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

FDP (Cyclone) NOC Report Dated 19th October, 2021

Time of Issue: 1200 UTC

Synoptic features (based on 0900 UTC analysis):

- Yesterday's low pressure area over southwest Madhya Pradesh and neighbourhood became less marked at 0000 UTC of today, the 19th October. It lay as a cyclonic circulation over central parts of Uttar Pradesh at 0900 UTC of today. The associated cyclonic circulation extended upto 3.1 km above mean sea level.
- Yesterday's low Pressure area over Gangetic West Bengal & neighbourhood lay over Bihar & neighbourhood at 0900 UTC of today. The associated cyclonic circulation extended upto 5.8 km above mean sea level.
- The trough from central Uttar Pradesh to the cyclonic circulation associated with the Low Pressure Area over Bihar & neighbourhood extending upto 1.5 km above mean sea level persists.
- The trough from South Interior Karnataka to south Tamilnadu coast at 0.9 km above mean sea level persists.

Dynamical and thermodynamical features

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
Sea Surface Temperature (SST) ºC	29-30°C over major parts of BoB.	28-29°C over the AS outside southwest & adjoining west-central AS where it is 26-27°C and 24-26°C along & off south Oman & Somalia coasts.
Tropical Cyclone Heat Potential (TCHP) kJ/cm^2	70-80 over most parts and 110-120 over some parts of northwest BoB as well as over the eastern equatorial Indian Ocean.	60-70 over southeast & east-central AS. Less than 50 over north, west-central & southwest AS and along & off Oman – Yemen coasts.
Relative vorticity (X10^{-6}s^{-1})	20-30 over northwest, west-central and southwest BoB. (it extends upto 500 hPa over northwest and upto 700 hPa over the remaining region). 40-50 over Equatorial Indian Ocean and adjoining southwest BoB off south Sri Lanka.	40-50 over a small pocket in westcentral AS. (it extends upto 500 hPa).

Low Level convergence ($X10^{-5}$ s^{-1})	a) 05-15 over north & adjoining eastcentral BoB. b) 05 over southwest BoB off north Sri Lanka coast. c) 05 over south Andaman Sea.	05 over westcentral AS off Somalia coast.
Upper Level divergence ($X10^{-5}$ s^{-1})	Positive extended zone 5-10 over entire west BoB and some parts of northeast BoB.	05 over Comorin Area
Vertical Wind Shear (VWS Knots)	High (30-40) over entire BoB	Low (05-20) over central and adjoining AS and High elsewhere.
Wind Shear Tendency (knots)	Decreasing over south and adjoining central BoB	Decreasing over eastcentral AS
Upper tropospheric Ridge	Around 25°N to the north of the BoB	Roughly along 19ºN.

Satellite observations based on INSAT imagery (0900 UTC):

Bay of Bengal & Andaman Sea:-
At 0900 UTC, scattered low to medium clouds with embedded intense to very intense convection lay over north & adjoining west BoB and also over south BoB. Scattered low and medium clouds with embedded moderate to intense convection lay over rest parts of BoB and South Andaman Sea.

Arabian Sea:-

At 0900 UTC, scattered low and medium clouds with embedded isolated moderate to intense convection lay over south AS.

M.J.O. Index:
MJO index is in Phase 1 with amplitude less than 1. It is likely to propagate temporarily into Phase 2 during next couple of days and then westwards to Phase 1 once again with gradual increase in amplitude during the subsequent 5 days. Thus, the Phase of MJO in general would not support convective activity over the NIO during next 7 days.

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

No Storm or Depression prevails over South China Sea & South Indian Ocean as on today.

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

Model	BoB	AS
IMD-GFS	No fresh genesis predicted. Indicates a trough of low over southeast & adjoining soutwest BoB on 24th and a fresh one over northeast & adjoining east-central BoB on 25th.	No fresh genesis predicted. Indicates a trough of low from Lakshadweep area to east-central AS off south Maharashtra coast on 24th, its persistence & further extension upto north Maharashtra coast on 25th.

IMD-GEFS	No significant low pressure system predicted	No significant low pressure system predicted
IMD-WRF	No fresh genesis predicted upto 22nd Oct.	No fresh genesis predicted. A trough of low from southeast to east-central AS off north Kerala – Karnataka -south Maharashtra coasts on 22nd .
NCMRWF-NCUM	No fresh genesis predicted.	No fresh genesis predicted.
NCMRWF-NEPS	No fresh genesis predicted.	No fresh genesis predicted.
NCMRWF-UM (Regional)	No fresh genesis predicted upto 22nd Oct.	No fresh genesis predicted upto 22nd Oct.
ECMWF	No fresh genesis predicted. Indicates an extended Low over Andaman Sea and adjoining east-central BoB on 25th	No fresh genesis predicted.
ECMWF-EPS	Shows NIL probability	Shows NIL probability
NCEP-GFS	No fresh genesis predicted.	No fresh genesis predicted.
IMD-GPP	No Potential zone predicted	No Potential zone predicted

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

Summary and Conclusion:
All the numerical models analysed above are indicating that there may not be any significant Low pressure system development taking place over the north Indian Ocean during the next 7 days.

It may thus be concluded that,
Fresh cyclogenesis (formation of depression & above intensity systems) over the north Indian Ocean is un-likely during the forecast period.

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

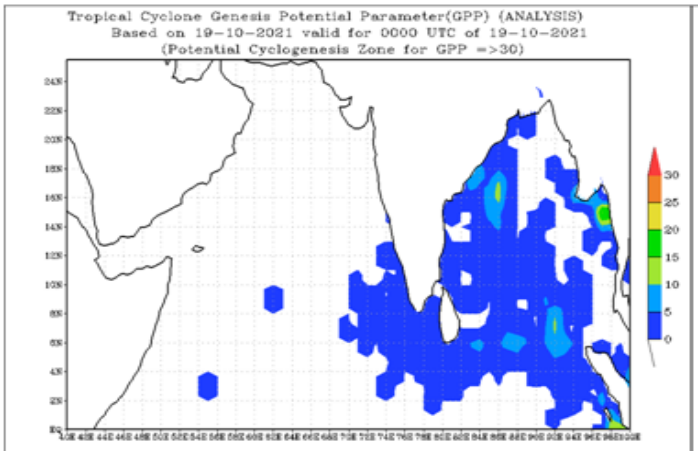
24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

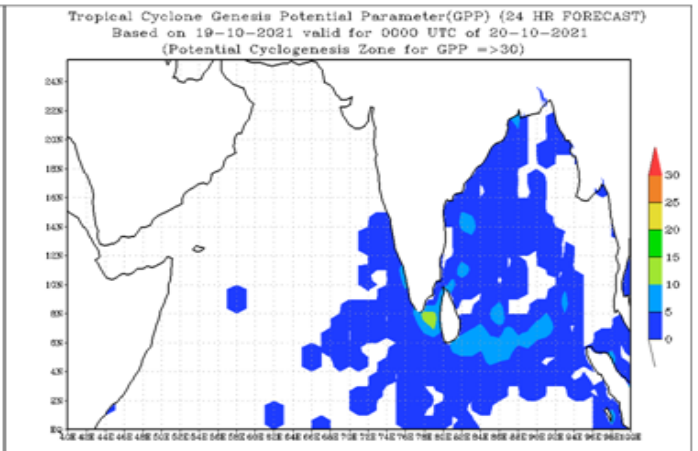
Probability of cyclogenesis (formation of depression and above intensity systems) over the Arabian Sea during next 168 hours:

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

Advisory:
NIL.
No IOP is suggested.

