



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

**Tropical Cyclone Forecast Programme  
Report Dated 15<sup>th</sup> October, 2024**

**Time of Issue: 1400 UTC**

**Synoptic features (based on 0300 UTC analysis):**

❖ **Well Marked Low Pressure Area over southwest and adjoining southeast Bay of Bengal**

A cyclonic circulation lay over southeast and adjoining North Equatorial Indian Ocean in the morning (0830 hours IST) of the 12th October, 2024. It moved west-northwestwards and under its influence, a **Low Pressure Area** formed over southeast Bay of Bengal in the early morning (0530 hours IST) of the 14th October 2024. It lay as a **Well Marked Low Pressure Area** over the central parts of south Bay of Bengal in the early morning (0530 hours IST) of today, the 15th October 2024.

It moved west-northwestwards and lay centered over southwest and adjoining southeast Bay of Bengal around noon (1130 hours IST) of today, the 15th October 2024.

It is likely to move west-northwestwards and intensify into a depression over southwest Bay of Bengal during next 12 hours. It is likely to continue to move west-northwestwards thereafter and reach near north Tamil Nadu, Puducherry and adjoining south Andhra Pradesh coasts by 17<sup>th</sup> October early morning as a depression.

❖ **Depression over Westcentral Arabian Sea off Oman coast**

A cyclonic circulation lay over South Kerala & neighbourhood in the morning (0830 hours IST) of the 7th October, 2024. Under its influence, a **Low Pressure Area** formed over Lakshadweep and adjoining southeast & eastcentral Arabian Sea in the morning (0830 hours IST) of the 9th October, 2024. It lay as a **Well Marked Low Pressure Area** over eastcentral Arabian Sea off Karnataka-Goa coasts in the morning (0830 hours IST) of the 10th October 2024. It intensified into a **Depression** in the evening (1730 hours IST) of yesterday, the 13th October, 2024 over central Arabian Sea and lay centred at 1130 hours IST of today, the 15th October, 2024 over the same region near latitude 17.5°N and longitude 59.8°E, about 320 km southeast of Duqm (Oman), 360 km south-southeast of Masirah (Oman), 610 km east of Salalah (Oman) and 840 km east-northeast of Al Ghaidah (Yemen).

It is likely to move nearly north-westwards towards Oman coast and weaken gradually into a well-marked low pressure area during next 12 hours.

## Dynamical and thermo-dynamical features

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
Sea Surface Temperature (SST) °C	29-31°C over entire BoB	<ul style="list-style-type: none"> <li>➤ 28-30°C over eastcentral AS.</li> <li>➤ 27°C over the westcentral and southwest parts of AS</li> </ul>
Tropical Cyclone Heat Potential (TCHP) kJ/cm <sup>2</sup>	<ul style="list-style-type: none"> <li>➤ &gt;100 over westcentral &amp; adjoining southwest BoB and south Andaman Sea</li> <li>➤ 80-100 over southeast BoB</li> </ul>	<ul style="list-style-type: none"> <li>➤ 60-70 over eastcentral AS</li> <li>➤ less than 50 over westcentral AS &amp; off Oman coast</li> </ul>
Cyclonic Relative vorticity (X10 <sup>-6</sup> s <sup>-1</sup> )	100 over southwest BoB	50 over system area with vertical extension upto 500 hpa level
Low Level convergence (X10 <sup>-5</sup> s <sup>-1</sup> )	➤ 5-10 over southwest & westcentral BoB	20 over system area
Upper Level divergence (X10 <sup>-5</sup> s <sup>-1</sup> )	20-30 over south BoB & adjoining Equatorial Indian Ocean	10-20 to the northwest of system area
Vertical Wind Shear (VWS knots) Low: 05-10 knots Moderate: 10-20 knots High: >20 knots	Low over Central and adjoining parts of South Bay of Bengal (over The System Area)	moderate over system area
Wind Shear Tendency (knots)	Decreasing tendency over system area	Increasing tendency over system area Decreasing tendency to the southwest of system area.
Upper tropospheric Ridge	Along 20 .0°N over BoB.	Along 20.0°N over AS.

## Satellite observations based on INSAT imagery (0300 UTC):

### (a) Over the BoB & Andaman Sea:-

Scattered to broken low and medium clouds with embedded intense to very intense convection lay over westcentral & South BoB and Andaman Sea (Minimum Cloud Top Tempertaure is minus 75-93 degree celsius). Scattered low and medium clouds with embedded isolated weak to moderate convection lay over north and eastcentral BoB.

### (b) Over the Arabian Sea:-

Scattered to broken low and medium clouds with embedded intense to very intense convection lay over north & central Arabian sea (Minimum Cloud Top Temperature is minus 75-90 degree celsius). Scattered low and medium clouds with embedded moderate to intense convection lay over southeast Arabian sea, Lakshadweep Islands Area, Maldives and Comorin area. Scattered low and medium clouds with embedded isolated weak to moderate convection lay over Gulf of Kutch, Gulf of Cambay and southwest Arabian sea.

### (c) Convection outside India:

Scattered low and medium clouds with embedded moderate to intense convection over Sri Lanka, Palk str, Gulf of Mannar, Maldives, S Pakistan, Tibet, China Yellow Sea, East China Sea, Taiwan, Myanmar, Thailand, Gulf Of Thailand, Cambodia, Vietnam, Gulf Of Tonkin, Hainan, Sumatra, Strait of Malacca, Malaysia, Borneo, South China Sea, Java Islands &

Sea Celebes Islands & Sea Philippines, Sulu Sea and over Indian Ocean between lat 5.0N to 15.0S long 55.0E to 110.0E.

**M.J.O. Index:**

MJO index is in Phase 4 with amplitude greater than 1 till 16<sup>th</sup>. It will then move to phase 5 and continue to be in phase 5 for next 7 days with amplitude more than 1.

