



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

**Tropical Cyclone Forecast Programme  
Report Dated 24<sup>th</sup> December 2024**

**Time of Issue: 1100 UTC**

**Synoptic features (based on 0300 UTC analysis):**

- Yesterday's well marked low pressure area over Southwest & adjoining Westcentral Bay of Bengal off South Andhra Pradesh- North Tamil Nadu coasts persisted over the same region at 0300 UTC of today, the 24th December, 2024. The associated cyclonic circulation extended upto 4.5 km above mean sea level tilting southwest with height. It is likely to move west-southwestwards and weaken gradually into a low pressure area over the same region during next 24 hours.

**Environmental Features based on 0300 UTC:**

Parameter	Bay of Bengal (BoB)	Arabian Sea (AS)
<b>Sea Surface Temperature (SST) °C</b>	<ul style="list-style-type: none"> <li>➤ 26-28°C over north &amp; adjoining central BoB and western coast.</li> <li>➤ 28-30°C over rest of BoB.</li> </ul>	<ul style="list-style-type: none"> <li>➤ 28-30°C over southeast AS &amp; adjoining southwest AS, most parts of eastcentral BoB, Lakshadweep Islands and Maldives.</li> <li>➤ 25-28°C over rest of AS.</li> </ul>
<b>Tropical Cyclone Heat Potential (TCHP) kJ/cm<sup>2</sup></b>	<ul style="list-style-type: none"> <li>➤ 150-200 over northeast BoB and adjoining parts of northwest &amp; eastcentral BoB and Andaman Sea</li> <li>➤ 100-140 over and southeast &amp; east central BoB and adjoining southern parts of southwest Bay of Bengal.</li> <li>➤ 20-30 over some parts of southwest BoB along &amp; off north Sri Lanka coast.</li> <li>➤ 60-80 over rest of BoB.</li> </ul>	<ul style="list-style-type: none"> <li>➤ 100-120 over southeast AS, Maldives Islands, Lakshadweep Islands and areas of eastcentral AS along Karnataka-Kerala coasts.</li> <li>➤ 20-60 over rest AS.</li> </ul>
<b>Cyclonic Relative vorticity (X10<sup>-6</sup>s<sup>-1</sup>)</b>	<ul style="list-style-type: none"> <li>➤ 50 over system area i.e. Southwest BoB.</li> </ul>	<ul style="list-style-type: none"> <li>➤ 20-30 over some parts of eastcentral AS and adjoining northeast AS off Gujarat coast.</li> </ul>
<b>Low-Level convergence (X10<sup>-5</sup> s<sup>-1</sup>)</b>	<ul style="list-style-type: none"> <li>➤ 05-20 over westcentral and adjoining southwest BoB off Andhra Pradesh coast.</li> <li>➤ 05 over south Andaman Sea and adjoining EIO</li> </ul>	--

<b>Upper-Level divergence</b> ( $\times 10^{-5} \text{ s}^{-1}$ )	<ul style="list-style-type: none"> <li>➤ -ve along and off Tamil Nadu coast.</li> <li>➤ 5 over westcentral BoB.</li> <li>➤ 05-10 over south Andaman Sea and adjoining EIO</li> </ul>	-
<b>Vertical Wind Shear</b> (VWS knots) <b>Low: 05-10 knots</b> <b>Moderate: 10-20 knots</b> <b>High: &gt;20 knots</b>	<ul style="list-style-type: none"> <li>➤ High over north, central and extreme south BoB.</li> <li>➤ Low-Moderate over rest of BoB and Andaman Sea.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Low-Moderate over of Lakshadweep Islands, Maldives &amp; Comorin area and southeast AS &amp; adjoining southern parts of southwest AS.</li> <li>➤ High over rest of AS.</li> </ul>
<b>Wind Shear Tendency</b> (knots)	<ul style="list-style-type: none"> <li>➤ Decreasing over north, westcentral BoB, southwest &amp; adjoining southeast BoB and Andaman Sea.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Decreasing over Lakshadweep Islands, Maldives, Comorin area, north and southeast AS.</li> </ul>
<b>Upper tropospheric Ridge</b>	12°N over BoB.	--

### **Satellite observations based on INSAT imagery (0300 UTC):**

**a) Over the BoB & Andaman Sea:**

Scattered low and medium clouds with embedded moderate to intense convection lay over westcentral & south Bay of Bengal and south Andaman sea. Scattered low and medium clouds with embedded isolated weak to moderate convection lay over north & eastcentral Bay of Bengal and north Andaman Sea.

