Cyclone Biparjoy : Naming of Indian cyclones

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Why in News: A cyclonic storm, named Biparjoy, has developed in the Arabian Sea. On Thursday (June 8) at

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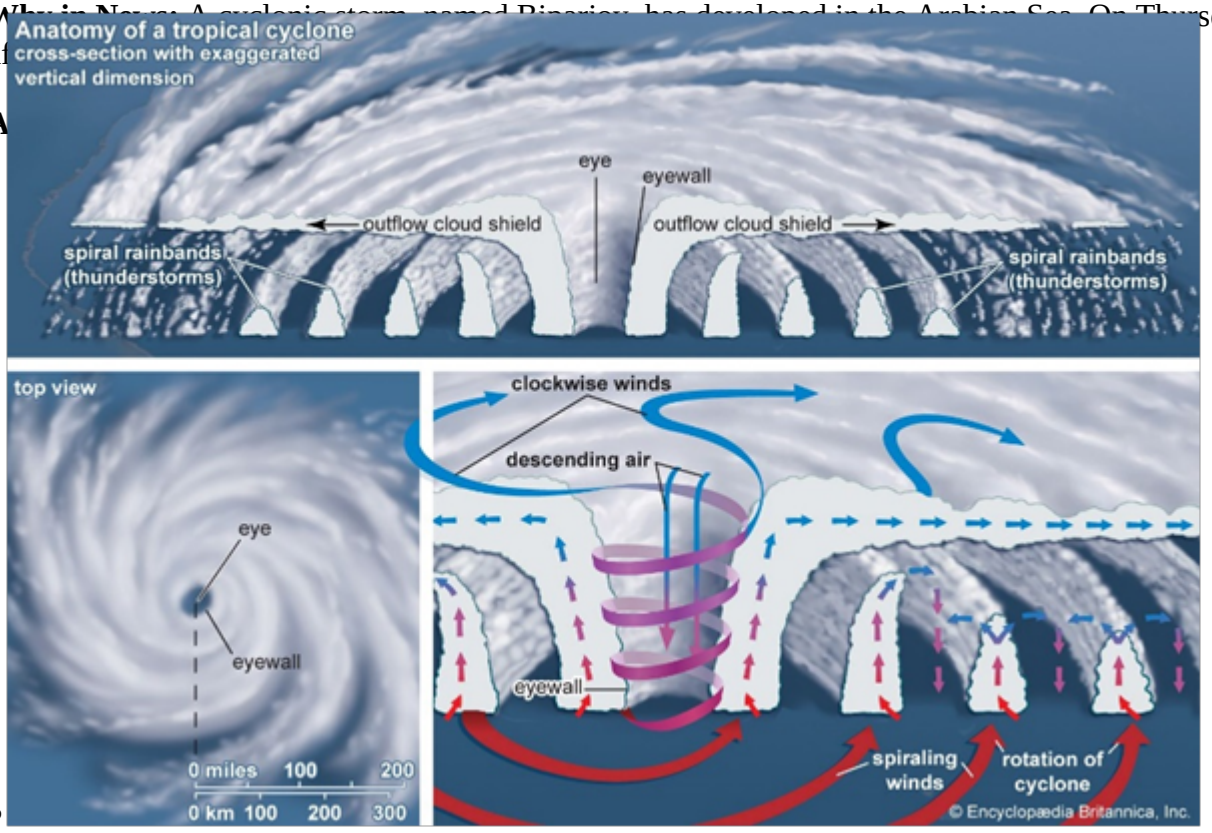

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A tropical cyclone is a rapid rotating storm originating over tropical oceans from where it draws the energy to develop.

It has a low pressure centre and clouds spiraling towards the eyewall surrounding the "eye", the central part of the system where the weather is normally calm and free of clouds.

Its diameter is typically around 200 to 500 km, but can reach 1000 km. A tropical cyclone brings very violent winds, torrential rain, high waves and, in some cases, very destructive storm surges and coastal flooding.

The winds blow counter clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere. Tropical cyclones above a certain strength are given names in the interests of public safety.

Impact of tropical cyclones

Tropical cyclones are associated with a variety of hazards. Damaging or destructive winds may reach speeds in excess of 300 km/h in the most intense systems.

The combination of wind-driven waves and the low-pressure of a tropical cyclone can produce a coastal storm surge – a huge volume of water driven ashore at high speed and with immense force that can wash away structures in its path and cause significant damage to the coastal environment.

Torrential rainfall results in flash-flooding, flooding, and potential landslides and mudslides

Their potential for wreaking havoc caused by those associated hazards is exacerbated by the length and width of the areas they affect, their intensity, frequency of occurrence and the vulnerability of the impacted areas

About Cyclone Biparjoy

A depression over the southeast Arabian Sea, south of Porbandar in Gujarat moved northwestward and intensified into a severe cyclonic storm. It is the first storm brewing in the Arabian Sea this year.

The cyclone is predicted to gain in strength over the next three days and develop into a very severe cyclonic storm by June 13.

