

Abstract Submitted
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Large Eddy Simulation of Langmuir Circulation in Shallow Water¹ ANDRES TEJADA-MARTINEZ, CHESTER GROSCHE, Center for Coastal Physical Oceanography, Old Dominion University — We report results of large-eddy simulation (LES) of Langmuir circulation (LC) in a wind-driven shear current in bottom-resolved shallow water. After the introduction and a brief description of the governing equations and the numerical method, we focus on major differences in the dynamics between wind shear-driven Couette flow and the same flow with LC. This comparison relies on flow visualizations and diagnostics including 1) profiles of mean velocity, 2) profiles of resolved Reynolds stress components, 3) invariants of the resolved Reynolds stress anisotropy tensor and 4) balances of the transport equations for resolved mean turbulent kinetic energy and resolved Reynolds stress tensor. In addition to comparisons between Couette flow with and without LC, comparisons are made with recent observations recorded in the southern coast of New Jersey.

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