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Gist of RSTV RAJYA SABHA Debate

INCREASING INCIDENCE OF SEVERE CYCLONES

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INCREASING INCIDENCE OF SEVERE CYCLONES

INTRODUCTION

- IThe powerful Cyclone Tauktae battered the western coast.
- The cyclone is currently classified as an 'Extremely Severe Cyclonic Storm' and is the fifth-strongest cyclone ever in recorded history in the Arabian Sea.
- At a time,when India is battling a massive spread of Covid-19, the cyclonic storm has unleashed a double-edged sword to people in the western coastal areas.
- The IMD categorises tropical storms, which rotate in an anti-clockwise direction, into Depression, Deep Depression, Cyclonic Storm, Severe Cyclonic Storm, Very Severe Cyclonic Storm, Extremely Severe Cyclonic Storm, and Super Cyclonic Storm.
- Cyclones occur in the pre-monsoon months of May-June and the post-monsoon months of October-November.
- India has faced 170 storms since 1970, which is the fourth highest after the United States, the Philippines and China in the same duration.
- And to analyse Increasing incidence of severe cyclones.

EDITED EXCERPTS FROM THE DEBATE

The increased frequency of cyclones

- India faced cyclones-
  - 2017- 3
  - 2018- 7
  - 2019- 8
  - 2020- 5

What is the general trend of cyclones?

- Generally, India gets 5 cyclones on an average in a year.
  - 4 in Bay of Bengal
  - 1 in Arabian Sea
- Cyclones occur in the pre-monsoon months of May-June and the post-monsoon months of October-November.
- Among the cyclones that formed in the waters of the **Bay of Bengal**, over 58 per cent approached the coast during the **October-November post-monsoon season**, while 30 per cent did so during pre-monsoon season.
- On the other side, only about 25 per cent of the cyclones that formed in the **Arabian Sea,** approached the coast during both **pre- and post-monsoons.**

Bay of Bengal vs Arabian Sea

- Tropical storms are those that form between the latitudes **Tropic of Cancer and the Tropic of Capricorn**, and rotate in the anti-clockwise direction.
- The surface of oceanic waters heats up due to the sun and as warm air and moisture rise up from the surface of the warm waters, more air rushes to fill the space in.
- This air in turn rises with humidity, creating a cycle of warm, moist air rising up. This system grows in height and size, spreading out and causing a tropical cyclone.
- Near India, cyclones form on either side of the country, but the ones in the Bay of Bengal are more frequent and more intense than in the Arabian Sea.
- The Bay of Bengal is fed by a constant source of freshwater in the form of giant rivers like the Ganga and the Brahmaputra.
- The river water that empties into the Bay of Bengal warms up at the surface and rises up as moisture.

- This makes it difficult for the warm layers of water to mix properly with the cooler layers of water below, keeping the surface always warm and ready to feed any potential cyclone over it.
- Furthermore, because of the shape of the land around the Bay of Bengal, the winds are slower and weaker over the ocean, ready to spin.
- Conversely, the northern, central and western parts of the Arabian Sea have a much cooler temperature. The mountains in east Africa direct winds towards the Arabian Peninsula, dissipating heat much more efficiently throughout the Arabian Sea.
- As a result, this region is not favourable to feed potential cyclones and about half the cyclones that move into this area typically lose energy and dissipate.
- However, this year, the sea surface temperatures continue to remain abnormally high, in the 30s, feeding cyclonic conditions.

The changing trend of cyclone frequency

- In recent years, this frequency of cyclone has increased and more than this, there is decrease in monsoon season as well as post-monsoon season.
- However, in the particular case of Arabian Sea, the last 30 years, from 1990 onwards, there is a significant increasing trend of **extremely severe cyclones**. And as a result, the most intense cyclones in the region are causing a lot of devastation over the western coast of India.
- Not only the Arabian Sea, the Bay of Bengal is also witnessing many severe cyclones in the recent times.

The Arabian Sea and the Bay of Bengal are both a part of the Indian Ocean, which extends on the west along the African coast and Madagascar upto the Arabian Peninsula and Gulf of Oman, down to the North Indian Ocean below India, along the Andaman Sea, and goes all the way to the Australian coast.

How climate change is contributing to increased frequency of cyclones?

- Climate change is increasing the damage that cyclones, cause in several ways like increasing sea surface temperatures that can make cyclones more powerful, increasing the rainfall intensity during the storm and rising sea levels, which increases the distance inland that storm surges reach.
- The strongest cyclones have become more common across the world and scientists project that climate change will continue to make the strongest cyclones more powerful.
- The strength of cyclones affecting the countries bordering the North Indian Ocean has been increasing as the planet has warmed, say multiple studies.
- Climate change is increasing the danger from cyclones in several ways like cyclones are fueled by available heat.

