



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

**Tropical Cyclone Forecast Programme
Report Dated 15th October, 2022**

Time of Issue: 1200 UTC

Synoptic features (based on 0900 UTC analysis):

- ❖ Southwest Monsoon has further withdrawn from entire Bihar, entire Sikkim, entire Meghalaya, entire MadhyaPradesh, some parts of Assam, Tripura and WestBengal, some more parts of Vidarbha, Chhattisgarh and Maharashtra. The withdrawal line of Southwest Monsoon now passes through 28.6°N, 93.6°E, Lumding, Kailashahar, Berhampore, Kanke, Bilaspur, Brahmapuri, Buldana, Dahanu, Long. 71.0° E/Lat. 19.5° N.
- ❖ Conditions are very likely to become favourable for further withdrawal of Southwest Monsoon from some more parts of Vidarbha, Chhattisgarh, interior Maharashtra and Jharkhand, some parts of interior Odisha and entire West Bengal during next 2 days.
- ❖ The cyclonic circulation over westcentral & adjacent southwest Bay of Bengal now lies over
- ❖ Westcentral Bay of Bengal and along & off South Andhra Pradesh & North Tamilnadu coasts and extends upto 3.1 km above mean sea level.
- ❖ The cyclonic circulation over eastcentral Arabian Sea off Karnataka coast now lies over central Arabian Sea and extends upto 5.8 km above mean sea level.
- ❖ A fresh Western Disturbance is likely to affect Western Himalayan region from the night of 18th October 2022.
- ❖ A cyclonic circulation is likely to form over north Andaman Sea & neighbourhood around 18th October 2022. It would move west northwestwards towards westcentral and adjoining southwest Bay of Bengal becoming low pressure area around 20th October, 2022.

Dynamical and thermo-dynamical features

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
Sea Surface Temperature (SST) °C	About 29-31°C over entire BoB and Andaman Sea except over some parts of southwest BoB	28-29°C over southeast & adjoining eastcentral AS. 26-28°C over eastcentral, westcentral and southwest BoB. Less than 26°C off Oman & Somalia coast.
Tropical Cyclone Heat Potential (TCHP) kJ/cm²	(a) 110-120 over eastcentral BoB. (b) 60-80 over western parts of BoB and parts of southeast BoB. (c) 30-40 over some parts of westcentral & southwest BoB off Tamil nadu & Andhra Pradesh coasts.	(a) 60-80 over eastcentral & adjoining southeast AS (b) 30-40 over remaining parts of AS.
Cyclonic Relative	(a) Positive vorticity of 30-40 over	(a) Positive vorticity of 30-40 over

vorticity ($\times 10^{-6} \text{s}^{-1}$)	westcentral & adjoining southwest BoB, southeast BoB and south Andaman Sea with vertical extension upto 500 hPa level.	central AS with vertical extension upto 500 hPa level. (b) 30-40 over southwest AS off Somalia coast. (c) 20-30 over Comorin area and adjoining southeast AS
Low Level convergence ($\times 10^{-5} \text{s}^{-1}$)	Small zone of value 05 over westcentral BoB. 5-15 over southeast BoB and adjoining Equatorial Indian Ocean off Sumatra coast.	Small zones of value 05 over eastcentral AS off Maharashtra-coast. 5-10 over northwest Equatorial Indian Ocean & adjoining south AS.
Upper Level divergence ($\times 10^{-5} \text{s}^{-1}$)	5-20 over south BoB & adjoining Equatorial Indian Ocean. 5-10 over westcentral BoB off Andhra Pradesh coast.	05 over northwest Equatorial Indian Ocean.
Vertical Wind Shear (VWS knots)	5-20 (favourable) over major parts of central BoB and north BoB. 25-30 (unfavourable) over extreme south BoB & adjoining EIO and off TamilNadu coast.	5-10 (favourable) over central & adjoining north AS. 15-20 over westcentral AS. 25-30 (unfavourable) over south AS and adjoining EIO.
Wind Shear Tendency (knots)	Decreasing over south BoB, south Andaman Sea and westcentral BoB.	Decreasing over westcentral & adjoining southwest AS and central AS Increasing over southeast AS and adjoining EIO and eastcentral AS off Goa-Maharashtra coast.
Upper tropospheric Ridge	Along 18.0°N over the BoB.	Along 19.0°N over the AS.

Satellite observations based on INSAT imagery (0900 UTC):

(a) Over the BoB & Andaman Sea:-

At 0900 UTC, Scattered to broken low and medium clouds with embedded intense to very intense convection lay over westcentral Bay of Bengal off Andhra Pradesh coast & south Bay of Bengal. Scattered low and medium clouds with embedded isolated moderate to intense convection lay over Andaman sea, Tenasserim coast and Arakan coast.

(b) Over the Arabian Sea:-

At 0900 UTC, Scattered low and medium clouds with embedded isolated moderate to intense convection lay over Arabian Sea between latitude 12°N to 17°N and longitude 63°E to 72°E southeast Arabian Sea and Comorin area.

M.J.O. Index:

MJO index is currently in Phase 6 with amplitude greater than 1. It will continue in same phase for next 7 days with amplitude remaining greater than 1.

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

No storm / depression prevails over these Sea areas as on today.

