

THE OCEANOGRAPHIC CONDITIONS IN THE SECTION FROM THE WEST OF OKINAWA TO PALAU ISLANDS IN 1995

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Introduction

In the research project of Kagoshima University Research Center for the South Pacific, oceanographic observations were carried out between the west of Okinawa and Palau Islands by the Keiten Maru (G. T. 860 tons), fishing training ship of Kagoshima University from 9th October to 7th November in 1995.

The oceanographic observations were made by XBT, Expendable Bathy-thermographs and CTD system, the Conductivity, Temperature, and Depth Recorder system. The maximum depth of XBT lowering was 800 m, and that of CTD 1100 m. The XBT and CTD observations were made at 29, and 11 stations, respectively. Fig. 1 shows the locations of XBT and CTD observations.

Results and Discussion

Vertical section of temperature

Fig. 2 shows the distribution of water temperature in the vertical section along the observation line on the way to Palau Island. The surface mixed layer, of which values are higher than 26°C, was found from 26° N to 8° N, having a thickness of 58 m ~ 115 m. A sharp thermocline with a core temperature of 20°C from 9° - 30' N to southward is associated with the North Equatorial Current. On the return voyage, the surface mixed layer, of which values are higher than 26°C, was found from 10° N to 27° N, having a thickness of 15 m ~ 100 m.

Vertical section of salinity

Fig. 3 shows the distribution of salinity in the vertical section along the observation line. The surface low-salinity water was found from 26° N to 24° N. The surface low-salinity water less than 34.5 PSU, associated with the North Equatorial Countercurrent, was found south of 16° N. It has a thickness of 95 m, with its lowest value being 33.546 PSU at the surface of 7° - 50' N.

The Subsurface saline water higher than 34.9 PSU is found in the layer of 60 m ~ 215 m deep between 22° N to 12° N. The maximum value of subsurface saline water is 35.045 PSU in 145 m depth at 18° N. Below the subsurface saline water, the North Pacific Intermediate Water, characterized by low-saline water less than 34.2 PSU, appears tongue-like in the layer of 470 m ~ 850 m deep. The North Pacific Intermediate Water extends from 18° N towards the north, and it becomes shallower towards the south.

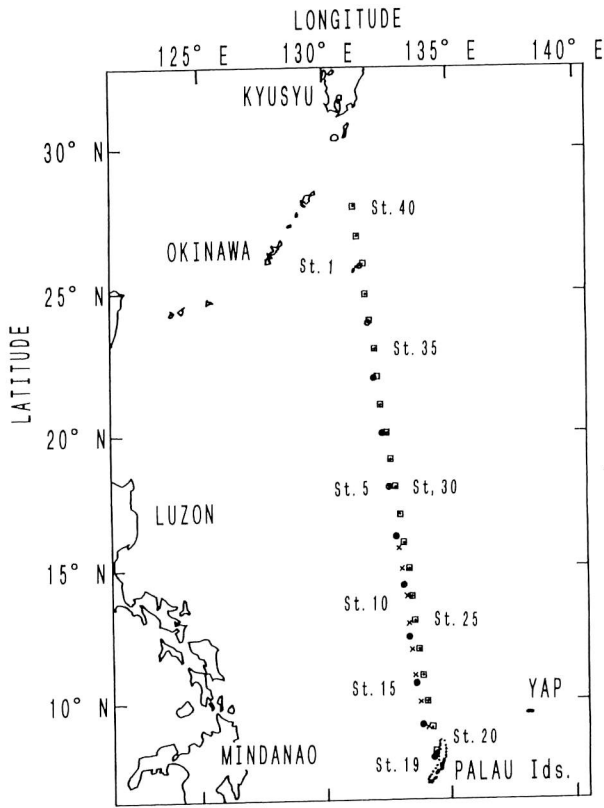


Fig. 1. The locations of oceanographic observations. (circles shows CTD, crosses shows XBT and squares shows XBT on the voyage out.)

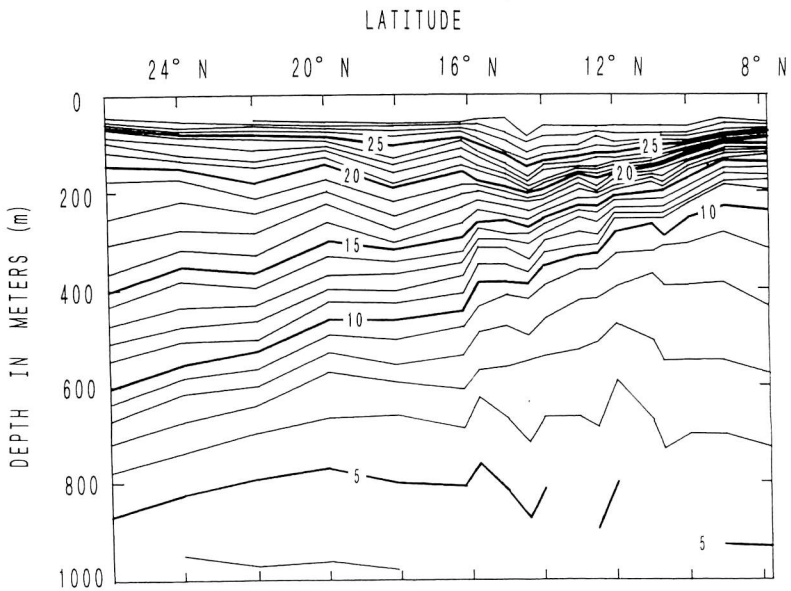


Fig. 2. Distribution of water temperature (°C) in the vertical section

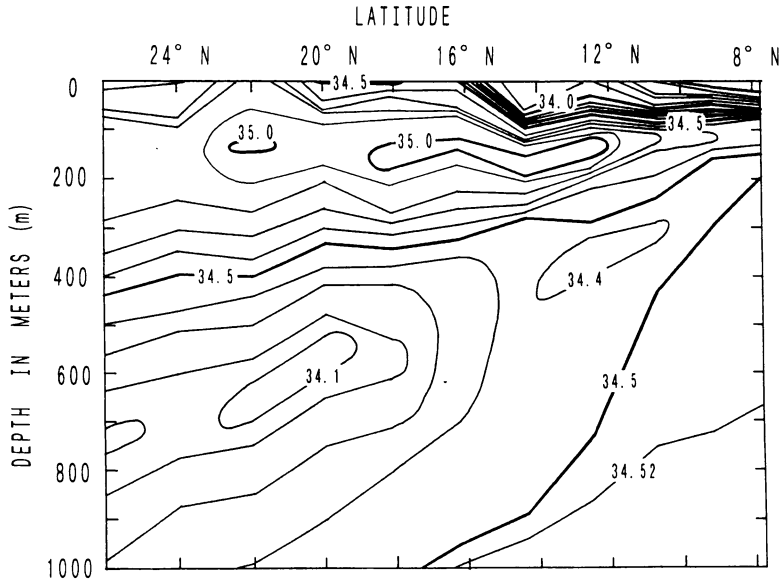


Fig. 3. Distribution of salinity (PSU) in the vertical section

References

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