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Expansion of the Amery Ice Shelf

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Why in News

The **National Centre for Polar and Ocean Research (NCPOR)** has predicted an increase in **the expansion of Amery Ice Shelf (AIS) boundaries** from its 2016 positions.

- The AIS is **one of the largest glacier drainage basins** in the world, located on the **east coast of Antarctica**.
The AIS dynamics and mass balance help in understanding the **changes in the global climate scenario**.
- The prediction made by NCPOR is expected to help to understand the **ongoing changes in the ocean and atmospheric forces better**.

Ice Shelves

- The floating sheets of ice are called '**ice shelves**'. It plays a multi-faceted role in maintaining the **stability of a glacier**.
- The ice sheet mass balance, sea stratification, and bottom water formation are important parameters for the balancing of a glacier. Ice shelves **connect a glacier to the landmass**.
 - The **ice sheet mass balance** of a glacier is the net balance between the mass gained by snow deposition, and the loss of mass by melting.
 - **Sea stratification** takes place when water masses with different properties - salinity, oxygenation, density, temperature - form layers that act as barriers to water mixing.
 - The **deep-ocean bottom water** is formed by the cooling and sinking of surface water at high latitudes.

Key Points

- **Description:**
 - The predictions are based on a **16-year-long satellite-based observation** that covered an area of 60,000 sq. km across the AIS.
 - The study intends to analyze **AIS extension and the influence of ocean atmospheric forcing in East Antarctica.**
- **Expansion of AIS:**
 - It has been predicted that there would be a **24% increase** in the expansion of AIS boundaries by **2021** and another **24% expansion by 2026** from its 2016 positions.
 - The study has also observed a **spatio-temporal change** in the ice shelf as reflected by the **extension of the Prydz, Mackenzie and the Sandefjord Bays** which forms a part of the AIS.
- **Significance:**
 - In the background of the global warming scenario, the study reveals about the **advancement in the predicted ice shelf extent**, the future dynamism of ocean heat fluctuation and Antarctic Amery ice shelf mass shifting-extent.
 - The study has also observed that the **critical cooling of the Sea Surface Temperature (SST)** is resulting in an **advancement of the ice shelf by 88%** in the past 15 years. These changes would contribute in a major way to **climate variability.**

Source:PIB