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

MODEL GUIDANCE	BoB	AS
IMD-GFS	<p>Cyclonic circulation (Cycir) lies over southwest BoB, likely to persist over the same region on 16th and become less marked over North Tamil Nadu on 17th.</p> <p>A fresh cycir likely to form over central and adjoining North Andaman Sea on 17th. It is likely to move west-northwestwards and lie over southeast BoB on 18th, central BoB on 19th, westcentral & adjoining southwest BoB on 20th, southwest & adjoining westcentral BoB on 21st, southwest & adjoining North Tamil Nadu & south coastal Andhra Pradesh on 22nd.</p> <p>Another low/cycir likely to form over central Andaman Sea on 22nd, become depression over Andaman Islands on 23rd.</p>	<p>A cycir lies over southeast & adjoining eastcentral AS, persist over same region on 16th & 17th, lies over central & adjoining south AS on 18th, becoming less marked on 19th.</p>
IMD-GEFS	<p>Cyclonic circulation (Cycir) lies over southwest BoB, likely to persist over the same region on 16th and become less marked over North Tamil Nadu on 17th.</p> <p>A fresh cycir likely to form over central and adjoining North Andaman Sea on 17th. It is likely to move west-northwestwards and lie over southeast BoB on 18th, central BoB on 19th, lies as a low over southwest & adjoining westcentral BoB on 20th, extended low over southwest & adjoining westcentral BoB on 21st becoming less marked on 22nd.</p> <p>Another low/cycir likely to form over southeast BoB on 23rd.</p>	<p>A cycir lies over southeast & adjoining eastcentral AS, persist over same region on 16th & 17th, lies over central & adjoining south AS on 18th, becoming less marked on 19th.</p>
IMD-WRF	<p>Cycir lies over southwest BoB, likely to persist over the same region on 16th and become less marked over North Tamil Nadu on 17th.</p>	<p>A cycir lies over southeast & adjoining eastcentral AS, persist over same region on 16th & 17th, lies over central & adjoining south AS on 18th, becoming less marked on 19th.</p>
NCMRWF-NCUM	<p>A fresh cycir likely to form over eastcentral BoB on 17th. It is likely to move west-northwestwards and lie over central BoB on 18th, as a low over westcentral BoB on 19th, as a WML over westcentral & adjoining southwest BoB on 20th, as a depression over southwest & adjoining westcentral BoB on 21st, Cyclonic Storm over southwest & adjoining westcentral BoB on 22nd and as SCS over westcentral BoB on 23rd, crossing coast as VSCS over Andhra Pradesh coast around Machhillipatnam-Narsapur on 24th.</p>	<p>A cycir lies over southeast & adjoining eastcentral AS, persist over same region on 16th, lies over central parts of AS on 17th, over westcentral AS during 18th – 20th, over eastcentral AS during 21st – 23rd.</p>

NCMRWF-NEPS	A fresh cycir likely to form over southeast BoB on 17 th . It is likely to move west-northwestwards and lie as a low over westcentral BoB on 18 th , WML over southwest & adjoining westcentral BoB on 19 th & 20 th , as a depression over southwest & adjoining westcentral BoB on 21 st , Cyclonic Storm over southwest & adjoining westcentral BoB on 22 nd and as SCS over westcentral & adjoining southwest BoB on 23 rd , crossing coast as VSCS over Andhra Pradesh coast around Machhillipatnam-Narsapur on 24 th .	A cycir lies over southeast & adjoining eastcentral AS during 16 th – 18 th , low over eastcentral AS on 19 th , cyccir over eastcentral AS during 20 th – 21 st , cyclir over central & adjoining south AS during 22 nd – 23 rd .
NCMRWF-UM (Regional)	Cycir lies over southwest BoB, likely to persist over the same region on 16 th and become less marked over North Tamil Nadu on 17 th .	A cycir lies over southeast & adjoining eastcentral AS, persist over same region on 16 th & 17 th , lies over central & adjoining south AS on 18 th , becoming less marked on 19 th .
ECMWF	A fresh cycir likely to form over central Andaman Sea on 17 th and over North Andaman Sea on 18 th . It is likely to move west-northwestwards and lie as a low over Andaman Islands on 19 th , WML over southeast & adjoining eastcentral BoB on 20 th , low over central & adjoining south BoB on 21 st , WML over southwest & adjoining westcentral BoB on 22 nd and depression over westcentral & adjoining southwest BoB on 23 rd , deep depression over westcentral BoB off central Andhra Pradesh coast on 24 th and low over North Odisha on 25 th .	A cycir lies over southeast & adjoining eastcentral AS, persist over same region on 16 th , lies over central parts of AS on 17 th , over westcentral AS during 18 th – 20 th , over eastcentral AS during 21 st – 23 rd .
ECMWF-EPS	Shows genesis & strike probability 10-20 % over central BoB and adjoining south BoB during 22 nd – 24 th .	
NCEP-GFS	Cyclonic circulation (Cycir) lies over southwest BoB, likely to persist over the same region on 16 th and become less marked over North Tamil Nadu on 17 th . A fresh cycir likely to form over central and adjoining North Andaman Sea on 17 th . It is likely to move west-northwestwards and lie over southeast BoB on 18 th , central BoB on 19 th , westcentral & adjoining southwest BoB on 20 th , southwest & adjoining westcentral BoB on 21 st , southwest & adjoining North Tamil Nadu & south coastal Andhra Pradesh on 22 nd . Another low/cycir likely to form over central Andaman Sea on 22 nd , become depression over Andaman Islands on 23 rd .	A cycir lies over southeast & adjoining eastcentral AS, persist over same region on 16 th & 17 th , lies over central & adjoining south AS on 18 th , becoming less marked on 19 th .
IMD-GPP	A Potential zone over South Andaman Sea on 17 th , central Andaman Sea during 18 th to 21 st , another zone over westcentral BoB on 20 th , central & adjoining south BoB on 21 st & 22 nd .	Potential zone over southeast AS during 19 th – 21 st and over eastcentral AS on 22 nd .

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

Summary and Conclusion:

1. For the Bay of Bengal:

The current cycir over southwest BoB is likely to move slowly west-northwestwards during 15th – 17th and cross North Tamil Nadu & adjoining south Andhra Pradesh coast on 17th and become less marked thereafter.

A fresh cycir is likely to form over central and adjoining North Andaman Sea around 17th/ 18th. It is likely to move west-northwestwards, become a low over southeast & adjoining eastcentral BoB around 19th/20th. Likely to concentrate into a depression over westcentral & adjoining southwest BoB around 22nd. Further intensification needs to be monitored.

The environmental conditions like SST and ocean thermal energy are favourable over south & central BoB for formation of low/depression. The La Nina conditions supported with negative IOD conditions will support the movement of remnant circulations from South China Sea to Andaman Sea with possible further intensification. However, MJO being in phase 6 with amplitude more than 1, will not be supportive for amplification of convection and hence the system.

2. For the Arabian Sea:

The cycir over southeast & adjoining eastcentral AS is likely to persist over same region during 16th & 17th, lie over central & adjoining south AS on 18th and become less marked thereafter.

