



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

**Tropical Cyclone Forecast Programme
Report Dated 09TH November, 2023**

Time of Issue: 1230 UTC

Synoptic features (based on 0300 UTC analysis):

- Yesterdays low pressure area over eastcentral Arabian Sea persists over the same region at 0300 UTC of today, the 09th November 2023. It will become less marked during next 24 hours.
- The cyclonic circulation over Comorin area persists and now extends upto 0.9 km above mean sea level.

Dynamical and thermo-dynamical features

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
Sea Surface Temperature (SST) °C	29-31°C over major parts of BoB, Andaman Sea, Gulf of Mannar, 26-28°C over parts of southwest BoB.	29-31°C over southeast, adjoining southwest and adjoining eastcentral AS, north AS, along and off south Gujarat, Maharashtra coasts, 26-28°C over central, adjoining north AS, southwest AS, along and off Kerala and Karnataka coasts. Less than 24 along and off Yemen-Oman & Somalia coasts and adjoining sea areas.
Tropical Cyclone Heat Potential (TCHP) kJ/cm ²	100-120 over eastcentral BoB adjoining southeast BoB. 80-100 over south Andaman Sea. 60-80 over most parts of BOB and north Andaman Sea adjoining south Andaman Sea. Less than 40 along Andhra Pradesh and Tamil Nadu coasts, adjoining sea areas, less than 20-30 over Gulf of Mannar and adjoining Comorin area, parts of southwest BoB.	60-90 over southeast, adjoining eastcentral and adjoining southwest AS, 50-60 over Gulf of Khambat, Less than 20 over eastcentral and adjoining southeast & north AS, along and off Kerala, Karnataka and south Maharashtra coasts, less than 10 over westcentral and southwest AS.
Cyclonic Relative vorticity (X10 ⁻⁶ s ⁻¹)	Around 30 over northeast BoB along and off Myanmar coast. 10-20 over south BoB.	30 over eastcentral AS & 10-20 over adjoining areas, around 20 over parts of northeast AS, 10-20 over parts of southwest and westcentral AS & Comorin Area.

Low Level convergence ($\times 10^{-5} \text{ s}^{-1}$)	5-10 over southwest BoB off south Sri Lanka coast, adjoining EIO, -5 over parts of north Andaman Sea, parts of southeast and eastcentral BoB.	5-10 over parts of southwest AS, 5 over southeast AS adjoining to EIO.
Upper Level divergence ($\times 10^{-5} \text{ s}^{-1}$)	5-10 over southwest BoB, along and off south Sri Lanka coast, -5 to -10 over north BoB. 10 over parts of Andaman Sea.	5 over southeast and eastcentral AS, Comorin area, 10-20 over southeast AS adjoining EIO, 5-10 over parts of southwest AS.
Vertical Wind Shear (VWS knots) Low: 05-10 knots Moderate: 10-20 knots High: >20 knots	5-10 over south and adjoining central BoB, Andaman Sea, 20 over central BoB, High (>20 knots) over remaining parts of BoB.	5-15 over south and adjoining central BoB, 20 over central AS, High (>20 knots) over remaining parts of AS.
Wind Shear Tendency (knots)	Increasing over southeast, eastcentral BoB & Andaman Sea. Decreasing over parts of southwest BoB, north BoB.	Decreasing Comorin Area and adjoining southeast AS, increasing over central AS and northwest AS.
Upper tropospheric Ridge	Along 12°N over BoB.	Along 13°N over AS.

Satellite observations based on INSAT imagery (0300 UTC):

(a) Over the BoB & Andaman Sea:-

Scattered low and medium clouds with embedded moderate to intense convection lay over westcentral & south Bay of Bengal, Andaman Sea, Gulf of Martaban.

(b) Over the Arabian Sea:-

Scattered to broken low and medium clouds with embedded intense to very intense convection lay over southeast Arabian Sea, Lakshadweep islands area & Comorin area (minimum CTT – 80°C). Scattered low and medium clouds with embedded moderate to intense convection lay over southwest Arabian Sea and isolated weak to moderate convection lay over rest of Arabian Sea.

(c) Convection outside India:-

Scattered low and medium clouds with embedded moderate to intense convection lay over north Sri Lanka Palk str gulf of Mannar Maldives Pak Tibet china east china sea Thailand gulf of Thailand Cambodia south Laos Vietnam Hainan Sumatra str of Malacca Malaysia Borneo south china sea java sea Celebes sea Philippines Madagascar Mozambique channel and over Indian ocean between latitude 5.0N to 10.0S longitude 40.0E to 110.0E and between Latitude 10.0S to 35.0S, Longitude 50.0E to 80.0E.

M.J.O. Index:

MJO index is currently in Phase 6 with amplitude less than 1 & it will remain there for next 2 days with amplitude less than 1. It will be in phase 7 with amplitude greater than 1 on 12th November & will remain there till 13th November. It will be in phase 8 on 14th November with amplitude greater 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

MODEL GUIDANCE	Bay of Bengal (BoB)	Arabian Sea (AS)
IMD-GFS	No significant system.	No significant system.
IMD-GEFS	No significant system.	No significant system.
IMD-WRF	No significant system.	Cycir over eastcentral and adjoining westcentral AS as on today the 9 th Nov, it moves westsouthwestwards and lay over westcentral AS during 10 th Nov as extended cycir, less marked thereafter.
NCMRWF-NCUM	A cycir over southwest BoB close to Tamil Nadu coast on day 7.	No significant system.
NCMRWF-NEPS	No significant system.	No significant system.
NCMRWF-UM (Regional)	No significant system.	No significant system.
ECMWF	A cycir over southeast BoB on day 6, having its northwestward movement and lay over southwest and adjoining westcentral BoB on day 7.	Cycir/LPA over eastcentral AS as on today, the 9 th Nov, it will become less marked by 10 th Nov.
NCEP-GFS	A cycir over southwest BoB off Tamil Nadu coast on day 6, it lay over same region as Cycir on day 7.	No significant system.
IMD-Genesis Potential Parameter	A potential zone over southeast BoB on day 5, it will be over westcentral BoB on day 6 and day 7. Another potential zone over southwest BoB on day 7.	No potential zone over AS for next 7 days.

