



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



FDP (Cyclone) NOC Report Dated 23<sup>rd</sup> October, 2019

Time of Issue: 1200 UTC

**Synoptic features:**

- The **Well Marked Low Pressure Area (WML)** over central parts of Arabian Sea lay over east-central Arabian Sea and neighbourhood at 0300 UTC and persists over the same region at 0900 UTC of today. Associated cyclonic circulation extends upto 4.5 km above mean sea level. It is very likely to concentrate into a Depression (D) during next 24 hours and into a Cyclonic Storm (CS) during the subsequent 48 hours. It is likely to move initially east-northeastwards over east-central Arabian Sea till 25th October and then west-northwestwards with gradual intensification.
- The other **WML** over west central Bay of Bengal & neighbourhood lay over west-central Bay of Bengal Andhra Pradesh coast at 0300 UTC and persists over the same region at 0900 UTC of today. Associated cyclonic circulation extends upto mid-tropospheric levels, tilting southwestwards with height. It is very likely to move north-northwestwards, towards Andhra Pradesh coast.

**Dynamical and thermodynamical features**

**Surface Temperature (SST):**

SST is 29-30°C over east-central & southeast Arabian Sea (AS) and Gulf of Oman, except over a small pocket over southeast AS off south Kerala coast where it is 26- 27°C, 28-29°C over rest AS, except over west central & southwest AS off Oman and Somalia coasts where it is 26-27°C.

SST is 30 - 32°C over north and adjoining east-central Bay of Bengal (BOB) & Myanmar coast and 29- 30°C over the rest of BOB.

**Tropical Cyclone Heat Potential (TCHP):**

TCHP is 80-100 kJ/cm<sup>2</sup> over southeast & adjoining central AS, 100-110 kJ/cm<sup>2</sup> over west equatorial Indian Ocean (IO). It is < 40 kJ/cm<sup>2</sup> over most parts of north & west-central AS and Oman – Yemen coasts.

TCHP is 110-130 kJ/cm<sup>2</sup> over west-central & southwest BOB, 100-110 kJ/cm<sup>2</sup> over north Andaman Sea and east-central BOB and 60-80 kJ/cm<sup>2</sup> elsewhere over the BOB.

**Relative Vorticity:**

An area of cyclonic relative vorticity at 850 hPa of 70 – 100 X10<sup>-6</sup>s<sup>-1</sup> is seen over east-central AS.

Cyclonic relative vorticity at 850 hPa of 80 – 110 X10<sup>-6</sup>s<sup>-1</sup> is seen over west-central BOB off south Andhra Pradesh coast.

**Low level Convergence:**

Lower level convergence is about 10 – 15 x 10<sup>-5</sup>s<sup>-1</sup> over east-central AS.

Lower level convergence of about 05 x 10<sup>-5</sup>s<sup>-1</sup> is seen over west central BOB and 10 – 20 x 10<sup>-5</sup>s<sup>-1</sup> east equatorial Indian Ocean (IO) and adjoining south Andaman Sea.

**Upper level Divergence:**

A zone of upper level divergence of 20 - 30x10<sup>-5</sup> s<sup>-1</sup> is seen over southeast and adjoining east-central AS.

A zone of upper level divergence of  $10 - 20 \times 10^{-5} \text{ s}^{-1}$  is seen over west-central BOB and adjoining Andhra Pradesh – south Odisha coasts and  $20 - 30 \times 10^{-5} \text{ s}^{-1}$  over east equatorial IO and adjoining south BOB.

#### **Wind Shear:**

Wind shear is 15-20 knots over east-central AS adjoining to south Maharashtra coast and also over central belt of west-central AS. It is increasing to high values (25-40) to the north as well as to the south.

Wind shear is 10-15 knots over west-central BOB adjoining to north coastal Andhra Pradesh and also over east-central BOB and Andaman Sea.

#### **Wind Shear Tendency:**

The wind shear is in increasing tendency over northeastern part of central AS & over south AS and decreasing over southeast AS and north AS. It is neutral over a narrow belt of central AS. It is increasing over southwest BOB and adjoining equatorial IO, decreasing over north & east-central BOB and Andaman Sea and neutral over west-central BOB off south Andhra Pradesh coast.

#### **Upper tropospheric ridge:**

The upper tropospheric ridge at 200 hPa runs roughly along  $15^\circ\text{N}$  over the AS and along  $17^\circ\text{N}$  over the BOB.

#### **Satellite observations based on INSAT imagery:**

##### **Arabian Sea:-**

According to 0600 UTC satellite imagery, broken low/medium clouds with embedded intense to very intense convection prevails over east-central and adjoining west-central Arabian Sea and neighbourhood in association with the WML of intensity (T 1.0) over the area. The centre of WML lies within half a deg of Lat.  $15.0^\circ\text{N}$ / Long.  $69.5^\circ\text{E}$ . Intense to very intense convection lies between Lat.  $10.0^\circ\text{N}$  to  $18.5^\circ\text{N}$  & Long.  $62.0^\circ\text{E}$  to  $74.0^\circ\text{E}$  in association with the WML over the area (minimum CTT is minus  $93^\circ\text{C}$ ).

##### **Bay of Bengal & Andaman Sea:-**

According to 0600 UTC satellite imagery, broken low/medium clouds with embedded intense to very intense convection prevails over southwest and adjoining west-central Bay off Andhra Pradesh coast and neighbourhood in association with the WML of intensity (T 1.0) over the area. The centre of WML lies within half a deg of Lat.  $15.0^\circ\text{N}$ / Long.  $81.0^\circ\text{E}$ . Intense to very intense convection lies bet Lat  $10.0^\circ\text{N}$  to  $19.5^\circ\text{N}$  & Long  $79.5^\circ\text{E}$  to  $87.0^\circ\text{E}$  (minimum CTT minus  $93^\circ\text{C}$ ).

#### **Large scale features**

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

MJO index is in Phase 2 (western Indian Ocean) with amplitude more than 1. It will continue in same phase with gradual reduction in amplitude for next 4-5 days.

**Storms and Depression over South China Sea/ South Indian Ocean:** None over south China Sea and over south Indian Ocean.

Tropical Storm 21W “Neoguri” has moved northeastwards and transformed into an extra-tropical cyclone. Typhoon 22W “Bualoi” is currently located over Pacific Ocean.