Annexure-I


Tropical Cyclone Genesis Potential Parameter(GPP) (ANALYSIS)
Based on 19-10-2021 valid for 0000 UTC of 19-10-2021
(Potential Cyclogenesis Zone for GPP =>30)


Tropical Cyclone Genesis Potential Parameter(GPP) (24 HR FORECAST)
Based on 19-10-2021 valid for 0000 UTC of 20-10-2021
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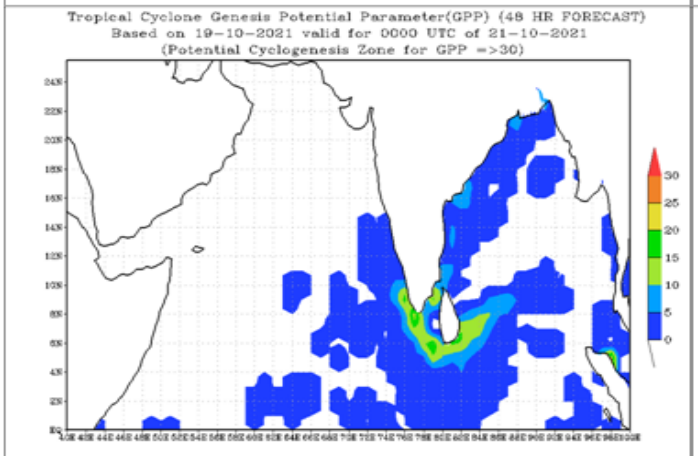
Tropical Cyclone Genesis Potential Parameter(GPP) (48 HR FORECAST)
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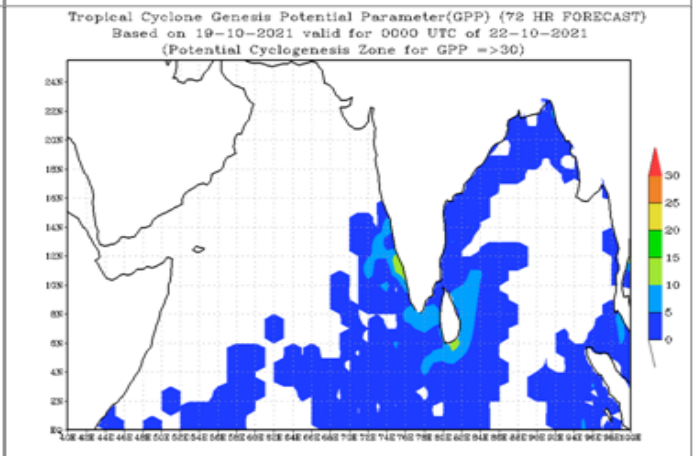
(Potential Cyclogenesis Zone for GPP =>30)


Tropical Cyclone Genesis Potential Parameter(GPP) (72 HR FORECAST)
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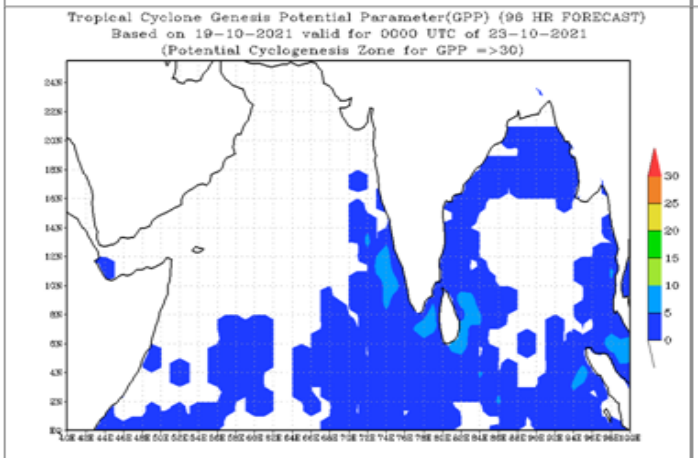
Tropical Cyclone Genesis Potential Parameter(GPP) (96 HR FORECAST)
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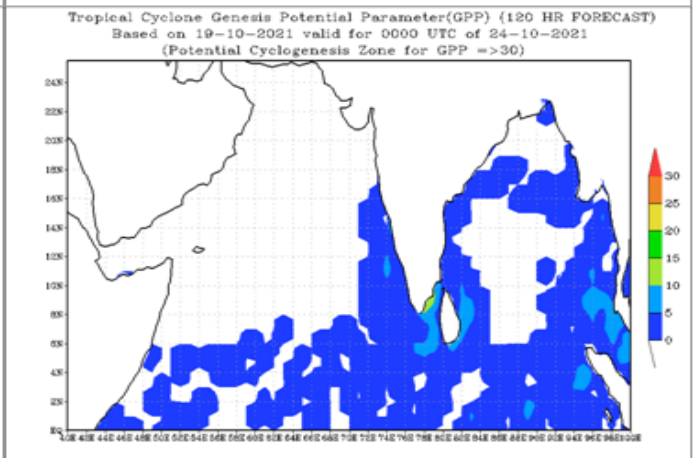
(Potential Cyclogenesis Zone for GPP =>30)


Tropical Cyclone Genesis Potential Parameter(GPP) (120 HR FORECAST)
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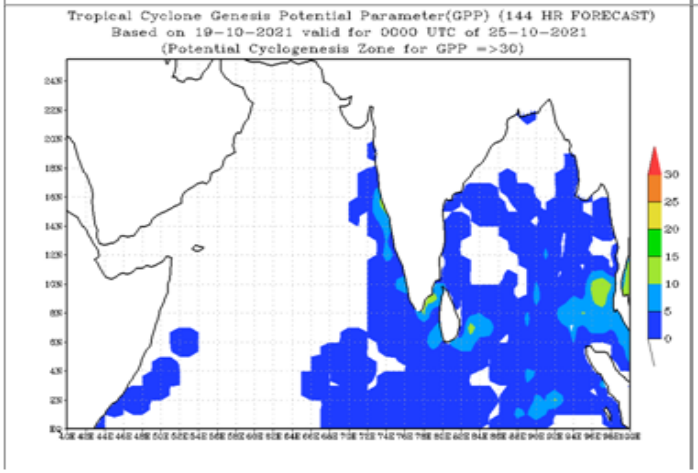
Tropical Cyclone Genesis Potential Parameter(GPP) (144 HR FORECAST)
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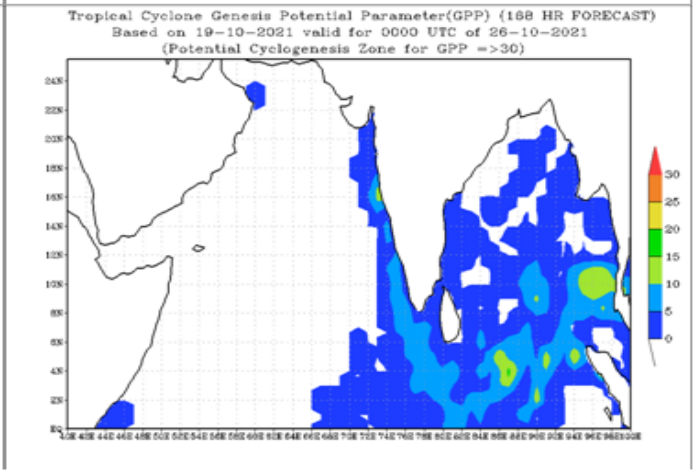
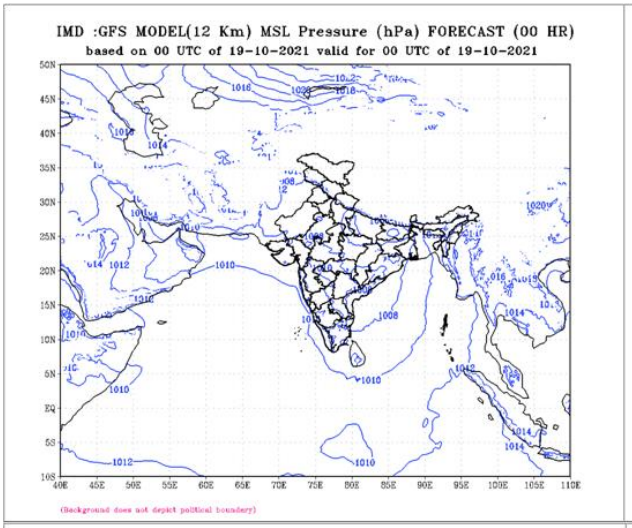
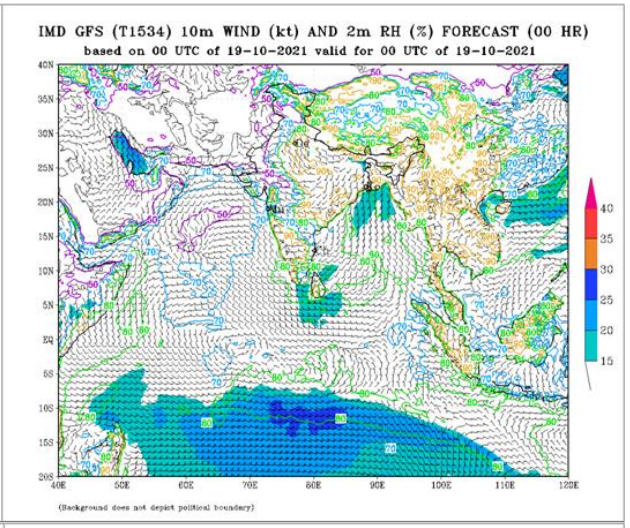

