

Cyclone

[UPSC Notes]

What is a Cyclone?

Cyclones are strong winds or storms caused by the winds blowing around an area of low atmospheric pressure.

- In the area above the equator, which is the Northern hemisphere, it is called a Cyclone and rotates in an anticlockwise direction, whereas in the Southern hemisphere it is called a hurricane or typhoon and rotates in a clockwise direction.
- The main characteristic of Cyclones is that they move in a spiraling movement in an inward direction.
- Tropical Cyclones form over warm water in the tropical region of the ocean where hot air is heated by the sun, creating areas of very low pressure.
- Due to this, the air rises at a very high speed and gets saturated with the moisture that later forms the thunderclouds.

Cyclone Formation

Cyclogenesis has a major role to play in the formation and strengthening of Cyclones.

- Near the equator, tropical Cyclones form over warm ocean water.
- As a result, the humidified warm air near the ocean surface starts to rise upwards. This is followed by the formation of low pressure near the surface.
- The low-pressure areas get surrounded by the cooler air from nearby areas, and this cool air also becomes warm, moist, and starts to rise upwards.
- This complete cycle keeps on continuing for a period of time.
- Later, when this warm moist air rises upwards, it cools down the water in the air, thereby forming the clouds.
- During this whole process of spinning and growing, the wind and cloud interact with each other, and all of this results in a Cyclone.
- If the speed of winds touches the speed of 63mph, they are called tropical Cyclones, and if the wind reaches the speed of 119 kmph, they are called hurricanes.

Types of Cyclones?

The types of Cyclones are as follows:

Tropical Cyclones:

Tropical Cyclones occur in the region of the tropical ocean. There are two types of tropical Cyclones: hurricanes and typhoons. The Northeast Pacific and Atlantic regions experience hurricanes, whereas the Northwest Pacific experiences typhoons.

Extratropical Cyclones:

These Cyclones are formed in the middle latitudes, hence also called extratropical or mid-latitude Cyclones. The winds in the extratropical zone are relatively weaker. However, the temperature drops quite sharply.

Polar Cyclones:

It occurs in the northern hemisphere and is also called the Arctic hurricane. In this, the heat transforms the water into air and releases the latent heat, which further creates clouds. These types of Cyclones are difficult to predict as they take less than 24 hours to form.

MesoCyclone:

MesoCyclones are the most severe and powerful types of Cyclones that produce thunderstorms. In the convective storm, the mesoCyclone appears as a vortex. This vortex rotates along the vertical axis. In the given hemisphere, both this airflow and the low-pressure system are pointing the same way. And this mesoCyclone comes into formation by rotating air inside the thunderstorm.

Naming of Cyclones

The nomenclature of the Cyclones is maintained by the World Meteorological Organisation. Earlier, the organization created a list that had names only of women, but later, after 1979, men's names were also included in the list. The women's and men's names are used alternatively. There are a total of 6 lists in total and they are used in rotation, which means if the list has been used in 2022, then the same list will be used in 2028.

Cyclones in India

India is surrounded by water bodies on all three sides, and all the water bodies act as a hotspot for Cyclones.

- Some states, like Gujarat, Tamil Nadu, Kerala, Odisha, and West Bengal, are more prone to Cyclones.
- Since these Cyclones are accompanied by plentiful rain and high-speed winds, they become more deadly.
- Storm surges, strong winds, and torrential rains cause immense destruction to the surroundings.