



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

FDP (Cyclone) NOC Report Dated 26th November, 2021

Time of Issue: 1200 UTC

Synoptic features (based on 0900 UTC analysis):

- ❖ Yesterday's cyclonic circulation over southwest Bay of Bengal (BoB) off Sri Lanka coast lay over Comorin area & adjoining Sri Lanka coast, extending upto 1.5 km above mean sea level at 0300 UTC of today, the 26th November. It persisted over the same region at 0900 UTC of today.
- ❖ A Low Pressure Area (LPA) is likely to form over south Andaman Sea around 29th November, 2021. It is likely to become more marked and move west-northwestwards during subsequent 48 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 region.	28-29°C over eastern parts of AS. 26-27°C over western parts of AS off Somalia, Yemen & Oman coasts.
Tropical Cyclone Heat Potential (TCHP) kJ/cm²	(a) 120-130 over eastern equatorial Indian Ocean and adjoining south Andaman Sea & southeast BoB. (b) 80-100 over major parts of central & north BoB (c) Less than 50 over southwest BoB to the east of Sri Lanka	(a) 50-60 over eastern parts of central & north AS (b) 60-80 over south AS. (c) It is less than 50 over western parts of AS and along & off Oman, adjoining Yemen & Somalia coasts.
Cyclonic Relative vorticity at 850 hPa (X10⁻⁶s⁻¹)	40-50 over equatorial Indian Ocean to the south of Sri Lanka and Comorin area with vertical extension upto 500 hPa level. 40-50 over southern parts of Gulf of Thailand with vertical extension upto 500 hPa level.	10-20 over central parts of south AS, extending upto 700 hPa.
Low Level convergence (X10⁻⁵ s⁻¹)	5 over southwest & adjoining west-central BoB	No significant zone.
Upper Level divergence (X10⁻⁵ s⁻¹)	05-10 over southwest BoB off Tamil Nadu coast and Comorin area. Also another zone of 05-10 over	05 over equatorial Indian Ocean and adjoining south AS.

	north Sumatra and adjoining south Andaman Sea	
Vertical Wind Shear (VWS knots)	Low (05-15) over south and adjoining central BoB and Andaman Sea.	Low (05-15) over south and adjoining central AS
Wind Shear Tendency (knots)	Decreasing over southwest BoB	Decreasing over southeast AS
Upper tropospheric Ridge	Along 15.0°N, with an anti-cyclone over west-central BoB	Along 16.0°N.

Satellite observations based on INSAT imagery (0900 UTC):

(a) Bay of Bengal & Andaman Sea:

At 0900 UTC, broken low & medium clouds with embedded intense to very intense convection lay over southwest BoB off Tamil Nadu coast, Gulf of Mannar and Palk Strait (Minimum Cloud Top Temperature was minus 86°C) and over northern parts of central BoB (Minimum Cloud Top Temperature was minus 76°C). Scattered low & medium clouds with embedded moderate to intense convection lay over southeast BoB and south Andaman Sea.

(b) Arabian Sea

At 0900 UTC, scattered to broken low & medium clouds with embedded intense to very intense convection lay over southeast AS and Comorin area (Minimum Cloud Top Temperature was minus 76°C). Scattered low & medium clouds with embedded moderate to intense convection lay over east-central AS off Karnataka – Goa coasts.

M.J.O. Index:

MJO index is currently in Phase 4 with amplitude close to 1. It will continue in same phase for next 2 days. Thereafter, it will move to phase 5 with amplitude remaining close to 1 for subsequent 3 days and further propagate eastwards into Phase 6 from 1st December onwards.

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

No Storm or Depression prevails over these areas as on today.

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

Model	BoB	AS
IMD-GFS	Indicates an LPA over Sri Lanka on 26 th & 27 th and its weakening & westward movement on 28 th . It is also indicating emergence of a Depression from Gulf of Thailand over south Andaman Sea off Thailand coast on 29 th , its rapid intensification into a Severe Cyclonic Storm (SCS) over Andaman & Nicobar islands on 30 th November, its west-northwestward movement and further intensification into an Extremely Severe Cyclonic Storm (ESCS) over east-central and adjoining southeast BoB on 1 st December and ESCS over west-central & adjoining southwest BoB on 2 nd December.	Indicates a broad-scale low over southeast AS & adjoining Lakshadweep area on 29 th November & weakening on 30 th .
IMD-GEFS	The ensuing system is predicted only as an LPA over Gulf of Thailand on	-Do-

	28 th , over Thailand & neighbourhood on 29 th , as a Depression over Andaman & Nicobar Islands and neighbourhood but with large uncertainty on 30 th November, as a Cyclonic Storm (CS) over southeast BoB on 1 st Dec., as an ESCS over west-central & adjoining southwest BoB on 2 nd Dec.	
IMD-WRF	An LPA over Sri Lanka & neighbourhood during 26 th – 28 th and its westward movement & weakening on 29 th .	A broad-scale Low over southeast AS and adjoining Comorin area on 29 th .
NCMRWF-NCUM	Indicates a broad-scale Low over southwest BoB, Sri Lanka off south Tamil Nadu coast during 26 th – 28 th and its westward movement on 29 th . Also indicates an LPA over Gulf of Thailand on 30 th , over south Andaman Sea off Thailand coast on 1 st December and as a Well Marked Low (WML) over south Andaman Sea and adjoining southeast BoB on 2 nd , as a Depression over southeast BoB on 3 rd .	A broad-scale Low over east-central AS on 2 nd Dec.
NCMRWF-NEPS	Similar to NCUM	Similar to NCUM.
NCMRWF-UM (Regional)	Indicates a Broad-scale Low over southwest Bay of Bengal & Sri Lanka off south Tamil Nadu coast on 26 th & 27 th and its westward movement on 28 th .	Indicates a Broad-scale Low over Comorin area on 28 th and over Lakshadweep area on 29 th .
ECMWF	An LPA emerging over Andaman Sea & adjoining Thailand from Gulf of Thailand by 1800 UTC of 30 th November, becoming more marked over Andaman Sea & adjoining Islands on 2 nd December, moving northwestwards and concentrating into a Depression over west-central BoB by 1800 UTC of 3 rd December.	Indicates a broad-scale Low over southeast & adjoining east-central AS during 29 th November – 1 st December and over east-central AS on 2 nd .
ECMWF-EPS	80-90 % probability of cyclogenesis over southwest BoB during next 2-3 days and also during 30 th November to 1 st December over south Andaman Sea.	NIL
NCEP-GFS	Indicates an LPA over southwest BoB off east Sri Lanka coast on 27 th & 28 th November and weakening on 30 th . A Fresh LPA over Thailand & adjoining south Andaman Sea on 30 th , over south Andaman Sea on 1 st Dec., over southeast & adjoining east-central BoB on 2 nd December and as a Depression over west-central BoB on 3 rd .	Indicates a broad-scale Low over southeast AS off Lakshadweep area during 29 th Nov. – 1 st Dec. and over southeast & adjoining east-central AS and Lakshadweep area on 2 nd Dec.
IMD-GPP	Potential zone (very small) over Comorin area on 26 th , NIL on 27 th , over	Potential zone over Lakshadweep area on 30 th

