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**Evolution of a Turbulent Shear Layer when One Layer is Uniformly Stratified** HIEU PHAM, SUTANU SARKAR, KYLE BRUCKER, University of California, San Diego — Direct Numerical Simulation of a turbulent shear layer between an upper unstratified region and a linearly stratified bottom region is performed. A pycnocline is found to develop at the bottom of the shear layer. The unsteady turbulent shear layer excites an internal gravity wave field over a broad range of frequencies. The waves travel away at angles in the range of 30-60 degrees to the vertical. Fluctuating velocities and density are transported into the bottom region. At late time, the turbulent kinetic energy in the bottom region is higher than in the shear layer. The internal wave flux is approximately 10% of the integrated production rate, and 40% of the integrated buoyancy flux. The balance of turbulent kinetic energy is compared to a corresponding case with a density jump but without a stratified bottom region. The turbulent production, dissipation and buoyancy flux are reduced with respect to the latter case. The growth rate of the shear layer thickness is also reduced.

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