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

Tropical Cyclone Forecast Programme
Report Dated 25th December 2022

Time of Issue: 1200 UTC

Synoptic features (based on 0900 UTC analysis):

- The Depression over Southwest Bay of Bengal and adjoining Sri Lanka coast moved west-southwestwards with a speed of 18 kmph during past 06 hours, crossed Sri Lanka coast to the south of Trincomalee near latitude 8.35°N and longitude 81.4°E as a depression with maximum sustained wind speed of 45-55 kmph gusting to 65 kmph during 1230 to 1330 hrs IST. Thereafter, it continued to move west-southwestwards and weakened into a well marked low pressure area over Sri Lanka at 1430 hrs IST of today, the 25th December 2022.
- It is likely to continue to move west-southwestwards and emerge into Comorin Area & neighbourhood by tomorrow, the 26th December morning.

Dynamical and thermo-dynamical features

Parameter	**Bay of Bengal (BoB)**	**Arabian Sea (AS)**
Sea Surface Temperature (SST) ºC	About 27 around the system, 28 over the south Andaman Sea and adjoining southeast Bay of Bengal, eastcentral BoB, 29-30 over north Andaman Sea, less than 25 over north BoB.	About 29-30°C over the Comorin Area, southeast and adjoining southwest AS, 26-28°C over eastcentral and adjoining north AS..
Tropical Cyclone Heat Potential (TCHP) kJ/cm^2	Not available	Not available
Cyclonic Relative vorticity (X10^{-6}s^{-1})	100 around system centre with vertical extension upto 500 hPa levels.	20-30 over Comorin Area & adjoining west coast of Sri Lanka with vertical extension upto 500 hPa level
Low Level convergence (X10^{-5} s^{-1})	20 to the south of system centre.	No significant zone
Upper Level divergence (X10^{-5} s^{-1})	20 to the south of the system centre.	05-10 over southwest AS.
Vertical Wind Shear (VWS knots)	10-20 over system centre. Moderate to the west of system centre.	05-20 over south and adjoining central AS.
Wind Shear Tendency (knots)	Decreasing over south BoB.	Decreasing over Comorin and south AS.
Upper tropospheric Ridge	Along 16°N over the BoB.	Along 15.0°N over the AS.
Trough in westerlies		

Satellite observations based on INSAT imagery (0600 UTC):

a) Over the BoB & Andaman Sea:-

The system is over land. Associated scattered to broken low/med clouds with embedded intense to very intense convection lay over Sri Lanka coast between latitude 4.0N to 12.0N and longitude 76.0E to 85.0E. Minimum CTT is -93°C.

b) Over the Arabian Sea:-

Scattered low/med clouds with embedded moderate to intense convection over east parts of Comorin Area and isolated weak to moderate convection over northwest and extreme southwest Arabian Sea.

M.J.O. Index:

The Madden Julian Oscillation (MJO) Index is currently in Phase 5 with amplitude greater than 1. Thereafter, it would move to phase 6 with amplitude greater than 1 from 26th December onwards.

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

Cyclonic Storm Darian over South Indian ocean centered near 15.2S/84.8E. Intensity of the system is T 4.5/5.0.

Model guidance based on 0000 UTC for the next 7 days

MODEL GUIDANCE	Bay of Bengal (BoB)	Arabian Sea (AS)
IMD-GFS	Well marked low pressure area (WML) over Sri Lanka on 25th to move west-southwestwards and lie over Comorin Area on 26/0000 UTC as a low pressure area. To move west-northwestwards thereafter and become less marked on 28/0000 UTC.	Low pressure area over Comorin Area on 26/0000 UTC. to move west-northwestwards thereafter and become less marked on 28/0000 UTC.
IMD-GEFS	Well marked low pressure area (WML) over Sri Lanka on 25th to move west-southwestwards and lie over Comorin Area on 26/0000 UTC as a low pressure area. To move west-northwestwards thereafter and become less marked on 28/0000 UTC.	Low pressure area over Comorin Area on 26/0000 UTC. to move west-northwestwards thereafter and become less marked on 28/0000 UTC.
GEFS Probabilistic guidance	NA	NA
IMD WRF	Well marked low pressure area (WML) over Sri Lanka on 25th to move west-southwestwards and lie over Comorin Area on 26/0000 UTC as a low pressure area. To move west-northwestwards thereafter and become less marked on 28/0000 UTC.	Low pressure area over Comorin Area on 26/0000 UTC. to move west-northwestwards thereafter and become less marked on 28/0000 UTC.

NCMRWF-NCUM (G)	Well marked low pressure area over Sri Lanka Coast on 25th, Comorin Area on 26/0000 UTC.	WML over Comorin Area on 26th, LPA over Lakshadweep on 27th, to move westwards and lie as an LPA over southeast Arabian Sea on 28th becoming less marked on 29th Dec.
NCMRWF-NEPS	Well marked low pressure area over Sri Lanka Coast on 25th, Comorin Area on 26/0000 UTC.	WML over Comorin Area on 26th, LPA over Lakshadweep on 27th, to move westwards and lie as an LPA over southeast Arabian Sea on 28th becoming less marked on 29th Dec.
NCMRWF-UM (Regional)	Well marked low pressure area over Sri Lanka Coast on 25th, Comorin Area on 26/0000 UTC.	WML over Comorin Area on 26th, LPA over Lakshadweep on 27th, to move westwards and lie as an LPA over southeast Arabian Sea on 28th becoming less marked on 29th Dec.
ECMWF	Depression over southwest Bay of Bengal to cross Sri Lanka coast around 0600 UTC of 25th, reaching Comorin area on 26th as a low pressure area/cyclonic circulation	Cyclonic circulation over Comorin on 26th/0000 UTC to move nearly westwards with marginal intensification on 27th/0000 UTC over Lakshadweep as a WML, LPA over southeast Arabian Sea on 28th December and weakening into an LPA on 29th/0000 UTC.
ECMWF ensemble	Not available	Not available
NCEP-GFS	Well marked low pressure area (WML) over Sri Lanka on 25th to move west-southwestwards and lie over Comorin Area on 26/0000 UTC as a low pressure area. To move west-northwestwards thereafter and become less marked on 28/0000 UTC.	Low pressure area over Comorin Area on 26/0000 UTC. to move west-northwestwards thereafter and become less marked on 28/0000 UTC.
IMD MME	MME is indicating southwestwards movement of the system towards Comorin Area on 26th/0000 UTC.	WML over Comorin Area on 26th/0000 UTC to move west-northwestwards thereafter with weakening into a well marked low pressure area on 28th Dec. over southeast Arabian Sea.
IMD HWRF	No guidance	No guidance
IMD-Genesis Potential Parameter (GPP)	A significant potential zone over southwest Bay of Bengal on 25th Dec.	A potential zone over Comorin area on 26th and over south Lakshadweep on 27th

Summary and conclusion:

Model guidance: Most of the models are indicating that the depression over southwest Bay of Bengal would cross Sri Lanka coast as a well marked low pressure area over around noon of 25th Dec and emerge into Comorin Area on 26th morning with west-northwestwards movement towards southeast Arabian Sea.

