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

FDP (Cyclone) NOC Report Dated 20th October, 2021

Time of Issue: 1200 UTC

Synoptic features (based on 0900 UTC analysis):

- Yesterday's low Pressure area over Bihar & neighbourhood became less marked at 0300 UTC of today. However, the associated cyclonic circulation persisted over Bihar & neighbourhood, extending upto 1.5 km above mean sea level.
- A cyclonic circulation lay over south Tamil Nadu coast & neighbourhood and extended upto 1.5 km above mean sea level at 0300 UTC of today and persisted there at 0900 UTC.
- A north-south trough extended from northwest Uttar Pradesh to east-central Arabian Sea across East Rajasthan, Southwest Madhya Pradesh and north Konkan between 3.1 & 5.8 km above mean sea level at 0300 UTC and persisted at 0900 UTC.
- Yesterday's cyclonic circulation over central parts of Uttar Pradesh became less marked at 0300 UTC of today.
- Yesterday's trough from central Uttar Pradesh to the cyclonic circulation associated with the Low Pressure Area over Bihar & neighbourhood also became less marked at 0300 UTC of today.
- The trough from South Interior Karnataka to south Tamil Nadu coast at 0.9 km above mean sea level also became less marked at 0300 UTC of today.

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 and higher over northwest BoB off Odisha & West Bengal coasts	28-29°C over eastcentral & adjoining southeast AS and major parts of south AS except extreme southwest AS. It is 26-27°C over southwest & adjoining west-central AS and also over central parts of AS..
Tropical Cyclone Heat Potential (TCHP) kJ/cm^2	70-80 over most parts and 110-120 over some parts of northwest BoB off Odisha & West Bengal coasts, 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})	10-20 over northwest, west-central and southwest BoB.	An extended zone 40-50 over a southwest and

	2 small pockets of higher vorticity 30-40 over southwest BoB off southwest Sri Lanka and to the southeast of Sri Lanka (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.	adjoining westcentral AS. (Vertically it extends upto 500 hPa and horizontally upto central India across entire central AS). Positive vorticity 10-20 over eastern parts of AS off Maharashtra to Kerala coast.
Low Level convergence ($X10^{-5}$ s^{-1})	a) 05-10 over north BoB off West Bengal – Bangladesh coasts. b) 05-10 over southwest BoB off north Sri Lanka coast and over Palk Strait.	05 over central parts of south AS and another zone of 05 over central parts of central AS.
Upper Level divergence ($X10^{-5}$ s^{-1})	Positive extended zone 5-10 over northwest BoB off Odisha & West Bengal coasts.	05 over southeast AS off Kerala coast extending over entire Peninsular region
Vertical Wind Shear (VWS Knots)	Moderate (15-20) over north and adjoining eastcentral BoB	Low (05-10) over entire central AS extending upto Maharashtra coast
Wind Shear Tendency (knots)	Decreasing over entire BoB. Increasing over south Andaman Sea and adjoining southeast BoB	Decreasing over southeast & adjoining eastcentral AS. Decreasing over westcentral AS off Yemen-Oman coasts.
Upper tropospheric Ridge	Around 22°N over the BoB	Not well defined. Roughly along 22ºN.

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 northwest BoB and isolated moderate to intense convection lay over westcentral & south BoB and South Andaman Sea.

Arabian Sea:-

At 0900 UTC, scattered low and medium clouds with embedded moderate to intense convection lay over southeast AS off Kerala coast.

M.J.O. Index:
MJO index is in Phase 1 with amplitude less than 1. It is likely to continue in the same Phase (Phase 1) with gradual increase in amplitude during next 7 days. Thus, the Phase of MJO 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 an extended low over east-central & adjoining southeast BoB on 25th and a trough of Low over southeast BoB on 26th.	No fresh genesis predicted. Indicates a trough of low over southeast AS and adjoining Kerala coast on 22nd, over east-central AS off Karnataka coast on 23rd and it's weakening on 24th.
IMD-GEFS	No significant low pressure system predicted, other than a trough of Low over southeast BoB on 26th.	No fresh genesis predicted. Indicates a trough of Low over southeast AS off Kerala coast on 22nd, its weakening on 23rd and a fresh one from southeast AS to east-central AS off Kerala – Karnataka coasts on 26th.
IMD-WRF	No fresh genesis predicted.	No fresh genesis predicted. Indicates a trough of low over southeast & adjoining east-central AS and Lakshadweep area off north Kerala – Karnataka coasts on 22nd and over east-central AS off Karnataka coast on 23rd.
NCMRWF-NCUM	No fresh genesis predicted. Indicates an extended Low over equatorial Indian Ocean and adjoining southwest BoB on 24th and its weakening on 25th, re-establishment on 26th.	No fresh genesis predicted. Indicates a trough of Low from southeast to east-central AS off north Kerala – Karnataka coasts on 22nd, its weakening on 23rd and re-appearance over southeast AS off Kerala coast on 25th & 26th.
NCMRWF-NEPS	-Do-	-Do-
NCMRWF-UM (Regional)	No fresh genesis predicted upto 23rd Oct.	No fresh genesis predicted upto 23rdOct.
ECMWF	No fresh genesis predicted. Indicates a trough of Low from southwest BoB to west-central BoB off Tamil Nadu – Andhra Pradesh coasts on 20th, weakening on 21st, a fresh trough of Low over southeast BoB and adjoining Andaman Sea on 25th and its moving westwards to southwest & adjoining southeast BoB on 26th.	No fresh genesis predicted. Indicates a trough of Low from Lakshadweep area to east-central AS off Kerala- Karnataka – Goa coasts on 26th.
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:

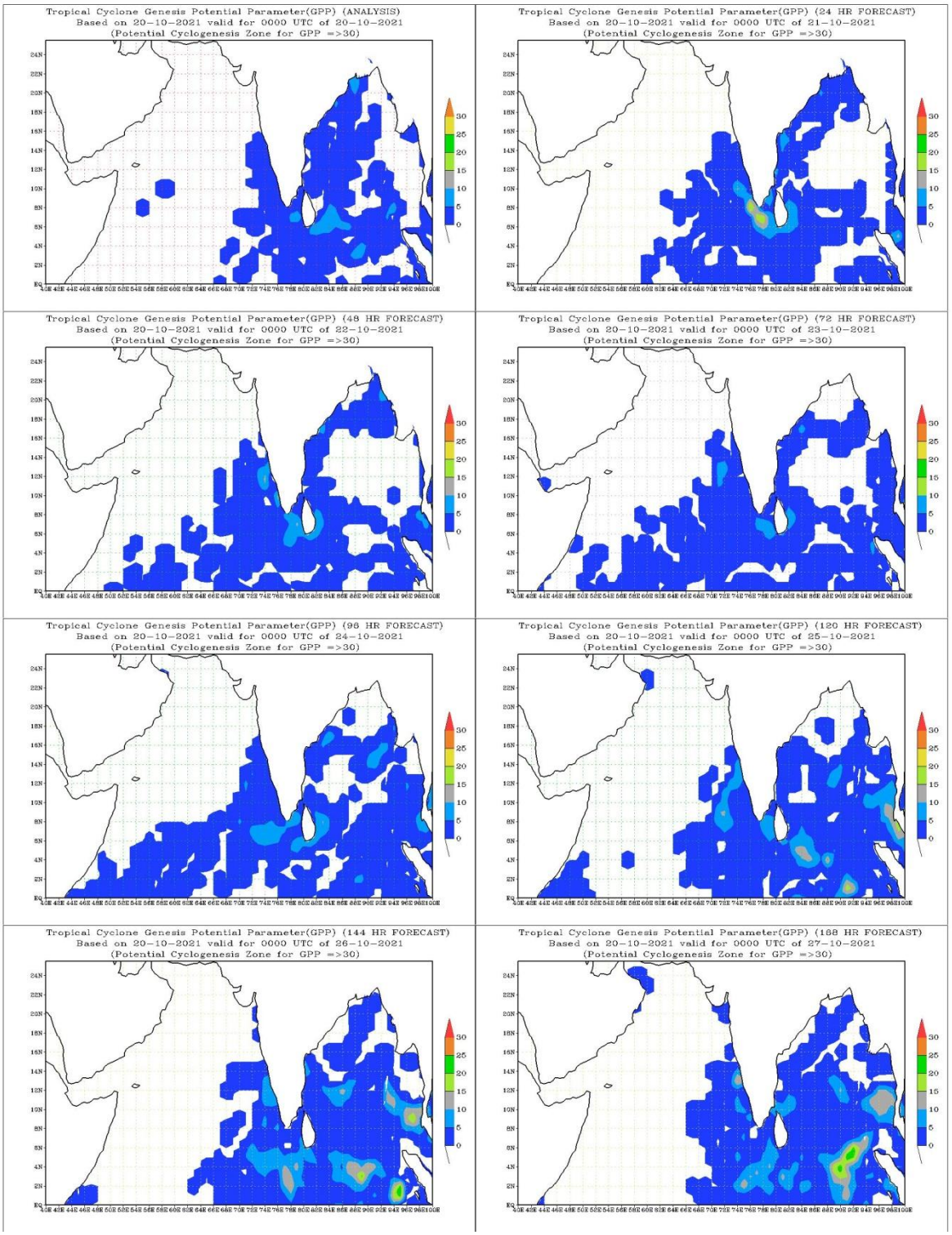
24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

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 20-10-2021 valid for 0000 UTC of 20-10-2021
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (24 HR FORECAST)
Based on 20-10-2021 valid for 0000 UTC of 21-10-2021
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Tropical Cyclone Genesis Potential Parameter(GPP) (48 HR FORECAST)
Based on 20-10-2021 valid for 0000 UTC of 22-10-2021
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (72 HR FORECAST)
Based on 20-10-2021 valid for 0000 UTC of 23-10-2021
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (96 HR FORECAST)
Based on 20-10-2021 valid for 0000 UTC of 24-10-2021
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (120 HR FORECAST)
Based on 20-10-2021 valid for 0000 UTC of 25-10-2021
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (144 HR FORECAST)
Based on 20-10-2021 valid for 0000 UTC of 26-10-2021
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (168 HR FORECAST)
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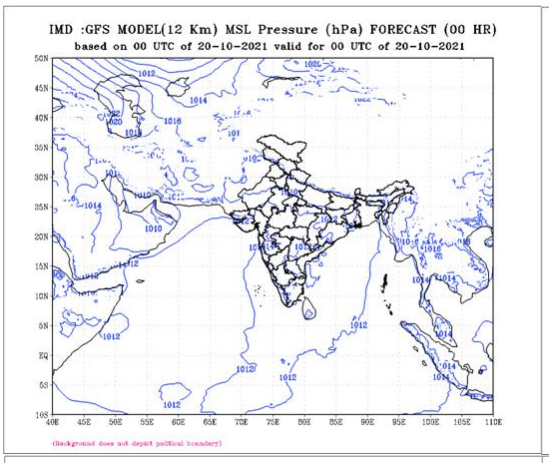
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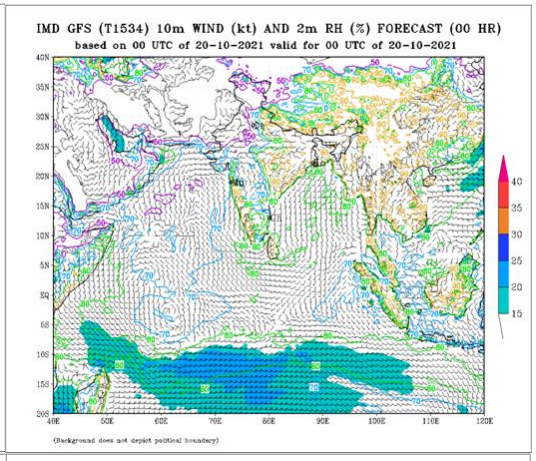
(Background does not depict political boundary)


IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (00 HR)
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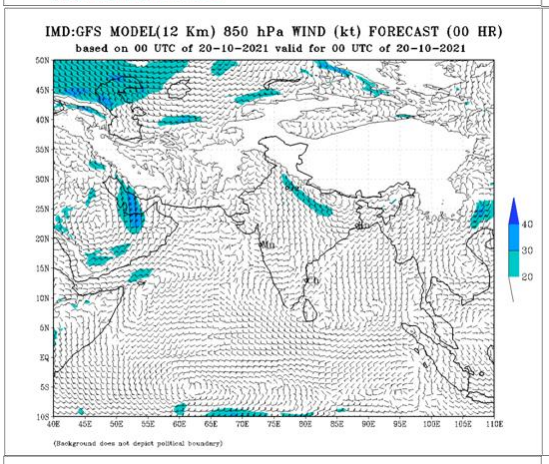
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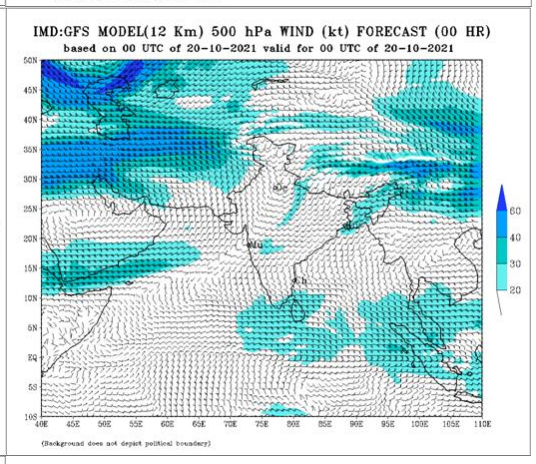
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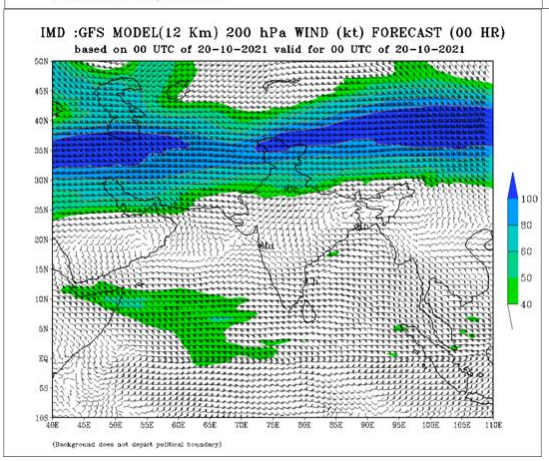
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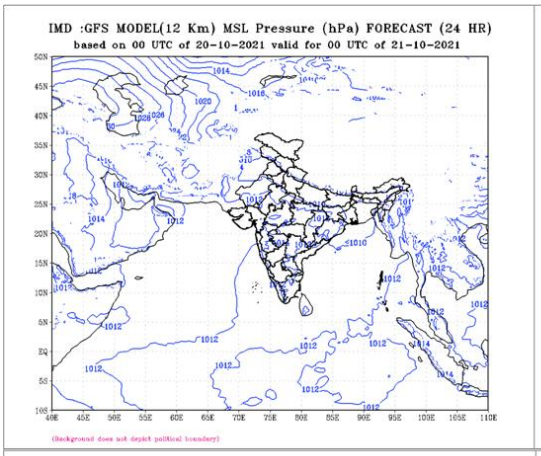
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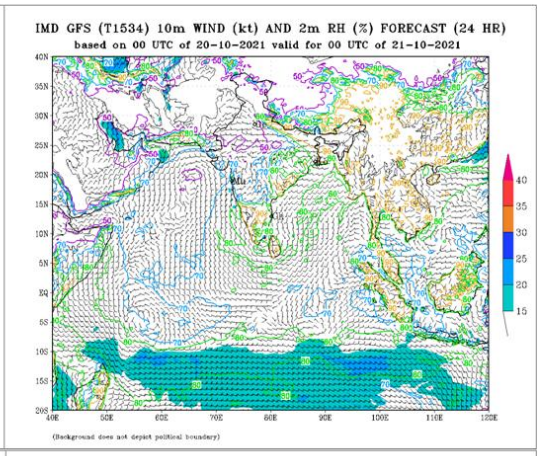
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (24 HR)