## **NWP Input for FDP Cyclone based on 0000 UTC of today**

### **IMD-GFS T-1534**

- (i) Indicates : WML over east-central AS on 23<sup>rd</sup>, **D** over east-central AS on 24<sup>th</sup>, **CS** over east-central AS off south Maharashtra-Goa coasts on 25<sup>th</sup>, Severe Cyclonic Storm (SCS) over east-central AS (west-northwestward movement from Maharashtra coast) on 26<sup>th</sup>, VSCS over central AS on 27<sup>th</sup>, Very Severe Cyclonic Storm (VSCS) over west-central AS on 28<sup>th</sup>, VSCS / Extremely SCS (ESCS) over west-central AS ( north of Socotra Island) on 29<sup>th</sup>, ESCS over west-central AS ( northwest of Socotra) on 30<sup>th</sup> and moving away westwards on 31<sup>st</sup> Oct.
- (ii) Indicates : WML over west-central BOB off Andhra Pradesh coast on 23<sup>rd</sup>, WML over west-central BOB and adjoining coastal Andhra Pradesh on 24<sup>th</sup>, extended low over west-central BOB and adjoining coastal Andhra Pradesh on 25<sup>th</sup> and less marked on 26<sup>th</sup> October.
- (iii) It also indicates the formation of a fresh low pressure area (Lopar) over east equatorial IO and adjoining south BOB on 26<sup>th</sup>, CS over southwest BOB on 27<sup>th</sup>, CS crossing Tamil Nadu coast over to interior Tamil Nadu on 28<sup>th</sup>, emerging as a WML over southeast AS off north Kerala coast on 29<sup>th</sup>, D over southeast AS & adjoining Lakshadweep on 30<sup>th</sup>, VSCS over southeast and adjoining east-central AS on 31<sup>st</sup> October ESCS over central and adjoining south AS on 1<sup>st</sup> November and ESCS over west central and adjoining southwest AS on 2<sup>nd</sup> November.
- (iv) According to this forecast, a D enters Gulf of Siam on 1<sup>st</sup> November and emerges into Andaman Sea as a CS on 2<sup>nd</sup> November.

### **IMD-GEFS**

- (i) Indicates : WML over east-central AS on 23<sup>rd</sup>, D over east central AS off Maharashtra coast on 24<sup>th</sup>, CS over east-central AS off south Maharashtra coast on 25<sup>th</sup> & 26<sup>th</sup>, CS over east-central AS away from Maharashtra coast on 27<sup>th</sup>, CS over west-central and adjoining east-central AS on 28<sup>th</sup>, CS over west-central AS (northeast of Socotra) on 29<sup>th</sup>, CS over west-central AS closer to Oman on 30<sup>th</sup> and D over Gulf of Oman on 31<sup>st</sup> October.
- (ii) Indicates: Lopar over west central BOB off Andhra Pradesh coast on 23<sup>rd</sup>, Lopar over west-central BOB and adjoining coastal Andhra Pradesh on 24<sup>th</sup>, extended low over the same region on 25<sup>th</sup> and less marked on 26<sup>th</sup> October. A fresh Lopar over southwest BOB and adjoining equatorial IO on 26<sup>th</sup>, Lopar over southwest BOB off Tamil Nadu coast on 27<sup>th</sup>, Lopar over coastal Tamil Nadu on 28<sup>th</sup> and less marked on 29<sup>th</sup> October.

### **IMD-WRF**

- (i) Indicates: WML over central AS on 23<sup>rd</sup>, CS over east-central AS off south Maharashtra coast on 24<sup>th</sup> and SCS over the same region on 25<sup>th</sup> and ESCS over east-central AS away from Maharashtra coast on 26<sup>th</sup> October.
- (ii) Indicates : Extended low over west central and adjoining southwest BOB on 23<sup>rd</sup>, trough of low from south west BOB to northwest BOB off Odisha coast on 24<sup>th</sup>, Lopar over north coastal Andhra Pradesh-south Odisha coasts on 25<sup>th</sup>, extended low over west central and northwest BOB off north Andhra Pradesh-Odisha-West Bengal coasts on 26<sup>th</sup> October.

### **NCMRWF-NCUM:**

- (i) Indicates : WML over east central and adjoining west central AS on 23<sup>rd</sup>, D over east central AS on 24<sup>th</sup>, CS over the east central AS off north Karnataka-Goa coasts on 25<sup>th</sup>, SCS over east central BOB off Goa coast on 26<sup>th</sup>, VSCS over central AS on 27<sup>th</sup>, VSCS over west central and adjoining east central AS on 28<sup>th</sup>, VSCS over west central AS,

northeast of Socotra on 29<sup>th</sup>, VSCS/ESCS over west central AS close to south Oman coast on 30<sup>th</sup>, crossed south Oman coast and over coastal Oman as SCS on 31 October.

- (ii) Indicates : Lopar over west-central BOB off Andhra Pradesh coast on 23<sup>rd</sup>, Lopar over north coastal Andhra Pradesh and neighbourhood on 24<sup>th</sup>, less marked on 25<sup>th</sup>, Lopar over gangetic West Bengal on 27<sup>th</sup>, Lopar over Bangladesh on 28<sup>th</sup> and less marked on 29<sup>th</sup> October.

#### **NCMRWF-UM-Regional Model:**

- (i) Indicates : D over east central AS on 23<sup>rd</sup>, CS over east-central AS off south Maharashtra-Goa Coasts on 24<sup>th</sup>, SCS over east-central AS off south Maharashtra-Goa coasts on 25<sup>th</sup>, VSCS over east-central AS off Maharashtra coast on 26<sup>th</sup> October.
- (ii) Indicates : WML over west central BOB off Andhra Pradesh coast on 23<sup>rd</sup>, WML over north coastal Andhra Pradesh and neighbourhood on 24<sup>th</sup> and less marked on 25<sup>th</sup> October.

#### **NEPS Model:**

- (i) Indicates : WML over east-central AS on 23<sup>rd</sup>, CS over east central AS off south Maharashtra coast on 24<sup>th</sup>, VSCS over the same region on 25<sup>th</sup>, ESCS over the same region on 26<sup>th</sup>, ESCS/super cyclonic storm (SuCS) over east central AS away from Maharashtra coast on 27<sup>th</sup> SuCS over west central AS on 28<sup>th</sup>, SuCS west central AS close to Oman coast on 29<sup>th</sup> and 30<sup>th</sup> October.
- (ii) Indicates : Lopar over west central BOB and adjoining coastal Andhra Pradesh on 23<sup>rd</sup>, and less marked on 24<sup>th</sup> October.

#### **ECMWF:**

- (i) Indicates : Lopar over east-central AS on 23<sup>rd</sup>, D over east-central AS off Maharashtra coast on 24<sup>th</sup>, CS over east-central AS off south Maharashtra coast on 25<sup>th</sup>, CS over east central AS close to Maharashtra coast on 26<sup>th</sup>, VSCS over east central and adjoining northwest ASA off north Maharashtra coast on 27<sup>th</sup>, ESCS over northwest and adjoining east central AS off south Gujarat coast on 28<sup>th</sup>, VSCS over northwest BOB away from south Gujarat coast on 29<sup>th</sup> CS over central parts of AS on 30<sup>th</sup>, D over central parts of north AS on 31<sup>st</sup> October, Lopar over northwest AS on 1<sup>st</sup> November, Lopar over north west AS on off Oman coast 2<sup>nd</sup> November.
- (ii) Indicates : Lopar over west central BOB off Andhra Pradesh coast on 23<sup>rd</sup>, Lopar over north coastal Andhra Pradesh on 24<sup>th</sup>, Lopar over interior Odisha on 25<sup>th</sup>, Lopar over Bangladesh on 26<sup>th</sup>, and less marked on 27<sup>th</sup> October.