In view of all the above, it is inferred that

1. **For the Bay of Bengal:**

The well marked low pressure area over Sri Lanka is likely to move west-southwestwards and emerge into Comorin Area & neighbourhood by tomorrow, the 26th December morning.

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	NIL	NIL	NIL	NIL	NIL	NIL

2. **For Arabian Sea:**

The well marked low pressure area over Sri Lanka would emerge into Comorin Area around 26th December and move west-northwestwards towards southeast Arabian Sea.

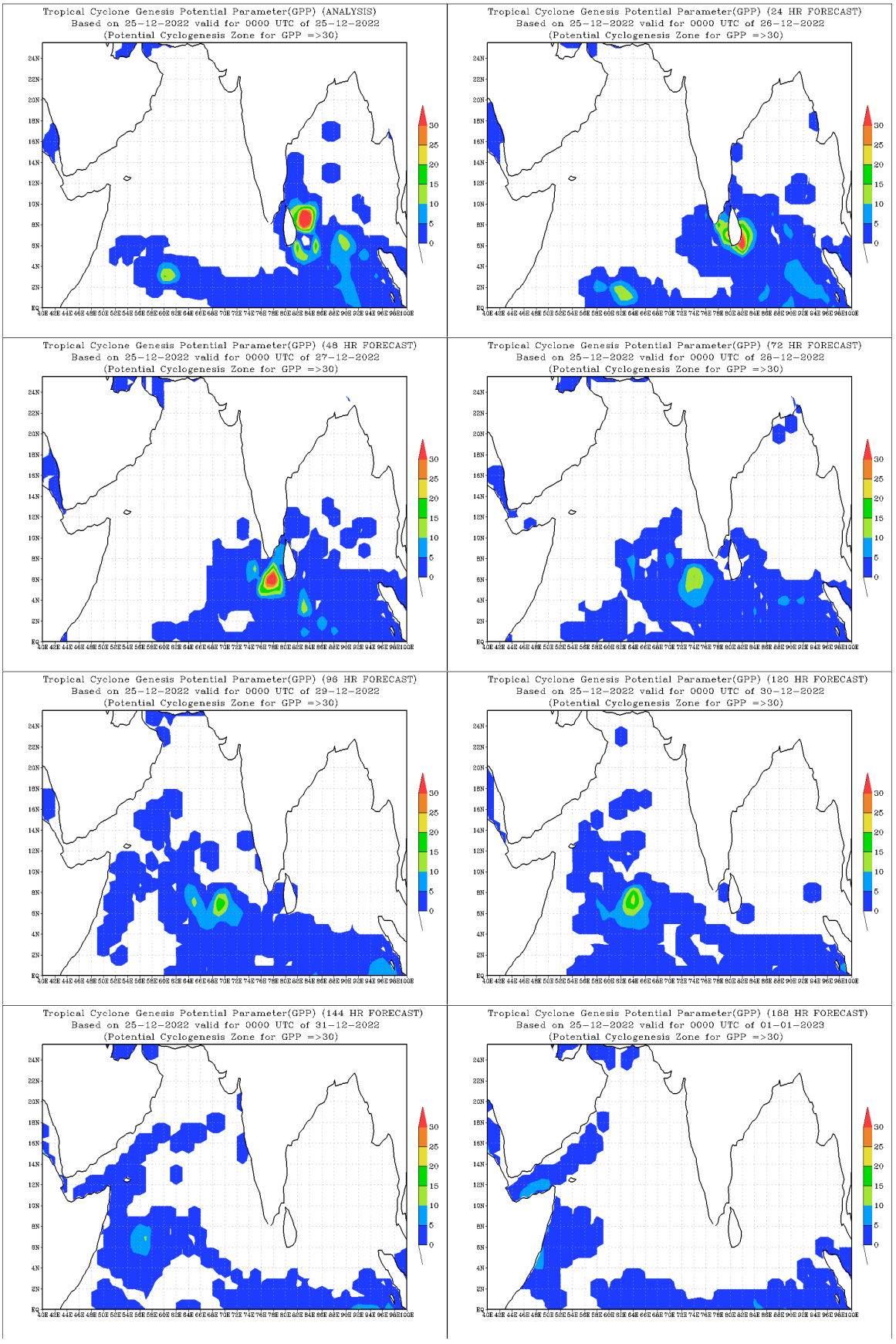
Probability of cyclogenesis (formation of depression and above intensity systems) over the Arabian Sea during next 168 hours:

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

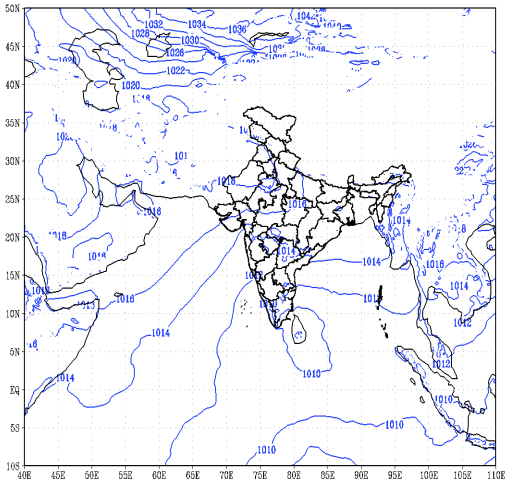
Advisory: The well marked low pressure area over Sri Lanka to be monitored continuously for any further development, as the well marked low pressure area is likely to move towards southeast Arabian Sea across Comorin area.

