

Abstract Submitted
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Turbulence suppression in a stably stratified boundary layer

BYUNG-GU KIM, CHANGHOON LEE, Yonsei University, Korea — Suppression of turbulence in stably stratified flow is investigated by using large eddy simulation of channel flow. Stably stratified turbulent flow owing to negative buoyancy or adverse density gradient is frequently observed phenomenon in geophysical flow as well as in many engineering flows. Total suppression or relaminarization was reported from many experiments, but it has not been reproduced in numerical simulations typically performed for low Reynolds number flow with low Richardson number. Here, suppression means decrease of turbulent stresses relative to the wall-shear velocity. In this study we by using large eddy simulation at relatively high Reynolds number investigate modification of near-wall turbulence due to strong stratification and relevant dynamics. Particularly, we focus on the role of the near-wall vortical structures against baroclinic torque generated by the stratification. Detailed statistics will be reported in the meeting.

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