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

**Nil**

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

<b>MODEL GUIDANCE</b>	<b>Bay of Bengal (BoB)</b>	<b>Arabian Sea (AS)</b>
<b>IMD-GFS</b>	A well marked low pressure area (WML) over southwest Bay of Bengal (BoB) at 0000 UTC of 15 <sup>th</sup> (11N/84E). It is indicated to move west-northwestwards lay as a depression on 16 <sup>th</sup> (12.5/84.5) over southwest and adjoining westcentral BoB. It will cross coast near Chennai (13.2/80.0) around 17/03 UTC. It would lay over TamilNadu coast as a low pressure area on 18 <sup>th</sup> . It is indicated to move across interior TamilNadu and become less marked.	Low pressure area over westcentral AS off Oman coast on 15 <sup>th</sup> and cross Oman coast as an extended low pressure area on 16 <sup>th</sup> and become less marked on 18 <sup>th</sup> .  A fresh low pressure area over Lakshadweep & adjoining eastcentral AS on 17 <sup>th</sup> . To move nearly westwards and become well marked over westcentral & adjoining eastcentral AS on 20 <sup>th</sup> and become less marked on 23 <sup>rd</sup> over westcentral AS.
<b>IMD-GEFS</b>	A well marked low pressure area (WML) over southwest Bay of Bengal (BoB) at 0000 UTC of 15 <sup>th</sup> (12.5N/82E). To move west-northwestwards, lay over TamilNadu-Andhra Pradesh coast as an extended low during 17-19 Oct. and less marked thereafter.	LPA over Oman coast on 16 <sup>th</sup> to move nearly westwards and become less marked on 18 <sup>th</sup> Oct.  A fresh LPA over Lakshadweep & adjoining eastcentral AS on 17 <sup>th</sup> . To move nearly westwards and become well marked over westcentral & adjoining eastcentral AS on 20 <sup>th</sup> and become less marked on 23 <sup>rd</sup> over westcentral AS.
<b>IMD-WRF</b>	A WML over southwest BoB on 15 <sup>th</sup> (11N/85E) to move west-northwestwards and intensify into a deep depression (DD) on 16 <sup>th</sup> over the same region (11.1N/83E). To move northwestwards and intensify into a cyclonic storm (CS) on 17 <sup>th</sup> over westcentral and adjoining southwest BoB (14.5N/82.5E).	LPA over westcentral AS on today the 15 <sup>th</sup> Oct. To move west-northwestwards, weaken further and reach Yemen-Oman coast as an extended low.
<b>NCMRWF-NCUM</b>	A well marked low pressure area (WML) over southwest Bay of Bengal (BoB) at 0000 UTC of 15 <sup>th</sup> (11N/81E) to move west-northwestwards lay as a depression on 16 <sup>th</sup> (12.5/84.5) over southwest and adjoining westcentral BoB. (11.1N/83E). It will cross coast near Chennai (13.2/80.0) around 17/03 UTC. It would lay over TamilNadu coast as a low pressure area on 18 <sup>th</sup> . It is	Low pressure area over westcentral AS off Oman coast on 15 <sup>th</sup> and cross Oman coast as an extended low pressure area on 16 <sup>th</sup> and become less marked on 18 <sup>th</sup> .  A fresh low pressure area over Lakshadweep & adjoining eastcentral AS on 17 <sup>th</sup> . To move nearly westwards and become well marked over westcentral & adjoining eastcentral

	indicated to move across interior TamilNadu and become less marked.	AS on 20 <sup>th</sup> and become less marked on 23 <sup>rd</sup> over westcentral AS.
<b>NCMRWF-NEPS</b>	WML/depression over southwest and adjoining westcentral BoB (12N/82E) as on today the 15 <sup>th</sup> October, it will move westnorthwestwards and will cross the north Tamil Nadu and south Andhra Pradesh coast (13.5N/80E) by 16 <sup>th</sup> as WML. It will move in the same direction over the land by weakening further.	Low pressure area over westcentral AS off Oman coast on 15 <sup>th</sup> and cross Oman coast as an extended low pressure area on 16 <sup>th</sup> and become less marked on 18 <sup>th</sup> .  A fresh low pressure area over Lakshadweep & adjoining eastcentral AS on 17 <sup>th</sup> . To move nearly westwards and become well marked over westcentral & adjoining eastcentral AS on 20 <sup>th</sup> and become less marked on 23 <sup>rd</sup> over westcentral AS.
<b>NCMRWF-UM (Regional)</b>	WML/depression over southwest and adjoining westcentral BoB (12N/82E) as on today the 15 <sup>th</sup> October, it will move westnorthwestwards and will cross the north Tamil Nadu and south Andhra Pradesh coast (13.5N/80E) by 16 <sup>th</sup> as WML. It will move in the same direction over the land by weakening further.	Low pressure area over westcentral AS off Oman coast on 15 <sup>th</sup> and cross Oman coast as an extended low pressure area on 16 <sup>th</sup> and become less marked on 18 <sup>th</sup> .
<b>ECMWF</b>	LPA over southwest and adjoining westcentral BoB (12N/84E) as on today the 15 <sup>th</sup> October, it will move northwestwards and will lay close to the north Tamil Nadu and south Andhra Pradesh coast (13.2N/81.8E) by 16 <sup>th</sup> as LPA. It will move in the same direction and will cross the same coastal stretch on 17 <sup>th</sup> as an extended low.	A fresh LPA over southeast and adjoining eastcentral Arabian Sea (12.9N/71.6E). It will move westnorthwest wards and lay over eastcentral and adjoining southeast Arabian Sea (14.9/66.7E) as WML on 18 <sup>th</sup> . It will further move in the same direction till 21 <sup>st</sup> without further intensification.
<b>NCEP-GFS</b>	WML over westcentral and adjoining southwest BoB (13N/85E) as on today the 15 <sup>th</sup> October, it will move northwestwards and will lay off south Andhra Pradesh and north Tamil Nadu coast (14N/82E) by 16 <sup>th</sup> as an LPA. It will move in the same direction and will cross the same coastal stretch on 17 <sup>th</sup> and weakening further.	

