



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

**Tropical Cyclone Forecast Programme
Report Dated 20th October, 2024**

Time of Issue: 1330 UTC

Synoptic features (based on 0300 UTC analysis):

- ❖ Yesterday's upper air cyclonic circulation over central Andaman Sea lay over North Andaman Sea in the early morning (0530 hours IST) and persisted over the same region in the forenoon (0830 hrs IST) of today, the 20th October 2024. Under its influence, a Low Pressure Area is very likely to form over the Eastcentral Bay of Bengal and adjoining north Andaman Sea during next 24 hours. It is very likely to move west-northwestwards and intensify into a depression by 22nd October morning and into a cyclonic storm by 23rd October, 2024 over Eastcentral Bay of Bengal. Thereafter, it is very likely to move northwestwards and reach northwest Bay of Bengal off Odisha-West Bengal coasts by 24th October morning.

- ❖ The well marked low pressure area over westcentral Arabian Sea weakened into a low pressure area over the same region at 0830 hours IST of today, the 20th October. The associated cyclonic circulation extends upto 5.8 km above mean sea levels. It is likely to move west-northwestwards away from Indian coast and weaken further during next 24 hours.

- ❖ The upper air cyclonic circulation over southwest & adjoining westcentral Bay of Bengal off north Tamil Nadu & south Andhra Pradesh coast extending upto 5.8 km above mean sea level tilting southwestwards with height persists.

Dynamical and thermo-dynamical features

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
Sea Surface Temperature (SST) °C	29-32°C over entire BoB	➤ 28-30°C over eastern parts of AS. ➤ 27°C over the westcentral and southwest parts of AS
Tropical Cyclone Heat Potential (TCHP) kJ/cm ²	➤ >120 over northeast BoB, westcentral BoB and south Andaman Sea. ➤ <80 over northwest & adjoining westcentral BoB ➤ 80-100 over remaining BoB	➤ 80-90 over central parts of south AS and adjoining EIO. ➤ 60-70 over eastcentral AS ➤ less than 50 over westcentral AS & off Oman and Somalia coasts
Cyclonic Relative vorticity (X10 ⁻⁶ s ⁻¹)	80-100 over north Andaman Sea & adjoining south Andaman Sea off Myanmar coast with vertical extension upto 500 hpa 20-30 over westcentral BoB off Tamil Nadu coast.	30-40 over westcentral AS & adjoining eastcentral AS with vertical extension upto 500 hpa level and 20-30 over westcentral AS off Somalia coast
Low Level	10-20 over north Andaman Sea &	5 over westcentral AS and

convergence ($X10^{-5} s^{-1}$)	Andaman & Nicobar islands off Thailand coast 5 over westcentral BoB off Tamil Nadu coast	another 5 over Somalia coast
Upper Level divergence ($X10^{-5} s^{-1}$)	20-30 over north Andaman Sea, westcentral BoB and Andaman & Nicobar islands off Thailand coast. 5-10 over south BoB.	5 over westcentral AS off Oman-Yemen coast and another 5 over eastcentral & Lakshadweep islands area off Karnataka coast.
Vertical Wind Shear (VWS knots) Low: 05-10 knots Moderate: 10-20 knots High: >20 knots	Low-moderate over central Bob and high over north & south BoB and adjoining EIO	Low-moderate over central AS and high over north & south AS and adjoining EIO
Wind Shear Tendency (knots)	Decreasing tendency over southwest BoB off Sri Lanka coast and Andaman & Nicobar islands. Increasing tendency over rest of BoB.	Increasing tendency over westcentral AS and adjoining north, south and eastcentral AS off Oman coast. Decreasing tendency over Rest of AS.
Upper tropospheric Ridge	Along 17.0°N over BoB.	Along 20.0°N over AS.

Satellite observations based on INSAT imagery (0300 UTC):

(a) Over the BoB & Andaman Sea:-

Scattered to broken low and medium clouds with embedded intense to very intense convection lay over eastcentral adjoining northeast & southeast Bay of Bengal and Andaman sea, Tenasserim coast, gulf of Martaban (minimum ctt minus 80⁰ -93⁰ C). Scattered low and medium clouds with embedded moderate to intense convection lay over rest of Bay of Bengal.

(b) Over the Arabian Sea:-

Scattered to broken low and medium clouds with embedded moderate to intense convection lay over westcentral Arabian Sea & southeast Arabian Sea off Karnataka-Kerala coasts. Scattered low and medium clouds with embedded isolated weak to moderate convection lay over northeast Arabian Sea off south Gujrat coast, Gulf of Cambay, eastcentral & south Arabian Sea.

(c) Convection outside India:

Scattered low and medium clouds with embedded moderate to intense convection lay over Sri Lanka, Nepal, Tibet, China, South Myanmar, Thailand, Gulf of Thailand, Cambodia, Laos, Vietnam, Sumatra, Strait of Malacca, Malaysia, Borneo, South China Sea, Java Islands & Sea, Celebes Islands & Sea, Philippines, Sulu Sea, Madagascar, and over the South Indian Ocean between latitude 5.0⁰ S to 20.0⁰ S and longitude 55.0⁰ E to 100.0⁰ E and between latitude 20.0⁰ S to 30.0⁰ S and longitude 80.0⁰ E to 120.0⁰ E.