	equatorial Indian Ocean and adjoining south Andaman Sea on 28 th , a near circular and hence significant zone over equatorial Indian Ocean of Sumatra coast on 29 th , 2 elongated zones over south Andaman Sea and Comorin area on 30 th November, over south Andaman Sea on 1 st December and over southeast BoB and adjoining south Andaman Sea on 2 nd .	November, over southeast AS off Kerala coast and another over east-central AS on 1 st December.
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GPP- Genesis Potential Parameter based on Dynamical Statistical model developed by IMD.

Summary and Conclusion:

- 1. For the Bay of Bengal:** Majority of the models indicate formation of a Low Pressure Area (emergence of a Low Pressure system from Gulf of Thailand) over south Andaman Sea around 29th with initial west-northwestward movement, deepening into a Depression around 3rd December, followed by northwestward movement towards north Bay of Bengal. All of them are also indicate further intensification of this system into a cyclonic storm during the subsequent 24-48 hours time span. However, there is large diversity in the direction of movement.
- 2. For the Arabian Sea:** No significant development is indicated buy any of the models during next 7 days.

It may thus be concluded that,

- Emergence of a Low pressure system from Gulf of Thailand into south Andaman Sea is likely around 29th November. It is likely to move west-northwestwards with gradual intensification during 30th November & 1st December. Further it could move northwestwards and intensify into a Depression over east-central Bay of Bengal around 3rd December. Owing to the temporal variation in the period of formation of the Depression by different models, we are assigning a 'LOW' probability for the 120-144 hr & 'moderate' probability during the 144-168 hr forecast periods.
- No significant development is likely over the Arabian Sea during the next 7 days.

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

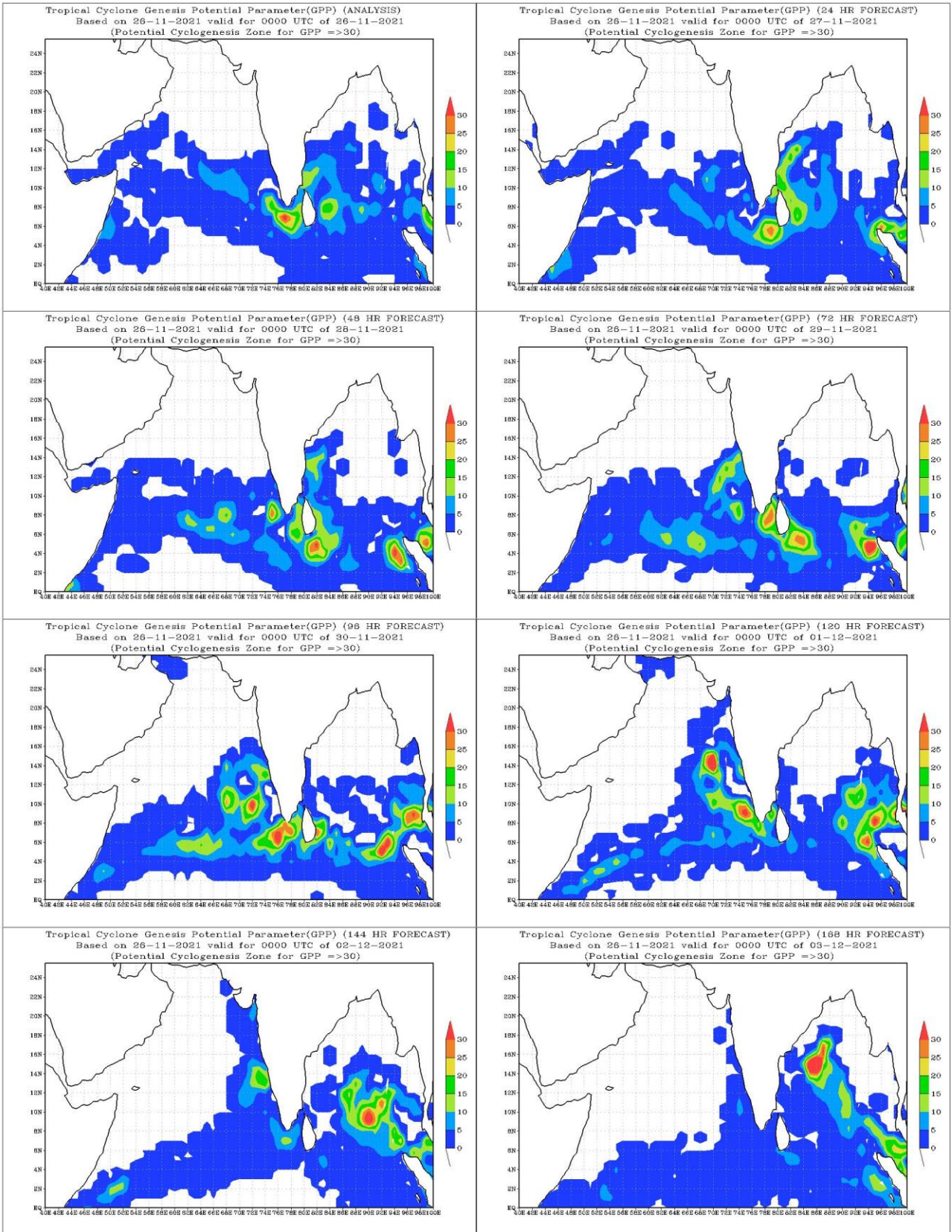
24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	LOW	MODERATE