## Summary and conclusion:

### 1. For the Bay of Bengal:

Most of the models (IMD-GFS, NCEP-GFS, NCUM-REG, NCUM-NEPS, NCUM-Global) are indicating LPA/WML over southwest Bay of Bengal on 15<sup>th</sup> October 2024. IMD GFS indicates a low pressure over south Bay of Bengal at 15/00. Today the forecast has changed and it is indicating the system to intensify into a depression by 16/00 and reach Chennai coast on 17/00 UTC. A fresh low pressure area into eastcentral as on 19th Oct and indicating the system to move west-northwestwards without any significant intensification till 22nd October. (Please remove). NCUM group of models are not indicating any significant intensification of system. However, this group is also indicating movement towards north Tamil Nadu coast and emergence of the cyclonic circulation/low pressure area into eastcentral Arabian Sea on 18th. ECMWF is indicating a low pressure area on 15<sup>th</sup>/0000 UTC and indicating further intensification into a well marked low pressure area/depression on 16th October. The model is indicating the depression to move west-northwestwards and

cross north Tamil Nadu-south Andhra Pradesh coast near 14.5/80.0 on 17/00 UTC. It is also indicating emergence of its remnant into eastcentral Arabian Sea around 19th October and then west-northwestwards movement towards Oman coast without significant intensification. IMD multi model ensemble is indicating nearly northwestwards movement of the system towards Chennai and crossing around 17/14 UTC near 12.7/80.2.

Hence, it is inferred that the well marked low pressure area over the central part of south Bay of Bengal is likely to move west-northwestwards and intensify into a depression over southwest Bay of Bengal during next 12 hours. It is likely to continue to move west-northwestwards thereafter and reach near north Tamil Nadu, Puducherry and adjoining south Andhra Pradesh coasts by 17<sup>th</sup> October early morning as a depression.

**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
HIGH	-	-	-	NIL	NIL	NIL

**2. For the Arabian Sea:**

Most of the models are capturing the current depression over westcentral Arabian Sea off Oman coast as a low pressure area and its crossing over Oman coast as a low pressure area/ cyclonic circulation by 16th October.

However, environmental features are still supporting the system to maintain its intensity during next 12 hours.

Hence, it is inferred that the depression over westcentral Arabian Sea off Oman coast is likely to move nearly north-westwards towards Oman coast and cross coast close to Duqm during 1800-2100 of 15th October and weaken gradually into a well-marked low pressure area thereafter.

**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

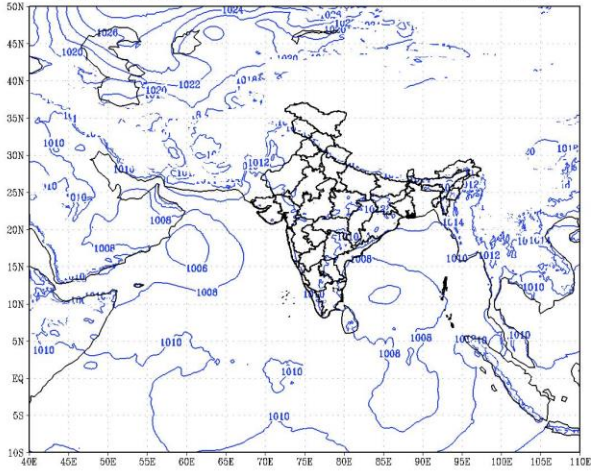
**Advisory:**

- (i) The intensification & movement of well marked low pressure area over central parts of south Bay of Bengal need to be monitored.

**Intense Observation Period (IOP) is suggested for:**

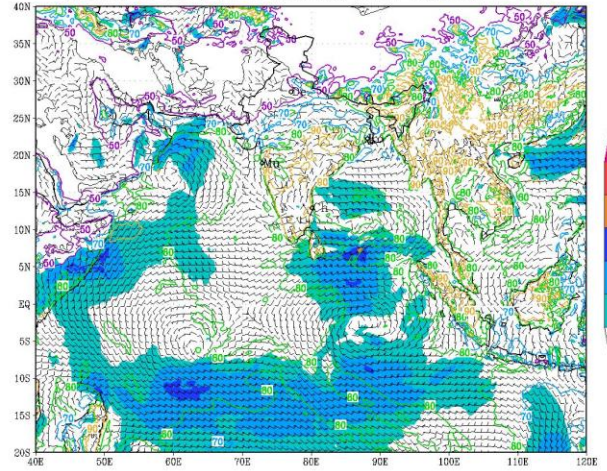
- (i) North Sri Lanka, Tamil Nadu and Andhra Pradesh during 15<sup>th</sup>-17<sup>th</sup> October.
- (ii) Lakshadweep Islands, Kerala, Karnataka coasts during 18<sup>th</sup>-20<sup>th</sup> October.

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (00 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 15-10-2024



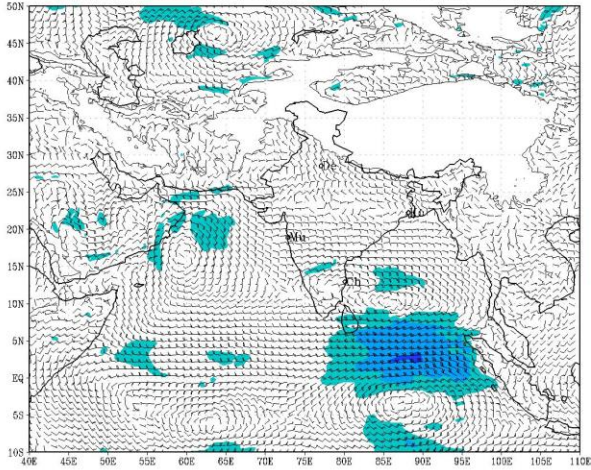
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IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (00 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 15-10-2024