M.J.O. Index:

Madden Julian Oscillation (MJO) index is currently in Phase 5 with amplitude greater than 1. It is likely to move to phase 6 during end of week 1 with amplitude remaining more 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	IMD GFS indicating low pressure area over east BoB (12.5/93) on 21/00 UTC, Depression over eastcentral BoB (15/93) on 21/12 UTC, Cyclonic Storm (CS) over east central parts of BoB (15/89) at 23/00 UTC, crossing near puri as VSCS (19.8/85.5) on 25/00 UTC.	Low pressure area over westcentral AS on 20/00 UTC moving nearly westwards till 22/00 UTC and becoming less marked thereafter.
IMD-GEFS	IMD GEFS indicating low pressure area over east BoB (12.5/93) on 21/00 UTC, Depression over eastcentral BoB (15/93) on 21/12 UTC, Cyclonic Storm (CS) over east central parts of BoB (15/89) at 23/00 UTC, crossing near puri as VSCS (19.8/85.5) on 25/00 UTC.	Low pressure area over westcentral AS on 21/00 UTC becoming less marked on 22 nd .
IMD-WRF	WRF is indicating Well marked low pressure area over north Andaman sea (14/94) on 20/00 UTC, Depression over EastCentral AS (15/95) on 22/00 UTC, Cyclonic Storm over EastCentral BoB (15.5/89.5) on 23/00 UTC.	Low pressure area over westcentral AS 20/00 UTC becoming less marked on 21 st .
NCMRWF-NCUM(G)	Cyclonic circulation over north Andaman sea (14/94) on 20/00 UTC, Low pressure area over East Central BoB (15/92) on 21/00 UTC, Depression over eastcentral BoB (15/90) on 22/00 UTC, Cyclonic Storm over Westcentral BoB (18/89) on 23/12 UTC crossing over WestBengal-Bangladesh COAST near (22/89.2) on 24/12 UTC.	Low pressure area over westcentral AS to move west northwestwards towards gulf of Eden till 22/00 UTC and less marked thereafter.
NCMRWF-NCUM(R)	NCUM(R) is indicating a low pressure area over eastcentral BoB (15/92.5) on 20/12 UTC, Depression over eastcentral BoB on 21/06 UTC, Cyclonic Storm over Westcentral BoB (16.5/88) on 23/06 UTC, and crossing near West Bengal coasts (22/87.5) on 24/12 UTC.	Low pressure area over westcentral AS 20/00 UTC moving west northwestwards becoming less marked on 21/12 UTC.
NCMRWF-NEPS	Low Pressure Area over EastCentral BOB (14.8/92.5) on 20/00 UTC, Depression over eastcentral BoB (15.2/90.2) on 22/00 UTC, cyclonic Storm over northwest BoB (18.5/89) on	Low pressure area over westcentral AS 20/00 UTC moving west northwestwards becoming less marked on 22/00 UTC.

	23/00 crossing West Bengal-Bangladesh coast (22/88.8) on 24/12 UTC.	
ECMWF	ECMWF is indicating low over eastcentral BoB (15.1/93.1) on 22/03 UTC, Depression over eastcentral BoB (14.9/91.5) on 23/00 UTC, Cyclonic Storm (CS) over eastcentral BoB (16.7/88.7) on 23/09 UTC and crossing near puri coast (20.8/86.6) as an SCS (55-60 knots) on 24/15 UTC.	Low pressure area over westcentral AS on 20/00 UTC, moving west northwestwards and becoming less marked on 22/00 UTC.
NCEP-GFS	NCEP GFS is indicating LPA over north Andaman Sea (13.7/94.6) on 20/12 UTC, Depression over eastcentral BoB (15/92.5) on 21/00 UTC, Cyclonic Storm over eastcentral BoB (16.5/92.1) on 22/00 UTC and crossing over West Bengal-Bangladesh Coasts (22/88) on 24/06 UTC as VSCS and above category systems.	Low pressure area over westcentral AS on 20/00 UTC, moving west northwestwards and becoming less marked on 22/00 UTC.
IMD MME	IMD MME is indicating depression over north Andaman sea (12.5/95.2) on 20/00 UTC, Cyclonic Storm over East central BoB (16.6/89.1) on 23/00 UTC crossing over North Odisha (21.3/86.9) on 25/00 UTC with wind speed of 40 knots.	-

Summary:

(a) Bay of Bengal:

There is large consensus among various models about the intensification of cyclonic circulation over north Andaman Sea into a cyclonic storm over Eastcentral Bay of Bengal on 23rd. There is also consensus among modes like ECMWF & GFS group regarding the crossing of the system over North Odisha coast. However the NCUM group of models are indicating crossing over West Bengal-Bangladesh coasts. Models including GFS group, IMD MME and ECMWF are also indicating further intensification of the system into a severe category cyclonic storm. However, NCUM group of models and IMD MME are indicating peak intensification upto cyclonic storm stage.

Considering all the above, the cyclonic circulation over north Andaman Sea is likely to become a Low Pressure Area over the Eastcentral Bay of Bengal and adjoining north Andaman Sea during next 12 hours. It is very likely to move west-northwestwards and intensify into a depression by 22nd October morning and into a cyclonic storm by 23rd October, 2024 over the eastcentral Bay of Bengal. Thereafter, it is very likely to move northwestwards and reach northwest Bay of Bengal off Odisha-West Bengal coasts by 24th October morning.