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	LOW	MODERATE

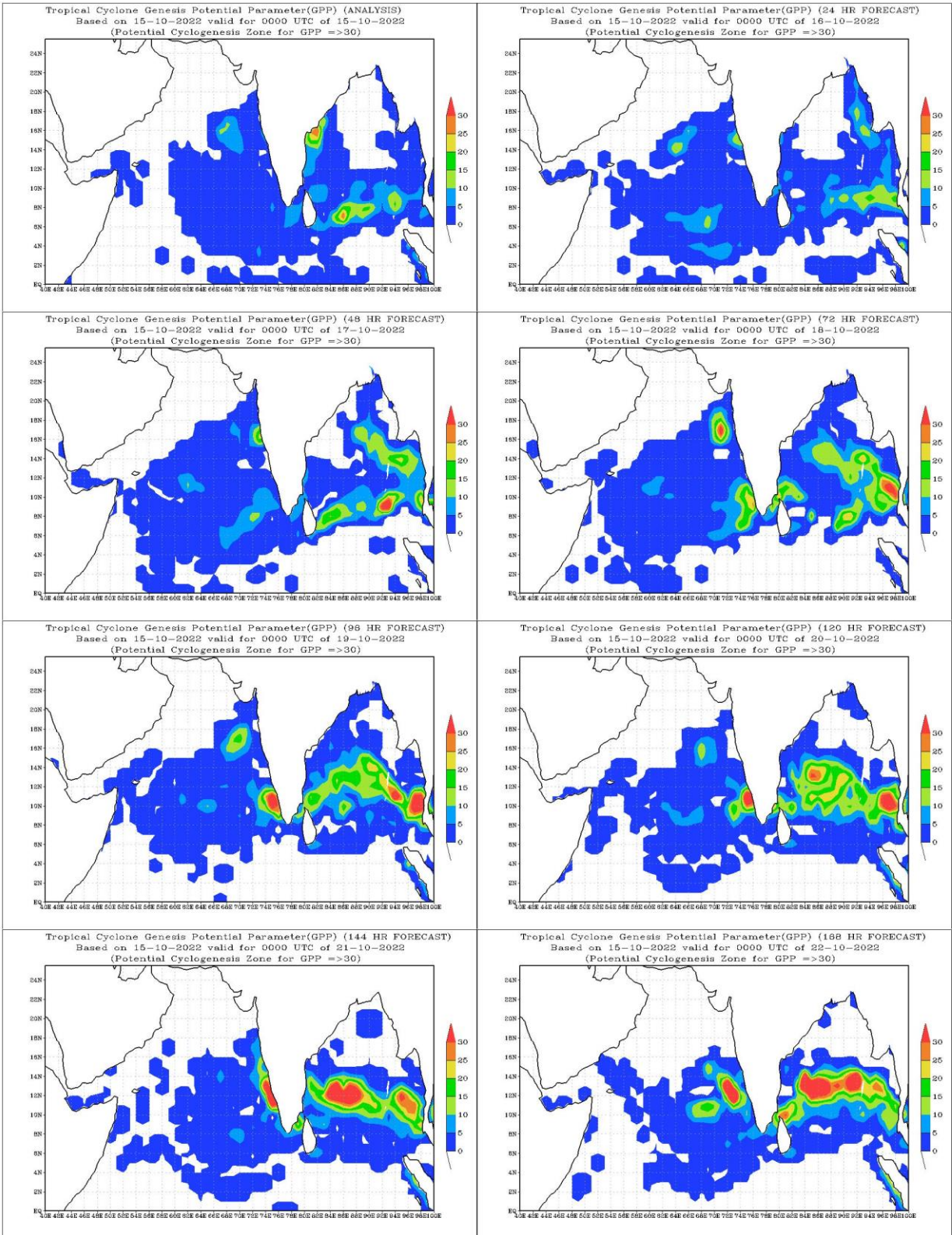
Probability of cyclogenesis (formation of depression and above intensity systems) over the Arabian Sea during next 168 hours:

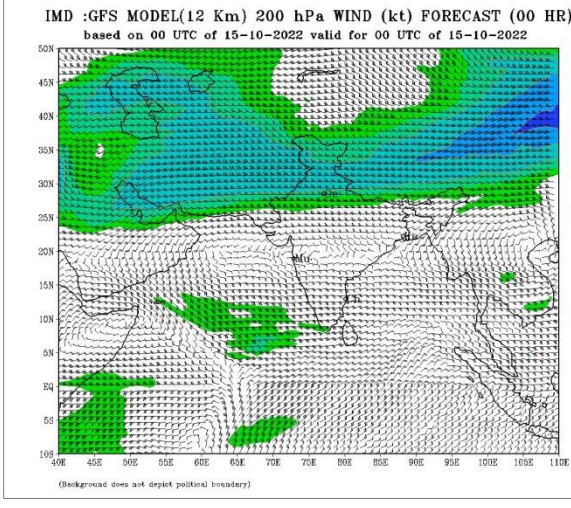
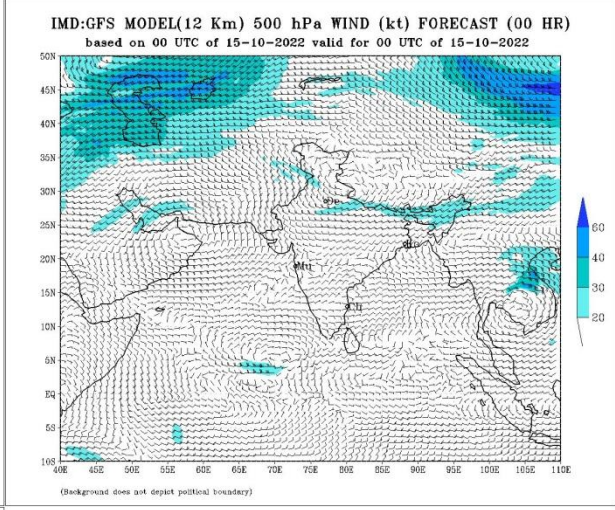
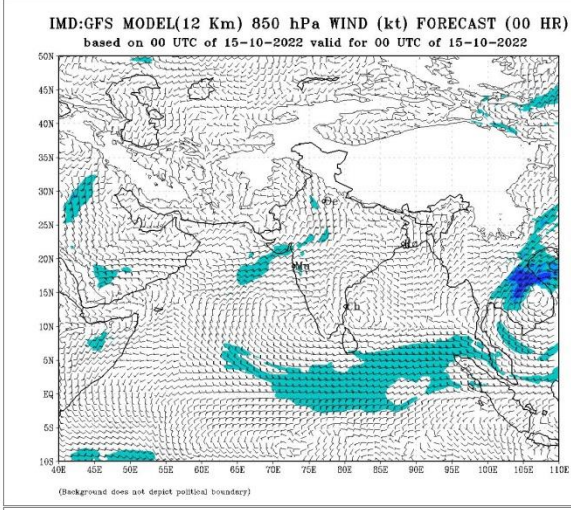
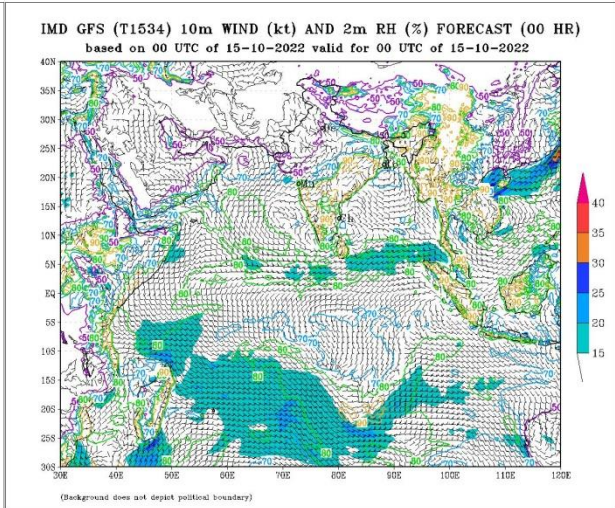
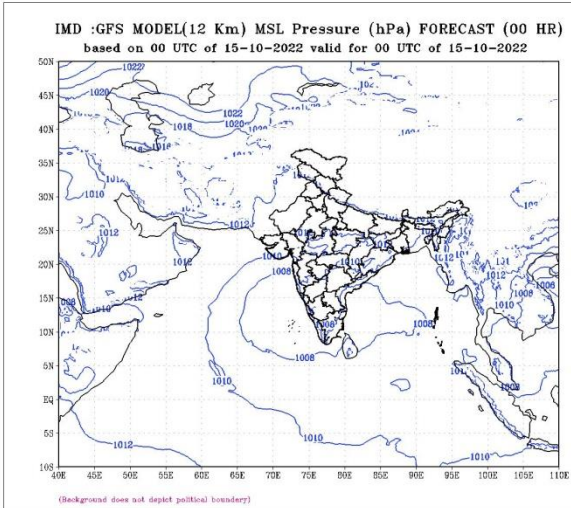
24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