IOP: **Tamil Nadu and Sri Lanka during 25th-26th December, Kerala on 26th & 27th and Lakshadweep Islands on 27th December.**

Annexure


Tropical Cyclone Genesis Potential Parameter(GPP) (ANALYSIS)
Based on 25-12-2022 valid for 0000 UTC of 25-12-2022
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (24 HR FORECAST)
Based on 25-12-2022 valid for 0000 UTC of 26-12-2022
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (48 HR FORECAST)
Based on 25-12-2022 valid for 0000 UTC of 27-12-2022
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (72 HR FORECAST)
Based on 25-12-2022 valid for 0000 UTC of 28-12-2022
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (96 HR FORECAST)
Based on 25-12-2022 valid for 0000 UTC of 29-12-2022
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (120 HR FORECAST)
Based on 25-12-2022 valid for 0000 UTC of 30-12-2022
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (144 HR FORECAST)
Based on 25-12-2022 valid for 0000 UTC of 31-12-2022
(Potential Cyclogenesis Zone for GPP =>30)
Tropical Cyclone Genesis Potential Parameter(GPP) (168 HR FORECAST)
Based on 25-12-2022 valid for 0000 UTC of 01-01-2023
(Potential Cyclogenesis Zone for GPP =>30)

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (00 HR)
based on 06 UTC of 25-12-2022 valid for 06 UTC of 25-12-2022



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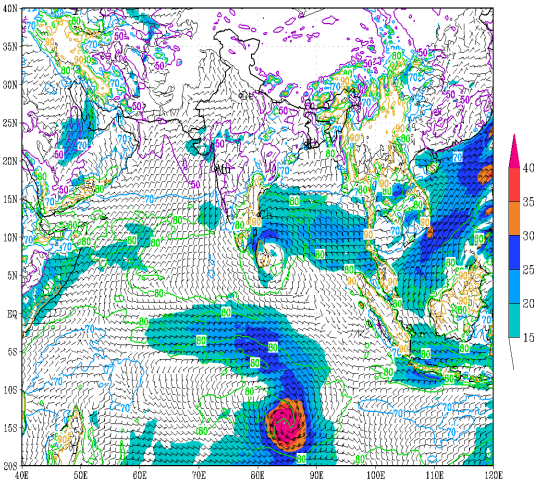
IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (00 HR)
based on 00 UTC of 25-12-2022 valid for 00 UTC of 25-12-2022



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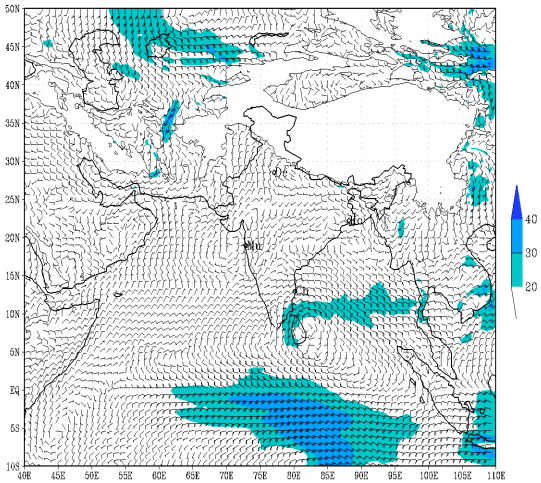

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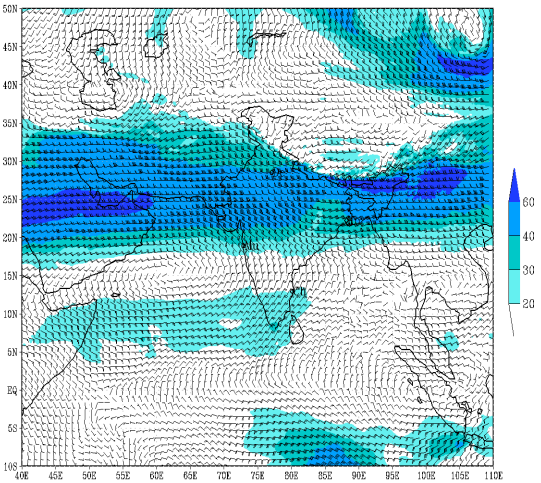

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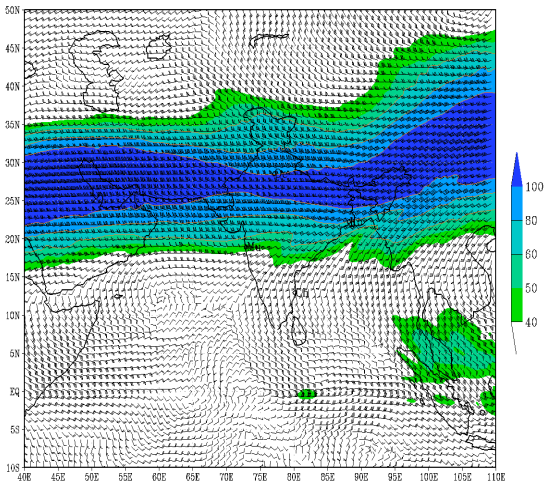

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IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (24 HR)

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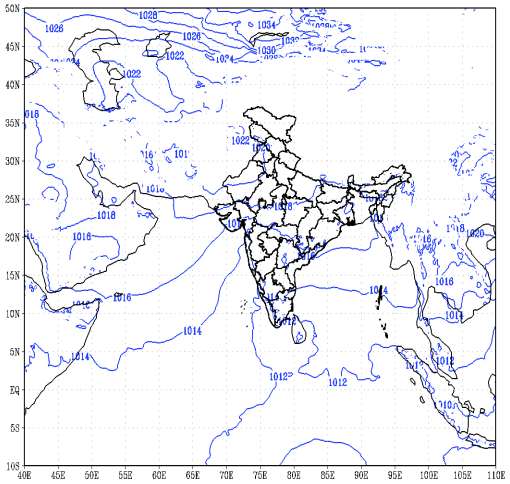

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IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (24 HR)

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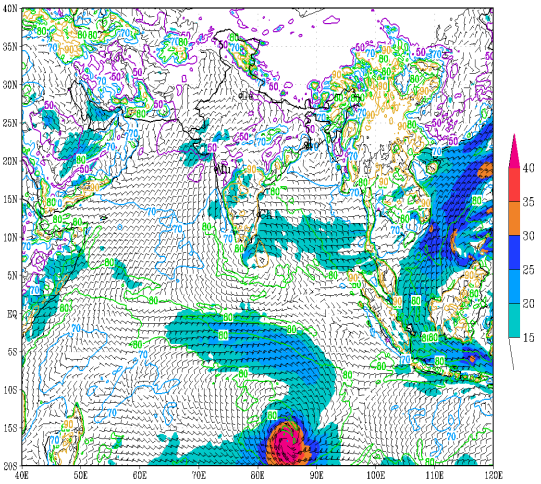

