



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



FDP (Cyclone) NOC Report Dated 17th November, 2019

Time of Issue: 1100 UTC

Synoptic features:

- A trough is seen in easterlies is seen to run from southwest Bay of Bengal to westcentral Bay of Bengal and extends upto 0.9 km above mean sea level.

Dynamical and thermodynamical features

Sea Surface Temperature (SST):

Sea Surface Temperature is around 25-28°C over most parts of westcentral Arabian Sea and adjoining north Arabian Sea. It increases to 28-30°C over eastcentral Arabian Sea and also over south Arabian Sea.

SST is around 27-28 °C over north BoB and adjoining WC BoB. It is around 28 - 30°C over rest BoB with higher values over eastcentral BoB.

Tropical Cyclone Heat Potential (TCHP):

Tropical Cyclone Heat Potential (TCHP) is 20-40 kJ/cm² over most parts of central Arabian Sea and north Arabian Sea. Over south Arabian Sea it is of value 60-100 kJ/cm².

TCHP is around 30-50 kJ/cm² over north BoB and adjoining westcentral BoB. It is around 80-90 kJ/cm² over rest of the BOB. A small area of value more than 100 kJ/cm² is seen over southwest BoB off Tamil Nadu coast.

Relative Vorticity:

Cyclonic relative vorticity at 850 hPa of value 10-20 X10⁻⁶s⁻¹ is seen over a small area westcentral BoB off South Andhra Pradesh coast.

Cyclonic relative vorticity at 850 hPa of value 10-20 X10⁻⁶s⁻¹ is seen over the westcentral Arabian Sea.

Low level Convergence:

No significant area of positive lower level convergence is seen over BoB.

No significant area of positive lower level convergence is seen over Arabian Sea except for an area over equatorial ocean.

Upper level Divergence:

No significant area of positive upper level divergence is seen over BoB.

Upper level divergence of value 10-20x10⁻⁵ s⁻¹ is seen over southwest and adjoining westcentral Arabian Sea.

Wind Shear:

Wind shear is high over most parts of Arabian Sea except extreme south Arabian Sea where it is low to moderate.

Wind shear is low to moderate over most parts of BoB and Andaman Sea except extreme north and adjoining westcentral BoB where it is high.

Wind Shear Tendency:

The wind shear tendency is positive over north, and over some parts of southwest BoB. It is negative or neutral elsewhere.

It is positive over north and adjoining westcentral Arabian Sea. It is negative or neutral over rest Arabian Sea.

Upper tropospheric ridge:

The upper tropospheric ridge at 200 hPa runs roughly along 18°N over the BoB and along 10°N over Arabian Sea.

Satellite observations based on INSAT imagery:

Arabian Sea:-

As per the satellite imagery at 0900 UTC of 17th November, 2019, scattered low to medium clouds with embedded moderate to intense convection lies over south Arabian Sea.

Bay of Bengal & Andaman Sea:

According to 0900 UTC satellite imagery, scattered low/medium clouds with embedded moderate to intense convection lies over central BoB.

Large scale features

M.J.O. Index:

MJO index is in Phase 8 with amplitude more than 1. MJO is likely to propagate eastwards from phase 8 to phase 1 after 2 days with amplitude >1.

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

Tropical storm (Kalmaegi), located at 0600 UTC near 16.7°N 124.9°E approximately 258 Nm east-northeast of Manila, Philippines, has moved north-northwestwards in the past. The maximum sustained wind speed is 50 knots. It is expected to move northwestwards with gradual intensification till 1800UTC of 18th and cross northern parts of Philippines and then move southwestwards with gradual weakening.

NWP Input for FDP Cyclone based on 0000 UTC of today

IMD-GFS T-1534: Indicates development of no low pressure systems for the next 10 days.

IMD-GEFS: Indicates development of no low pressure systems for the next 8 days.

IMD-WRF: Analysis shows a Low Pressure area forming over Lakshadweep area on 20th.

NCMRWF-NCUM: Indicates development of no low pressure systems for the next 10 days.

NCMRWF-UM-Regional Model: Indicates development of no low pressure systems for the next 3 days.

NEPS Model: Indicates development of no low pressure systems for the next 10 days.

ECMWF: Indicates development of no low pressure systems for the next 10 days.

NCEP-GFS: Indicates development of no low pressure systems for the next 10 days.

ARP-Meteo France : Indicates development of no low pressure systems for the next 3 days

Dynamical statistical models

IMD Genesis Potential Parameter (GPP):

No area of significant zone of GPP is seen to develop over NIO region during next 5 days.

IMD NWP products are available at:

<http://nwp.imd.gov.in/bias/gfsproducts.php>

<http://nwp.imd.gov.in/bias/wrf27pro.php>

http://www.rsmcnewdelhi.imd.gov.in/NWP_CYC/Analysis.htm or

http://www.rsmcnewdelhi.imd.gov.in/NWP_CYC/<HH> hrs.htm

<HH> are forecast hours i.e. 24, 48, 72 and etc.

Summary and Conclusion:

As per the NWP models considered, no significant low pressure system is seen to form over North Indian Ocean Region for the next 8-10 days.

