Date: **October 28th, 2005**

Time: **11:00 AM**

Location: **Maryland Hall 110**

Speaker: **Dr. Matthew Wells**
Yale University

Title: **"How Density Currents Set the Vertical Stratification of Deep Oceanic Basins and Lakes"**

Abstract

Cooling or evaporation in marginal seas or shallow coastal embayments leads to the formation of dense water masses that can drain away in the form of density currents or underflows. In many cases the source water in the currents is initially denser than the bottom waters of the basin it flows into, but mixing dilutes the current so that it can intrude at mid-depth. Such small-scale mixing is difficult to parameterize in a large scale Ocean models, but the depth at which deep waters spread has been shown to have important impacts on climate. I will present recent experimental measurements of the entrainment rates in density currents. Using these results I will show how the small scale mixing of the density currents will set the depth at which a density current intrudes into a stable stratification, how the upwelling driven by a density current in a confined basin can set the large scale density stratification, and finally how submerged eddies can be formed by the intruding density currents in rotating systems. Finally applications from these laboratory experiments will be given to field observations of the stratification within lakes and oceanic basins.