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

Tropical Cyclone Forecast Programme
Report Dated 18th November, 2022

Time of Issue: 1200 UTC

Synoptic features (based on 0600 UTC analysis):

Yesterday's low pressure area over southeast Bay of Bengal & adjoining Andaman Sea moved westwards and lay over southeast Bay of Bengal & neighbourhood in the morning of today, the 18th november, 2022. It is likely to move west-northwestwards and gradually concentrate into a depression over central parts of south Bay of Bengal during next 48 hours. Thereafter, it is very likely to move west-northwestwards towards Tamil Nadu-Puducherry and south Andhra Pradesh coasts during subsequent 3 days.

Dynamical and thermo-dynamical features

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
Sea Surface Temperature (SST) ºC	About 28-29°C over major parts of BoB, 26-28°C over south of southwest BoB and Gulf of Mannar, Sri Lanka coast.	About 28-29°C over southeast and adjoining southwest AS, along and off south Gujarat and Maharashtra coasts, north of north AS, 26-28°C over eastcentral and adjoining westcentral, north AS, along and off Kerala and Karnataka coasts, less than 24°C over southwest AS off Oman and Yemen coasts and adjoining sea areas, Comorin area.
Tropical Cyclone Heat Potential (TCHP) kJ/cm^2	>110 over south Andaman sea & eastcentral BoB, 70-80 over north Andaman Sea, southwest BoB off Sri Lanka, north BoB, and less than 40 over westcentral BoB, along and off TN and AP coasts, Gulf of Mannar, some parts of southwest BoB.	70-90 over southeast and adjoining eastcentral and southwest AS, Maldives & adjoining EIO, and less than 40 over remaining AS and also off west coast of India, Comorin area.
Cyclonic Relative vorticity (X10^{-6}s^{-1})	Positive vorticity of 60-70 x10-6 s-1 over southest and adjoining southeast and westcentral BoB, adjoiningeastcentral BoB, 10-20 x10-6 s-1 over off Sri Lanka coast.	40-50x10-6 s^{-1} over eastern parts of southwest AS, 10-20x10-6 s^{-1} over central parts of AS and off Kerala coast.
Low Level convergence (X10^{-5} s^{-1})	05-10x10^{-5} s^{-1} over central parts of southwest BoB, 05 x10^{-5} s^{-1} over north Andaman Sea and adjoining eastcentral BoB, east parts of southwest BoB.	Negative values over most parts.
Upper Level divergence (X10^{-5} s^{-1})	10x10^{-5} s^{-1} over north Andaman Sea and southwest BoB along and off NE Sri Lanka, 20 x10^{-5} s^{-1} over western parts of eastcentral BoB, 5	Negative values over most parts.

	x10^{-5} s^{-1} over southwest and adjoining westcentral BoB.	
Vertical Wind Shear (VWS knots)	15-25 kt over the low pressure area	5-15 over southwest and adjoining west central AS, 20-30 over southeast and adjoining eastcentral AS, 30-50 over north parts of central AS and north AS.
Wind Shear Tendency (knots)	Decreasing over south west BoB. Increasing over central, north BoB and Andaman sea & adjoining southeast BoB.	Decreasing over southwest AS & adjoining EIO region, westcentral and northwest AS. Increasing over southeast AS and adjoining EIO, eastcentral and northeast AS.
Upper tropospheric Ridge	Along 17.0°N over the BoB.	Along 13.0°N over the AS.
Trough in westerlies		

Satellite observations based on INSAT imagery (0900 UTC):

a) Over the BoB & Andaman Sea:-

Scattered to broken low and medium clouds with embedded intense to very intense convection lay over central & southwest Bay of Bengal and scattered low to medium clouds with moderate to intense convection over southeast and Andaman Sea.

b) Over the Arabian Sea:-

Scattered low and medium clouds with embedded moderate to convection lay over south Arabian Sea.

M.J.O. Index:

MJO index is currently in Phase 5 with amplitude more than 1. It will continue in same phase for next 2 days. Thereafter, it would move to phase 6 with amplitude remaining more than 1.

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

At 0900 UTC of 18th November, a Depression lies near 9.354S/106.0E. The wind speed associated with the system is 25 kt.

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

MODEL GUIDANCE	BoB	AS
IMD-GFS	WML over southwest BoB on 18th, WML over southwest BoB on 19th, depression over southwest and adjoining westcentral BoB on 20th, less marked thereafter. A fresh low pressure area is expected over south Andaman Sea on 24th.	No significant system
IMD-GEFS	WML over southeast BoB on 18th, depression over southwest BoB on 19th, continue with same intensity till 22nd, less marked thereafter. A fresh low pressure area is expected over north Andaman Sea on 24th.	No significant system

GEFS Probablistic guidance	Not available	Not available
IMD WRF	WML over southwest & adjoining southeast BoB on 19th, depression over southwest BoB on 20th. and continue as depression till 21st.	No significant system
NCMRWF-NCUM	WML over southwest BoB on 18th, depression over southwest BoB on 19th, deep depression over westcentral and adjoining southwest BoB on 20st, crossing around 22nd morning as a deep depression near 15.5N/80.0E (South Andhra Pradesh coast). A fresh LPA over North Andaman Sea on 24th.	No significant system
NCMRWF-NEPS	WML over southwest BoB on 18th, depression over southwest BoB on 19th, deep depression over westcentral & adjoining southwest BoB on 20th, crossing around 22nd morning as a deep depression near 15.5N/80.0E (South Andhra Pradesh coast). Fresh LPA over North Andaman Sea and adjoining eastcentral BoB on 24th Nov.	No significant system
NCMRWF-UM (Regional)	LPA over southwest BoB on 18th, WML over southwest BoB on 19th, depression over southwest BoB on 20th	No significant system
ECMWF	WML over southwest BoB on 18th, depression over southwest BoB on 20th, depression over southwest BoB on 19th, LPA over southwest and adjoining westcentral BoB on 20th, less marked thereafter.	No significant system
ECMWF ensemble	60-80% probability of formation of depression over south BoB over south BoB during 19th-22nd.	No significant system
NCEP-GFS	LPA over southwest BoB on 18th, extended low over southwest BoB on 19th, WML over southwest & adjoining westcentral BoB on 20th, will move west-northwest ward toward north TN and south AP coasts without significant intensification thereafter.	No significant system
IMD MME	IMD MME is indicating formation of depression over southwest BoB on 20th, move north-northwestwards till 23rd and move south-southwestward there after till 24th and reach off TN coast as less marked.	No significant system
IMD HWRF	Available during cyclonic disturbance period only	No significant system
IMD-Genesis Potential Parameter	A potential zone over southwest and eastcentral BoB on 18th, over southwest and adjoining westcentral BoB and adjoining southwest BoB on 20th, westcentral BoB on 20th/21st, westcentral BoB off AP coast on 22st-24th.	No potential zone over Arabian Sea

Summary and conclusion:

- Most of models are indicating that the low pressure area formed today over southeast BoB and adjoining Andaman Sea would concentrate into a depression during 19th-20th. Models are also indicating west-northwestwards movement of the system towards North Tamil Nadu-South Andhra Pradesh coasts. Most of the models are indicating that the system would weaken slightly before reaching coast. However, NCUM group of models is indicating that the system would cross South Andhra Pradesh coast as a deep depression.