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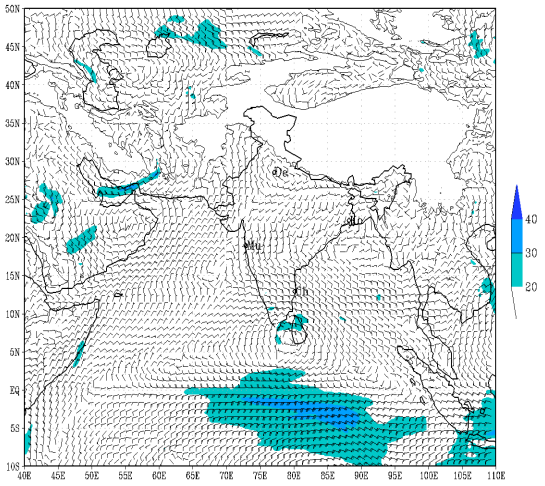
based on 00 UTC of 25-12-2022 valid for 00 UTC of 26-12-2022



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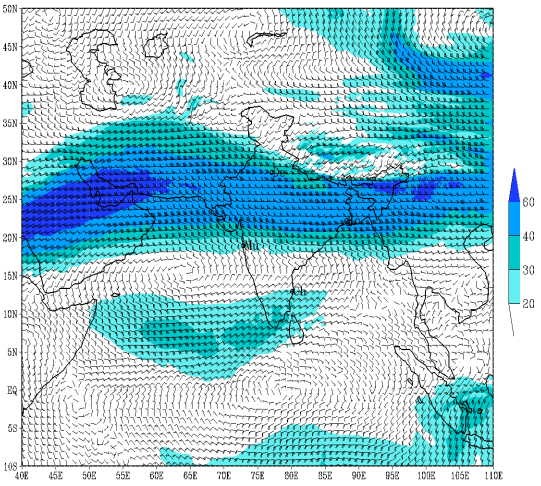

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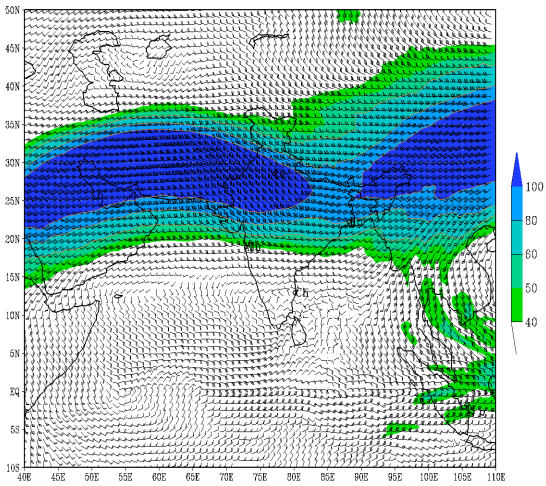

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IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (48 HR)

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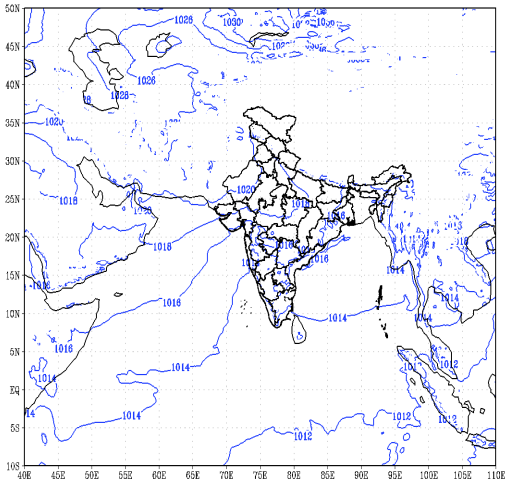

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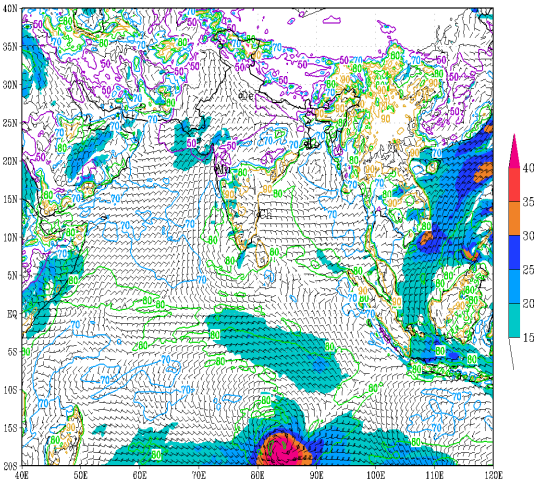
IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (48 HR)

based on 00 UTC of 25-12-2022 valid for 00 UTC of 27-12-2022



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IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (48 HR)

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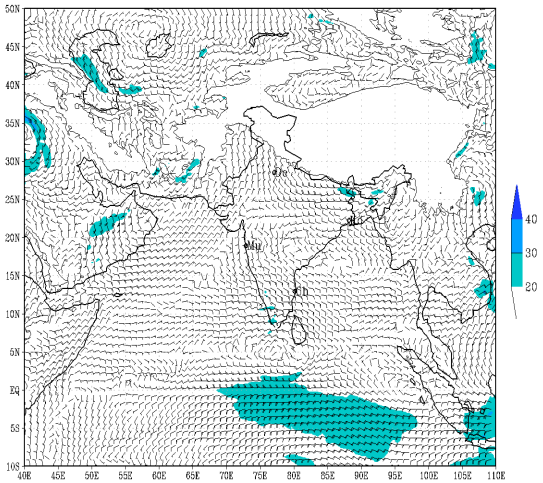

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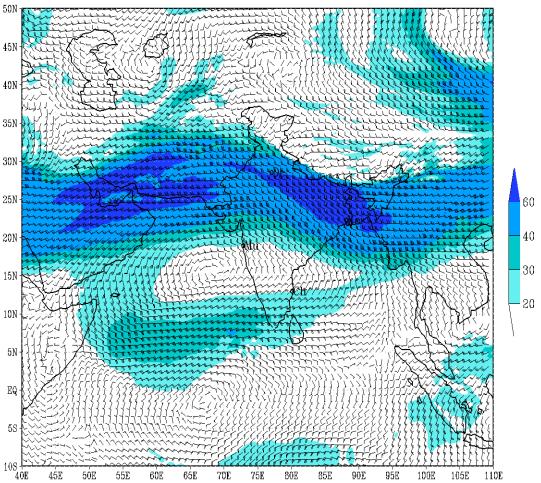

