A study of the nonhydrostatic mesoscale processes

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Abstract

This is a study of the nonhydrostatic mesoscale processes. Comparison is made between the results of both hydrostatic and nonhydrostatic mesoscale processes. To do so, a stably stratified, two-dimensional, Boussinesq, nonrotating, inviscid fluid experiencing a thermal forcing is considered under both hydrostatic and nonhydrostatic assumptions. Techniques of Fourier and Laplace transform are considered to solve the governing equations. Numerical computing via MATLAB is done to provide us with the contours (curves along which a function has a constant value) of perturbation vertical velocity. It has been noticed that the hydrostatic assumption causes significant changes to the results.