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

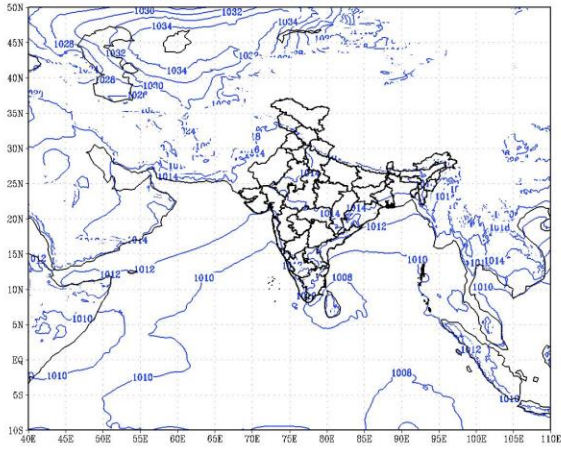
24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

Advisory: The emergence of a Low pressure system from Gulf of Thailand to Andaman Sea as a Low pressure area around 29th November and it's subsequent intensification and movement to be monitored regularly.

IOP is suggested for Andaman & Nicobar Islands on 29th & 30th November.

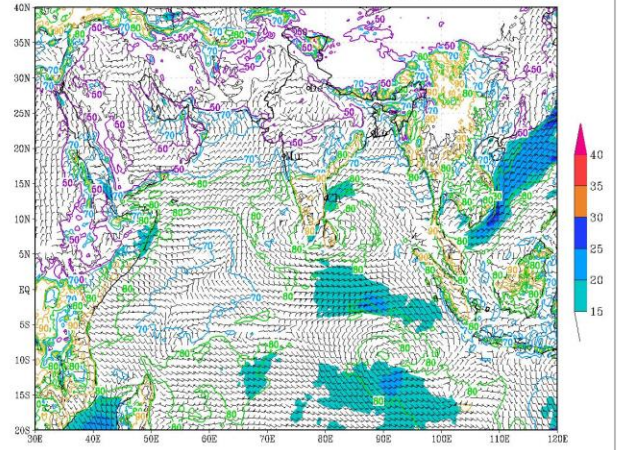


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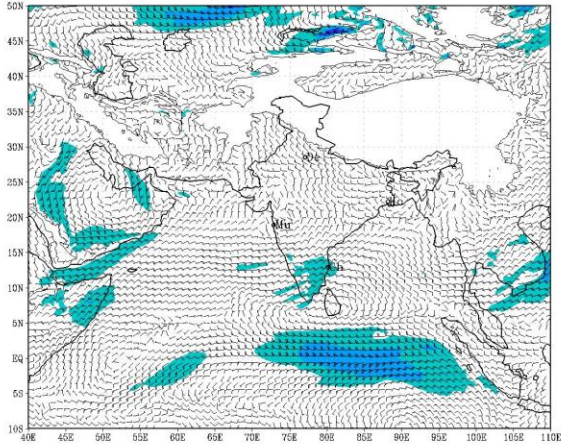
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IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (00 HR)
based on 00 UTC of 26-11-2021 valid for 00 UTC of 26-11-2021



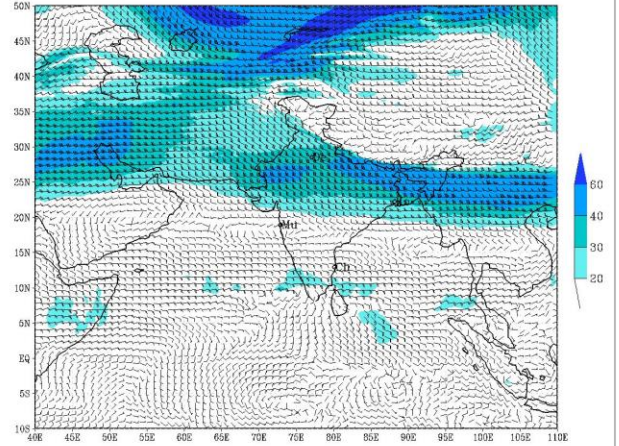
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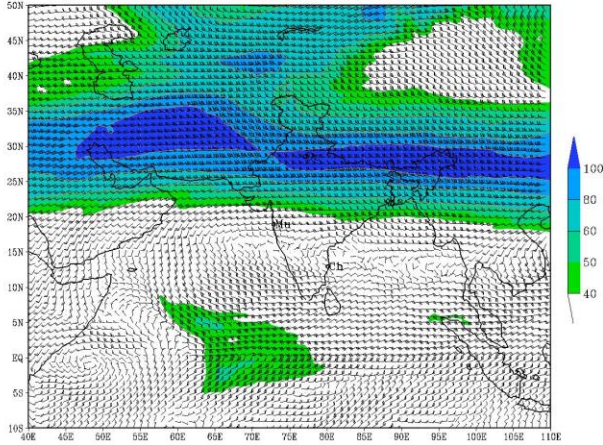
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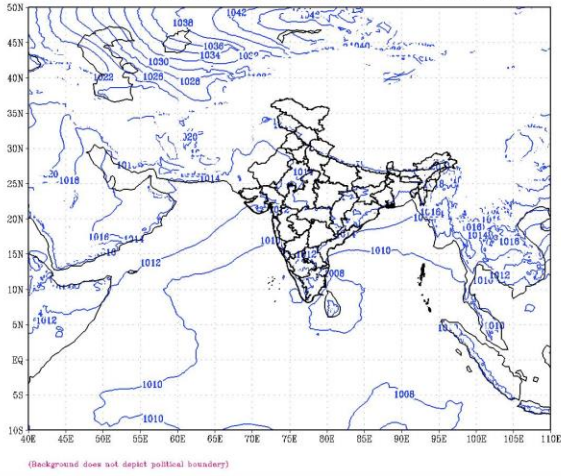
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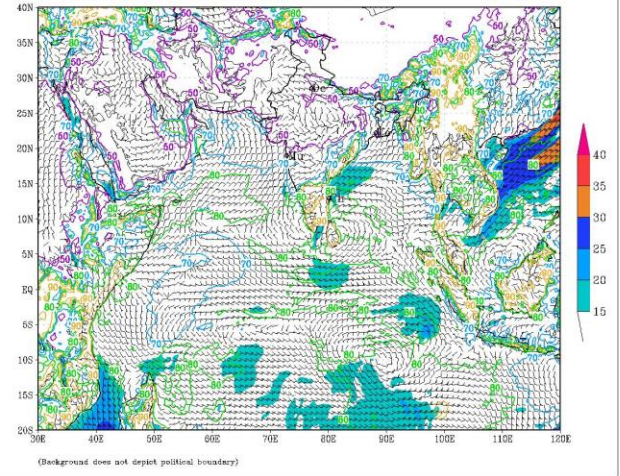


