



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

**Tropical Cyclone Forecast Programme
Report Dated 23rd October, 2023**

Time of Issue: 1230 UTC

Synoptic features (based on 0300 UTC analysis):

➤ **Very Severe Cyclonic Storm “Tej” (pronounced as Tej) over Westcentral Arabian Sea**

The Very Severe Cyclonic Storm “Tej” (pronounced as Tej) over Westcentral Arabian Sea continued to move northwestwards with a speed of 12 kmph during past 6 hours and lay centered at 1430 hours IST of today, the 23rd October over the same region, near latitude 15.1°N and longitude 52.8°E, about 250 km south-southwest of Salalah (Oman) and 130 km south-southeast of Al Ghaidah (Yemen).

It is very likely to continue to move northwestwards and cross Yemen coast close to Al-Ghaidah around early hours of 24th October as a Very Severe Cyclonic Storm with wind speed of 125-135 kmph gusting to 150 kmph.

➤ **Deep Depression over Westcentral Bay of Bengal**

The Deep Depression over Westcentral Bay of Bengal moved north-northeastwards with a speed of 18 kmph during past 6 hours and lay centered at 1430 hours IST of today, the 23rd October over the same region, near latitude 17.9°N and longitude 87.2°E, about 270 km south-southeast of Paradip (Odisha), 410 km south of Digha (West Bengal) and 550 km south-southwest of Khepupara (Bangladesh).

It is likely to intensify into a Cyclonic Storm during next 3 hours. It is very likely to move nearly north-northeastwards and cross Bangladesh coast between Khepupara and Chittagong around evening of 25th October as a Deep Depression.

Dynamical and thermo-dynamical features

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
Sea Surface Temperature (SST) °C	28-30°C almost over entire BoB, 26-28 over southwest BoB adjoining to Sri Lanka coast, Gulf of Mannar, Comorin area.	29-30°C over southeast and adjoining southwest Arabian Sea, north AS. 26-28 over the system, central parts of AS, and less than 24 along and off Somalia, Yemen, Oman coasts.
Tropical Cyclone Heat Potential (TCHP) kJ/cm²	100-110 over eastcentral BoB. 50-60 over most parts of BOB and Andaman Sea. Less than 40 along Andhra Pradesh and Tamil Nadu coasts, adjoining sea areas, less than 20 over Gulf of Mannar and Comorin area.	60-80 over southeast & adjoining eastcentral, southwest Arabian Sea. 20-30 over eastcentral and adjoining northeast AS, along and off west coast of India, less than 10 over westcentral and southwest AS.

Cyclonic Relative vorticity ($\times 10^{-6} \text{ s}^{-1}$)	140-160 over the system, 100 over its surrounding area with vertical extension upto 500 hPa level.	160-170 over the system centre and vertical extension upto 500 hpa level, 100 surrounding the system and vertical extension upto 500 hpa level.
Low Level convergence ($\times 10^{-5} \text{ s}^{-1}$)	15-25 over the system, 10 over its surrounding area.	20 over the system centre, 10 over its surrounding area.
Upper Level divergence ($\times 10^{-5} \text{ s}^{-1}$)	30 over the system centra, 10 to its northeast, along and off Yemen-Oman coast.	30 over the system centre, 10-30 over its surrounding areas.
Vertical Wind Shear (VWS knots)	15-20 over the westcentral BoB, 30 over the south and north BoB.	15-20 over westcentral AS, 5-10 over south AS, 25-30 over north and adjoining central AS.
Wind Shear Tendency (knots)	Decreasing tendency over the central BoB, increasing tendency over the north and south BoB.	Decreasing tendency towards the southern regions of the system, southeast and adjoining central AS, increasing tendency over southwest and north AS.
Upper tropospheric Ridge	Along 18°N over BoB	Along 18°N over AS

Satellite observations based on INSAT imagery (0300 UTC):

(a) Over the BoB & Andaman Sea:-

Scattered to broken low/mod clouds with embedded intense to very intense convection over BoB north of lat 15.0N . Scattered low/mod clouds with embedded isol mod to intense convection over rest of the BoB, Andaman Sea, Arakan Coast.

