

Abstract Submitted  
for the DFD10 Meeting of  
The American Physical Society

**Horizontal Convection**<sup>1</sup> KATARZYNA MATUSIK, STEFAN LLEWELLYN SMITH, UCSD MAE Dept. — Horizontal convection, caused by differential heating along the horizontal boundary of a fluid, is a model of the meridional overturning circulation of the oceans. We explore aspects of horizontal convection using laboratory experiments. We use salt rather than heat, with sinks and sources of dense and fresh water on the upper boundary of the tank so that the net flux of salt into the tank is statistically zero. We measure the density using the Synthetic Schlieren method and a conductivity probe, and dye the incoming fluid and measure its concentration using optical methods. We also use particle tracking to visualize the velocity field within the tank. Our goal is to examine the role of the aspect ratio and governing dimensionless parameters of the system, as well as the effect of the location of sources and sinks, and relate these to features of the flow such as boundary-layer thickness and net overturning circulation. The use of salt rather than temperature results in a high Schmidt number, with implications for the understanding of the experiments and their relation to the ocean.

<sup>1</sup>NSF

Stefan Llewellyn Smith  
UCSD MAE Dept.

Date submitted: 04 Aug 2010

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