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Mixing in stratified fluids induced by bubble swarms ABRIL AMEZCUA-MONTIEL, ANGEL RUIZ-ANGULO, ROBERTO ZENIT, Universidad Nacional Autonoma de Mexico, B. SUBRAMANIAN, PAOLO LUZZATTO-FEGIZ, University of California Santa Barbara, MARCO CARMINATI, Politecnico di Milano — The mixing dynamics induced by bubble swarms rising across a sharp stably-stratified density interface are studied experimentally. In the middle of a column, an interface separates two Newtonian-miscible-liquids: fresh water and brine. The bubble swarm is injected from the bottom with a bank of small capillaries. When the bubbles cross the interface, they drag denser fluid into the upper lighter fluid and then some denser fluid returns to the lower layer (Diaz-Damacillo et al., 2015). This process induces mixing. We record the bubble with a high speed camera and track the temporal evolution of the fluids conductivity with a *Conduino* (Carminati and Luzzatto-Fegiz, 2017). We obtain the mixing coefficient , D_b, by fitting the concentration profiles to a simplified advection-diffusion equation, $\partial c/\partial t = D_b \nabla^2 c$. Experiments are conducted for a range of gas volume fractions and density contrasts between the fluids. Finally, we discuss the implications of our results for lake and ocean mixing.

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