#### **NCEP-GFS :**

- (i) Indicates : D over east central AS off Maharashtra coast on 24<sup>th</sup>, D over coastal Maharashtra and adjoining east central AS on 25<sup>th</sup>, WML over coastal Maharashtra and neighbourhood, Lopar over east central AS off Maharashtra coast on 27<sup>th</sup>, Lopar over east central AS away from Maharashtra coast on 28<sup>th</sup> Lopar over central AS on 29<sup>th</sup> and 30<sup>th</sup> October. In an active easterly wave pattern a tropical D located over south China Sea to the east of Thailand and troughs of low over south west BOB and west central AS during 31 October – 2 November.
- (ii) Indicates : Lopar over north coastal Andhra Pradesh on 24<sup>th</sup>, less marked on 25<sup>th</sup>, fresh Lopar over equatorial IO to the east of Sri Lanka on 25<sup>th</sup>, Lopar over south west BOB off Sri Lanka-Tamil Nadu coasts on 26<sup>th</sup>, Lopar over south west adjoining west central BOB off north Tamil Nadu-south Andhra Pradesh coast on 27<sup>th</sup>, Lopar inland on 28<sup>th</sup>, fresh trough of low over southwest BOB on 28<sup>th</sup>, extended low over southwest and adjoining west central BOB off Tamil Nadu coast on 29<sup>th</sup>, Lopar inland over interior Tamil Nadu and fresh Lopar over east equatorial IO on 30<sup>th</sup> October.

## **ARP-Meteo France :**

- (i) WML over east central AS on 23<sup>rd</sup>, CS over east central AS on 24<sup>th</sup>, SCS over east central AS off south Maharashtra coast on 25<sup>th</sup>, ESCS over east central AS off south Maharashtra coast on 26<sup>th</sup> October.
- (ii)** WML over west central BOB off Andhra Pradesh coast on 23<sup>rd</sup>, WML over north coastal Andhra Pradesh on 24<sup>th</sup>, Lopar over south Chhattisgarh and neighbourhood on 25<sup>th</sup> October.

## **Dynamical statistical models**

### **IMD Genesis Potential Parameter (GPP):**

- (i) Significant zone of GPP seen over east central AS on 23<sup>rd</sup>, east central AS off south Maharashtra coast on 24<sup>th</sup>, east central AS off Maharashtra coast on 25<sup>th</sup>, nil on 26<sup>th</sup>, east central AS off Maharashtra coast on 27<sup>th</sup>, east central AS away from Maharashtra coast on 28<sup>th</sup>, east central and adjoining west central AS on 29<sup>th</sup> and nil on 30<sup>th</sup> October.
- (ii) Significant zone of GPP seen over west central BOB off Andhra Pradesh coast on 23<sup>rd</sup>, west central BOB off north Andhra Pradesh coast on 24<sup>th</sup>, east equatorial IO and adjoining south west BOB on 25<sup>th</sup>, west central and adjoining southwest BOB on 26<sup>th</sup>, west central BOB off Andhra Pradesh coast on 27<sup>th</sup>, south west BOB and also over east equatorial IO on 28<sup>th</sup>, west central BOB off Andhra Pradesh coast on 29<sup>th</sup> and nil on 30<sup>th</sup> October.

### **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](http://www.rsmcnewdelhi.imd.gov.in/NWP_CYC/Analysis.htm) or

[http://www.rsmcnewdelhi.imd.gov.in/NWP\\_CYC/<HH> hrs.htm](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:**

### **Arabian Sea:**

ECMWF, NEPS and NCUM are showing intensification of the system upto cyclonic storm on 25<sup>th</sup> and upto very severe cyclonic system stage thereafter. IMD GFS is also showing depression on 24<sup>th</sup> Oct. and cyclonic storm on 25<sup>th</sup> Oct., further intensification and west-northwestward movement from 26<sup>th</sup> onwards. But NCEP GFS forecast is showing the formation up to depression only. Hence, majority of models suggest that a depression will form around 24<sup>th</sup> Oct. Over east-central Arabian Sea. Based on the climatology and dynamical parameters such as poleward out flow and anticyclonic shear suggest that it may intensify into a cyclonic storm.

Further, 29-30°C sea surface temperature over most parts of eastcentral Arabian Sea and >80 KJ/cm<sup>2</sup> tropical cyclone heat potential over eastcentral Arabian Sea area are favorable for cyclogenesis and its further intensification. Most of the models agree for east-northeast ward movement initially towards Maharashtra coast till 25<sup>th</sup> and then west-northwestwards.

The MJO lies in the phase 2 with amplitude >1. It will remain in the same phase during next 4-5 days. Also it is undergoing a constructive interaction with the positive Indian Ocean Dipole at present. It is favorable for genesis and intensification of the system over Arabian Sea.

### **Bay of Bengal:**

Majority of the models including IMD GFS and NCUM suggest no further intensification of well marked low pressure system. However all the models suggest the movement of the this low pressure system from westcentral Bay of Bengal north-northwestwards towards Andhra Pradesh coast.