(b) Over the Arabian Sea:-

Scattered to broken low/med clouds with embedded intense to very intense convection over westcentral AS. Scattered low/med clouds with embedded mod to intense convection over northwest & south AS, Lakshadweep, islands area, Comorin area.

(c) Convection outside India:

Scattered low/med clouds with embedded mod to intense convection over Sri Lanka, Gulf of Mannar, Maldives, Tibet, adjoining China, Myanmar, Thailand, Gulf of Thailand, West Cambodia, Central Vietnam, Hainan, Sumatra, Strait of Malacca, Malaysia, Borneo, South China Sea, Java Sea, Celebes islands, Philippines, Sulu Sea, South Madagascar, South Mozambique channel and over Indian Ocean between lat 5.0N to 10.0S long 50.0E to 100.0E .

M.J.O. Index:

MJO index is in Phase 8 with amplitude less than 1. It remain in phase 8 for next seven days with amplitude less 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	Yesterday's DD moved northeastward and lay over northwest and adjoining westcentral BoB ($20\text{N}/87\text{E}$) as on night of today 23^{rd} or early hours of 24^{th} as VSCS, it will move further northeastward and cross	Yesterday's ESCS over westcentral AS weakened into VSCS as on morning of today 23^{rd} , system moves northwestwards and cross the coast near Yeman ($16\text{N}/52\text{E}$) Yeman on

	the Bangladesh coast near 22.5N/91.5E by night of 24 th or early hours of 25 th .	morning of 24 th and weakens thereafter.
IMD-GEFS	VSCS over northwest and adjoining westcentral BoB (20N/88E) by evening/night of today 23 rd , moves northeastward with very rapid weakening and cross the Bangladesh coast near 22.5N/91.5E on night of 24 th or 25 th as LPA.	Yesterday's ESCS over westcentral AS moved northwestward and cross the Yemen coast near (16.1N/52E) around early hours of 24 th as CS and weaken thereafter.
IMD-WRF	VSCS/ESCS over westcentral and adjoining northwest BoB (18N/86E) by evening/night of today 23 rd , moves northeastward and lay over northeast and adjoining northwest BoB close to Bangladesh coast (22N/89.5E) as SCS/VSCS on 24 th , cross the coast on night of 24 th or 25 th with reduced intensity.	Yesterday's ESCS over westcentral AS moved northwestward and cross the Yemen coast near (16.1N/52E) around early hours of 24 th as SCS/VSCS and weaken thereafter.
NCMRWF-NCUM	Yesterday's system moves northeastward and lay over northwest BoB (19N/89E) as DD/CS as on today 23 rd , moves further northeastward and lay over northeast BoB close to Bangladesh coast (20.5N/91.5E) as DD on 24 th , weaken thereafter and cross the coast on 25 th as D.	Yesterday's ESCS over westcentral AS moved northwestward and cross the Yemen coast near (16.1N/52E) around early hours of 24 th as SCS/VSCS and weaken thereafter.
NCMRWF-NEPS	Yesterday's system moves northeastward and lay over northwest BoB (19N/88E) as CS as on today 23 rd , moves further northeastward and lay over northeast BoB (21N/91E) as D on 24 th , weaken thereafter and cross the Bangladesh coast near 22N/91.5E on 25 th as LPA.	Yesterday's ESCS over westcentral AS moved northwestward and cross the Yemen coast near (16.1N/52E) around early hours of 24 th as SCS/VSCS and weaken thereafter.
NCMRWF-UM (Regional)	Yesterday's system moves northeastward and lay over northwest BoB (19N/88E) as CS as on today 23 rd , moves further northeastward and lay over northeast BoB (20.5N/90.5E) as DD on 24 th , weaken thereafter and cross the Bangladesh coast near 22N/91.5E on 25 th as LPA.	
ECMWF	CS over northwest BoB (19.4N/88.6E) as on night of today 23 rd , will moves northeastward and lay over northeast BoB (20.6N/90.5E) as CS on 24 th , will moves northeastward and lay over northeast BoB close to the Bangladesh coast (21.7N/91.1E) as CS on 25 th , cross the coast on the same day as D.	Yesterday's ESCS moves northwestward with weakening and cross the Yemen coast (16.1N/52.2E) as SCS by night of today 23 rd or morning of 24 th .
NCEP-GFS	DD/CS over northwest BoB (20.5N/89E) as on today 23 rd , moves northeastward and lay over northeast BoB close to Bangladesh coast (22.5N/92.5E) as LPA on 24 th , cross the coast on 25 th .	Yesterday's ESCS moves northwestward with weakening and cross the Yemen coast (16.1N/52.2E) as SCS/VSCS by night of today 23 rd or morning of 24 th .