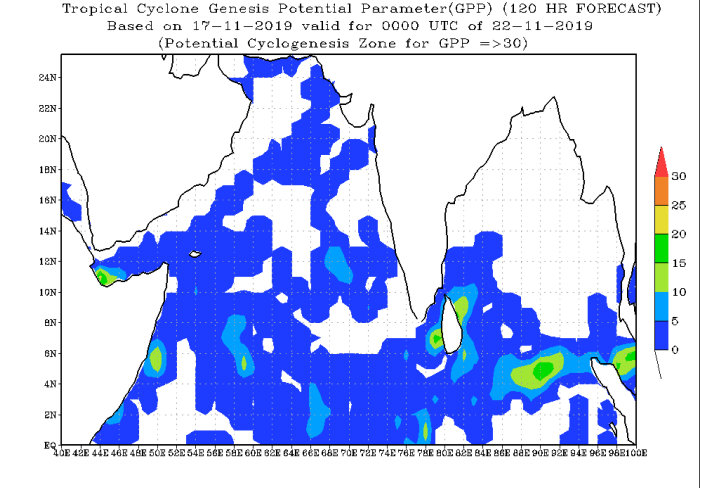
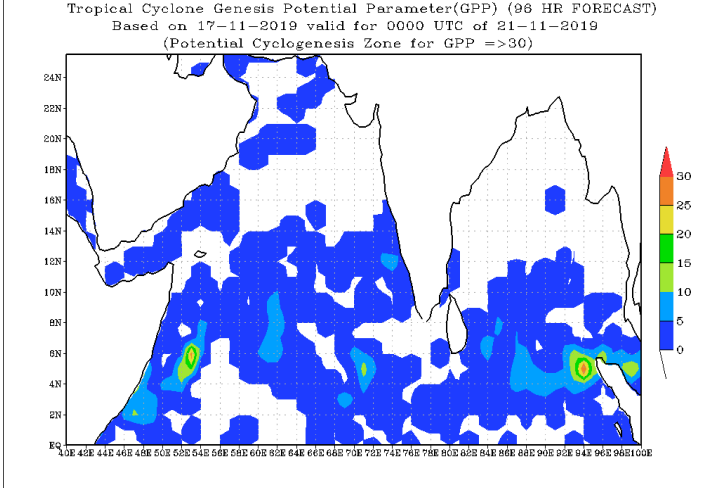
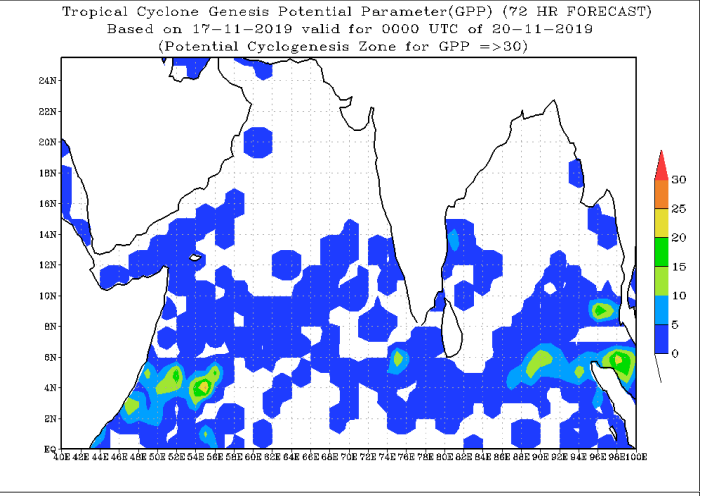
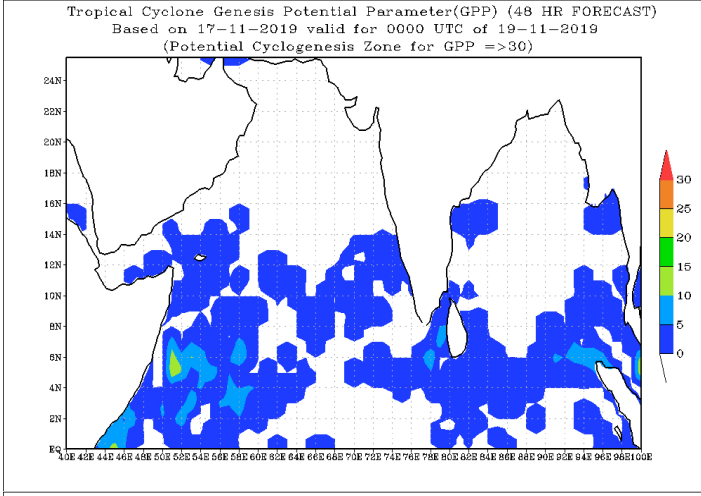
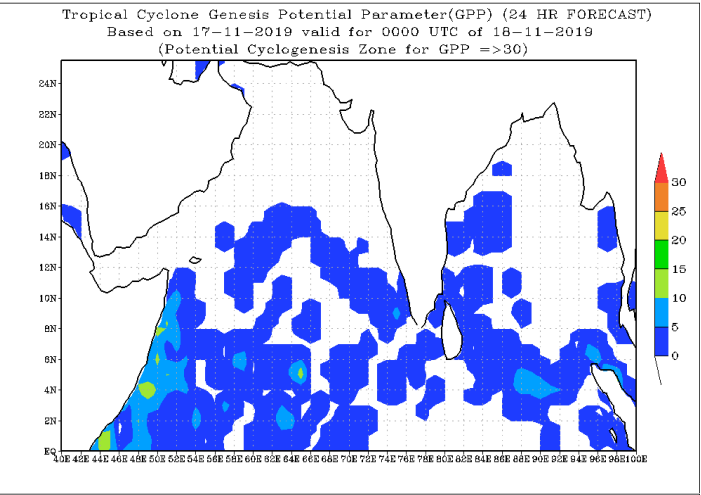
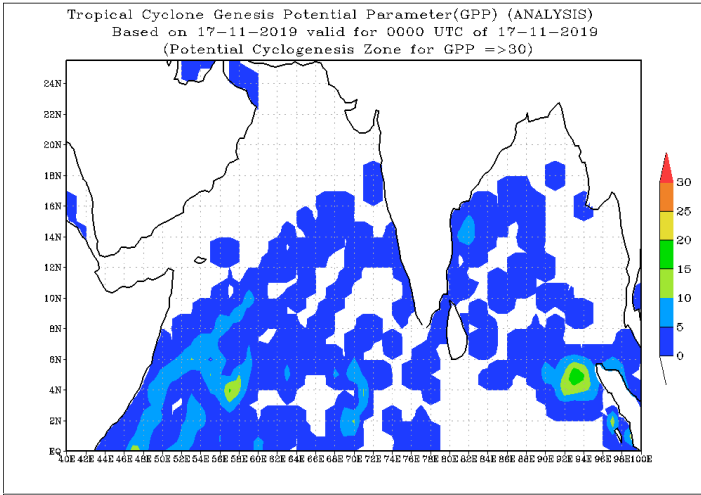
Probability of cyclogenesis over Bay of Bengal and Andaman Sea during next 120 hours:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
Nil	Nil	Nil	Nil	Nil