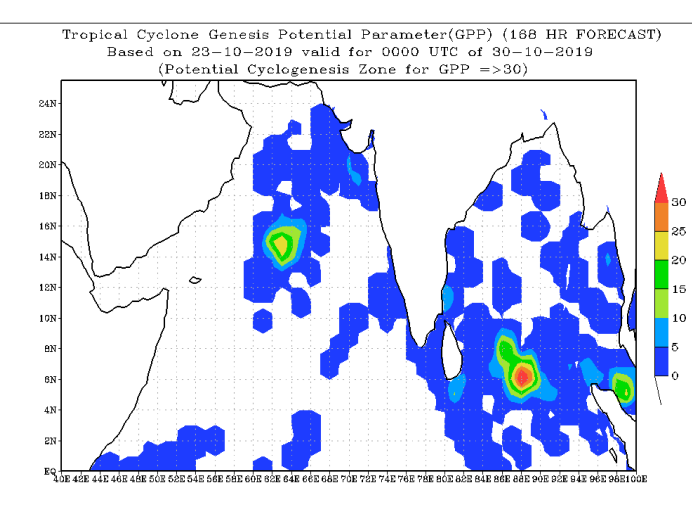
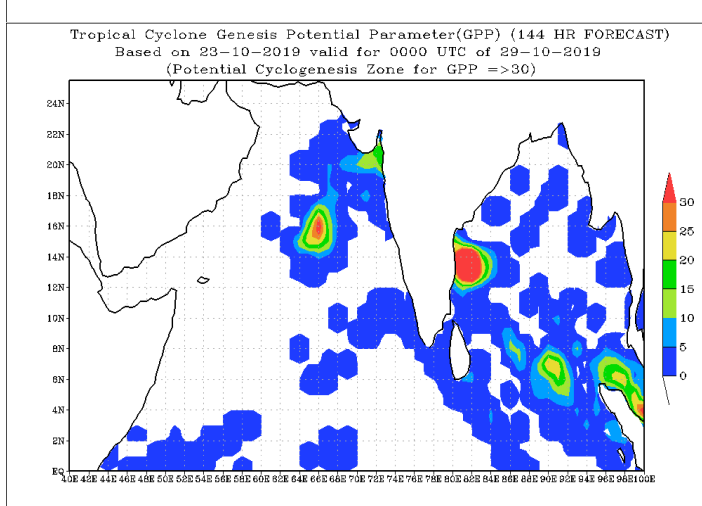
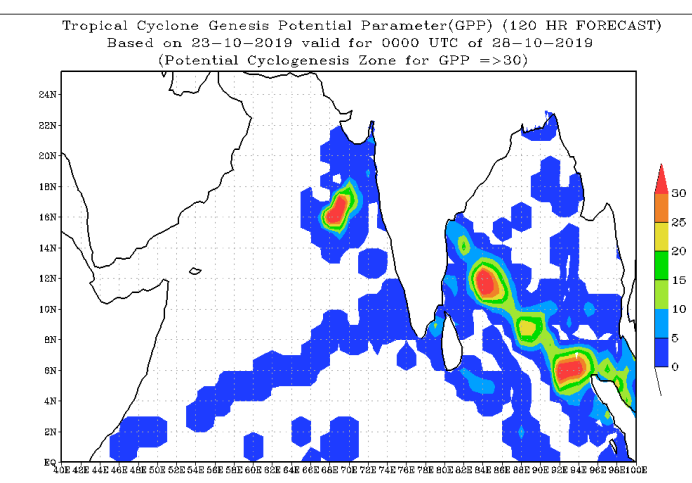
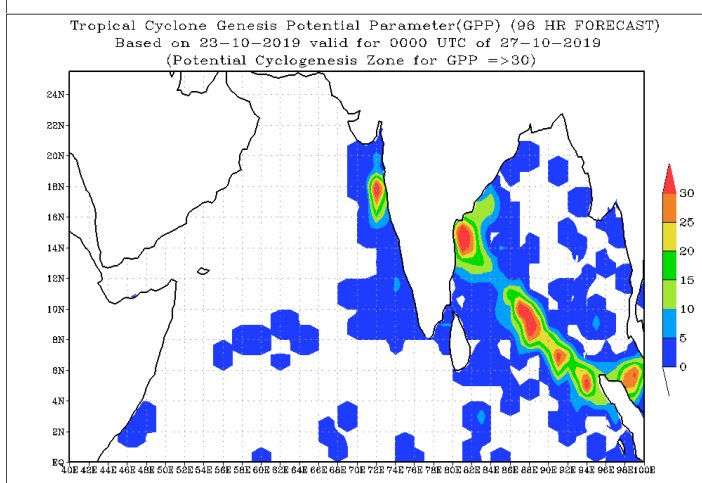
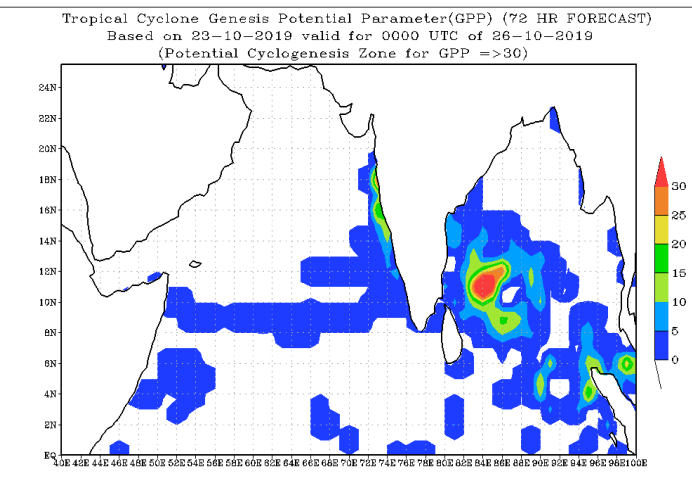
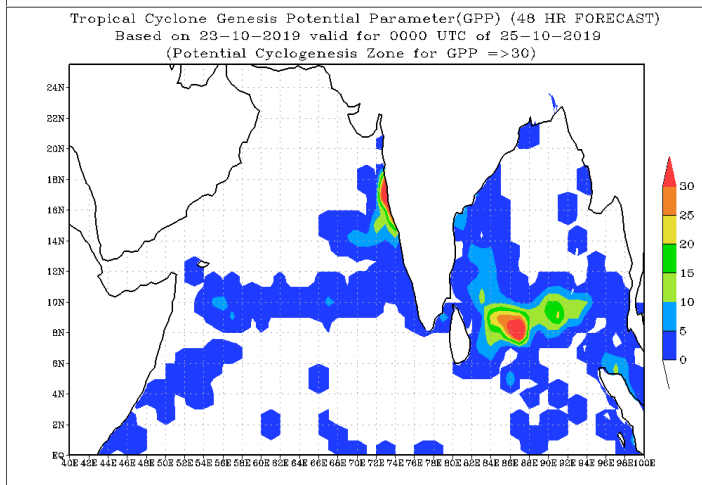
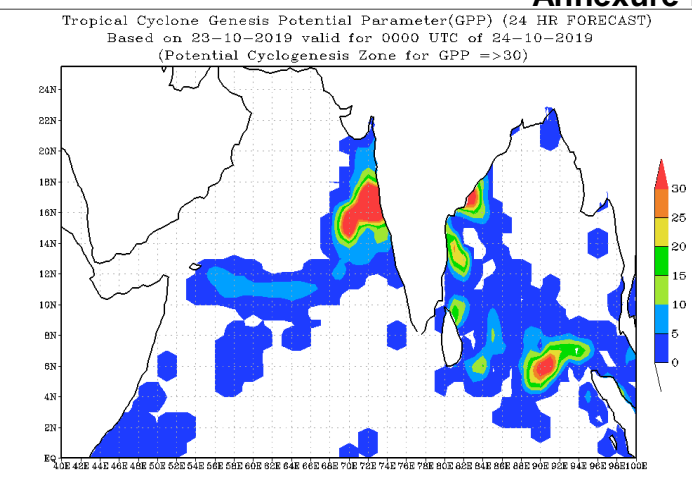
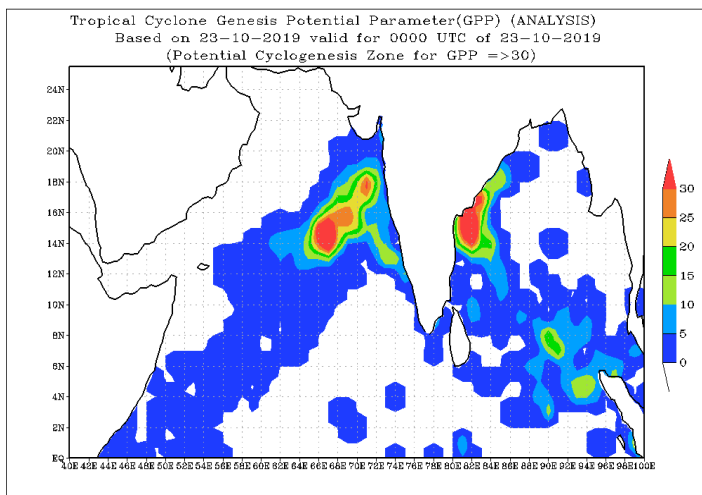
**Probability of cyclogenesis over Bay of Bengal and Andaman Sea during next 120 hours:**