IMD-Genesis Potential Parameter	Potential zone of Cyclogenesis over northeast BoB as on today 23 rd .	Potential zone of Cyclogenesis over westcentral AS close to the Yemen-Oman coast as on today 23 rd .
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Summary and conclusion:

1. For the Bay of Bengal:

Most of the models are indicating further intensification of system into cyclonic storm around 1200 UTC of 23rd October 2023. Models are also indicating weakening of the system from 24th 1200 UTC onwards and crossing over Bangladesh coast around 1200 UTC.

Considering all these, the deep depression over westcentral BoB is very likely to intensify into a cyclonic storm during next 6 hours. It will intensify further and peak intensity (45 knots gusting to 55 knots) will occur around 0000 UTC of 24th. Thereafter, it is expected to weaken slightly while moving towards Bangladesh coast. It is likely to weaken under the influence of high vertical wind shear in association with the upper air trough in westerly with embedded jet stream over the region. It is very likely to move nearly north-northeastwards and cross Bangladesh coast between Khepupara and Chittagong around 1200 UTC of 25th October as a deep depression with wind speed of 55-65 gusting to 75 kmph (30 gusting to 40 knots).

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

“-“ INDICATE THAT CYCLOGENESIS HAS ALREADY OCCURRED. THE ABOVE TABLE INDICATES PROBABILITY OF CYCLOGENESIS ONLY (FORMATION OF DEPRESSION).

2. For the Arabian Sea:

Most of the models are indicating that the very severe cyclonic storm “Tej” (pronounced as Tej) is very likely to move northwestwards and cross Yemen coast close to Al Ghaidah (Yemen) during 1800 UTC of 23rd to 0000 UTC of 24th October as a severe/very severe cyclonic storm.

In view of above, it is concluded that the very severe cyclonic storm “Tej” (pronounced as tej) is very likely to move northwestwards and cross Yemen coast close to Al Ghaidah (Yemen) during night of 23rd October and early hours of 24th October as a severe/very severe cyclonic storm with wind speed of 125-135 Kmph gusting to 150 kmph (70 knots gusting 80 knots).

