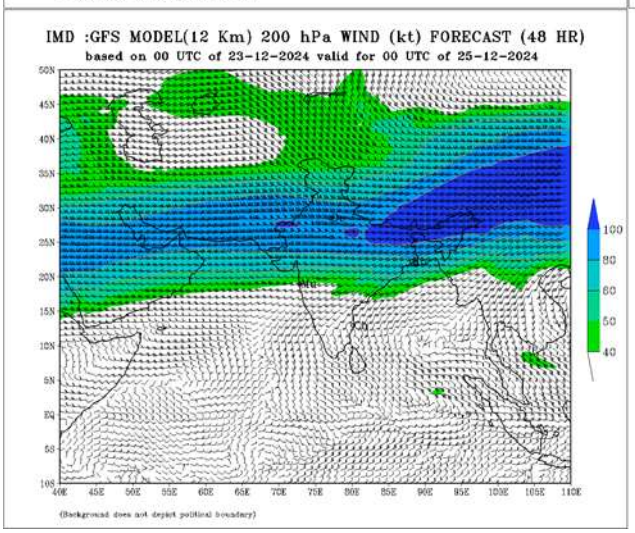
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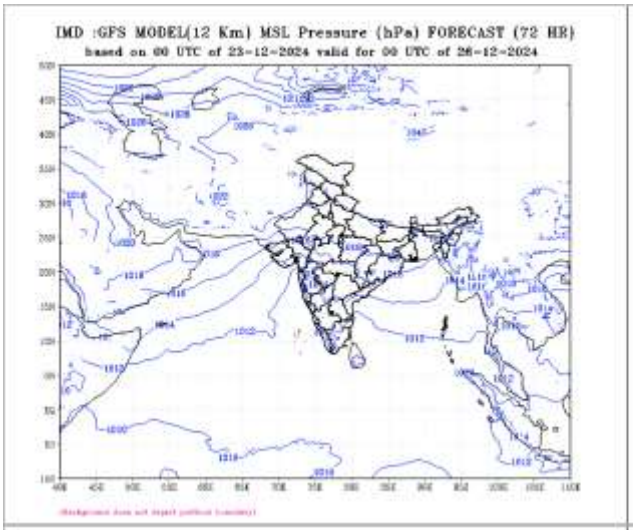
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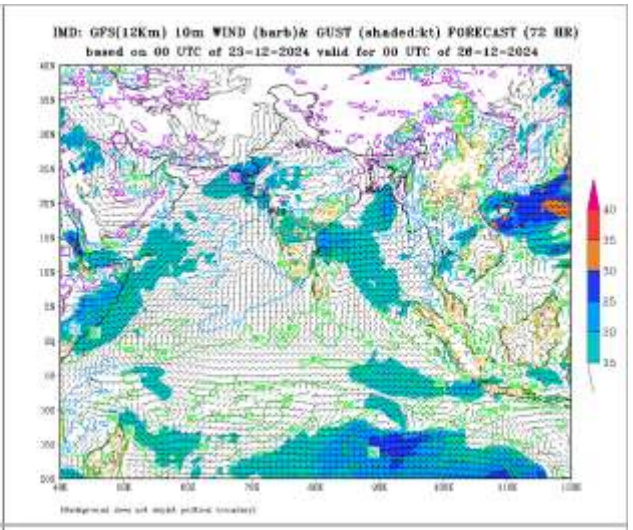
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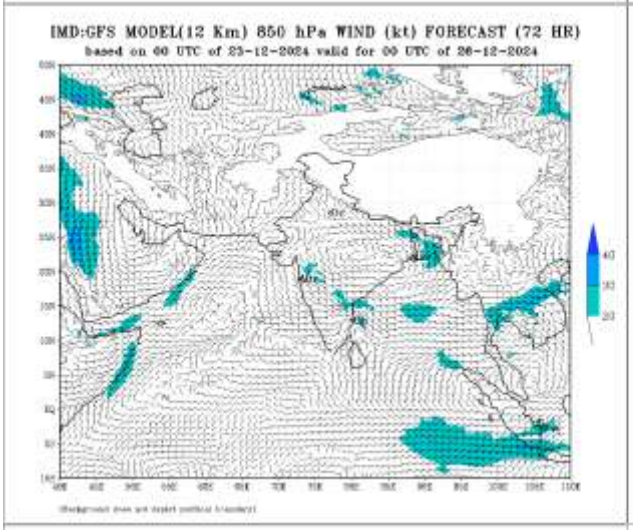