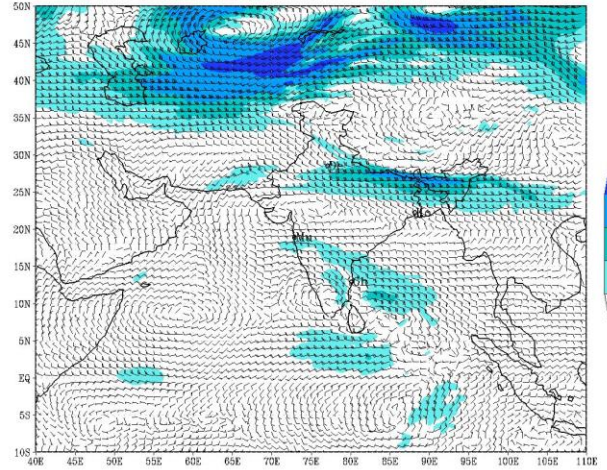
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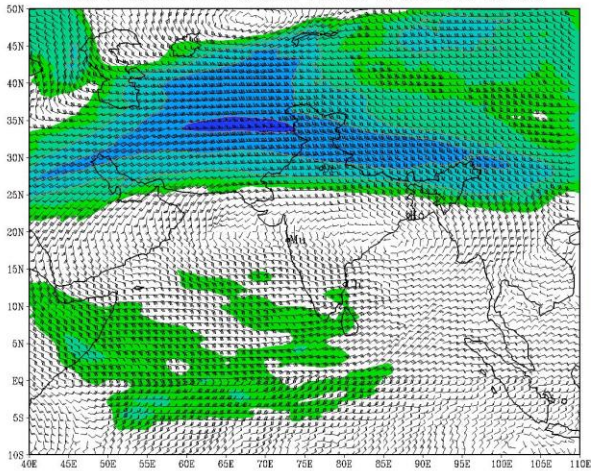
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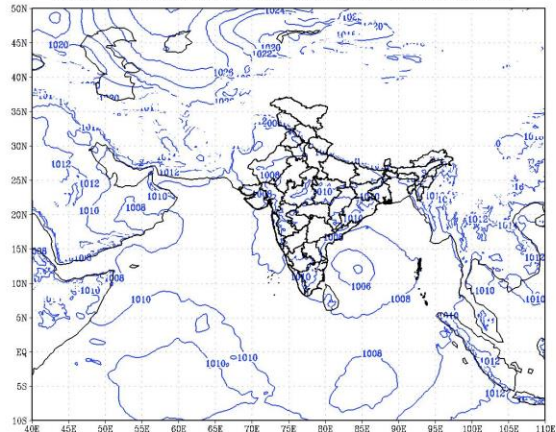
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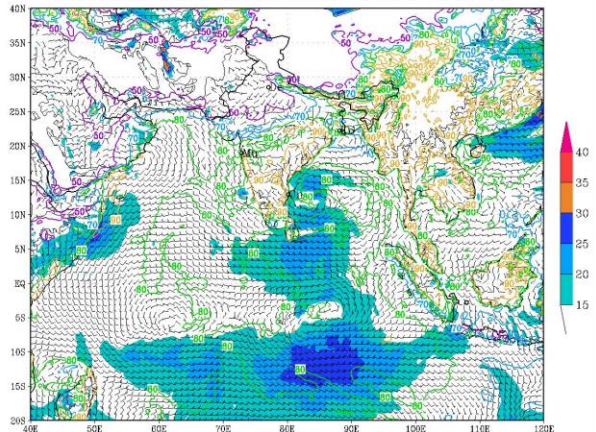
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**IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (24 HR)**  
 based on 00 UTC of 15-10-2024 valid for 00 UTC of 16-10-2024



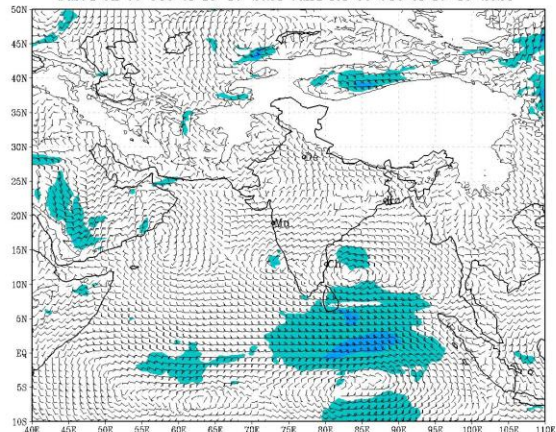
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**IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (24 HR)**  
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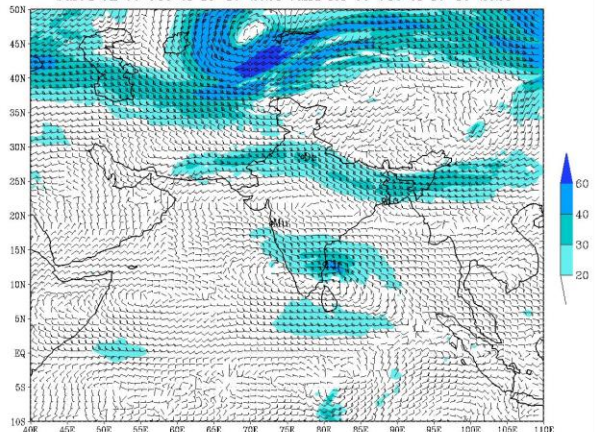
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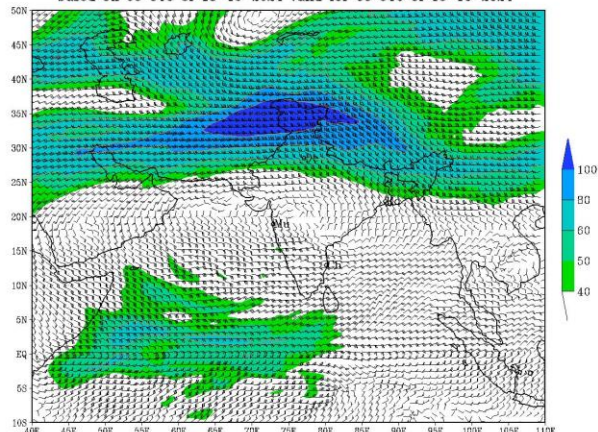
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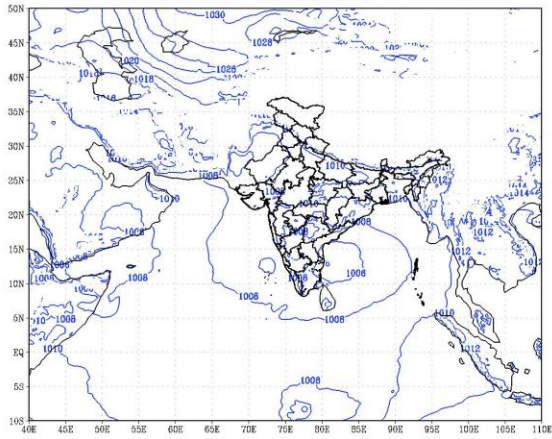
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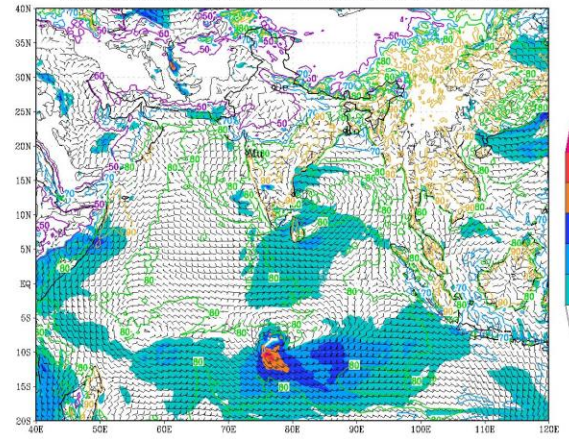
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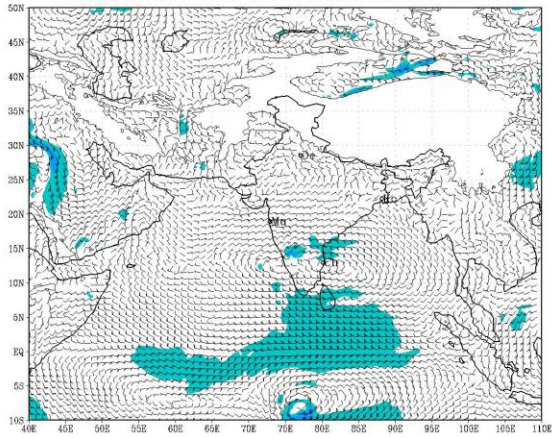
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IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (48 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 17-10-2024