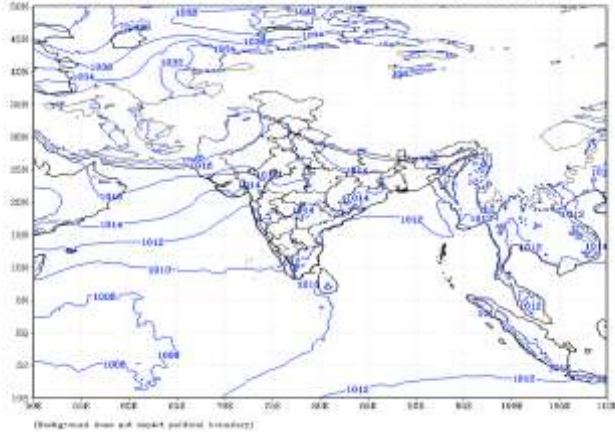
Probability of cyclogenesis over Arabian Sea during next 120 hours:

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
Nil	Nil	Nil	Nil	Nil

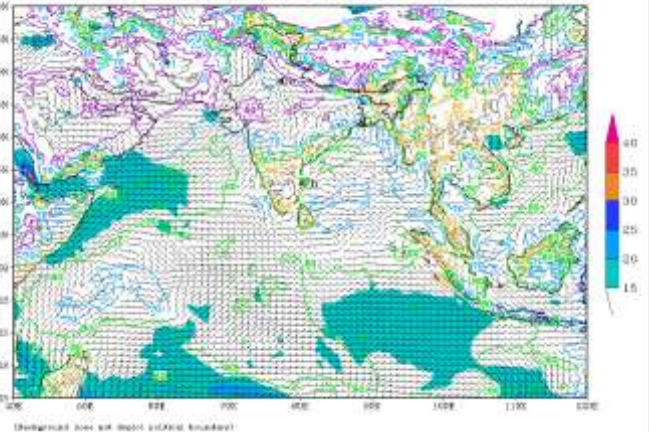
Advisory: No IOP area for the next 5 days



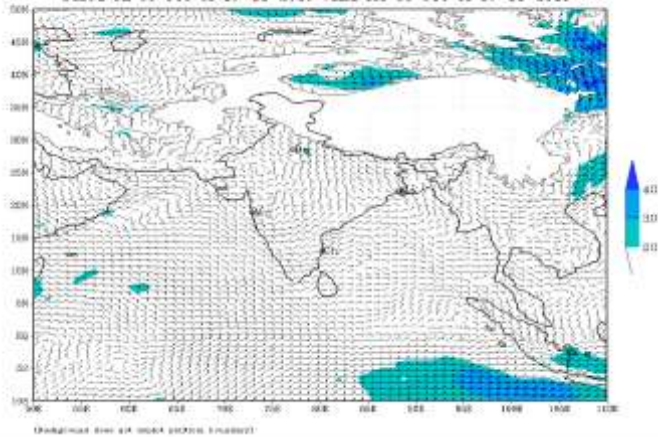
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 based on 00 UTC of 17-11-2019 valid for 00 UTC of 17-11-2019



