Abstract Submitted
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Falling bodies through sharply stratified fluids: theory and experiments[1] RICHARD MCLAUGHLIN, ROBERTO CAMASSA, University of North Carolina, CLAUDIA FALCON, STEVE HARENBERG, KEITH MERTENS, JOHNNY REIS, WILLIAM SCHLIEPER, BAILEY WATSON, BRIAN WHITE, University of North Carolina, UNC RTG FLUIDS GROUP TEAM — The motion of bodies and fluids moving through a stratified background fluid arises naturally in the context of carbon (marine snow) settling in the ocean, as well as less naturally in the context of the DWH Gulf oil spill. The details of the settling rates may affect the ocean contribution to the earth's carbon cycle. We look at phenomena associated with many falling spheres in stratified fluids, as well as behavior of multiphase buoyant plumes penetrating strong stratification. We present careful measurements critical heights for fully miscible jets and companion analytical prediction. In turn, we examine cases involving clouds of sinking particulate and rising buoyant oil emulsions and associated plume trapping behaviors.

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