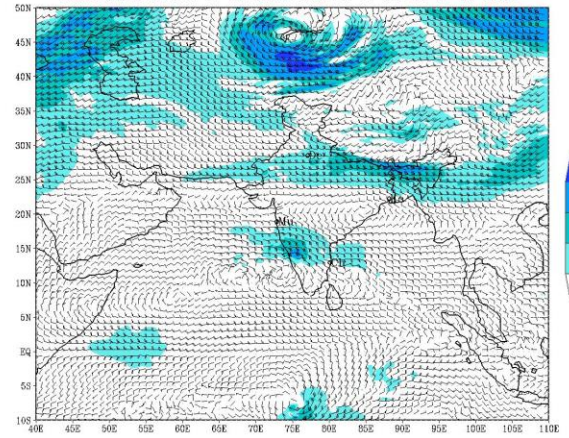
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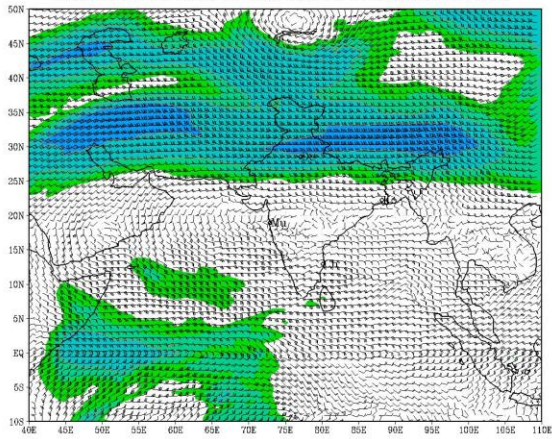
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IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (48 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 17-10-2024



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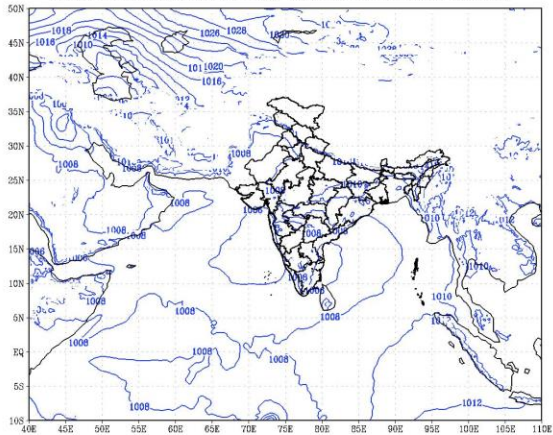
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (48 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 17-10-2024



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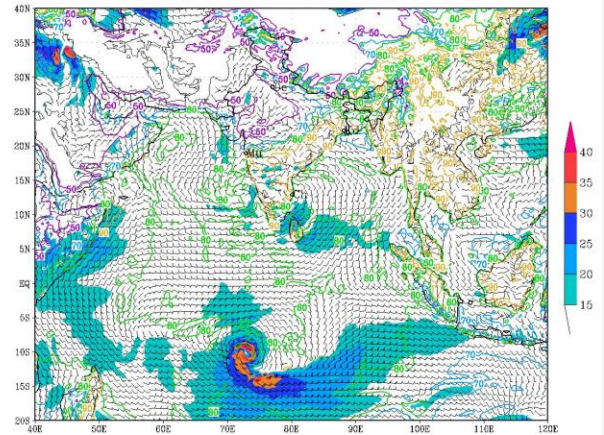


**IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (72 HR)**  
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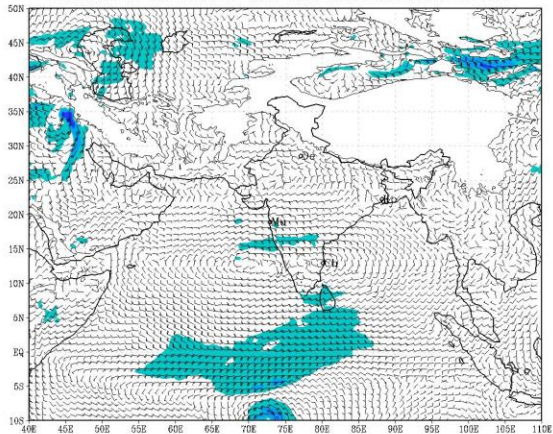
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**IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (72 HR)**  
 based on 00 UTC of 15-10-2024 valid for 00 UTC of 18-10-2024



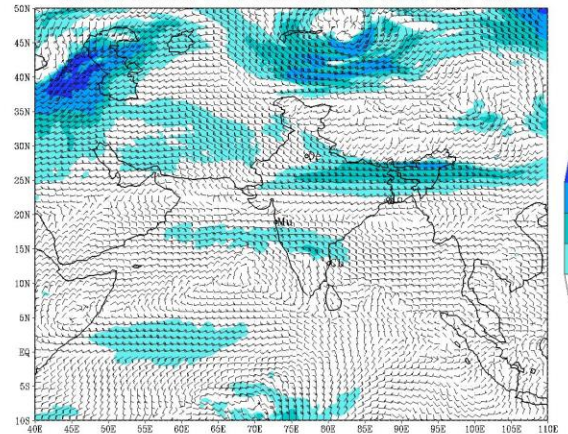
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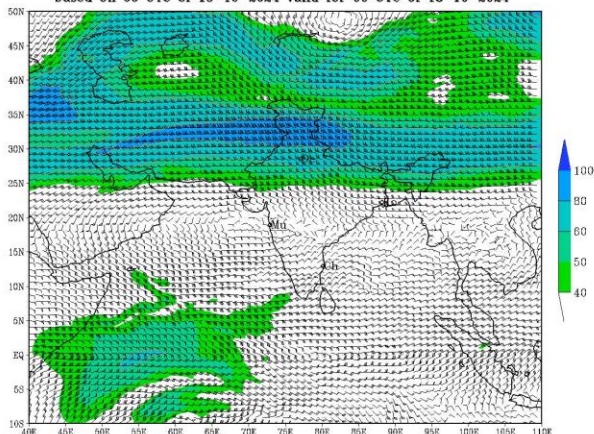
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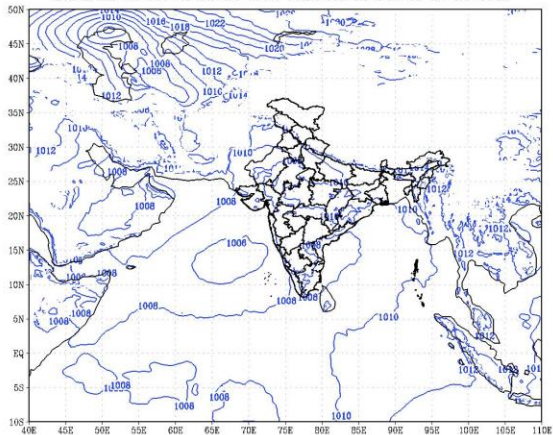
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**IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (72 HR)**  
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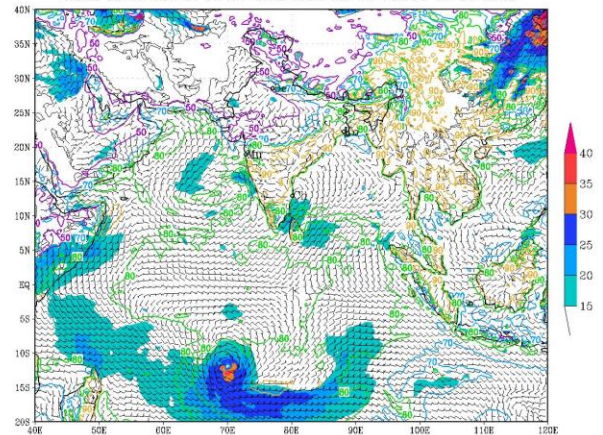
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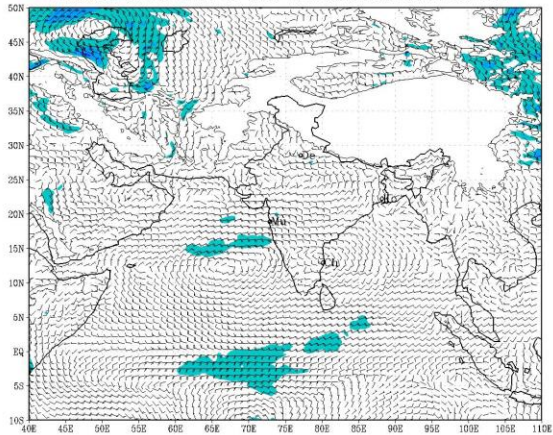
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IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (96 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 19-10-2024



