

## Formation and Growth of Layer Structures due to Diffusive Convection

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In order to understand a formation mechanism of oceanic layer structures, diffusive convections in an infinite fluid, with a stable vertical gradients of salt and density, but with an unstable gradient of temperature, are investigated numerically. The fluid is initially at rest except that small random temperature perturbations are added over the whole calculation domain on which cyclic boundary conditions are imposed both laterally and vertically. When the ratio of the initial vertical gradients of temperature and salt falls in a certain range, multi-layer structure in which convective layers are sandwiched by sharp diffusive interfaces is formed spontaneously. The average thickness of layers increases with time by repeating merging of the adjacent layers.

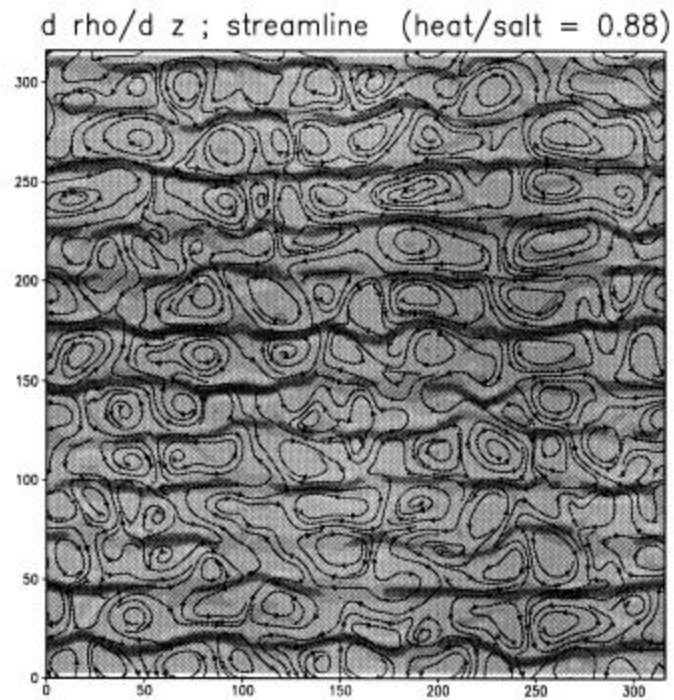


図 1: 線形的に不安定な勾配を持つ一様な連続成層から自励的に発生した層構造 (熱-塩系). 鉛直面内の鉛直密度勾配 (濃淡) と流線を示す.

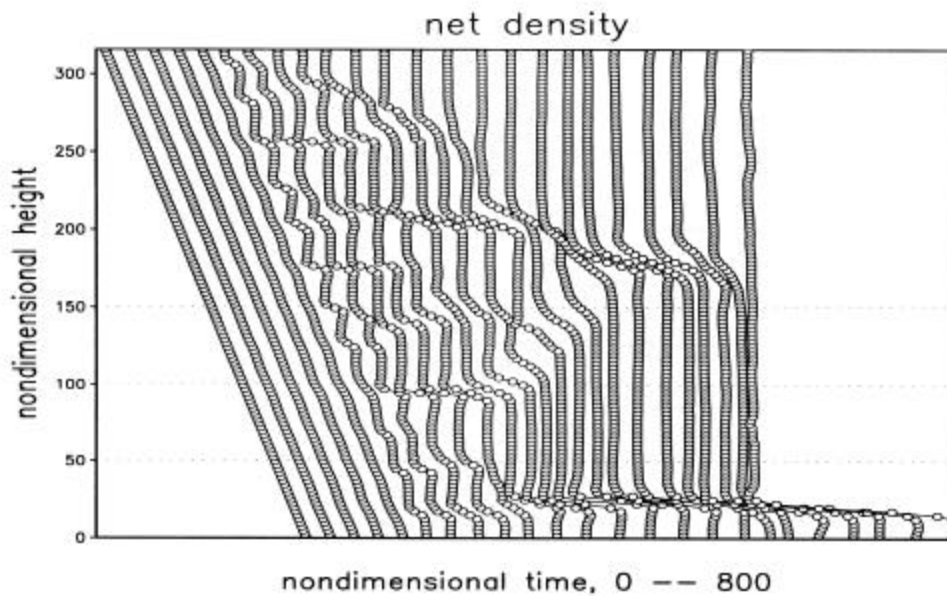


図 2: 層構造の時間発展 (熱-塩系). 水平平均した密度場を左から右へ一定時間間隔毎に示す.