



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

**Tropical Cyclone Forecast Programme
Report Dated 05th December 2024**

Time of Issue: 1100 UTC

Synoptic features (based on 0300 UTC analysis):

Yesterday's Low-Pressure Area over east-central & adjoining southeast Arabian Sea has become less marked at 0000 UTC of the 05th December over the same region. However, the associated cyclonic circulation over the same region extends up to 4.5 km above mean sea level tilting southwestwards with height.

Environmental Features based on 03 UTC:

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
Sea Surface Temperature (SST) °C	<ul style="list-style-type: none"> ➤ 26-28°C along & off west coast. ➤ 28-30°C over rest of BoB. 	<ul style="list-style-type: none"> ➤ 26-28°C over west-central AS & some parts of southwest AS along and off Oman, Yemen & Somalia coast and Northeast AS over Gujarat coast. ➤ 28-30°C over most parts of AS.
Tropical Cyclone Heat Potential (TCHP) kJ/cm²	<ul style="list-style-type: none"> ➤ 120-170 over north BoB & adjoining eastcentral BoB. ➤ 100-130 over Andaman Sea and southern parts of south BoB & adjoining EIO. ➤ 20-40 over southwest and some 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 & adjoining southwest AS, Lakshadweep Island and adjoining EIO. ➤ 20-40 over westcentral and southwest AS off Oman, Yemen & Somalia coasts and Comorin area. ➤ 60-80 over rest of AS
Cyclonic Relative vorticity (X10⁻⁶s⁻¹)	-	30-40 over some parts of southeast & adjoining eastcentral AS.
Low-Level convergence(X10⁻⁵ s⁻¹)	<ul style="list-style-type: none"> ➤ 05 over south Andaman Sea and westcentral BoB off Andhra Pradesh- 	5 over some parts of southeast AS, Lakshadweep Islands Area and adjoining eastcentral

	Tamil Nadu coasts.	AS.
Upper-Level divergence ($X10^{-5} s^{-1}$)	➤ 05-10 over south Andaman Sea, southern parts of southeast BoB & adjoining EIO.	➤ 05-10 over central parts of central AS.
Vertical Wind Shear (VWS knots) Low: 05-10 knots Moderate: 10-20 knots High: >20 knots	➤ High over extreme north and extreme South BoB. ➤ Low-moderate over rest of BoB.	➤ Low to moderate over eastcentral and southeast AS, Lakshadweep island area. ➤ High over rest of AS.
Wind Shear Tendency (knots)	➤ Decreasing over south BoB and adjoining westcentral BoB.	➤ Increasing over westcentral and southwest AS off Oman, Yemen and Somalia coasts. ➤ Decreasing over rest of AS.
Upper tropospheric Ridge	➤ At 18° N.	➤ At 18° N.

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 southeast Bay of Bengal and south Andaman Sea. Scattered low and medium clouds with embedded isolated moderate to intense convection lay over east-central Bay of Bengal, southwest Bay of Bengal and north Andaman Sea.

b) Over the Arabian Sea:

Scattered low and medium clouds with embedded intense to very intense convection lay over central and southeast Arabian Sea. Scattered low and medium clouds with embedded isolated weak to moderate convection lay over the rest Arabian Sea, Lakshadweep Island Area, Maldives & Comorin Area.

c) Outside India:

Scattered low & medium clouds with embedded moderate to intense convection over Maldives, China, Yellow Sea, Thailand, Gulf of Thailand, Cambodia, South Vietnam, Sumatra, Strait of Malacca, Malaysia, Borneo, South China Sea, Java Islands & Sea, Celebes Islands & Sea, Philippines, Sulu Sea, North Madagascar and over Indian Ocean between latitude 5.0N to 20.0S longitude 50.0E to 120.0E.