(b) Arabian Sea

Most of the numerical models are indicating nearly westwards movement of the system and it's weakening by 22/00 UTC.

Considering various environmental conditions and model guidance, it is inferred that:

- ❖ The cyclonic circulation over north Andaman Sea is very likely to become a Low-Pressure Area over the Eastcentral Bay of Bengal and adjoining north Andaman Sea during next 12 hours. It is very likely to move west-northwestwards and intensify into a depression by 22nd October morning and into a cyclonic storm by 23rd October, 2024 over Eastcentral Bay of Bengal. Thereafter, it is very likely to move northwestwards and reach northwest Bay of Bengal off Odisha-West Bengal coasts by 24th October morning.
- ❖ The existing low pressure area over westcentral Arabian Sea is likely to move westwards and become less marked by 22/00 UTC.

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

<u>24 HOURS</u>	<u>24-48 HOURS</u>	<u>48-72 HOURS</u>	<u>72-96 HOURS</u>	<u>96-120 HOURS</u>	<u>120-144 HOURS</u>	<u>144-168 HOURS</u>
<u>NIL</u>	<u>MOD</u>	<u>HIGH</u>	-	-	-	<u>NIL</u>

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

“-“ indicate genesis has already occurred.

Probabiliy is indicated as NIL for 0%, LOW for 1-33%, MOD for 34-67% and High for 68-100%.

Advisory:

Impact Expected [along Odisha and West Bengal coasts due to heavy rainfall]

