

Abstract Submitted
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Influence of a crossed tidal current on a wind shear driven flow in shallow water with and without wave forcing by means of LES.¹ GUILLAUME MARTINAT, Old Dominion University, ANDRES TEJADA-MARTINEZ, University South Florida, CHESTER E. GROSCH, Old Dominion University — Turbulent generated by tidal current and wind shear is important because it controls heat and mass transfer at the air-sea interface. Understanding the turbulence dynamics of this class of flows presents complications because of the presence of a free surface, the necessity of including the flow interaction with a solid bottom. The intent of the LES discussed here is to simulate the turbulent flow on shallow shelves having turbulence scales of $O(100)$ m in the horizontal and depths in the range of 10 to 50 m. On these scales the turbulent flow is homogenous in the horizontal. The purpose of our calculations is to elucidate the structure of the turbulence dynamics as driven by pressure gradient (tidal) flow crossed with a surface stress driven flow both imposing an equal stress on the solid bottom, with and without wave forcing.

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