Advisory:

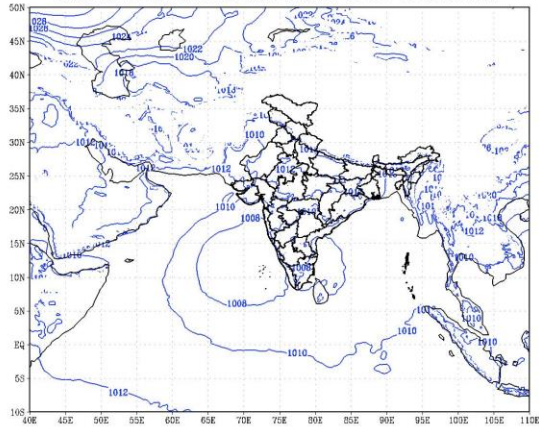
The intensification & movement of cycir likely to form over Andaman Sea on 17th/18th need to be monitored.

IOP is suggested for Andaman & Nicobar Islands on 19th.



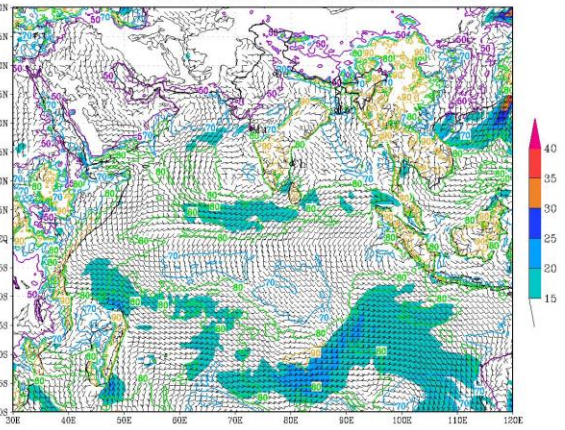


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (24 HR)
based on 00 UTC of 15-10-2022 valid for 00 UTC of 16-10-2022



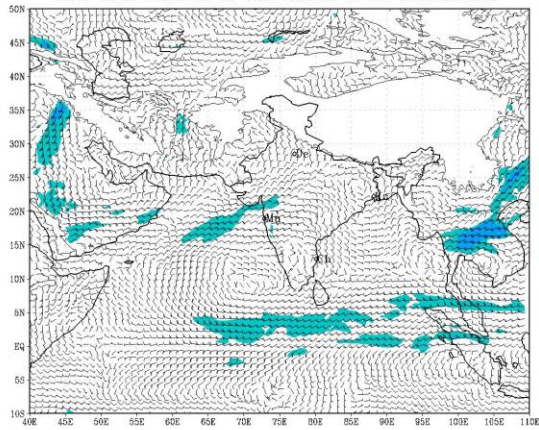
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IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (24 HR)
based on 00 UTC of 15-10-2022 valid for 00 UTC of 16-10-2022