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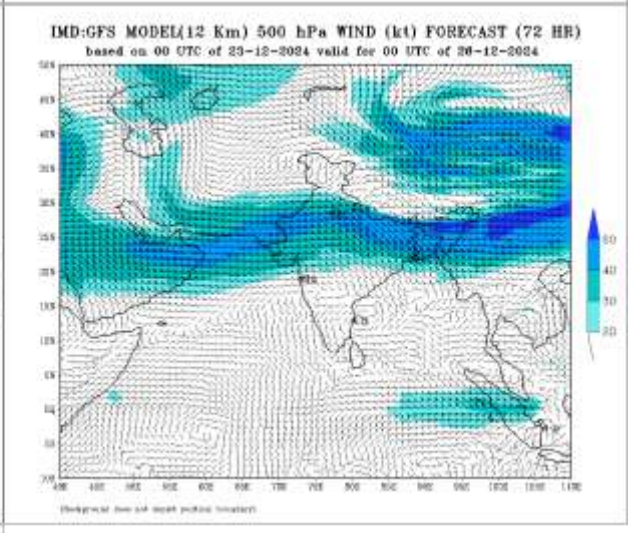
based on 00 UTC of 23-12-2024 valid for 00 UTC of 26-12-2024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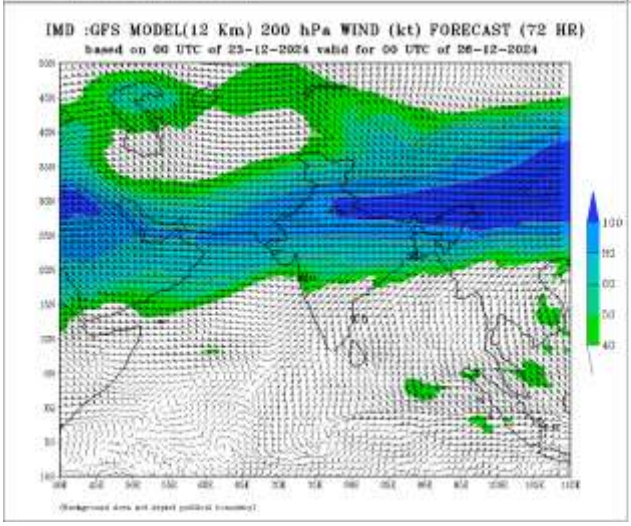
