



Tilted Ocean Convection

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The convection in an ocean with constant stratification is investigated by numerically integrating the three dimensional non hydrostatic Boussinesq equations. The study focusses on determining the influence and interference of three essential parameters: (i) the surface heatflux, (ii) the stratification and (iii) the angle between the axis of rotation and gravity. To this end results from a large number of experiments for different parameter values are analysed. The range of the parameters investigated is taken (non exclusively) from typical open ocean deep convection sites.

The dependence of the horizontally averaged mean values of the main dynamical quantities on the parameter values are determined. Higher order correlations of these quantities are considered and the dynamically important length and time scales are determined. Special interest is focused on the anisotropy of the inertial scale turbulence.

The results are employed to assess and improve the currently used parametrisation schemes of open-ocean deep convection, implemented in hydrostatic models of the ocean circulation.