

Abstract Submitted  
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**Vortex roll-up in a stratified fluid** SURUPA SHAW, JOHN MCHUGH,  
University of New Hampshire — Recent simulations of a vortex pair in a stratified fluid show that in some parameter regions the vortices disintegrate into internal waves. The kinetic energy loss for the vortex pair in this regime is remarkably fast, essentially annihilating the coherent vortex pair before any propagation. Hence the wave making occurs very early in the process. If the vortex pair is created by flow past a wing, then this wavemaking will occur mostly during the roll-up process of the trailing vorticity, and this is considered here. Results are obtained numerically using a spectral method, the flow is treated as Boussinesq and viscous, and the initial conditions are approximately the flow due to a line vortex. The results show that wavemaking is important over a much wider parameter range when the vorticity rolls-up in a stratified flow compared to previous simulation results. However for very strong vortex flows, there is no significant wavemaking, and the distributed vorticity very quickly rolls-up into a vortex pair.

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