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

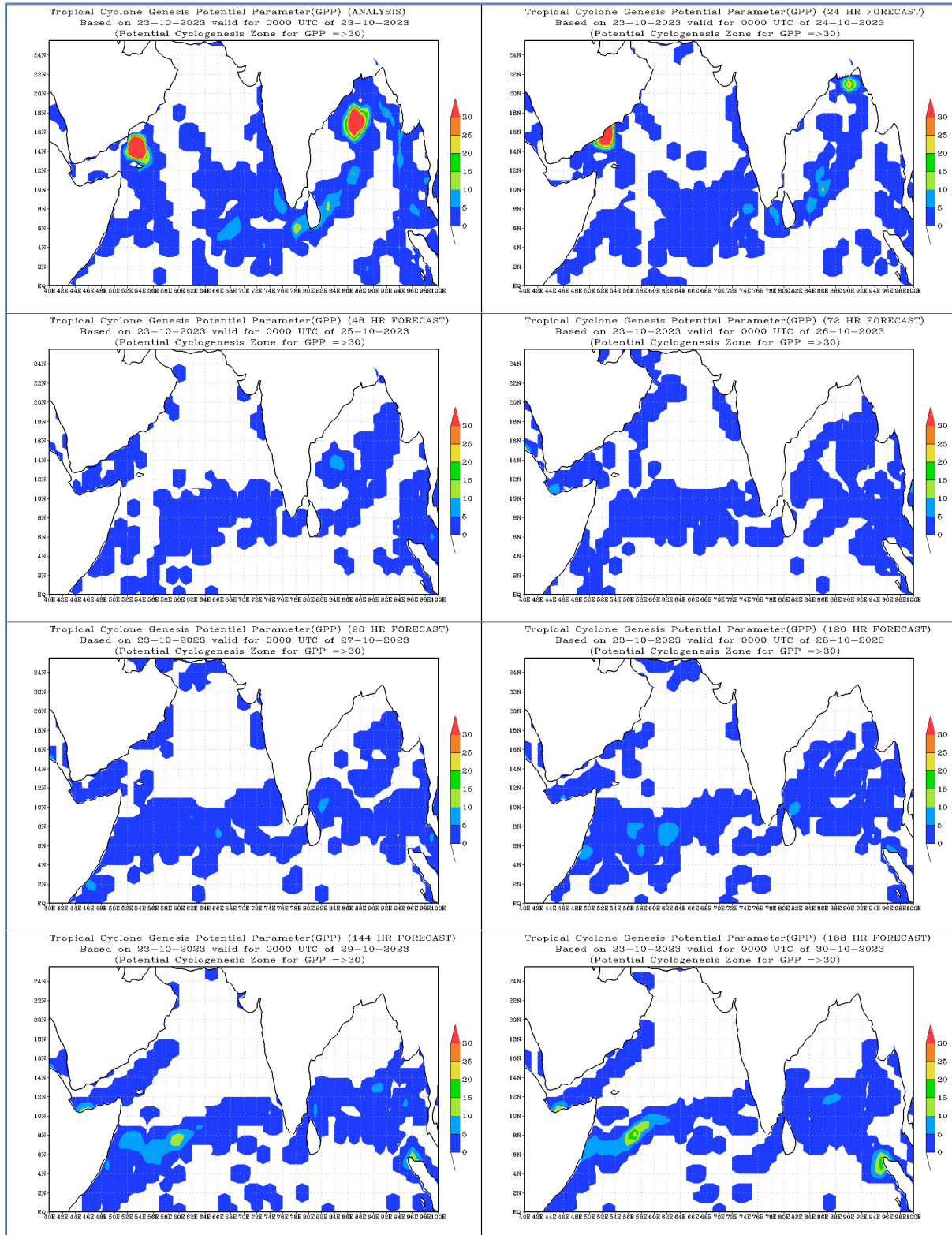
“-“indicate that Cyclogenesis has already occurred. The above table indicates probability of cyclogenesis (formation of depression).

Advisory for fishermen:

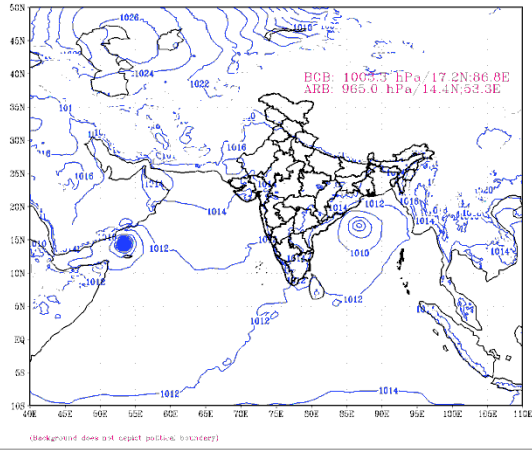
Fishermen are advised not to venture into following areas:

- ❖ **Westcentral Arabian Sea** till 24th evening.
- ❖ Those out at sea are advised to return to coast.
- ❖ **Westcentral Bay of Bengal** on 23rd October onwards.
- ❖ **North Bay of Bengal and along & off Odisha, West Bengal and Bangladesh coasts** from 24th to 26th October.