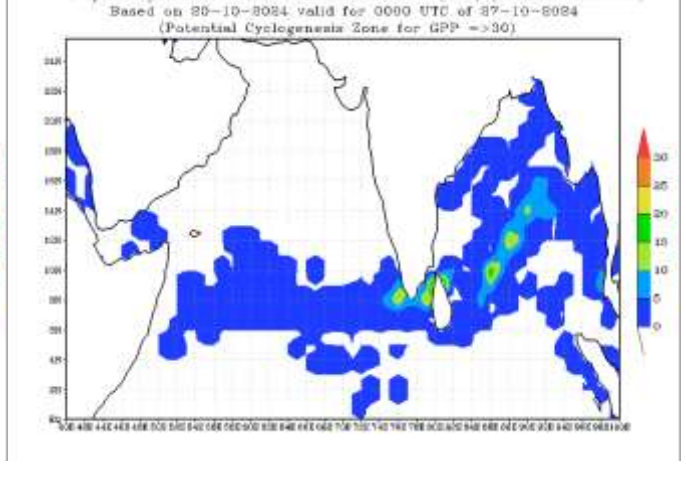
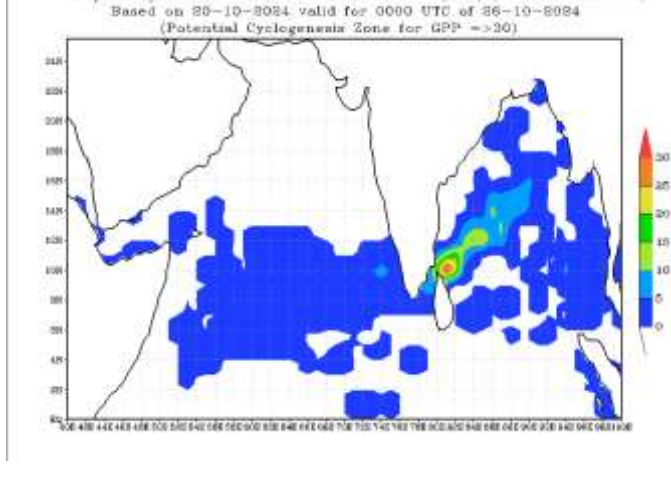
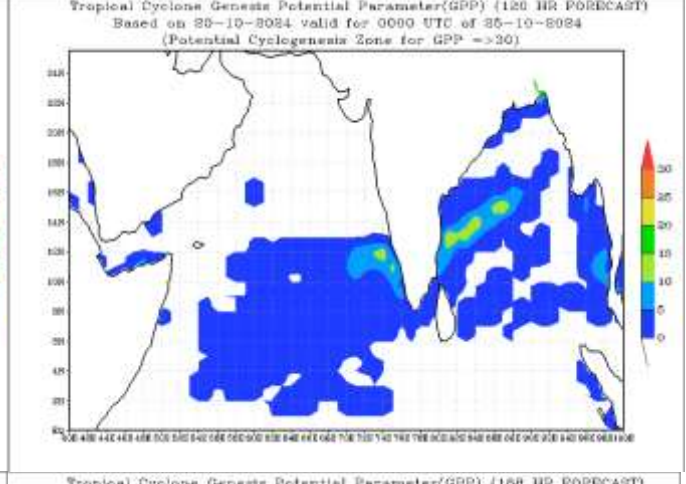
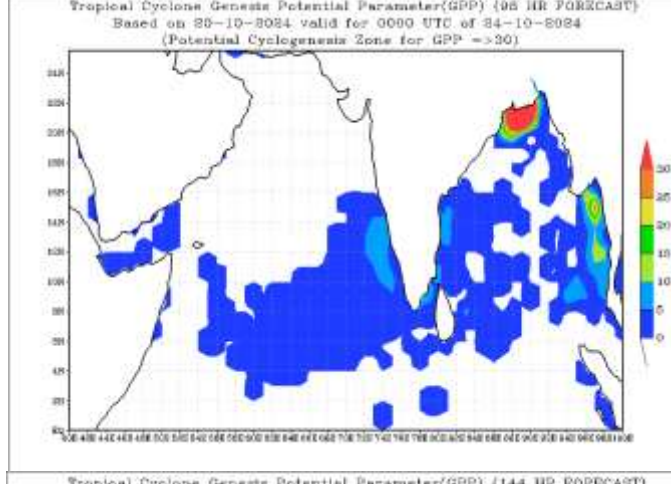
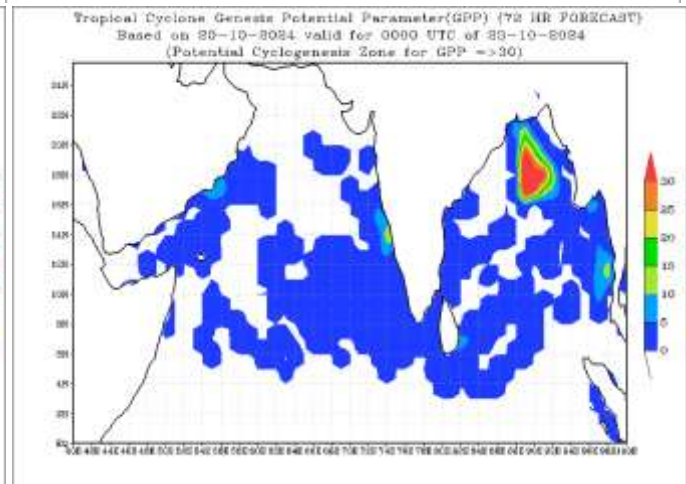
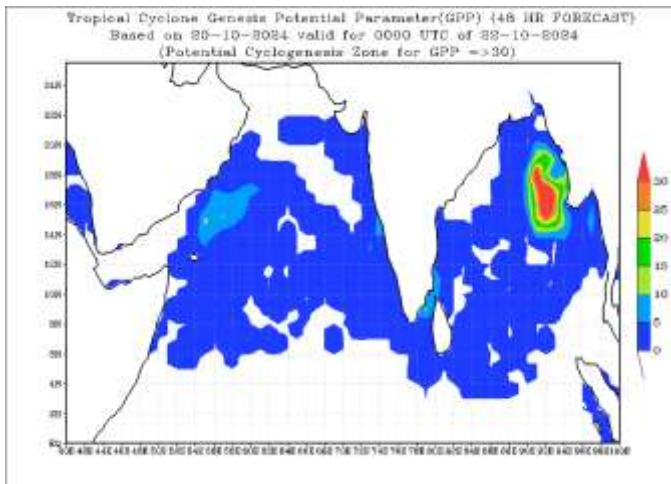
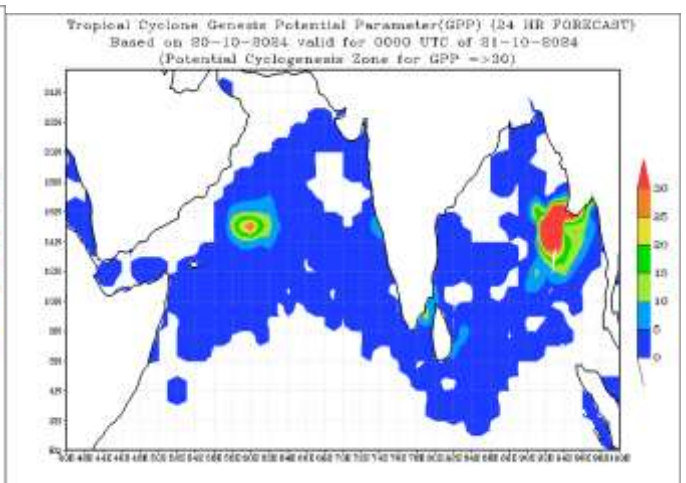
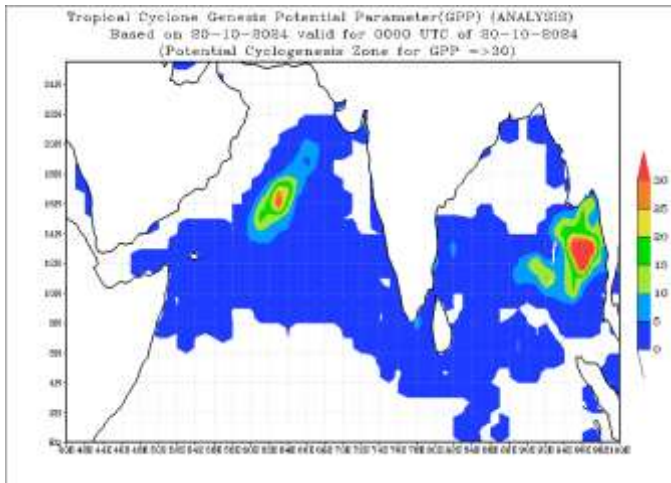
- Localized Flooding of roads, water logging in low lying areas and closure of underpasses mainly in urban areas of the above region.
- Occasional reduction in visibility due to heavy rainfall.
- Disruption of traffic in major cities and roadways due to water logging in roads and poor visibility due to heavy rain leading to increased travel time and incidents
- Localized Landslides/Mudslides/landslips/mud slips/land sinks/mud sinks.
- Likely disruption of marine and inland water transportation like small boats and trawlers.
- Minor damage to kutcha roads.
- Possibilities of damage to vulnerable structure. Breaking of tree branches and uprooting of trees.
- Damage to power and communication lines.
- Damage to horticulture and standing crops in some areas due to inundation and wind.
- It may lead to riverine flooding in some river catchments.