**b) Over the Arabian Sea:**

Isolated low and medium clouds with embedded moderate to intense convection lay over southwest Arabian Sea. Scattered low and medium clouds over rest of Arabian Sea & Lakshadweep Islands area.

**c) Outside India:**

Scattered low & medium clouds with embedded moderate to intense convection over Nepal, Tibet China, Gulf of Thailand, South Vietnam, Sumatra, Strait of Malacca, Malaysia, Borneo, South China Sea, Sumatra, Java Islands & Sea, Celebes Islands & Sea, Philippines, Sulu Sea, Madagascar, Mozambique Channel and over Indian Ocean between latitude 5.0N to 18.0S longitude 40.0E to 110.0E.

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

MJO is currently in phase 6 with amplitude less than 1. It will be in same phase till today, the 24<sup>th</sup> December 2024. Later, it will move to phase 7 from 25<sup>th</sup> with amplitude less than 1 and afterwards in the same phase with amplitude greater than 1 till 1<sup>st</sup> of January 2025.

## NWP Guidance for FDP Cyclone:

<b>MODEL GUIDANCE</b>	<b>Bay of Bengal (BoB)</b>	<b>Arabian Sea (AS)</b>
<b>IMD-GFS</b>	Model is indicating the Low-Pressure area (LPA) over southwest BoB as of today 24 <sup>th</sup> Dec, moving westsouthwestwards and lay as LPA over southwest BoB on 25 <sup>th</sup> , less marked thereafter.	The model indicates no significant system over AS.
<b>IMD-GEFS</b>	Model is indicating the Low-Pressure area (LPA) over southwest BoB as of today 24 <sup>th</sup> Dec, moving westsouthwestwards and lay as LPA over southwest BoB on 25 <sup>th</sup> , less marked thereafter.	The model indicates no significant system over AS.
<b>IMD-WRF</b>	Model is indicating the Low-Pressure area (LPA) over southwest BoB as of today 24 <sup>th</sup> Dec, moving westsouthwestwards and lay as LPA over southwest BoB on 25 <sup>th</sup> , less marked thereafter.	The model indicates no significant system over AS.
<b>NCMRWF-NCUM(G)</b>	Model is indicating the Low-Pressure area (LPA) over southwest BoB as of today 24 <sup>th</sup> Dec, moving westsouthwestwards and lay as LPA over southwest BoB on 25 <sup>th</sup> , less marked thereafter.	The model indicates no significant system over AS.
<b>NCMRWF-NCUM(R)</b>	Model is indicating a cyclonic circulation over southwest BoB as of today 24 <sup>th</sup> Dec, having its westsouthwestward movement and lay over southwest BoB on 25 <sup>th</sup> as cyclonic circulation.	The model indicates no significant system over AS.
<b>NCMRWF-NEPS</b>	Model is indicating the Low-Pressure area (LPA) over southwest BoB as of today 24 <sup>th</sup> Dec, moving westsouthwestwards and lay as LPA over southwest BoB on 25 <sup>th</sup> , less marked thereafter.	The model indicates no significant system over AS.
<b>ECMWF</b>	Model is indicating the Low-Pressure area (LPA) over southwest BoB as of today 24 <sup>th</sup> Dec, It will lay over the same region till 25 <sup>th</sup> /06 UTC and less marked thereafter.	The model indicates no significant system over AS.
<b>NCEP-GFS</b>	Model is indicating the Low-Pressure area (LPA) over southwest BoB as of today 24 <sup>rd</sup> Dec, moving westsouthwestwards and lay as LPA over southwest BoB on 25 <sup>th</sup> /18 UTC, less marked thereafter.	The model indicates no significant system over AS.