- A Fresh low pressure is also likely over central Andaman Sea on 23rd/24th.

In view of all the above, it is inferred that

1. For the Bay of Bengal:

The Low pressure area over Southeast Bay of Bengal & adjoining Andaman Sea is likely to move west-northwestwards and gradually concentrate into a Depression over central parts of South Bay of Bengal during next 48 hrs. Thereafter, it is likely to move west-northwestwards towards Tamilnadu-Puducherry and south Andhra Pradesh coasts during subsequent 3 days.

- **A Fresh low pressure is also likely over central Andaman Sea on 23rd/24th.**

2. For the Arabian Sea:

No significant system.

Probability of cyclogenesis (formation of depression and above intensity systems) over the BAY OF BENGAL 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	LOW	MOD	MOD	LOW	NIL	NIL

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

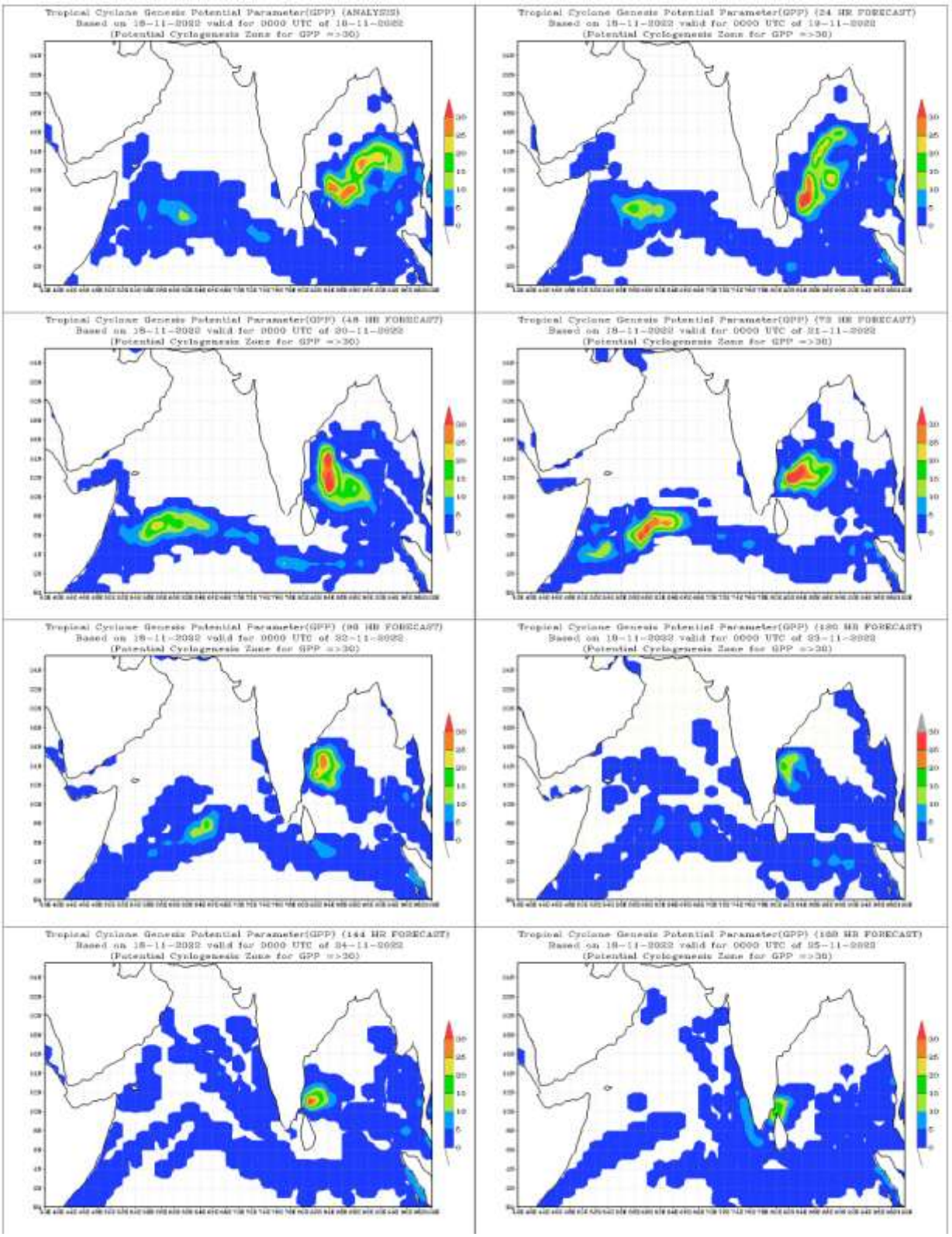
24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

Advisory:

The possible cyclogenesis as indicated above needs to be watched and monitored.

IOP: Andaman Sea for 18th, Sri Lanka for 18th & 19th, Tamil Nadu-Puducherry and adjoining Andhra Pradesh coasts on 20th, 21st & 22nd .

