As the cold, deep water flows southward along the continent of South America, it is picked up by the eastward flowing Antarctic Circumpolar Current which flows completely around the Antarctic continent. Here the Conveyor is recharged by new cold, sinking water in the Weddell Sea, which shoves the water northeastward toward the Indian Ocean. Sea ice that surrounds the margins of the Antarctic continent begins to melt and sink as it drifts northward. The Weddell Sea is the prime area where this melting of ice and sinking of glacial meltwater occurs, and rejuvenates the flow of the Conveyor.

The warm surface waters that flow from the Pacific and Indian Ocean basins meet in the South Atlantic. Most of the water originating in the Pacific is diverted westward by the prevailing westerly winds. The water originating in the Indian Ocean is pushed northward toward the equator by the southeast trade winds. Both of these currents set up the return flow back to the North Atlantic.

Sources:
