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Large Eddy Simulations of Kelvin-Helmholtz Instabilities in Stratified Ocean Flows DANA BROWN, LOUIS GOODMAN, MEHDI RAESSI, University of Massachusetts Dartmouth — Numerical simulations of turbulence in the ocean environment are used to supplement and enhance understanding of observational data. Here, using the NGA framework (Dejardins et al., JCP 2008), direct numerical simulations (DNS) and large eddy simulations (LES) of Kelvin-Helmholtz instabilities are employed to study turbulence in presence of density stratification. Kelvin-Helmholtz instabilities have been shown to be a common source of turbulence in the ocean. Past DNS studies of Kelvin Helmholtz instabilities have compared favorably with observational data, but were limited to moderate Reynolds numbers. Here, LES is used to solve the filtered incompressible NS equations at a higher Reynolds number, Re = 10,000. The effect of increased Reynolds number on the turbulence behavior is examined in terms of velocity spectra and energy budgets.

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