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

FDP (Cyclone) NOC Report Dated 05th December, 2021

Time of Issue: 1200 UTC

Synoptic features (based on 0900 UTC analysis):

- Yesterday's cyclonic storm "JAWAD" over westcentral Bay of Bengal (BoB) moved northwards and weakened into a deep depression over westcentral BoB in the same evening (1730 hours IST of 4th December). Thereafter, it moved north-northeastwards and lay centered over northwest BoB at 1430 hours IST of today, the 5th December, 2021 over over northwest Bay of Bengal close to Odisha coast near Lat. 19.5°N and Long. 86.2°E, about 50 km southeast of Puri (Odisha), 100 km south-southwest of Paradip (Odisha), 130 km east-northeast of Gopalpur (Odisha), and 370 km north-northeast of Vishakhapatnam (Andhra Pradesh). It is likely to continue to move north-northeastwards, along Odisha coast towards West Bengal coast and weaken into a well marked low pressure area during next 12 hours.
- The cyclonic circulation over Northeast Arabian Sea off south Gujarat coast persisted over the same region with vertical extension upto 1.5 above mean sea level.
- The cyclonic circulation over Gulf of Mannar & neighbourhood extending upto 0.9 km above mean sea level persisted over the same region at 1430 hours IST of today, the 5th December.

Dynamical and thermodynamical features

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
Sea Surface Temperature (SST) ºC	28-29°C over westcentral BoB. Slightly less 26-28°C over northwest BoB. Less than 26°C off West Bengal-Bangladesh coast.	28-29°C over major parts of south and eastcentral AS. 26-28°C over westcentral and southwest AS.
Tropical Cyclone Heat Potential (TCHP) kJ/cm^2	100-120 over south Andaman Sea, southeast BoB and adjoining Equatorial Indian Ocean. 60-80 over westcentral and adjoining northwest BoB. It is becoming less than 50 over northwest BoB off north Odisha-West Bengal-Bangladesh coasts.	60-80 over southeast & parts of eastcentral AS. Less than 50 over major parts of west AS.
Cyclonic Relative vorticity (X10^{-6}s^{-1})	Vorticity has decreased during past 24 hours and is around 60-80 to the south of system centre with vertical extension upto 500 hPa.	40 to 50 over northeast AS with vertical extension upto 500 hPa.
Low Level	Low level convergence is 10 to	Some small pockets of 05 value

convergence ($X10^{-5}$ s^{-1})	the northeast of system centre and is oriented towards northeast direction.	over south AS.
Upper Level divergence ($X10^{-5}$ s^{-1})	A large extended zone of 20 to the north of system centre and is oriented towards north direction.	A small pocket of 05 over southwest & adjoining southeast AS
Vertical Wind Shear (VWS Knots)	Moderate (15-20) over system centre and also over adjoining northwest BoB. However, it is gradually increasing becoming 20-30 over extreme north BoB.	Moderate 15-20 over south AS. High over remaining parts of AS.
Wind Shear Tendency (knots)	Increasing over the system area and over northwest BoB upto north Odisha coast.	Decreasing over major parts of AS.
Upper tropospheric Ridge	Along 18.5°N over the central BoB.	Not well defined..

Satellite observations based on INSAT imagery (0900 UTC):

(a) Cyclonic storm "JAWAD" over southeast BoB:

The intensity of the system is characterized as T 1.5/C.I. 2.0. Cloud bands with embedded intense to very intense convection are seen over east Odishaand moderate to intense convection is seen over west Odisha, Jharkhand and Gangetic West Bengal. Associated scattered to broken low & medium clouds with embedded intense to very intense convection lay over westcentral & northwest BoB to the north of latitude 17.5N and west of longitude 89.0E. Minimum cloud top temperature is -93^{0}C.

(b) Arabian Sea

At 0900 UTC, scattered low & medium clouds with embedded intense to very intense convection lay over Comorin Area.

M.J.O. Index:

MJO index is currently in Phase 6 with amplitude more than 1. It will continue in same phase for next 7 days.

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

No system over the area.

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

Model	BoB	AS
IMD-GFS	Indicates a Deep Depression over west-central BoB close to north Andhra Pradesh coast at 00 UTC of 5th, as a Depression over northwest BoB close to south Odisha coast at 0600 UTC of 5th, as a Low Pressure Area (LPA) over north coastal Odisha coast at 1800 UTC of 5th, over north coastal Odisha & adjoining West Bengal on 6th, over Bangladesh coast at 18 UTC of 6th and further weakening by 0000 UTC of 7th.	No significant development is indicated.
IMD-GEFS	Same as above	Same as above
IMD-WRF	Indicates a Depression over northwest & adjoining west-central BoB on 5th, as an LPA over north coastal Odisha on 6th and dissipation on 7th.	No significant development is indicated.

NCMRWF-NCUM(Global)	Indicates a Depression over northwest & adjoining west-central BoB on 5th, over north coastal Odisha on 6th and dissipation on 7th.	No significant development is indicated.
NCMRWF-NEPS	Similar to NCUM-G	Similar to NCUM-G
NCMRWF-UM (Regional)	Indicates a Depression over northwest & adjoining west-central BoB on 5th, over north coastal Odisha on 6th, as an LPA over south Bangladesh on 7th and dissipation on 8th.	Same as above
ECMWF	A Depression over northwest & adjoining west-central BoB off south Odisha - Andhra Pradesh coasts on 5th, as an LPA over coastal Odisha on 6th, then moving along West Bengal coast and dissipation on 7th.	No significant development is indicated.
ECMWF-EPS	NIL cyclogenesis / strike probability	NIL cyclogenesis / strike probability
NCEP-GFS	Indicates an LPA over south coastal Odisha coast on 5th, over north BoB & adjoining West Bengal – Bangladesh coasts on 6th and weakening on 7th.	No Low pressure system predicted.
IMD-GPP	Potential zone over northwest BoB off Odisha coast on 5th and NIL thereafter.	No potential zone.

GPP- Genesis Potential Parameter based on Dynamical Statistical model developed by IMD.

Summary and Conclusion:

Most of the models are indicating that the Depression [remnant of the Cyclonic Storm (JAWAD)] would weaken gradually and dissipate while moving north-northeastwards along Odisha – West Bengal coasts by 7th December.

It may thus be concluded that,

1. The Depression (remnant of the **Cyclonic Storm 'JAWAD')** is likely to continue to move north-northeastwards along Odisha coast towards West Bengal coast and weaken into a well marked low pressure area around mid-night of 5th December 2021.
2. No significant development is likely over the Arabian Sea during next 7 days.

