FM9L_10366

XXI International Congress of Theoretical and Applied Mechanics
Warsaw, Poland, August 15–21, 2004

The Growth and Structure of Double-Diffusive Cells Adjacent to a Side-Wall in a Salt-Stratified Enviroment

O.M. Phillips[(1)], L. Malki-Epshtein[(2)], H.E. Huppert[(2)]

(1) *Johns Hopkins University, Baltimore, USA*
(2) *Institute of Theoretical Geophysics, University of Cambridge, UK*

Measurements are reported of the rate of horizontal extension of the cells in tanks of different lengths with a range of initial salinity gradients and cooling rates (which determine the vertical height of each cell). A simple model for the cell evolution is developed. It predicts that cell growth is dependent on tank length. The mean rate of increase of cell length decreases linearly in time, as does the density gradient inside the cells, supported by both temperature and salinity gradients. The results are found to agree quantitatively with the measurements.

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