Summary and conclusion:

1. For Bay of Bengal:

Models such as IMD-GFS, IMD-GEFS, NCUM (NEPS & Regional) are indicating no significant cyclonic disturbance is likely over the Bay of Bengal during next seven days. However, ECMWF model is indicating a cyclonic circulation over southeast BoB on day 6 with northwestward movement, it will be over southwest and adjoining westcentral BoB on day 7 without significant intensification; NCUM-Global and NCEP-GFS models are indicating cyclonic circulation over southwest BoB on day 6 without further intensification. None of these models are indicating the formation of a depression during the next seven days and hence the probability for the cyclogenesis over the Bay of Bengal is assigned as Nil.

Probability of Cyclogenesis (formation of depression and above intensity systems) over 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	NIL	NIL

2. For the Arabian Sea:

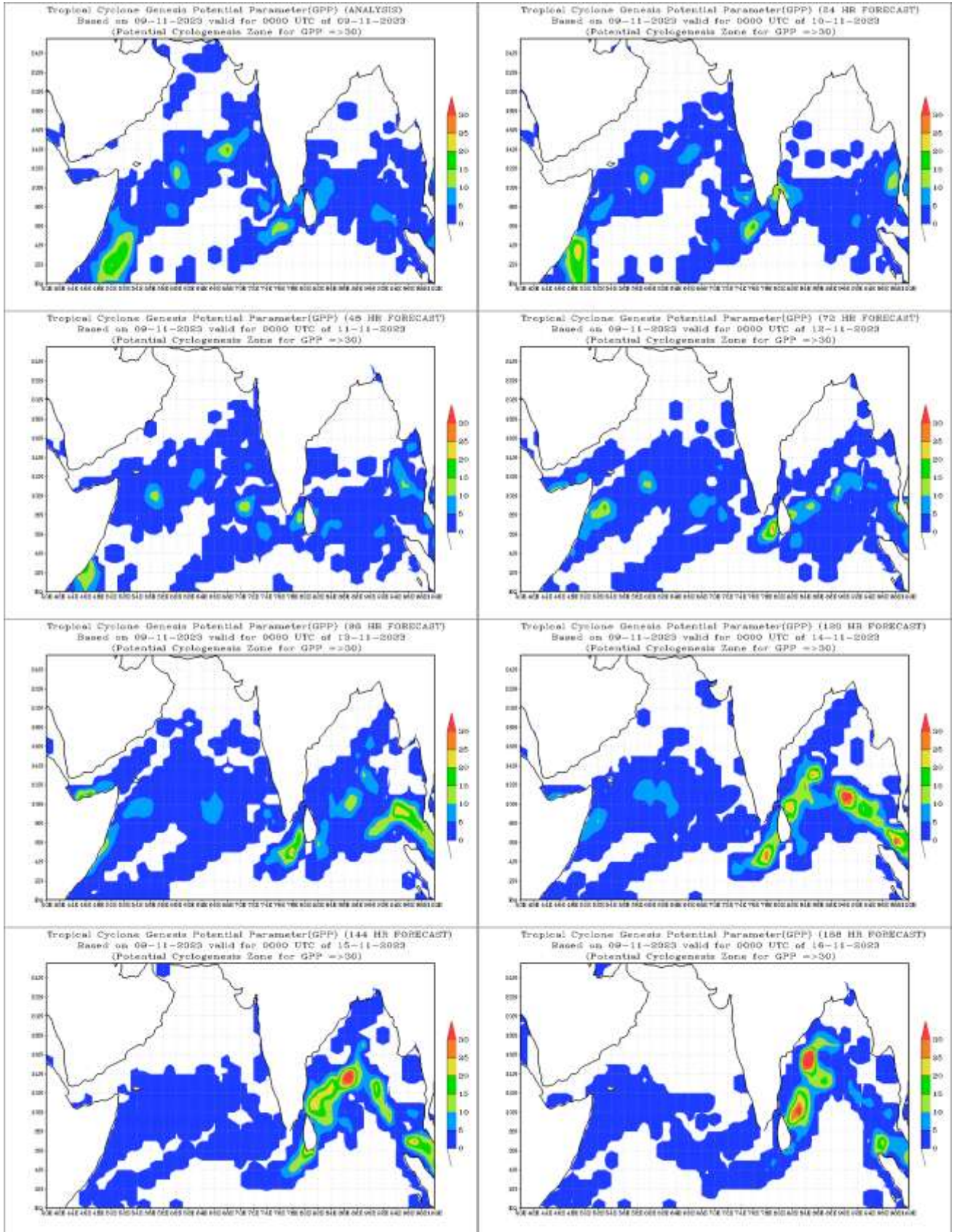
Most of the models are indicating that there will be no significant system for the next seven days. However, IMD-WRF and ECMWF models are indicating a cyclonic circulation over eastcentral Arabian Sea as of today and will be less marked by 10th November.

From the consensus, it can be inferred that yesterday's low pressure area over eastcentral Arabian Sea persists over the same region at 0300 UTC of today, the 9th November 2023. It will become less marked during the next 24 hours.