Probability of cyclogenesis (formation of depression and above intensity systems) over the Bay 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
HIGH	NIL	NIL	NIL	NIL	NIL	NIL

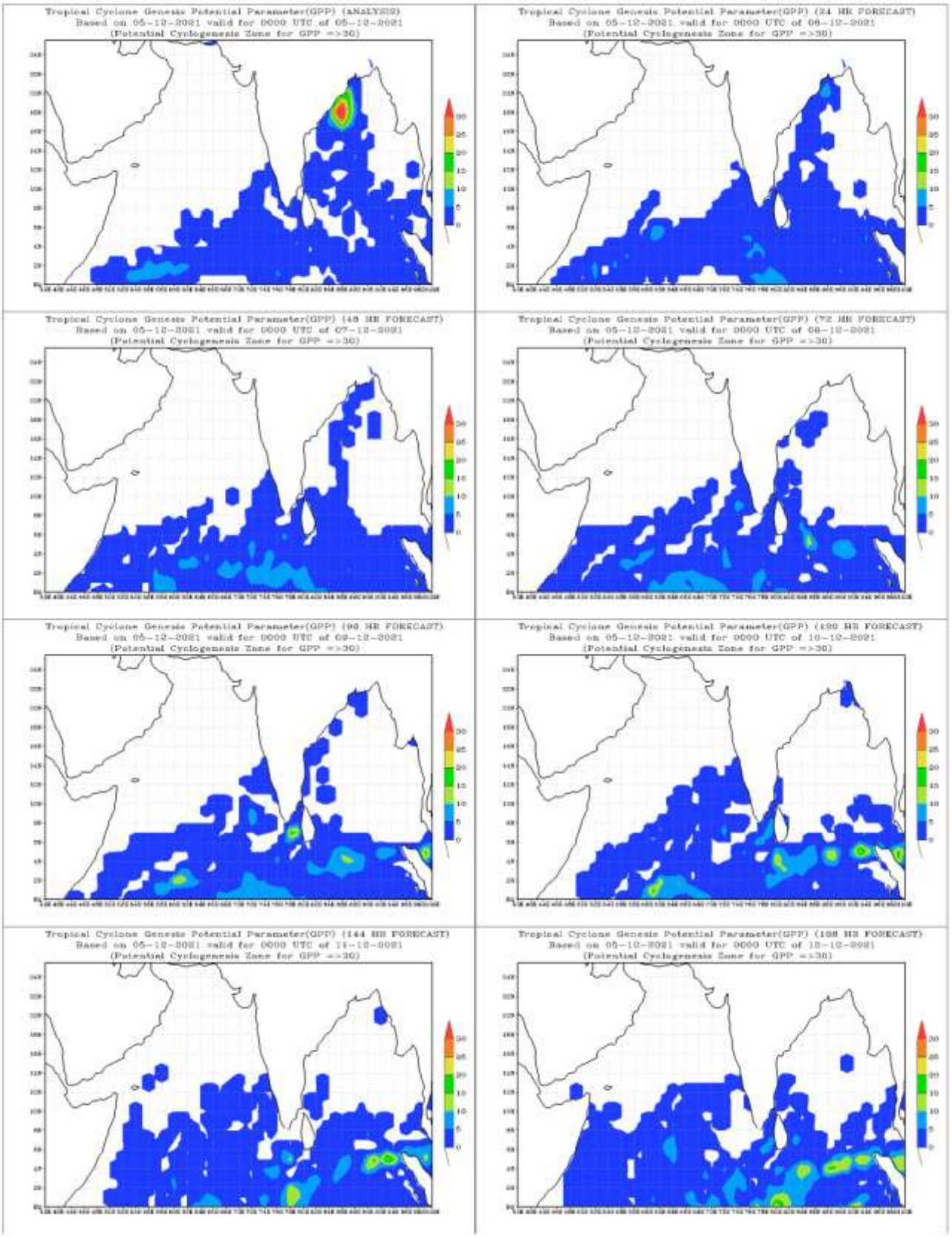
Probability of cyclogenesis (formation of depression and above intensity systems) over the Arabian Sea during next 168 hours:

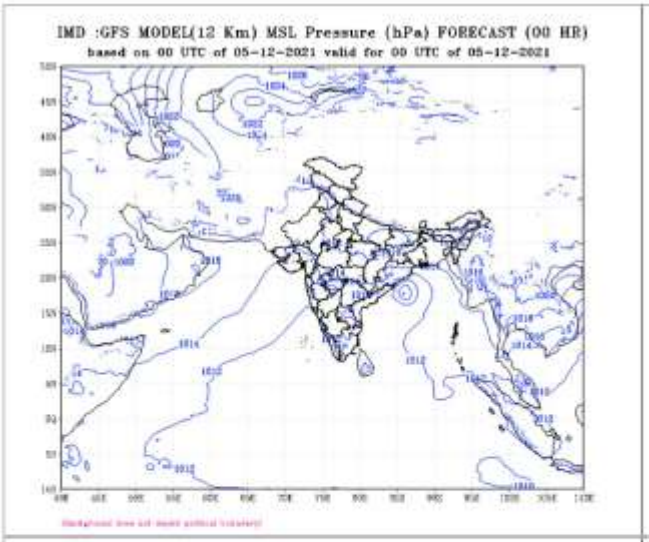
24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

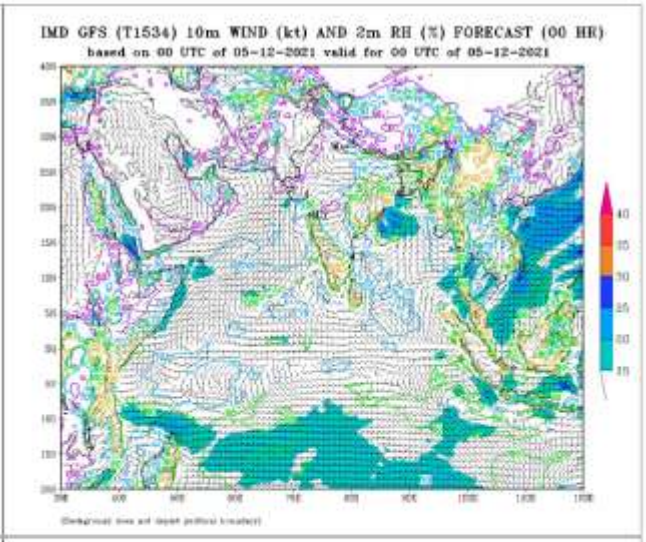
Advisory: The movement & intensity of the Depression (remnant of the Cyclonic Storm 'JAWAD') over northwest Bay of Bengal and its remnant is to be monitored regularly.

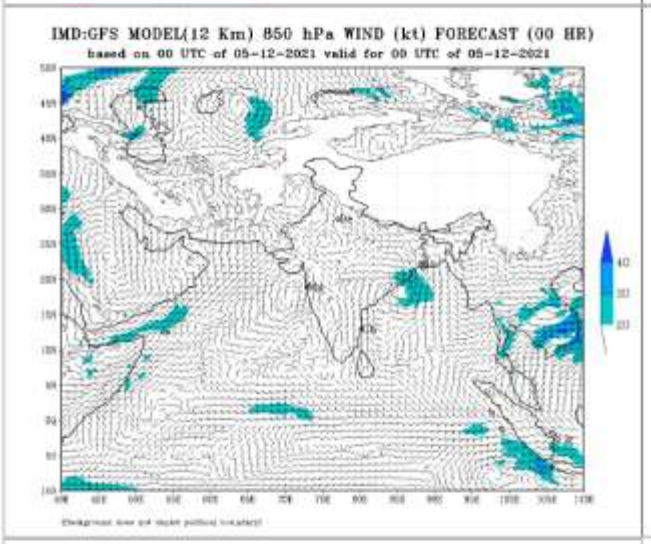
IOP is suggested for north Odisha & West Bengal coasts on 6th December.