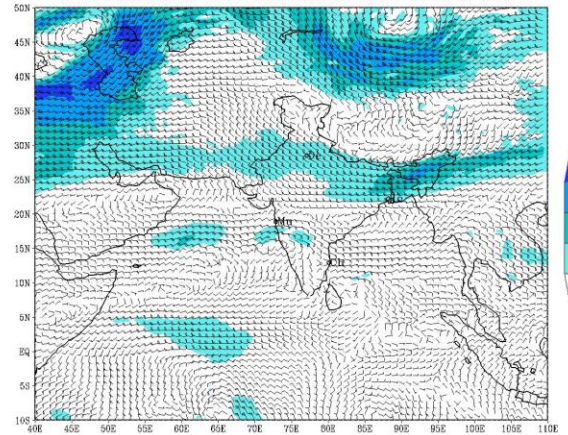
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IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (96 HR)  
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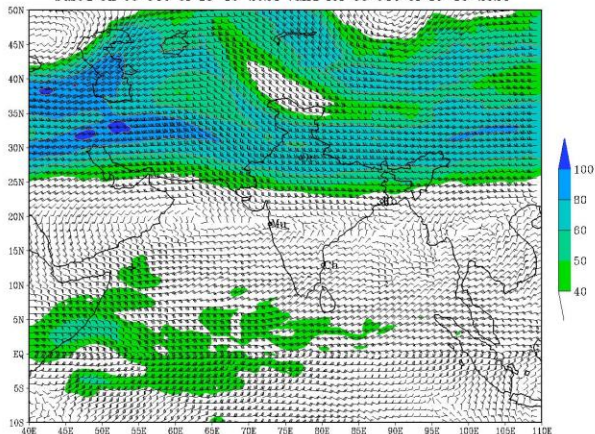
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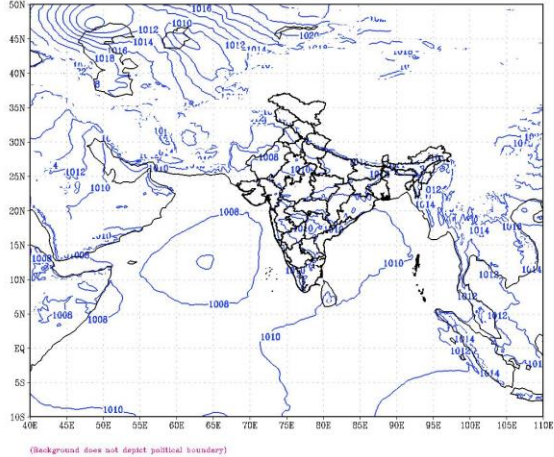
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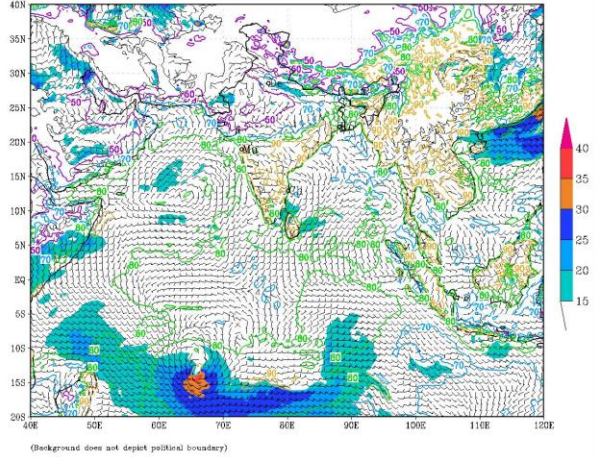


(Background does not depict political boundary)

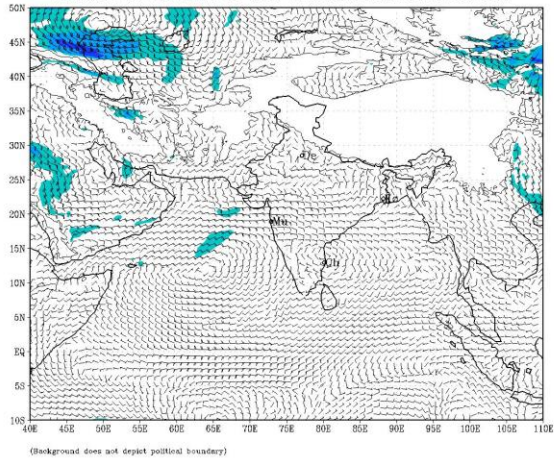
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (120 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 20-10-2024



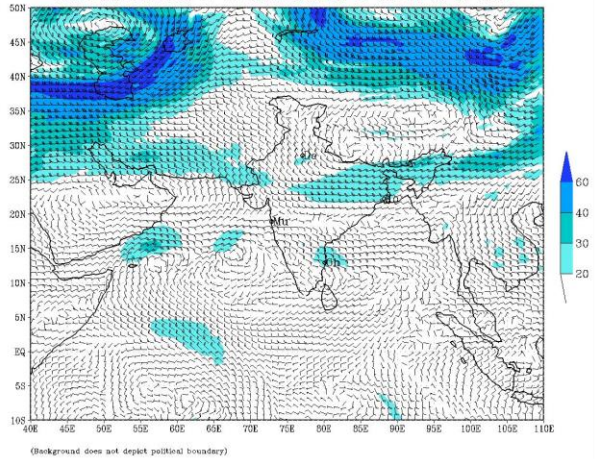
IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (120 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 20-10-2024



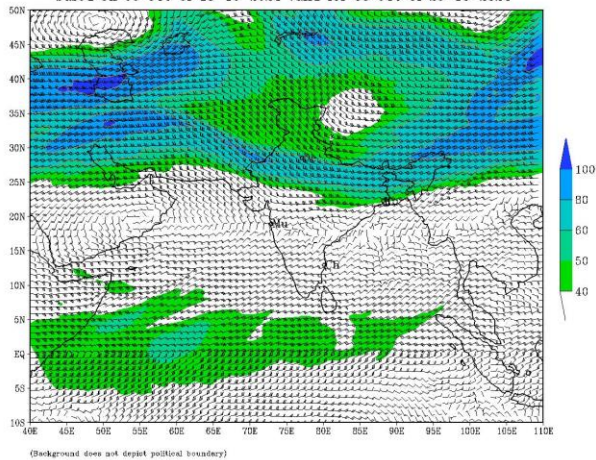
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (120 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 20-10-2024



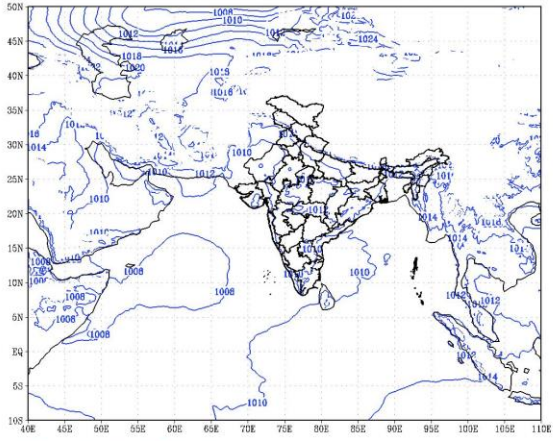
IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (120 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 20-10-2024