M.J.O. Index:

Madden Julian Oscillation (MJO) is in phase 5 with amplitude more than 1 and would remain in same phase during next 7 days with amplitude more 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	Model is indicating an extended cycir over east equatorial Indian Ocean and adjoining southeast Bay of Bengal as of today. It will have west-northwestwards towards Tamil Nadu coast till 13 th December without intensification.	Model indicates cyclonic circulation over eastcentral & adjoining southeast Arabian Sea till 06th December.
IMD-GEFS	Model is indicating an extended cycir over east equatorial Indian Ocean and adjoining southeast Bay of Bengal as of today. It will have west-northwestwards towards north Sri Lanka coast till 12 th December without intensification.	Model indicates cyclonic circulation over eastcentral & adjoining southeast Arabian Sea till 06th December.
IMD-WRF	Model is indicating an extended cycir over east equatorial Indian Ocean and adjoining southeast Bay of Bengal as of today. It will have west-northwestwards towards Sri Lanka coast till 7 th December without intensification.	Model indicates cyclonic circulation over eastcentral & adjoining southeast Arabian Sea till 06th December.
NCMRWF-NCUM(G)	Model is indicating an extended cycir over east equatorial Indian Ocean and adjoining southeast Bay of Bengal as of today. It will have west-northwestwards towards Sri Lanka coast till 11 th December without intensification.	Model indicates cyclonic circulation over eastcentral & adjoining southeast Arabian Sea till 05th December.
NCMRWF-NCUM(R)	Model is indicating an extended cycir over east equatorial Indian Ocean and adjoining southeast Bay of Bengal as of today. It will have west-northwestwards towards Sri Lanka coast till 8 th December without intensification.	Model indicates cyclonic circulation over eastcentral & adjoining southeast Arabian Sea till 05th December.
NCMRWF-NEPS	Model is indicating an extended cycir over east equatorial Indian Ocean and adjoining southeast Bay of Bengal as of today. It will have west-northwestwards towards Sri Lanka coast till 11 th December without intensification.	Model indicates cyclonic circulation over eastcentral & adjoining southeast Arabian Sea till 05th December.
ECMWF	Model is indicating an extended cycir over east equatorial Indian Ocean and adjoining southeast Bay of Bengal as of today. It will have west-northwestwards towards Sri Lanka coast till 10 th December without intensification.	Model indicates cyclonic circulation over eastcentral & adjoining southeast Arabian Sea till 06th December.
NCEP-GFS	Model is indicating an extended cycir over east equatorial Indian Ocean and adjoining southeast Bay of Bengal as of today. It will have west-northwestwards towards north Sri Lanka coast till 12 th December without intensification.	Model indicates cyclonic circulation over eastcentral & adjoining southeast Arabian Sea till 07th December.

Summary:

(a) Bay of Bengal:

Most of the models indicating an extended cycir over east equatorial Indian Ocean and adjoining southeast Bay of Bengal as of today. It will have west-northwestwards towards north Sri Lanka coast/ Tamil Nadu coast till 12th/13th December without intensification.

(b) Arabian Sea

All the models are indicating that cyclonic circulation associated with yesterday's Low-Pressure Area over eastcentral & adjoining southeast Arabian Sea as of today, the 5th December. Models are also indicating that cyclonic circulation will move west-southwestwards till 6th December.

Inference:

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

Yesterday's Low-Pressure Area over east-central & adjoining southeast Arabian Sea has become less marked at 0000 UTC of the 05th December over the same region. However, the associated cyclonic circulation over the same region extends up to 4.5 km above mean sea level tilting southwestwards with height.

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:

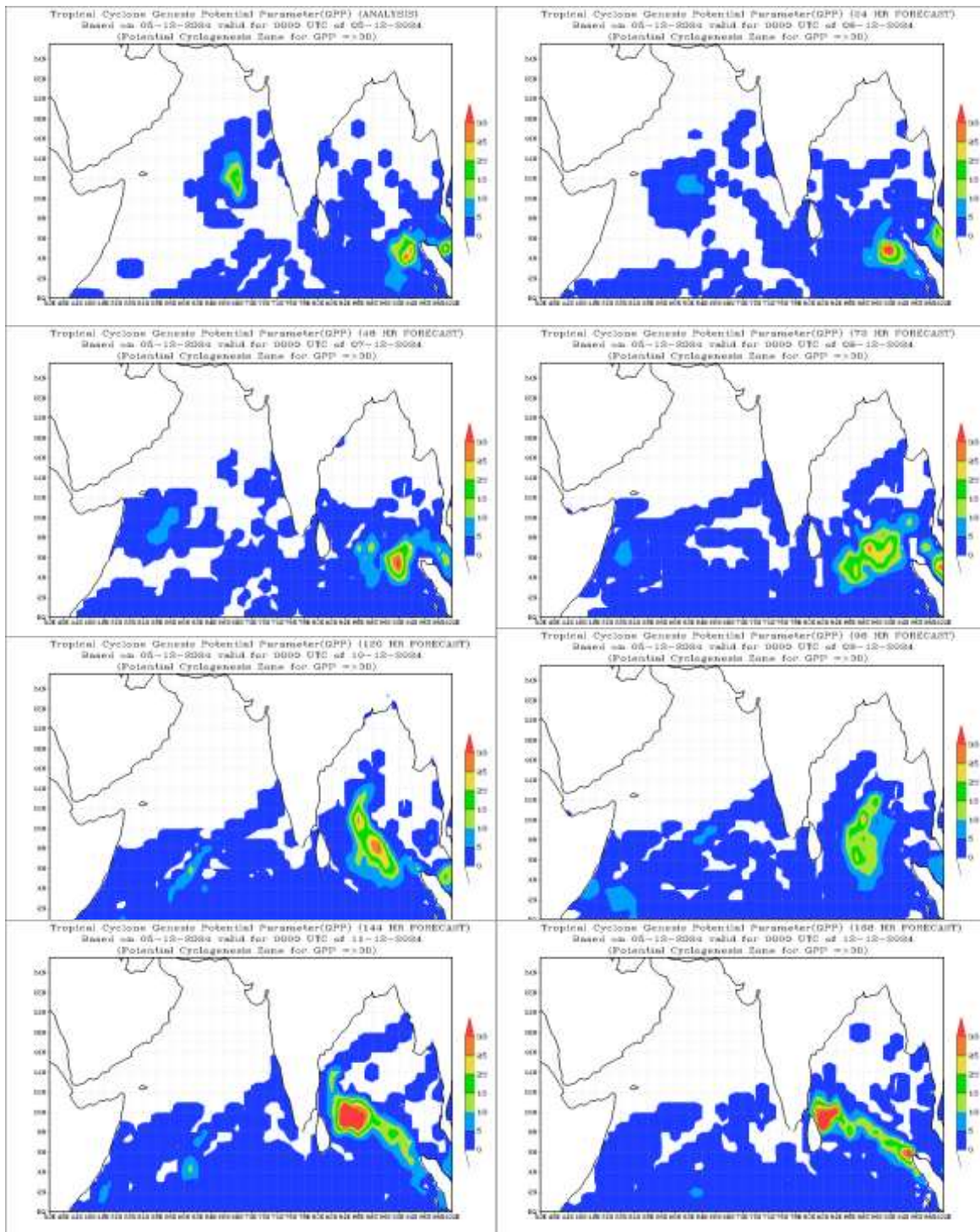
24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

“- “indicates genesis has already occurred.

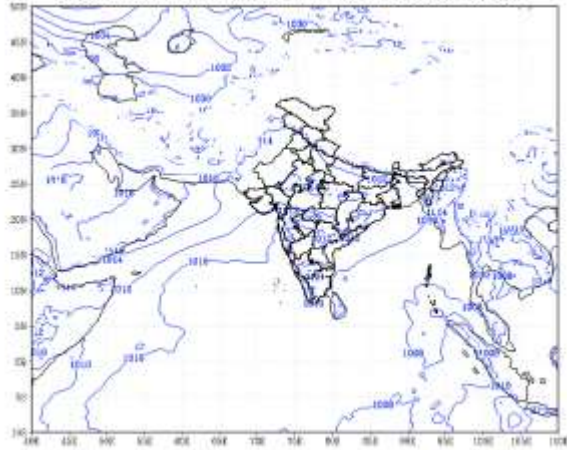
Probability is indicated as NIL for 0%, LOW for 1-33%, MOD for 34-67% and High for 68-100%.

