# All About Cyclone

## Why in news?

Cyclone Remal, after its landfall over the West Bengal-Bangladesh coast turned into a cyclonic storm and affected large parts of North East India.

## What is a cyclone?

- **About**- As per National Disaster Management Authority (NDMA), cyclones result from *atmospheric disturbances* surrounding a low-pressure area characterised by rapid and often destructive air circulation
- **Air circulation**- The air circulates inward in an anticlockwise direction in the Northern Hemisphere and clockwise in the Southern Hemisphere.
- **Occurrence**- Cyclonic winds move across nearly all regions of the Earth except the equatorial belt.

| Types of cyclone | About |
|---|---|
| **Tropical cyclone** | They form over warm ocean waters near the equator and are characterized by a low-pressure center, strong winds, and heavy rain. |
| **Extratropical cyclone** | They are also known as *mid-latitude cyclones*, form outside the tropics and typically occur between 30° and 60° latitude. |
| **Subtropical cyclone** | They have characteristics of both tropical and extratropical cyclones, they typically form in the subtropics, between 20° and 35° latitude, |
| **Polar lows** | They are also known as *Arctic or Antarctic hurricane*s, are small, intense, short-lived cyclones that form over the ocean in polar regions. |
| **Mesocyclones** | They are *smaller-scale cyclonic circulations* associated with severe thunderstorms. They occur within a convective storm and can lead to the development of tornadoes. |
| **Medicanes** | *Mediterranean hurricanes*, are rare tropical-like cyclones that occur in the Mediterranean Sea. |

- **Conditions of the cyclone**-
    - Large and continuous supply of warm and moist air that can release enormous latent heat.
    - Strong *Coriolis force* that can prevent filling of low pressure at the centre (absence of Coriolis force near the equator prohibits the formation of tropical

cyclone between 0 -5 latitude).
    - Unstable condition through the troposphere that creates local disturbances around which a cyclone develops.
    - Absence of strong vertical wind wedge, which disturbs the vertical transport of latent heat

- **Cause**- By atmospheric disturbances around a low-pressure area distinguished by swift and often destructive air circulation.
- **Eye of the cyclone-** Low-pressure center of the cyclone
- The lower the pressure in the eye, the more intense is the cyclone.
- **Eye-wall-** Surrounds the eye with the strongest winds and heaviest rain and is the most destructive part of the cyclone.
- **Storm surge-** The abnormal rise in sea level due to cyclonic storms.
- **Cyclone prone areas-** India's east and west coasts are affected by cyclones annually, mostly in pre-monsoon and post-monsoon seasons.
- **Indian tropical storms-** Climatologically, about 5 cyclones develop in the North Indian Ocean basin comprising the Bay of Bengal and the Arabian Sea every year.
- **Cyclone Remal-** Itis a severe cyclonic storm that was moderately intense and deadly tropical cyclone which affected West Bengal and Bangladesh.

  *Remal was named by Oman following standard conventions of naming tropical cyclones, in arabic remal means "Sand"*

- It was the *first depression and the first cyclonic storm* of the 2024 North Indian Ocean cyclone season.
- Heavy rains caused by the cyclone triggered landslides in several places in Meghalaya, Mizoram, Assam, and Nagaland.

## What are the impacts of cyclone?

- **Heavy rainfall-** Cyclones typically bring heavy rainfall, leading to flooding in low-lying areas.
- **Disrupt livelihood**- The heavy rainfall causes flooding which result in damage to homes and businesses, loss of crops, and disruption of transportation networks.
- **Storm surges-** The combination of strong winds and low atmospheric pressure associated with cyclones can generate storm surges, which are elevated sea levels that inundate coastal areas.
- **Displacement-** It can result in the displacement of large numbers of people as homes are destroyed and areas become uninhabitable due to flooding and other damage.
- **Loss of life-** It can cause loss of life, both directly through the destruction caused by the storm itself and indirectly through factors such as flooding, landslides, and the disruption of essential services.
- **Environmental impact-** Cyclones can have significant environmental impacts, including the destruction of habitats, contamination of water sources due to flooding, and damage to ecosystem.

## What are the steps taken by India to mitigate the impacts of cyclone?

- **National Cyclone Risk Mitigation Project (NCRMP)-** It was launched in 2011 funded by World Bank, it's aim is to reduce vulnerabiltiy to cyclones and other hydro-metrological hazards.
- **Categories-** NCRMP classifies States based on vulnerability namely
    - Higher vulnerability States i.e. Andhra Pradesh,Gujarat,Odisha,Tamil Nadu and West Bengal.
    - Lower vulnerability States- Maharashtra, Karnataka, Kerala, Goa, Lakshadweep, Daman and Diu, Andaman and Nicobar Islands
- **Web-CRA**- Web based Composite Risk Atlas uses deterministic hazard and vulnerability analysis modelling based on historical cyclone event.
- **HmRAP-** Hydro-meteorological Resilience Action Plan is developed in 6 cities namely Panaji (Goa), Ratnagiri (Maharashtra), Mangalore (Karnataka), Kochi ( Kerala),Porbandar (Gujarat) and Bidhan Nagar (West Bengal).
- **CMhRFS** - Comprehensive Multi-hazard Risk Financing Strategy establishes a robust Disaster Risk Financing Strategy for the targeted States (namely Uttarakhand, Odisha, Kerala& Gujarat) and develops Multi-State Disaster Risk Insurance Poo

## References


1. Indian Express- Mizoram rain stone quarry collapse
2. NDMA- Cyclone risk mitigation preparation