## Summary:

### (a) Bay of Bengal:

Most of the models are indicating a low pressure area (LPA) over southwest Bay of Bengal as of today the 24<sup>rd</sup> December, 2024. Models are also indicating its West-southwestwards movement towards Tamil Nadu coast till 25<sup>th</sup> without further intensification and less marked thereafter. There is good convergence among all the models in this regard.

### (b) Arabian Sea

Most of the models are indicating no significant system over Arabian Sea.

## Inference:

Yesterday's well marked low pressure area over Southwest & adjoining Westcentral Bay of Bengal off South Andhra Pradesh- North Tamil Nadu coasts persisted over the same region at 0300 UTC of today, the 24th December, 2024. The associated cyclonic circulation extended upto 4.5 km above mean sea level tilting southwest with height. It is likely to move west-southwestwards and weaken gradually into a low pressure area over the same region during next 24 hours.

### Probability of cyclogenesis (formation of depression and above intensity systems) over the Bay of Bengal 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:

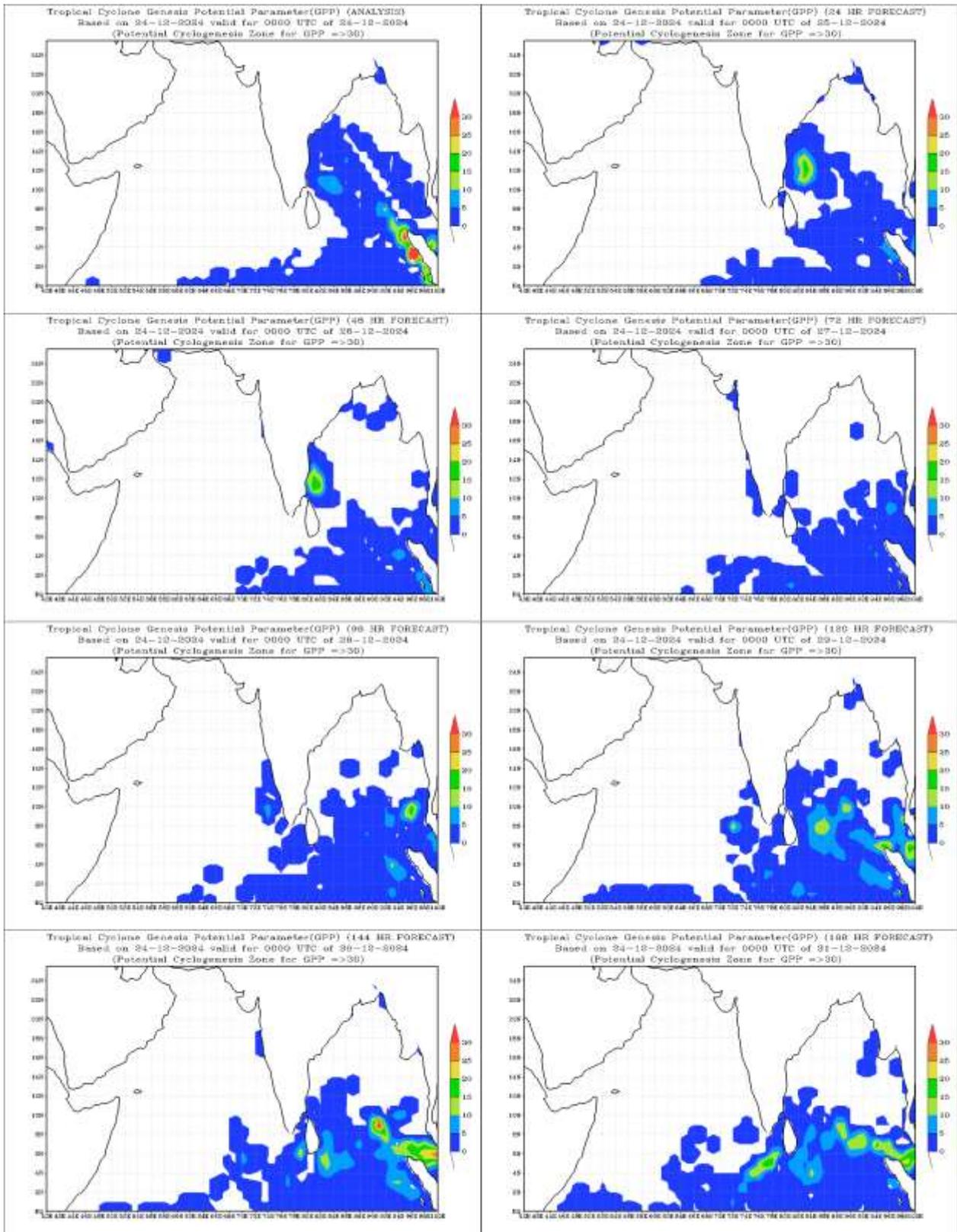
24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS	120-144 HOURS	144-168 HOURS
NIL	NIL	NIL	NIL	NIL	NIL	NIL

