Falling Spheres in Stratified Fluids\textsuperscript{1} JOYCE LIN, ROBERTO CAMASSA, CLAUDIA FALCON, RICHARD MCLAUGHLIN, UNC - Chapel Hill — Low settling rates are observed for small particulate matter in strongly, stably stratified fluid. As the particle passes through an interface between two layers of fluid, it entrains lighter, upper fluid. The significance of this entrained fluid in the low Reynolds regime, along with a model for the behavior of the particle, has not yet been fully explored. We present careful measurements performed in stratified corn syrup showing the effects of the enhanced drag due to entrained fluid on the sphere at low Reynolds. We explore the theory for modeling sphere behavior and also discuss the hydrodynamics, which involve a strong coupling between the variable density fluid and moving solid boundary.

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