

PRESS RELEASE(2017/08/28)

OMIX project: observation in a mixing hotspot within the Kuroshio

Turbulent mixing was observed using a turbulence profiler in the Tokara Strait, where many shallow seamounts and small islands exist within the route of a western boundary current, Kuroshio. We, the research group of Kyushu University, University of Washington, Kagoshima University, and Ehime University, observed large values of turbulence intensity (vertical eddy diffusivity) reaching to $10^{-2} \text{ m}^2 \text{ s}^{-1}$ in the lee of a seamount crest, which is 1000 times higher than a nominal value at the open ocean. Analyses using simple diffusion models suggested the vertical eddy diffusivity is at least 10 times higher at the vicinity of the seamount than that observed in the lee of the seamount. Our study suggests that interaction between flow and topography and the associated turbulence are important for modeling the downstream evolution of the Kuroshio water.

This research achievement was published online in Journal of Geophysical Research: -Oceans on August 25, 2017.

For more information about this research, see “Turbulent mixing within the Kuroshio in the Tokara Strait.” Tsutsumi, E., T. Matsuno, R.-C. Lien, H. Nakamura, T. Senjyu, and X. Guo, Turbulent mixing within the Kuroshio in the Tokara Strait, Journal of Geophysical Research: -Oceans.

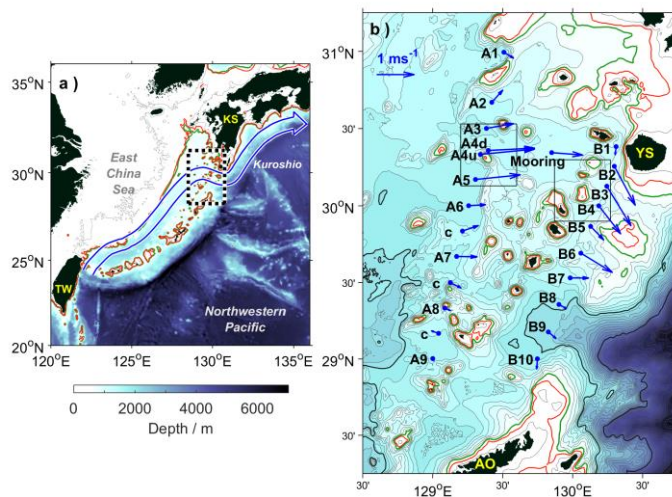


Fig. 1. Map showing the geometry of the Kuroshio and our experimental site in the Tokara Strait. Blue arrows in (b) represent surface current velocity.

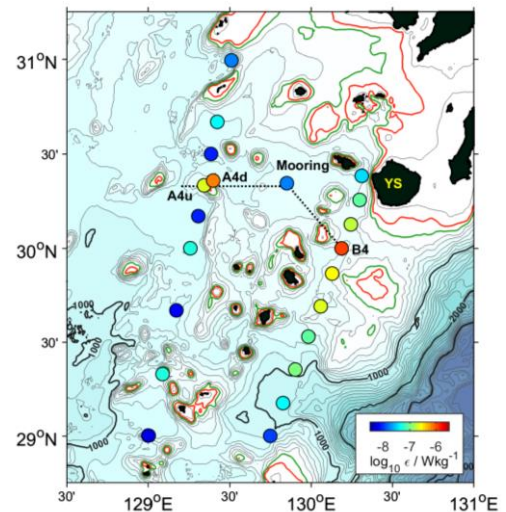


Fig. 2. Map showing spatial variation of depth-averaged turbulent energy dissipation rate.

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