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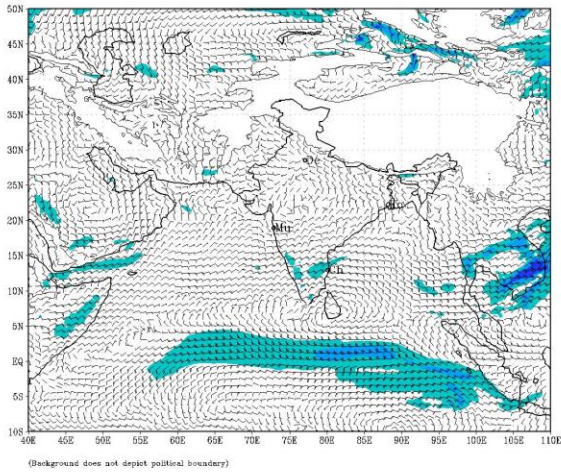
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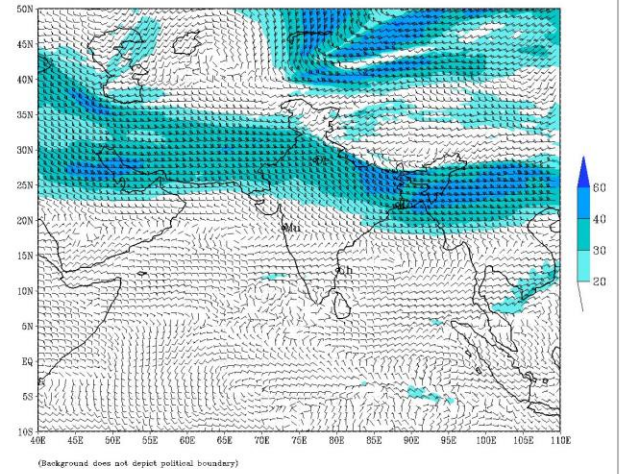
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (24 HR)
based on 00 UTC of 26-11-2021 valid for 00 UTC of 27-11-2021



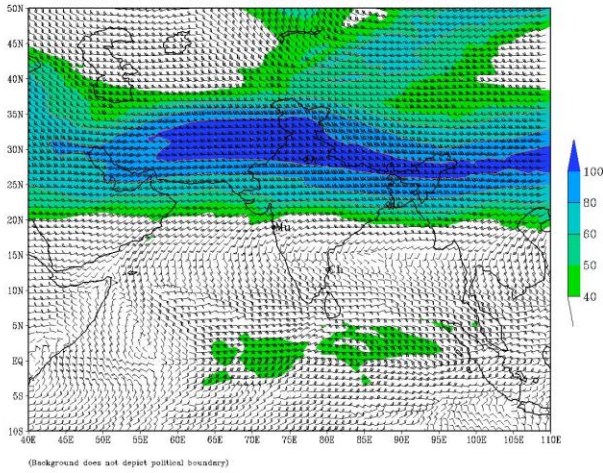
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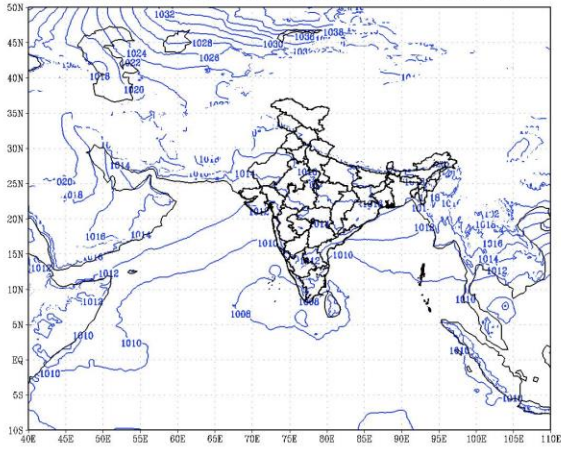
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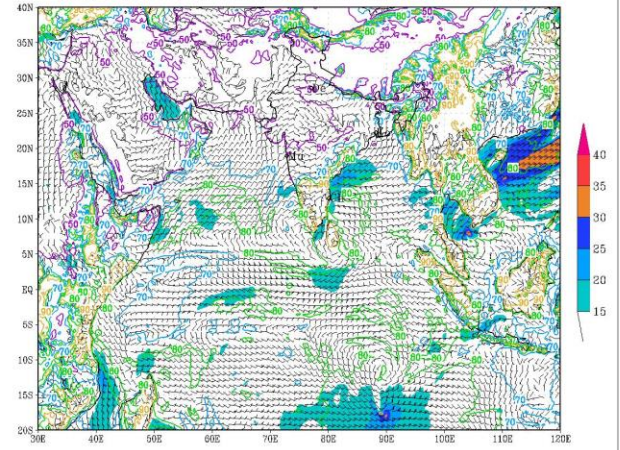