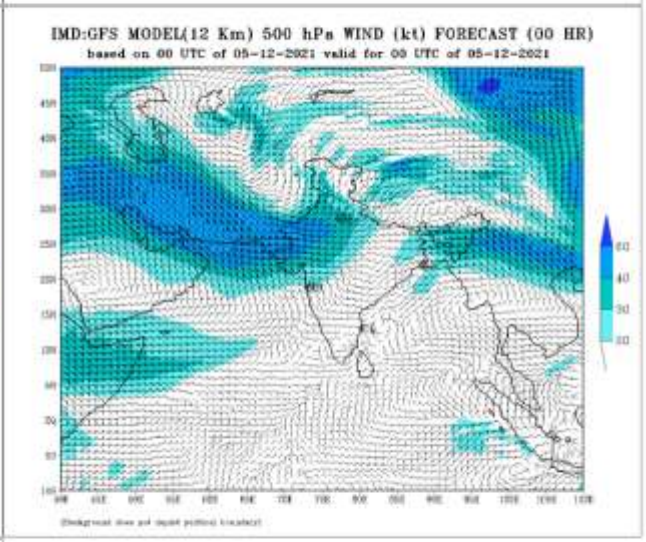
Annexure

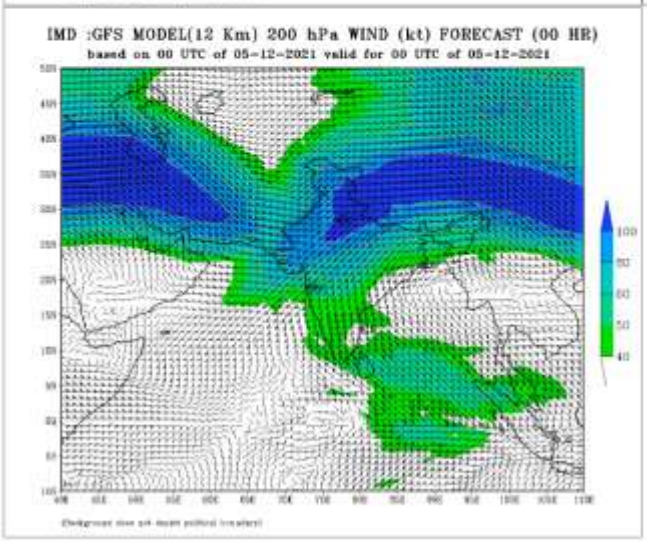

Tropical Cyclone Genesis Potential Parameter(GPP) (ANALYSIS)
Based on 05-12-2021 valid for 0000 UTC of 05-12-2021
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (24 HR FORECAST)
Based on 05-12-2021 valid for 0000 UTC of 06-12-2021
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (48 HR FORECAST)
Based on 05-12-2021 valid for 0000 UTC of 07-12-2021
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (72 HR FORECAST)
Based on 05-12-2021 valid for 0000 UTC of 08-12-2021
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (96 HR FORECAST)
Based on 05-12-2021 valid for 0000 UTC of 09-12-2021
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (120 HR FORECAST)
Based on 05-12-2021 valid for 0000 UTC of 10-12-2021
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (144 HR FORECAST)
Based on 05-12-2021 valid for 0000 UTC of 11-12-2021
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (168 HR FORECAST)
Based on 05-12-2021 valid for 0000 UTC of 12-12-2021
(Potential Cyclogenesis Zone for GPP =>30)

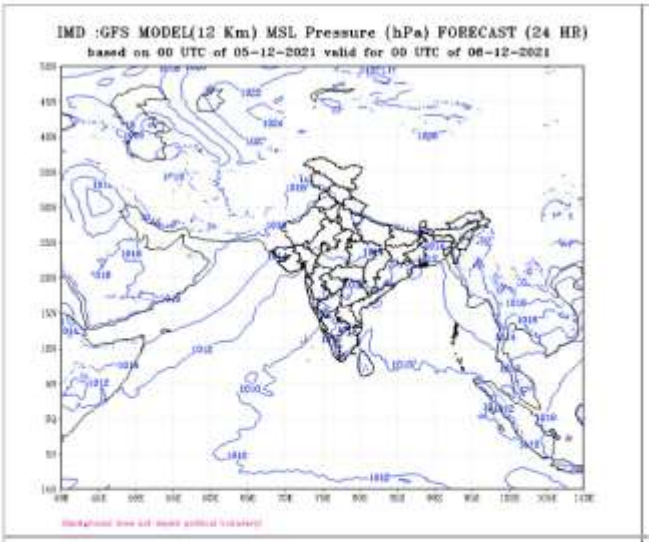

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (00 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 05-12-2021

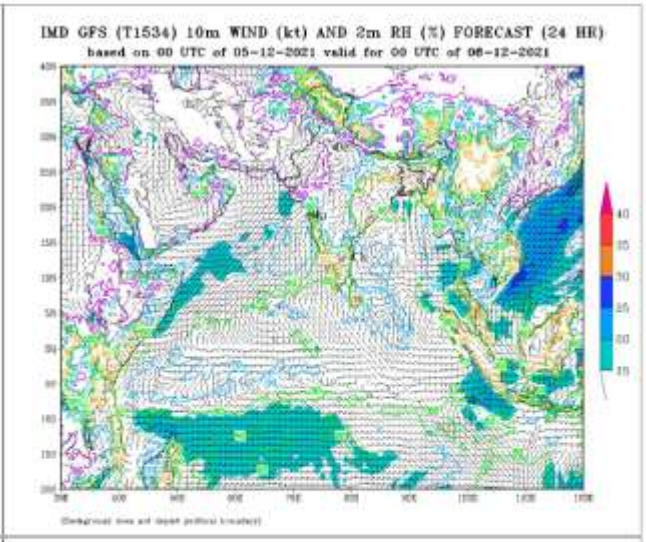

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (00 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 05-12-2021

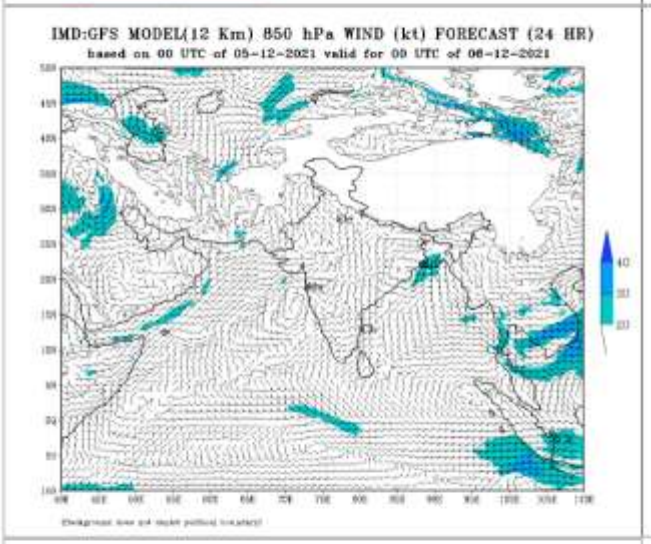

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (00 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 05-12-2021