Annexure


Tropical Cyclone Genesis Potential Parameter(GPP) (ANALYSIS)
Based on 18-11-2022 valid for 0000 UTC of 18-11-2022
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (24 HR FORECAST)
Based on 18-11-2022 valid for 0000 UTC of 19-11-2022
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (48 HR FORECAST)
Based on 18-11-2022 valid for 0000 UTC of 20-11-2022
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Tropical Cyclone Genesis Potential Parameter(GPP) (72 HR FORECAST)
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Tropical Cyclone Genesis Potential Parameter(GPP) (120 HR FORECAST)
Based on 18-11-2022 valid for 0000 UTC of 23-11-2022
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Tropical Cyclone Genesis Potential Parameter(GPP) (144 HR FORECAST)
Based on 18-11-2022 valid for 0000 UTC of 24-11-2022
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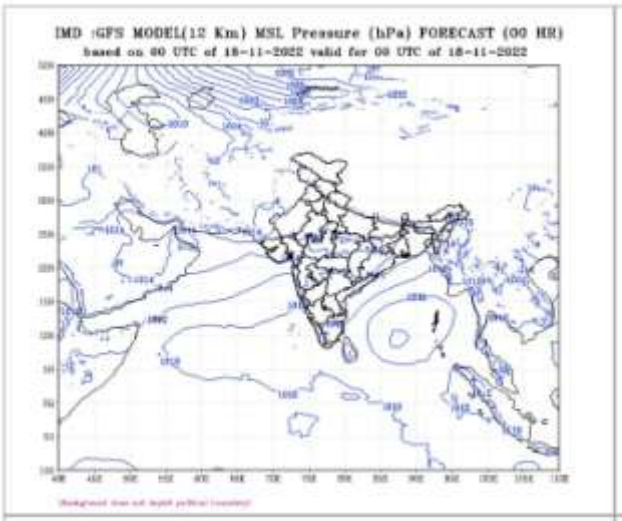
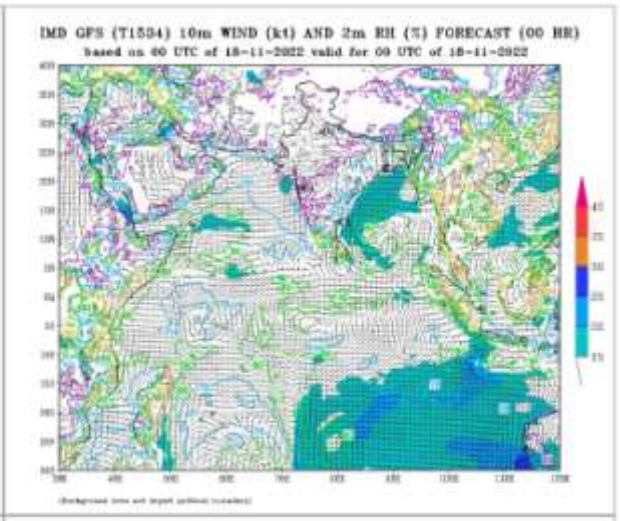
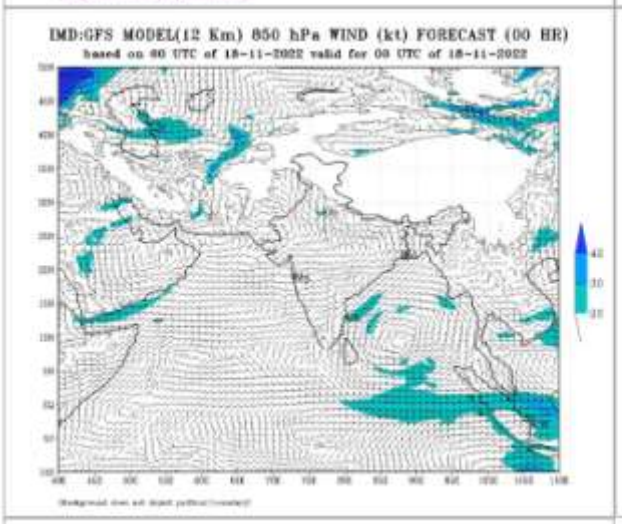

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (00 HR)
based on 00 UTC of 18-11-2022 valid for 00 UTC of 18-11-2022


IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (00 HR)
based on 00 UTC of 18-11-2022 valid for 00 UTC of 18-11-2022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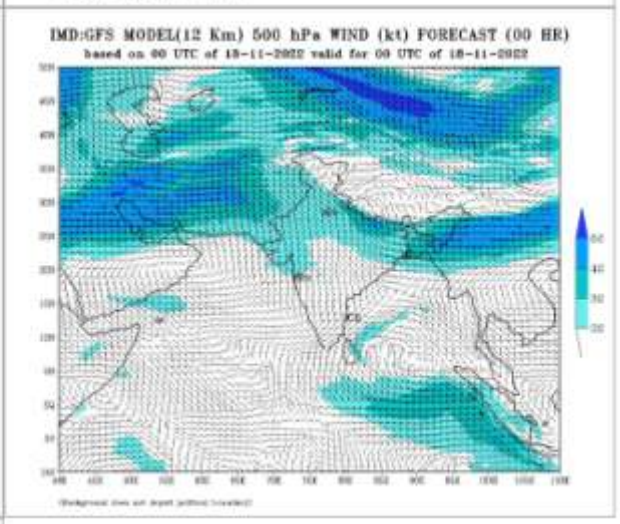
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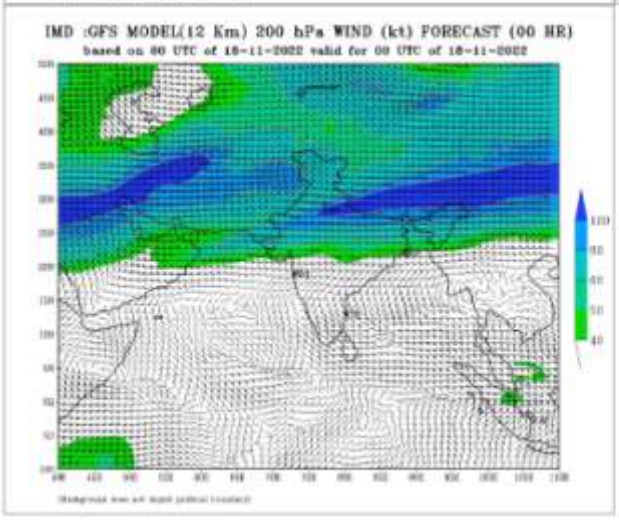
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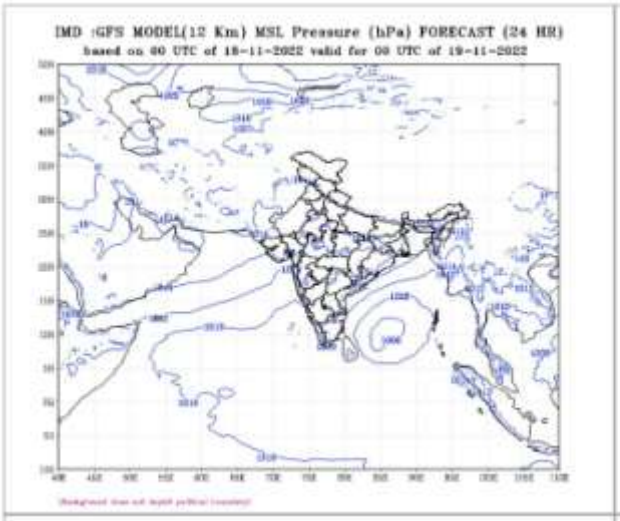
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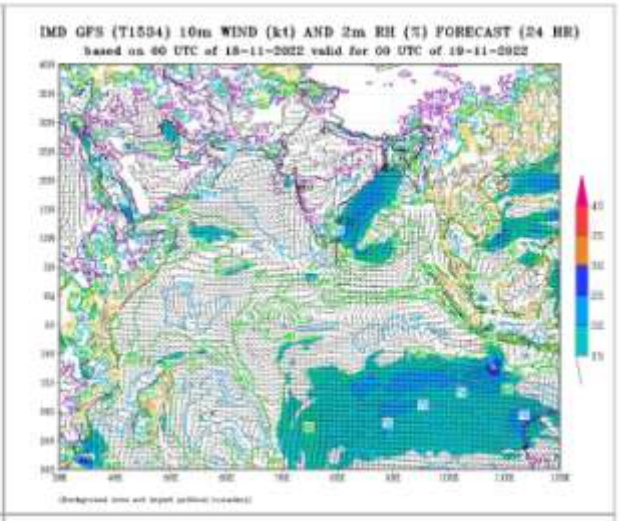
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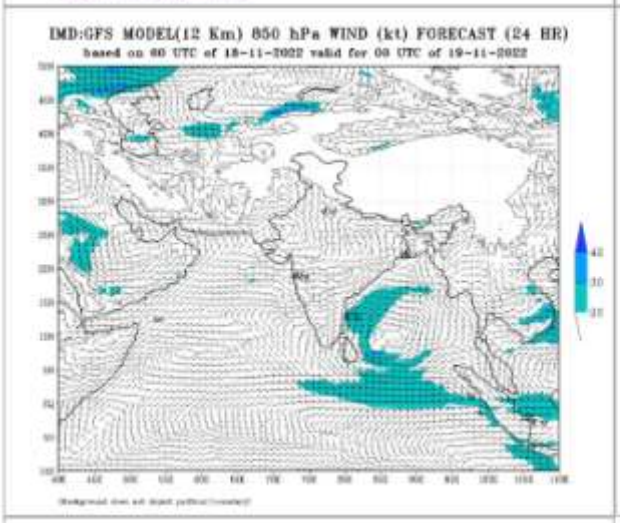
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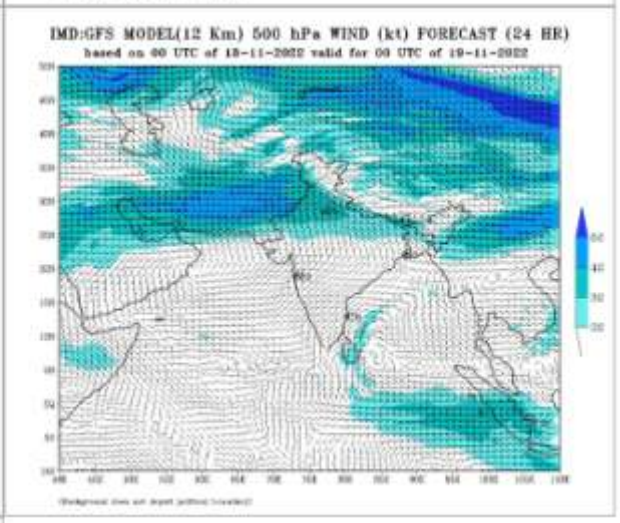
