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

Tropical Cyclone Forecast Programme
Report Dated 8th November, 2022

Time of Issue: 1200 UTC

Synoptic features (based on 0600 UTC analysis):

- A cyclonic circulation lay over southwest Bay of Bengal (BoB) and adjoining Equatorial Indian Ocean (EIO) at 0300 UTC and persisted over the same region at 0600 UTC. Under it's influence, a Low Pressure Area (LPA) is likely to form over the same region during next 48 hours. It is very likely to move northwestwards towards Tamilnadu-Puducherry coasts during 9th-11th November.

Dynamical and thermo-dynamical features

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
Sea Surface Temperature (SST) ºC	About 28-30°C over major parts of BoB and 24-28°C over a small pocket over southwest BoB and Comorin area.	29-31°C over extreme north AS, along and off south Gujarat & Maharashtra coasts and southeast AS & adjoining EIO. 26-28°C over remaining parts of AS with less than 24°C off Oman & Somalia coast, Socotra Islands and adjoining parts of southwest and westcentral AS.
Tropical Cyclone Heat Potential (TCHP) kJ/cm²	>110 KJ/cm² over eastcentral BoB & south Andaman Sea, 70-80 KJ/cm² over north BoB & westcentral BoB, southwest BoB, north Andaman Sea, less than 40 KJ/cm² off Andhra Pradesh and southwest BoB & adjoining Tamil Nadu & Sri Lanka coasts & less than 30 over a small pocket over southwest BoB & Comorin Area.	(a) 60-70 over southeast AS & adjoining eastcentral AS. (b) Less than 30 KJ/cm² over remaining AS and also off west coast of India.
Cyclonic Relative vorticity ($X10^{-6}s^{-1}$)	Positive vorticity of 50-60 over southwest BoB & adjoining EIO and also over some parts of southeast BoB & south Andaman Sea.	Positive vorticity of 30-40 over southeast AS and northern parts of north AS.

Low Level convergence ($X10^{-5}$ s^{-1})	About 05 over south Andaman Sea, 05 over southwest BoB off Tamil Nadu coast.	
Upper Level divergence ($X10^{-5}$ s^{-1})	10-20 over Andaman Sea & adjoining southeast BoB. 10-20 over southwest BoB and along & off Sri Lanka.	Positive zone 10-20 over Comorin Area and south AS.
Vertical Wind Shear (VWS knots)	Moderate 10-20 knots over south & adjoining central BoB. 25-30 over north BoB and adjoining central BoB.	10-20 over south & adjoining central AS. 25-30 over north AS and adjoining central AS.
Wind Shear Tendency (knots)	Decreasing over eastcentral BoB and south & adjoining north Andaman Sea.	
Upper tropospheric Ridge	Along 13.0°N over the BoB.	Along 15.0°N over the AS.
Trough in westerlies	Along 72° E upto 21° N	

Satellite observations based on INSAT imagery (0600 UTC):

(a) Over the BoB & Andaman Sea:-

Scattered to broken low/medium clouds with embedded intense to very intense convection lay over south BoB and south Andaman Sea. Scattered low/medium clouds with embedded moderate to intense convection lay over central BoB and isolated weak convection over north BoB.

(b) Over the Arabian Sea:-

Scattered low/medium clouds with embedded moderate to intense convection lay over northwest AS, south parts of central AS, Lakshadweep area and Comorin area. Isolated weak to moderate convection lay over northeast AS.

M.J.O. Index:

MJO index is currently in Phase 7 with amplitude greater than 1. It will continue in same phase with gradually decreasing amplitude during next 7 days.

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	BoB	AS
IMD-GFS	A cyclonic circulation (cycir) over southeast BoB on 8th and another over southwest BoB on 9th, cycir over southwest BoB on 9th to move towards Tamil Nadu till 12th. A fresh cycir over south Andaman Sea & adjoining Equatorial Indian Ocean (EIO) on 13th with west-northwestwards movement and gradual intensification into a depression around 18th.	No significant cycir during forecast period.
IMD-GEFS	A cyclonic circulation (cycir) over southwest BoB on	No significant cycir

