



## Abstract View

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# Laboratory Models of Bay-Type Continental Shelves in the Winter

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### ABSTRACT

A laboratory experiment consisting of a shallow sea of constant depth bounded by a deep ocean through a uniformly sloping continental rise was conducted. The experiment is cooled from above, and there is a region that exhibits sinking convection cells which form the coldest water. This water then spills off the rhs of the shallow sea as a density current (looking downstream for counterclockwise rotation) and forms bottom water in the deep experimental ocean. There are three regimes: for very slow (scaled) rotations there is one big gyre in the shallow sea, and the sinking (convection) region is near the coast; for faster rotations, there are two or three gyres, and for even faster rotations, there are many gyres. In this latter case, the sinking regions are very patchy and sporadic. Comparison with theoretical estimates of temperature difference between the coldest shelf water and the offshore water (based upon the assumption that the density current removes all the cold water) was good but yielded somewhat low predictions.

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