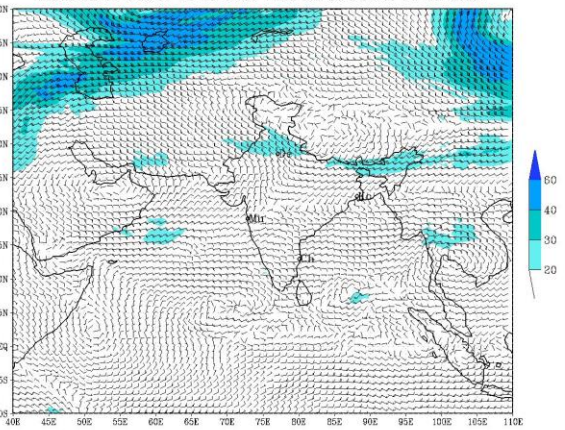
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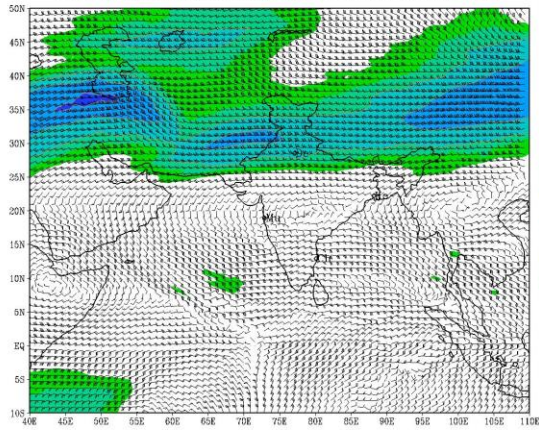
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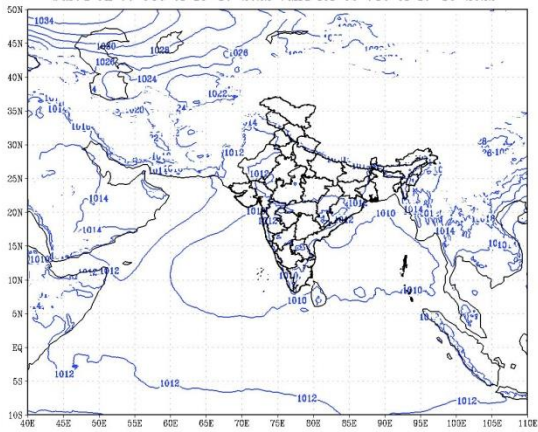
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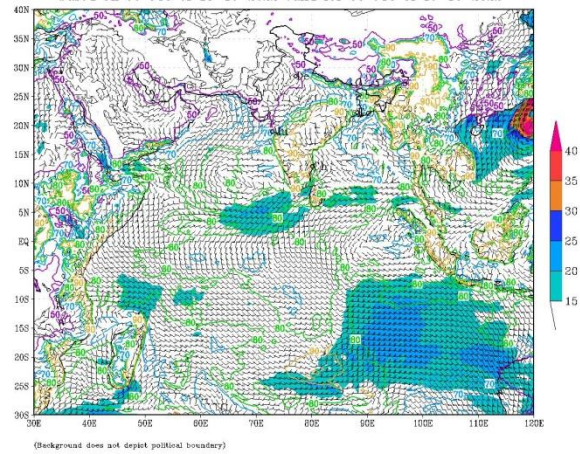


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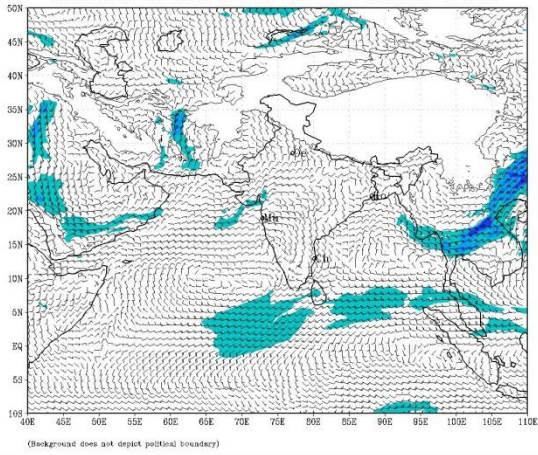
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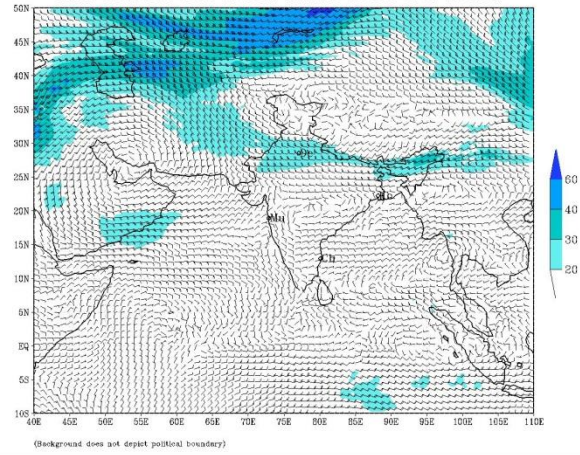
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (48 HR)
based on 00 UTC of 15-10-2022 valid for 00 UTC of 17-10-2022



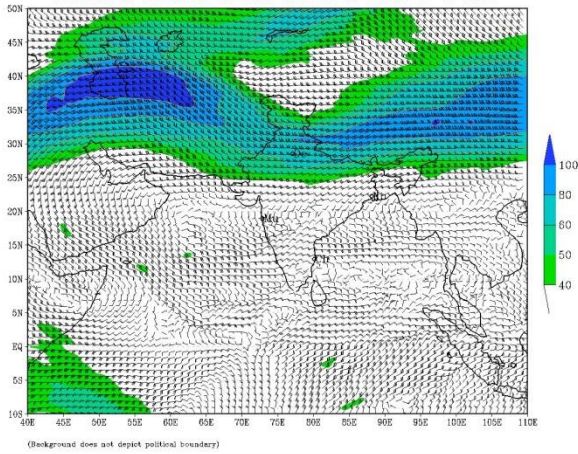
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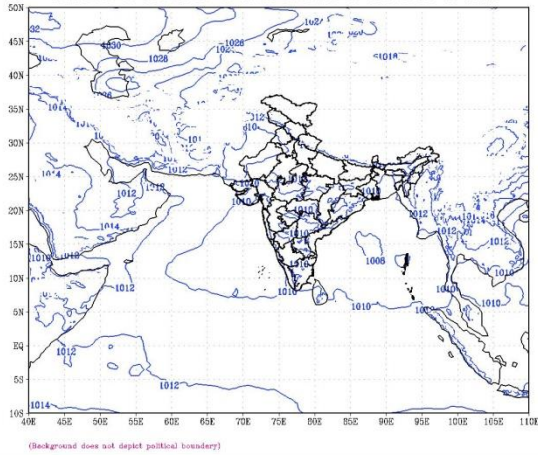
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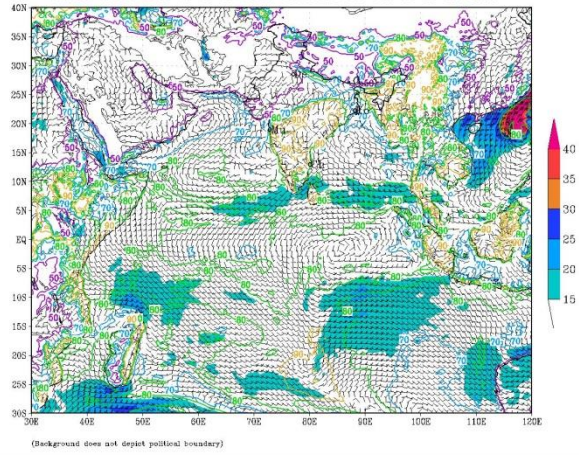
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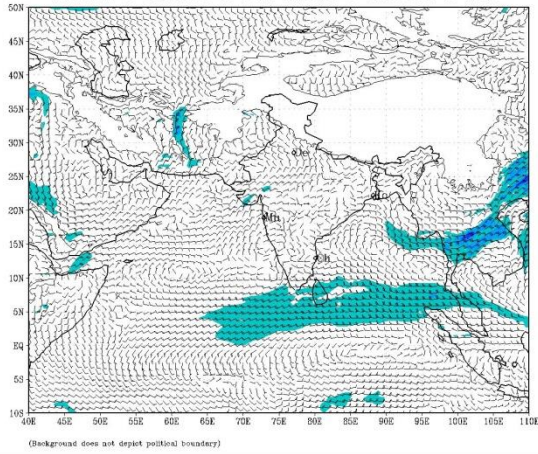
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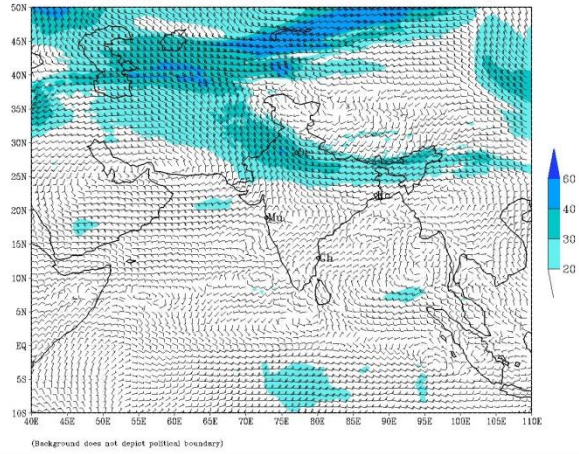
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (72 HR)
based on 00 UTC of 15-10-2022 valid for 00 UTC of 18-10-2022



