

What are Tropical Cyclones?

A **tropical cyclone** is a fast-rotating storm system having a low-pressure center, a closed low-level atmospheric circulation, strong winds, and a spiral arrangement of thunderstorms that produce heavy rain or squalls.

Depending on its location and strength, a tropical cyclone is referred to by different names, including hurricane typhoon, tropical storm, cyclonic storm, tropical depression, and simply cyclone. A **hurricane** is a tropical cyclone that occurs in the Atlantic Ocean and northeastern Pacific Ocean, and a typhoon occurs in the northwestern Pacific Ocean; in the south Pacific or Indian Ocean, comparable storms are referred to simply as "tropical cyclones" or "severe cyclonic storms"

They are called tropical because of the geographic locations of the origin of the cyclone, whereas the cyclone refers to as the blowing wind in the spiral form.

The cyclones adopt the energy it requires using the evaporation process and evaporating the water from the ocean surface which further condenses and forms the clouds and eventually rains when it again cools down and condenses.

Physical Structure of Cyclones:

Tropical cyclones are areas of relatively low pressure in the troposphere, with the largest pressure area occurring at low altitudes near the surface. On Earth, the pressures recorded at the centers of tropical cyclones are among the lowest ever observed at sea level.

The Physical structure of the cyclone comprises of the following:

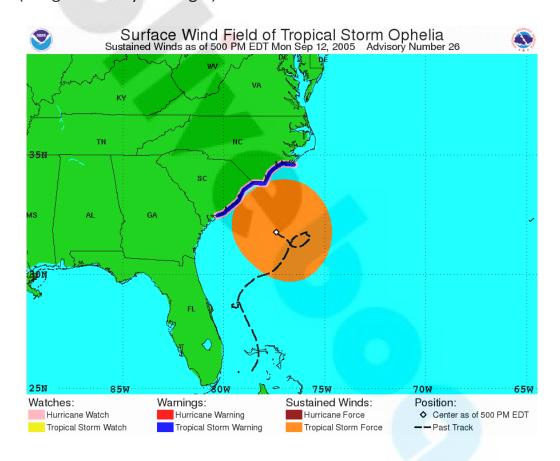




 Wind Field – The wind field is defined as the high-intensity air flowing around the center of circulation while also flowing radially inwards. Due to the radial inward movement of the air it becomes cyclonic and the air rotation speed increases rapidly.

At an inner radius, air begins to ascend to the top of the troposphere. This radius is typically coincident with the inner radius of the eyewall, and has the strongest near-surface winds of the storm; consequently, it is known as the radius of maximum winds.

This is how a wind field is described by the National Hurricane center (image courtesy – Google)





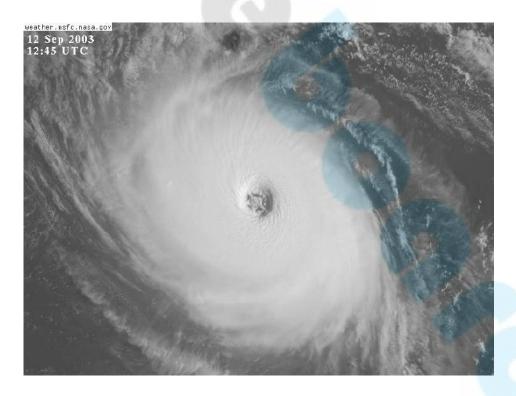
2. **Centre of Cyclone or 'Eye'** - At the center of a mature tropical cyclone, air sinks rather than rises. For a sufficiently strong storm, air may sink over a layer deep enough to suppress cloud formation, thereby creating a clear "eye". Weather in the eye is normally calm and free of clouds, although the sea may be extremely violent.

The eye is normally circular and is typically 30–65 km (19–40 mi) in diameter, though eyes as small as 3 km (1.9 mi) and as large as 370 km (230 mi) have been observed over time.

The cloudy outer edge of the eye is called the "eyewall". The eyewall typically expands outward with height, resembling an arena football stadium; this phenomenon is sometimes referred to as the "stadium effect"

The eyewall may vary over time in the form of eyewall replacement cycles, particularly in intense tropical cyclones.