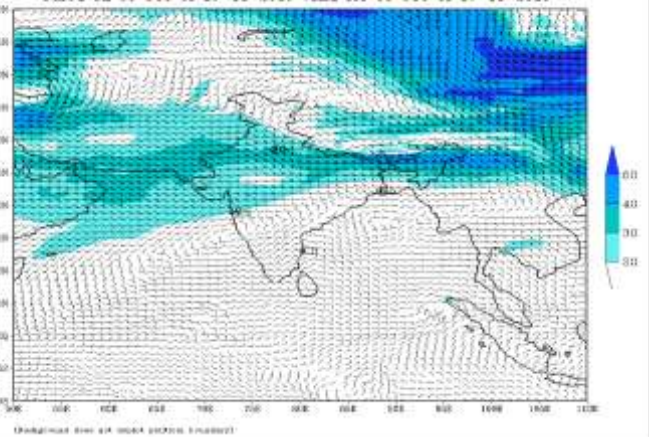
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (00 HR)
 based on 00 UTC of 17-11-2019 valid for 00 UTC of 17-11-2019



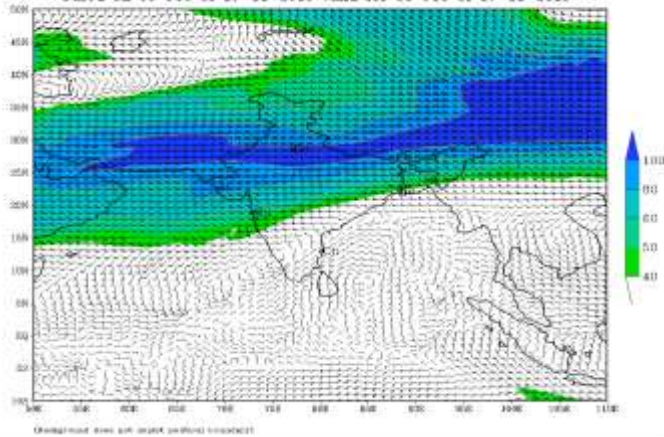
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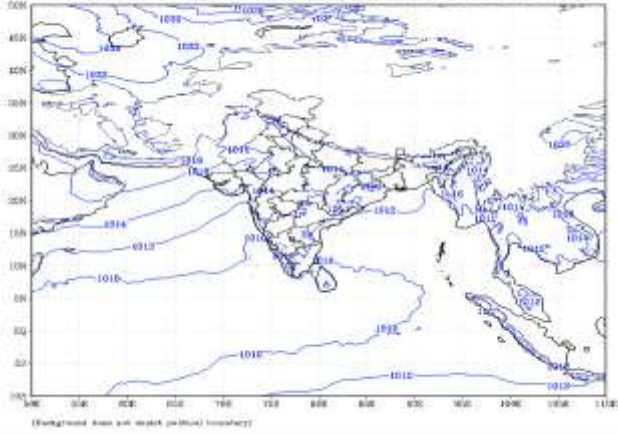
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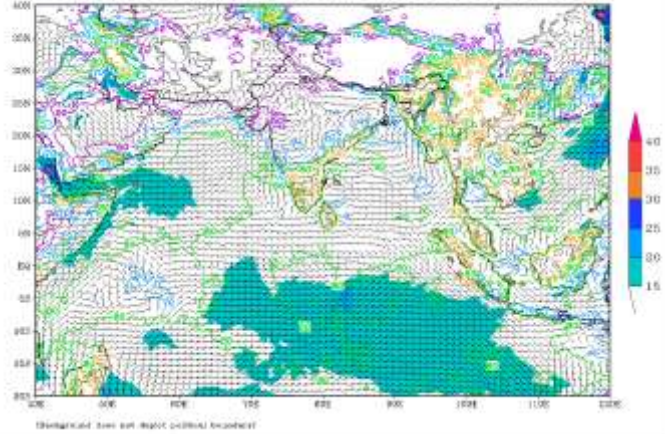
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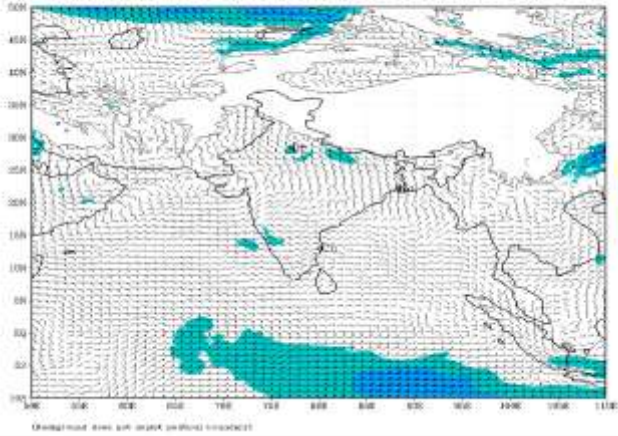
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (24 HR)
based on 00 UTC of 17-11-2019 valid for 00 UTC of 18-11-2019