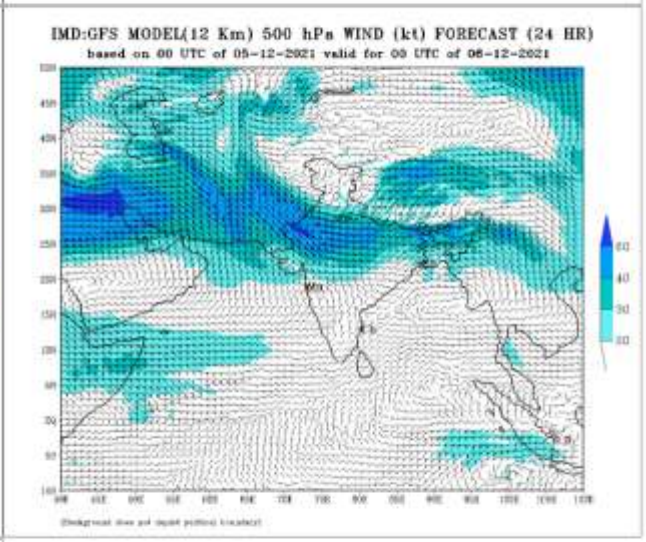

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (00 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 05-12-2021

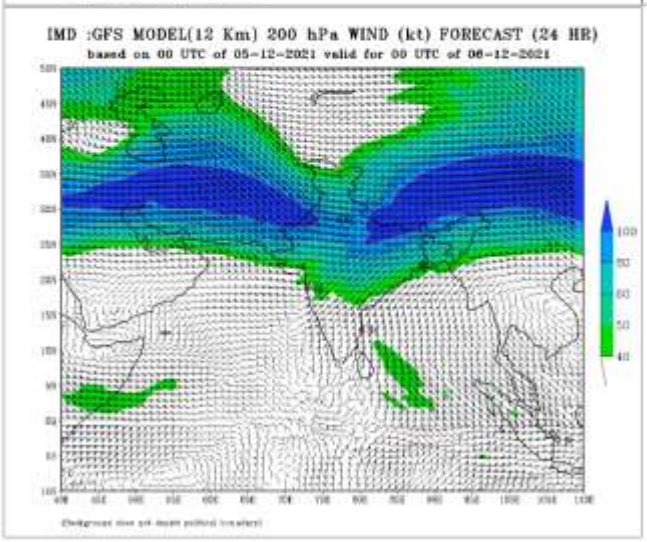

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (00 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 05-12-2021

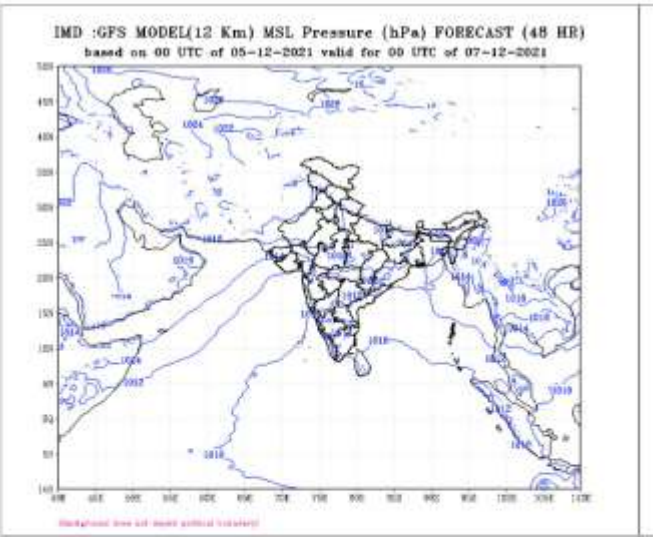

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (24 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 06-12-2021

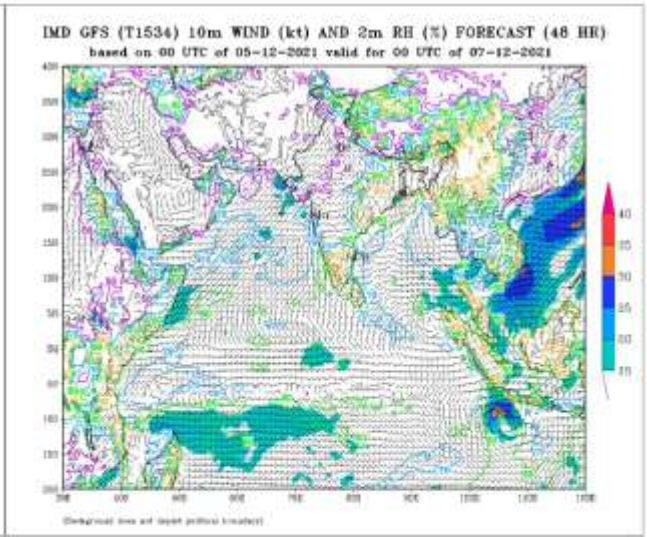

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (24 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 06-12-2021

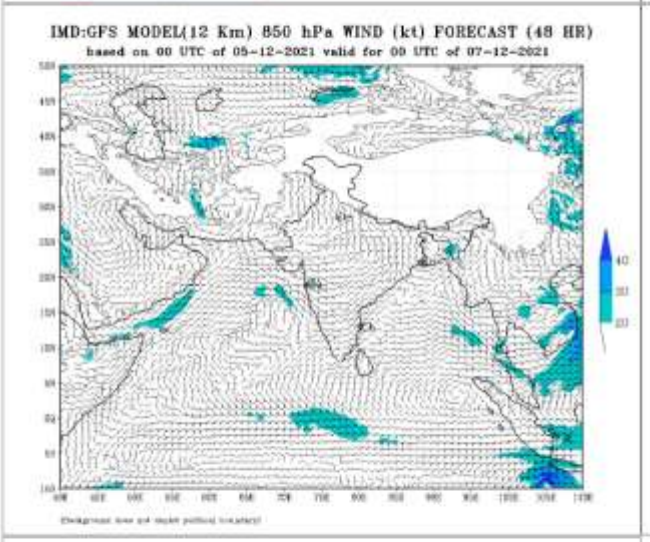

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (24 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 06-12-2021

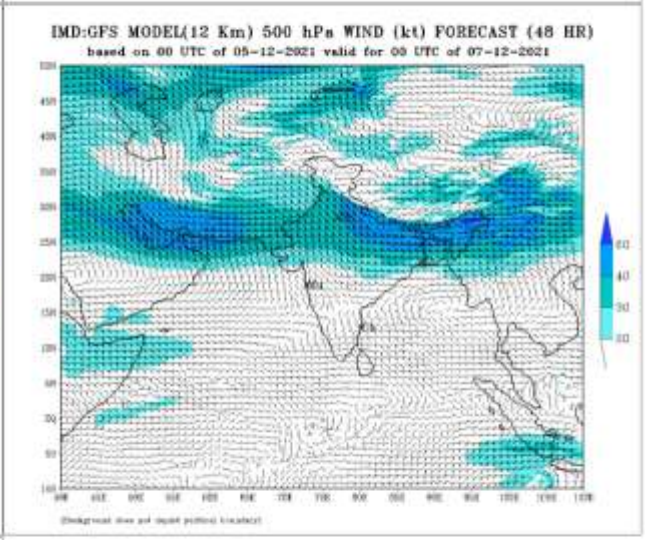

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (24 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 06-12-2021