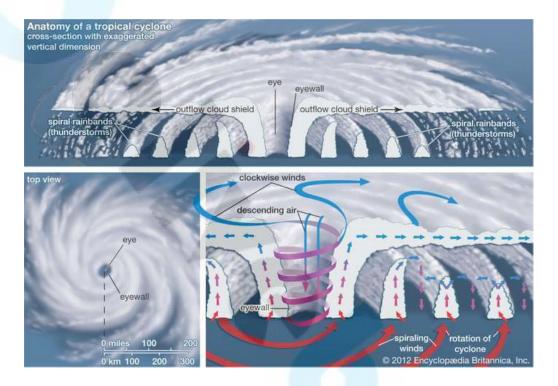
Here's how an eye of a cyclone is visible when viewed from the outer space: (image source – google)





3. **Rapid Intensification** - On occasion, tropical cyclones may undergo a process known as rapid intensification, a period in which the maximum sustained winds of a tropical cyclone increase by 30 knots within 24 hours

Here's an anatomy picture of what a mature cyclone looks like from inside (image source – Britannica.com)



Now, Let's have a look at the list of cyclones that has hit India over the last 30 years, their pressure intensity and the region they affected.

This list also includes the most recent Amphan Cyclone that hit the West Bengal and parts of Odisha.

List of Cyclones:

Cyclones have impacted India and its coast since a long time but the recent Amphan cyclone has broken all previous records and has come out as the most severe or as we call 'Super cyclone'.

Over the time the coastal cities of West Bengal, Tamil Nadu, Andhra Pradesh and Odisha have witnessed many cyclone that were of various intensity and had drastic impacts on the livelihoods.



To summarize the cyclones, we have distributed them into state-wise to form so that you can better memorize their names and the year that they hit the shore.

Andhra Pradesh:

Name	Lowest Pressure (mbar)	Year
BOB 02	920	1990
BOB 05	982	1998
03B	992	2003
Yemyin	986	2007
Khai-Muk	996	2008
Laila	986	2010
Nilam	982	2012
Helen	990	2013
Lehar	980	2013
Hudhud	940	2014
Kyant	997	2016
Titli	978	2018

The pressure bar represents the pressure of the cyclone at the centre of the origination where the cyclone is rotating at its full speed.

This center has a low pressure and air falls into it rather than rising thus making the storm more intense and eventually it slows when the eyewall decreases in size.



Odisha:

Name	Lowest Pressure (mbar)	Year
1999 Odisha cyclone	912	1999
Phailin	940	2013
Hudhud	950	2014
Titli	978	2018
Fani	932	2019
Amphan	925	2020

The recent Amphan cyclone had a destructing effect on the livelihoods of the people of West Bengal and parts of Odisha.

Amphan is a powerful tropical cyclone that has caused widespread damage over East India and Bangladesh. It is the strongest tropical cyclone to strike the Ganges Delta since Cyclone Sidr of the 2007 season and the first super cyclonic storm to occur in the Bay of Bengal since the 1999 Odisha cyclone.

It has widely impacted the life cycles and the properties of the locals over the last few days. Do you know? Amphan which is pronounced as 'Um-Pun' means the Sky. The name was designated by Thailand in 2004.

Amphan originated from a low-pressure area persisting a couple of hundred miles east of Colombo, Sri Lanka, on 13 May 2020. Tracking northeastward, the disturbance organized over exceptionally warm sea surface temperatures.

Few Important Facts on Amphan Cyclone

Wind Speed of Amphan when it made the landfall – 155-165 kmph

Wind Speed in Kolkata when it made landfall around 2:30 PM on 20th May – 80-90 kmph



Max. Wind speed in Kolkata – 112 kmph Alipore, 133 kmph at Dum Dum Airport.

West Bengal:

Name	Lowest Pressure (mbar)	Year
1970 Bhola Cyclone	966	1970
BOB 03	964	1981
BOB 03	972	1988
BOB 07	994	1997
BOB 06	984	1998
BOB 04	998	2000
BOB 03	970	2002
Sidr	944	2007
Rashmi	996	2008
Aila	970	2009
Komen	986	2015
Roanu	983	2016
Mora	970	2017
Fani	932	2019
Bulbul	980	2019
Amphan	925	2020



Tamil Nadu:

Name	Lowest Pressure (mbar)	Year
BOB 09	998	1991
BOB 06	994	1992
BOB 03	968	1993
08B	967	1996
BOB 05	958	2000
Fanoos	998	2005
Nisha	996	2008
Jal	988	2010
Thane	972	2011
Nilam	992	2012
Madi	986	2013
Roanu	983	2016
Kyant	997	2016
Nada	1000	2016
Vardah	982	2016
Ockhi	975	2017
Gaja	995	2018





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