



Subduction of North Pacific Tropical Water and Its Equatorward Pathways as Shown by a Simulated Passive Tracer

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The subduction and equatorward pathways of North Pacific Tropical Water (NPTW) are investigated using a simulated passive tracer of the consortium Estimating the Circulation and Climate of the Ocean (ECCO). The results demonstrate that the subduction of NPTW occurs in a large area that extends from about 150°E to 130°W between 20°N and 30°N, but the main subduction region lies in its eastern part. After subduction, the main body of NPTW first spreads westward in the North Equatorial Current. Then it splits into two branches. One flows northward in the Kuroshio upon reaching the western boundary, and the other enters the tropical Pacific either via its western boundary pathway (WBP) or interior pathway (IP). Less than half of the transport through the WBP can eventually reach the central and eastern Pacific by the Equatorial Undercurrent, while the rest is seen to flow into the Indian Ocean by the Indonesian Throughflow. The IP is found to play a significant (~30%) role in transporting of the NPTW towards the equatorial Pacific.