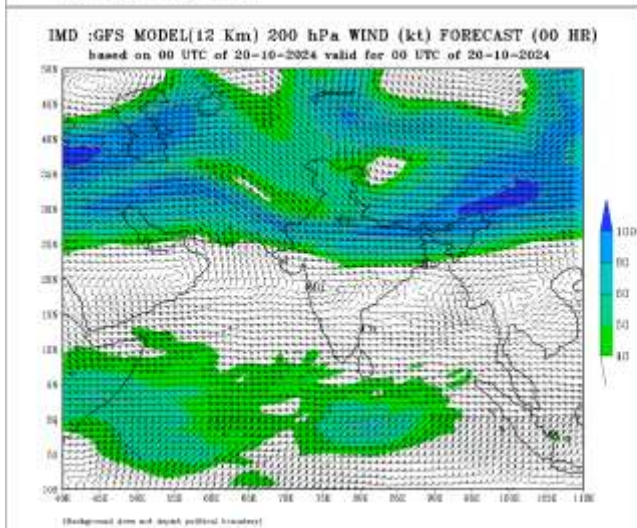
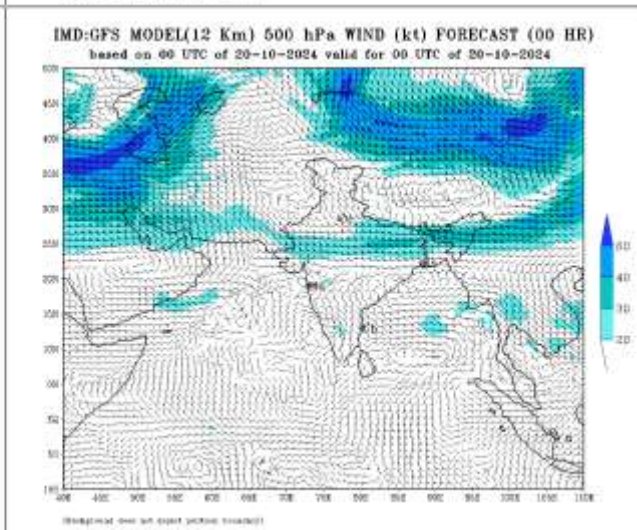
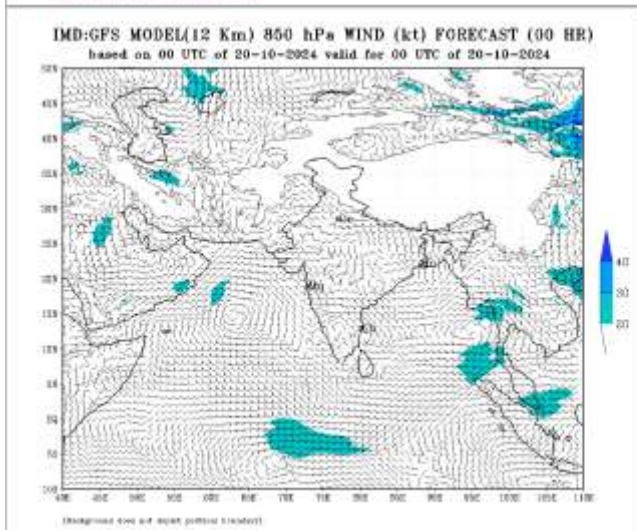
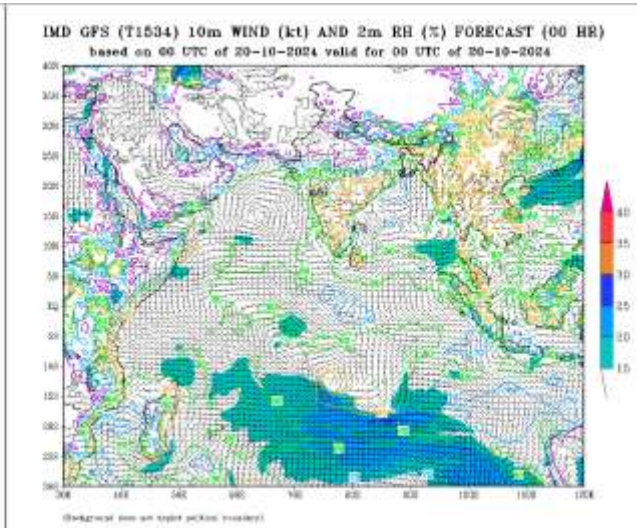
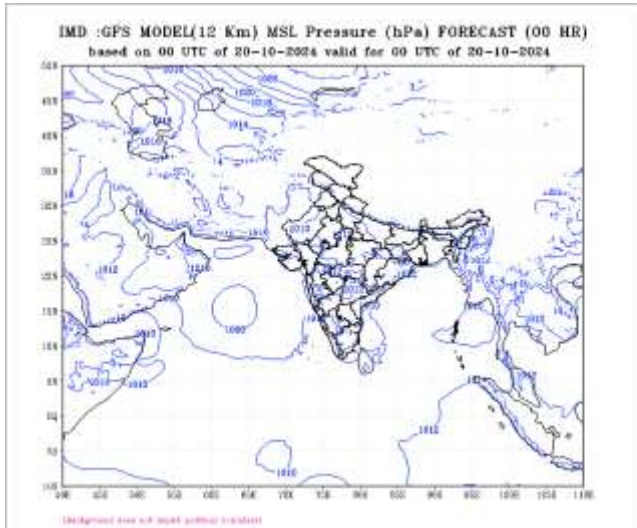
Action Suggested [affected areas of Odisha and West Bengal due to heavy rainfall]