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

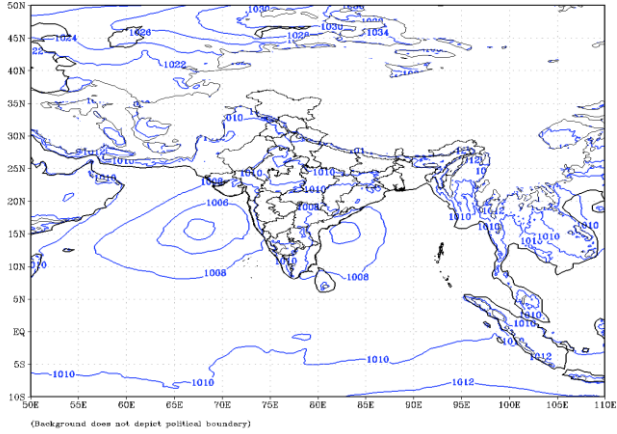
**Probability of cyclogenesis over Arabian Sea during next 120 hours:**

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
LOW	MODERATE	HIGH	HIGH	HIGH

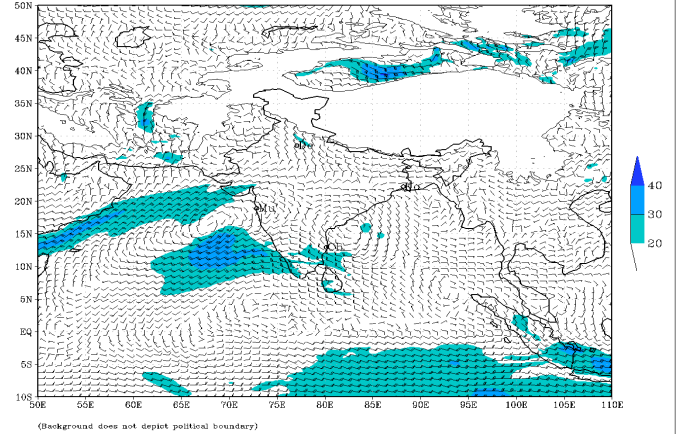
**Advisory: (i) IOP for coastal Andhra Pradesh & coastal Odisha during 23<sup>rd</sup> October night – 25<sup>th</sup> October and  
(ii) IOP for Maharashtra- Goa- Karnataka coasts from 24<sup>th</sup> October.**



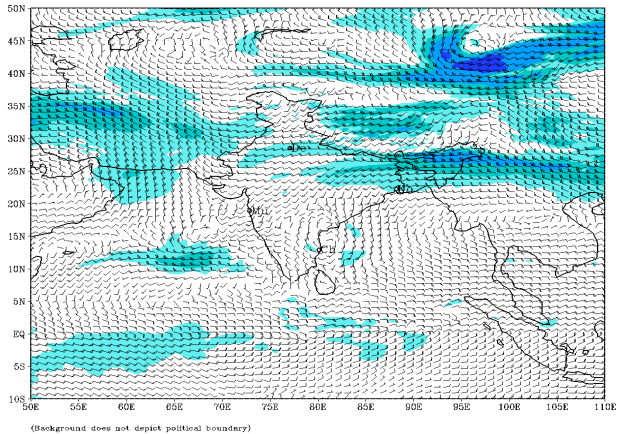
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (00 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 23-10-2019



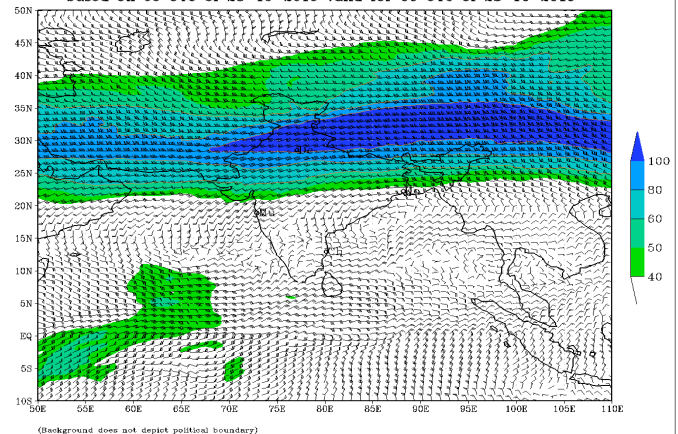
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based on 00 UTC of 23-10-2019 valid for 00 UTC of 23-10-2019



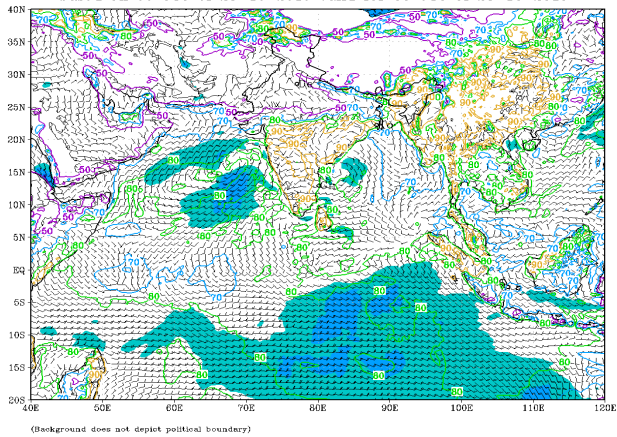
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based on 00 UTC of 23-10-2019 valid for 00 UTC of 23-10-2019



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based on 00 UTC of 23-10-2019 valid for 00 UTC of 23-10-2019

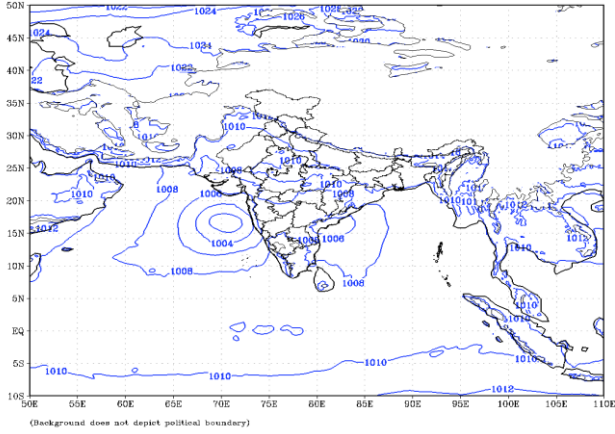


IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (00 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 23-10-2019

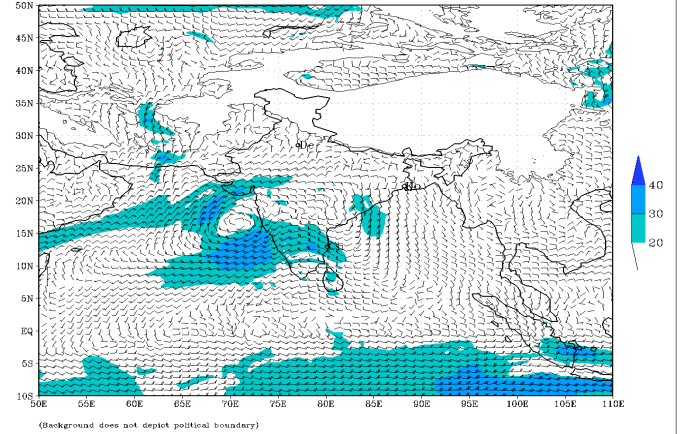




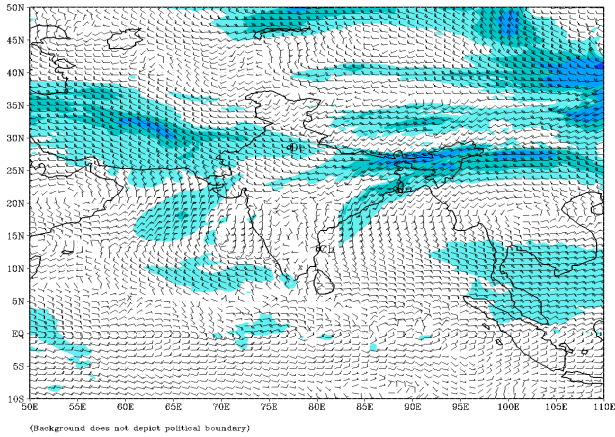
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (24 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 24-10-2019