“- “indicates genesis has already occurred.

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

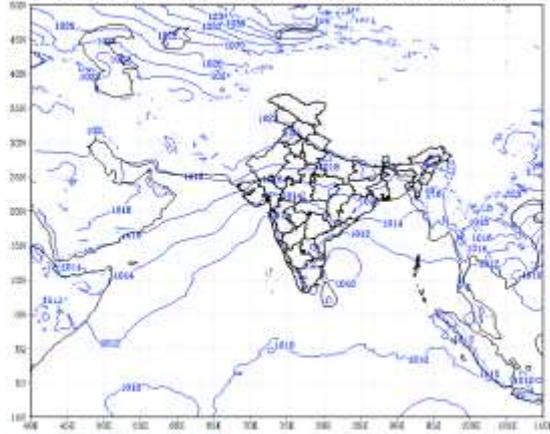
**Intense Observation Period (IOP):** South Andhra Pradesh and North Tamil Nadu coasts during 24<sup>th</sup> & North Tamil Nadu and adjoining South Andhra Pradesh during 25<sup>th</sup> December, 2024.

# ANNEXURE



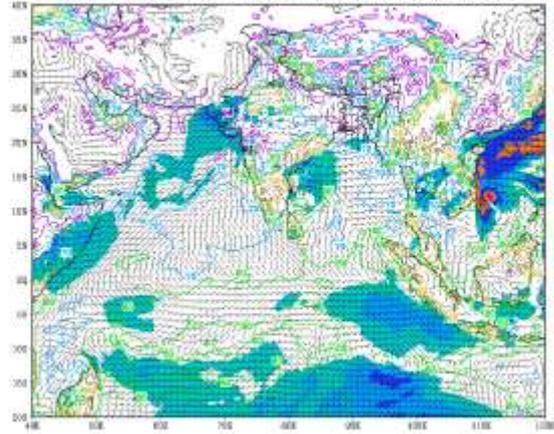


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (24 HR)  
based on 00 UTC of 24-12-2024 valid for 00 UTC of 25-12-2024



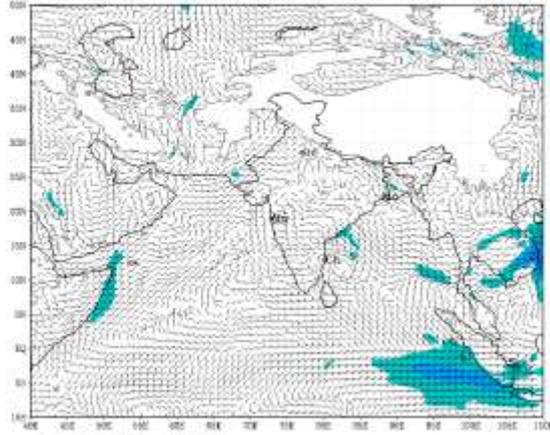
(Background area not depict political boundary)