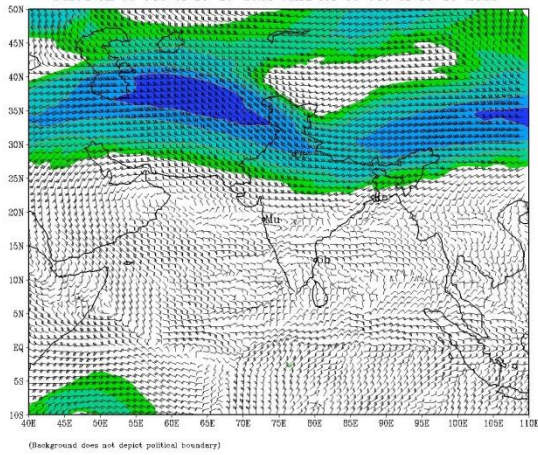
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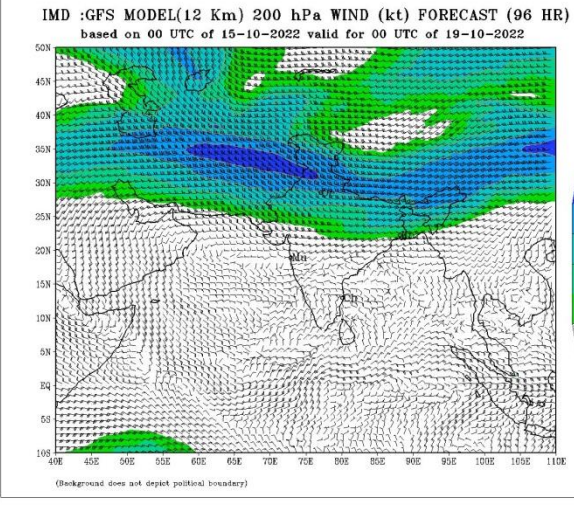
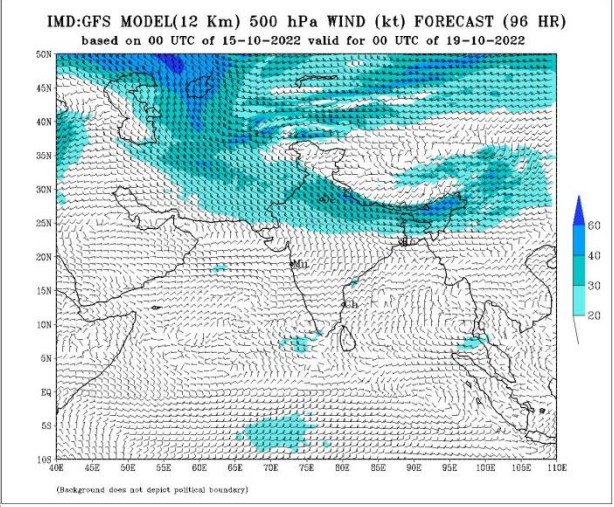
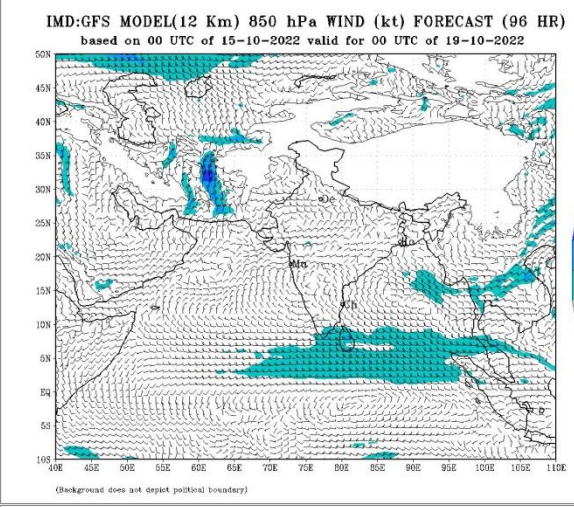
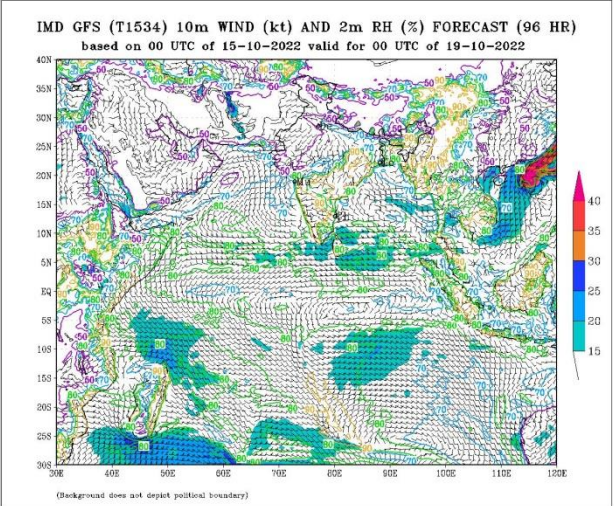
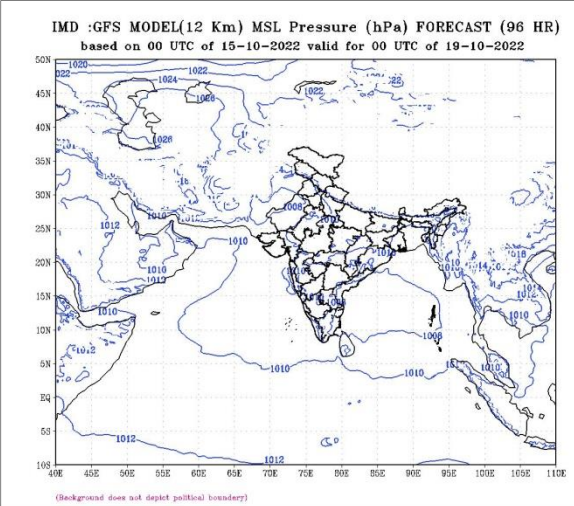