What are the other reasons?

- **Warming:** Tropical cyclone rainfall rates will likely increase in the future due to anthropogenic warming and accompanying increase in atmospheric moisture content.
- **Human influence:** Apart from increased warming, other human influences conceivably could have contributed to recent observed increases in hurricanes.

CONCLUSION

In the last few years, given the global warming, meteorologists have seen changes in the temperature of the Arabian Sea. This can likely be the reason for increased cyclonic activities in the area.

VALUE ADDITION

What are Tropical Cyclones?

- Tropical cyclones, also known as typhoons or hurricanes, are among the most destructive weather phenomena.
- They are intense circular storms that originate over warm tropical oceans, and have maximum sustained wind speeds exceeding 119 kilometres per hour and heavy rains.
- However, the greatest damage to life and property is not from the wind, but from secondary events such as storm surges, flooding, landslides and tornadoes.
  - **Tropical cyclones** are referred to by different names depending on where they originate in the world.
  - **Hurricanes** occur in the Atlantic Ocean and the eastern north Pacific Ocean.
  - **Typhoons** occur in the western Pacific Ocean.
  - **Tropical cyclones** occur in the south Pacific Ocean and Indian Ocean.

Cyclones are moving closer to land: Study

- According to a recent report, high-intensity tropical cyclones have been moving closer to coasts over the past 40 years, potentially causing more destruction than before.
- The new findings show cyclones at maximum intensity are also migrating westward, bringing them closer to coastlines and increasing their potential for damage.
- Occurrence of the additional cyclone: Each decade since the 1980s, an additional two cyclones have come within 124 miles (200 km) of land.

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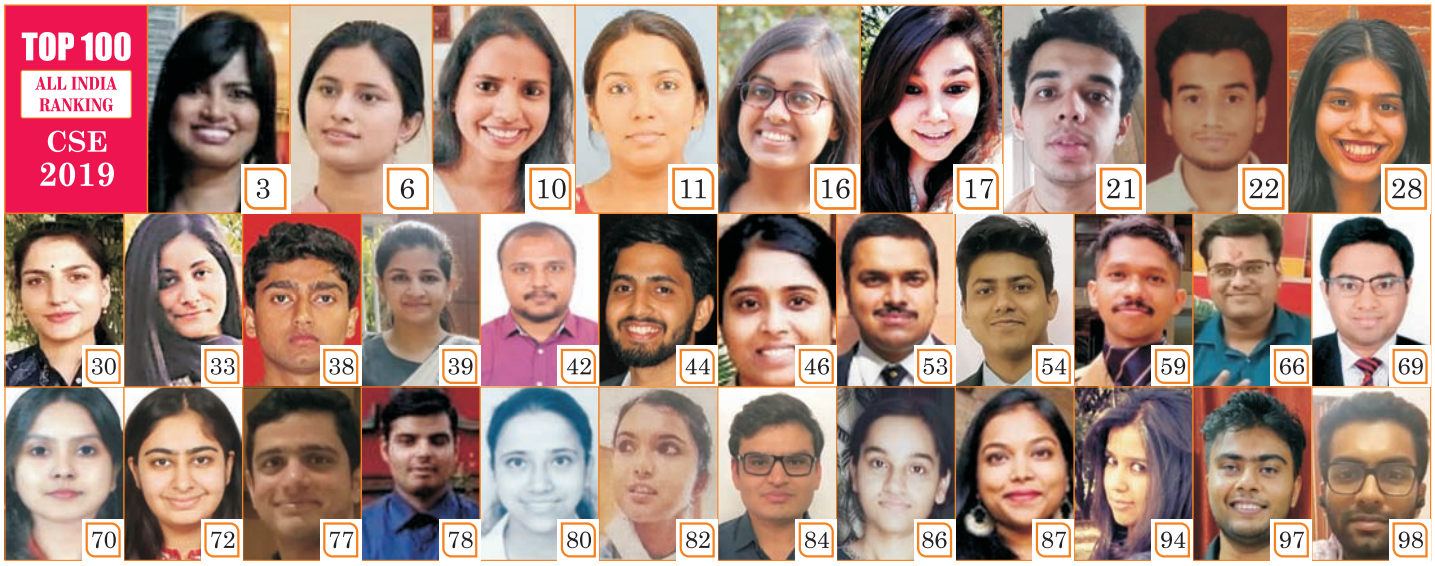

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