IMD :GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (24 HR)  
based on 00 UTC of 24-12-2024 valid for 00 UTC of 25-12-2024



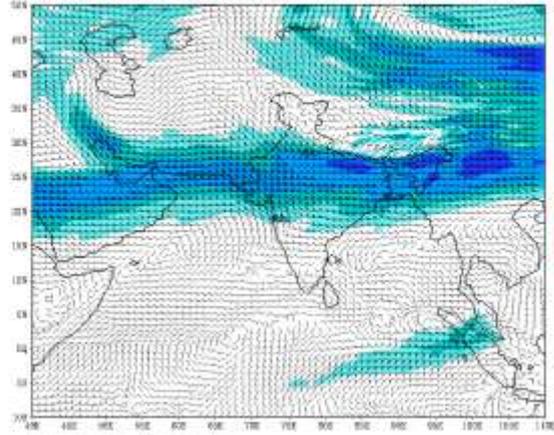
(Background area not depict political boundary)

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (24 HR)  
based on 00 UTC of 24-12-2024 valid for 00 UTC of 25-12-2024



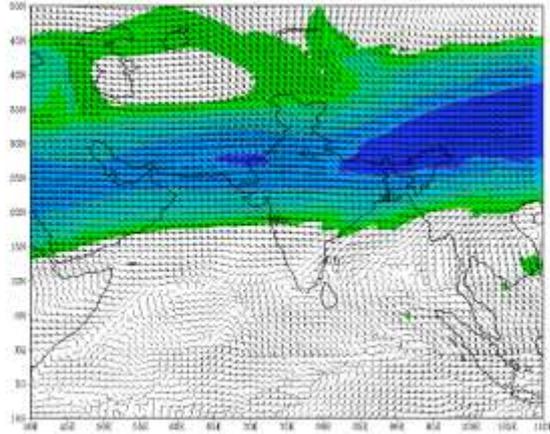
(Background area not depict political boundary)

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (24 HR)  
based on 00 UTC of 24-12-2024 valid for 00 UTC of 25-12-2024



(Background area not depict political boundary)

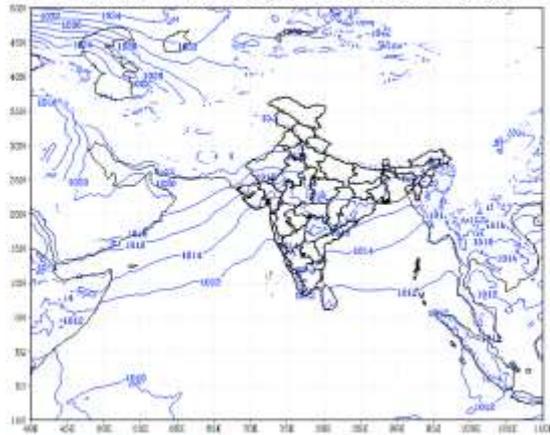
IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (24 HR)  
based on 00 UTC of 24-12-2024 valid for 00 UTC of 25-12-2024



(Background area not depict political boundary)

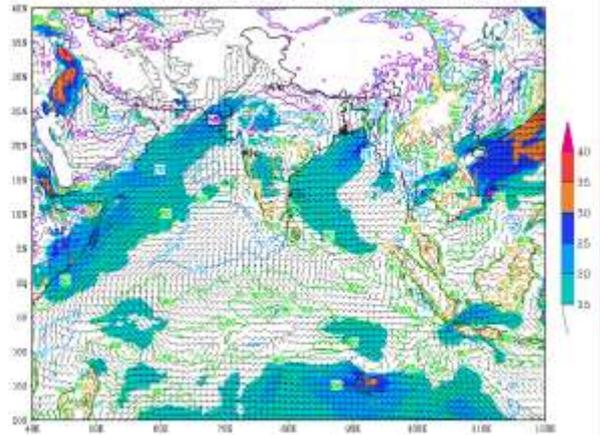


IMD :GFS MODEL(12 Km) MSL Pressure (hPa) FORECAST (72 HR)  
based on 00 UTC of 24-12-2024 valid for 00 UTC of 27-12-2024