Tropical Cyclone Genesis Potential Parameter(GPP) (168 HR FORECAST)
Based on 19-10-2021 valid for 0000 UTC of 26-10-2021
(Potential Cyclogenesis Zone for GPP =>30)


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (00 HR)
based on 00 UTC of 19-10-2021 valid for 00 UTC of 19-10-2021
(Background doesn not depict political boundary)


IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (00 HR)
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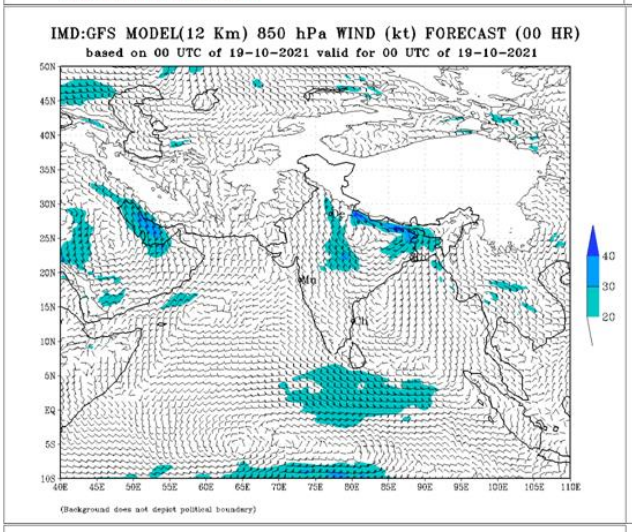
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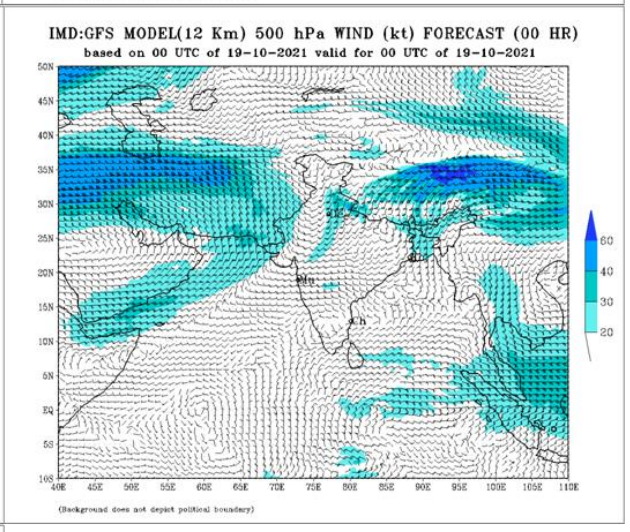
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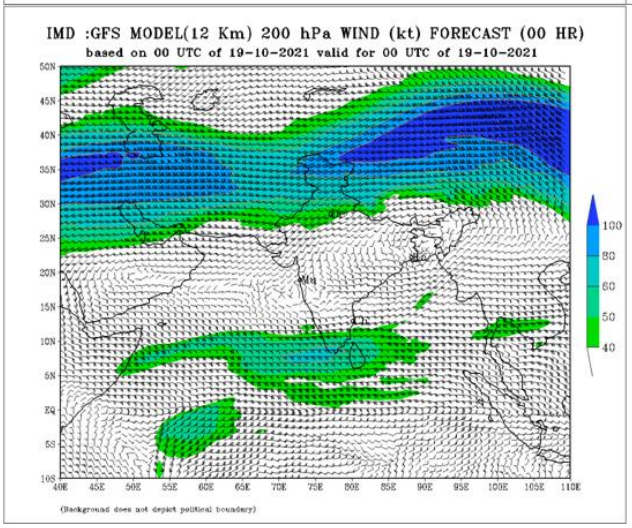
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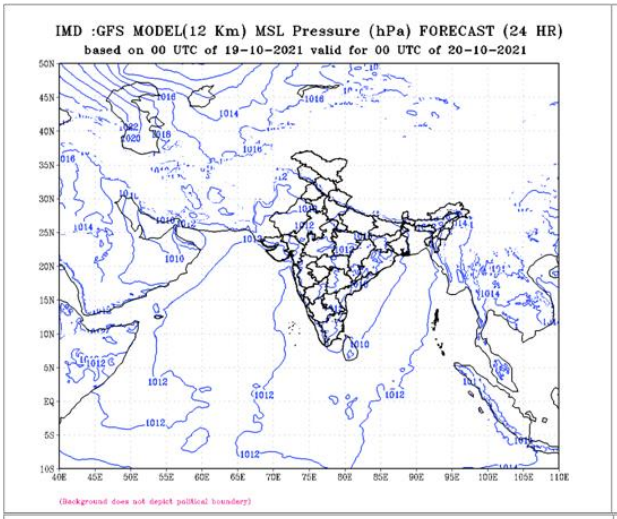
