Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

Energy Dissipation Rate in Stably Stratified Turbulence SABA ALMALKIE, STEPHEN DE BRUYN KOPS, University of Massachusetts, Amherst — One of the key issues in modeling complex flows is the characteristics of small scale turbulence under the influence of large scale anisotropies. We study turbulence dynamics under stabilizing effect of stratification using direct numerical solutions of horizontally homogeneous, vertically stratified turbulence. The simulations use up to $4096 \times 4096 \times 2048$ grid points to resolve the dissipation scales. The Froude number ranges from 0.125 to 1 and the buoyancy Reynolds number from 9 to 219. The small scale turbulence is characterized in terms of one and two-point statistics of the local and locally averaged energy dissipation rate. Intermittency of the energy dissipation rate and its scale dependency gives us insight into the scaling characteristics of the stratified flows and deviation of the scaling laws from those of the isotropic turbulence as a function of Froude number. The effects of stratification on the intermittency of energy dissipation rate and the scales of turbulent bursts are discussed.

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Date submitted: 05 Aug 2011 Electronic form version 1.4