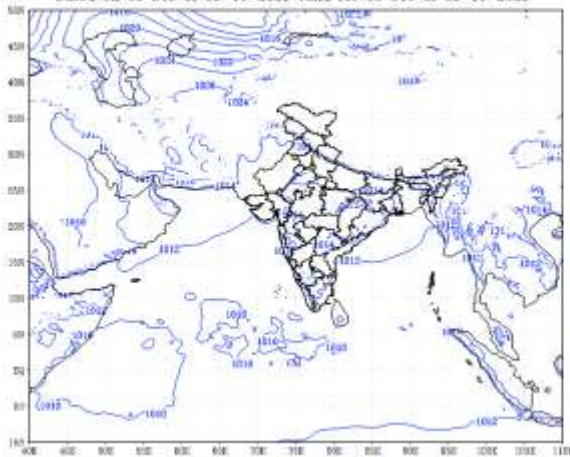
Probability of Cyclogenesis (formation of depression and above intensity systems) over the Arabian Sea during next 168 hours:

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

IOP: Nil

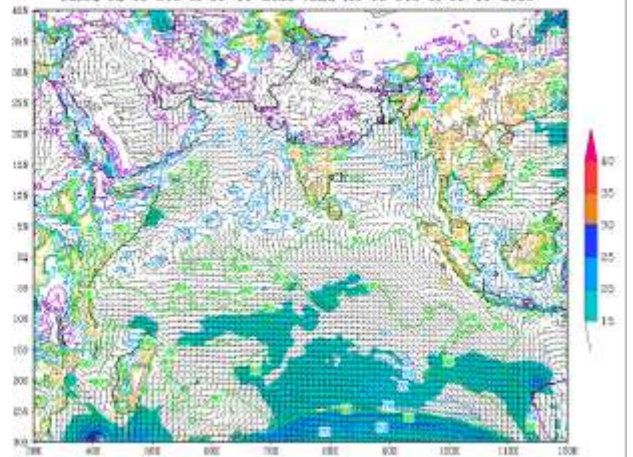


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (00 HR)
based on 00 UTC of 09-11-2023 valid for 00 UTC of 09-11-2023



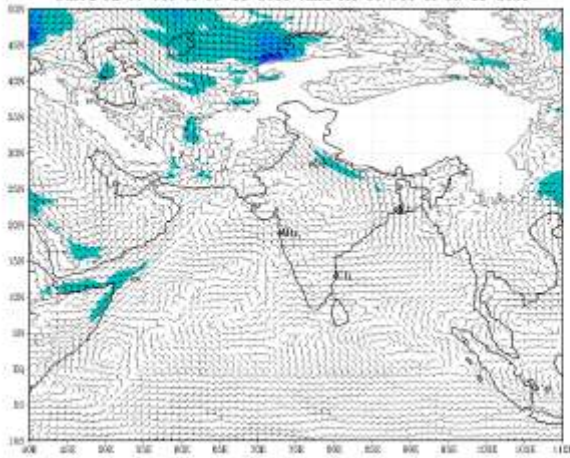
(Background line not depict political boundary)

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (00 HR)
based on 00 UTC of 09-11-2023 valid for 00 UTC of 09-11-2023



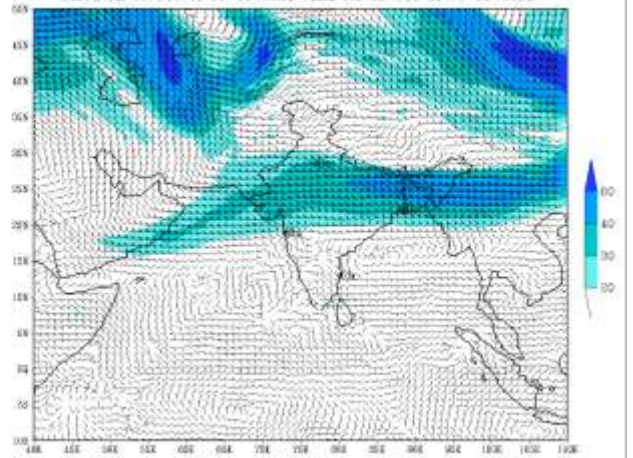
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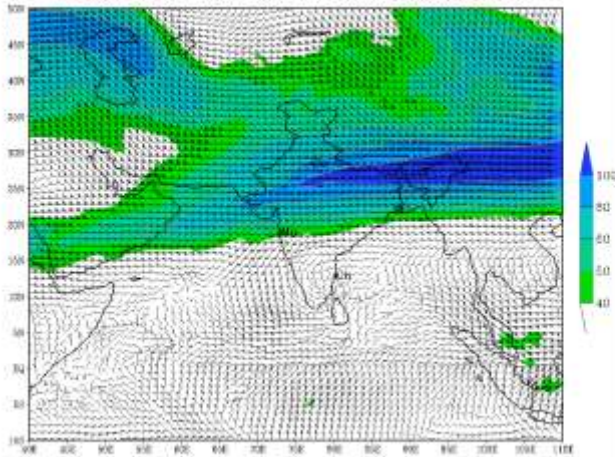
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IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (00 HR)
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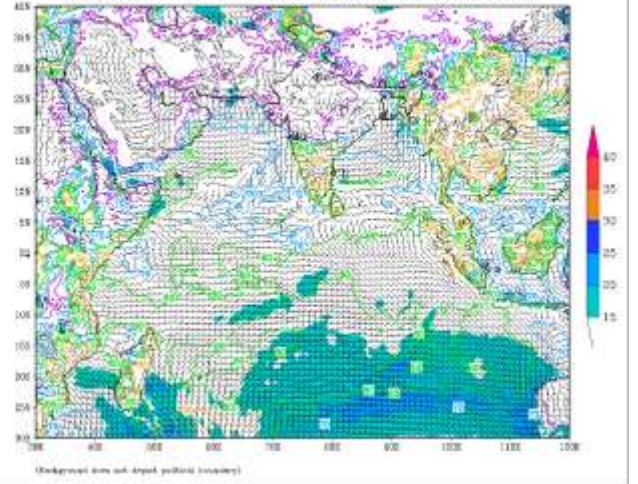