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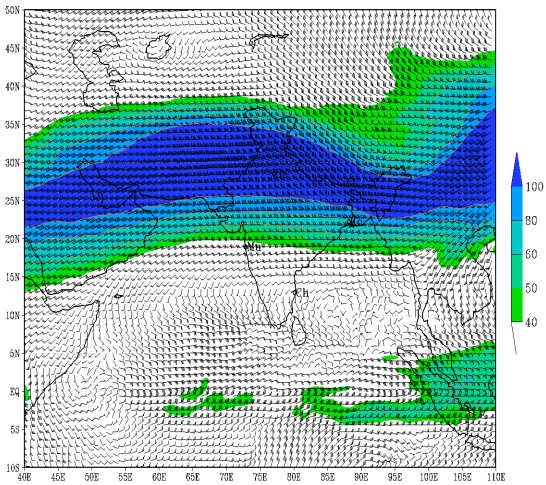

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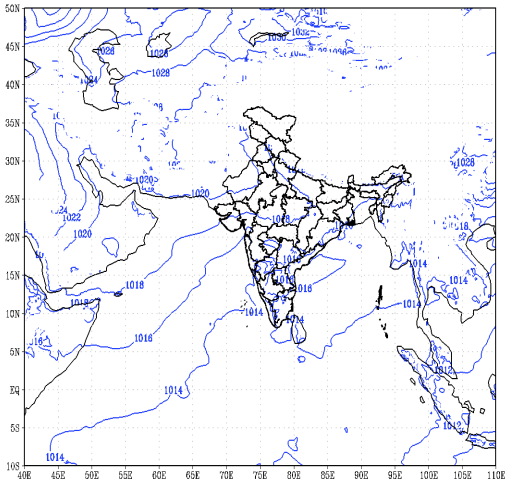
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (72 HR)
based on 06 UTC of 25-12-2022 valid for 06 UTC of 28-12-2022



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IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (72 HR)
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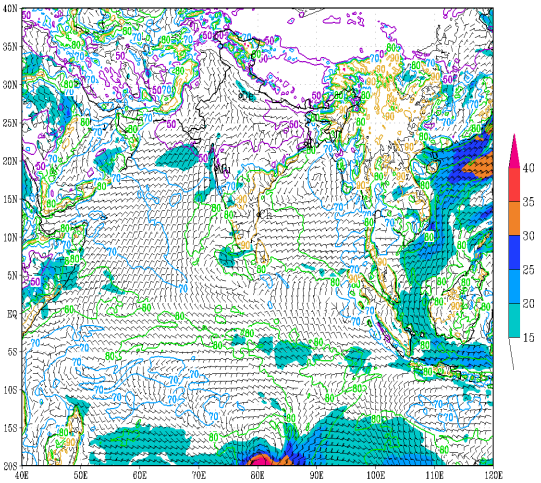

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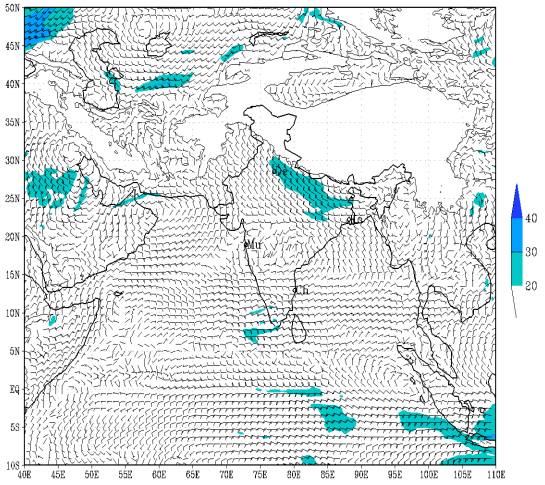
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 25-12-2022 valid for 00 UTC of 28-12-2022



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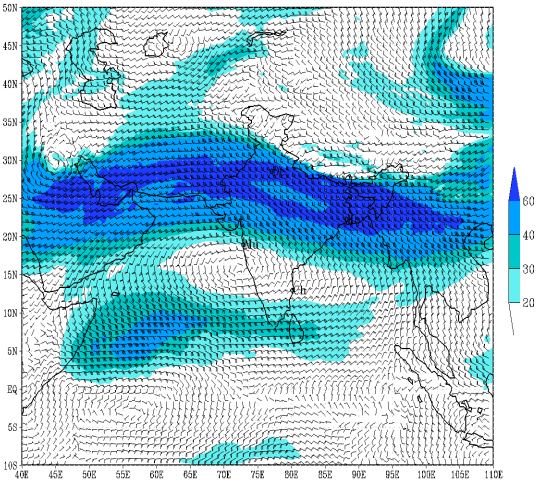

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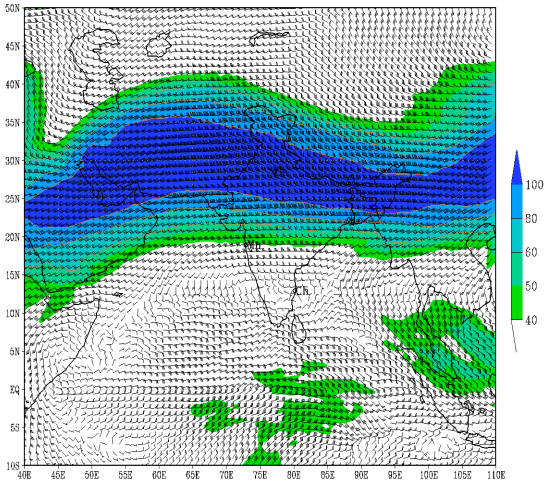

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IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (96 HR)

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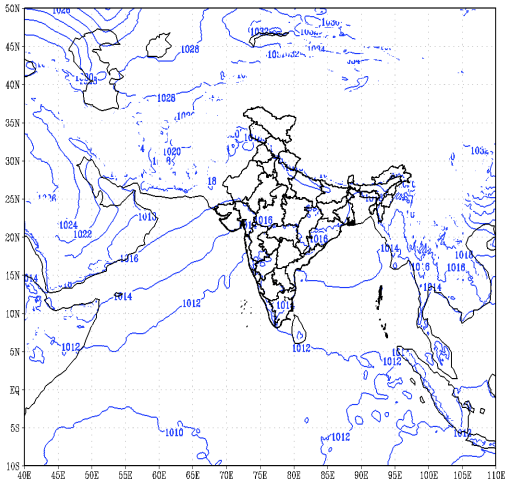