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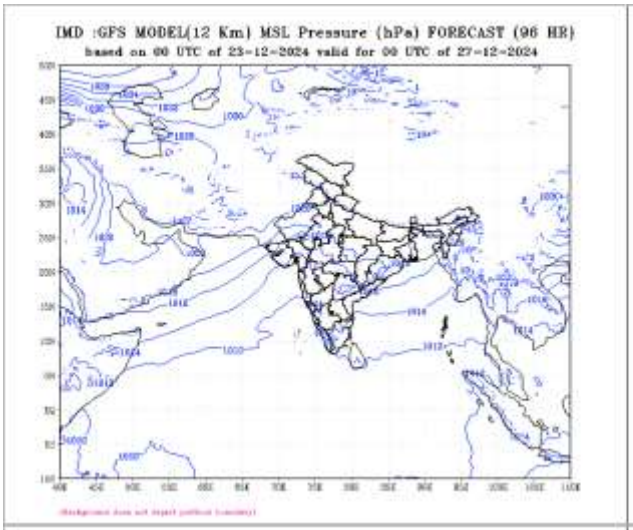
based on 00 UTC of 23-12-2024 valid for 00 UTC of 26-12-2024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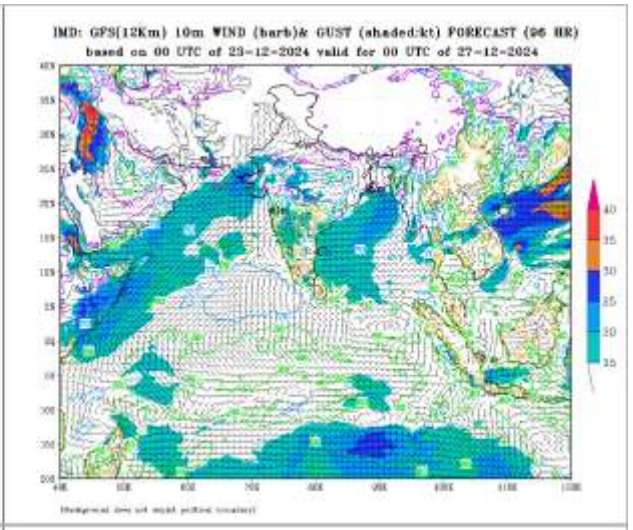
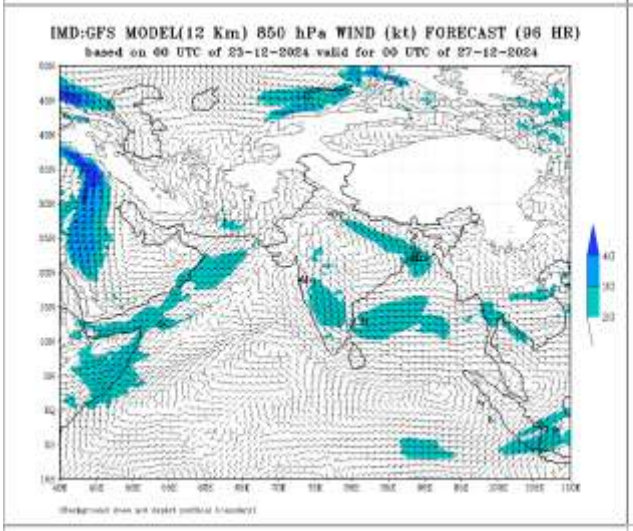
based on 00 UTC of 23-12-2024 valid for 00 UTC of 27-12-2024


IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (96 HR)
based on 00 UTC of 23-12-2024 valid for 00 UTC of 27-12-2024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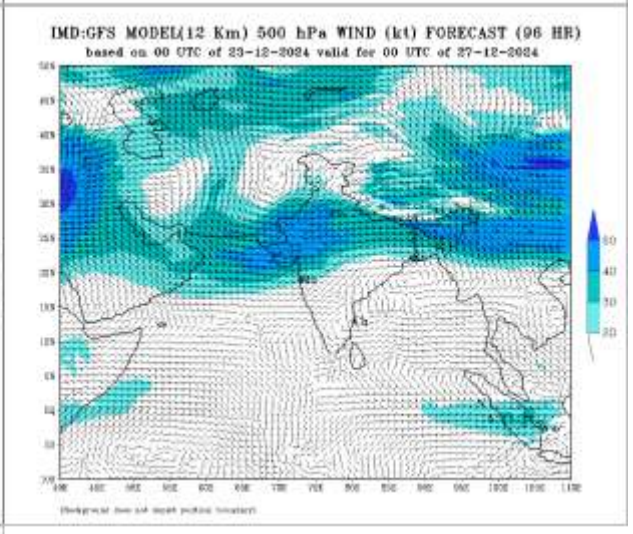
based on 00 UTC of 23-12-2024 valid for 00 UTC of 27-12-2024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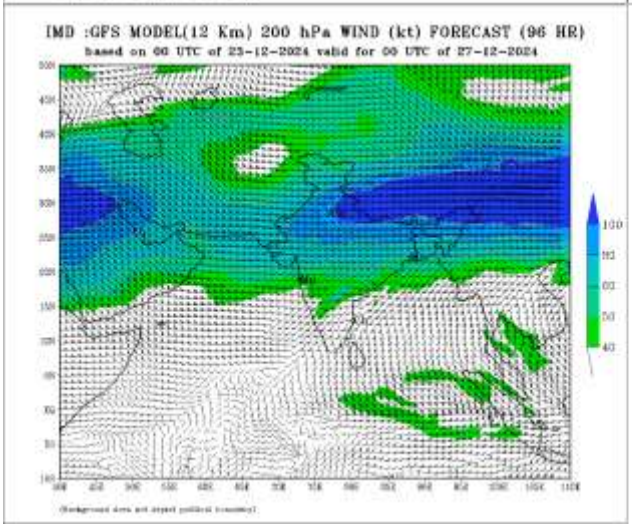
based on 00 UTC of 23-12-2024 valid for 00 UTC of 27-12-2024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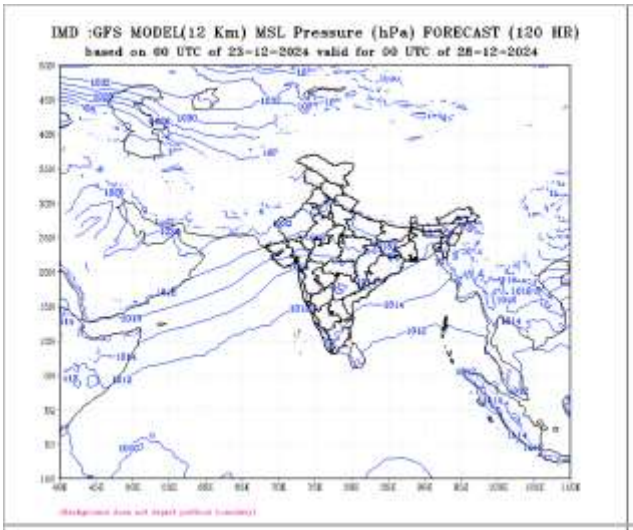