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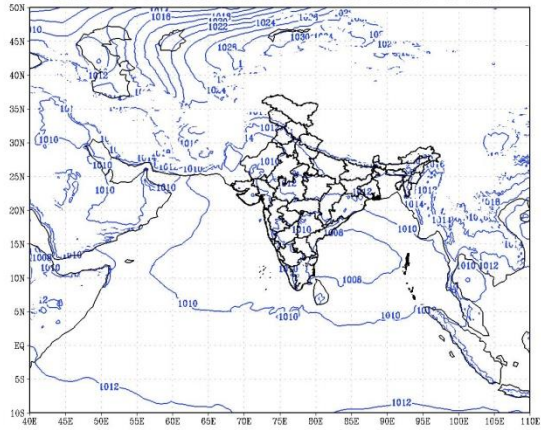


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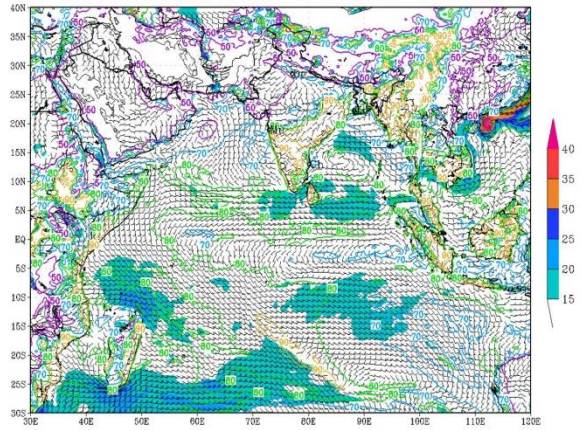


