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Driving Turbulence by Generic Mean Flow - A New Model Formulation for Large-Eddy Simulation ASHLEY BRERETON, JEFF POLTON, National Oceanography Centre (UK), ANDRES TEJADA-MARTINEZ, University of South Florida — Shelf sea models are currently at the stage where computing capability permits the resolving of internal tides (<2 km). However, the underpinning turbulence closure schemes which govern the vertical flux of momentum and scalars do not have the skill to provide meaningful estimates at regions of appreciable stratification. The implications of this are large, as modelling of important phenomena, such as plankton bloom formations and the carbon cycle will not yield meaningful results. This deficiency in turbulence parametrisations promotes motivation for the model development of a turbulence resolving Large-eddy simulation. A new model formulation will be presented, whereby mean flow and stratification can be prescribed by observational, analytical or model data. The resultant velocity and density fluctuations, which govern the mediation of turbulent flux quantities, are explicitly solved for. We will present compelling comparisons between model and observations to demonstrate the skill of the new model approach.

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