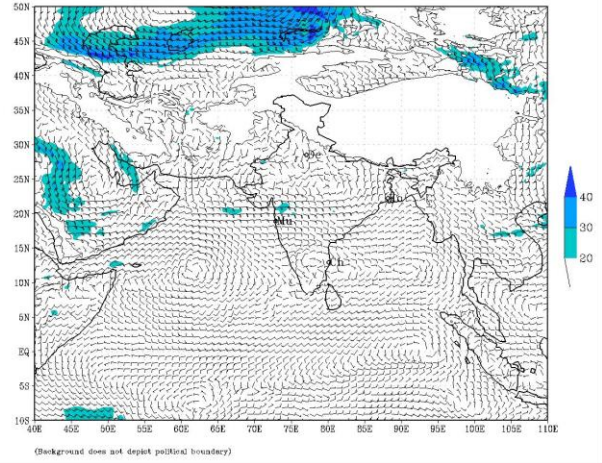
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (120 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 20-10-2024



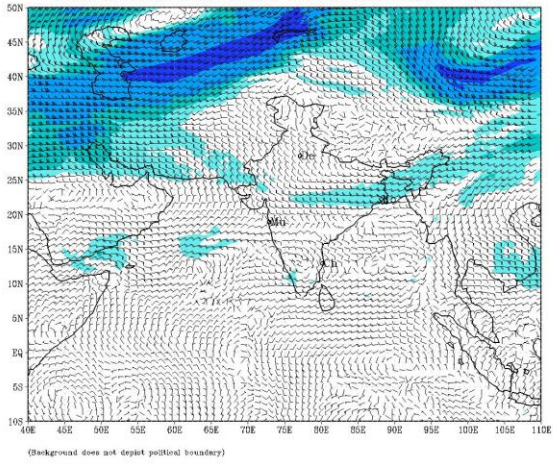
IMD:GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (144 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 21-10-2024



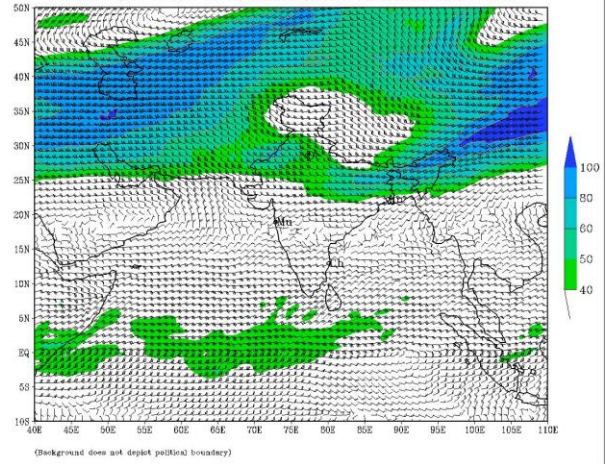
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (144 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 21-10-2024



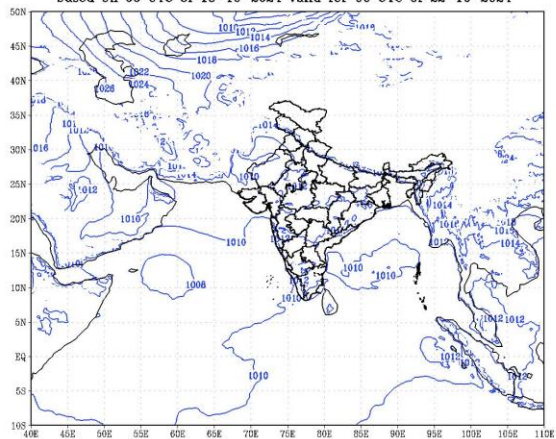
IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (144 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 21-10-2024



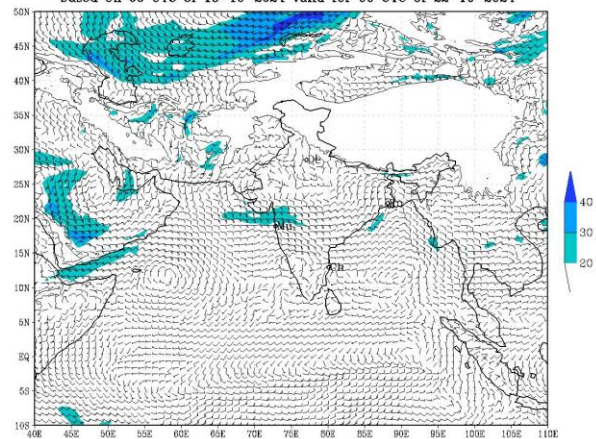
IMD:GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (144 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 21-10-2024



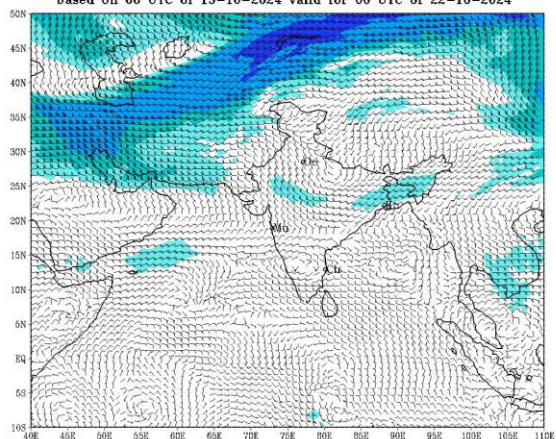
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (168 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 22-10-2024



IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (168 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 22-10-2024



IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (168 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 22-10-2024



IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (168 HR)  
based on 00 UTC of 15-10-2024 valid for 00 UTC of 22-10-2024