	8th, to move northwestwards towards Tamil Nadu coast during 9th-12th A fresh cycir over south Andaman Sea & adjoining southeast BoB on 13th & 14th, LPA over southeast BoB on 15th.	during forecast period.
GEFS Probablistic guidance	Available during cyclone	Available during cyclone
IMD WRF	A cycir over southwest BoB and another over southeast BoB on 8th, circulation over southwest BoB during 9th-11th.	No significant system
NCMRWF-NCUM	Cycir over southwest BoB on 8th, LPA over southwest BoB on 9th & 10th, LPA over southwest BoB off Tamil Nadu on 12th, to move across south peninsular region on 13th as cycir. Fresh cycir over south Andaman Sea on 14th, to move west-northwestwards, lay over southwest BoB on 18th.	To emerge into southeast AS on 14th. LPA over southeast AS on 15th to move west-northwestwards and intensify into a depression southeast & adjoining eastcentral AS on 18th.
NCMRWF-NEPS	Cycir over southwest BoB on 8th, LPA over southwest BoB on 9th & 10th, LPA over southwest BoB off Tamil Nadu on 12th, to move across south peninsular region on 13th as cycir. Fresh cycir over south Andaman Sea on 14th, to move west-northwestwards, lay over southwest BoB on 18th.	Cycir to emerge into southeast AS on 14th. LPA over southeast AS on 15th to move west-northwestwards and intensify into a depression southeast & adjoining eastcentral AS on 18th.
NCMRWF-UM (Regional)	Cycir over southwest BoB on 8th, LPA over southwest BoB on 9th & 10th, LPA over southwest BoB off Tamil Nadu on 12th,	No significant system over AS.
ECMWF	Cycir over southwest and adjoining southeast BoB on 8th Nov., an LPA over southwest BoB on 9th & 10th Nov., extended low over southwest BoB on 11th, LPA over southwest BoB off Tamil Nadu coast on 12th, crossing coast thereafter. A fresh cycir over south Andaman Sea & adjoining Equatorial Indian Ocean (EIO) on 13th with west-northwestwards movement till 17th.	A cycir over southeast AS on 13th, becoming LPA on 14th and moving westwards thereafter.
ECMWF ensemble	40-50% probability of cyclogenesis over southwest Bay of Bengal during 9th/10th Nov, will have initial northwards movement followed by westwards movement towards Tamil Nadu coast.	30-40 % probability of cyclogenesis over southeast AS during 14th-15 with system likely to move nearly west-northwestwards.
NCEP-GFS	The cycir over southeast BoB on 8th Nov, to move west-northwestwards during 8th-10th and lie as an LPA over southwest BoB on 10th, LPA over southwest BoB on 11th and 12th. Extended circulation over southwest BoB and adjoining southeast AS on 13th & 14th.	LPA over southeast AS on 14th moving westwards as LPA till 18th Nov.

IMD MME	The cycir over southwest BoB as on 8th Nov. To become an LPA on 9th, move west-northwestwards and reach Tamil Nadu coast as well marked low pressure area/depression on 13th.	No significant system.
IMD HWRF	Available during cyclonic disturbance period only	Available during cyclonic disturbance period only.
IMD-Genesis Potential Parameter	A potential zone over southwest BoB during 9th – 12th towards Tamil Nadu coast.	No significant zone.

Summary and conclusion:

Most of the models like IMD GFS, GEFS, NCEP GFS, ECMWF, ECMWF ensemble and NCUM are indicating a cyclonic circulation over southwest BoB on 8th. However, models like NCEP GFS, ECMWF and NCUM are indicating development of low pressure area over southwest BoB during 8th to 10th Nov. There is consensus among various models w.r.t northwestward movement of the system towards Tamil Nadu – Puducherry coast. Models are not indicating significant intensification.

1. **For the Bay of Bengal**:

In view of all the above, it is inferred that

- **A Low Pressure Area (LPA) is likely to form over southwest Bay of Bengal during next 48 hours. It is very likely to move northwestwards towards Tamilnadu-Puducherry coasts during 9th-11th November.**
- **There is also likelihood of development of a fresh cyclonic circulation over south Andaman Sea/ southeast BoB around 13th Nov.**

2. **For the Arabian Sea**:

No cyclogenesis is predicted over Arabian Sea during next 7 days.

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	NIL	NIL	NIL

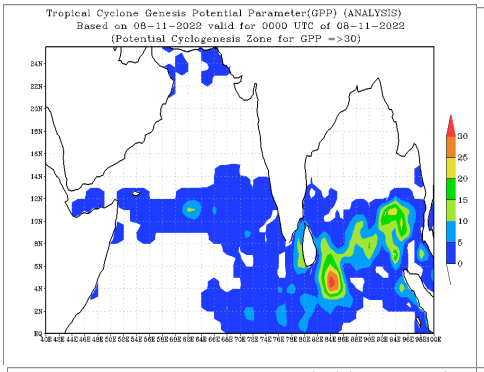
Probability of cyclogenesis (formation of depression and above intensity systems) over the Arabian Sea during next 168 hours:

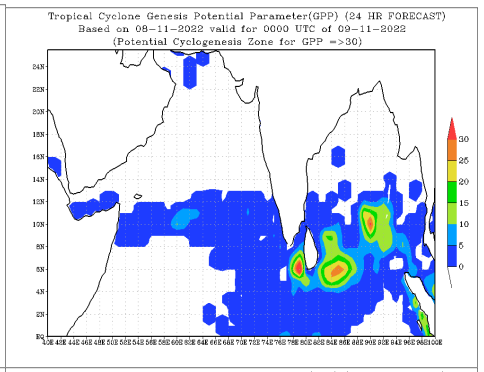
24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

Advisory:
Nil

IOP: NIL

Annexure


Tropical Cyclone Genesis Potential Parameter(GPP) (ANALYSIS)
Based on 08-11-2022 valid for 0000 UTC of 08-11-2022
(Potential Cyclogenesis Zone for GPP =>30)