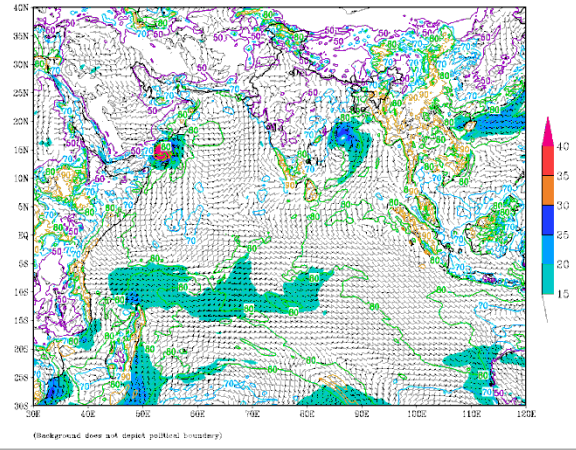
Intense Observation Period (IOP) is suggested for Oman and Yemen coasts on 23rd, 24th October, Odisha coast on 23rd & 24th and West Bengal and Bangladesh coasts on 24th 25th to 26th October.



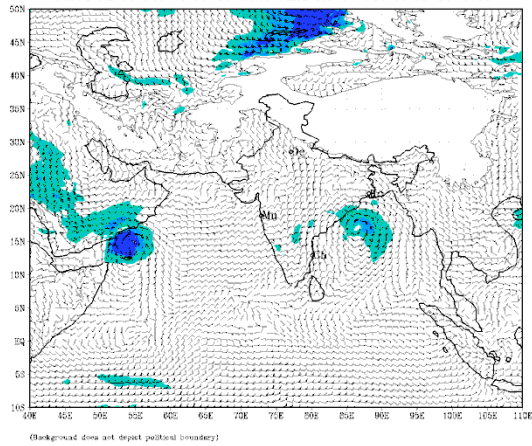
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (00 HR)
based on 00 UTC of 23-10-2023 valid for 00 UTC of 23-10-2023



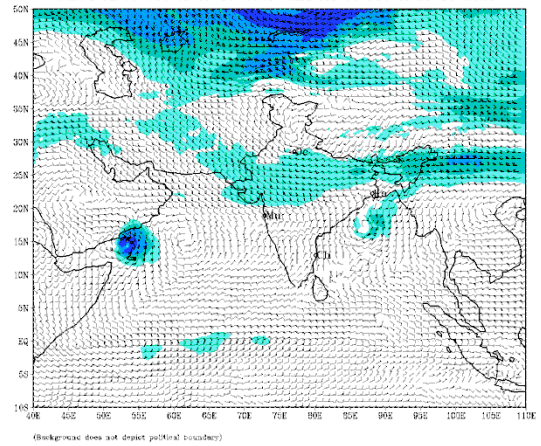
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (00 HR)
based on 00 UTC of 23-10-2023 valid for 00 UTC of 23-10-2023



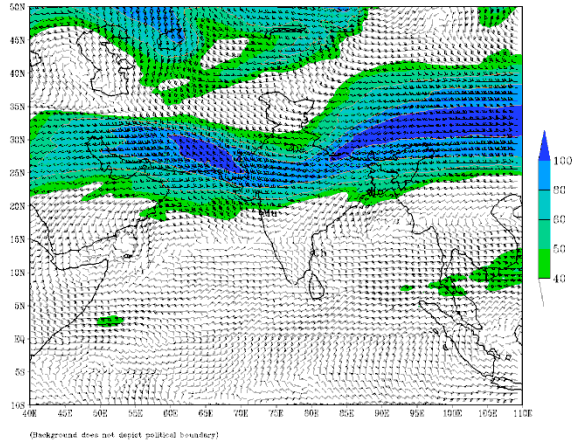
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based on 00 UTC of 23-10-2023 valid for 00 UTC of 23-10-2023