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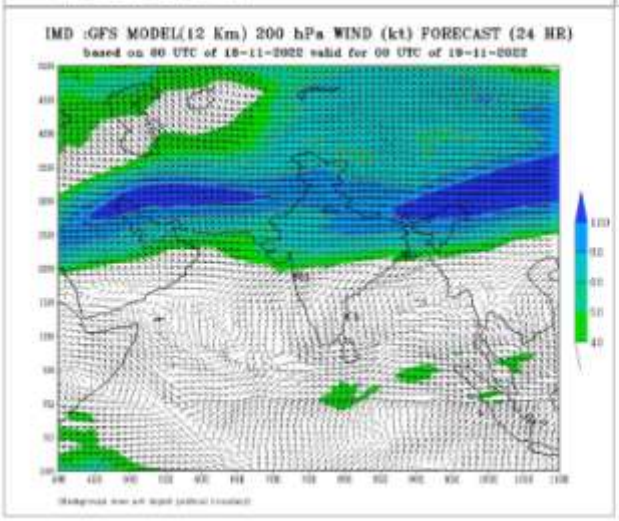
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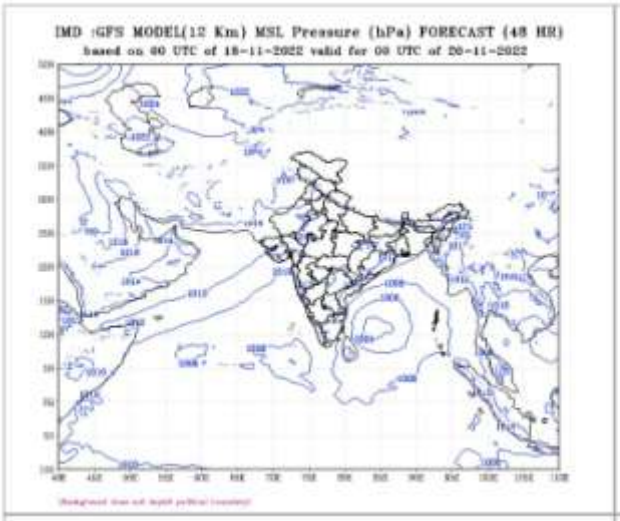
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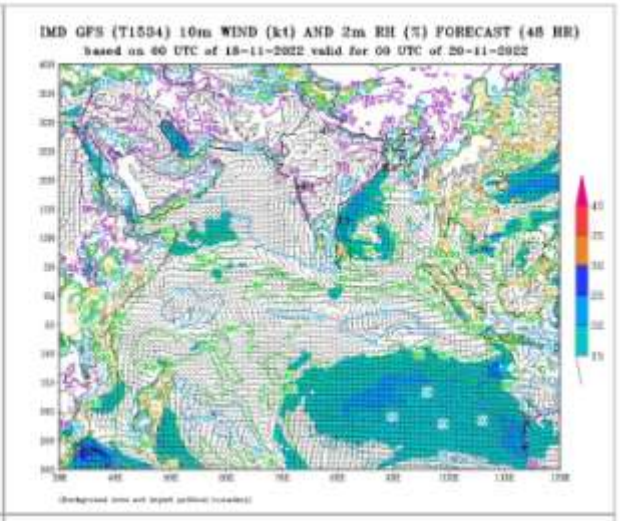
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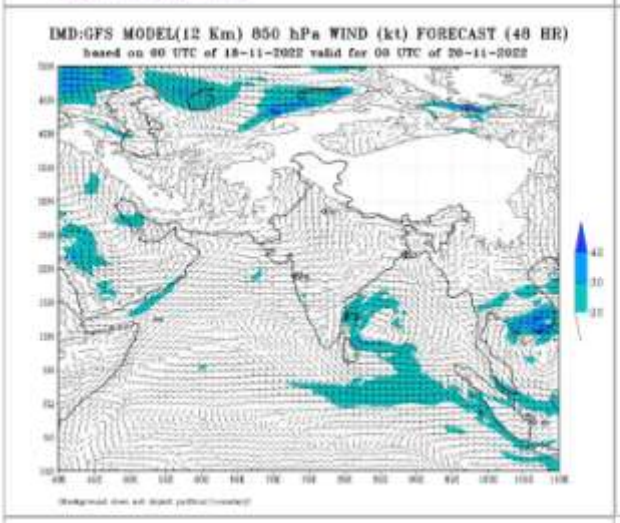
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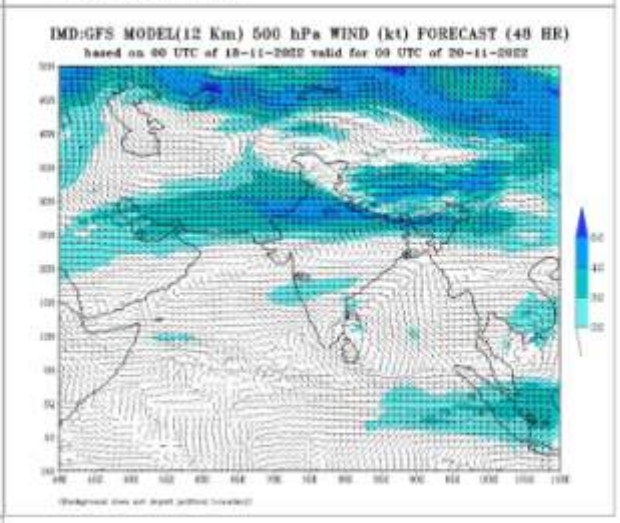
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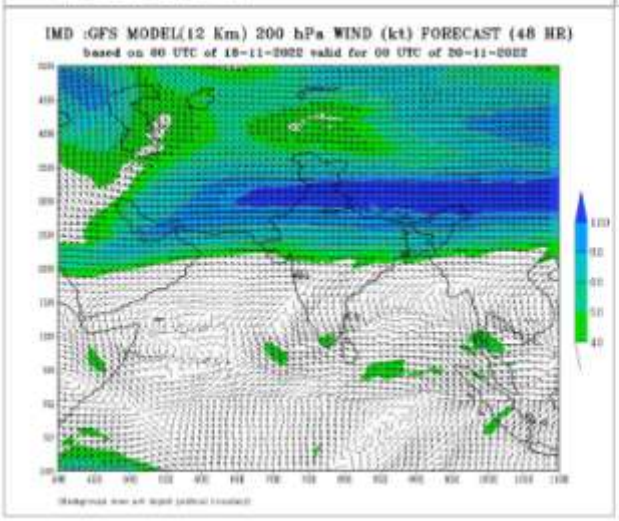
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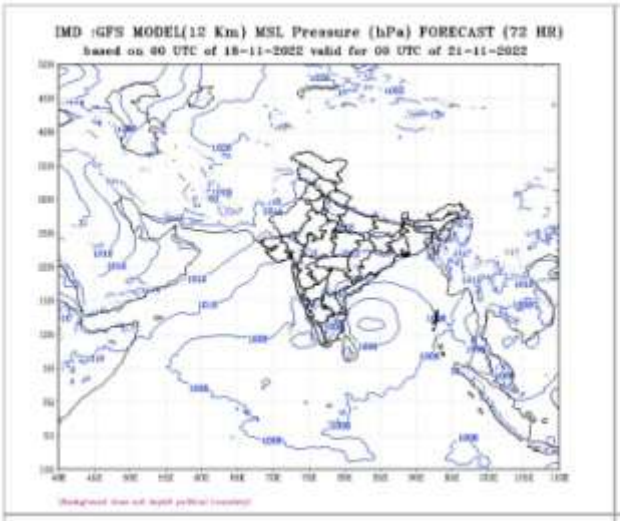
