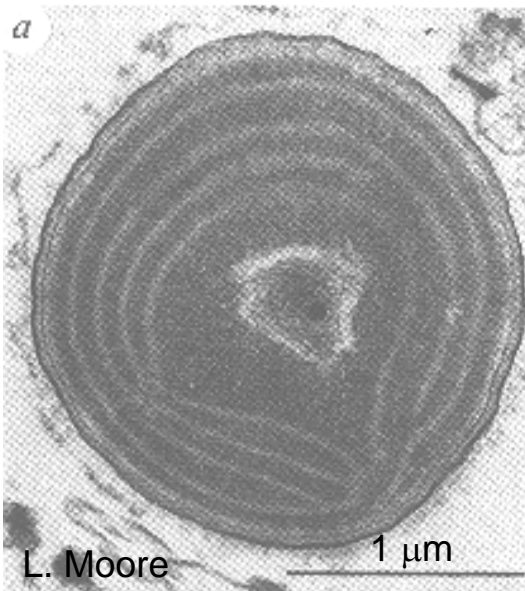


# Dynamics of Cyanobacteria in Coastal Ecosystems



Liz Mann   Jennifer Fox   Karin Biller

## *Synechococcus*



Cyanobacteria are small ( $< 3\mu\text{m}$ ) prokaryotic picophytoplankton that can account for 15 to 27% of the total chlorophyll in some estuarine systems.

Abundant in fresh to open ocean waters

Contain the diagnostic pigments phycoerythrin (PE, marine species), and phycocyanin (PC, estuarine cyanobacteria)

Easy to identify and quantify using flow cytometry

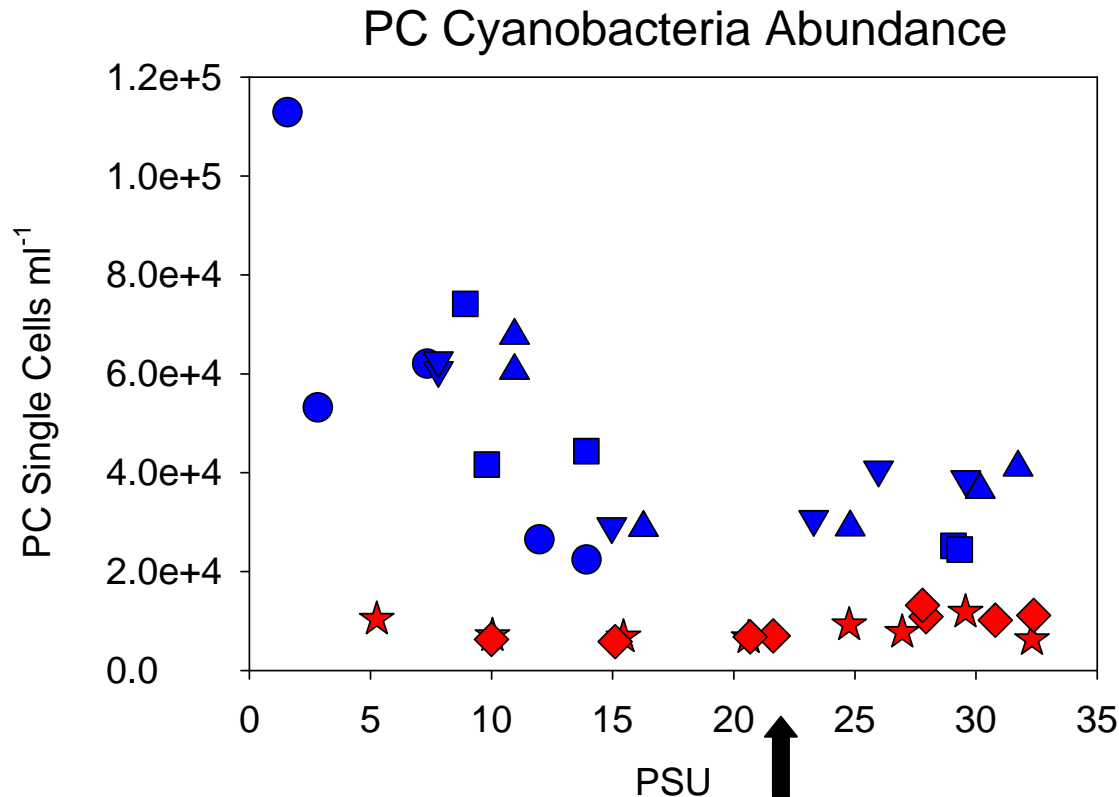
Generally more sensitive to toxic trace metals than eukaryotic phytoplankton