Tropical Cyclone Genesis Potential Parameter(GPP) (24 HR FORECAST)
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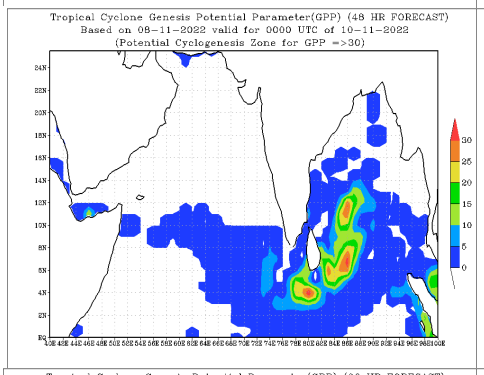
Tropical Cyclone Genesis Potential Parameter(GPP) (48 HR FORECAST)
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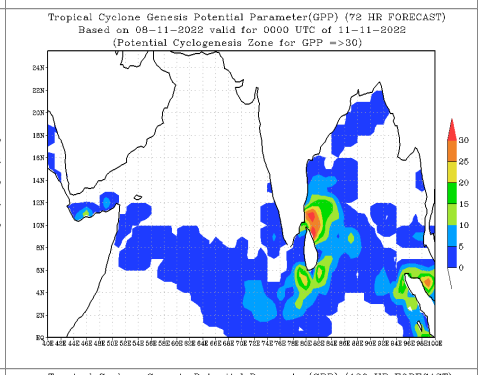
Tropical Cyclone Genesis Potential Parameter(GPP) (72 HR FORECAST)
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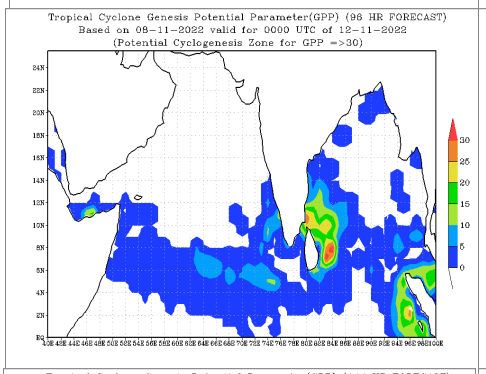
Tropical Cyclone Genesis Potential Parameter(GPP) (96 HR FORECAST)
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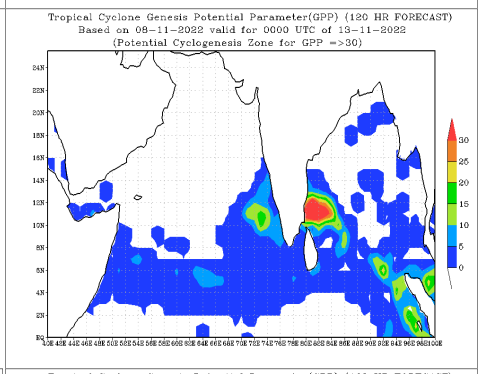
Tropical Cyclone Genesis Potential Parameter(GPP) (120 HR FORECAST)
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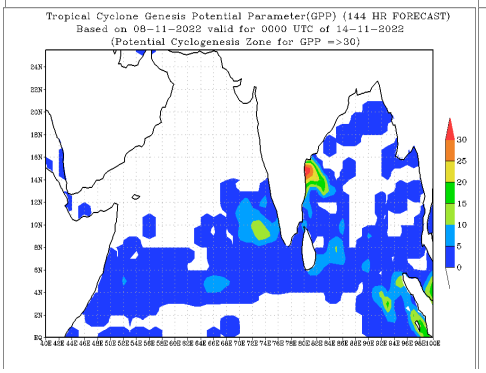
Tropical Cyclone Genesis Potential Parameter(GPP) (144 HR FORECAST)
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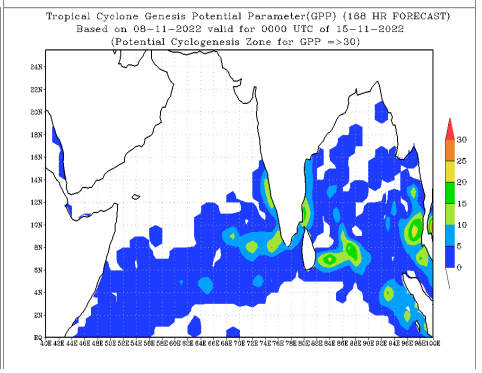
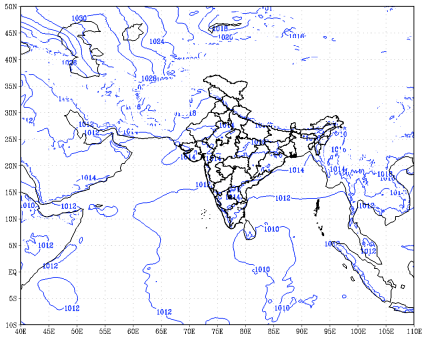
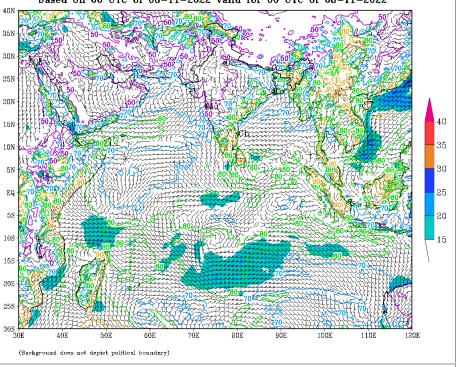

Tropical Cyclone Genesis Potential Parameter(GPP) (168 HR FORECAST)
Based on 08-11-2022 valid for 0000 UTC of 15-11-2022
(Potential Cyclogenesis Zone for GPP =>30)

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (00 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 08-11-2022



(Background does not depict political boundary)

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (00 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 08-11-2022



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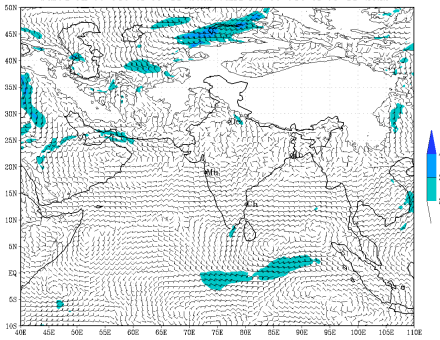