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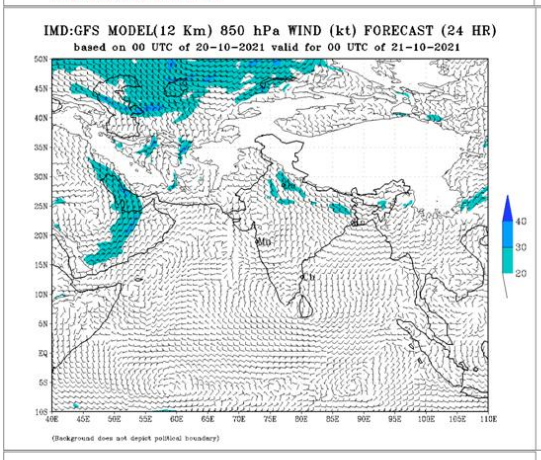
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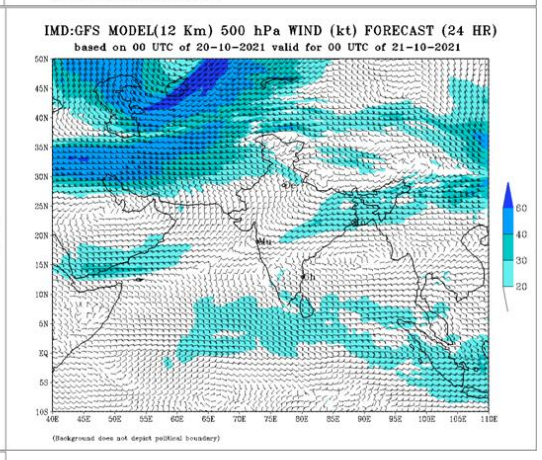
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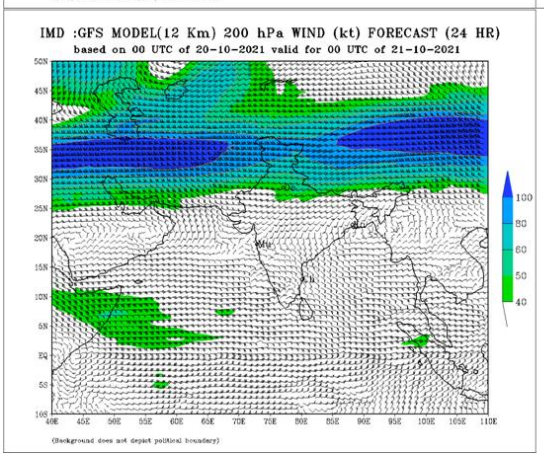
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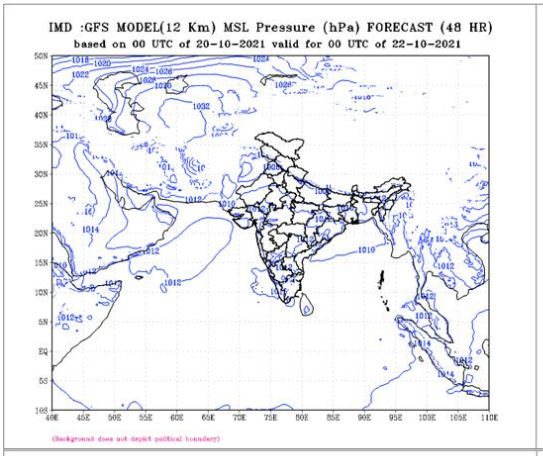
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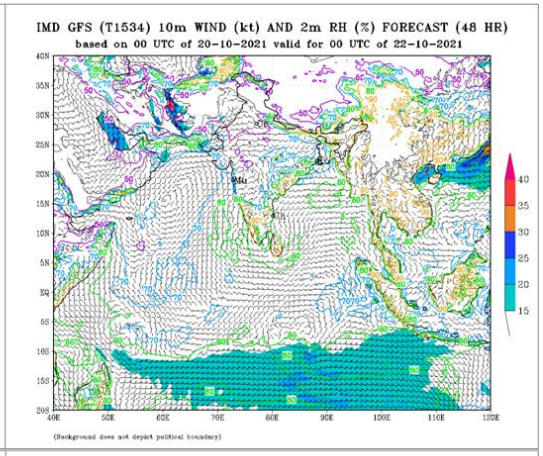
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (48 HR)