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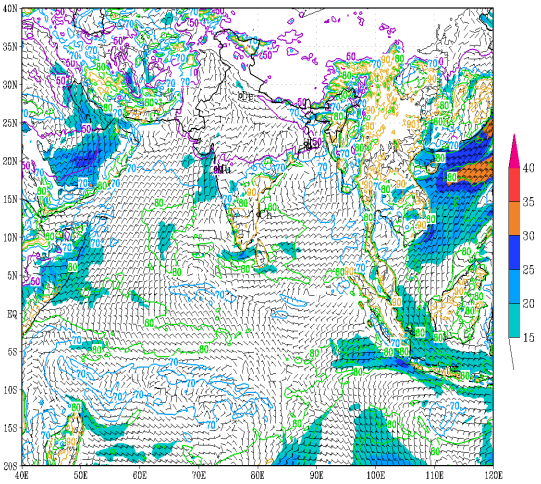
IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (96 HR)

based on 00 UTC of 25-12-2022 valid for 00 UTC of 29-12-2022



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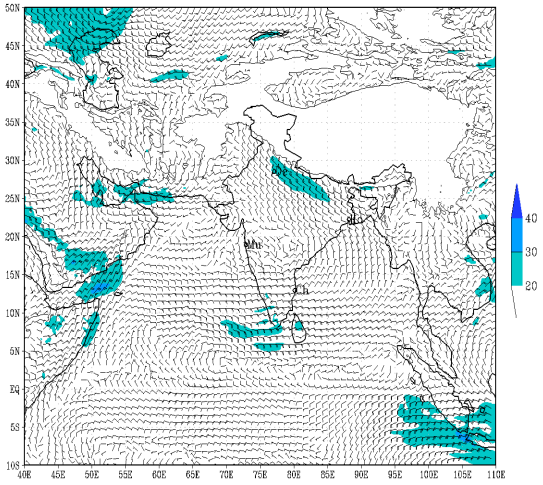
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (96 HR)

based on 00 UTC of 25-12-2022 valid for 00 UTC of 29-12-2022



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IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (96 HR)

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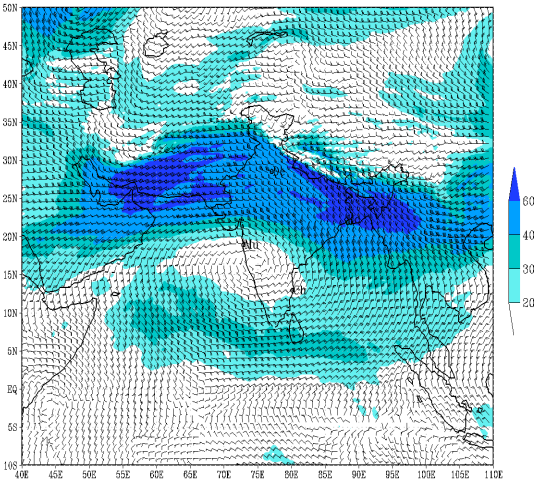

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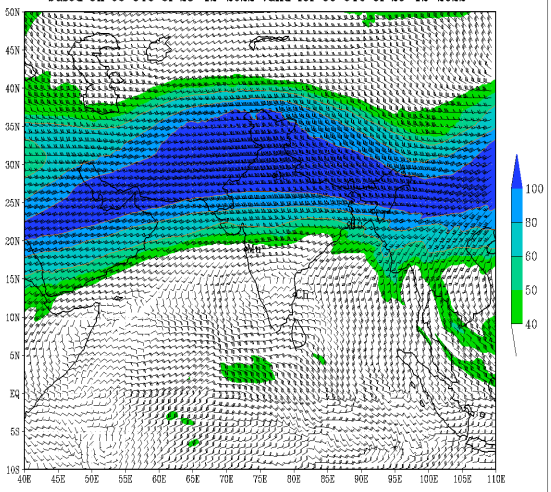
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (96 HR)