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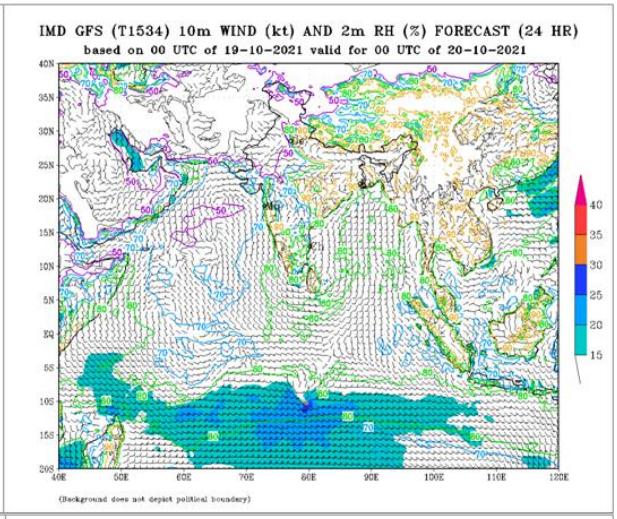
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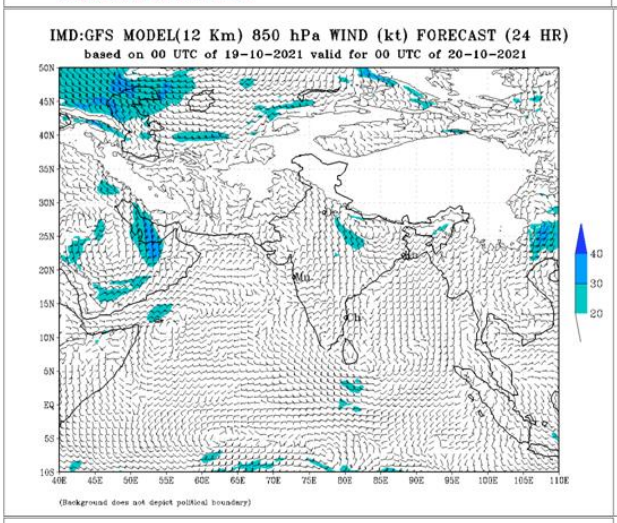
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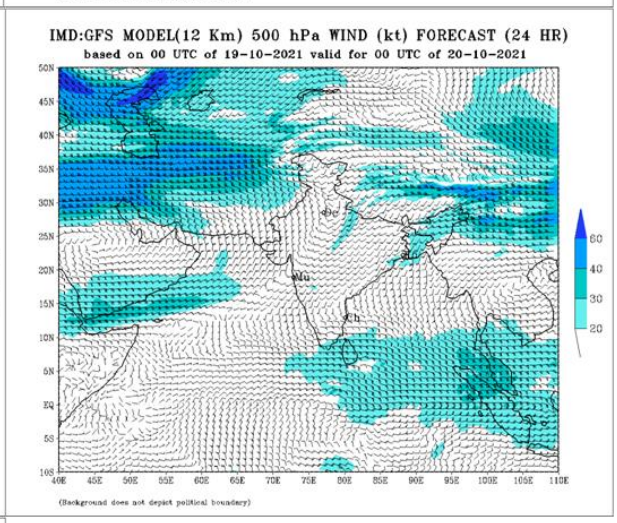
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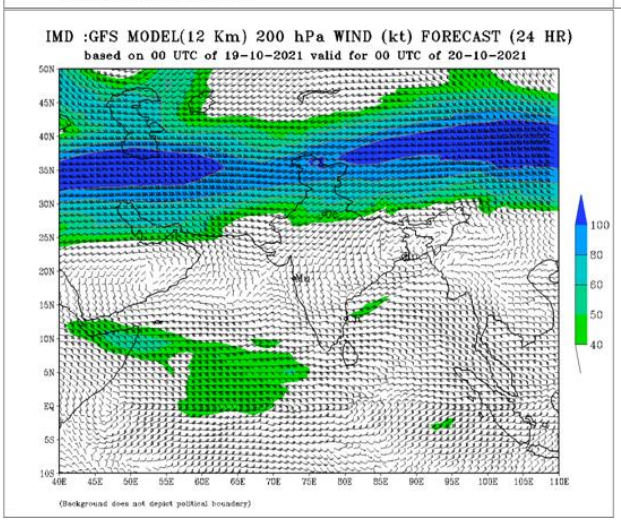
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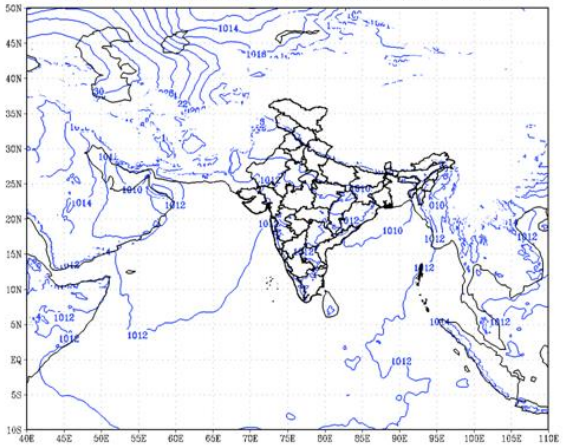
based on 00 UTC of 19-10-2021 valid for 00 UTC of 21-10-2021



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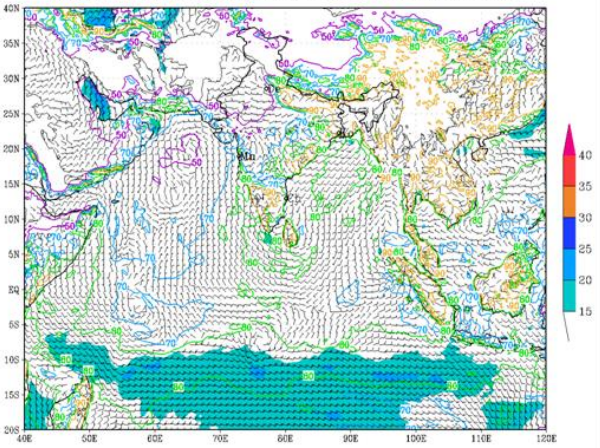

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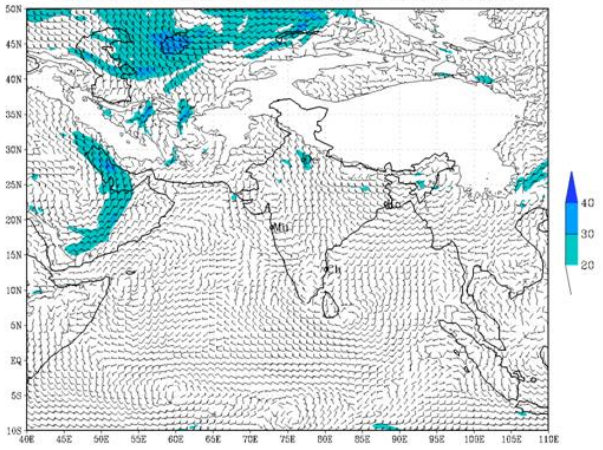

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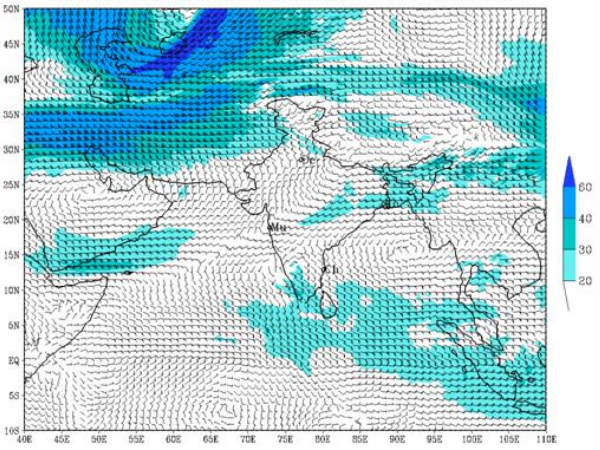