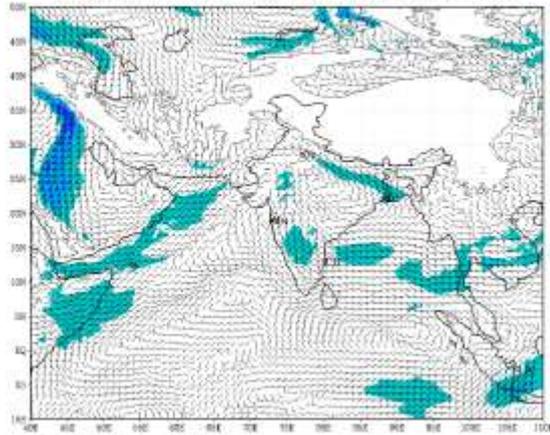
(Background Area not depict political boundary)

IMD: GFS(12Km) 10m WIND (barb)& GUST (shaded:kt) FORECAST (72 HR)  
based on 00 UTC of 24-12-2024 valid for 00 UTC of 27-12-2024



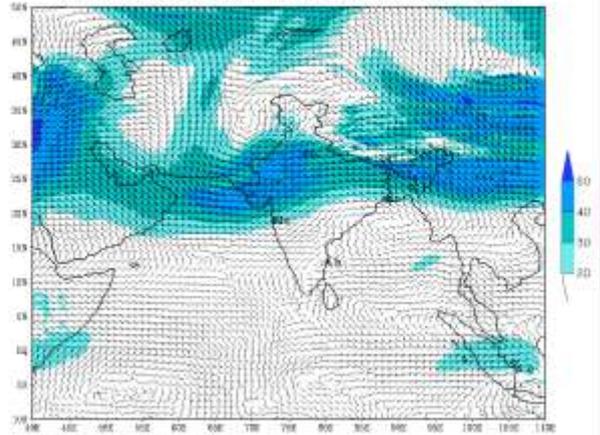
(Background Area not depict political boundary)

IMD:GFS MODEL(12 Km) 850 hPa WIND (kt) FORECAST (72 HR)  
based on 00 UTC of 24-12-2024 valid for 00 UTC of 27-12-2024



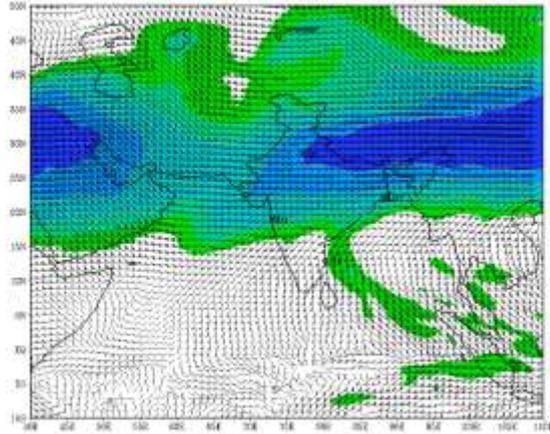
(Background Area not depict political boundary)

IMD:GFS MODEL(12 Km) 500 hPa WIND (kt) FORECAST (72 HR)  
based on 00 UTC of 24-12-2024 valid for 00 UTC of 27-12-2024



(Background Area not depict political boundary)

IMD :GFS MODEL(12 Km) 200 hPa WIND (kt) FORECAST (72 HR)  
based on 00 UTC of 24-12-2024 valid for 00 UTC of 27-12-2024



(Background Area not depict political boundary)