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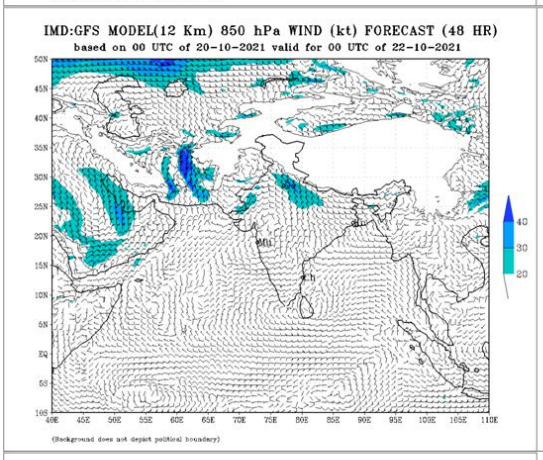
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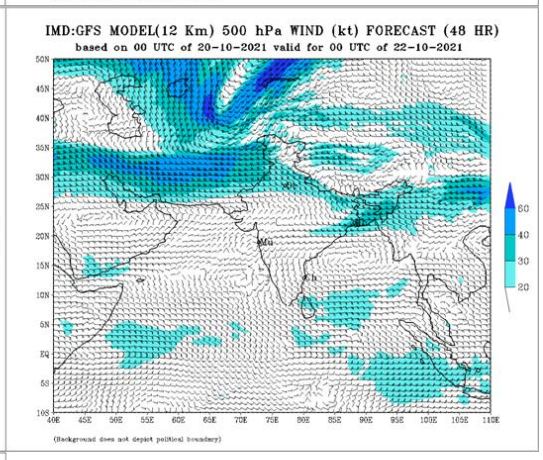
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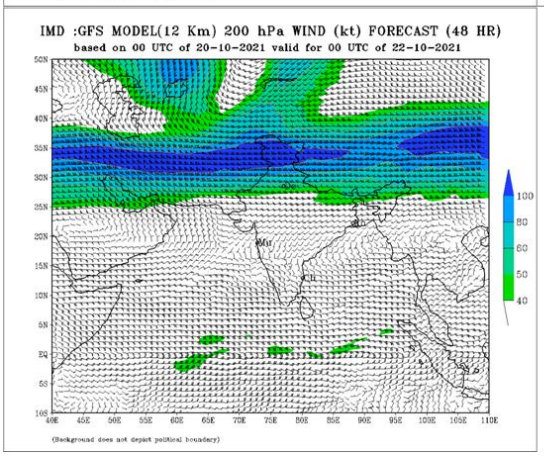
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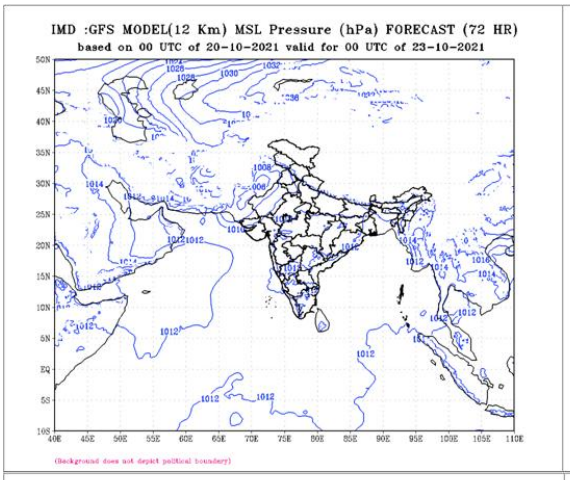
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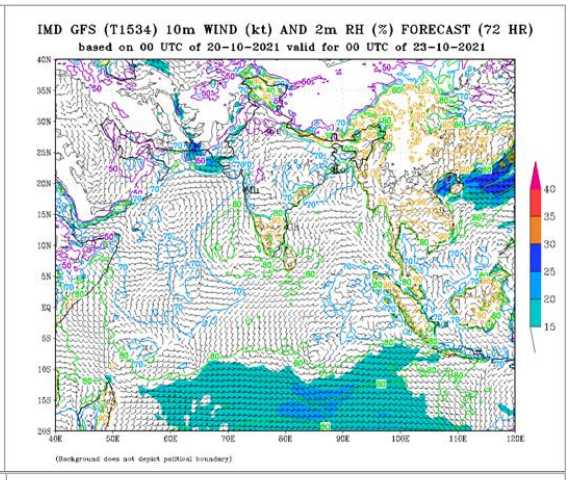
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (72 HR)
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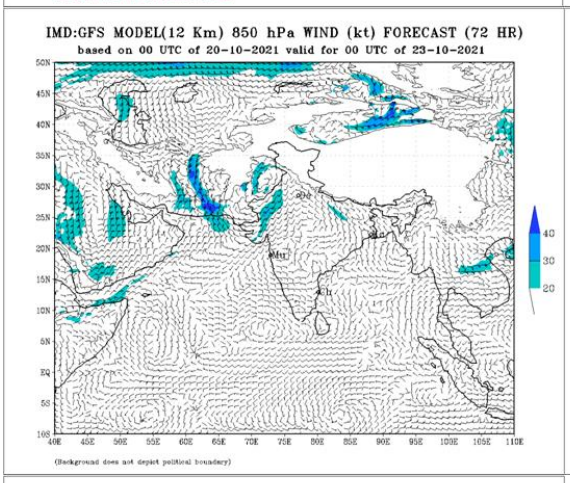
