Hotter Oceans and Supercyclones

Why in News

supercyclone 'Amphan'The is likely to make landfall between the Sagar islands of West Bengal and the Hatiya islands of Bangladesh.

- **"super cyclonic storm (maximum wind speed is 120 knots)".** Cyclone Amphan (pronounced as UM-PUN) is a tropical cyclone formed over Bay of Bengal that has turned into a
- **higher than normal temperatures**<u>countrywide lockdown</u> **Covid-19**due to **pandemic**The in the Bay of Bengal (BoB) with the have played a role turning a storm into a super cyclone.
- **strongest storm**since the super cyclone of 1999Additionally, the super cyclone Amphan is the to have formed in the BoB that ravaged Paradip in Odisha.

Key Points

- **'Cyclones' as a Regular Phenomenon**
  - **energy from the heat and moisturewarm ocean surfaces.** The cyclones gain their generated from
  - **higher**
    - **Slow Flowing Winds:** It keeps temperatures relatively high i.e. around 28 degrees around the year.
    - **Higher Rainfall:** It provides required humidity for cyclone formation.
    - **Constant Inflow of Fresh Water:** The inflow from the Ganga and Brahmaputra rivers makes it impossible for the warm water to mix with the cooler water below, making it ideal for a cyclonic depression.

    The BoB has Sea Surface Temperature (SST) compared to the Arabian Sea. Some of the reasons for higher SST of Bob are:
  - **Arabian Sea receives stronger winds**On the other hand, the that help dissipate the heat, and the lack of constant fresh water supply helps the warm water mix with the cool water, reducing the temperature.
  - **play a role in aiding the arrival of the monsoon.** Additionally, the tropical cyclones in these seas are a typical feature of the summer months and
- **Unusual Higher Temperature in BoB:**
  - **record summer temperatures**

    cyclone Fani The in 2019 was also fuelled by high temperatures in the BoB. In 2020, the BoB has observed due to the global warming from fossil fuel emissions that has been heating up oceans.
  - **maximum surface temperatures of 32-34°C**For the first two weeks of May, there were consecutively. These are record temperatures driven by climate change observed until now.
  - **no longer restrictedstorm prediction less reliabledisrupting monsoon patterns.** Such unusual warming around India is to just the BoB but also the Arabian Sea and the Indian Ocean. It makes as well as
- **Impact of Lockdown:**
  - **Reduced particulate matter emissions fewer aerosolsreflect sunlight and heat away from the surface.**

    Every year, the particulate pollution from the Indo-Gangetic plains is transported towards the BoB which influences the formation of clouds over the ocean.

    during the lockdown resulted in, such as black carbon, that are known to
  - **minimal presence of heat and sunlight reflecting aerosolsfewer clouds and more heat.1-3°C higher than normal.amplified the strength**The in BoB resulted in Further, it raised the temperature of BoB by Thus, the whole phenomenon has of the cyclone.

- **Overall Impact:**
    category-1 cyclone to category-518 hours The higher temperatures and minimal presence of aerosols helped the cyclone Amphan to intensify itself from a in that is an unusually quick evolution.

Cyclones

- **low-pressure system**Cyclones are the formation of a very with very high-speed winds revolving around it. Factors like wind speed, wind direction, temperature and humidity contribute to the development of cyclones.
- Before cloud formation, water takes up heat from the atmosphere to change into vapour. When water vapour changes back to liquid form as raindrops, this heat is released to the atmosphere.
- The heat released to the atmosphere warms the air around. The air tends to rise and causes a drop in pressure. More air rushes to the centre of the storm. This cycle is repeated.
- Hurricanes derive their energy from heated seawater which can be prevented by presence of upper-level-winds that disrupt the storm circulation forcing it to lose its strength.

Source: TH