Intense Observation Period (IOP): NIL

ANNEXURE



IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (24 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 06-12-2024



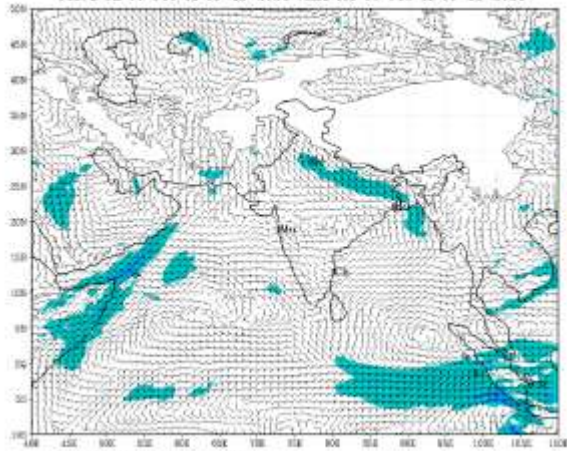
(Background line is sea level pressure boundary)

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (24 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 06-12-2024



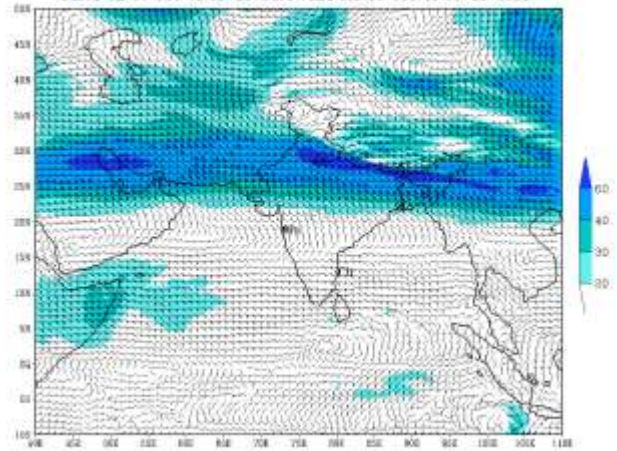
(Background line is sea level pressure boundary)

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (24 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 06-12-2024



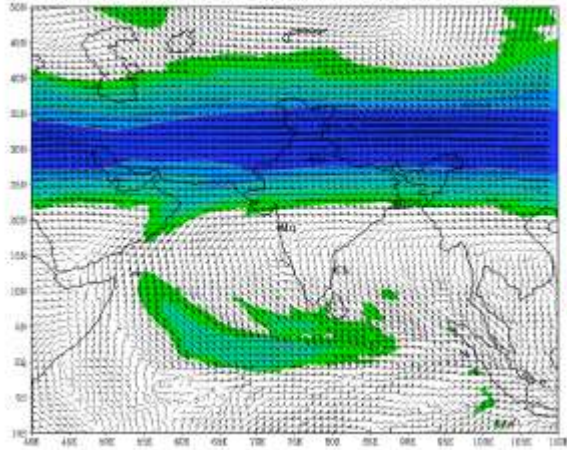
(Background line is sea level pressure boundary)

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (24 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 06-12-2024



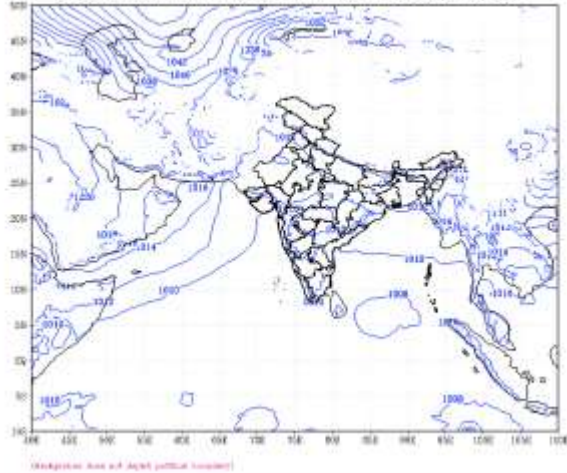
(Background line is sea level pressure boundary)

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (24 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 06-12-2024