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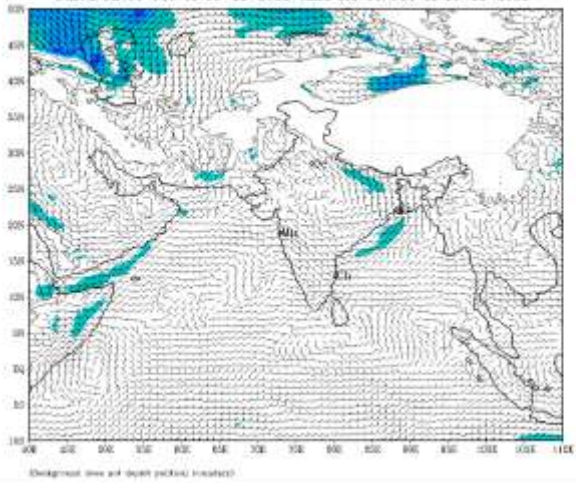
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (24 HR)
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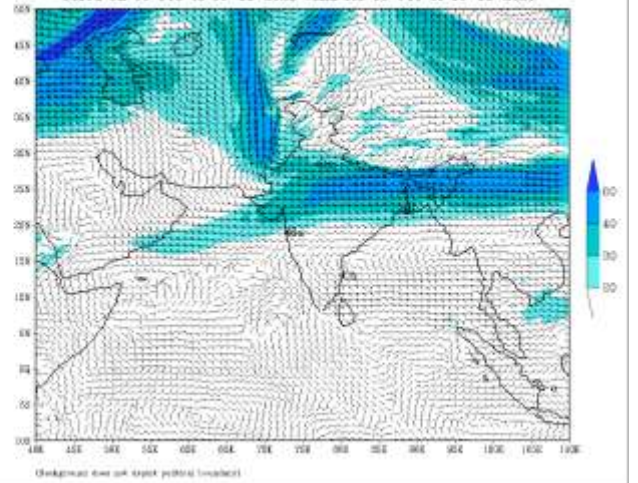
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (24 HR)
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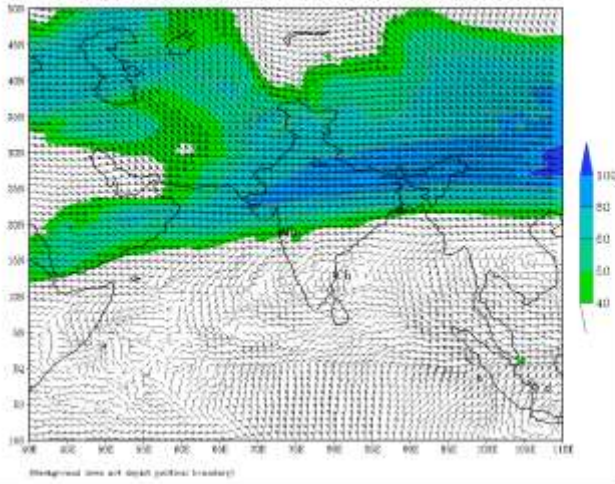
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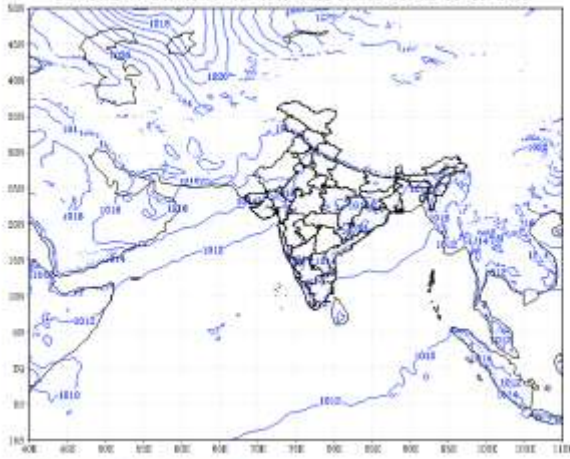
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based on 00 UTC of 09-11-2023 valid for 00 UTC of 10-11-2023



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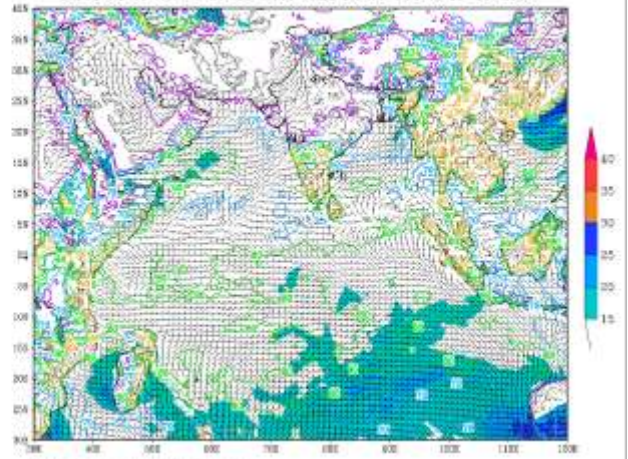


