

Measuring Microstructure in the Global Ocean

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Global estimates of mixing rates have recently been published based on internal wave intensities inferred from temperature, salinity and density profiles measured with Argo floats. The procedure is justified by comparisons of internal wave parameters with estimates of mixing rates from direct microstructure measurements. Those estimates in turn are based on comparisons between microstructure measurements and the vertical spreading rates of tracers injected into the thermocline. Although microstructure is being measured from a wide variety of fixed and moving platforms, justification of the global estimates is based on sensors developed 40 years ago and which resolve only a fraction of the estimated range of microstructure variability. To investigate issues about these measurements, such as mixing efficiency, new sensors are needed, mainly to resolve smaller spatial scales. The required spatial scales and sensitivities are estimated and compared with present and experimental sensors.

Keywords: Mixing, Microstructure, Turbulence