Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Porous Sphere in Stratified Environments: Entrainment and Diffusion[1] ROBERTO CAMASSA, CLAUDIA FALCON, SHILPA KHATRI, RICHARD MCLAUGHLIN, University of North Carolina, UNC JOINT FLUIDS LAB TEAM — A theoretical, experimental, and numerical study of porous spheres falling in stratified fluids will be presented. The systematic justification of asymptotic regimes resulting in asymptotic models with "heat bath" boundary conditions for salinity are derived in low Reynolds number regimes. Violation of these asymptotic scalings will be discussed in the context of experiments and mathematical modeling. In particular the presence of a salt depletion or enrichment wake left behind by the settling, ab/de-sorbing sphere, and its competition with entrainment, will be presented and highlighted. Experimental results with microporous spheres as well calibrated manufactured drilled spheres will be compared.

[1]Supported by : NSF CMG , NSF RTG, ONR

Roberto Camassa
University of North Carolina

Date submitted: 01 Aug 2014 Electronic form version 1.4