

Abstract Submitted  
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**Drops settling in a fluid with surface tension increasing with depth**<sup>1</sup> AVI SHAPIRO, FRANCOIS BLANCHETTE, U.C. Merced — We investigated numerically drops settling across layers of miscible fluids, representing oil droplets settling in a fluid stratified by temperature or salinity variations. The top layer is lighter than the lower one, while the drop itself is heavier than both layers. As the drop settles into the lower, its surface tension with the ambient fluid increases, which generates significant Marangoni effects. If the surface tension difference is small, the drop is delayed as it settles into the lower layer. Above a critical surface tension difference, the drop may be altogether prevented from crossing into the lower layer. We determine the conditions under which a drop may remain suspended at the transition region, and study the mixing generated by suspended drops.

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