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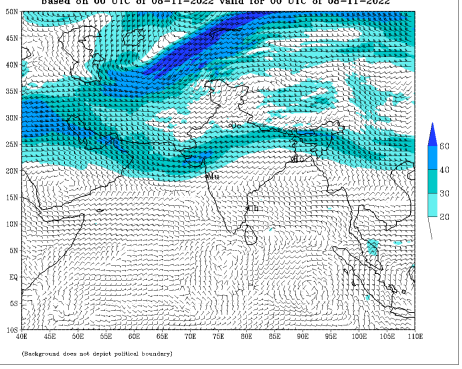

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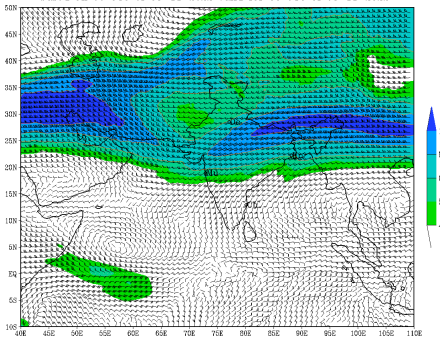

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IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (24 HR)
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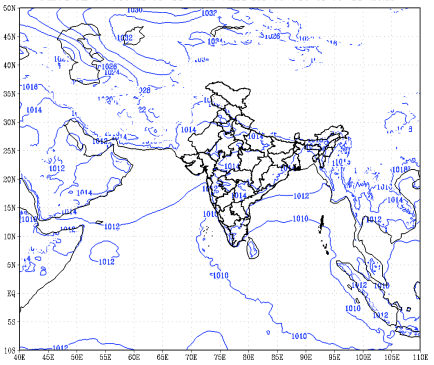

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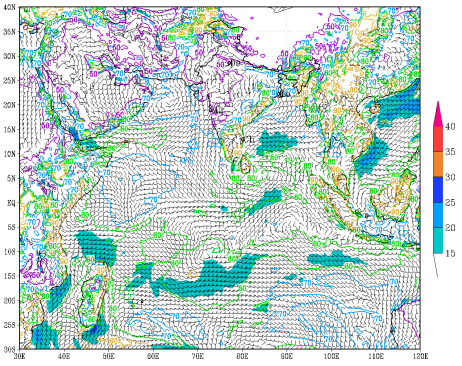
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (24 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 09-11-2022



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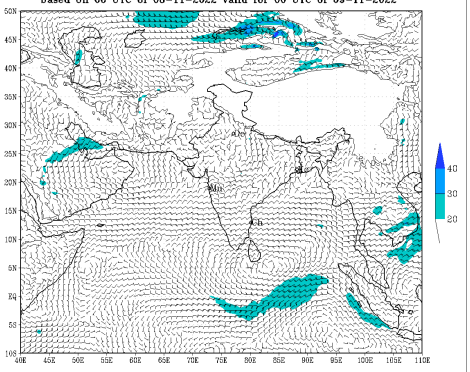

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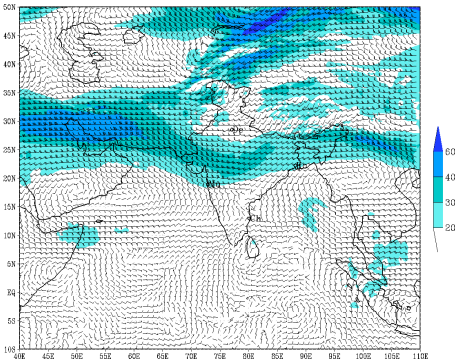

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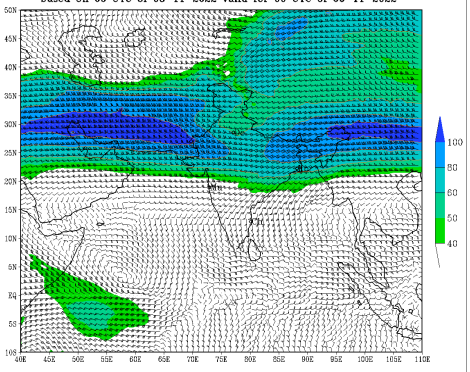

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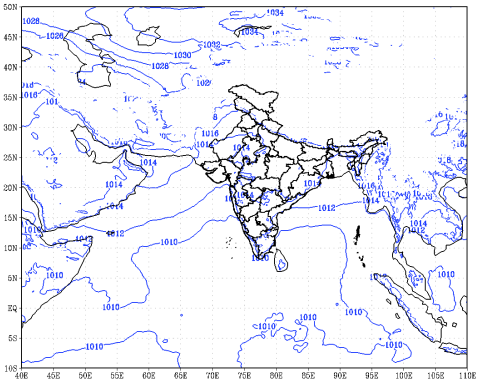
IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (48 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 10-11-2022



IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (48 HR)
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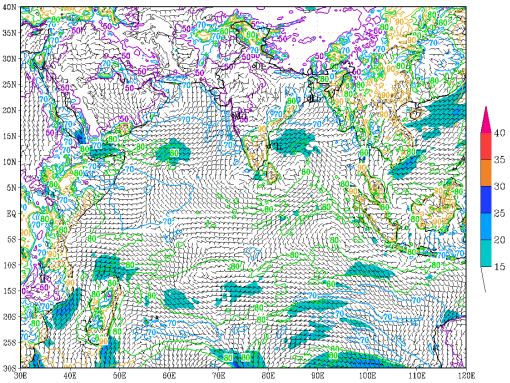

