

Southern Ocean hydrography and climate: property and circulation changes in the Southwest Pacific Basin

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Repeated occupations of four hydrographic sections in the western Pacific Ocean from the 1990's to 2000's show the spatial distribution of Antarctic Bottom Water change in the Southwest Pacific Basin. The largest property change - temperature, salinity, total carbon and oxygen - are found in the deep western boundary current from 50S to the equator. The magnitude of the property change decreases with increasing distance from the western boundary. The abyssal warming and freshening has resulted in a local decrease in density of the deep Southwest Pacific basin. The western deepening and eastern shoaling of deep isopycnal in the southwestern Pacific Basin has resulted in a decrease of the isopycnal gradient across the basin and hence a reduction in the northward volume transport of Antarctic Bottom Water into the Pacific Ocean.