

OCEAN MIXING THAT DRIVES CLIMATE FOUND IN SURPRISE SPOT

Relevant for: Geography | Topic: Climate and Weather & Changes in Climate

AMOC moves warm, salty water north to mix with cold water near Greenland. ap

One of the key drivers of the world's climate is an area in the North Atlantic Ocean, where warmer and colder water mix and swirl.

When scientists went for their first close look at this critical underwater dynamo, they found they were looking in the wrong place. By hundreds of miles.

The consequences are not quite yet understood, but eventually it could change forecasts of one of the worst-case global warming scenarios still considered unlikely this century, in which the mixing stops and climate chaos ensues.

It's called the Atlantic Meridional Overturning Circulation, and scientists describe it as a giant ocean conveyor belt that moves water from Greenland south to beyond the tip of Africa and into the Indian Ocean.

Warm, salty water near the surface moves north and mixes with cold, fresher water near Greenland. As that water cools and sinks it drives a slow circulation of the oceans that is critical to global climate, affecting the location of droughts and frequency of hurricanes. It also stores heat-trapping carbon dioxide deep in the ocean. The faster it moves, the more warm water gets sent into the depths to cool.

The area where warm water turns over in the North Atlantic is considered to be the engine of the conveyor belt. Scientists thought it was in the Labrador Sea west of Greenland.

But then a new international science team measured temperature, saltiness and the speed of ocean currents throughout the North Atlantic to try to better understand the conveyor belt. The preliminary results after hundreds of measurements in 21 months found that engine was several hundreds of miles east of where they figured, said lead author Susan Lozier, an ocean sciences professor at Duke University. The study, published in *Science*, puts it east of Greenland, closer to Scotland.

The computer simulations that predict how the climate could change in coming years didn't factor in exactly where the conveyor belt engine is, and now they may be able to.

Ms. Lozier and several outside experts said this doesn't change their trust in the models, especially because when the models are checked with what is happening in the real world, they are found to be generally accurate.

Project Cosmic Microwave Background-Bharat is under consideration by ISRO.

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