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**On accuracy of overturn-based estimates of turbulent dissipation in a Luzon Strait model simulation with realistic topography** MASOUD JALALI, VAMSI CHALAMALLA, SUTANU SARKAR, UC San Diego — Oceanic density overturns are commonly used to estimate the dissipation rate of turbulent kinetic energy using the Thorpe sorting method. However, the accuracy of the dissipation estimate under different conditions is unclear. To assess the accuracy of Thorpe estimates of turbulence dissipation, 3D LES are performed with scaled semidiurnal frequency in a scaled down model of Luzon strait topography. The Thorpe-scale method is found to be able to qualitatively estimate the spatial distribution and phasing of dissipation rate but there are quantitative errors. It overestimates the magnitude of dissipation in locations with strong convectively driven turbulence. The extent of overestimation in the case of Luzon strait is up to more than one order of magnitude. However, the Thorpe estimate has reasonably good agreement with the dissipation in regions with shear-driven turbulence. An alternative model based on a modified estimate of the Thorpe scale from the vertical profile of density is introduced. This method is able to estimate convectively driven dissipation more accurately, although it is less accurate in regions with shear driven turbulence such as downslope jets. Both methods of inferring dissipation rate exhibit phase difference with respect to the value in the simulations.

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