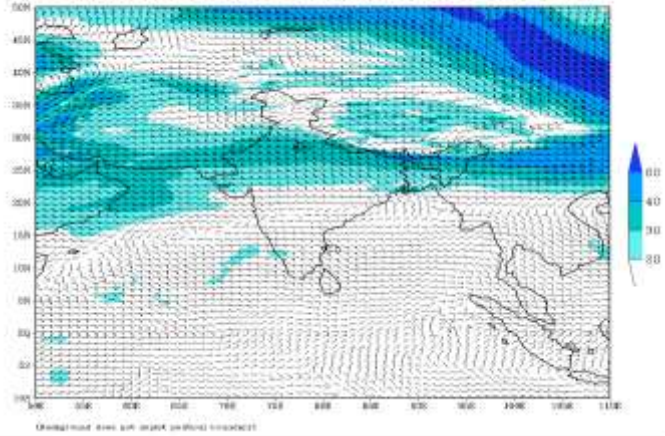
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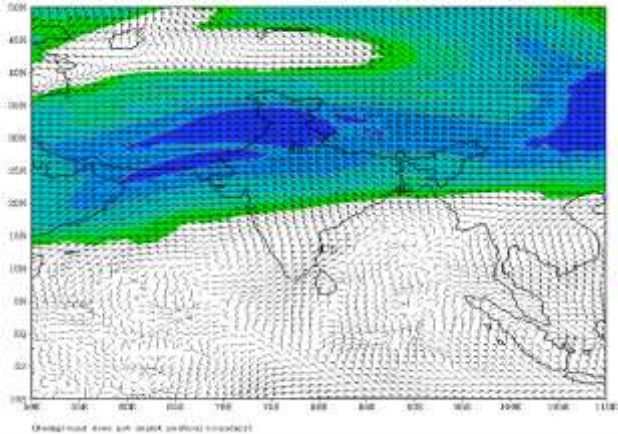
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based on 00 UTC of 17-11-2019 valid for 00 UTC of 18-11-2019

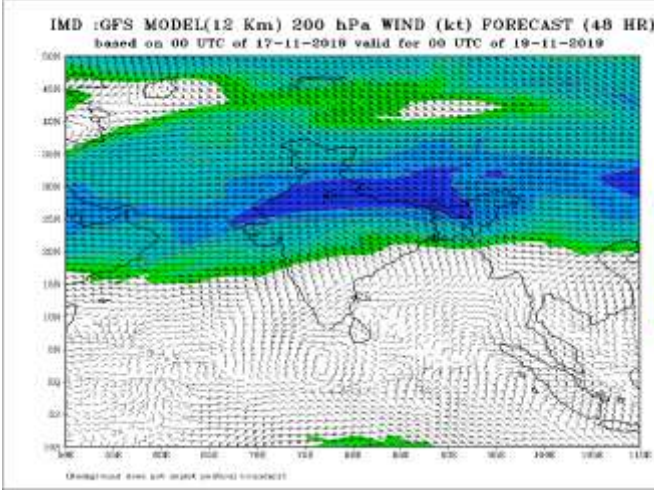
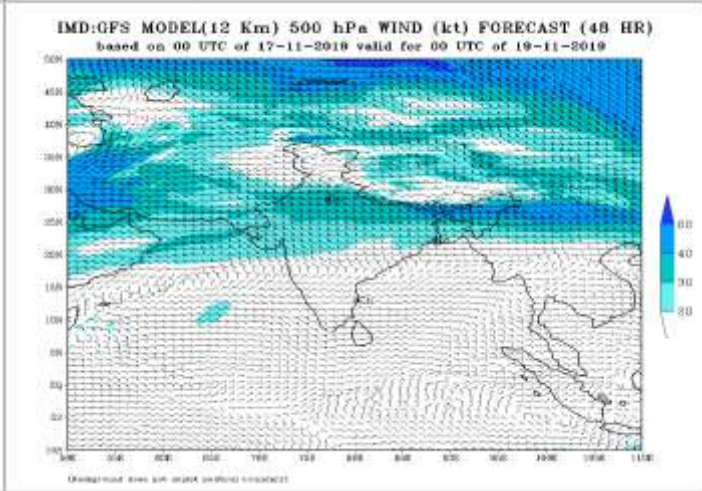
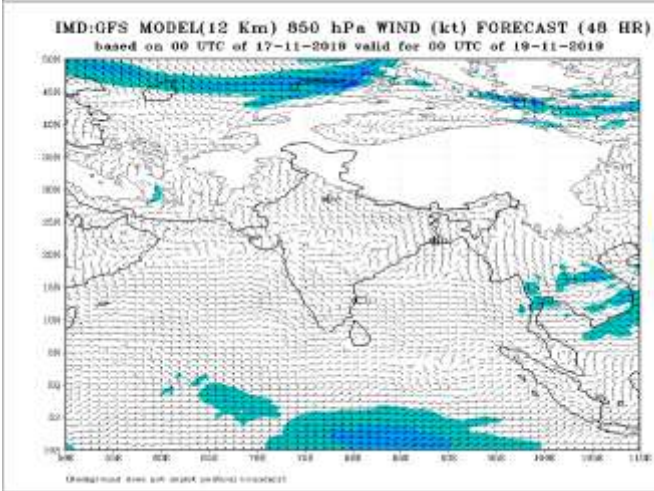
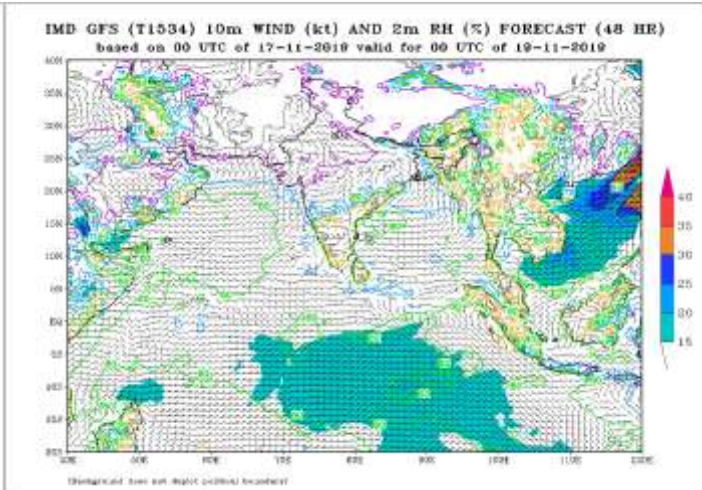
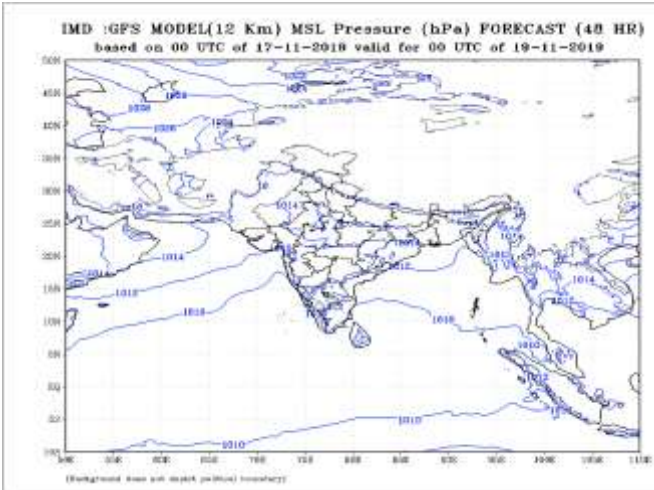


IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (24 HR)
based on 00 UTC of 17-11-2019 valid for 00 UTC of 18-11-2019



IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (24 HR)
based on 00 UTC of 17-11-2019 valid for 00 UTC of 18-11-2019

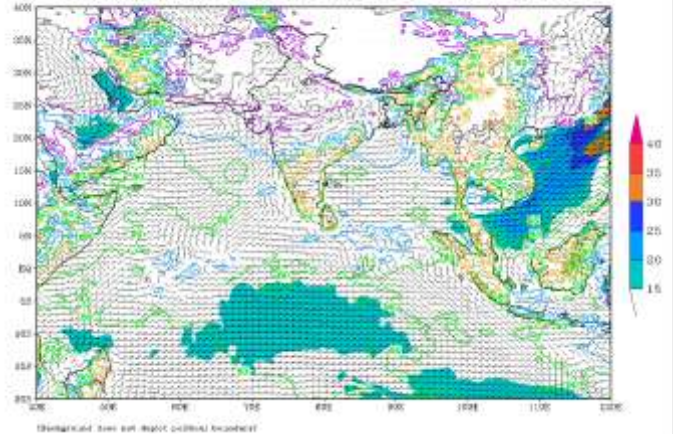




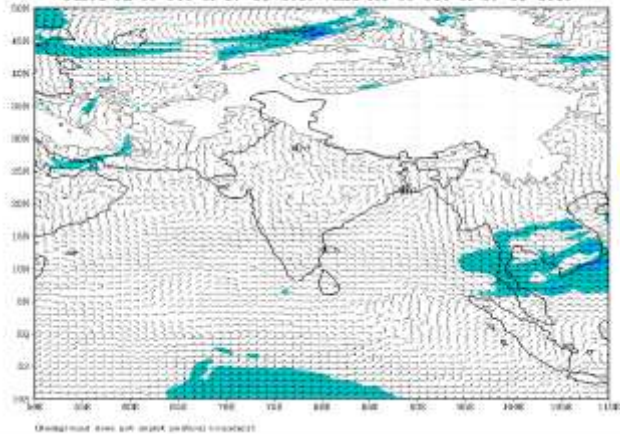
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (72 HR)
based on 00 UTC of 17-11-2019 valid for 00 UTC of 20-11-2019