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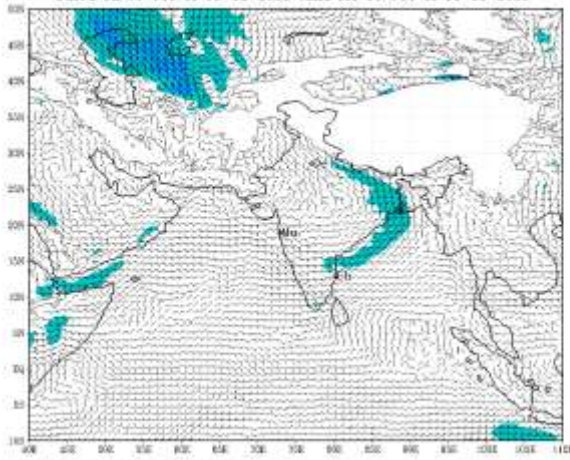
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based on 00 UTC of 09-11-2023 valid for 00 UTC of 11-11-2023



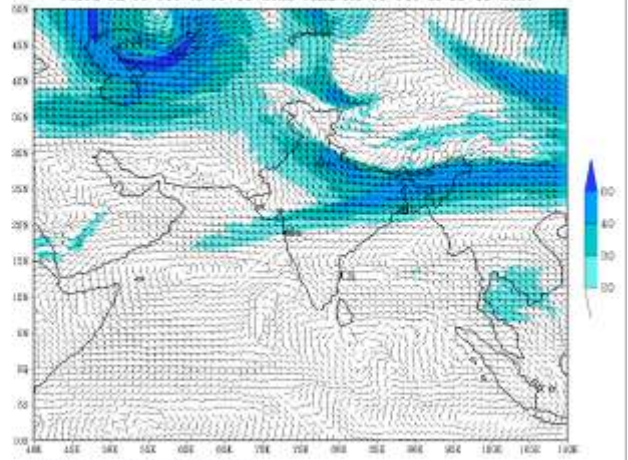
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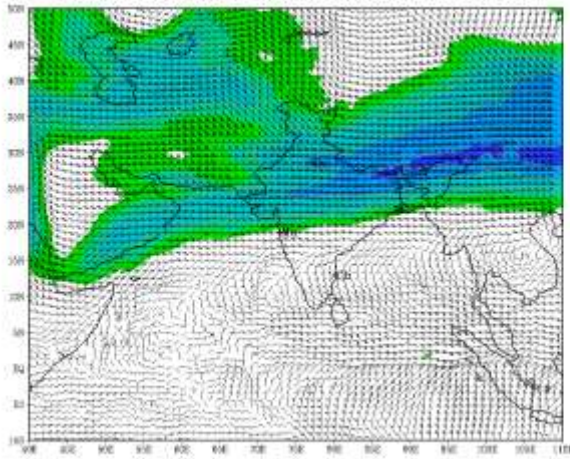
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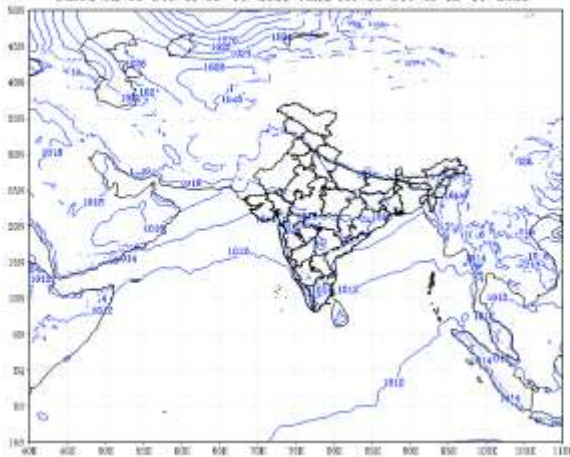
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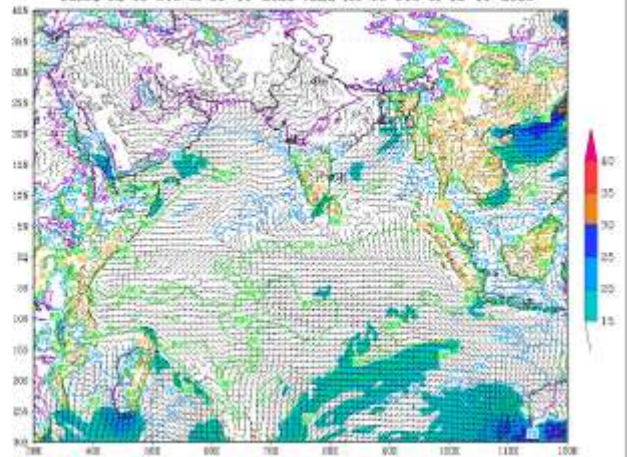
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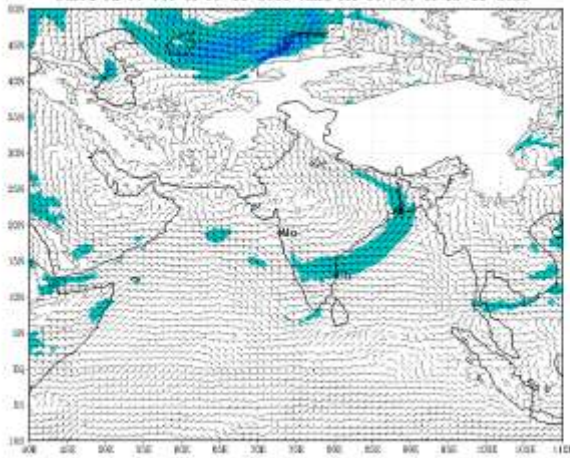
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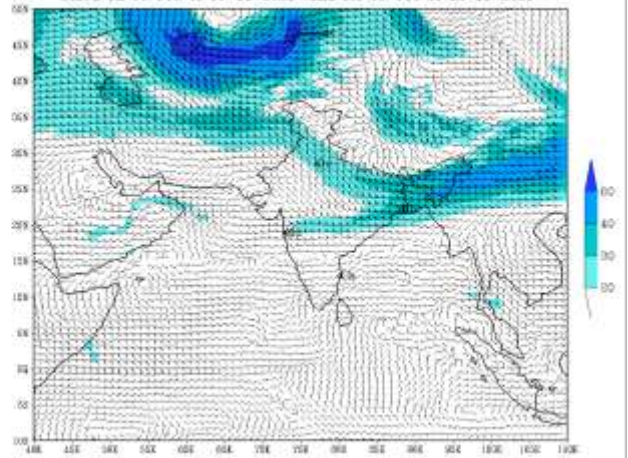
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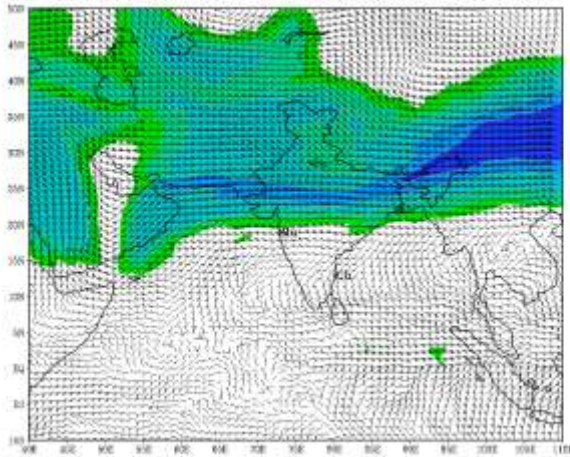
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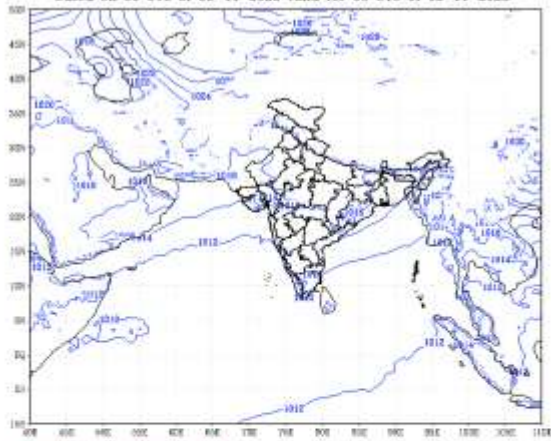
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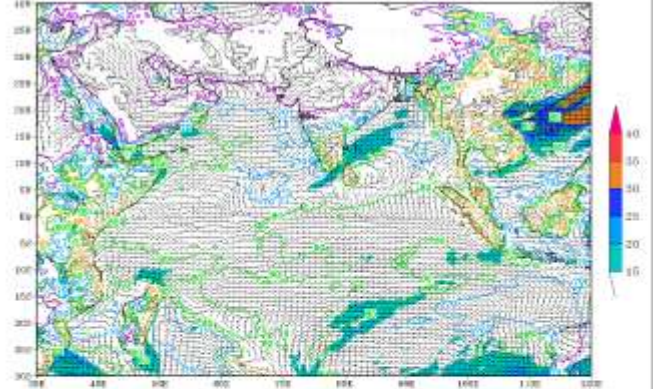
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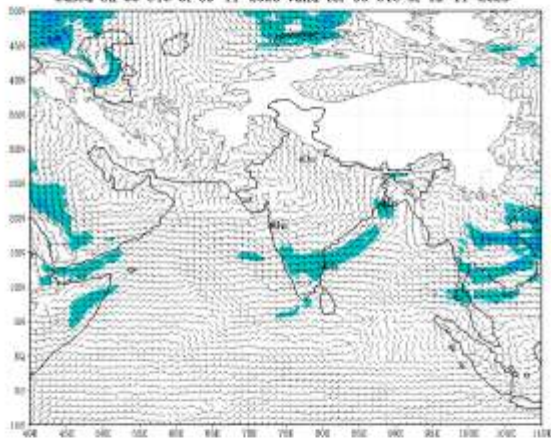
(Background over sea level political boundary)