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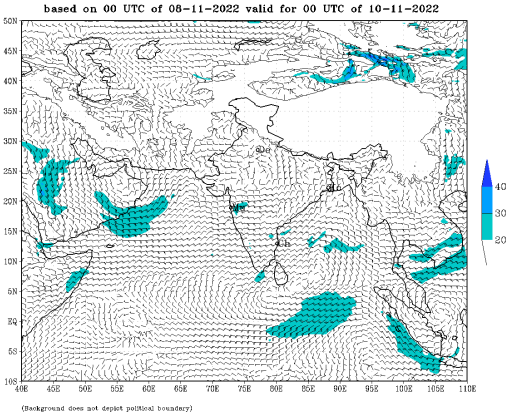

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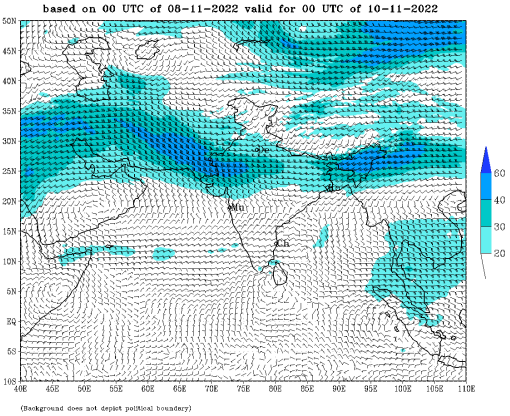

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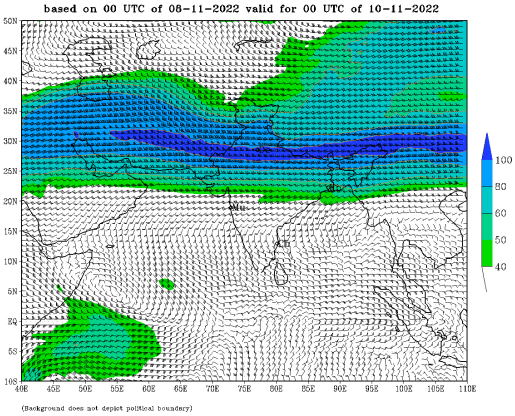

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (72 HR)
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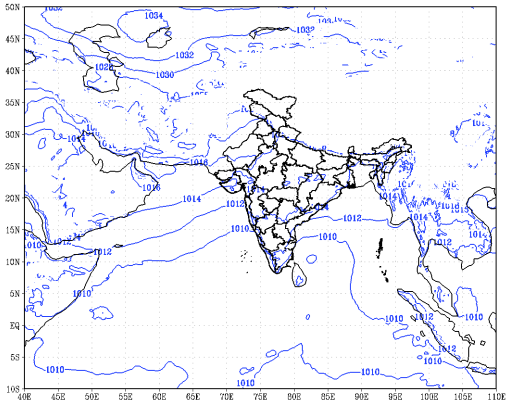
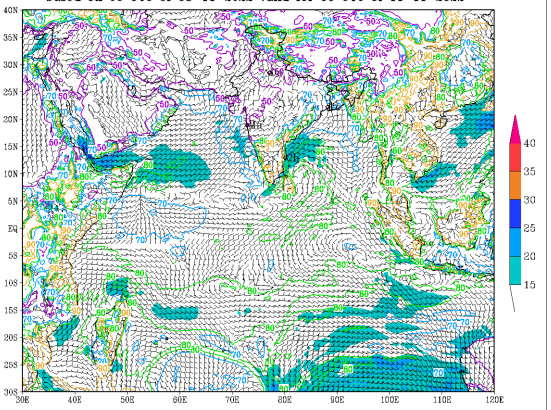


(Background does not depict political boundary)

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (72 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 11-11-2022



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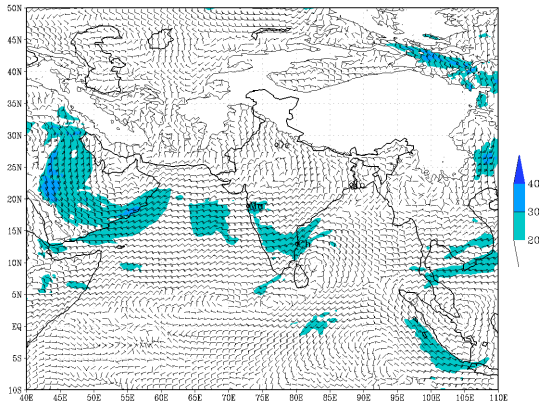
IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (72 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 11-11-2022



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IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (72 HR)
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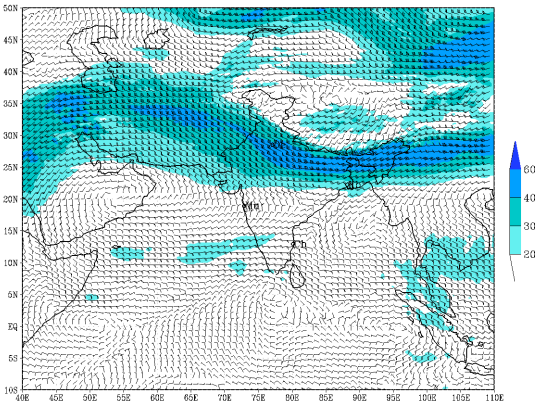

