All phytoplankton species require light to photosynthesize, and therefore are dependent on the location of the euphotic zone in the water column for their habitat (Franks, 1997). Light levels in and below the euphotic zone differ for varying depths, with more light occurring at shallower depths. As greater light intensity results in greater primary production and photosynthesis rates, we predicted that phytoplankton abundance is positively correlated with greater light levels and shallower depths. We tested this hypothesis in the lab by manipulating light levels for several phytoplankton monoculture treatments, and then measuring Chlorophyll-a concentrations for small sub-samples of the culture. In Charleston Harbor, we compared Chl-a concentrations for water samples near the surface versus at near-bottom depths.

**RESULTS**

Phytoplankton biomass increased under all light intensities, however the rate of increase was positively correlated with increased light.

At all sites Chl-a concentration was greater at near-bottom depths versus surface water.

**DISCUSSION**

Phytoplankton compete for resources such as light. An environment with a greater amount of light allows for a greater abundance of phytoplankton. For this reason increased light intensity is positively correlated with higher concentrations of Chl-a.

Wind driven currents are restricted to the upper 100 to 200 m of the oceans and generally to even shallower depths (Segar 2007). Because near-bottom samples taken for the purpose of this experiment ranged between 4-20 m it is likely that phytoplankton distribution was still affected by wind driven currents at these depths. This explains why the resultant Chl-a concentrations were significant at both surface and near-bottom waters. It is also apparent the freshwater front evident on the day of sampling had not mixed thoroughly with near-bottom waters causing lower Chl-a concentrations in surface water samples.