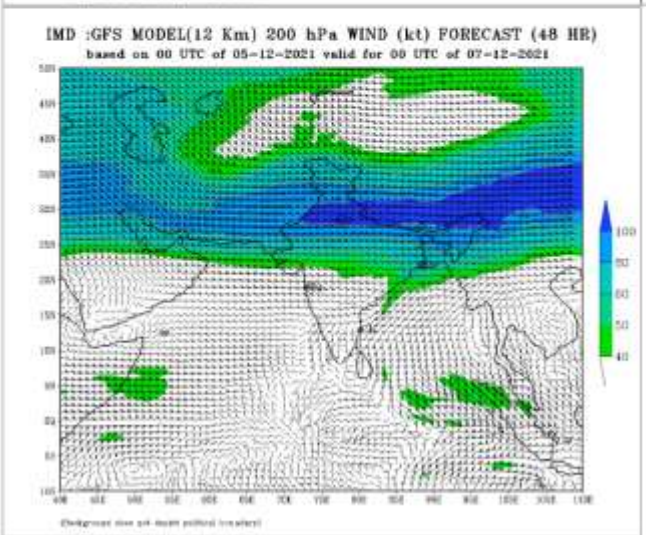

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (24 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 06-12-2021

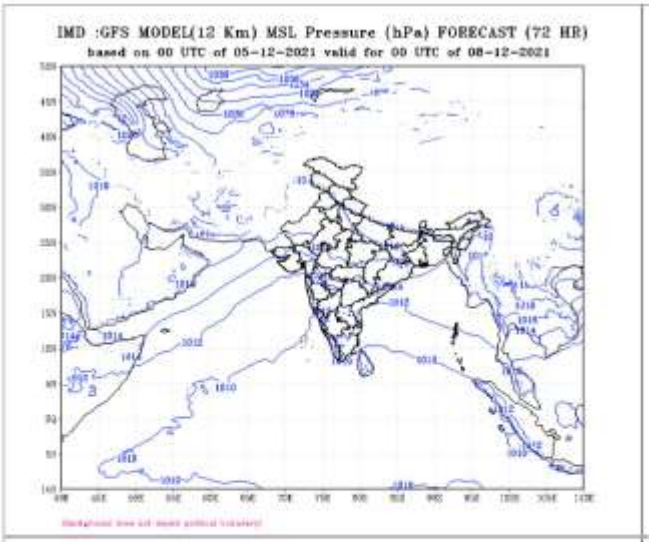

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (48 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 07-12-2021

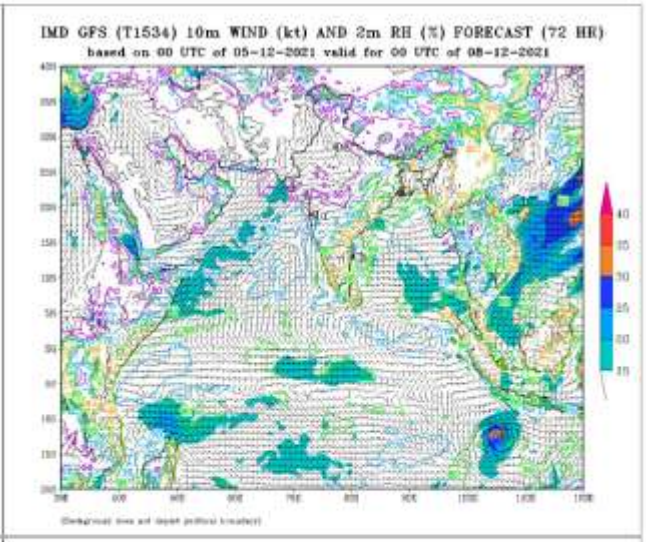

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (48 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 07-12-2021

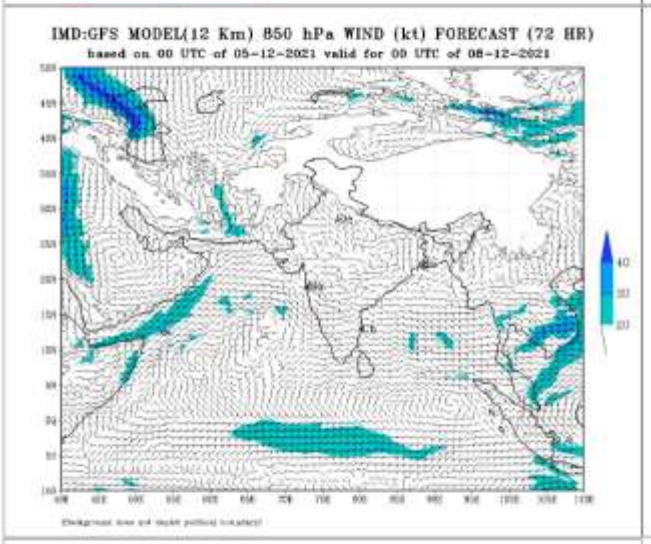

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (48 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 07-12-2021

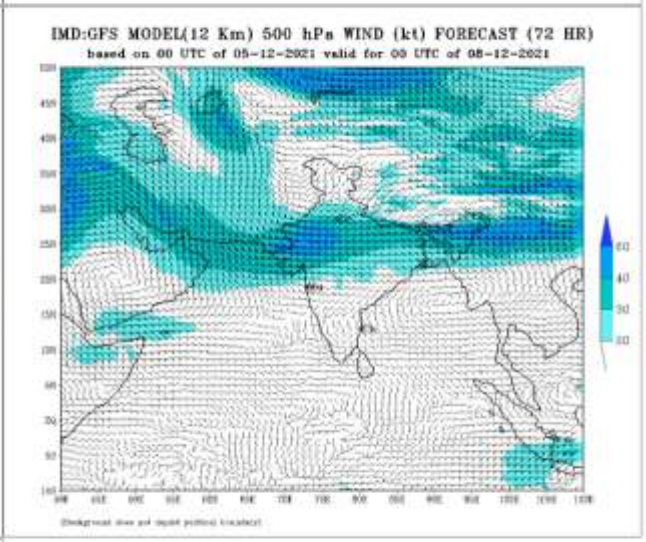

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (48 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 07-12-2021

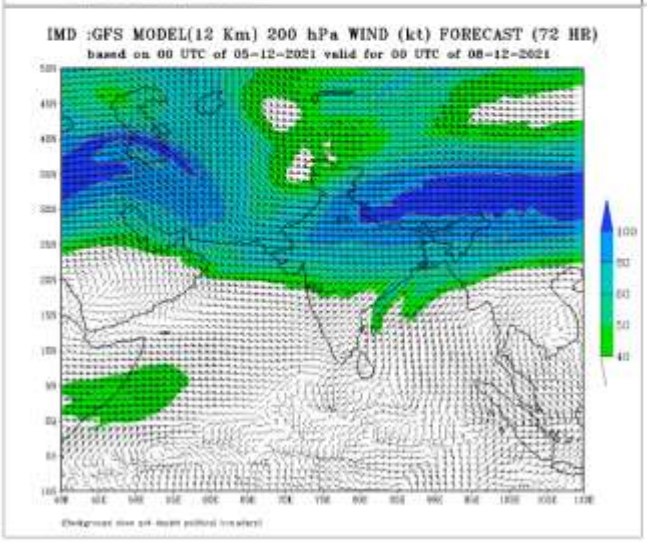

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (48 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 07-12-2021