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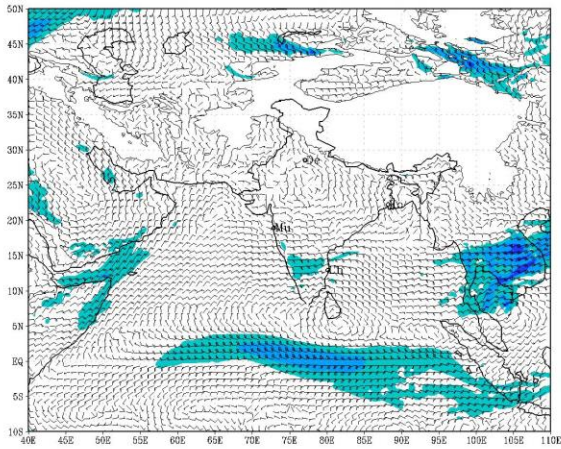
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IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (48 HR)
based on 00 UTC of 26-11-2021 valid for 00 UTC of 28-11-2021



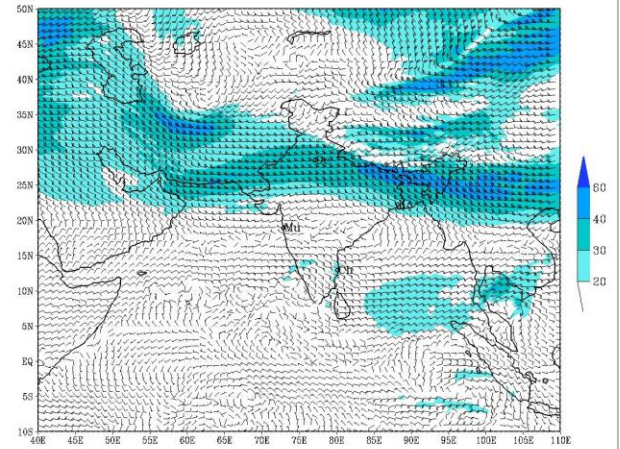
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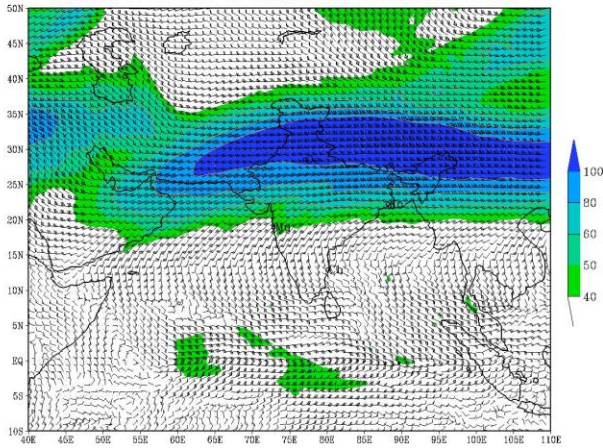
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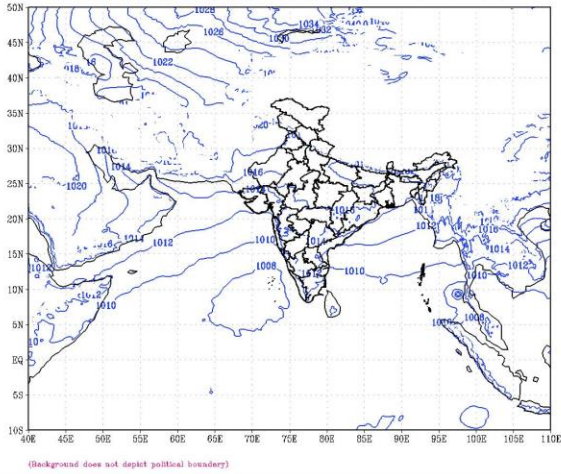
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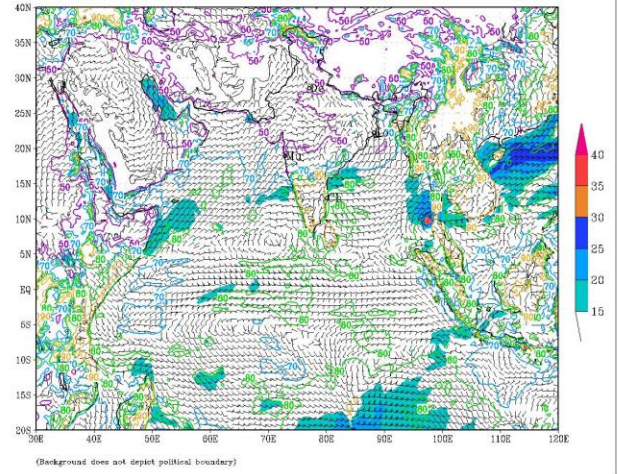