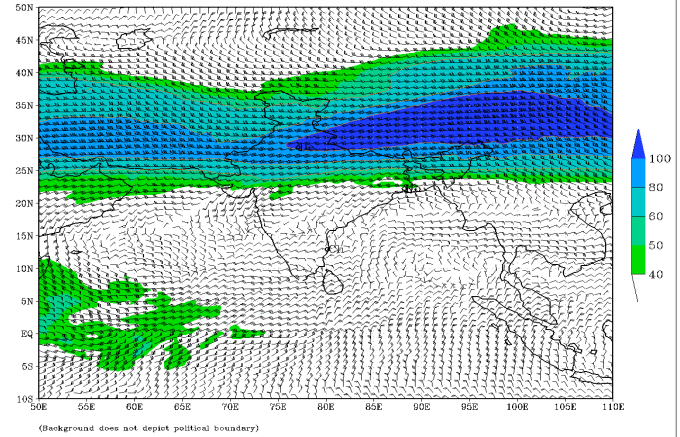
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based on 00 UTC of 23-10-2019 valid for 00 UTC of 24-10-2019



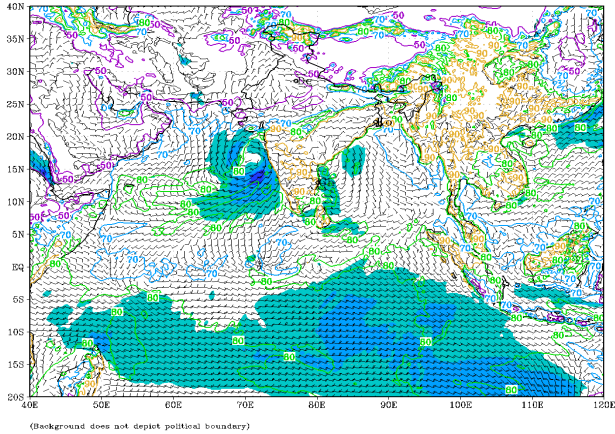
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based on 00 UTC of 23-10-2019 valid for 00 UTC of 24-10-2019



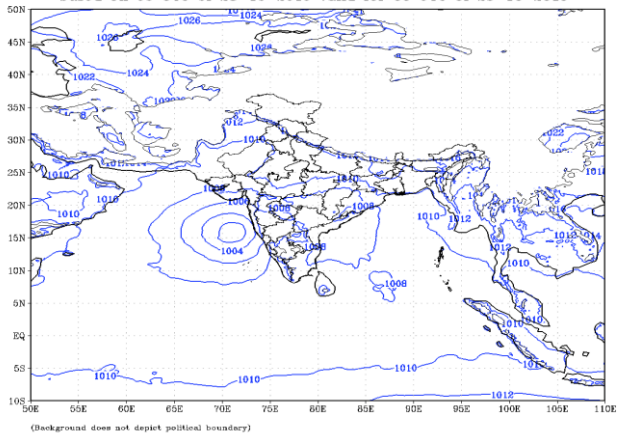
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (24 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 24-10-2019



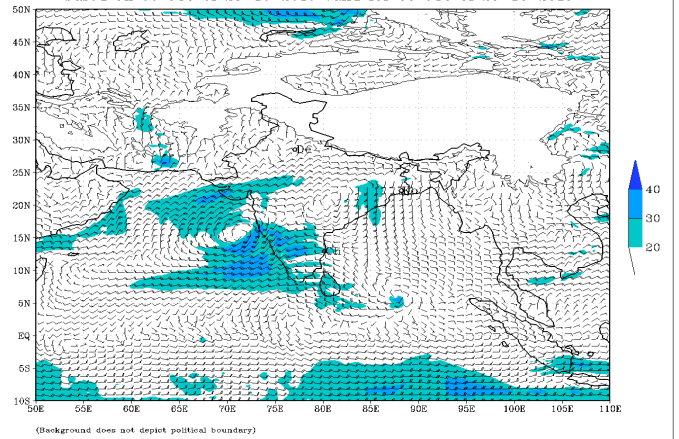
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (24 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 24-10-2019



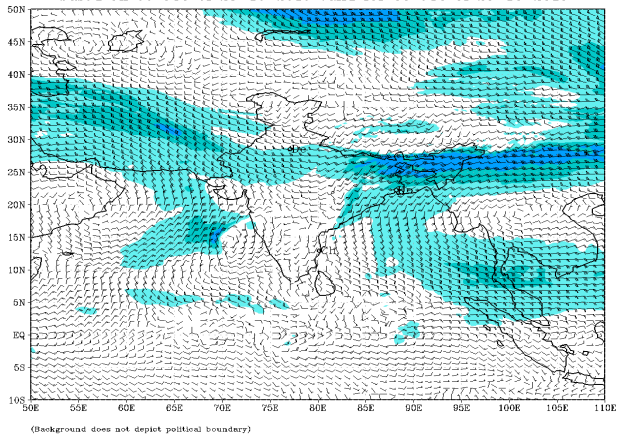
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based on 00 UTC of 23-10-2019 valid for 00 UTC of 25-10-2019



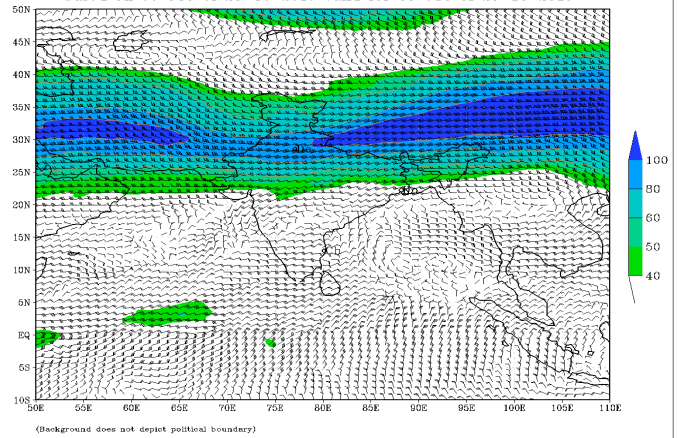
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (48 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 25-10-2019