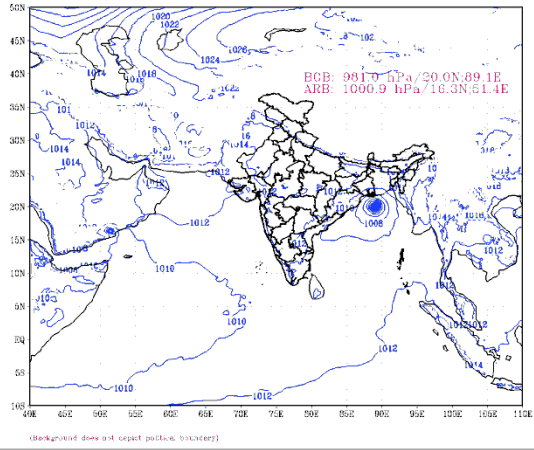
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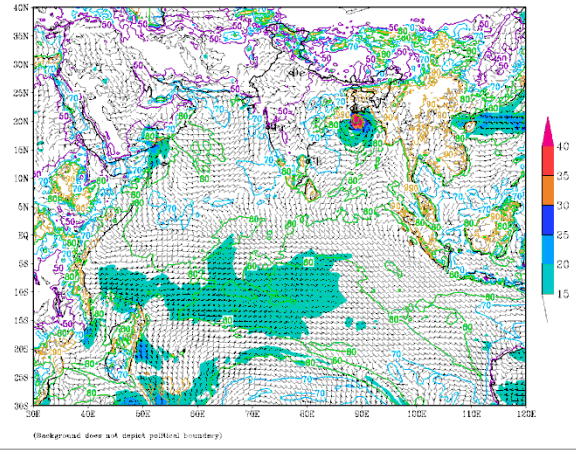
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based on 00 UTC of 23-10-2023 valid for 00 UTC of 23-10-2023



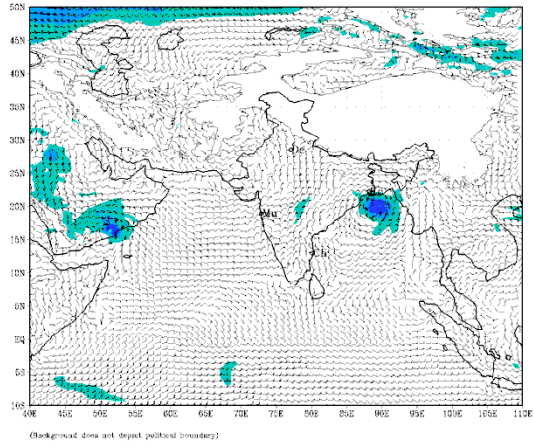
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (24 HR)
based on 00 UTC of 23-10-2023 valid for 00 UTC of 24-10-2023



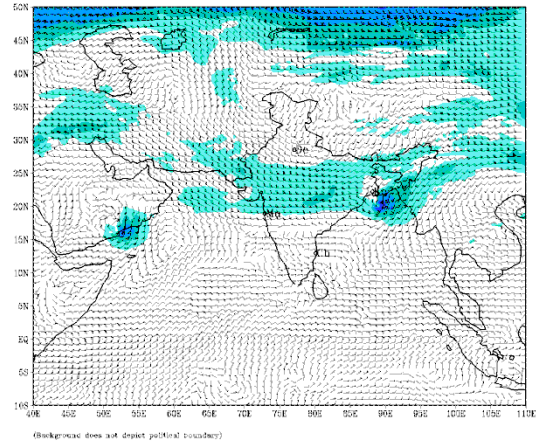
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (24 HR)
based on 00 UTC of 23-10-2023 valid for 00 UTC of 24-10-2023



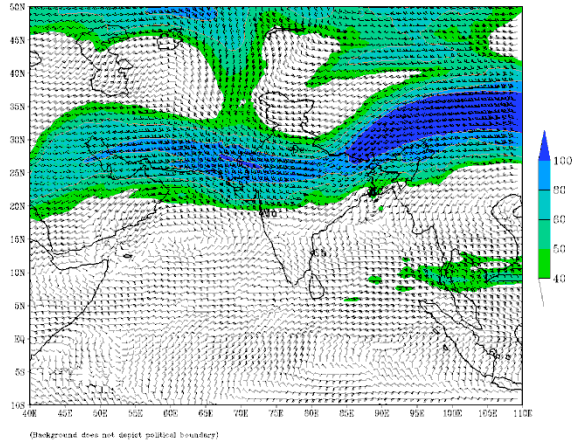
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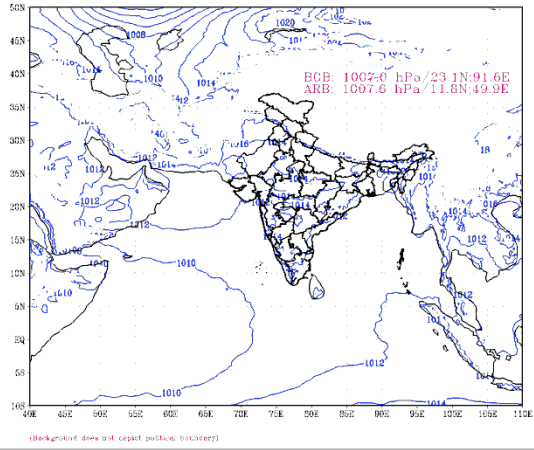
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based on 00 UTC of 23-10-2023 valid for 00 UTC of 24-10-2023



