Development of CTD-attached microstructure measurements and basin-scale turbulence distribution in the North Pacific

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A new efficient microstructure measurement with fast-response thermistors attached to CTD as common ship-based observational platforms were elaborated. This revealed cross-Pacific top-bottom turbulence distributions. Vertical distribution of turbulent energy dissipation is found to be proportional with local squared buoyancy frequency N^2(representing density vertical gradient) and local internal tide energy generation and dissipation, indicating that main part of energy dissipation of tide-induced turbulence occurs in the main thermocline. These contribute to revising models of tide-induced three-dimensional distribution used in ocean/climate models, which will contribute to reproducing ocean meridional overturning circulation and oceanic heat/material circulation.

Keywords: Turbulence, microstructure observation method, Meridional Overturning Circulation , Tide-induced mixing, North Pacific