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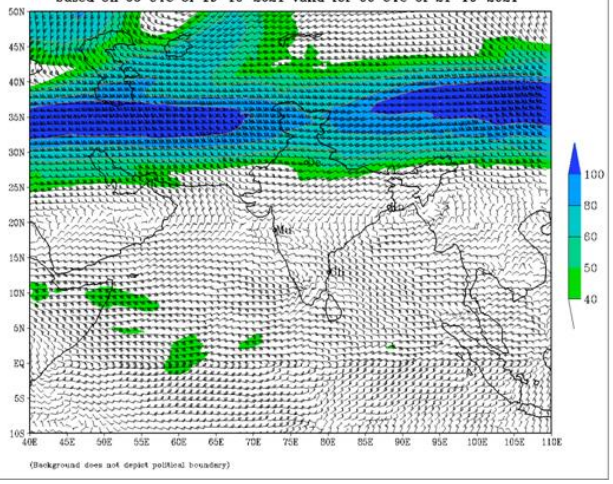

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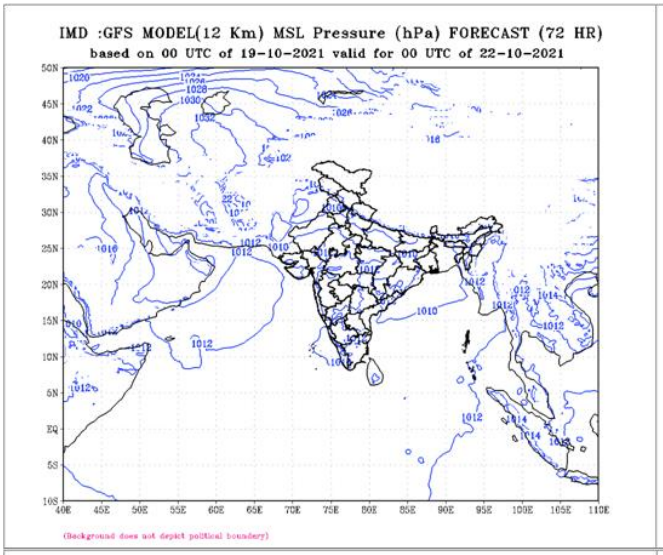
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based on 00 UTC of 19-10-2021 valid for 00 UTC of 22-10-2021
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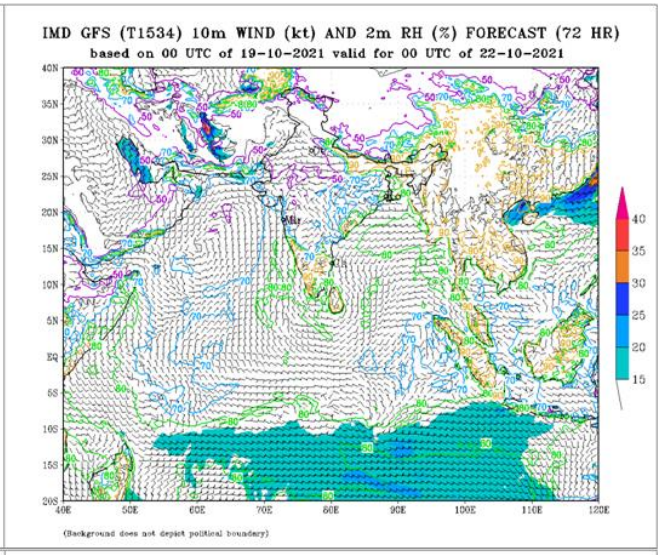
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (72 HR)
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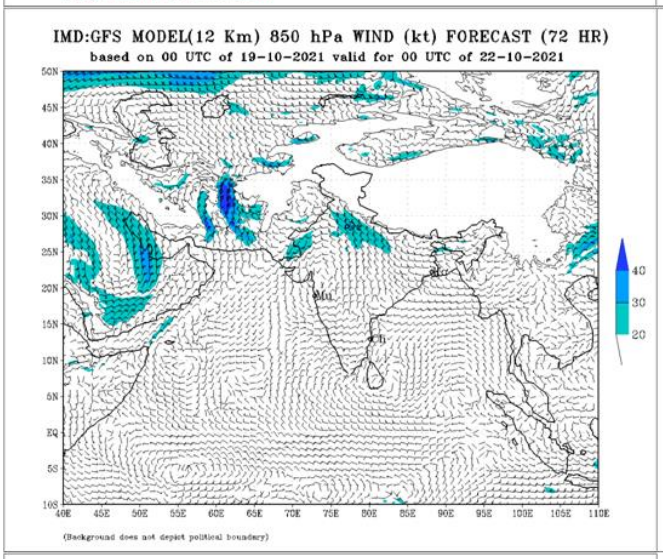
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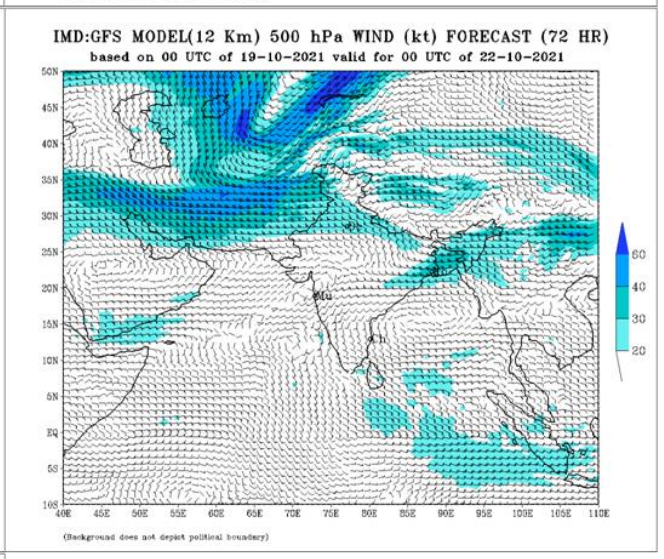
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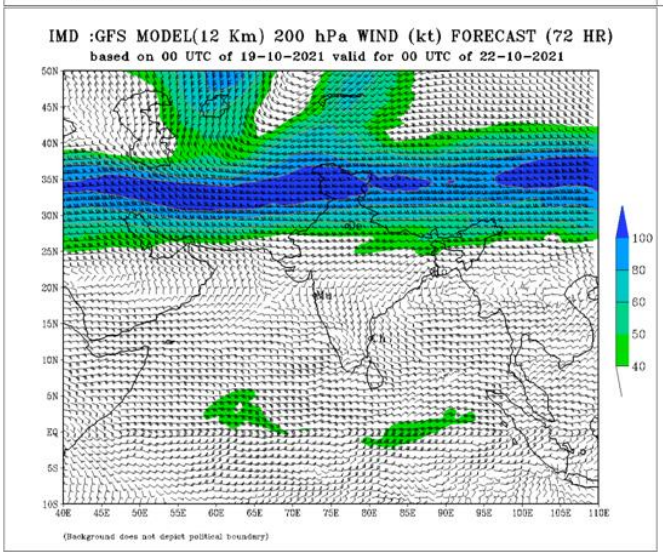
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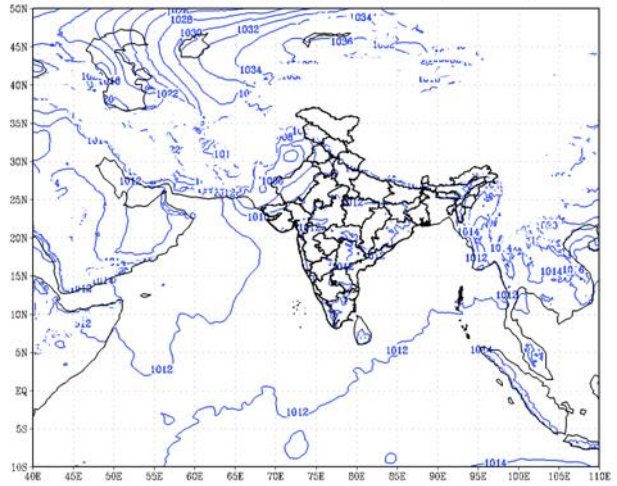