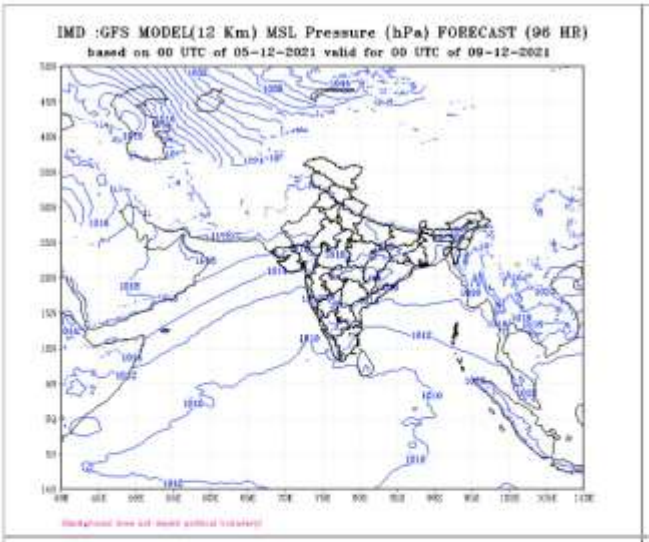

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (72 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 08-12-2021

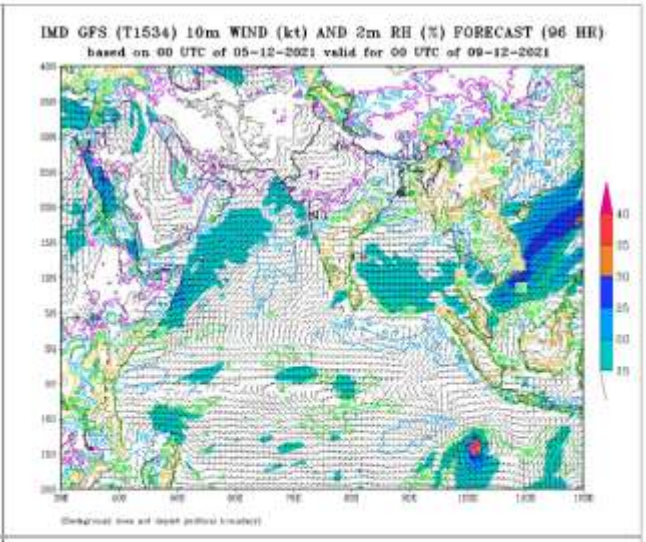

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (72 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 08-12-2021

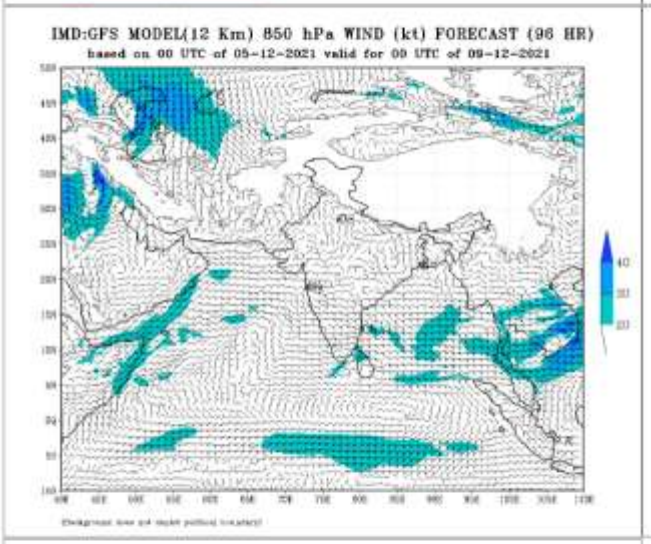

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 08-12-2021

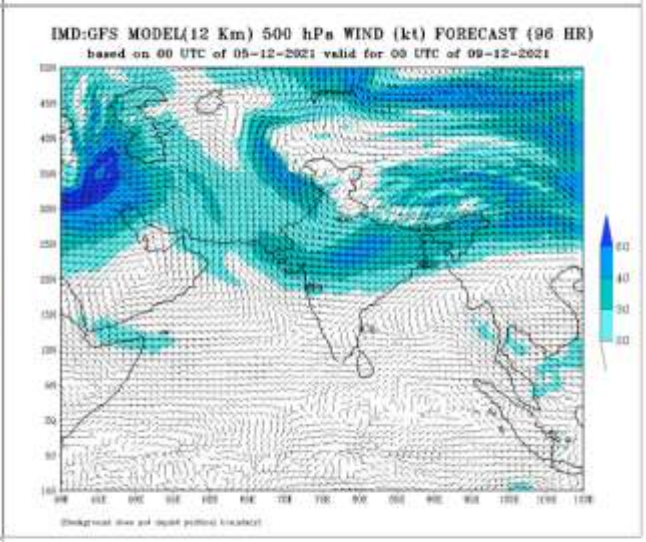

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 08-12-2021

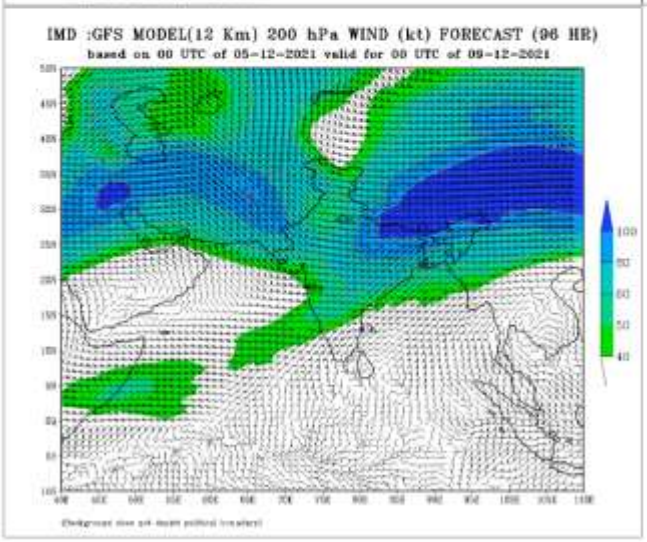

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 08-12-2021

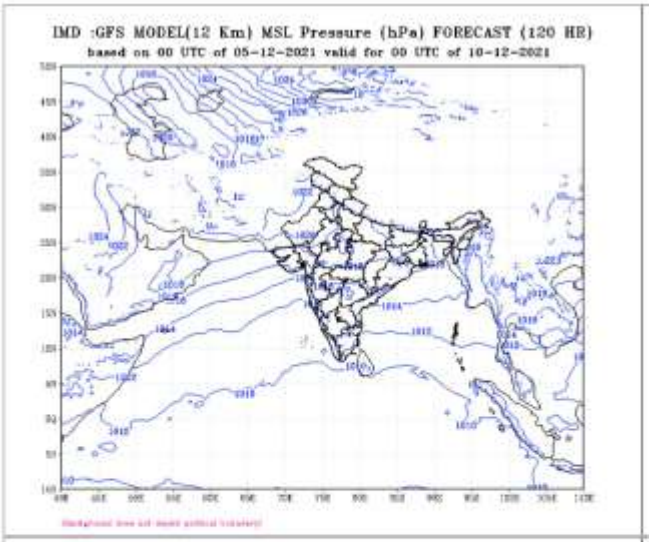

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (96 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 09-12-2021

