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Large-eddy simulation of stationary homogeneous stratified sheared turbulence GEORGIOS MATHEOU, DANIEL CHUNG, Jet Propulsion Laboratory/California Institute of Technology — Using a buoyancy-adjusted extension of the stretched-vortex subgrid-scale (SGS) model suitable for large-eddy simulation (LES) of stratified flows we investigate stationary and homogeneous shear-driven turbulence. The SGS model is free of parameters and is consistent with features of anisotropic mixing frequently observed in stratified flows. The vortex-based construction naturally constrains the mixing in the horizontal provided the vortex alignment is favorable even at high gradient Richardson numbers. By comparison with a corresponding set of high Reynolds number direct numerical simulations (DNS), the performance of the SGS model is assessed, with focus on its performance as the grid resolution approaches the overturning scale of the flow. Moreover, several aspects of stratified turbulence dynamics are discussed.

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