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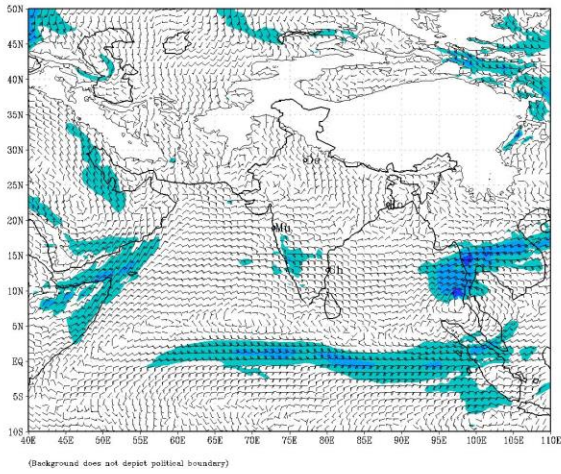
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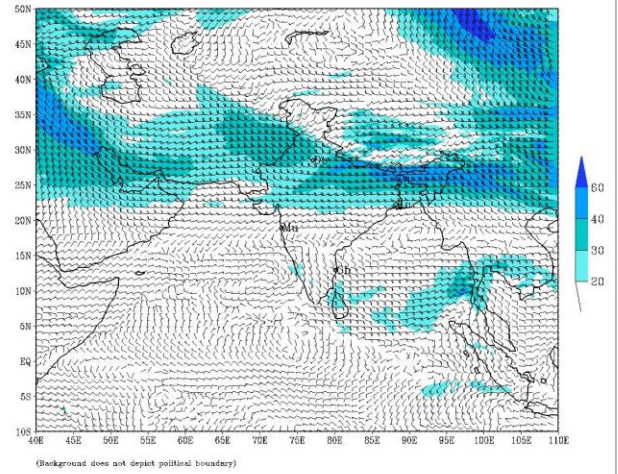
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (72 HR)
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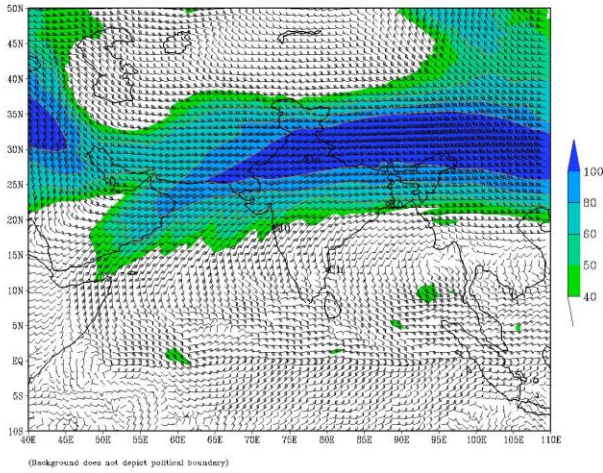
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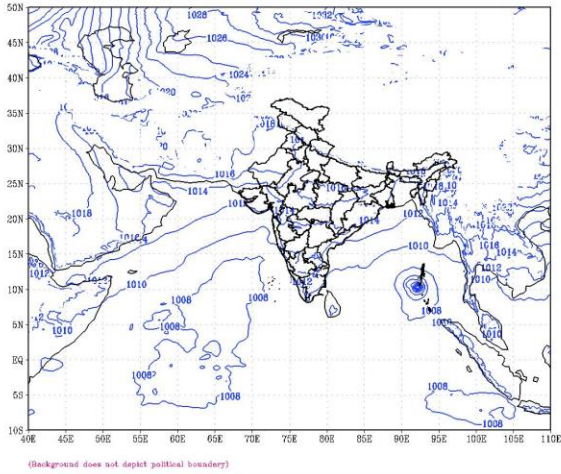
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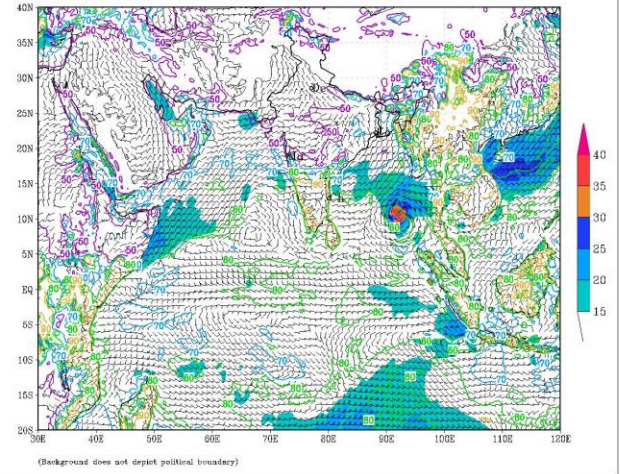
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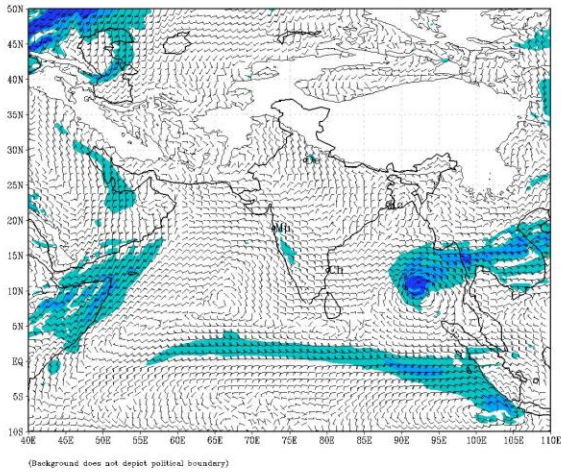
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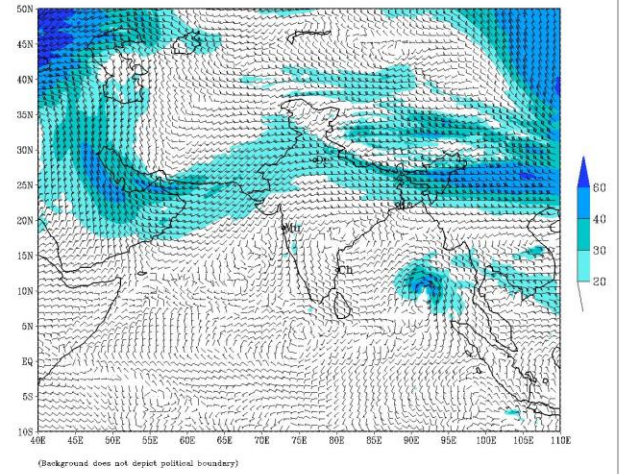
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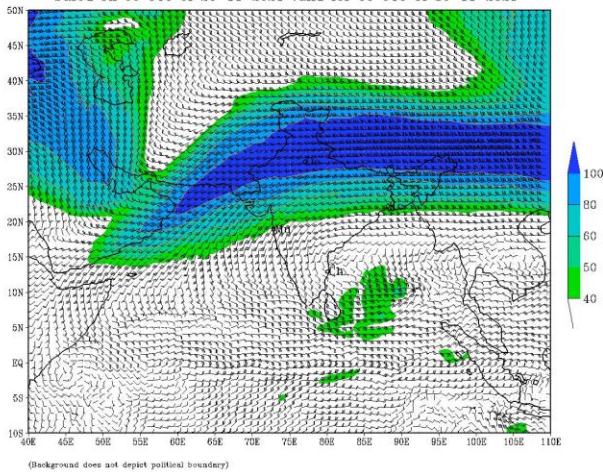
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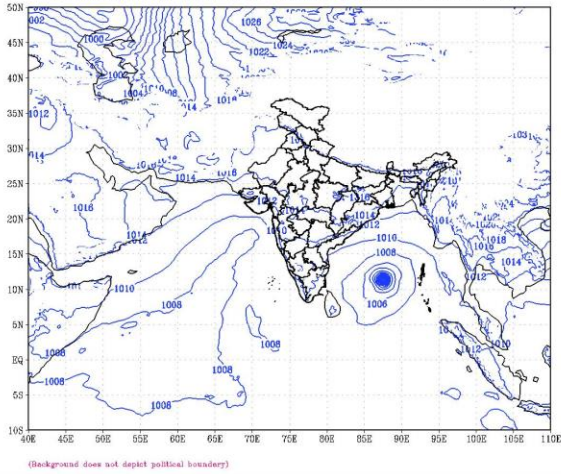