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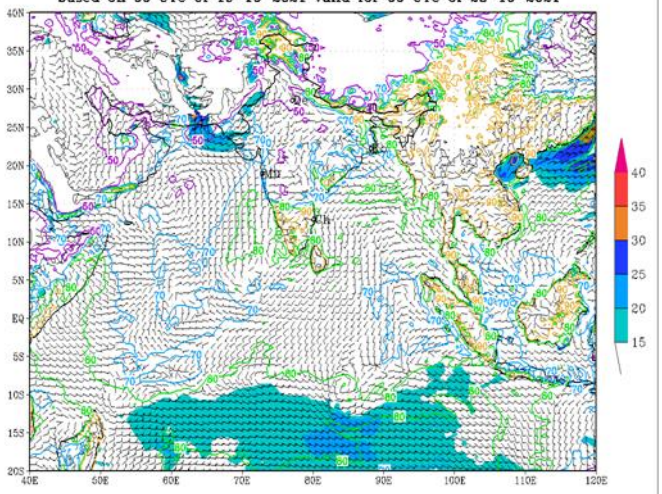

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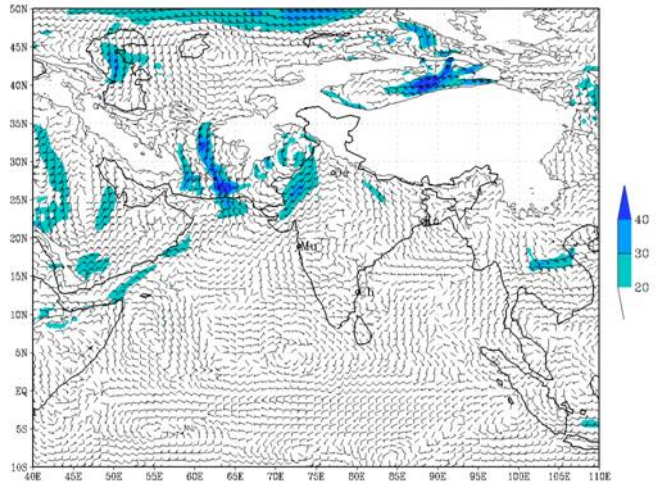

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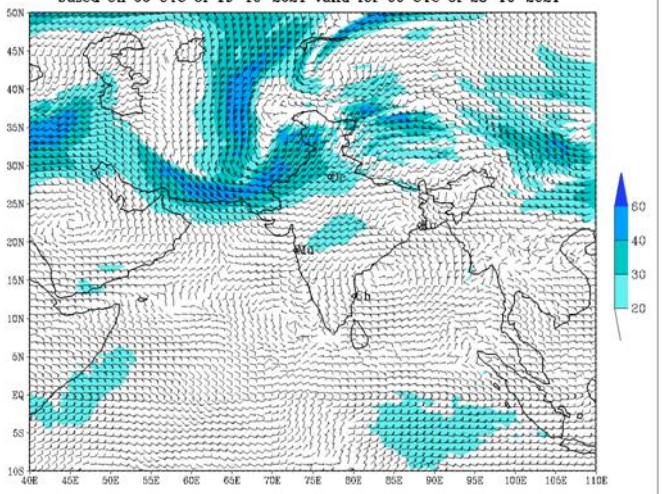

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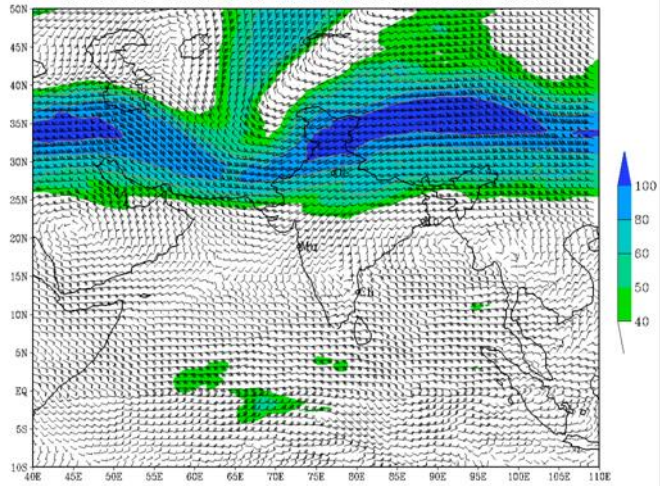