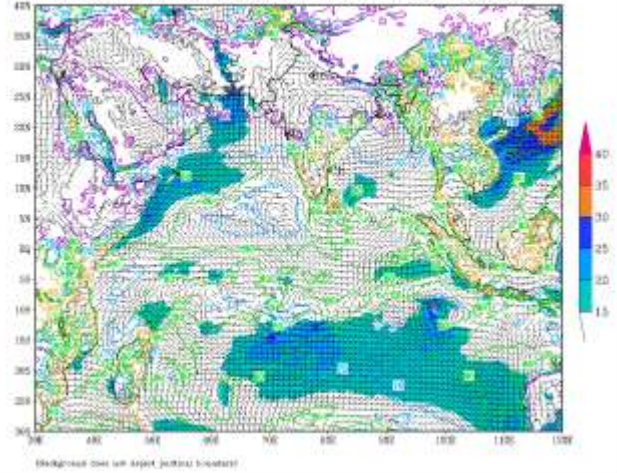


(Background line is sea level pressure boundary)

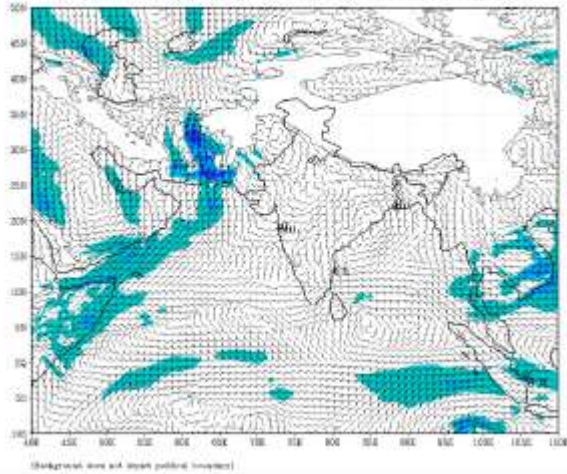
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (72 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 08-12-2024



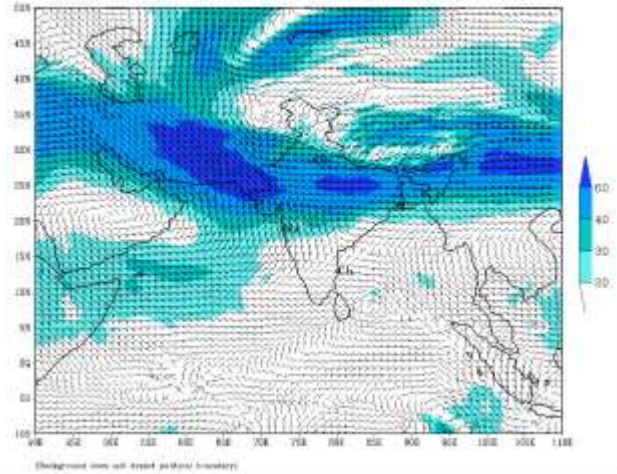
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (72 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 08-12-2024



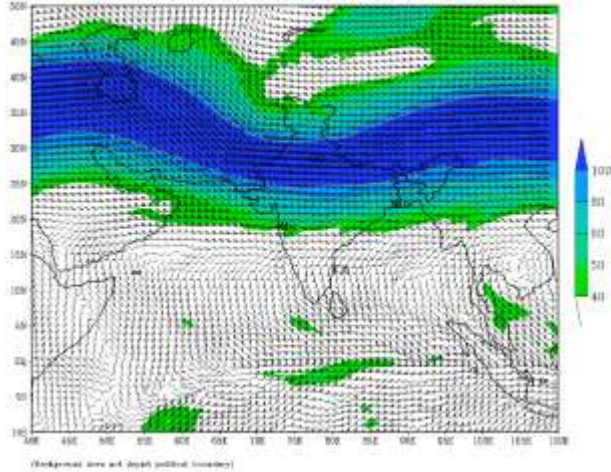
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 08-12-2024