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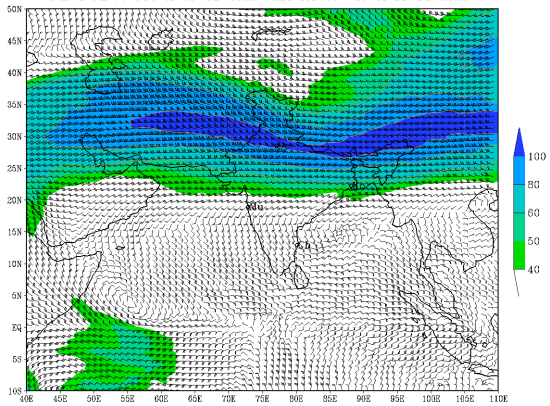
based on 00 UTC of 08-11-2022 valid for 00 UTC of 11-11-2022



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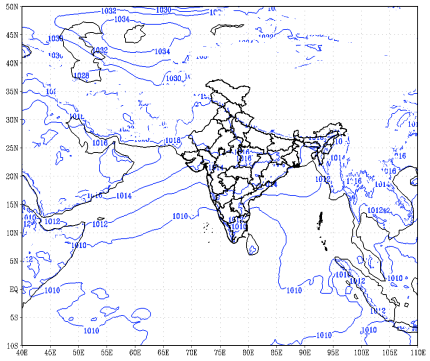

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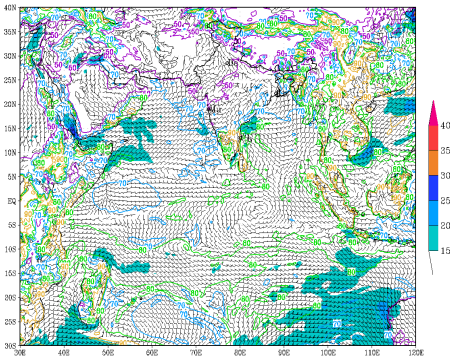
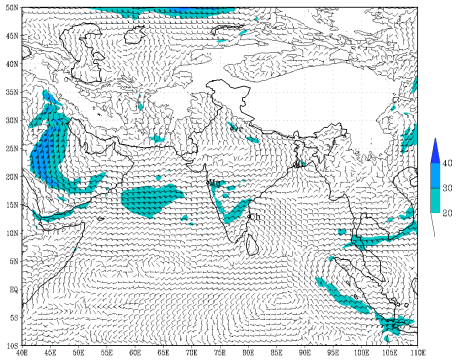
IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (96 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 12-11-2022



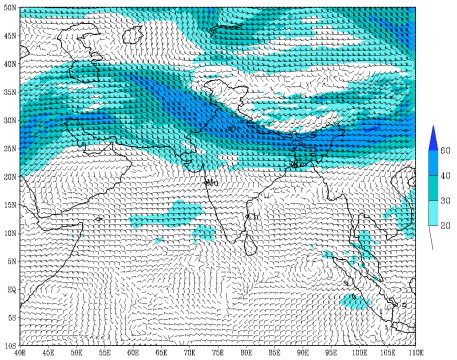
(Background does not depict political boundary)

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (96 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 12-11-2022



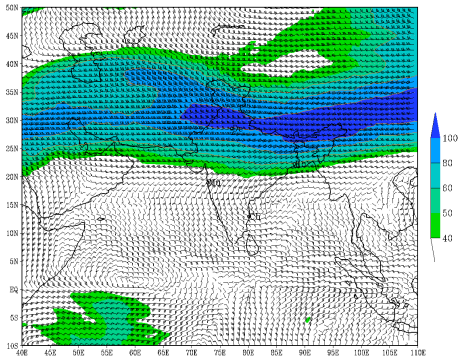
(Background does not depict political boundary)

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (96 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 12-11-2022

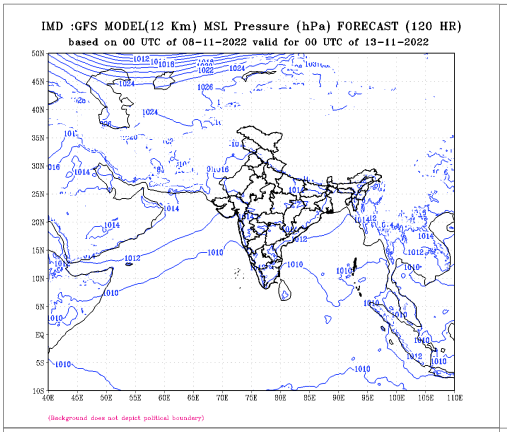


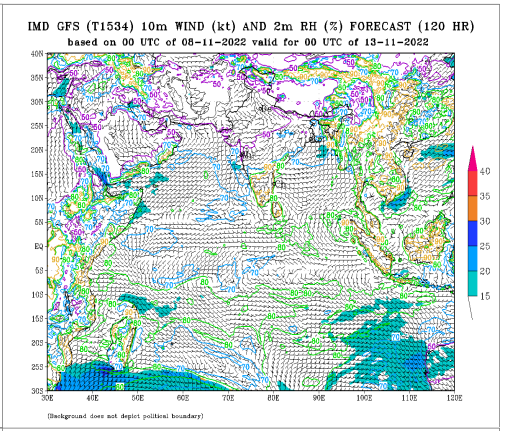
(Background does not depict political boundary)