based on 00 UTC of 25-12-2022 valid for 00 UTC of 29-12-2022



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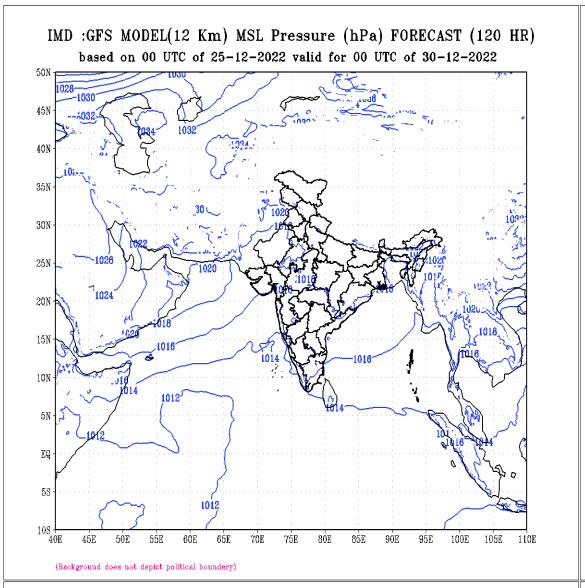
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (120 HR)
based on 00 UTC of 25-12-2022 valid for 00 UTC of 30-12-2022
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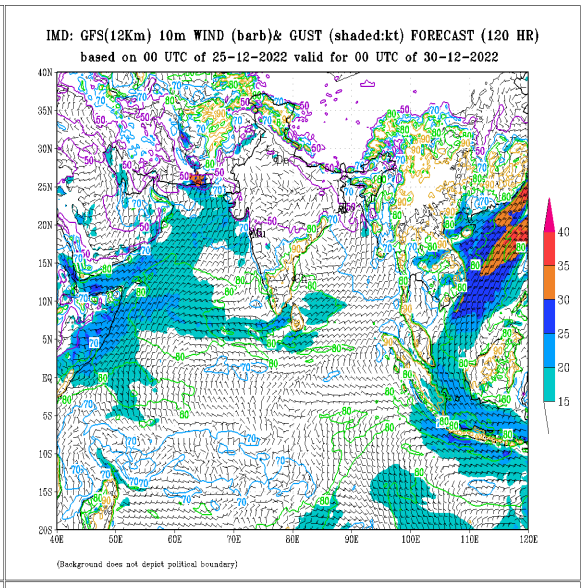
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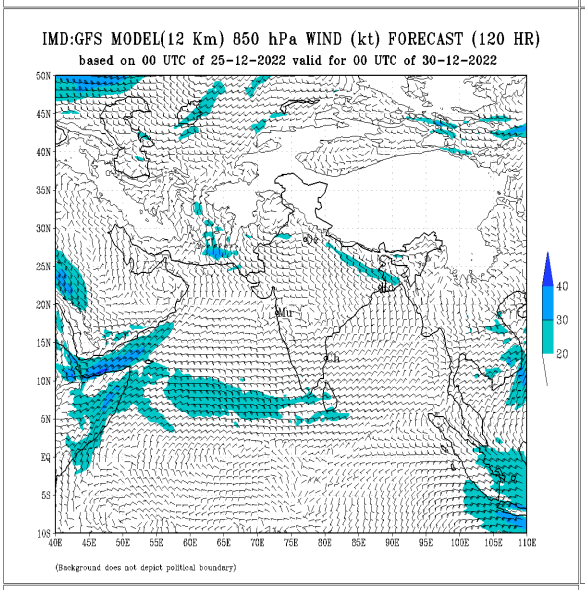
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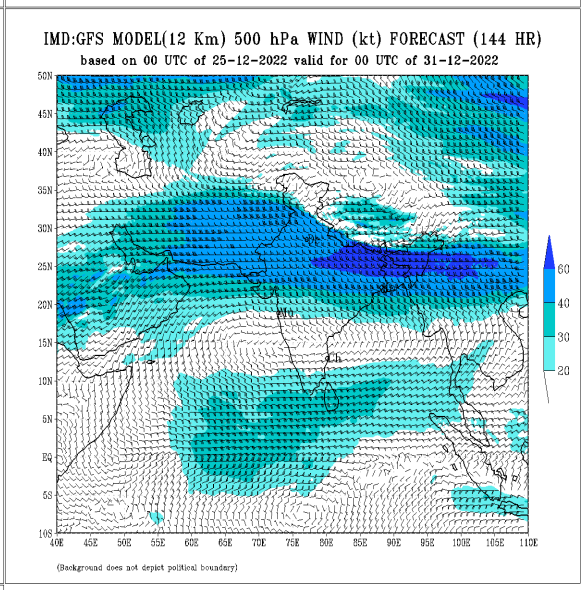
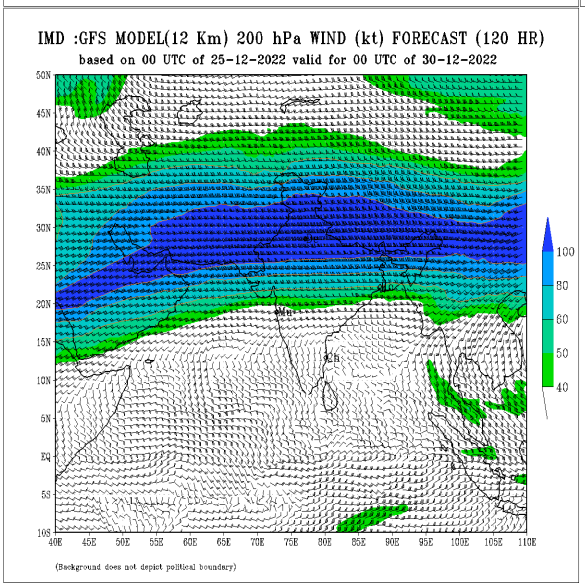
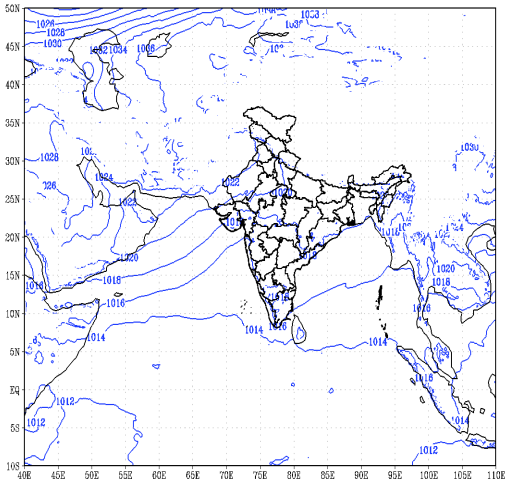
(Background does not depict political boundary)


IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 25-12-2022 valid for 00 UTC of 31-12-2022
(Background does not depict political boundary)


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 25-12-2022 valid for 00 UTC of 30-12-2022
(Background does not depict political boundary)

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (144 HR)

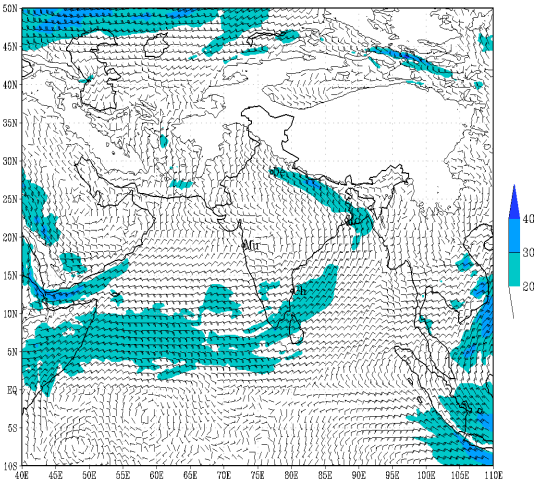
based on 00 UTC of 25-12-2022 valid for 00 UTC of 31-12-2022



(Background does not depict political boundary)

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (144 HR)

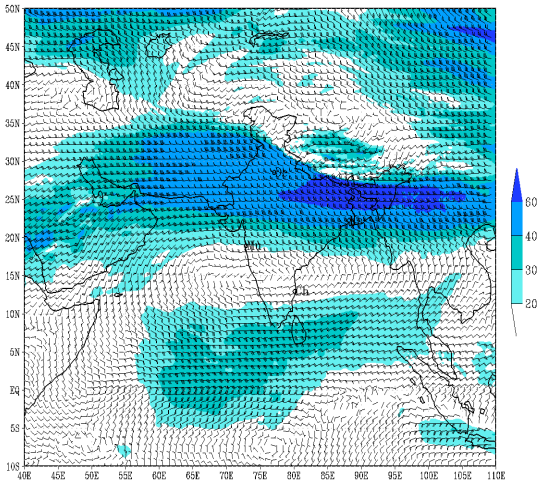
based on 00 UTC of 25-12-2022 valid for 00 UTC of 31-12-2022



