



# Cyclone Remal

[Source: IE](#)

## Why in News?

The [India Meteorological Department \(IMD\)](#) has issued a warning for a potential severe **cyclonic storm, named Cyclone Remal**, that could impact the coasts of West Bengal and Bangladesh.

## What are the Key Insights About Cyclone Remal?

- **Naming:** The name '**Remal**' in the list of tropical cyclones is given by **Oman**. It will be the first cyclone to hit the region this 2024 pre-monsoon season.
  - 'Remal,' meaning 'sand' in Arabic.
- **Origin:** [Bay of Bengal \(BoB\)](#).
- **Factors Contributing to the Formation:**
  - A **depression** (an area of low pressure characterised by circulating winds and atmospheric instability) has formed over the central Bay of Bengal, serving as the genesis for Cyclone Remal.
  - The Bay of Bengal, experiences **water temperatures higher(2-3°C) warmer than average**. This warm water provides the energy needed for cyclones to form and intensify.
  - The [Madden Julian Oscillation](#), a band of clouds moving eastward, along with the winds and warm ocean waters, is currently moving south of the Bay of Bengal. These winds play a role in initiating cyclones due to their rotational effect.
- **Potential Impact:** The cyclone may impact the [Sundarbans region](#) if the landfall happens on the Indian coast and coincides with high tide, potentially causing partial **damage to the fragile ecosystem**.
  - The shallow [bathymetry](#) and the **funnel-shaped geography** of the northern Bay of Bengal can amplify the intensity of the cyclone as it approaches the coast, increasing the risk of storm surges and flooding.
- **Previous Cyclones:** The cyclone scare comes close to the anniversaries of previous devastating cyclones, such as [Yaas \(2021\)](#), [Amphan \(2020\)](#), [Cyclone Fani\( 2019\)](#), and [Aila \(2009\)](#) which caused massive damage in the Sundarbans and other parts of West Bengal.
  - The state's disaster management authorities and local communities are drawing on the lessons learned from these past experiences to better prepare for and mitigate the potential impact of Cyclone Remal.

## Note:

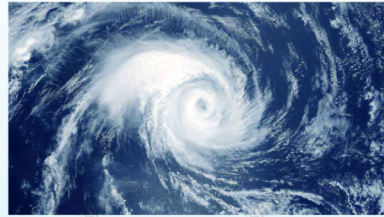
- The Bay of Bengal (BoB) experiences more cyclones than the Arabian Sea (A.S.) by a ratio of about 4:1. However, a 2022 study found that the [frequency of cyclones in the A.S. has increased by 52% from 2001-2019](#), while the **Bay of Bengal's frequency has slightly decreased**.
- The BoB is relatively shallower than the A.S. The larger surface area of the BoB allows faster heating causing **higher evaporation**. Inturn forms a **high-pressure zone** in the area causing instability in the region. All these factors make it suitable for cyclone formation.
- The A.S. has traditionally seen fewer cyclones due to **higher salinity, lower sea surface temperatures**, and disadvantageous wind systems.
  - However, changes in ocean and atmosphere warming patterns are leading to more

**frequent and severe tropical cyclones in the Arabian Sea.**

- The positive phase of the **Indian Ocean Dipole (IOD)** and human-induced **climate change** are contributing to the intensification and higher frequency of cyclones in the Arabian Sea.

# CYCLONE

Cyclones are rapid **inward** air circulation around a **low-pressure** area.

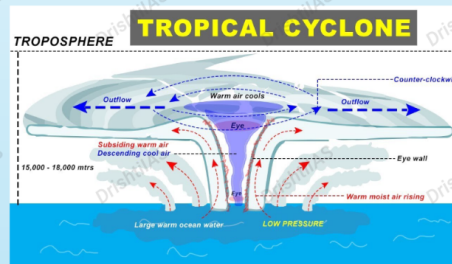


## Cyclone v/s Anticyclone

Pressure System	Pressure Condition at the Center	Pattern of Wind Direction	
		Northern Hemisphere	Southern Hemisphere
Cyclone	Low	Anticlockwise	Clockwise
Anticyclone	High	Clockwise	Anticlockwise

## Classification

- **Tropical Cyclones;** originate between the **Tropics of Capricorn and Cancer**
- **Extra Tropical/ Temperate Cyclones;** originate in the **Polar Regions**



### Conditions for Formation

- Large sea surface with temperature  $>27^{\circ}$  C.
- Presence of the **Coriolis force**
- Small **variations in the vertical wind speed**
- **A pre-existing weak low- pressure area**
- **Upper divergence** above the sea level system

### Nomenclature

- Nodal Authority - **World Meteorological Organization (WMO)**
- Indian Ocean Region - **Bangladesh, India, Maldives, Myanmar, Oman, Pakistan, Sri Lanka and Thailand** contribute to naming cyclones that occur in this region.

### Different Names for Tropical Cyclones

- **Typhoons** - Southeast Asia and China
- **Hurricanes** - North Atlantic and eastern Pacific
- **Tornados** - West Africa and southern USA
- **Willy-willies** - Northwest Australia
- **Tropical Cyclones** - Southwest Pacific and Indian Ocean

### Cyclones in India

- **Bi-annual Cyclone Season** - March to May and October to December
- Recent Cyclones - **Tauktae, Vayu, Nisarga and Mekanu** (in Arabian Sea) and **Asani, Amphan, Fani, Nivar, Bulbul, Titli, Yaas and Sitrang** (in Bay of Bengal)

**UPSC Civil Services Examination, Previous Year Questions (PYQs)**

**Prelims**

**Q. In the South Atlantic and South-Eastern Pacific regions in tropical latitudes, cyclone does not originate. What is the reason? (2015)**

- (a) Sea surface temperatures are low
- (b) Inter-Tropical Convergence Zone seldom occurs
- (c) Coriolis force is too weak
- (d) Absence of land in those regions

**Ans: (b)**

**Ans:**

- The most proximate reasons for the lack of cyclones in the South Atlantic and South Eastern Pacific ocean is the rare occurrence of the Inter-Tropical Convergence Zone (ITCZ) over the region.
- It becomes very difficult or nearly impossible to have genesis of tropical cyclones, unless synoptic vorticity (it is a clockwise or counterclockwise spin in the troposphere) and convergence (i.e., large scale spin and thunderstorm activity) are provided by ITCZ.
- Therefore, option (b) is the correct answer.

PDF Refernece URL: <https://www.drishtias.com/printpdf/cyclone-remal>