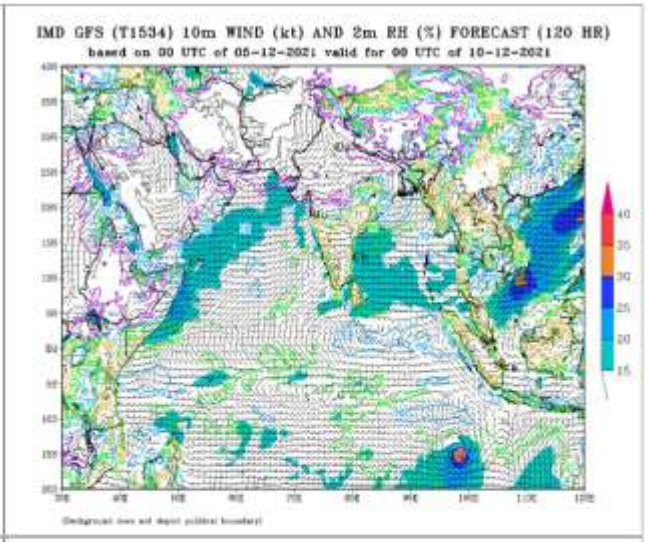

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (96 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 09-12-2021

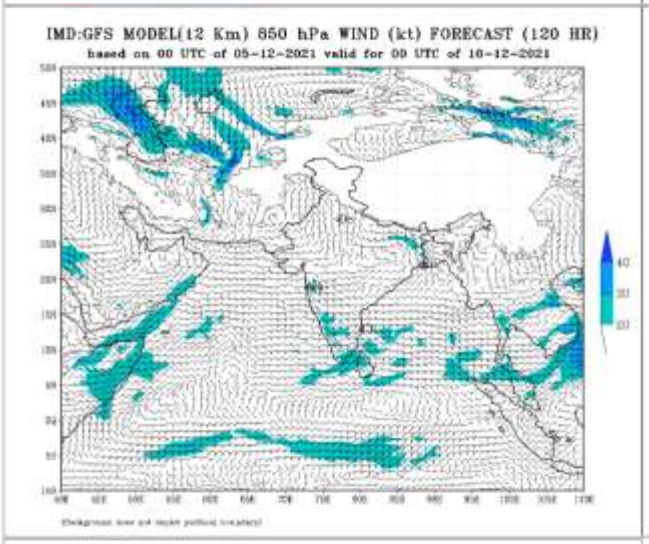

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (96 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 09-12-2021

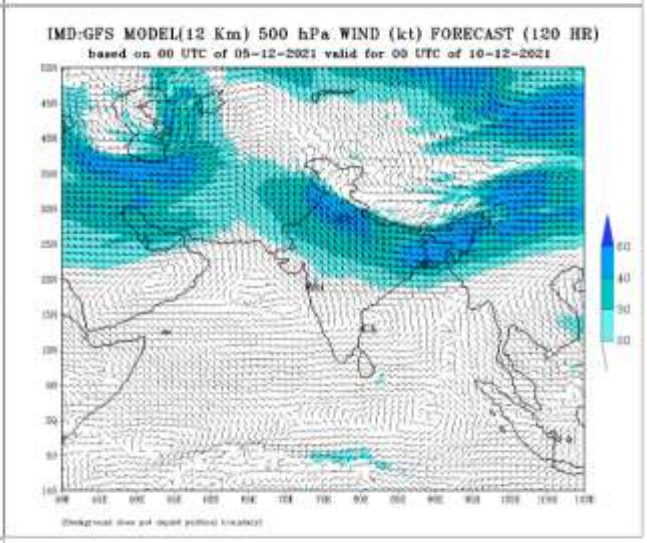

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (96 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 09-12-2021

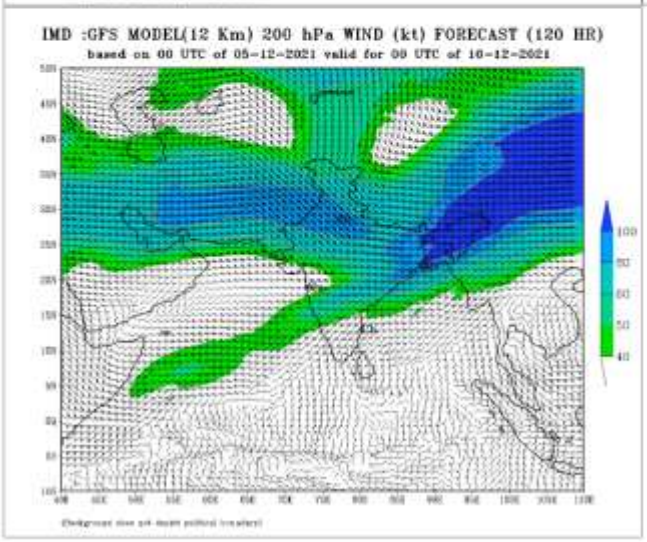

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (96 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 09-12-2021

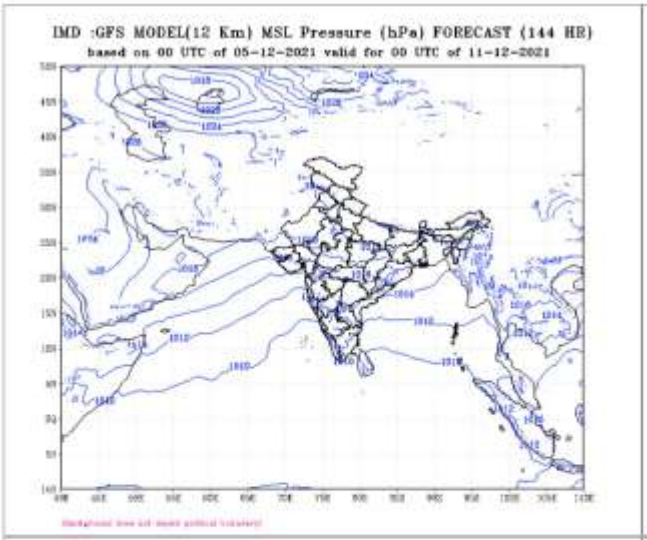

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (120 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 10-12-2021

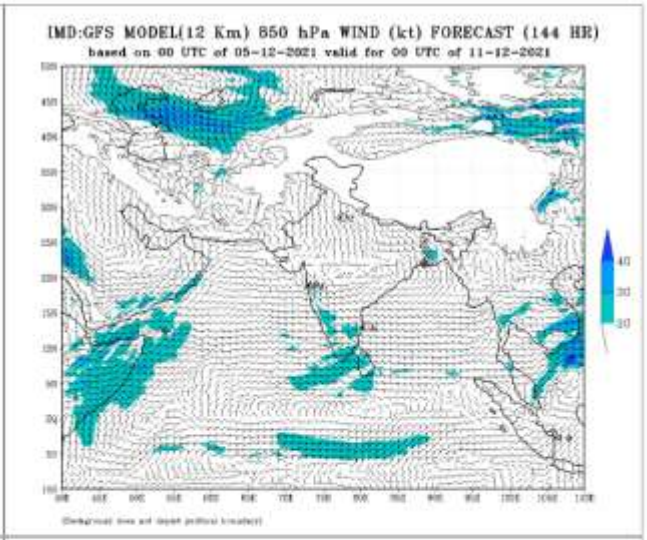

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (120 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 10-12-2021