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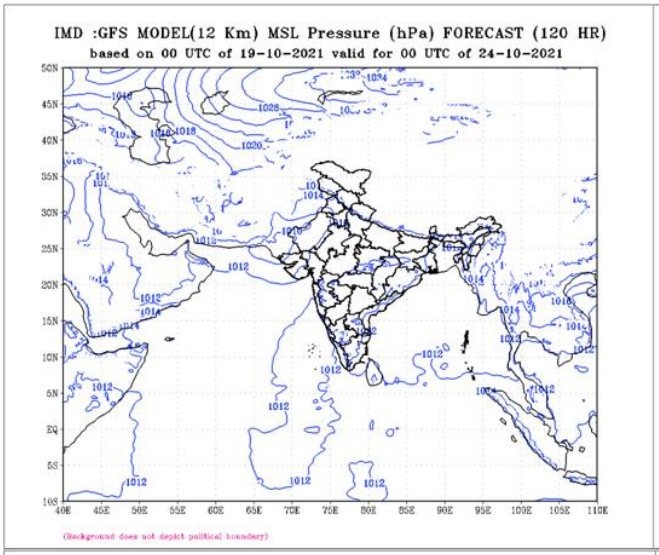
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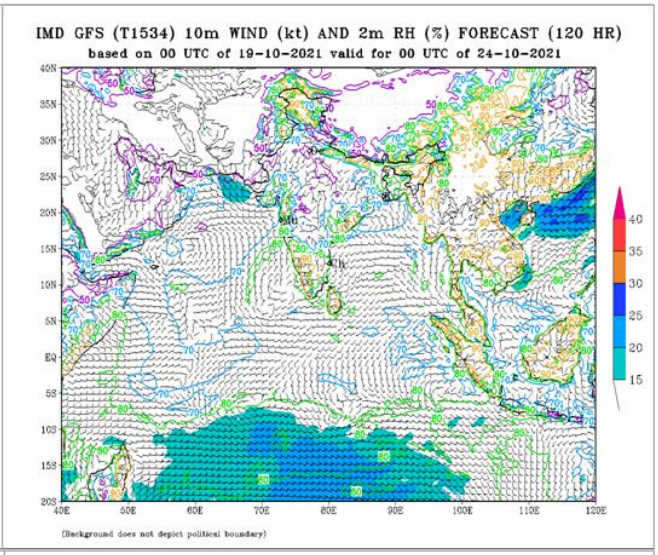
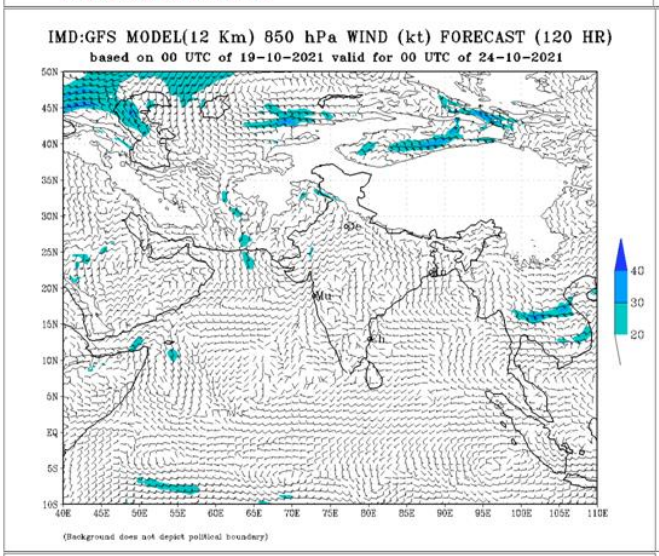
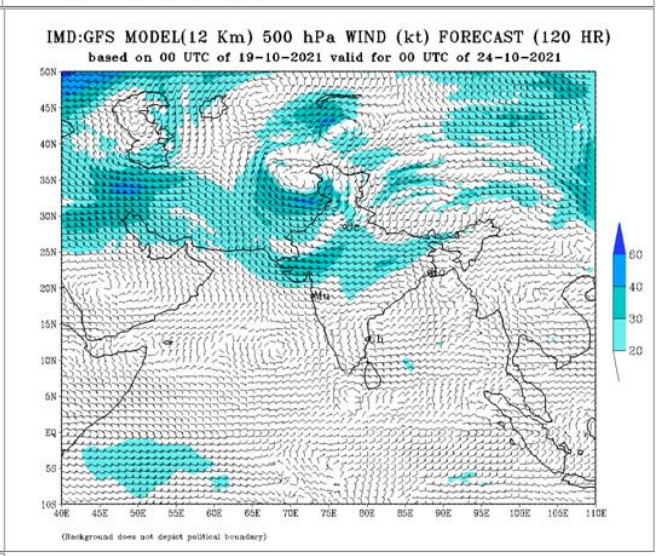
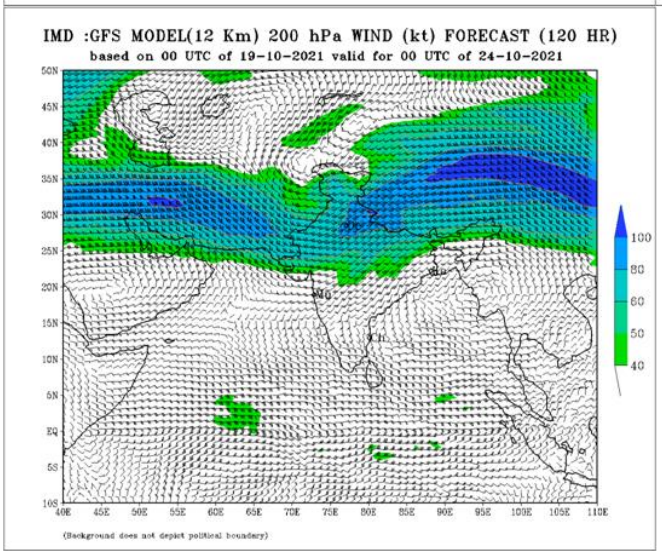
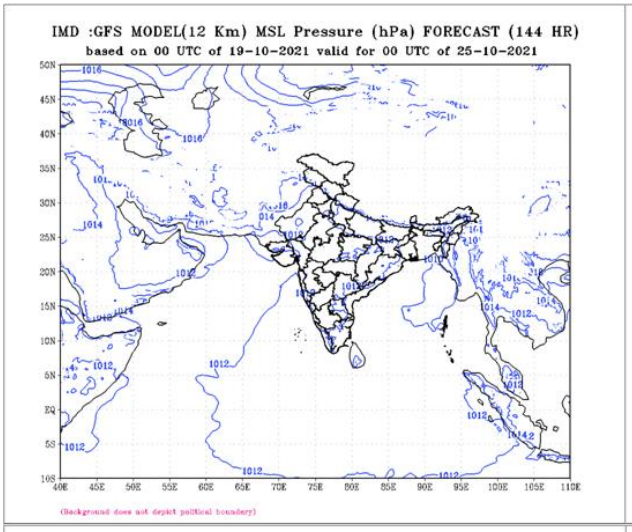
(Background does not depict political boundary)

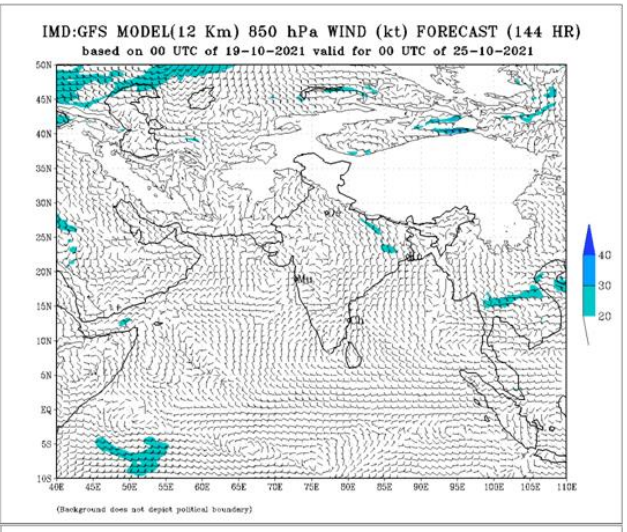

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (120 HR)
based on 00 UTC of 19-10-2021 valid for 00 UTC of 24-10-2021
(Background does not depict political boundary)

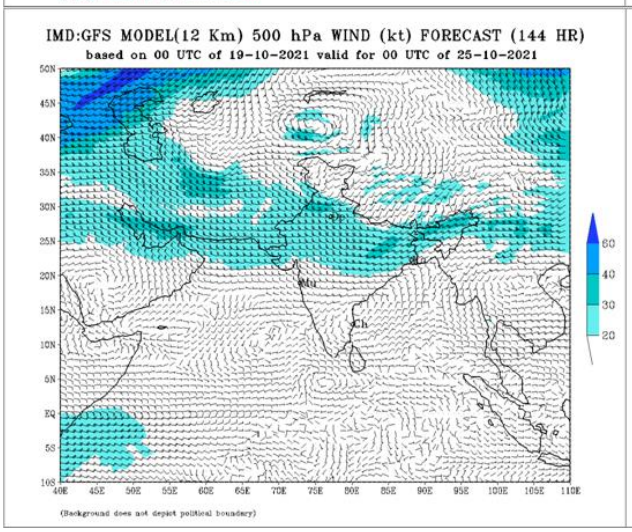

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 19-10-2021 valid for 00 UTC of 24-10-2021
(Background does not depict political boundary)