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (96 HR)
based on 00 UTC of 09-11-2023 valid for 00 UTC of 13-11-2023



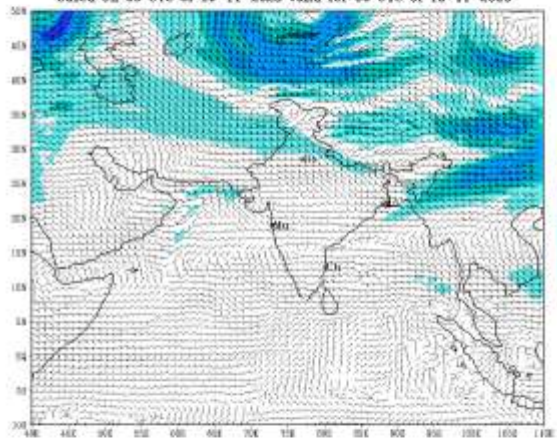
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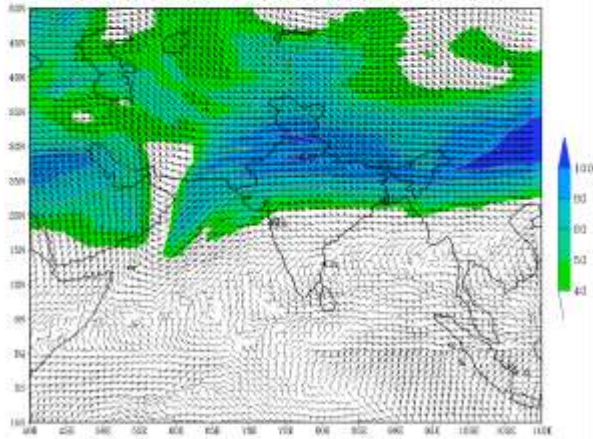
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based on 00 UTC of 09-11-2023 valid for 00 UTC of 13-11-2023