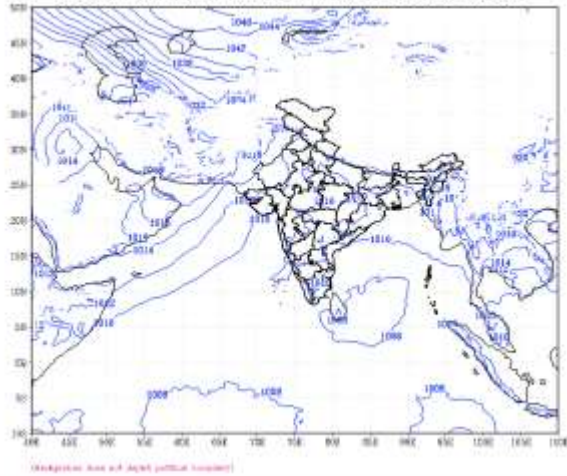
IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 08-12-2024



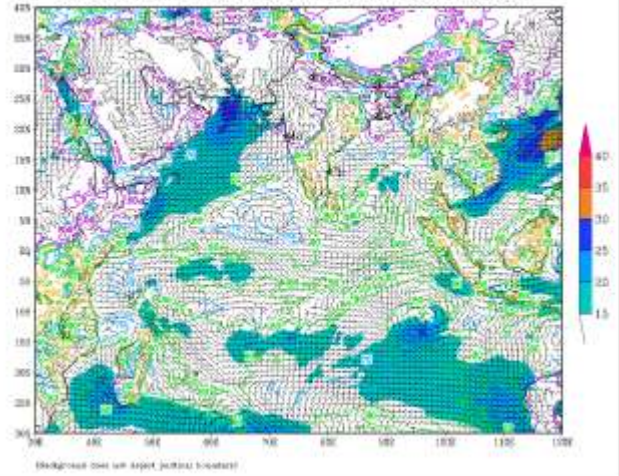
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 08-12-2024



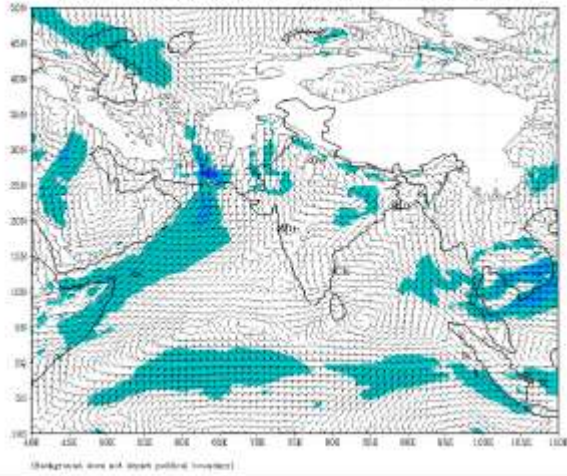
IMD-GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (96 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 09-12-2024



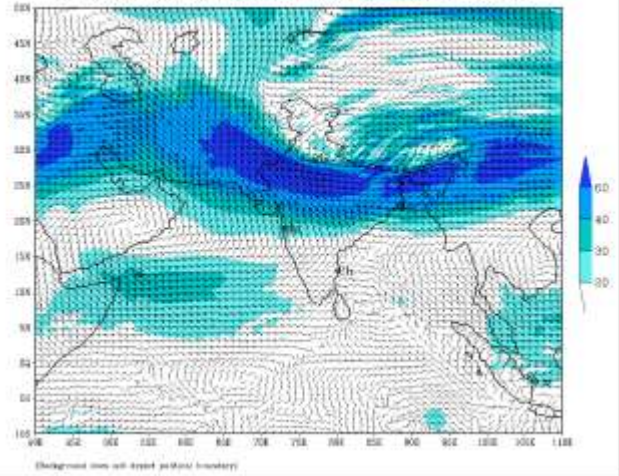
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (96 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 09-12-2024



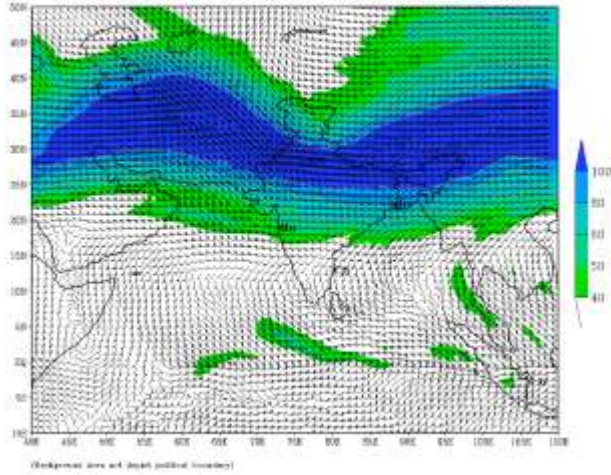
IMD-GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (96 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 09-12-2024