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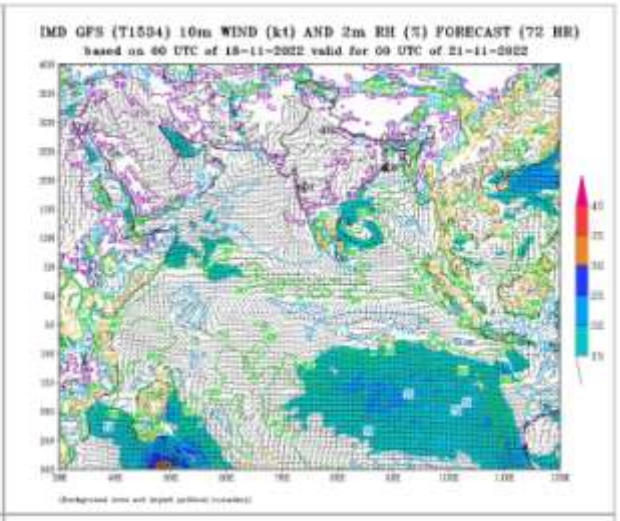
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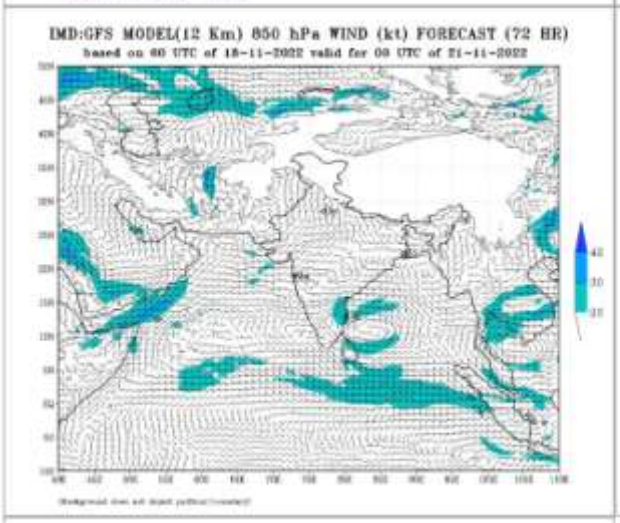
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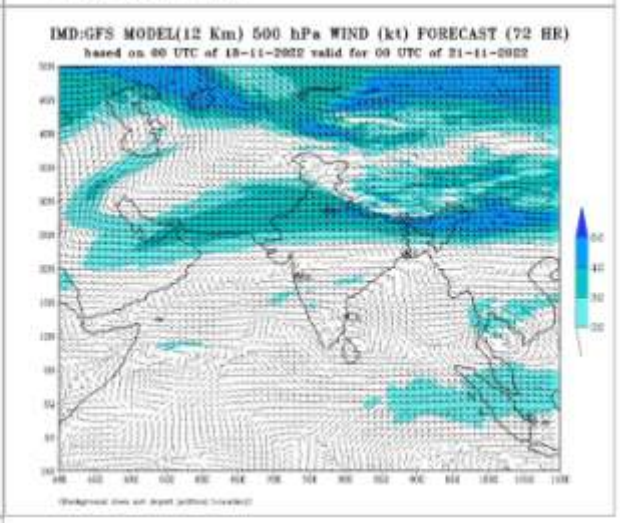
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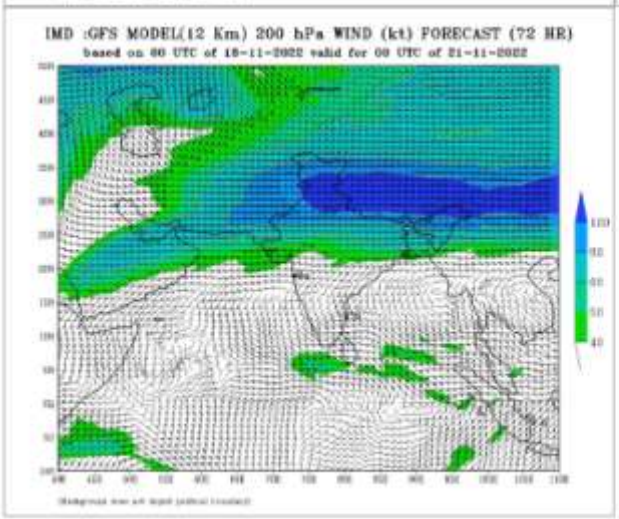
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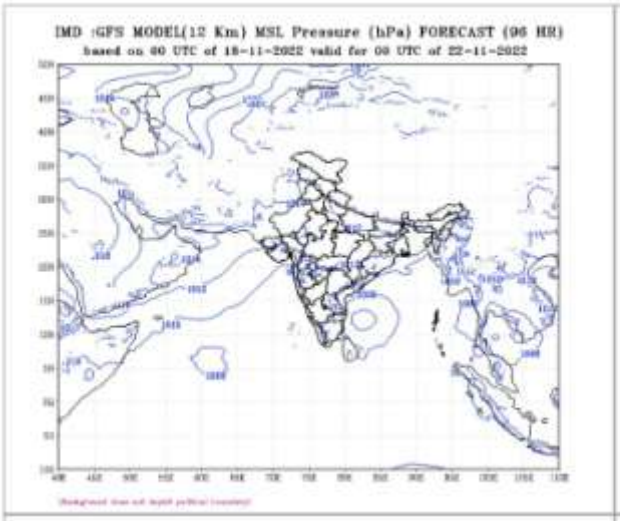
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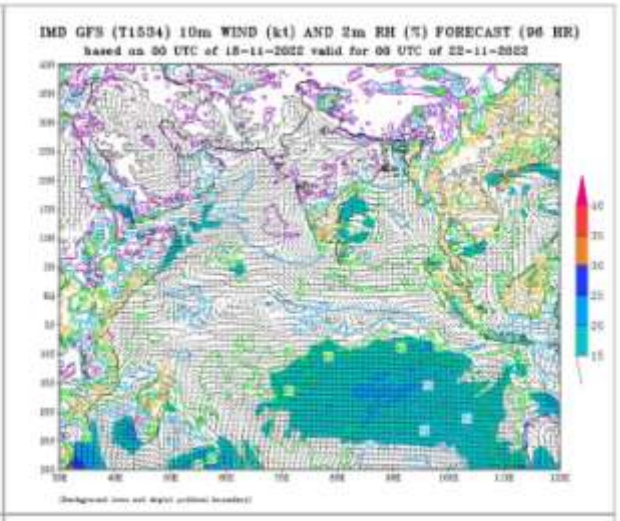
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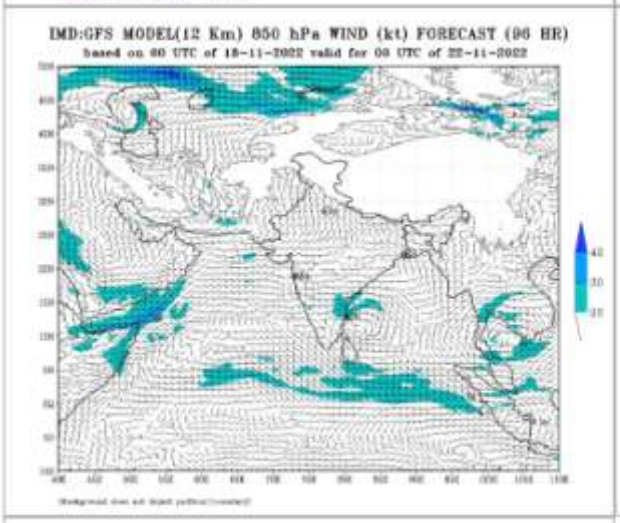
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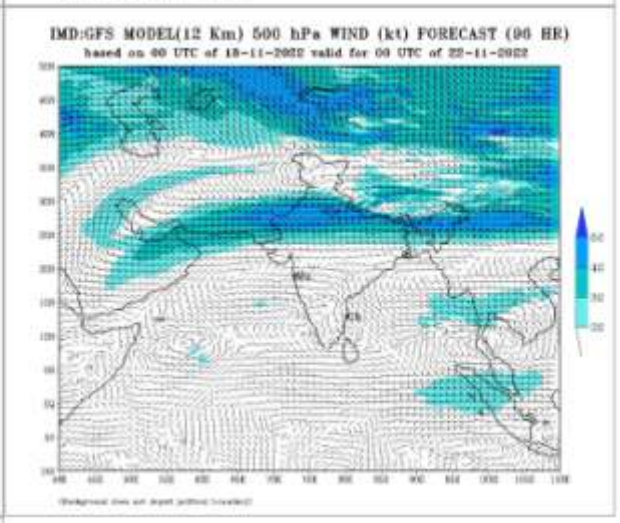