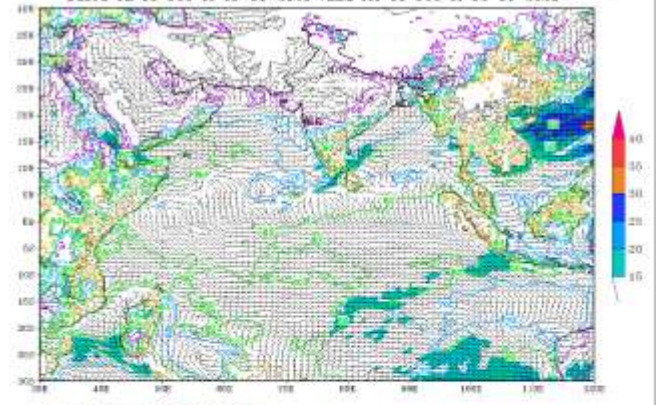
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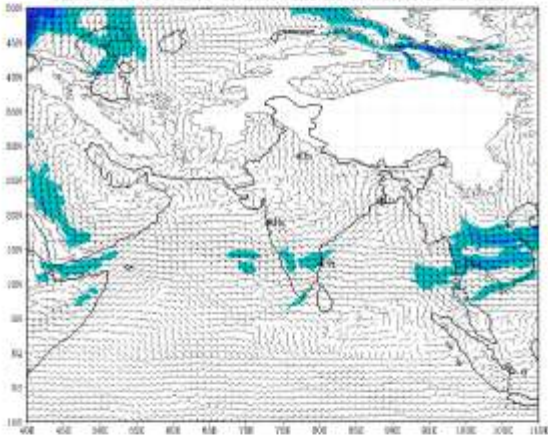
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IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (120 HR)
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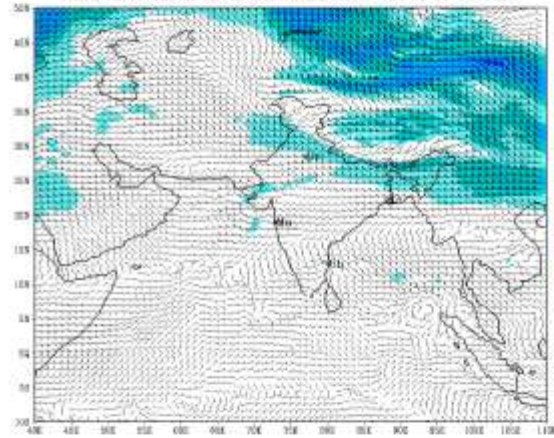
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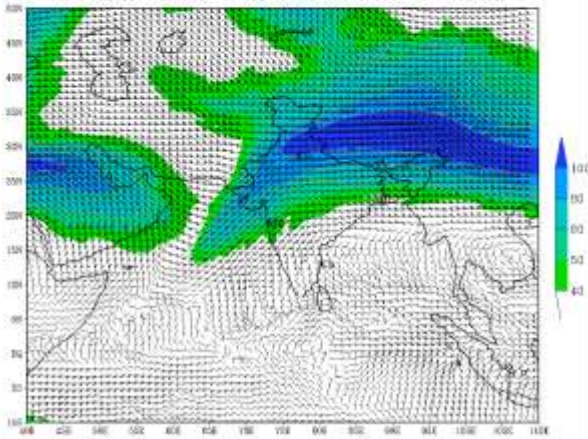
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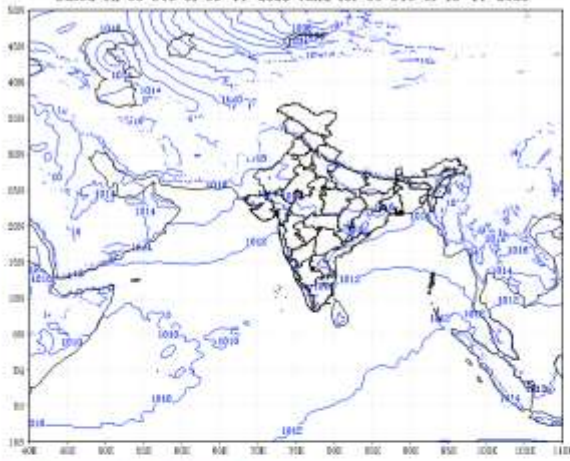
(Background over sea depicts political boundary)

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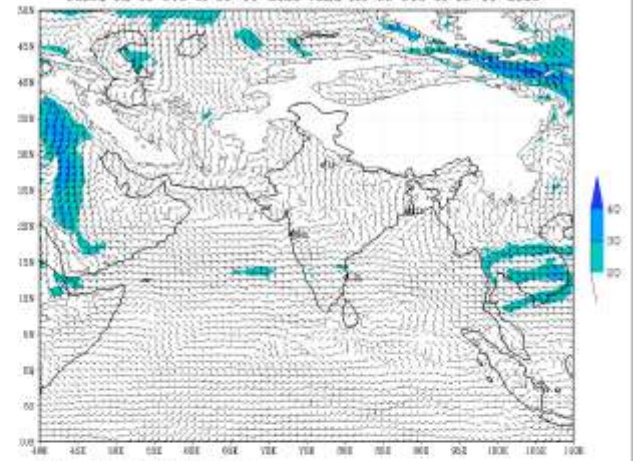
(Background over sea depicts political boundary)

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (144 HR)
based on 00 UTC of 09-11-2023 valid for 00 UTC of 15-11-2023