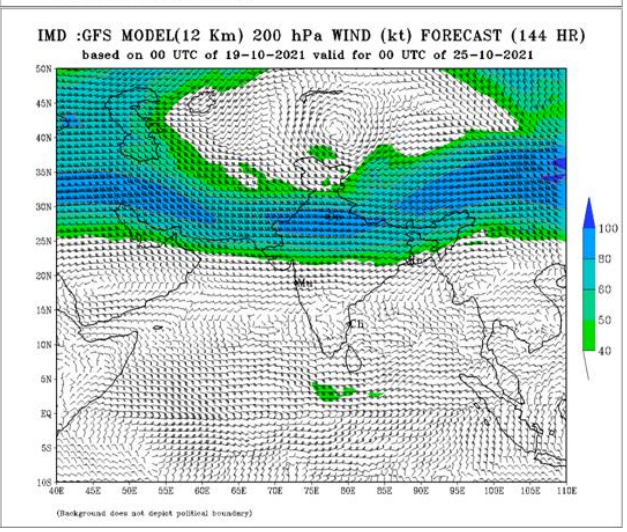

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 19-10-2021 valid for 00 UTC of 24-10-2021
(Background does not depict political boundary)

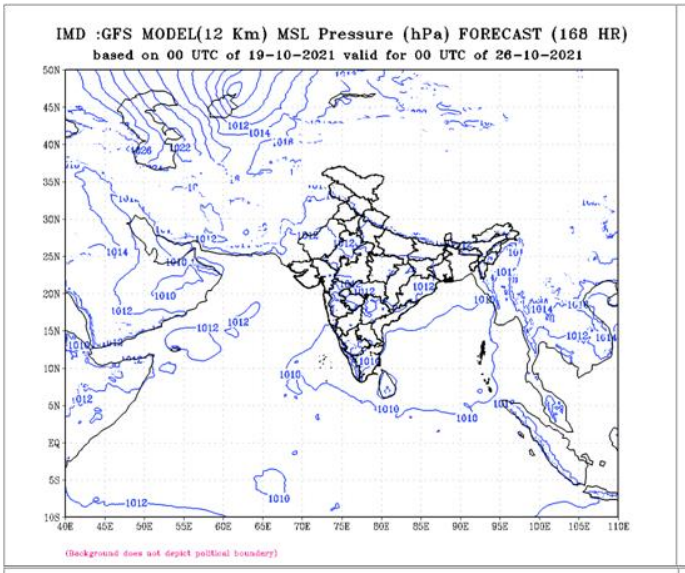

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 19-10-2021 valid for 00 UTC of 24-10-2021
(Background does not depict political boundary)

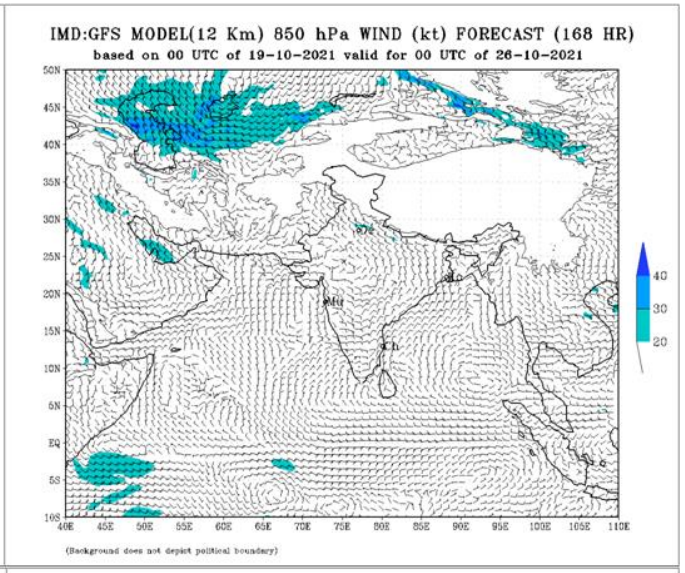

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (144 HR)
based on 00 UTC of 19-10-2021 valid for 00 UTC of 25-10-2021
(Background does not depict political boundary)


IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 19-10-2021 valid for 00 UTC of 25-10-2021
40
30
20
(Background does not depict political boundary)


IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 19-10-2021 valid for 00 UTC of 25-10-2021
60
40
30
20
(Background does not depict political boundary)


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 19-10-2021 valid for 00 UTC of 25-10-2021
100
80
60
50
40
(Background does not depict political boundary)


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (168 HR)
based on 00 UTC of 19-10-2021 valid for 00 UTC of 26-10-2021
(Background does not depict political boundary)


IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 19-10-2021 valid for 00 UTC of 26-10-2021
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30
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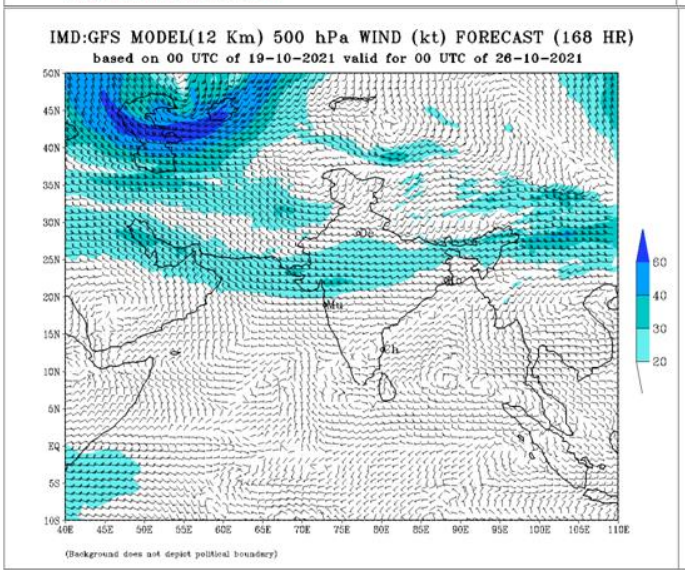
(Background does not depict political boundary)


IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 19-10-2021 valid for 00 UTC of 26-10-2021
60
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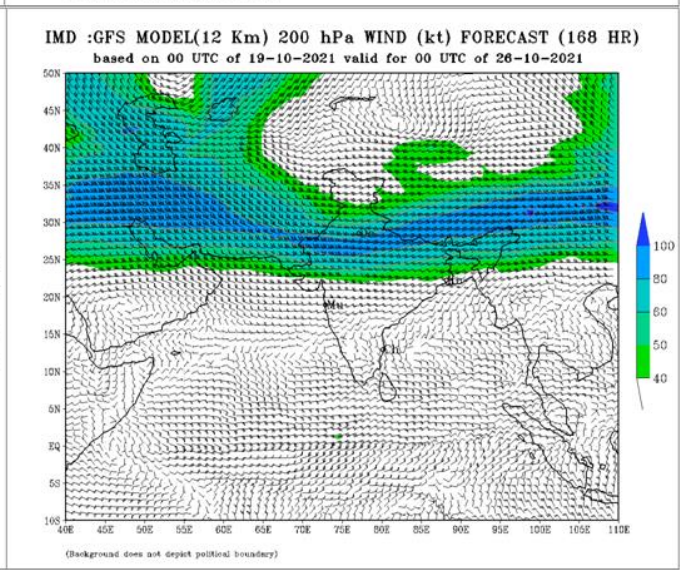
(Background does not depict political boundary)


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 19-10-2021 valid for 00 UTC of 26-10-2021
100
80
60
50
40
(Background does not depict political boundary)