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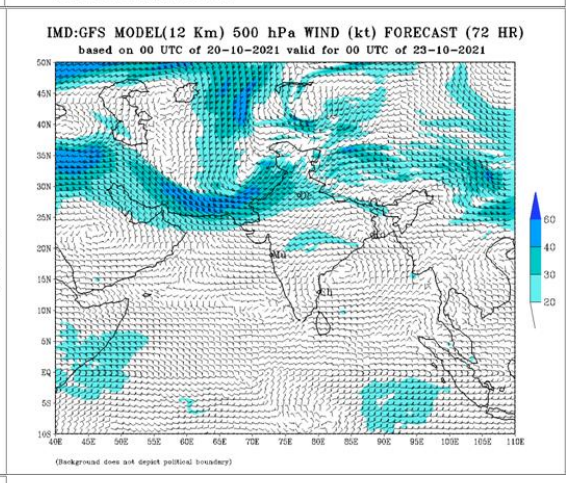
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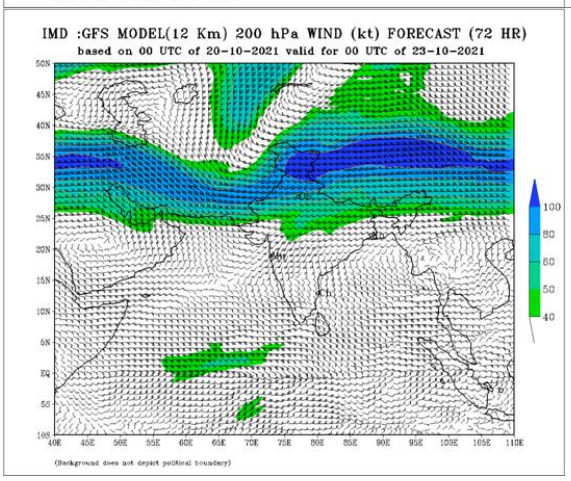
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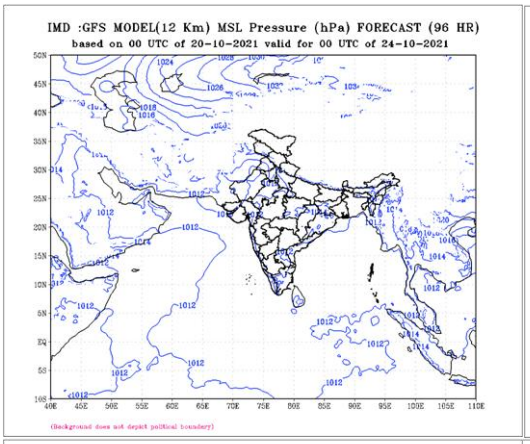
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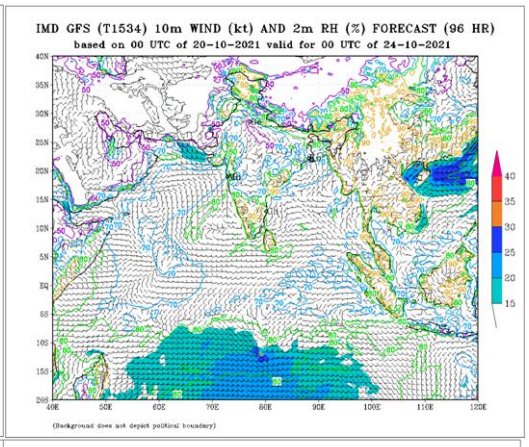
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (96 HR)
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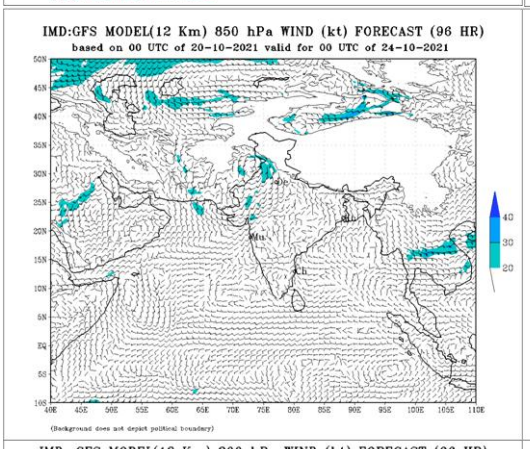