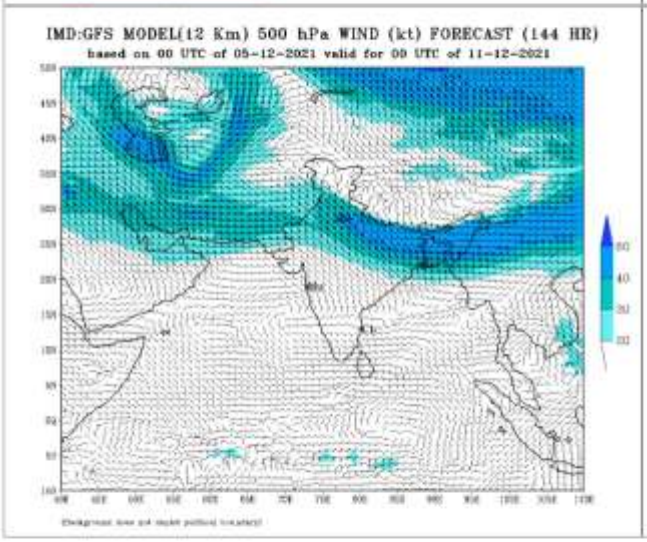

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 10-12-2021

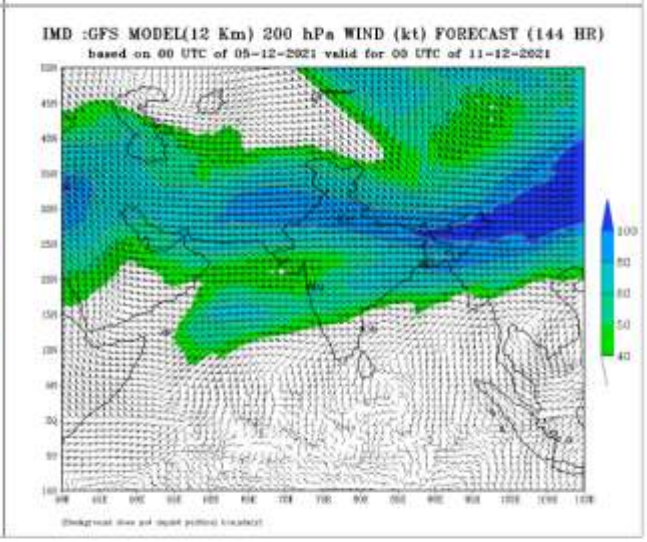

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 10-12-2021

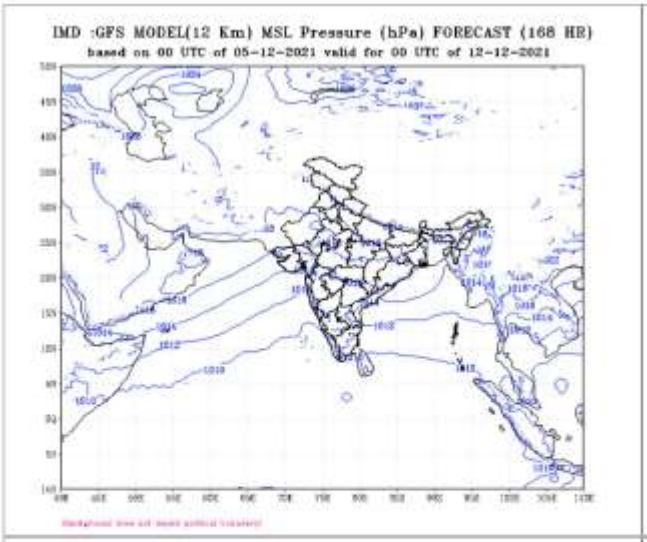

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 10-12-2021

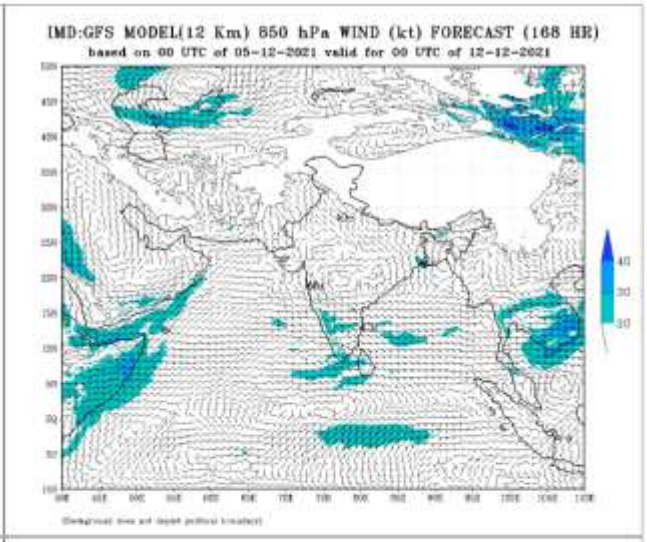

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (144 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 11-12-2021

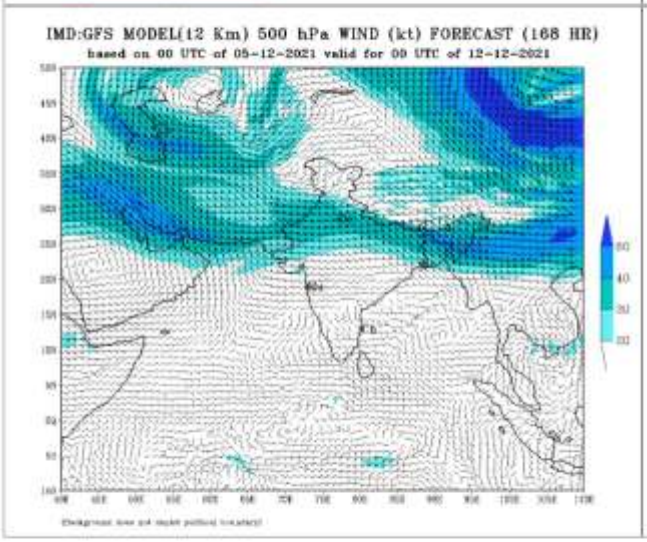

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 11-12-2021

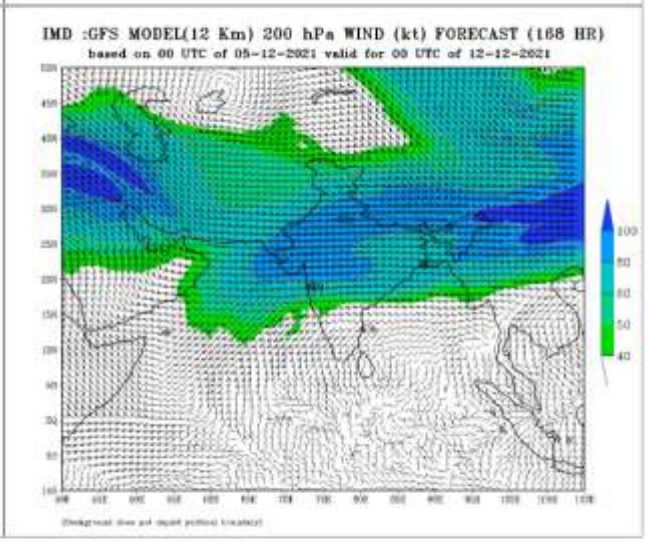

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 11-12-2021


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 11-12-2021


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (168 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 12-12-2021


IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 12-12-2021


IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 12-12-2021


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 05-12-2021 valid for 00 UTC of 12-12-2021