Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

**Interaction of finite volume gravity currents with a two-layer stratified interface** PERIANDROS SAMOTHRAKIS, Graduate Student, Department of Civil and Environmental Engineering, University of Michigan, ALINE COTEL, Assistant Professor, Department of Civil and Environmental Engineering, University of Michigan — An experimental study of two-dimensional gravity currents impinging on a stratified interface in a two-layer stratified environment has been conducted. The gravity currents are created by the release of a finite volume of dense fluid along a $6^o$ inclined boundary. The effect of the stratified interface on the entrainment and mixing processes is quantified by the use of Planar Laser Induced Fluorescence (PLIF) and Particle Image Velocimetry (PIV). The instantaneous velocity and vorticity fields are quantified and averages are computed over 0.2 seconds. For both experimental techniques, the laser sheet is positioned at mid-span and extends in the streamwise direction. This allows for the measurements to be centered on the impact region between the gravity current and the stratified interface. We have previously determined the entrainment rate and studied the internal structure of a gravity current created by a continuous source with similar experimental conditions (for the slope and the ambient stratification) as in the current study. A thorough comparison of the two cases is provided.

Periandros Samothrakis
Graduate Student, Department of Civil and Environmental Engineering
University of Michigan

Date submitted: 09 Aug 2005 Electronic form version 1.4