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On the Far-Field Boundary Conditions for Stably Stratified Flows

The problem of numerical simulations of gravity waves appearing in stably stratified flows is addressed. This numerical study presents the results of simulations of stably stratified wall-bounded flows. The effect of artificial far-field boundary conditions is studied in detail. The two- and three-dimensional tests are performed for the case of flow over a low isolated hill. The simulations on computational domains with three different heights are discussed to evaluate the performance of the new far-field artificial boundary condition. The model is based on Boussinesq approximation of non-homogeneous Navier-Stokes equations, solved using artificial compressibility method, looking for a steady solution.