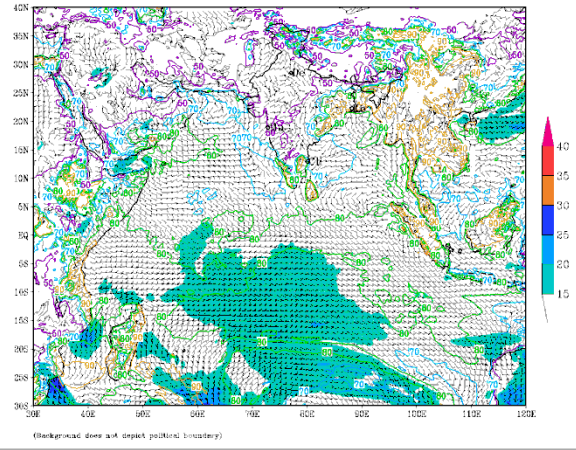
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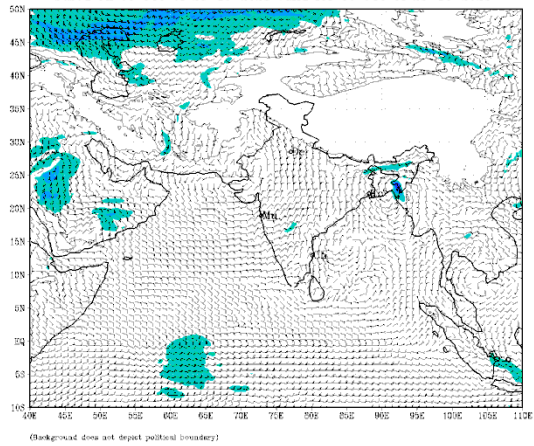
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (48 HR)
based on 00 UTC of 23-10-2023 valid for 00 UTC of 25-10-2023



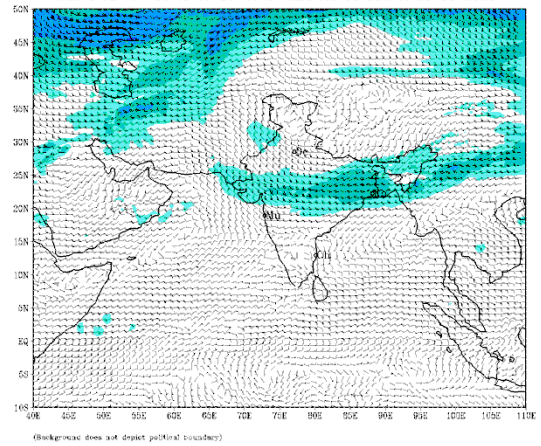
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (48 HR)
based on 00 UTC of 23-10-2023 valid for 00 UTC of 25-10-2023



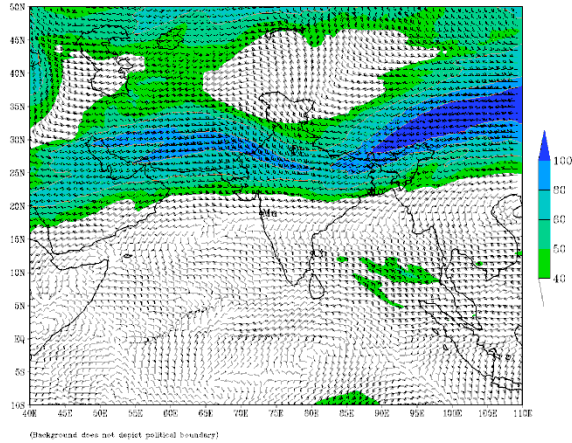
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (48 HR)
based on 00 UTC of 23-10-2023 valid for 00 UTC of 25-10-2023



