

Atlantic Meridional Overturning Circulation

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Atlantic Meridional Overturning Circulation Latest News

According to a new study the complete collapse of the Atlantic Meridional Overturning Circulation (AMOC) could lead to the release of large amounts of carbon into the atmosphere, particularly from the Southern Ocean.

About Atlantic Meridional Overturning Circulation

- It is a complex **system of ocean currents and eddies** (circular currents of water) that form a huge vertical loop spanning the **whole length of the Atlantic Ocean**.
- AMOC is also one of the **16 Earth system climate tipping** elements being studied by scientists

Mechanism of Atlantic Meridional Overturning Circulation

- AMOC acts as an ocean conveyor belt, **transporting warm water northward from the tropics across the Atlantic** at the surface, and cold water southward at the bottom.
- This circulation is driven by **differences in temperature and salinity**, which create differences in water density – a process known as thermohaline circulation.

- In the North Atlantic Ocean, the warm **water cools and becomes denser**, sinking and down into the deep ocean.
- This **dense water then travels southward** along the ocean floor, eventually warming and resurfacing to complete the cycle.

Reason for Weakening of AMOC

- It will weaken as greenhouse gas concentrations rise and **global temperatures increase**.
- One of the main drivers is believed to be the **influx of freshwater** from the melting **Greenland Ice Sheet**, which reduces ocean salinity and disrupts the circulation.

Impact of Weakening of AMOC

- **Gulf Stream**, a part of the AMOC, is a **warm current** responsible for mild climate at the Eastern coast of North America as well as Europe.
- Without a **proper AMOC and Gulf Stream, Europe will be very cold**.
- Modelling studies have shown that an AMOC shutdown **would cool the northern hemisphere** and **decrease rainfall over Europe**.
- It can also have an **effect on the El Nino**.

Source: **DTE**

Source: <https://vajiramandravi.com/current-affairs/atlantic-meridional-overturning-circulation/>

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