Ocean's 'missing link' discovered

- Story Highlights
- New research shows current is part of the world climate system's engine-room
- The Tasman Outflow, at an average depth of 2,600 to 3,300 feet, is a "supergyre"
- Identification of current improves ability explain how ocean affects global climate
- If major currents collapse there is a threat of areas plunging into an ice age

SYDNEY, Australia (Reuters) -- Australian scientists have discovered a giant underwater current that is one of the last missing links of a system that connects the world's oceans and helps govern global climate.

New research shows that a current sweeping past Australia's southern island of Tasmania toward the South Atlantic is a previously undetected part of the world climate system's engine-room, said scientist Ken Ridgway.

The Southern Ocean, which swirls around Antarctica, has been identified in recent years as the main lung of global climate, absorbing a third of all carbon dioxide taken in by the world's oceans.

"We knew that they (deep ocean pathway currents) could move from the Pacific to the Indian Ocean through Indonesia. Now we can see that they move south of Tasmania as well, another important link," Ridgway, of the Commonwealth Scientific and Industrial Research Organisation, told Reuters.

In each ocean, water flows around anticlockwise pathways, or gyres, the size of ocean basins.

The newly discovered Tasman Outflow, which sweeps past Tasmania at an average depth of 800-1,000 meters (2,600 to 3,300 feet), is classed as a "supergyre" that links the Indian, Pacific and Atlantic southern hemisphere ocean basins, the government-backed CSIRO said in a statement on Wednesday.

The CSIRO team analyzed thousands of temperature and salinity data samples collected between 1950 and 2002 by research ships, robotic ocean monitors and satellites between 60 degrees south, just north of the Antarctic Circle, and the Equator.

"They identified linkages between these gyres to form a global-scale 'supergyre' that transfers water to all three ocean basins," the CSIRO said.

Ridgway and co-author Jeff Dunn said identification of the supergyre improves the ability of researchers to more accurately explain how the ocean governs global climate.

"Recognizing the scales and patterns of these subsurface water masses means they can be incorporated into the powerful models used by scientists to project how climate may change," Ridgway said in a statement.

The best known of the global ocean currents is the North Atlantic loop of the Great Ocean Conveyer, which brings warm water from the Equator to waters off northern Europe, ensuring relatively mild weather there. Scientists say if the conveyor collapsed, northern Europe would be plunged into an ice age.

Earlier this year, another CSIRO scientist said global warming was already having an impact on the vast Southern Ocean, posing a threat to myriad ocean currents that distribute heat around the world.

Melting ice-sheets and glaciers in Antarctica are releasing fresh water, interfering with the formation of dense "bottom water", which sinks 4-5 kilometers to the ocean floor and helps drive the world's ocean circulation system.

A slowdown in the system known as "overturning circulation" would affect the way the ocean, which absorbs 85 percent of atmospheric heat, carries heat around the globe, Steve Rintoul, a senior scientist at the CSIRO Division of Marine and Atmospheric Research, said in March.

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