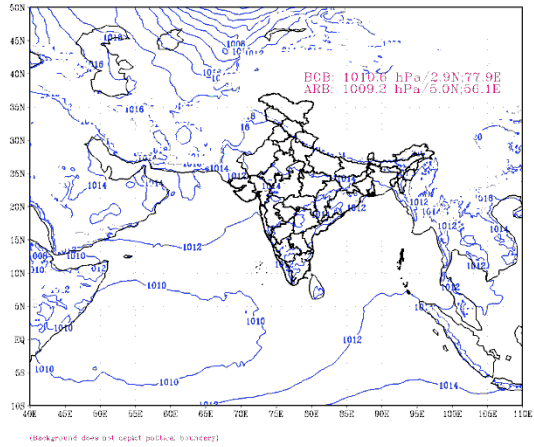
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based on 00 UTC of 23-10-2023 valid for 00 UTC of 25-10-2023



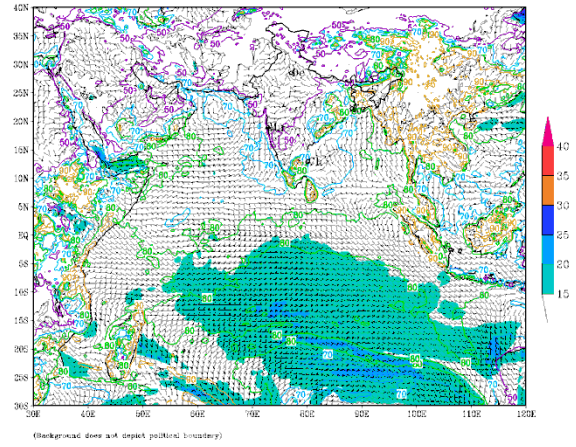
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based on 00 UTC of 23-10-2023 valid for 00 UTC of 25-10-2023



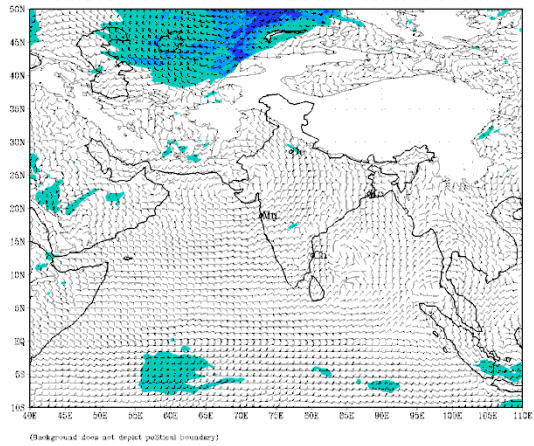
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based on 00 UTC of 23-10-2023 valid for 00 UTC of 26-10-2023



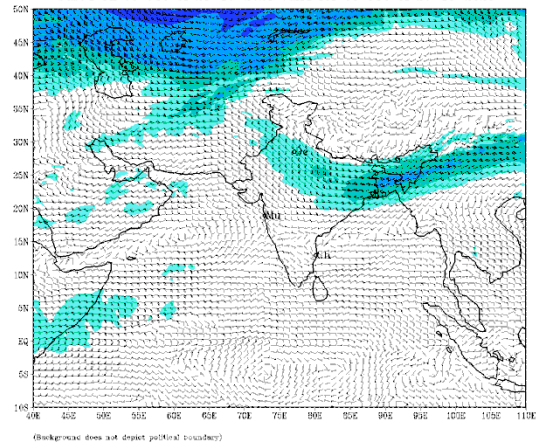
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (72 HR)
based on 00 UTC of 23-10-2023 valid for 00 UTC of 26-10-2023



IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 23-10-2023 valid for 00 UTC of 26-10-2023



IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 23-10-2023 valid for 00 UTC of 26-10-2023



IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 23-10-2023 valid for 00 UTC of 26-10-2023

