Geophysical Research Letters

Data Description for

How variable is mixing efficiency in the abyss?

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Introduction

This directory contains BBTRE/DoMORE processed data ("all_BBTRE.mat" and "all_DoMORE.mat") that was used to produce all figures in the above research letter. Each mat file has two structure arrays named "location" and "patch10". The "location" array includes microstructure profile information used in this study (Table D1). The "patch10" array includes 10-m patch-wise parameter estimates used in this study (Table D2). Note that bulk averaged parameters can be constructed from parameters saved in "patch10" (see the above paper).

Table D1. Parameters saved in the "location" array.

Name	Description
year	field program year (1st year or 2nd year), only in "all_BBTRE.mat"
stn	profiler's dive number
lat	latitude (in degree) of each dive
lon	longitude (in degree) of each dive
bottom	bottom depth (in meter)

Table D2. Parameters saved in the "patch10" array.

Name	Description
year	field program year (1st year or 2nd year), only in "all_BBTRE.mat"
stn	profiler's dive number
z	middle depth (in meter) of each 10-m segment
z1	start depth (in meter) of each 10-m segment
z2	end depth (in meter) of each 10-m segment
p	middle pressure (in dbar) of each 10-m segment
p1	start pressure (in dbar) of each 10-m segment
p2	end pressure (in dbar) of each 10-m segment
HAB	height above bottom (in meter)

bvf2_overturn	overturn-based squared buoyancy frequency $\widehat{N}^2$ (in s^{-2})
bvf2_fit	squared buoyancy frequency by linear-fitting sorted potential density N_{10}^2 (in s^{-2})
dTdz_fit	Potential temperature gradient by linear-fitting sorted potential temperature θ_{z10} (in °C m^{-1})
nu	molecular viscosity ν_{10} (in m^2 s^{-1})
dif	thermal diffusivity κ_{10} (in m^2 s^{-1})
e	turbulent kinetic energy dissipation rate ε_{10} (in W kg^{-1}), passing the quality control by a spectral shape criterion
chi	thermal variance dissipation rate χ_{10} (in $°C^2$ s^{-1}), passing the quality control by a spectral shape criterion
Lo	Ozmidov scale L_O (in meter)
Lt	Thorpe scale L_T (in meter)
Rrho	density stability ratio R_ρ
S2	squared shear by linear-fitting velocity profile over the computed Thorpe length $\hat{S}_{LT}^2$ (in s^{-2})
Gamma_patch	patch-wise mixing coefficient Γ_{patch}
K	vertical wavenumber (in cpm) for microstructure spectra
sh_spec_obs	observed microstructure shear spectrum (in s^{-2} cpm^{-1}) interpolated into the vertical wavenumber row K
T_spec_obs	observed microstructure temperature gradient spectrum (in $°C^2$ m^{-2} cpm^{-1}) interpolated into the vertical wavenumber row K
sh_spec_th	theoretical Nasmyth spectrum (in s^{-2} cpm^{-1}) for the vertical wavenumber row K and the estimated ε_{10} and ν_{10}
T_spec_th	theoretical Kraichnan spectrum (in $°C^2$ m^{-2} cpm^{-1}) for the vertical wavenumber row K and the estimated ε_{10}, χ_{10}, ν_{10}, and κ_{10}