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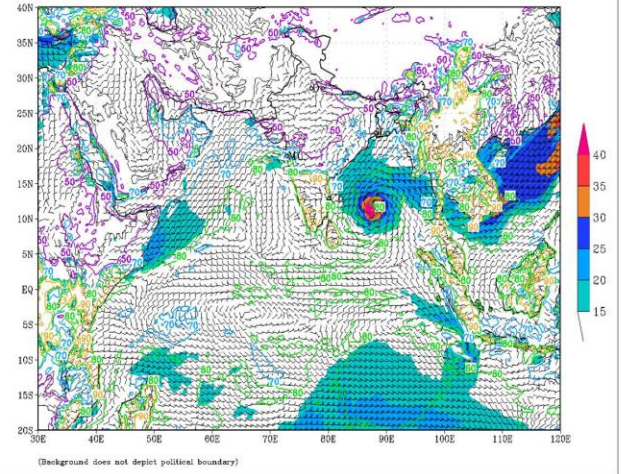
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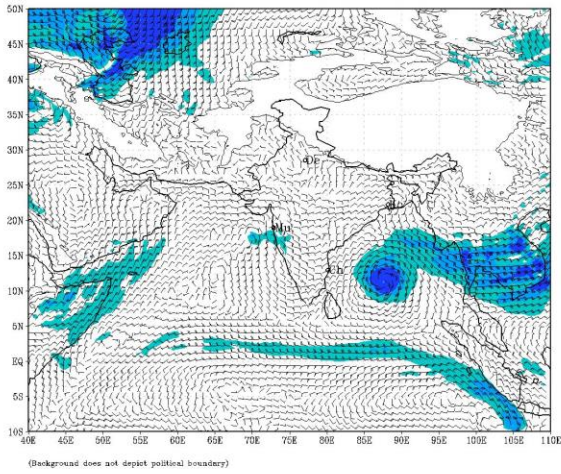
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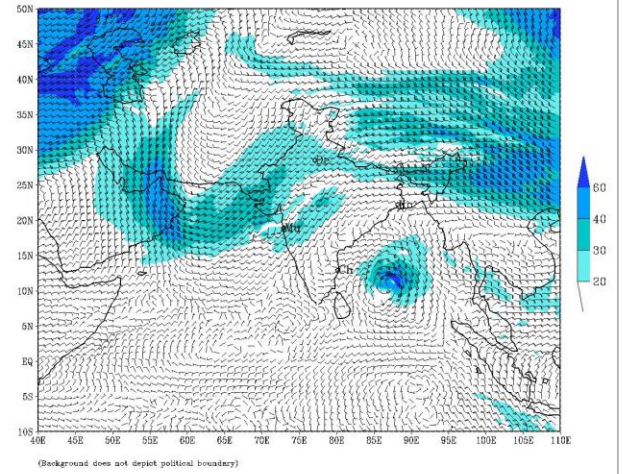
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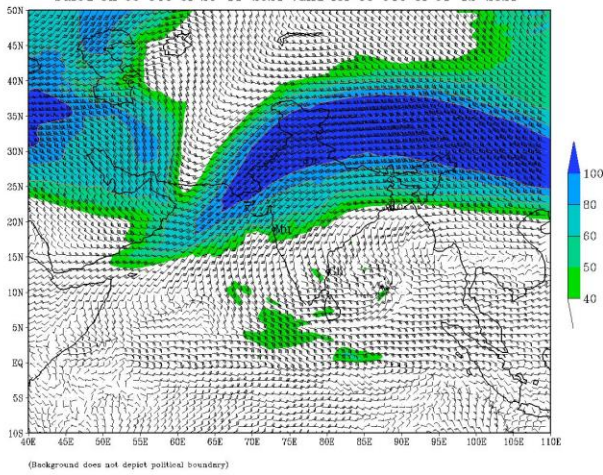
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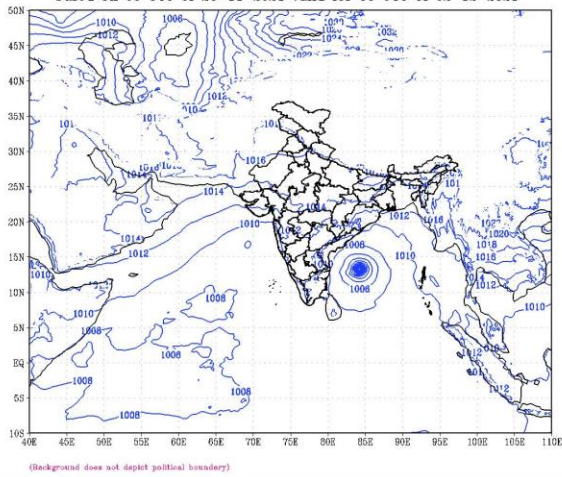
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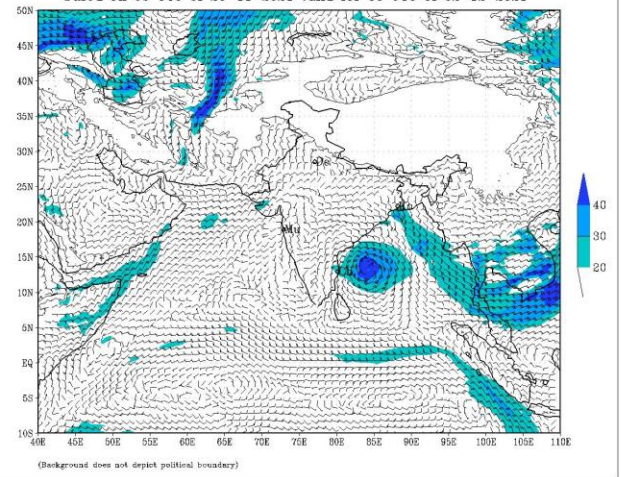
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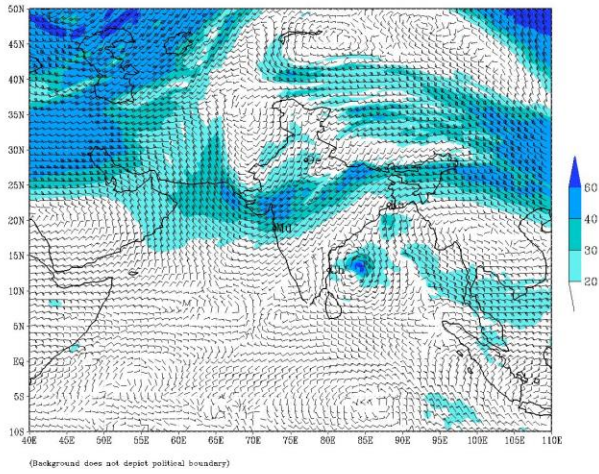
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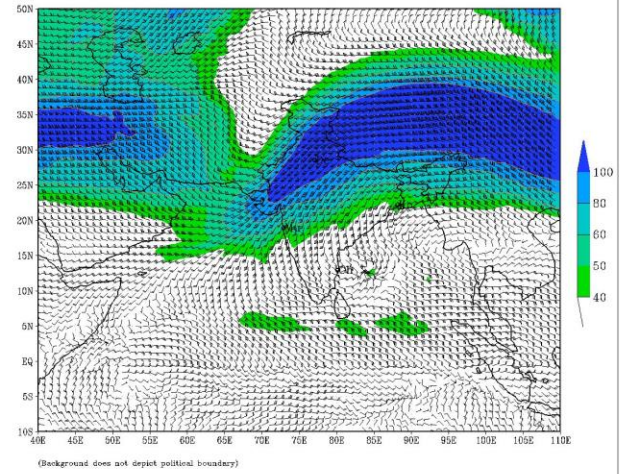
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based on 00 UTC of 26-11-2021 valid for 00 UTC of 02-12-2021