According toan Indian Meteorological Department (IMD) advisory, the cyclone would result in squally weather with wind speeds reaching 35-45 kmph along the coastline of Karnataka, Goa and Maharashtra on Thursday, Friday and Saturday.

The IMD has not yet predicted any major impact on countries adjoining the Arabian Sea, including India, Oman, Iran, and Pakistan.

But the cyclone is expected to keep the monsoon a little subdued. The IMD announced the onset of the monsoon on Kerala coast on Thursday, eight days behind normal schedule, but its northwards progression in the interiors of the mainland could be stunted.

The IMD said monsoon could progress to some more parts of central Arabian Sea, remaining parts of Kerala, some parts of Tamil Nadu, some parts of Karnataka and some parts of the northeastern states during the next 48 hours.

Naming of the Tropical Cyclones

‘Biparjoy’ was suggested by Bangladesh and the word means ‘disaster’ or ‘calamity’ in Bengali. The naming of cyclones is done by countries on a rotational basis, following certain existing guidelines.

Worldwide, there are six regional specialised meteorological centres (RSMCs) and five regional Tropical Cyclone Warning Centres (TCWCs) mandated for issuing advisories and naming of tropical cyclones.

IMD is one of the six RSMCs to provide tropical cyclone and storm surge advisories to 13 member countries under the WMO/Economic and Social Commission for Asia-Pacific (ESCAP) Panel including Bangladesh, India, Iran, Maldives, Myanmar, Oman, Pakistan, Qatar, Saudi Arabia, Sri Lanka, Thailand, United Arab Emirates and Yemen.

RSMC, New Delhi is also mandated to name the Tropical Cyclones developing over the north Indian Ocean (NIO), including the Bay of Bengal (BoB) and the Arabian Sea (AS).

So, the tropical cyclones forming over different Ocean basins are named by the concerned RSMCs & TCWCs.

The WMO/ESCAP Panel on Tropical Cyclones in 2000 agreed in principle to assign names to the tropical cyclones in these seas. After deliberations, the naming began in September 2004.

This list contained names proposed by then eight member countries of WMO/ESCAP PTC, viz., Bangladesh, India, Maldives, Myanmar, Oman, Pakistan, Sri Lanka and Thailand. It was expanded to include five more countries in 2018 — Iran, Qatar, Saudi Arabia, United Arab Emirates and Yemen.

The list of 169 cyclone names released by IMD in 2020 was provided by these countries — 13 suggestions from each of the 13 countries.

Some rules are to be followed while naming cyclones, such as:

The proposed name should be neutral to (a) politics and political figures (b) religious believes, (c) cultures and (d) gender

Name should be chosen in such a way that it does not hurt the sentiments of any group of population over the globe

It should not be very rude and cruel in nature

It should be short, easy to pronounce and should not be offensive to any member

The maximum length of the name will be eight letters

After Bangladesh, the next cyclone will be named ‘Tej’ based on India’s suggestion.

Cyclone development in Arabian Sea

There are fewer number of cyclones in the Arabian Sea than the Bay of Bengal, but it is not uncommon. In fact, June is one of the favourable months for the formation of cyclones in the Arabian Sea

A cyclone is a low-pressure system that forms over warm waters. Usually, a high temperature anywhere means the existence of low-pressure air, and a low temperature means high-pressure wind. In fact, that is one of the main reasons why we see greater number of cyclones in the Bay of Bengal compared to Arabian Sea.

Bay of Bengal is slightly warmer. Because of climate change, the Arabian Sea side is also getting warmer, and as a result, the number of cyclones in the Arabian Sea is showing an increasing trend in the recent trend.

As air warms over hotter regions, it ascends, leading to low pressure at the surface it is covering. When air cools in colder areas it descends, leading to high pressure at the surface. In a depression or low-pressure situation, the air is rising and blows in an anticlockwise direction around the low in the northern hemisphere and in a clockwise direction in the southern hemisphere. This is because of the Coriolis effect, a result of the earth’s rotation on its axis.

As warm air rises and cools, water vapour condenses to form clouds and this can lead to rains. Weather systems formed over the Bay of Bengal in the peak of summer in May are among the strongest in the North Indian Ocean region. Warm seas present ripe conditions for the development and strengthening of cyclones and fuel these systems over the water

Historically, the Bay of Bengal has been known for tropical cyclones. But over the years there has been an increase in cyclones forming in the Arabian Sea, as well.

An analysis of past data of cyclones over the North Indian Ocean from 1891–2020 indicates that the frequency of extremely severe cyclonic storms has increased in recent years over the Arabian Sea since 1990, and remained the same over the Bay of Bengal.

A 2021 study (‘Changing status of tropical cyclones over the north Indian Ocean’) published in Springer noted that between 1982 and 2019, a “significant increasing trend in the intensity, frequency, and duration of cyclonic storms

and very severe CS” was observed over the Arabian Sea.

Storms intensify and sustain depending on the energy availability through heat load in oceans and moisture

The study has also highlighted that accumulated cyclone energy — total wind energy during the lifespan of a storm — in Arabian Sea has nearly tripled, indicating the extent of warming that it might have undergone in recent years