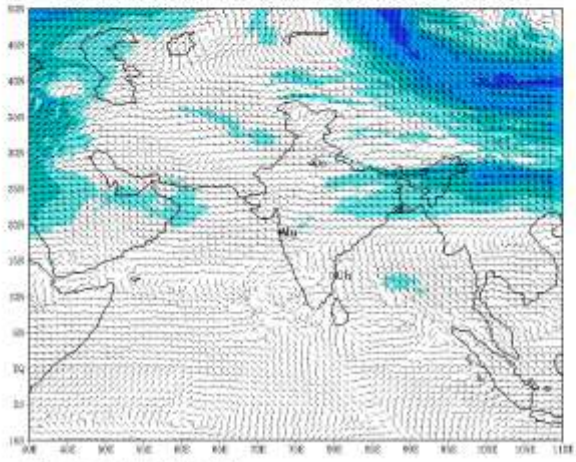
(Background line with 6000 m interval boundary)

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based on 00 UTC of 09-11-2023 valid for 00 UTC of 15-11-2023



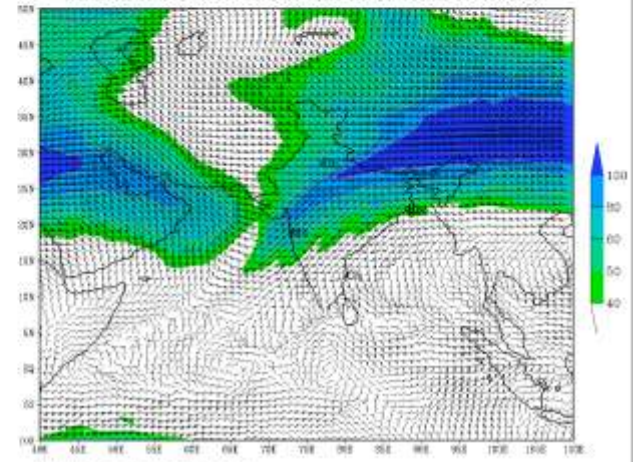
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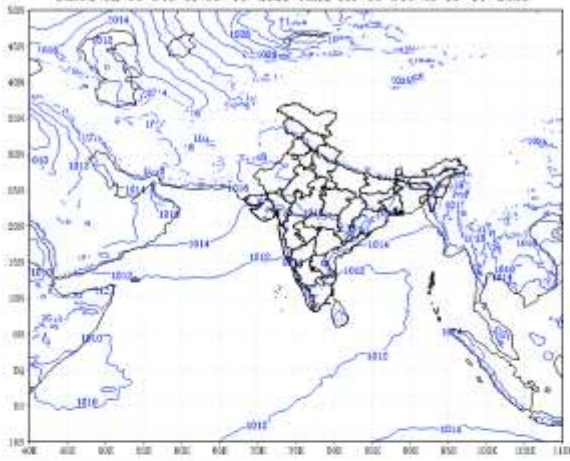
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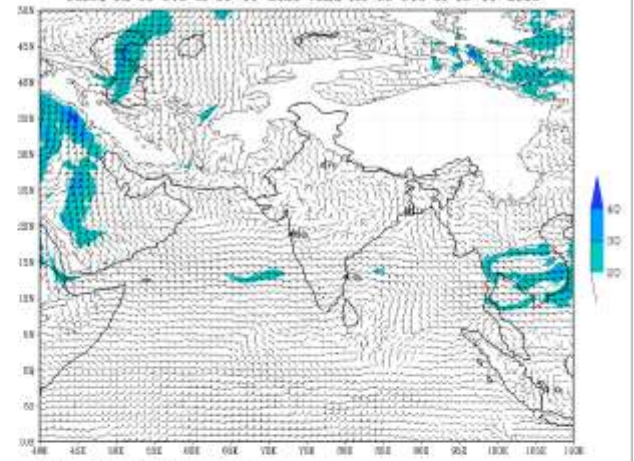
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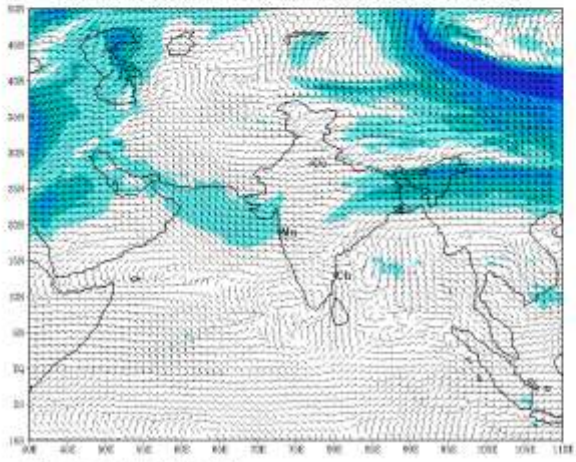
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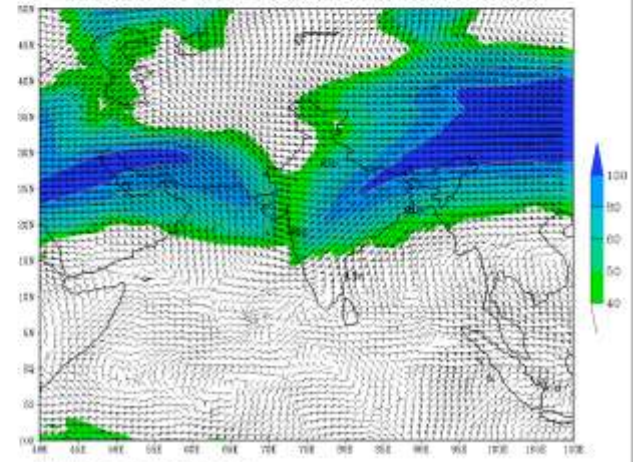
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