

Ocean variability at intermediate depth in the western equatorial Pacific

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Intermediate ocean variability at the depth of 300 - 750m in the western equatorial Pacific west of 156E is investigated using data from underwater sensors of the Triangle Trans-Ocean Buoy Network (TRITON) buoys and CTD data by Japan Meteorological Agency, and others. Variability is dominant in the western boundary region. Seasonal variability is generally dominant, but, intraseasonal variability is not negligible around 2N, 138E, where the northwestward flowing New Guinea Coastal Undercurrent retroflects to the east as the Equatorial Undercurrent. There is the anti-cyclonic New Guinea Eddy, which interacts with neighbor eddies around this location. Interannual variability with ENSO and quasi-decadal time scales was observed. Because the pattern of correlations between temperature variability at the intermediate layer and indices of ENSO and quasi-decadal time scales is not simple, variability with these time scale is thought to be associated with thermocline structure variability due to the equatorial waves rather than zonal shift of the warm water pool. We also found freshening trend in the intermediate waters in the western equatorial Pacific. This is likely associated with the freshening of the North Pacific Intermediate Water and Antarctic Intermediate Water.

Keywords: Intermediate ocean variability, Western equatorial Pacific, TRITON buoy, Intermediate waters