DFD16-2016-001620

Abstract for an Invited Paper
for the DFD16 Meeting of
the American Physical Society

**The Role of Non-Propagating Form Drag in Mixing the Ocean**

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Topographically induced internal waves are common features in the atmosphere and ocean. In the former, they give rise to the so-called "mountain-waves" which form as winds blow over rough topography and give rise to severe downslope windstorms. In the ocean, boundary forced waves are related to flow of tides, inertial oscillations and geostrophic flows over rough topography. Depending upon length scale, stratification, latitude and frequency, the hydrodynamic response can be bottom trapped or freely upward propagating. Robust quantitative constraints on ocean mixing are few. They come from a restricted number of control volume budgets for abyssal upwelling and observations of diapycnal dispersion from anthropogenic tracer releases. This talk will summarize control volume budgets and tracer observations from the South Scotia Sea, the Brazil Basin, the Gulf of Mexico and the Western North Atlantic and discuss extant observations of fine- and microstructure that relate to the mechanisms of mixing. There are significant disparities between the fine- and microstructure observations and large scale budgets in all but the Brazil Basin. There, mixing is regarded as being associated with internal tide generation and near boundary breaking. Elsewhere, sub-inertial flow over finite amplitude topography is inferred to be the significant process. Rather than discussing the efficacy of quasi-stationary lee waves in mixing, we discuss closing the large scale budgets in the oceanic allegory of downslope windstorms: flow over finite amplitude topography giving rise to hydrualic like effects that can be summarized as converting non-propagating form drag into mixing.