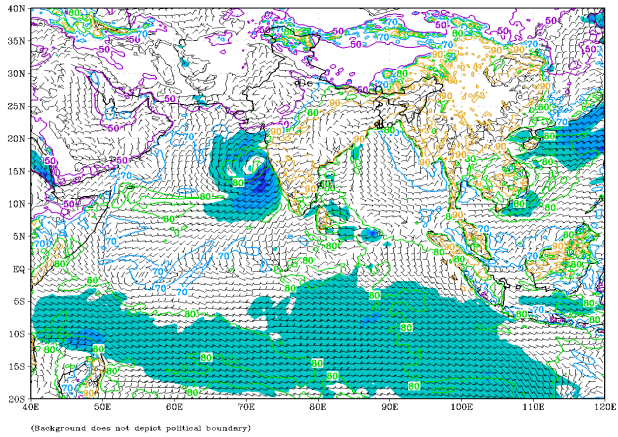
IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (48 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 25-10-2019



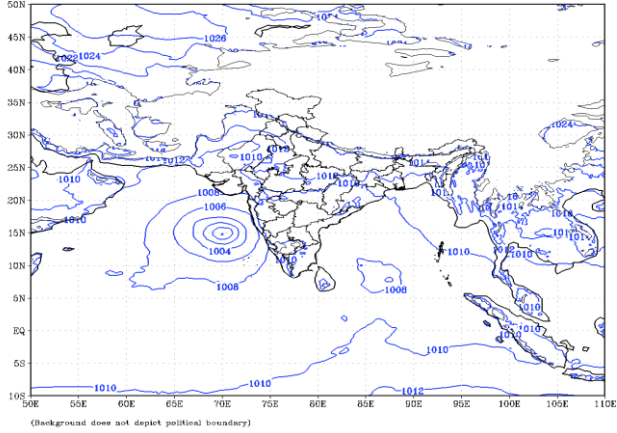
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (48 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 25-10-2019



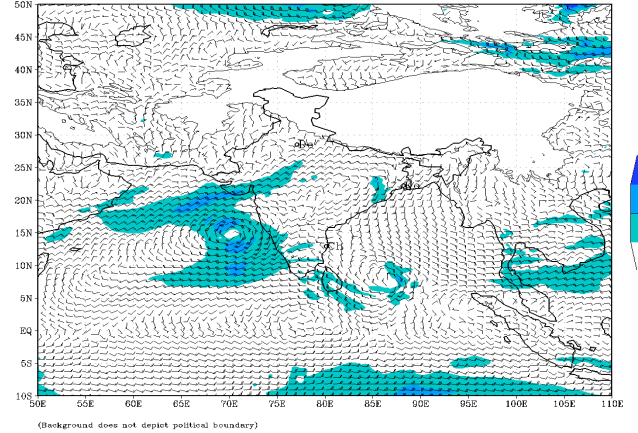
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (48 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 25-10-2019



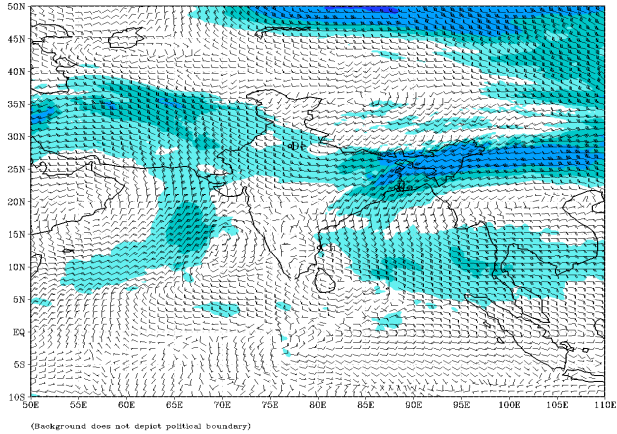
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (72 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 26-10-2019



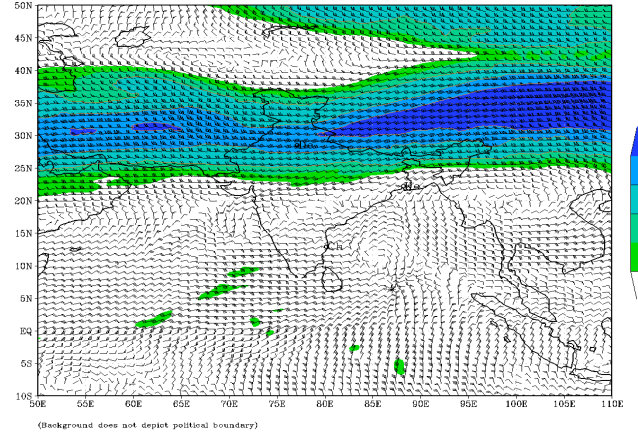
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (72 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 26-10-2019



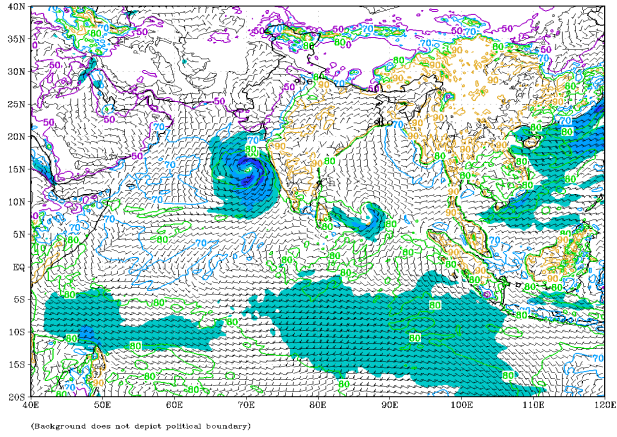
IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (72 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 26-10-2019



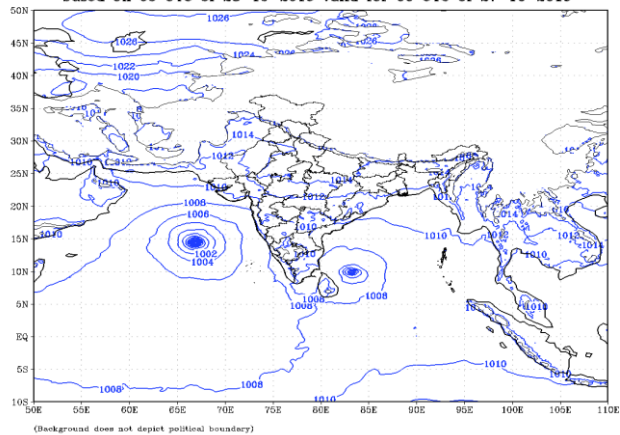
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (72 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 26-10-2019



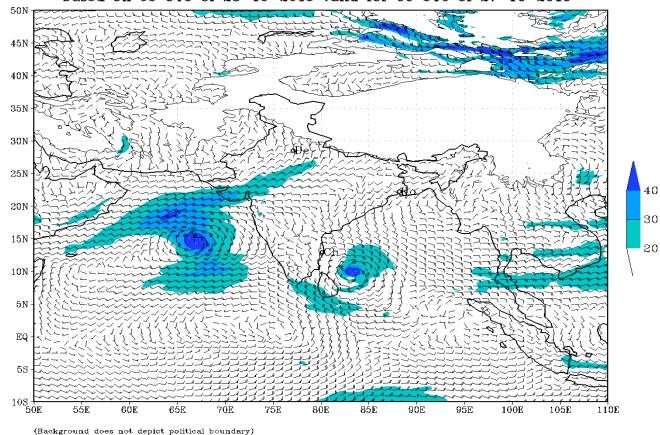
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (72 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 26-10-2019



