

Abstract Submitted  
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**Scaling and Flow Structure of Stratified Turbulent Wakes at High Reynolds Numbers** PETER DIAMESSIS, Cornell University — Direct Numerical Simulations of the stratified turbulent wake of a towed sphere have been performed over a range of Reynolds and internal Froude numbers, varied by a factor of 20. At higher Reynolds numbers, the duration of the non-equilibrium (NEQ) regime is prolonged, as secondary Kelvin-Helmholtz instabilities and turbulence emerge through the action of the intensified vertical shear. This is the first observation of such secondary events in a controlled stratified flow with turbulent initial conditions. The robust agreement with inviscid scaling arguments proposed by a number of researchers suggests that the secondary instabilities are a manifestation of the “stratified turbulence” phenomenon proposed by Lilly (1983). Significant reconsideration of the life-cycle of a turbulent patch in the ocean may therefore be necessary.

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