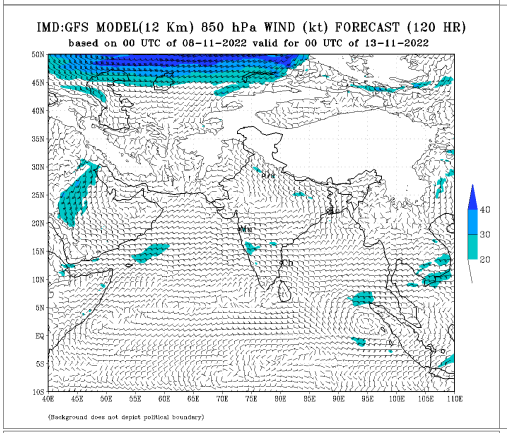
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (96 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 12-11-2022

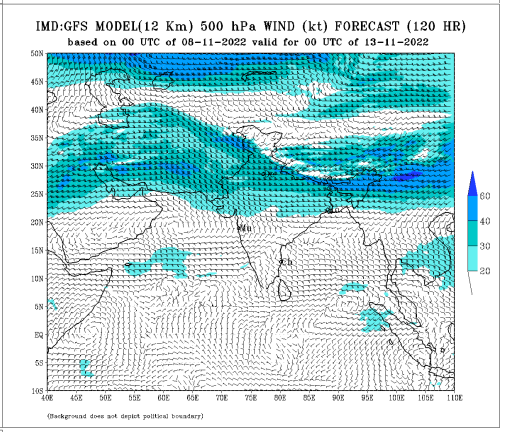


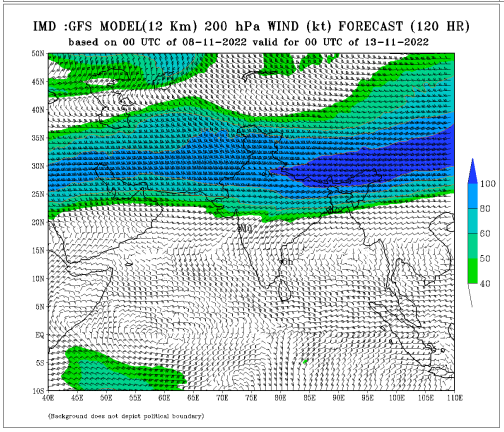
(Background does not depict political boundary)

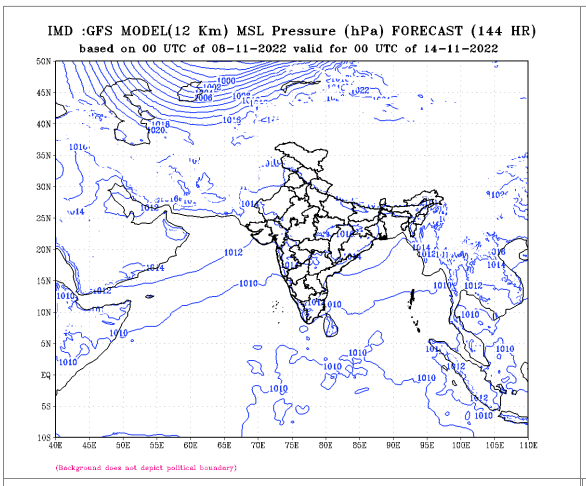

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (120 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 13-11-2022
(Background does not depict political boundary)

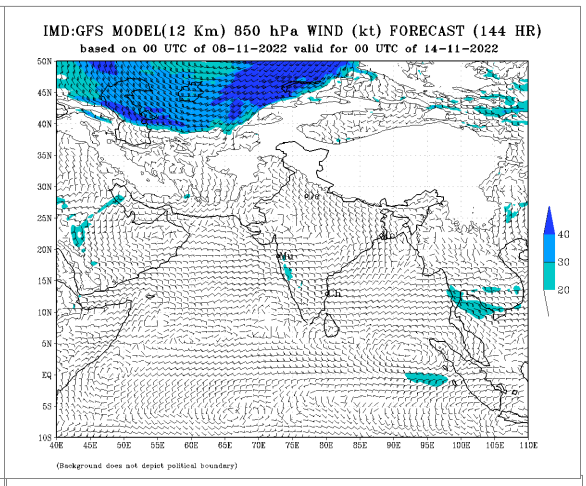

IMD GFS (T1534) 10m WIND (kt) AND 2m RH (%) FORECAST (120 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 13-11-2022
(Background does not depict political boundary)

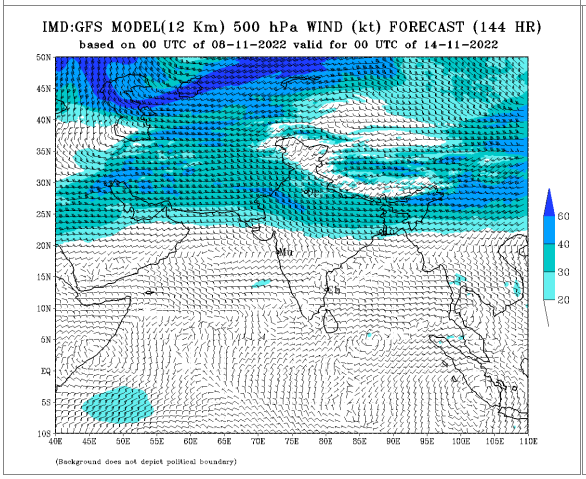

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 13-11-2022
(Background does not depict political boundary)