# Response of cyanobacteria to anthropogenic impacts



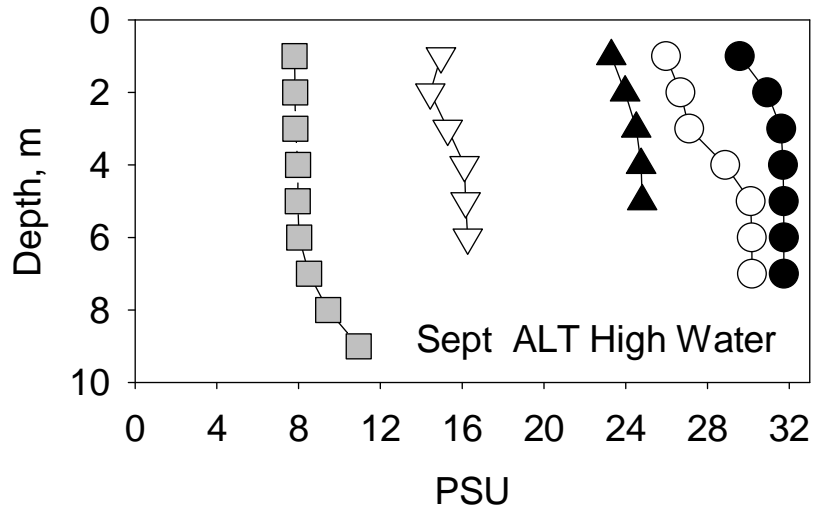
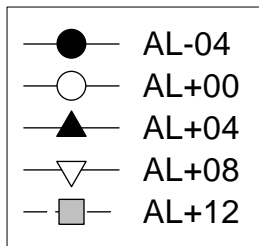
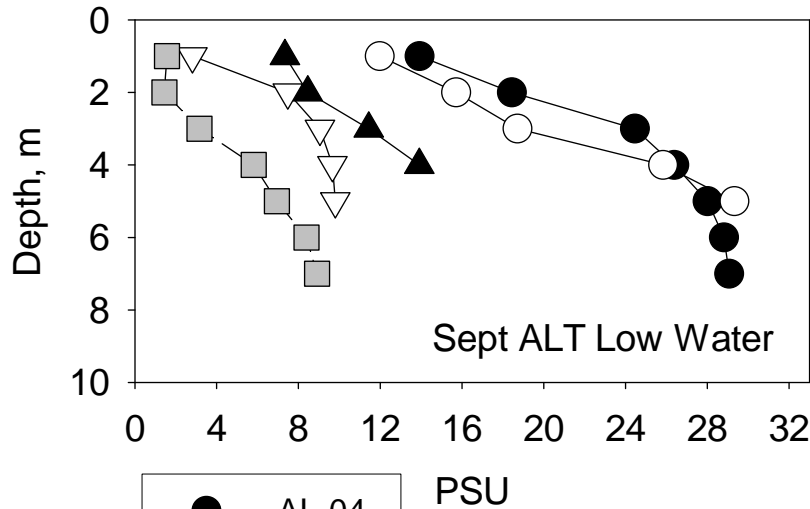
■ Altamaha – relatively pristine

◆ Savannah – heavily industrialized



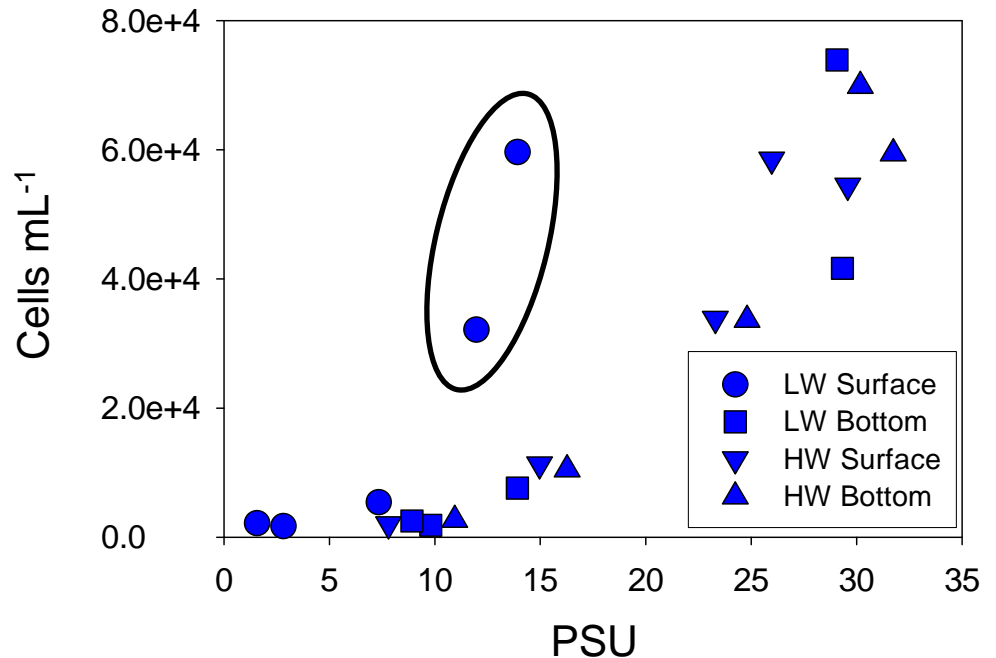
Water collected from the Savannah River (PSU 21.7) can decrease the net growth of cyanobacteria in three to five days.