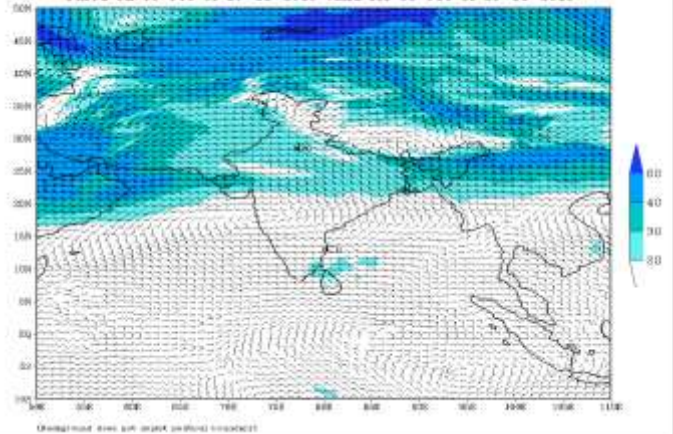
IMD :GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (72 HR)
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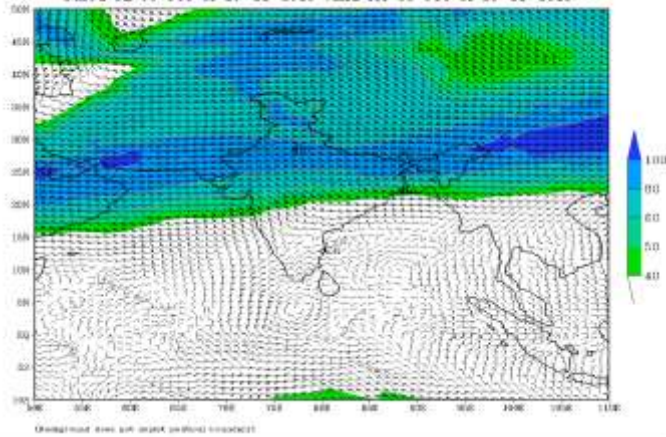
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based on 00 UTC of 17-11-2019 valid for 00 UTC of 20-11-2019



IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 17-11-2019 valid for 00 UTC of 20-11-2019



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

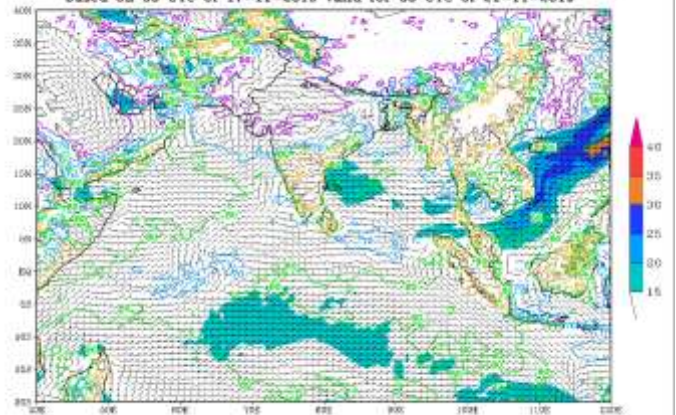
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(Background from sat input geopotential forecast)

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (96 HR)

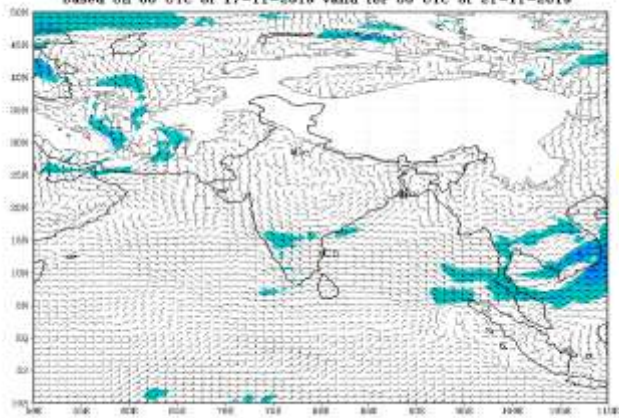
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(Background from sat input geopotential forecast)

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

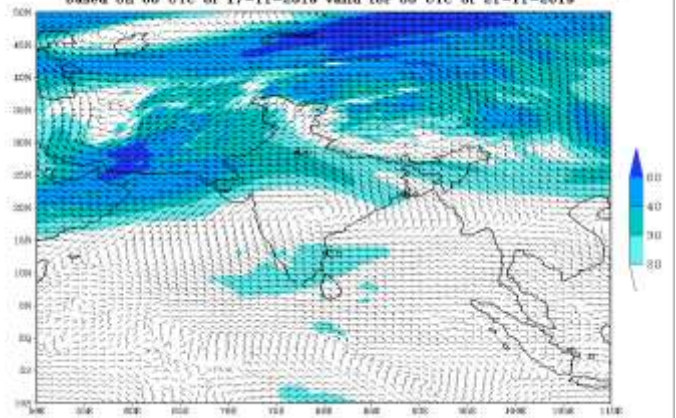
based on 00 UTC of 17-11-2018 valid for 00 UTC of 21-11-2019