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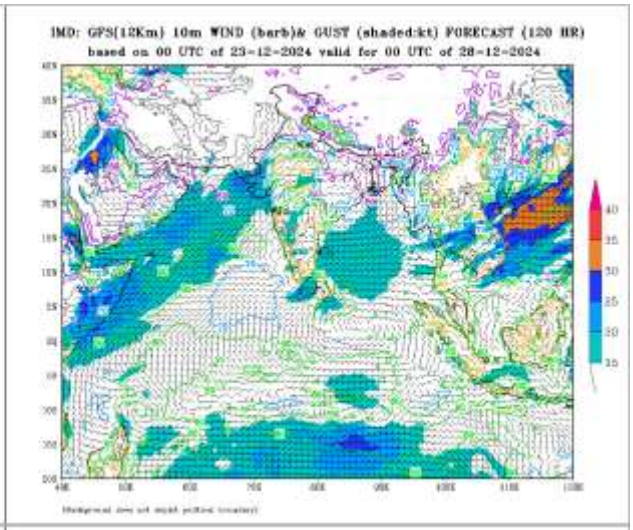
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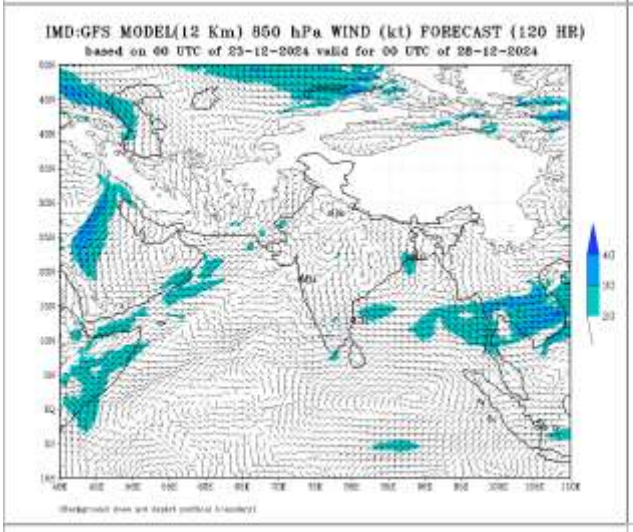
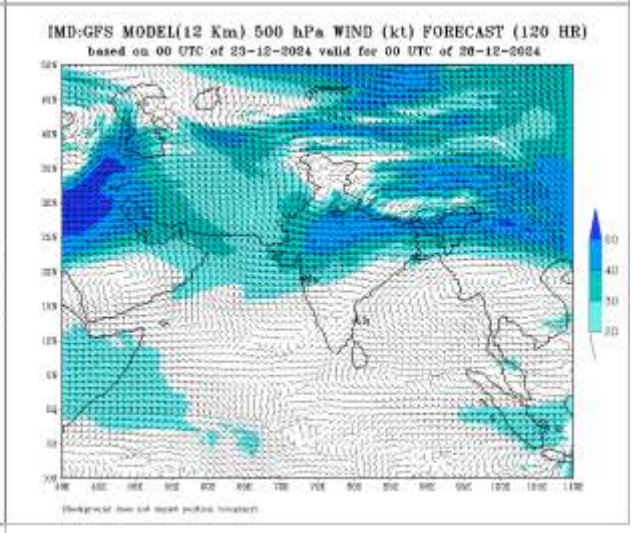
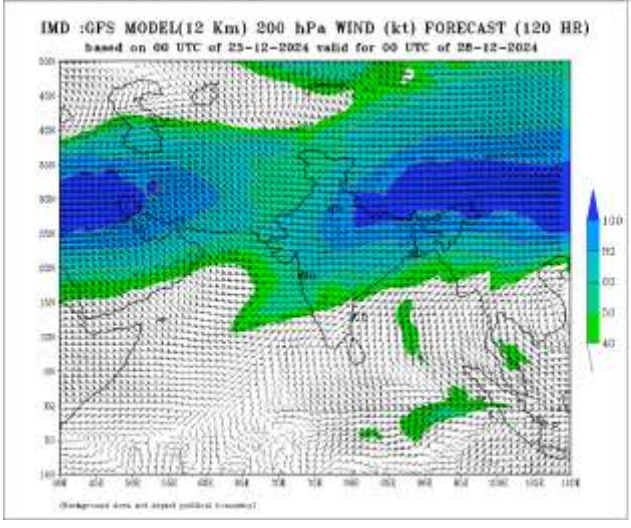
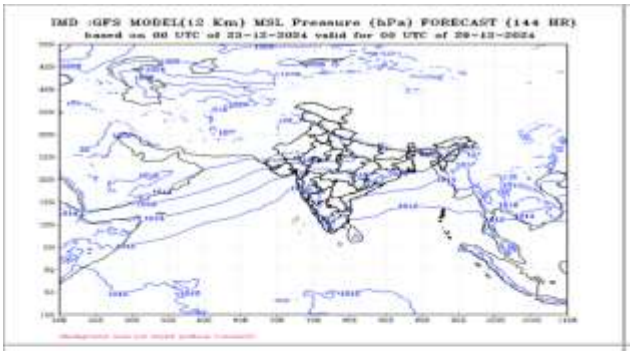
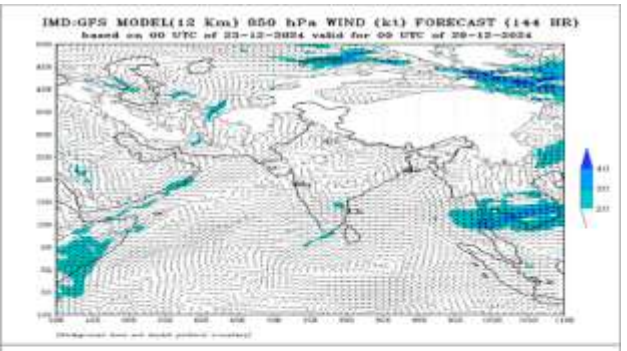
based on 00 UTC of 23-12-2024 valid for 00 UTC of 28-12-2024