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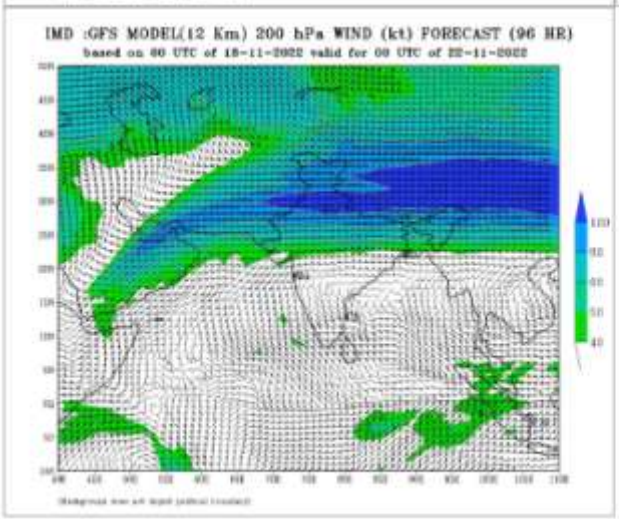
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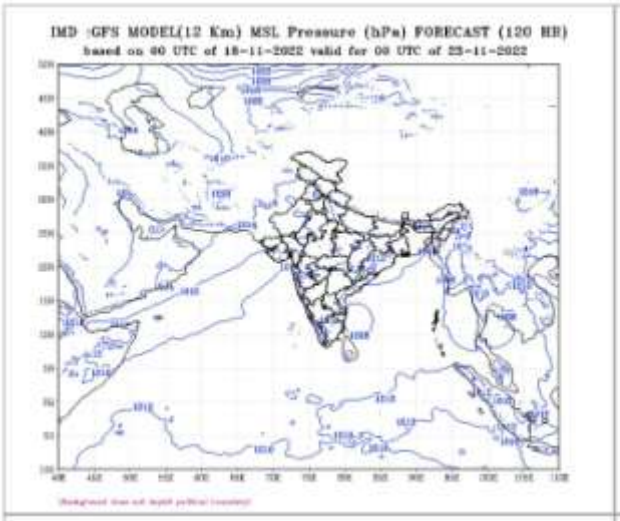
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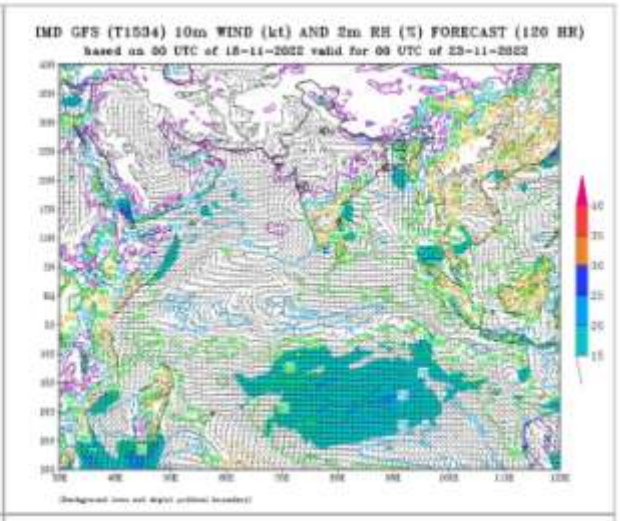
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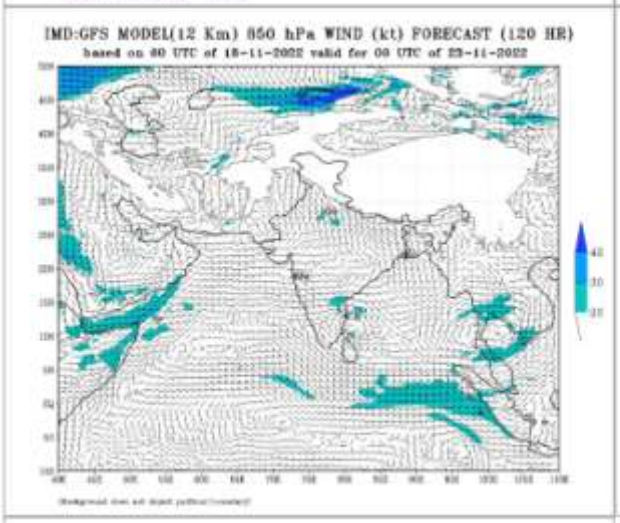
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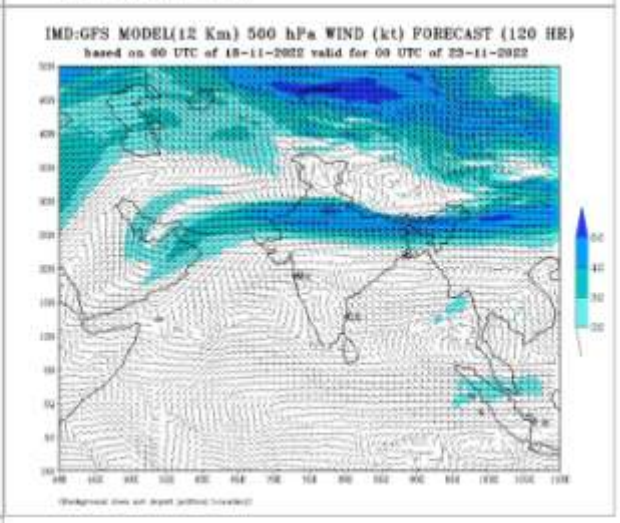
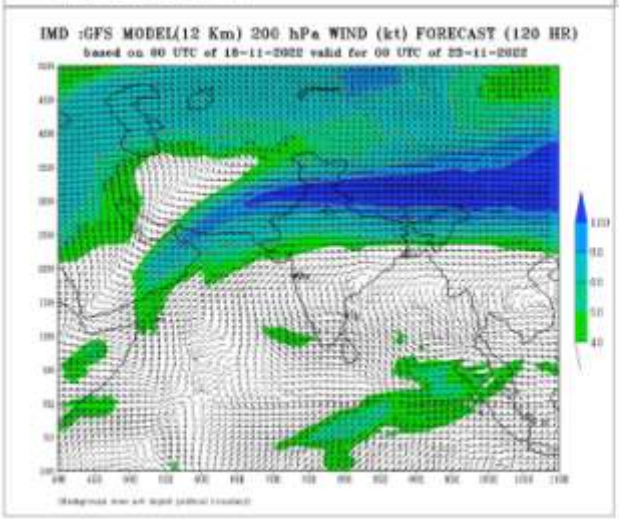
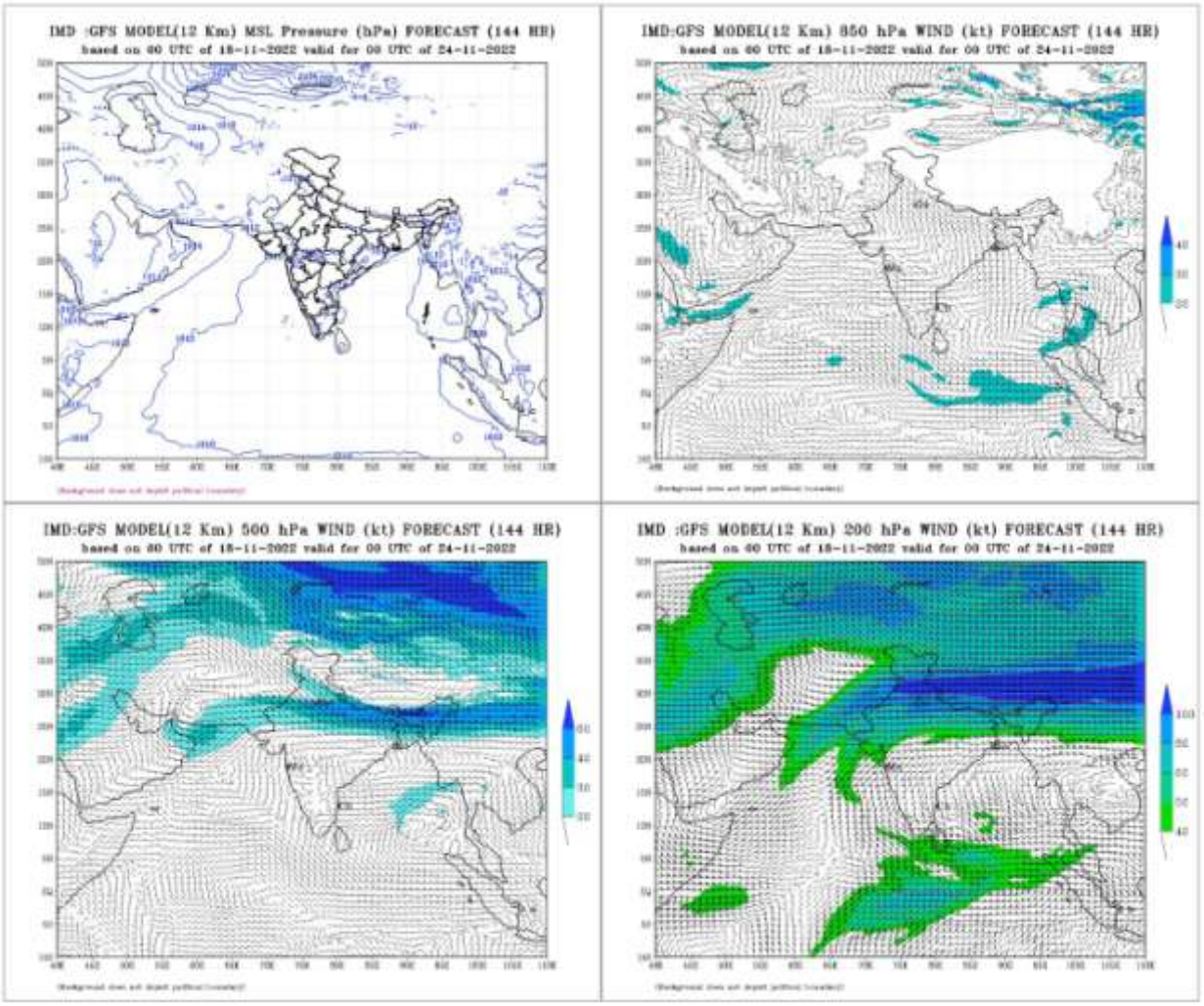
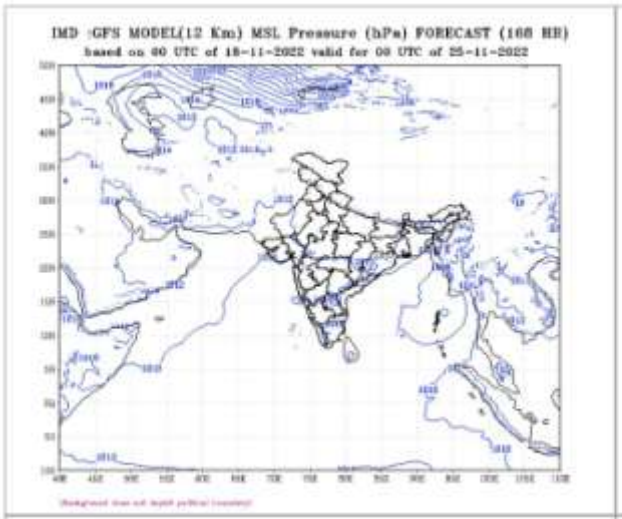
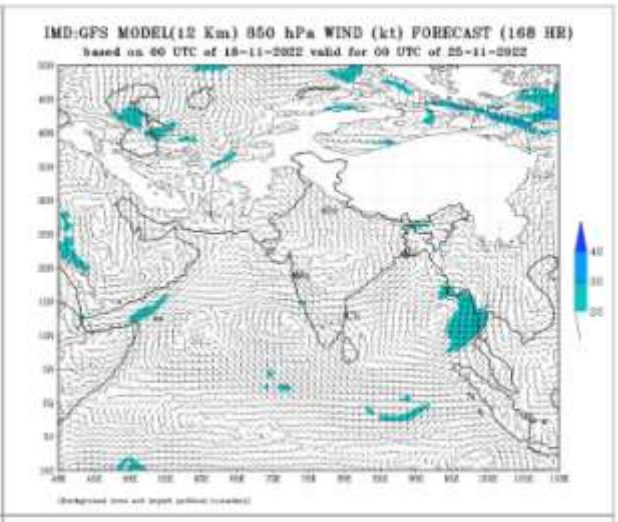
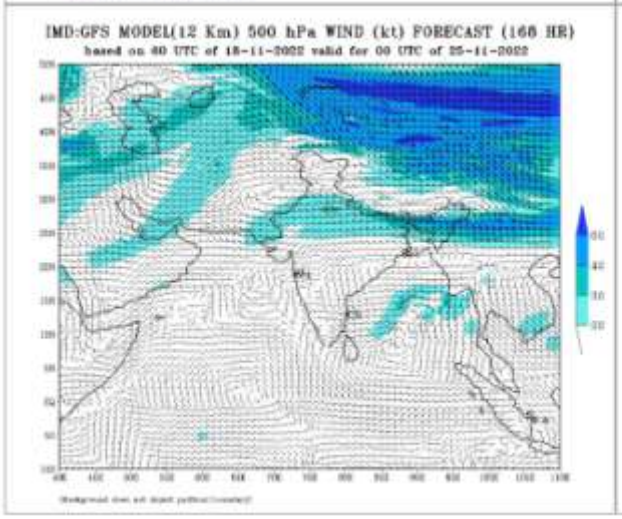