(Background from sat input geopotential forecast)

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

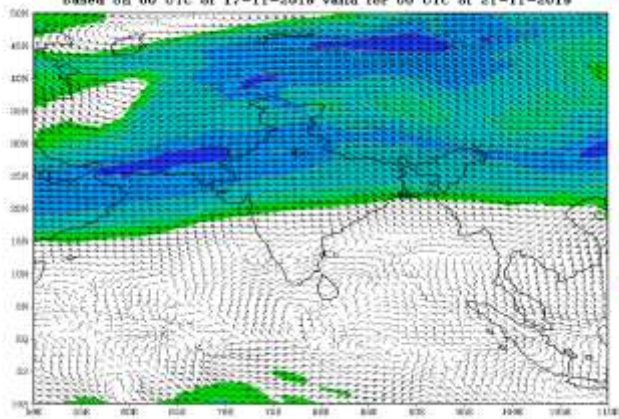
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(Background from sat input geopotential forecast)

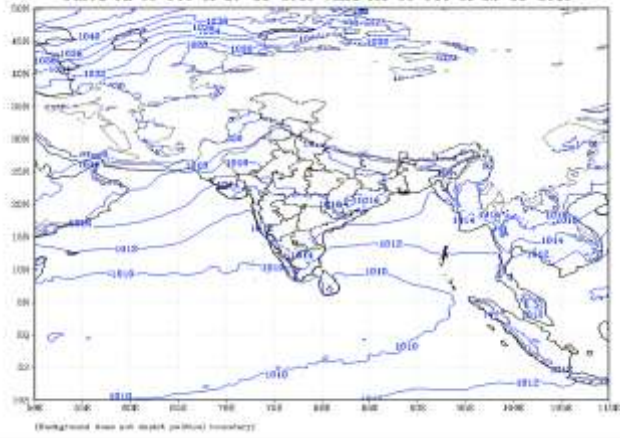
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based on 00 UTC of 17-11-2018 valid for 00 UTC of 21-11-2019

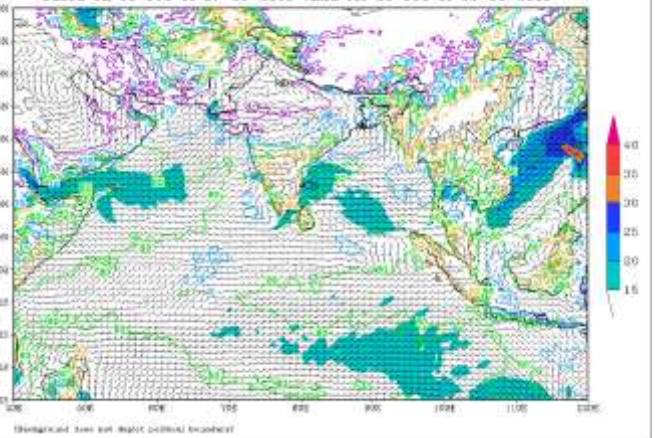


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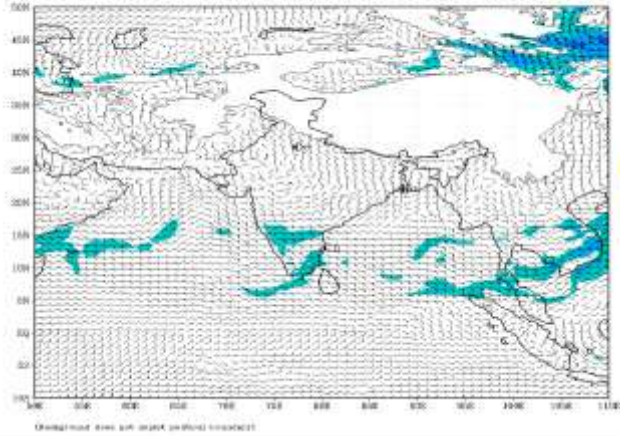
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based on 00 UTC of 17-11-2019 valid for 00 UTC of 22-11-2019



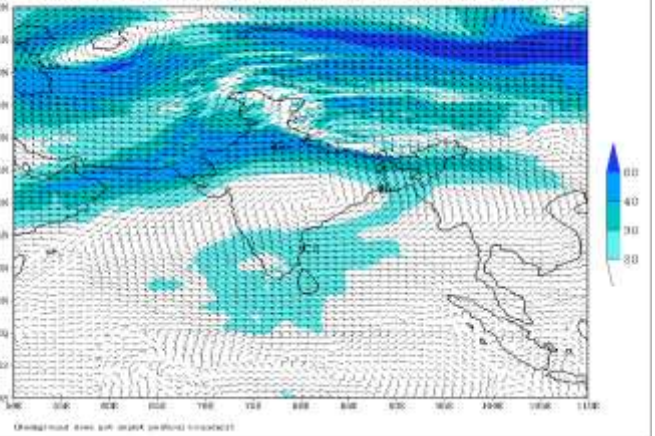
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (120 HR)
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IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 17-11-2019 valid for 00 UTC of 22-11-2019



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