(Background does not depict political boundary)

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (144 HR)

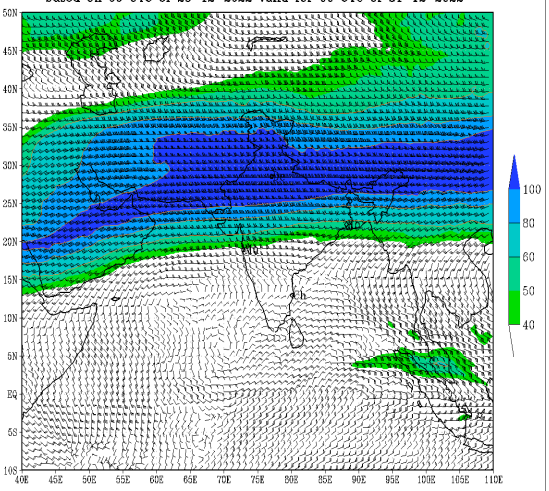
based on 00 UTC of 25-12-2022 valid for 00 UTC of 31-12-2022



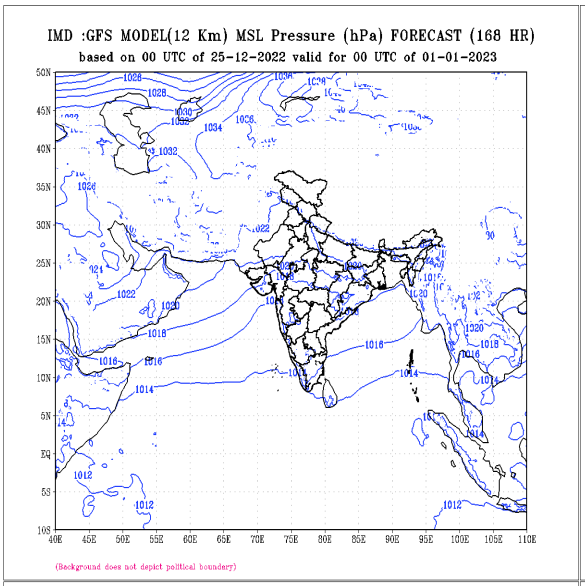
(Background does not depict political boundary)

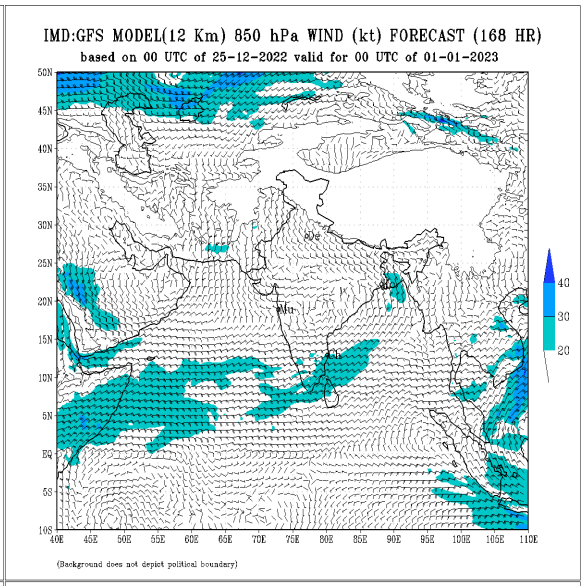
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (144 HR)

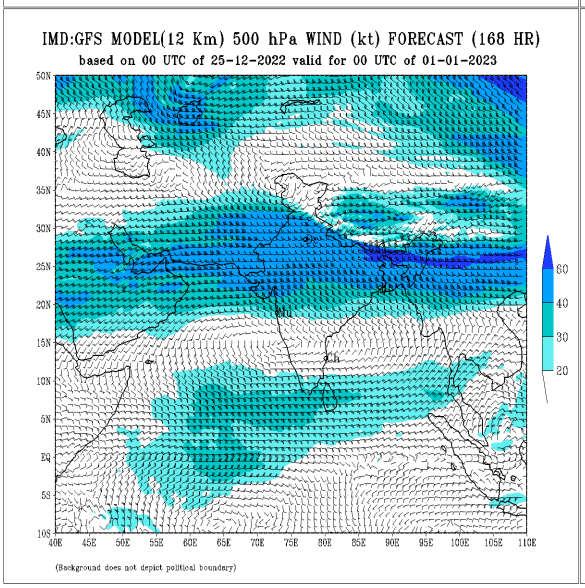
based on 00 UTC of 25-12-2022 valid for 00 UTC of 31-12-2022

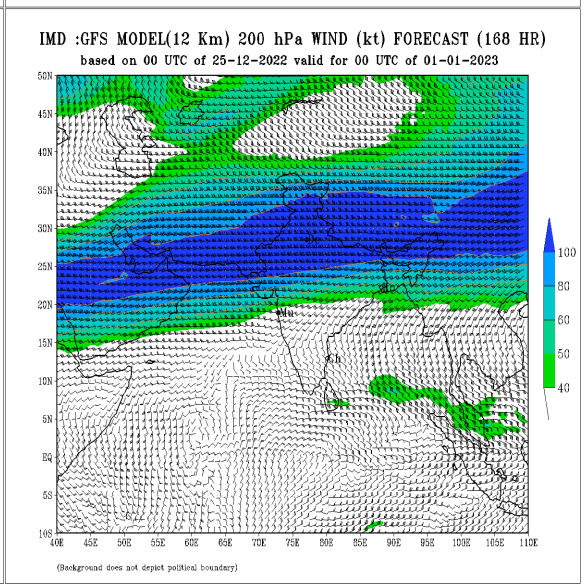


(Background does not depict political boundary)


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (168 HR)
based on 00 UTC of 25-12-2022 valid for 00 UTC of 01-01-2023
(Background does not depict political boundary)


IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 25-12-2022 valid for 00 UTC of 01-01-2023
40
30
20
(Background does not depict political boundary)


IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 25-12-2022 valid for 00 UTC of 01-01-2023
60
40
30
20
(Background does not depict political boundary)


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 25-12-2022 valid for 00 UTC of 01-01-2023
100
80
60
50
40
(Background does not depict political boundary)