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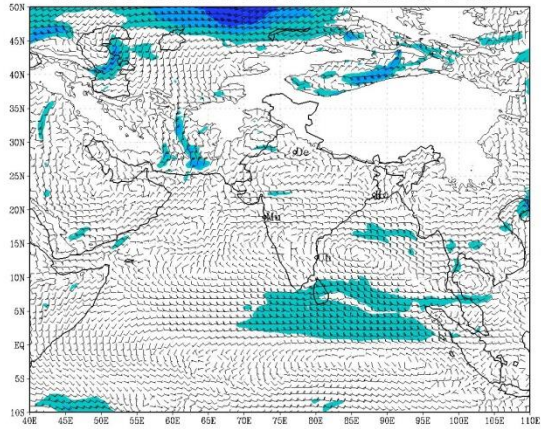
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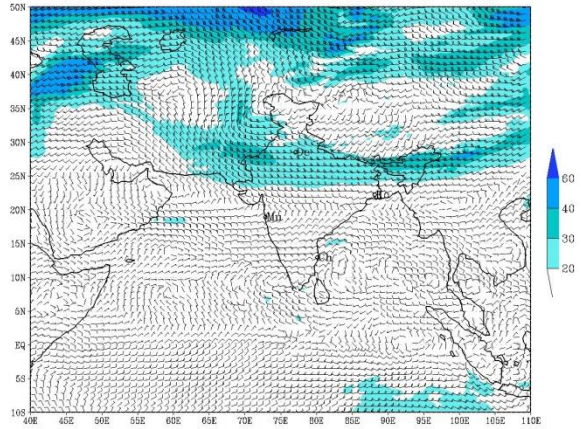
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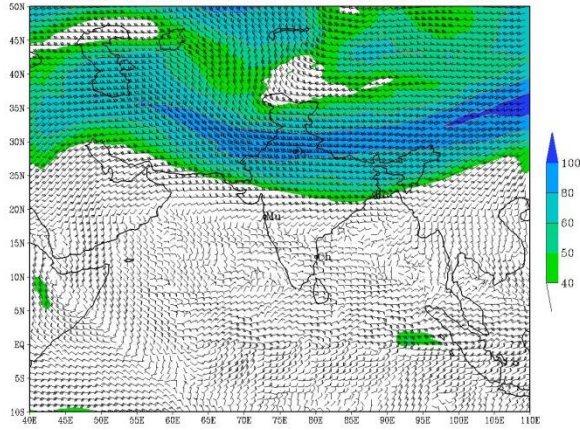
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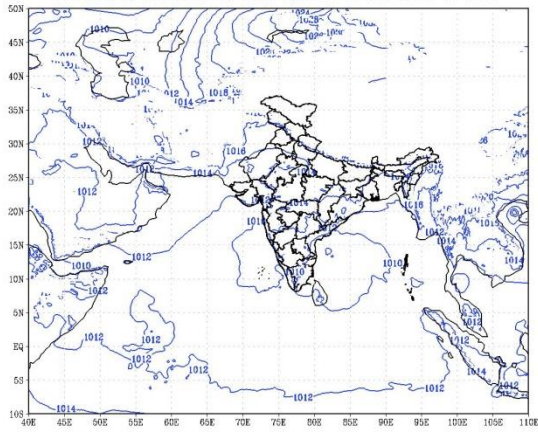
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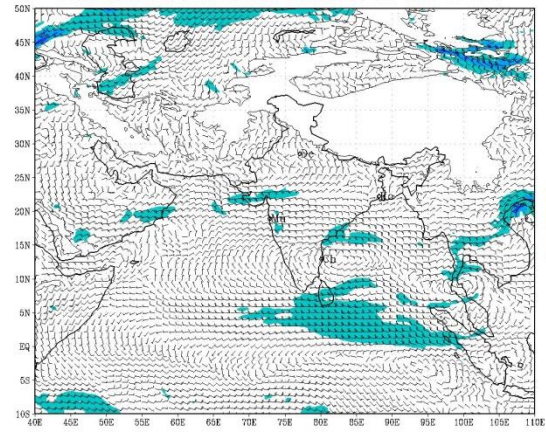
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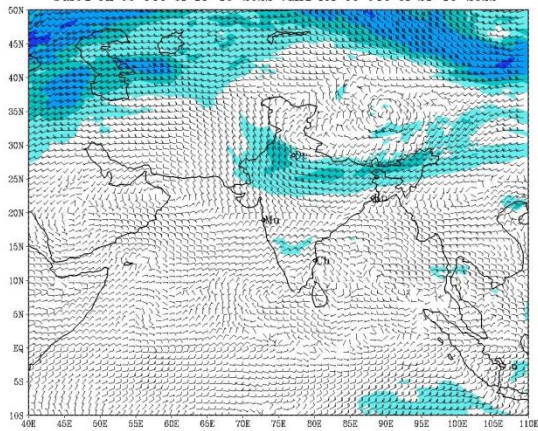
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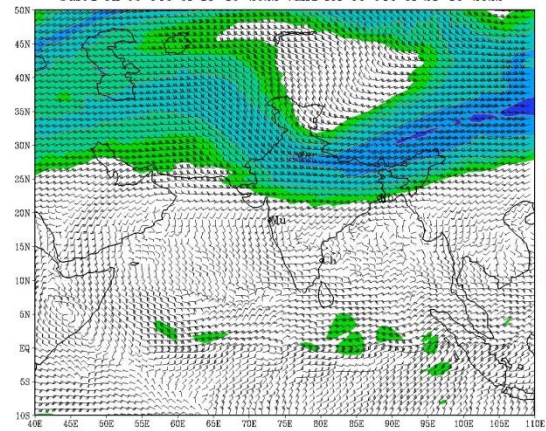
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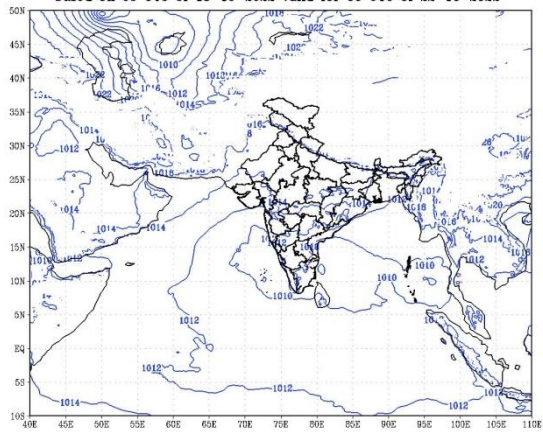
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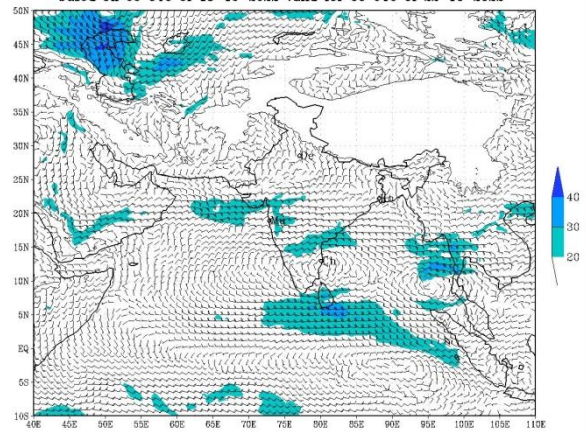
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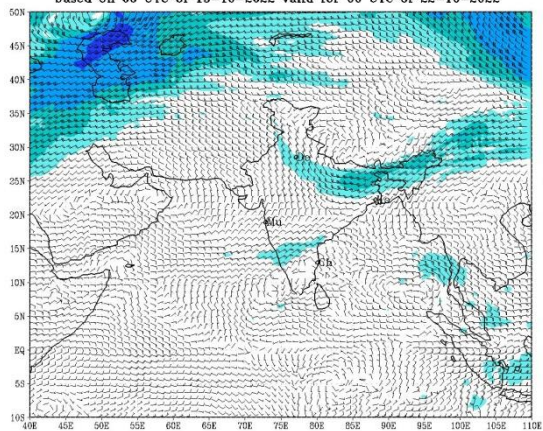
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IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 15-10-2022 valid for 00 UTC of 22-10-2022



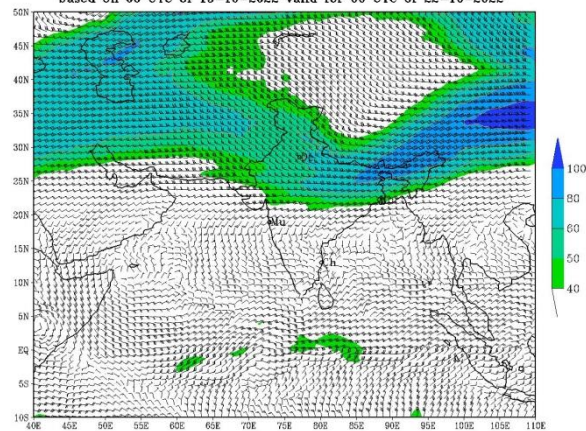
(Background does not depict political boundary)

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 15-10-2022 valid for 00 UTC of 22-10-2022



(Background does not depict political boundary)

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 15-10-2022 valid for 00 UTC of 22-10-2022



(Background does not depict political boundary)