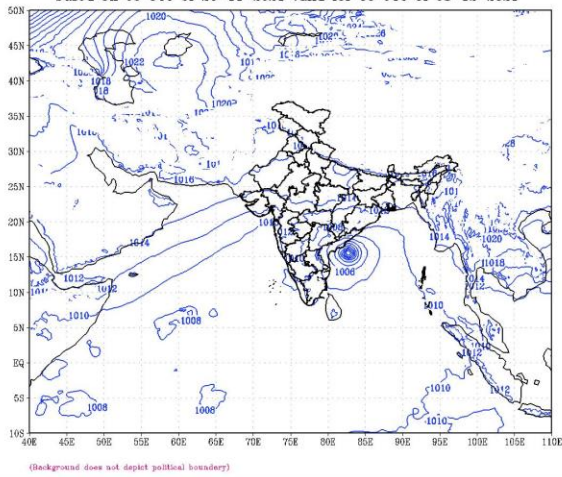
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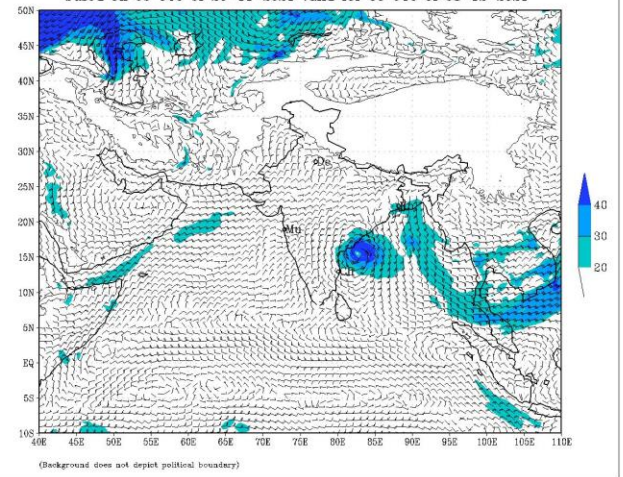
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based on 00 UTC of 26-11-2021 valid for 00 UTC of 02-12-2021



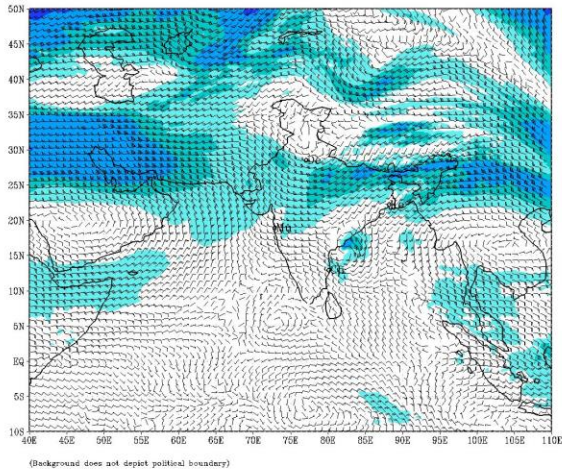
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IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 26-11-2021 valid for 00 UTC of 03-12-2021



IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 26-11-2021 valid for 00 UTC of 03-12-2021



IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 26-11-2021 valid for 00 UTC of 03-12-2021