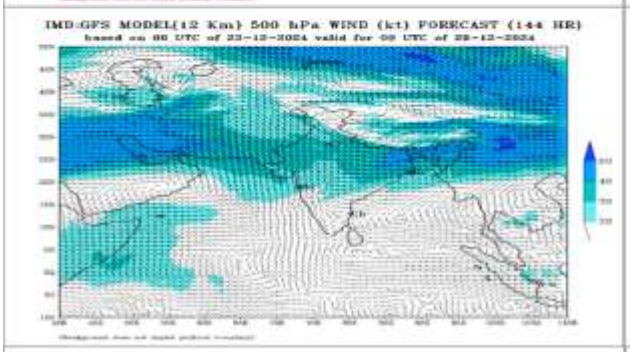

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 23-12-2024 valid for 00 UTC of 28-12-2024


IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 23-12-2024 valid for 00 UTC of 28-12-2024


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 23-12-2024 valid for 00 UTC of 28-12-2024


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (144 HR)
based on 00 UTC of 23-12-2024 valid for 00 UTC of 29-12-2024


IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 23-12-2024 valid for 00 UTC of 29-12-2024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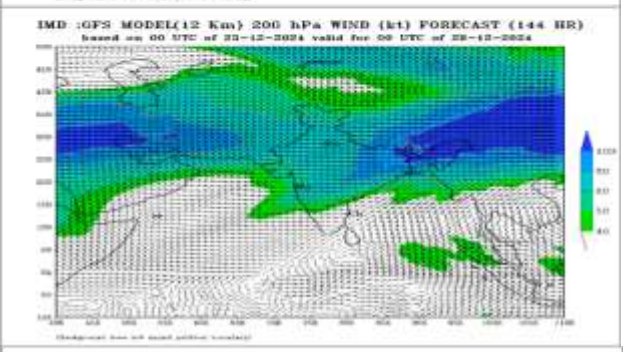
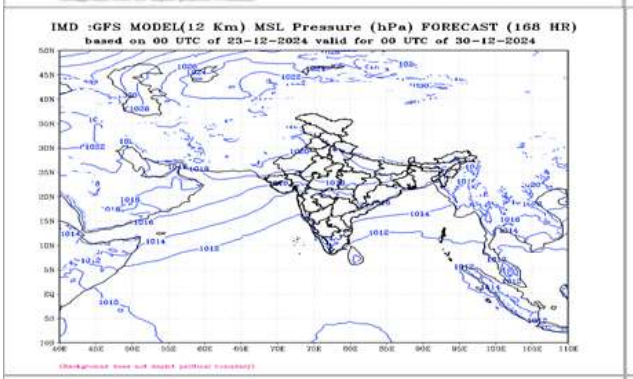
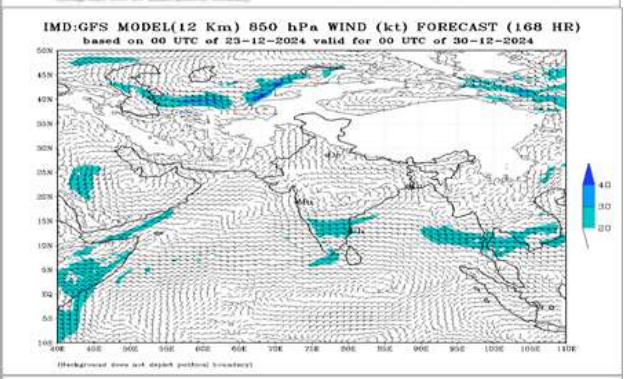
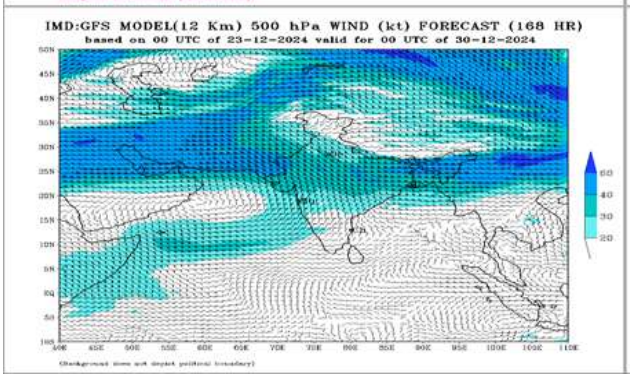
based on 00 UTC of 23-12-2024 valid for 00 UTC of 29-12-2024


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 23-12-2024 valid for 00 UTC of 29-12-2024


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (168 HR)
based on 00 UTC of 23-12-2024 valid for 00 UTC of 30-12-2024


IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 23-12-2024 valid for 00 UTC of 30-12-2024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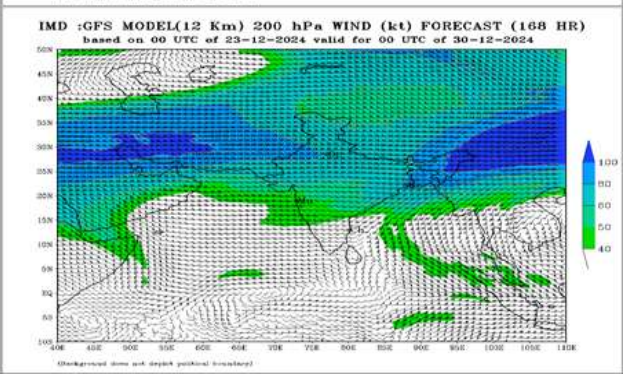
based on 00 UTC of 23-12-2024 valid for 00 UTC of 30-12-2024


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 23-12-2024 valid for 00 UTC of 30-12-2024