- Fishermen are advised not to venture into
 - ✓ Andaman Sea till 21st October.
 - ✓ Eastcentral Bay of Bengal during 21st-24th October.
 - ✓ Adjoining areas of Westcentral Bay of Bengal on 23rd and 24th Oct.
 - ✓ North Bay of Bengal and along & off Odisha-West Bengal coasts during 23rd to 25th Oct. morning.
- Fishermen out at sea are advised to return to coasts by 21st October.
- Total suspension of fishing operations during 22nd to 25th Oct over Central and North Bay of Bengal.
- Judicious regulation of onshore/offshore, Port and maritime activities including shipping.
- Judicious regulation of tourism activities in Andaman & Nicobar Islands.
- Judicious regulation of surface transports including railways and roadways.
- Check for traffic congestion on your route before leaving for your destination.
- Follow any traffic advisories that are issued in this regard.
- Avoid going to areas that face the water logging problems often.
- Avoid staying in vulnerable structure.

Intense Observation Period (IOP) is suggested for:

Andaman Sea during 21st & 22nd and Odisha, West Bengal, Bangladesh and Myanmar coasts during 23rd – 25th October.



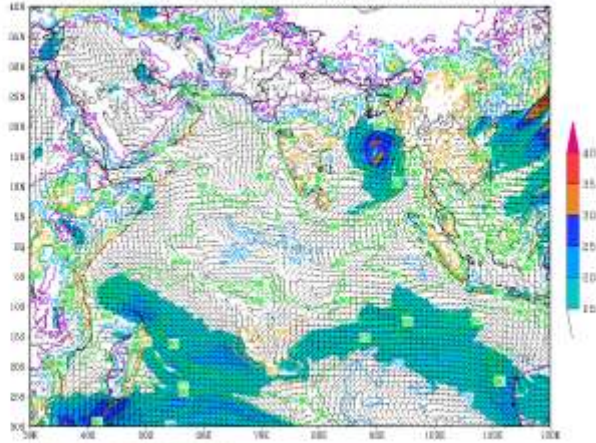


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (72 HR)
based on 00 UTC of 20-10-2024 valid for 00 UTC of 23-10-2024



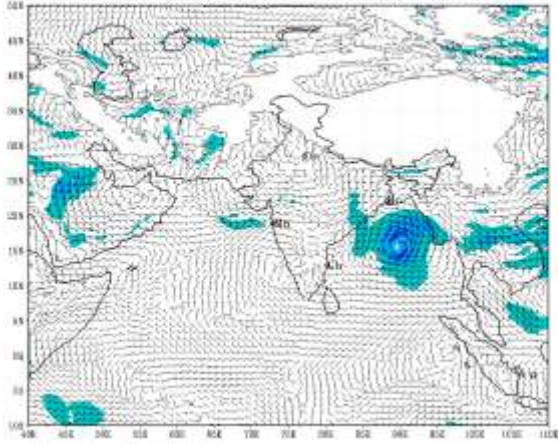
(Background area not depicted political boundary)

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (72 HR)
based on 00 UTC of 20-10-2024 valid for 00 UTC of 23-10-2024