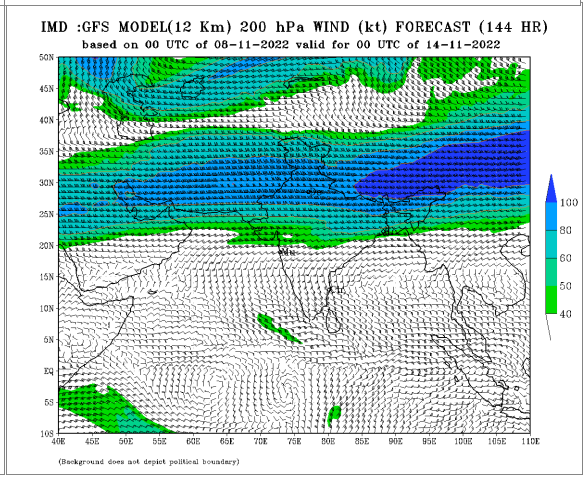

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 13-11-2022
(Background does not depict political boundary)

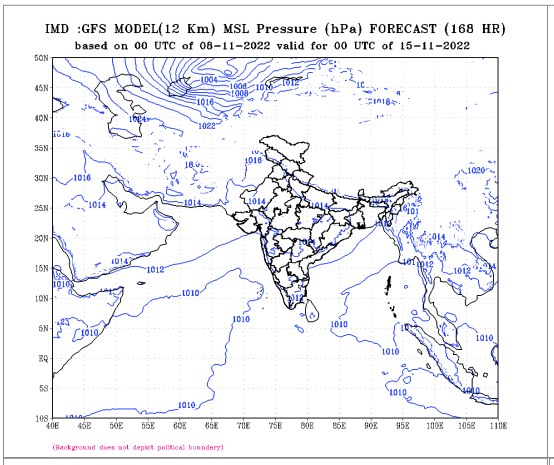

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (120 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 13-11-2022
(Background does not depict political boundary)

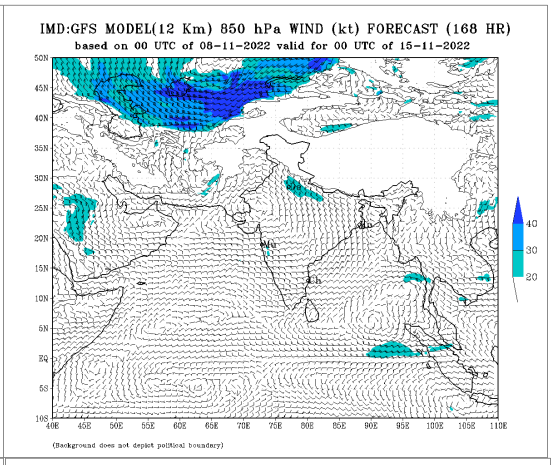

IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (144 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 14-11-2022
(Background does not depict political boundary)


IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 14-11-2022
40
30
20
(Background does not depict political boundary)


IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 14-11-2022
60
40
30
20
(Background does not depict political boundary)


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (144 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 14-11-2022
100
80
60
50
40
(Background does not depict political boundary)


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (168 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 15-11-2022
(Background does not depict political boundary)


IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 15-11-2022
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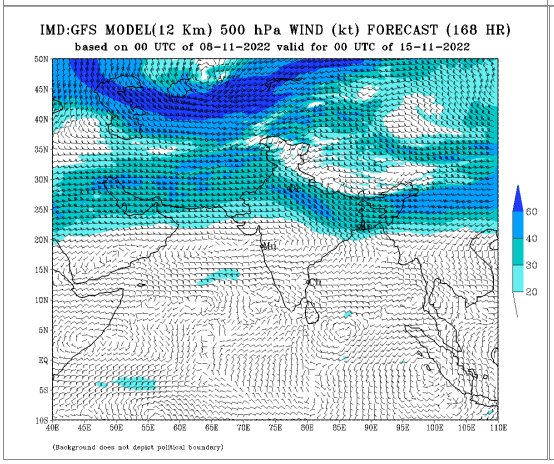
(Background does not depict political boundary)


IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 15-11-2022
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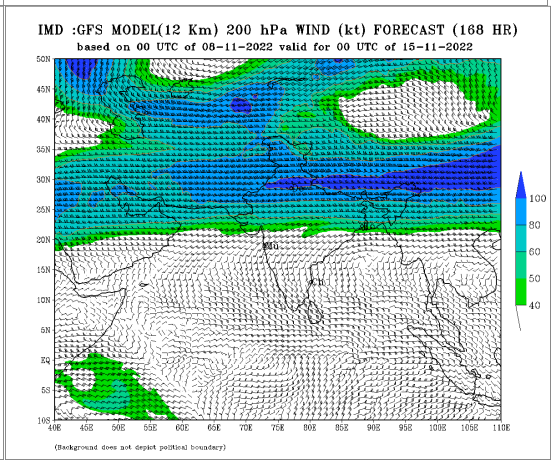
(Background does not depict political boundary)


IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (168 HR)
based on 00 UTC of 08-11-2022 valid for 00 UTC of 15-11-2022
100
80
60
50
40
(Background does not depict political boundary)