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 18-11-2022 valid for 00 UTC of 23-11-2022

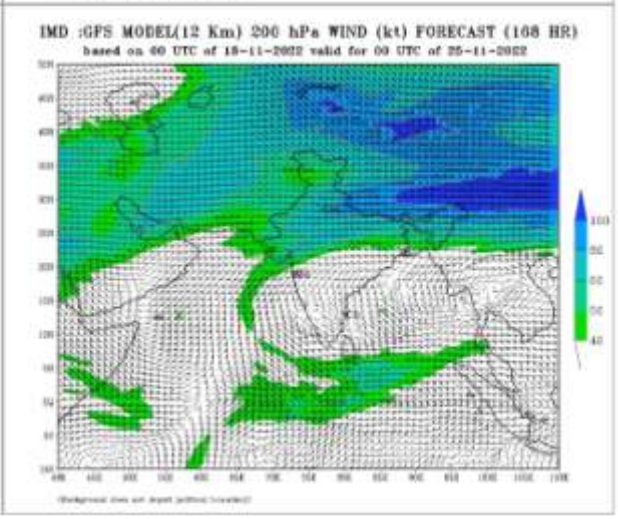

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 18-11-2022 valid for 00 UTC of 23-11-2022


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (144 HR)
based on 00 UTC of 18-11-2022 valid for 00 UTC of 24-11-2022
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 18-11-2022 valid for 00 UTC of 24-11-2022
IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 18-11-2022 valid for 00 UTC of 24-11-2022
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 18-11-2022 valid for 00 UTC of 24-11-2022


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (168 HR)
based on 00 UTC of 18-11-2022 valid for 00 UTC of 25-11-2022


IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 18-11-2022 valid for 00 UTC of 25-11-2022


IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 18-11-2022 valid for 00 UTC of 25-11-2022


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 18-11-2022 valid for 00 UTC of 25-11-2022