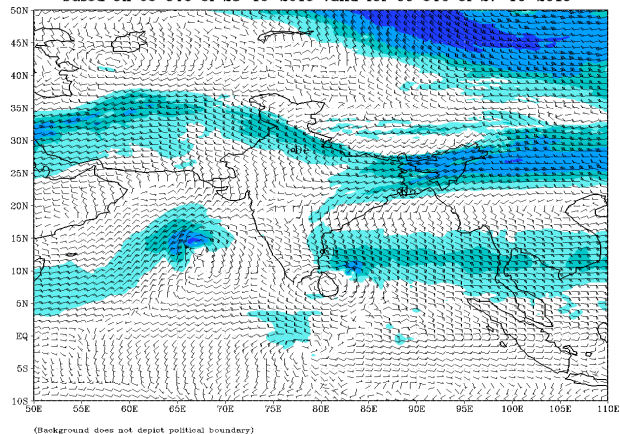
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (96 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 27-10-2019



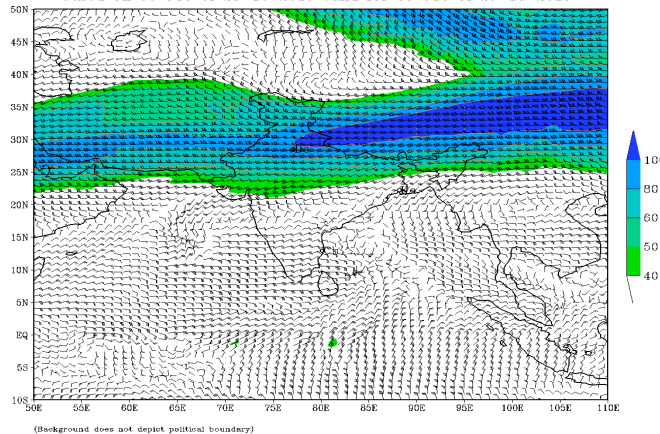
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (96 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 27-10-2019



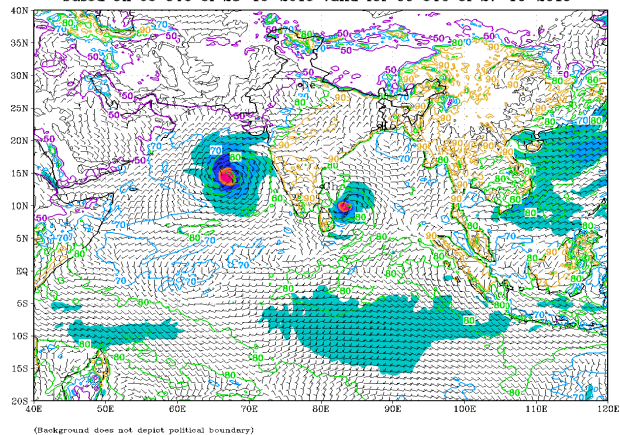
IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (96 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 27-10-2019



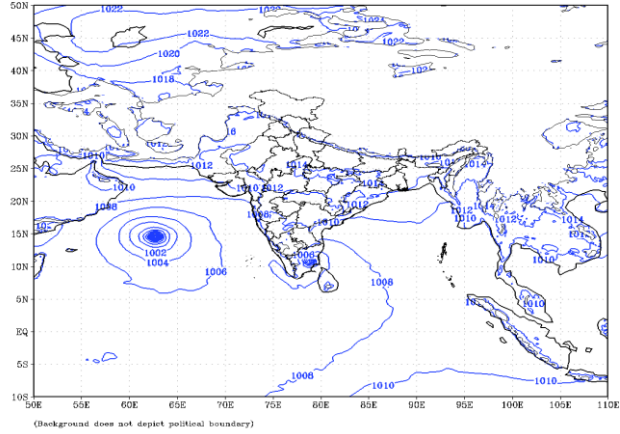
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (96 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 27-10-2019



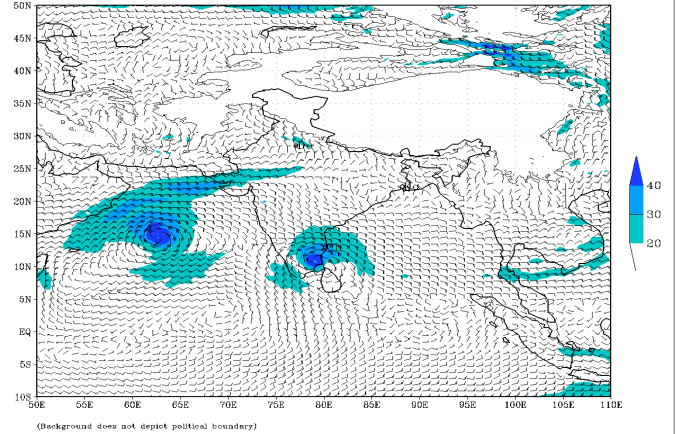
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (96 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 27-10-2019



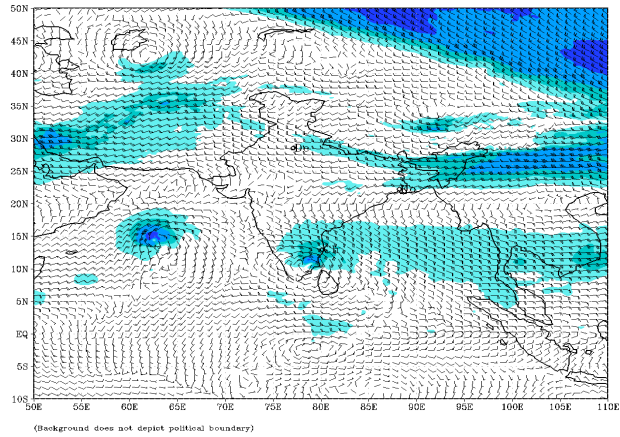
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (120 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 28-10-2019



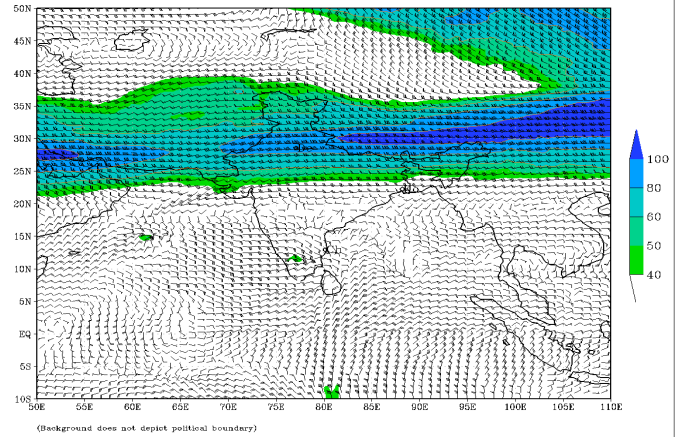
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (120 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 28-10-2019



IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (120 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 28-10-2019



IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (120 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 28-10-2019



IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (120 HR)  
based on 00 UTC of 23-10-2019 valid for 00 UTC of 28-10-2019