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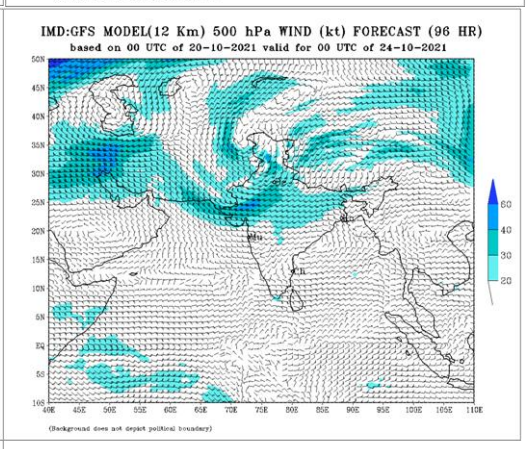
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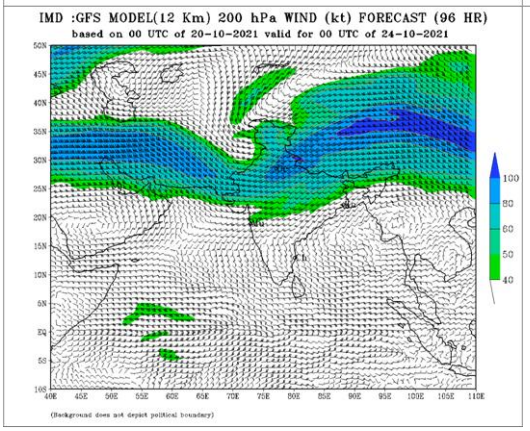
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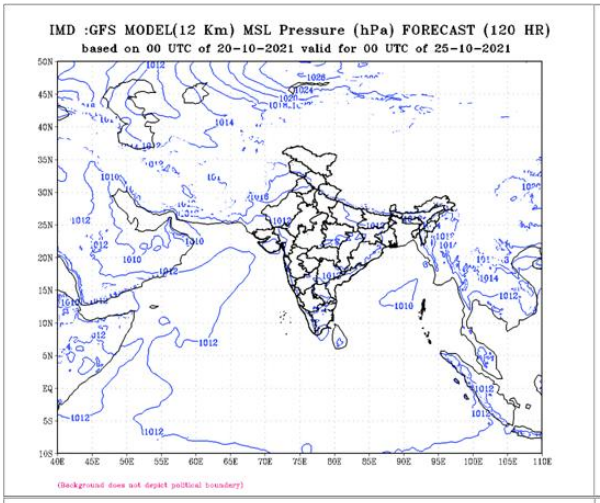
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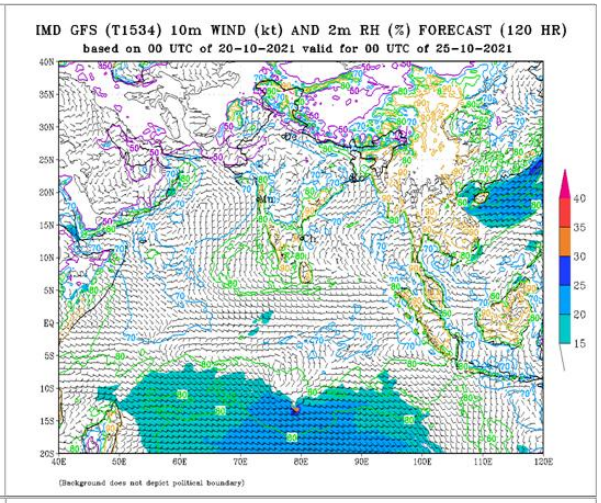
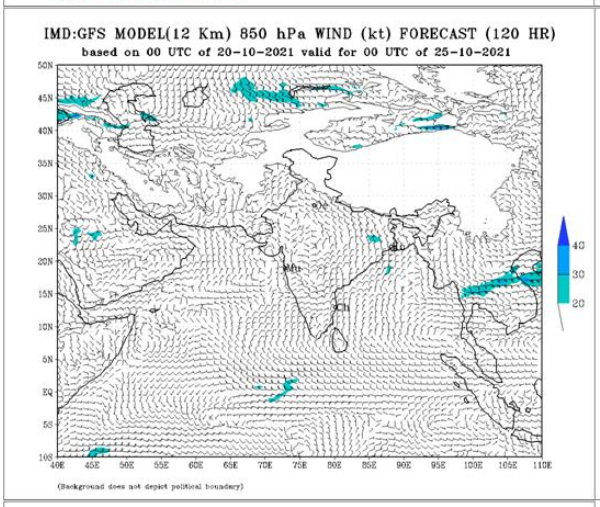
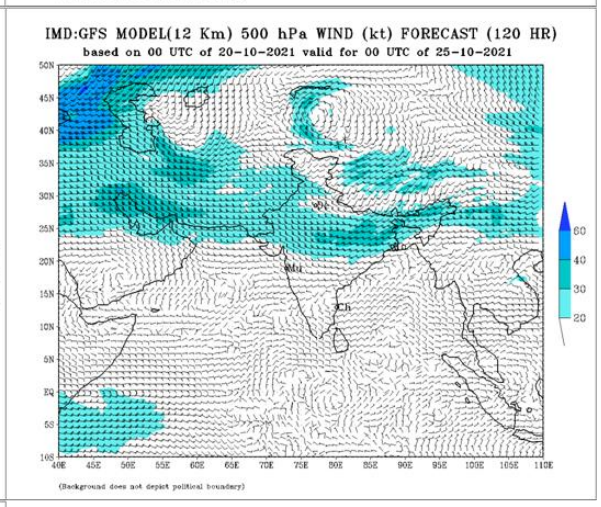
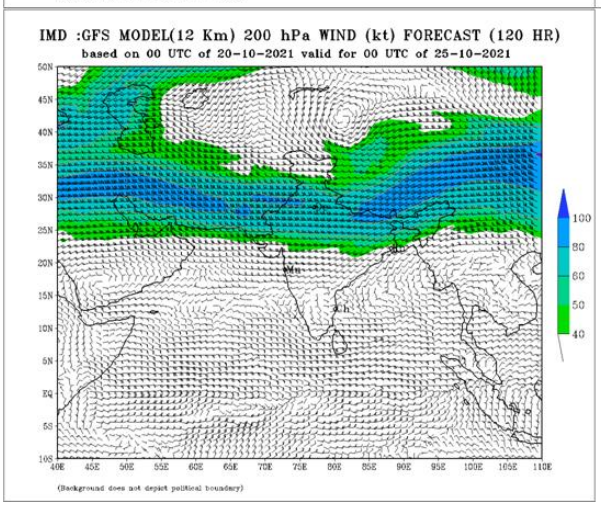
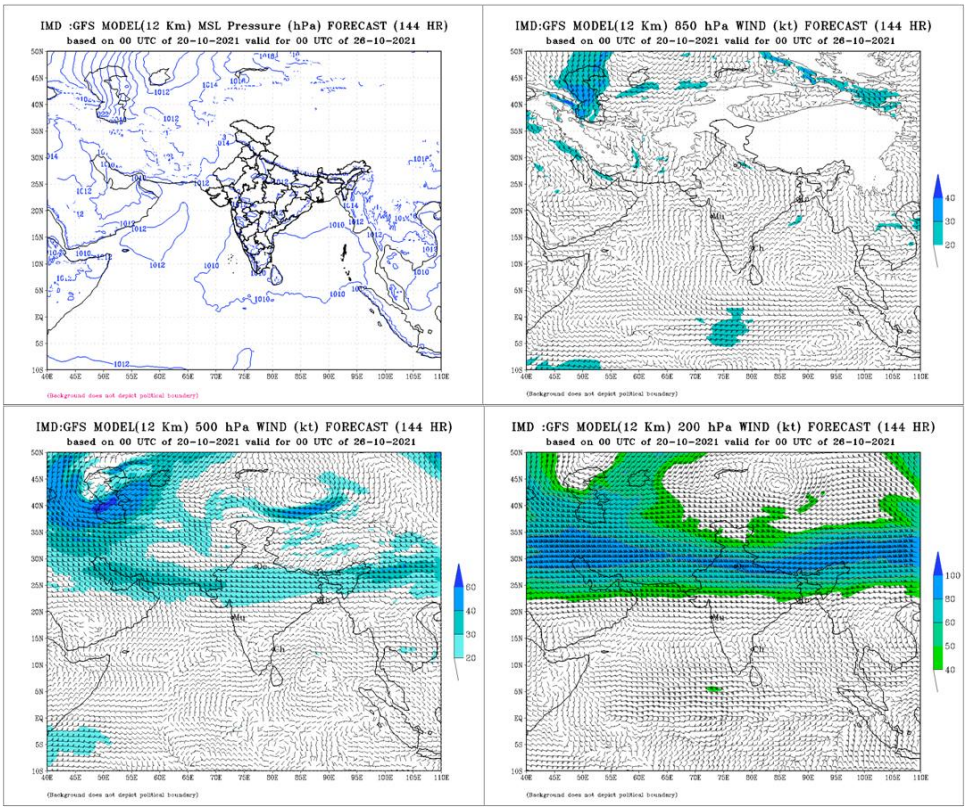
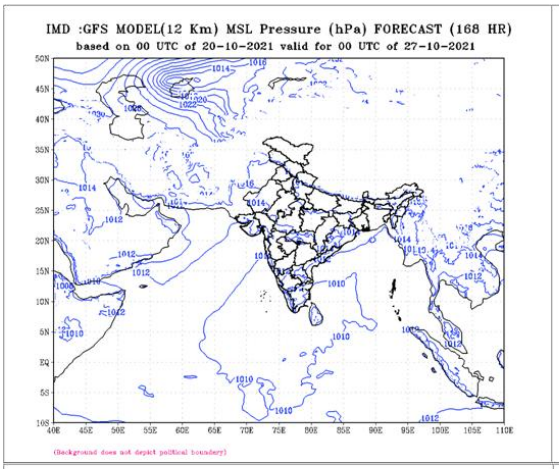