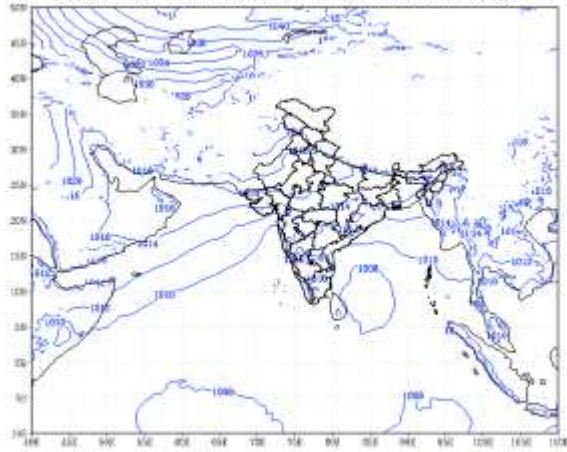
IMD-GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (96 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 09-12-2024



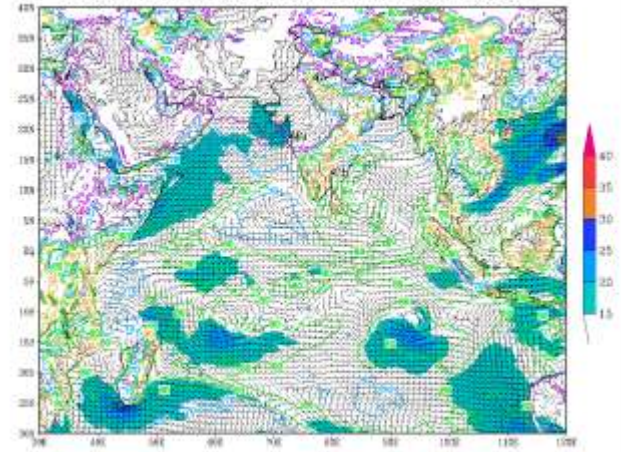
IMD-GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (96 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 09-12-2024



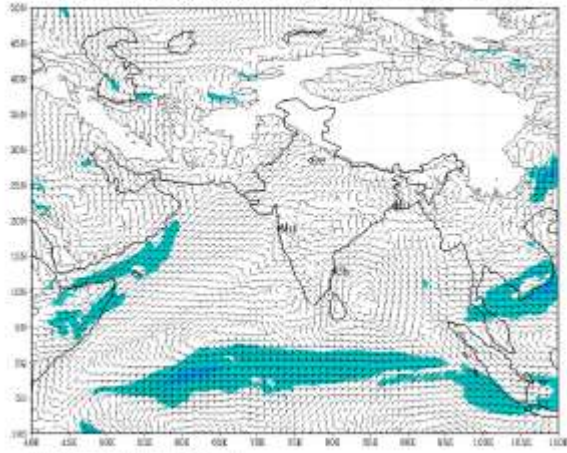
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (120 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 10-12-2024



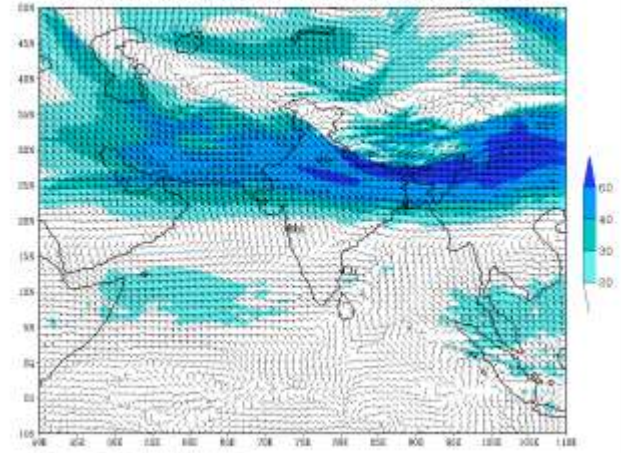
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (120 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 10-12-2024