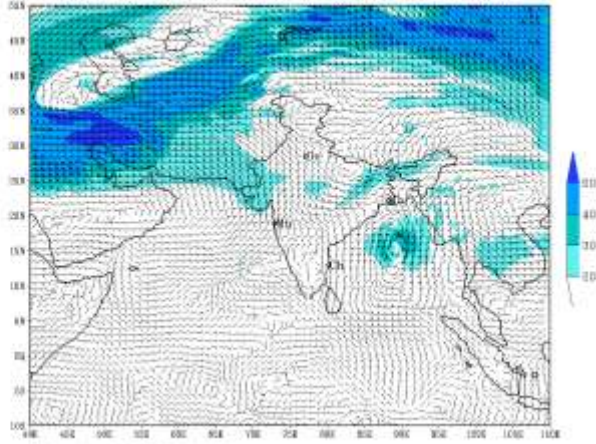
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IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (72 HR)
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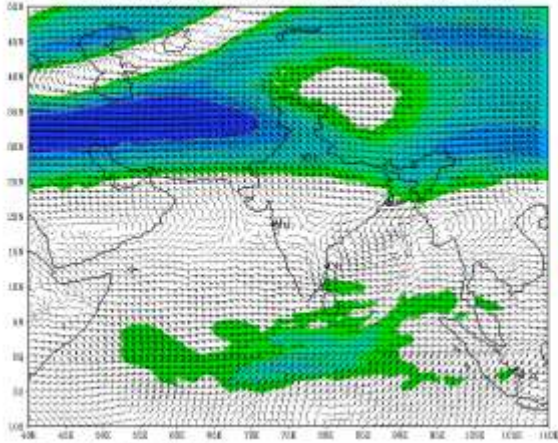
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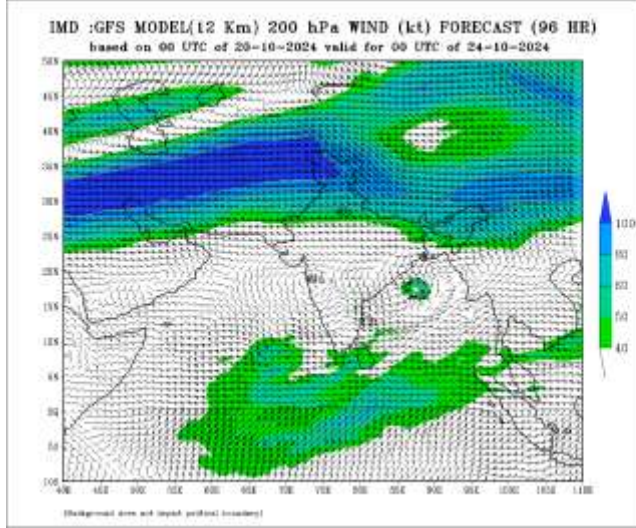
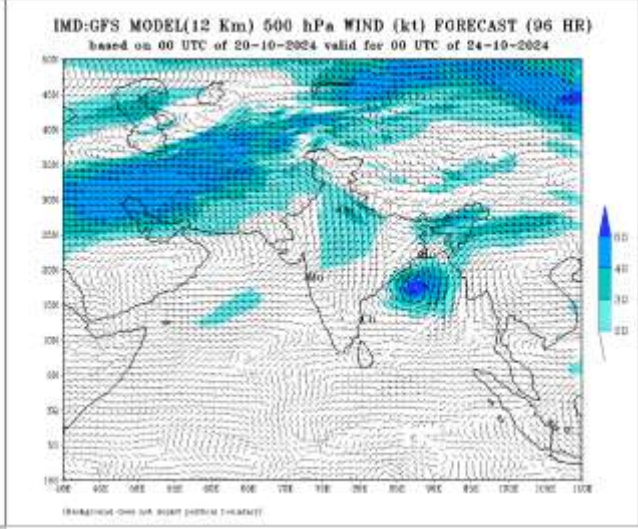
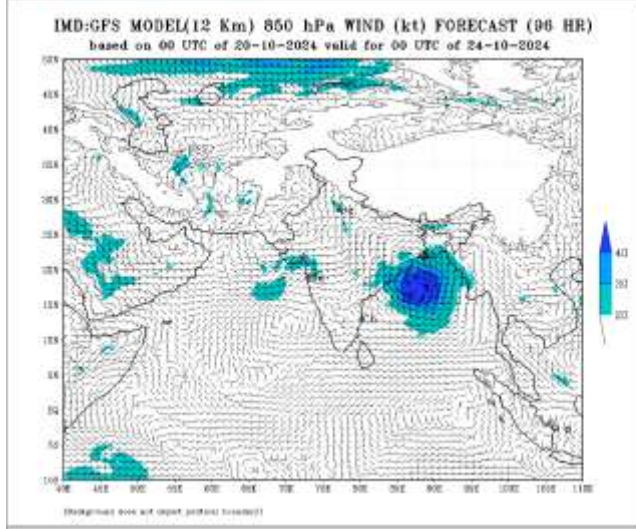
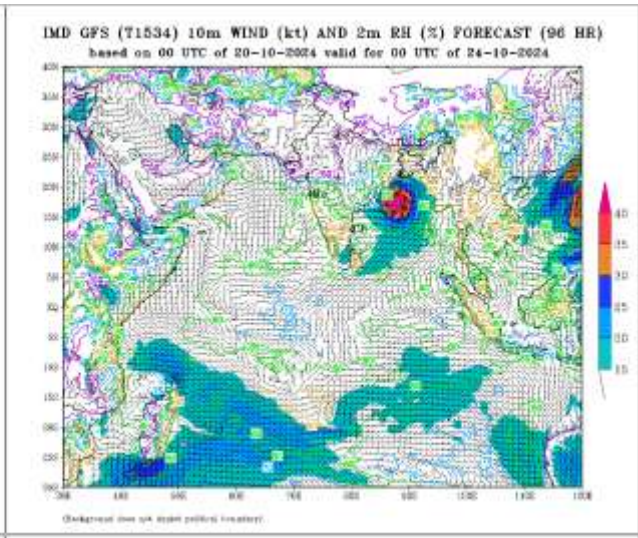
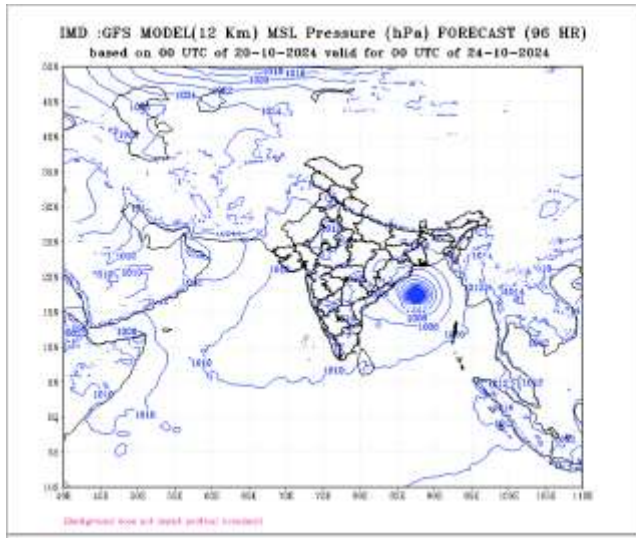