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (120 HR)
based on 00 UTC of 20-10-2021 valid for 00 UTC of 25-10-2021
(Background does not depict political boundary)

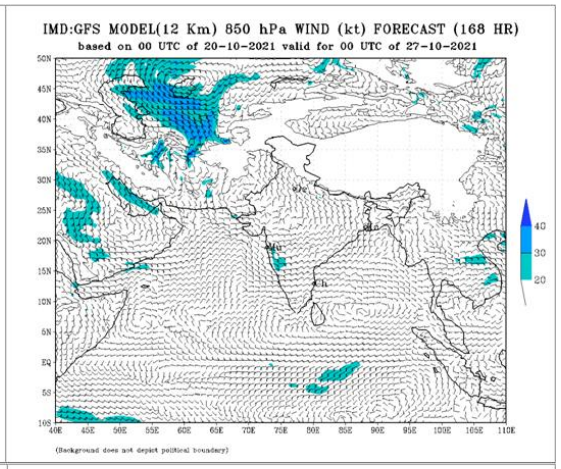

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 20-10-2021 valid for 00 UTC of 25-10-2021
(Background does not depict political boundary)

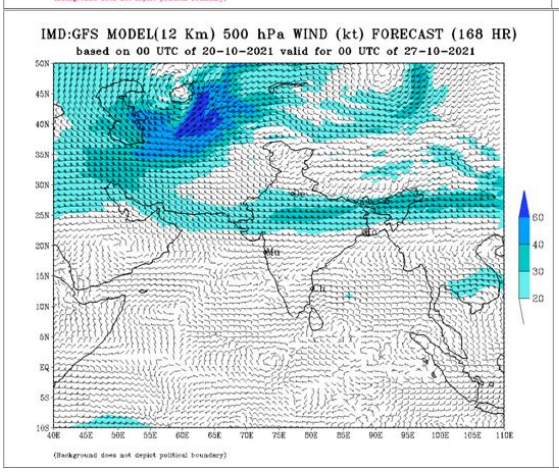

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 20-10-2021 valid for 00 UTC of 25-10-2021
(Background does not depict political boundary)

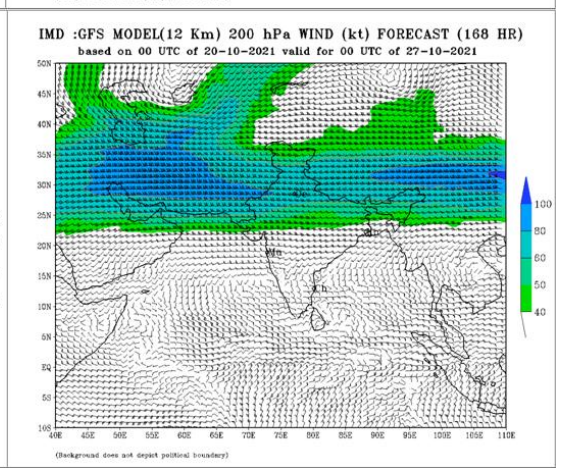

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 20-10-2021 valid for 00 UTC of 25-10-2021
(Background does not depict political boundary)


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (144 HR)
based on 00 UTC of 20-10-2021 valid for 00 UTC of 26-10-2021
(Background does not depict political boundary)
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 20-10-2021 valid for 00 UTC of 26-10-2021
(Background does not depict political boundary)
IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 20-10-2021 valid for 00 UTC of 26-10-2021
(Background does not depict political boundary)
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 20-10-2021 valid for 00 UTC of 26-10-2021
(Background does not depict political boundary)


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (168 HR)
based on 00 UTC of 20-10-2021 valid for 00 UTC of 27-10-2021
(Background does not depict political boundary)


IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 20-10-2021 valid for 00 UTC of 27-10-2021
(Background does not depict political boundary)


IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 20-10-2021 valid for 00 UTC of 27-10-2021
(Background does not depict political boundary)


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 20-10-2021 valid for 00 UTC of 27-10-2021
(Background does not depict political boundary)