

Mixing processes in the upper tropical Atlantic: An event data base for evaluating vertical mixing parameterizations in Earth System Models

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Observational and modelling studies of the tropical ocean mixed layer have shown a dominant role of the vertical diffusive heat flux due to turbulent mixing for maintaining sea surface temperature in the tropical Atlantic. Progress has been made in identifying ocean processes responsible for enhancing turbulent mixing in the upper stratified ocean including near-inertial waves and Tropical Instability Waves. Additionally, the vertically sheared large-scale equatorial circulation provides an energy source that can overcome stratification and drive turbulence known as deep cycle turbulence. In this contribution we exploit a large observational data base of turbulence and hydrographic measurements to construct average mixing events by near-inertial waves, Tropical Instability Waves and deep cycle turbulence that can be used to evaluate high-resolution earth system models.

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