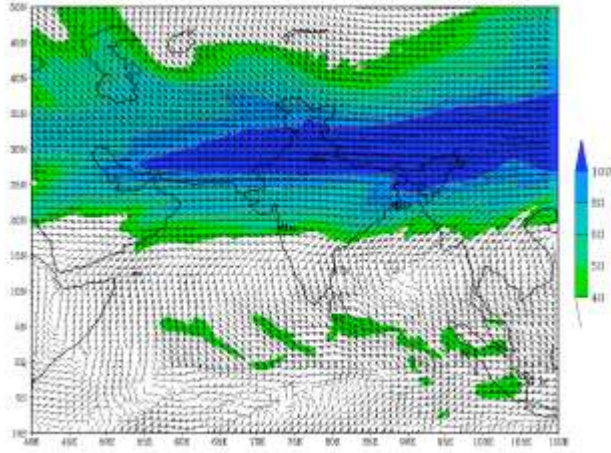
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 10-12-2024



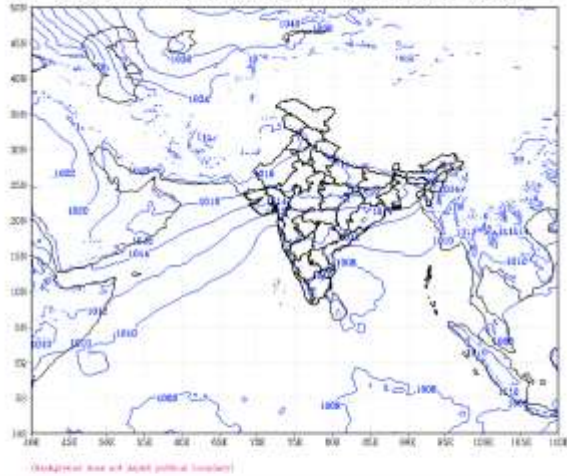
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based on 00 UTC of 05-12-2024 valid for 00 UTC of 10-12-2024



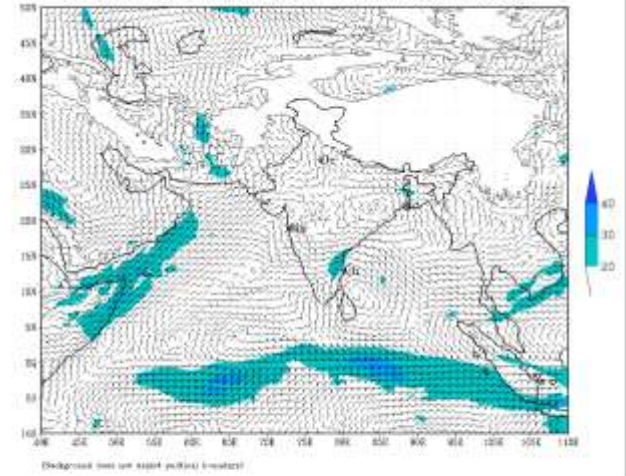
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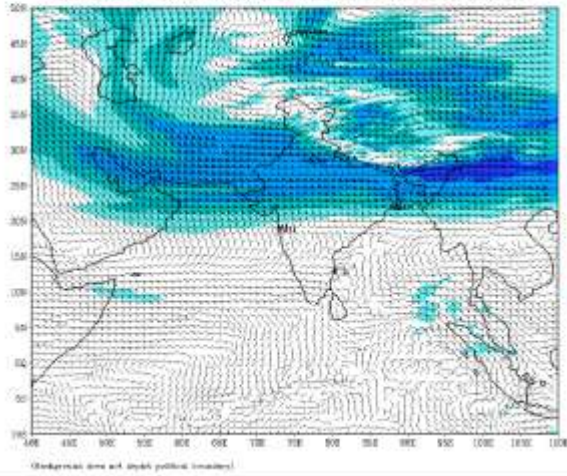
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (144 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 11-12-2024



IMD :GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 11-12-2024



IMD :GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 11-12-2024



IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 05-12-2024 valid for 00 UTC of 11-12-2024