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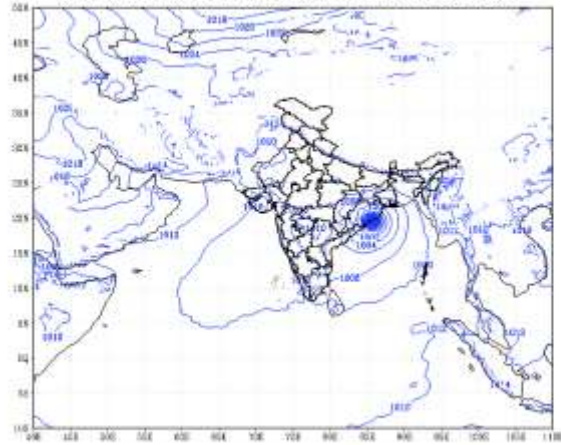
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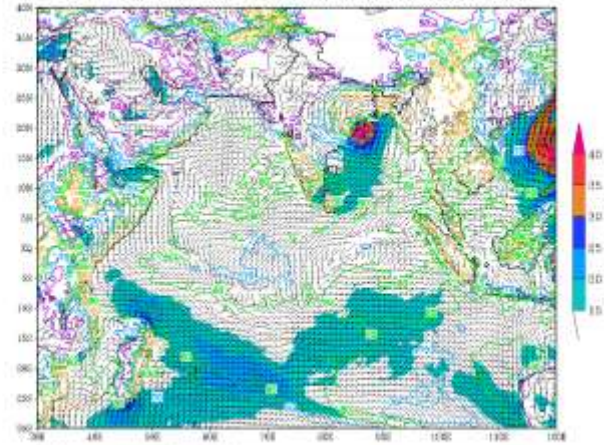


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (120 HR)
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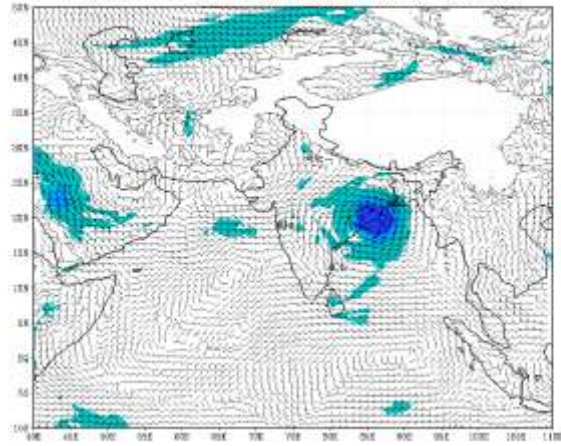
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IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (120 HR)
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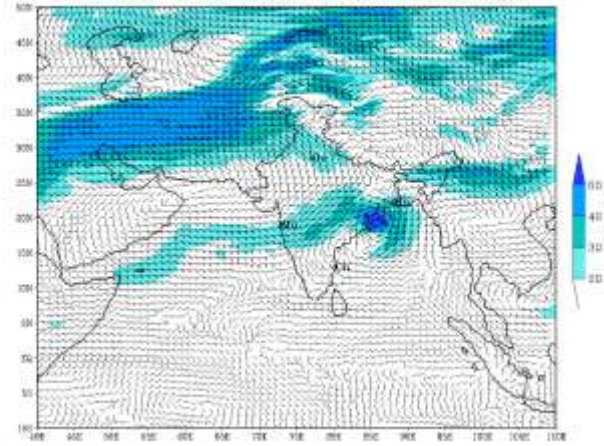
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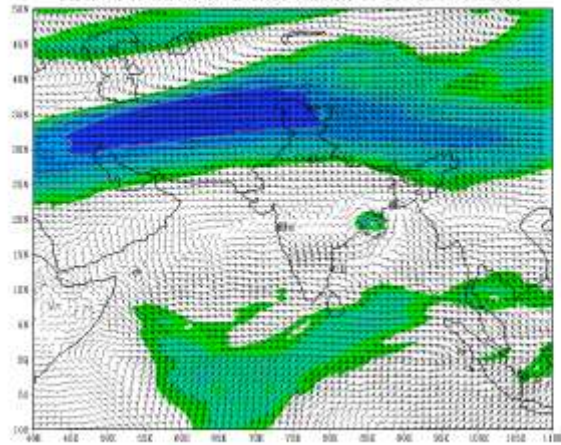
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(Background area and legend omitted)

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (120 HR)
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(Background area and legend omitted)

