

## Rapid Ice Melt in West Antarctica

### Why in news?

A new study has pointed out that rapid melting of West Antarctica's ice sheet due to warm waters around it, is now unavoidable, no matter how much carbon emissions are cut.

### What is an ice sheet?

- **Ice sheet** - An ice sheet is essentially a mass of glacial ice that covers *more than 50,000 square kilometres* of land.
- Ice sheets contain about 99% of the fresh water on Earth, and are sometimes called *continental glaciers*.
- Major ice sheets include
  - **Antarctica ice sheet**- World's largest volume of land-based ice
  - **Greenland ice sheet**
- **Ice shelf**- As ice sheets extend to the coast and over the ocean, they become ice shelves.
- **Ice cap**- A mass of glacial ice covering less area than an ice sheet is called an ice cap.
- **Ice field**- A series of connected ice caps is called an ice field.
- **Individual glaciers**- They make up the ice fields, ice caps, and eventually ice sheets.
- **Sea ice** - It is the free-floating ice that surrounds the polar regions created by sea water freezing.

### What is the recent study about?

*The study, 'Unavoidable future increase in West Antarctic ice-shelf melting over the twenty-first century', quoted the reasons for the rapid ice melt in West Antarctica.*

- The scientists have used a high-resolution computer model of the **Amundsen Sea**, the most vulnerable sector of the ice sheet, to provide comprehensive assessment of warming in West Antarctica.
- **Findings** - Amundsen Sea will warm roughly *3 times faster than the historical rate* through the rest of this century leading to much more rapid melting of ice shelves.
- The study worsens the outlook for **Thwaites Glacier** that is rapidly melting beneath its connected ice shelf.
- The processes triggered by faster ice shelf melting could lead to the collapse of the West Antarctic Ice Sheet.
- If lost completely, the ice sheet would raise the global mean sea level by *5.3 metres or 17.4 feet*, a devastating consequence for people living in coastal cities across the world, including in India.



### How the West Antarctic ice sheet is melting?

*The Antarctic ice sheet contains enough ice to raise global sea-levels by about 58m (190ft) if it melted entirely. Of this, a sizeable portion enough to raise sea-levels by around 5m (16ft), is held in West Antarctica.*

- **Ocean currents** - Strengthening of ocean currents drives more warm water from the deep ocean towards the shallower ice shelves along the coast.
- **Thinning of ice shelf**- If an ice shelf thins or disappears, these glaciers tend to speed up, discharging more ice into the ocean and causing sea level rise.
- The region's ice shelves have been depleting, glaciers have been flowing faster towards the ocean and the ice sheet has been shrinking.
- Thwaites glacier is referred as the "***doomsday glacier***" because it would raise global sea-levels by around 65cm if it collapses entirely.



## References

1. [Indian Express- Ice sheet melt in West Antarctica](#)
2. [BBC | West Antarctic ice shelf melt 'unavoidable'](#)



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