# Response of cyanobacteria to stratification



The abundance of PE cyanobacteria decreases exponentially with decreasing salinity – except for surface waters at the mouth of the ALT during low tide.

## PE Cyanobacteria



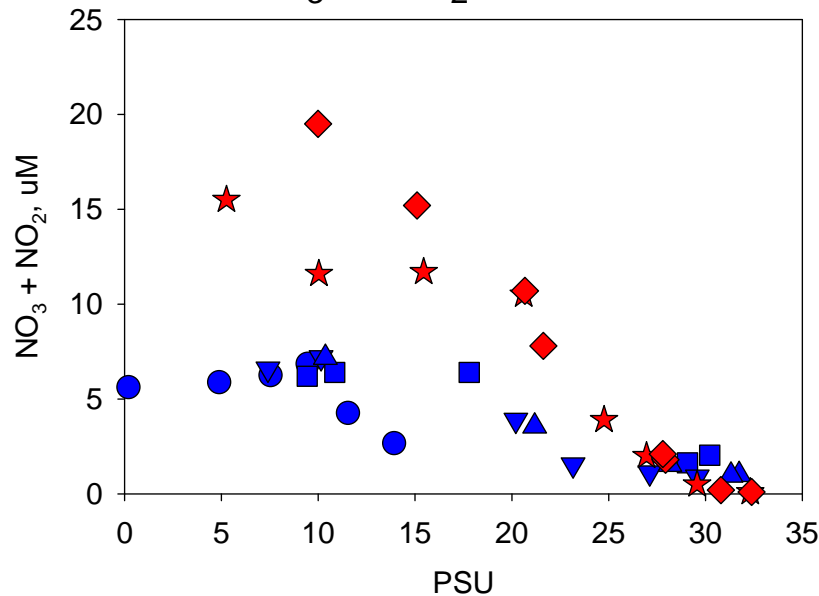
# Response of cyanobacteria to anthropogenic impacts



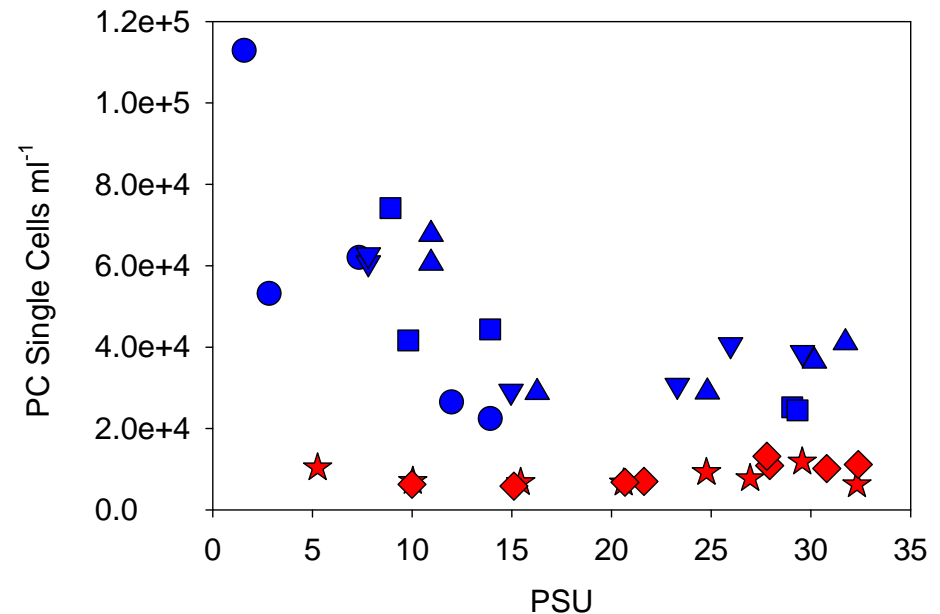
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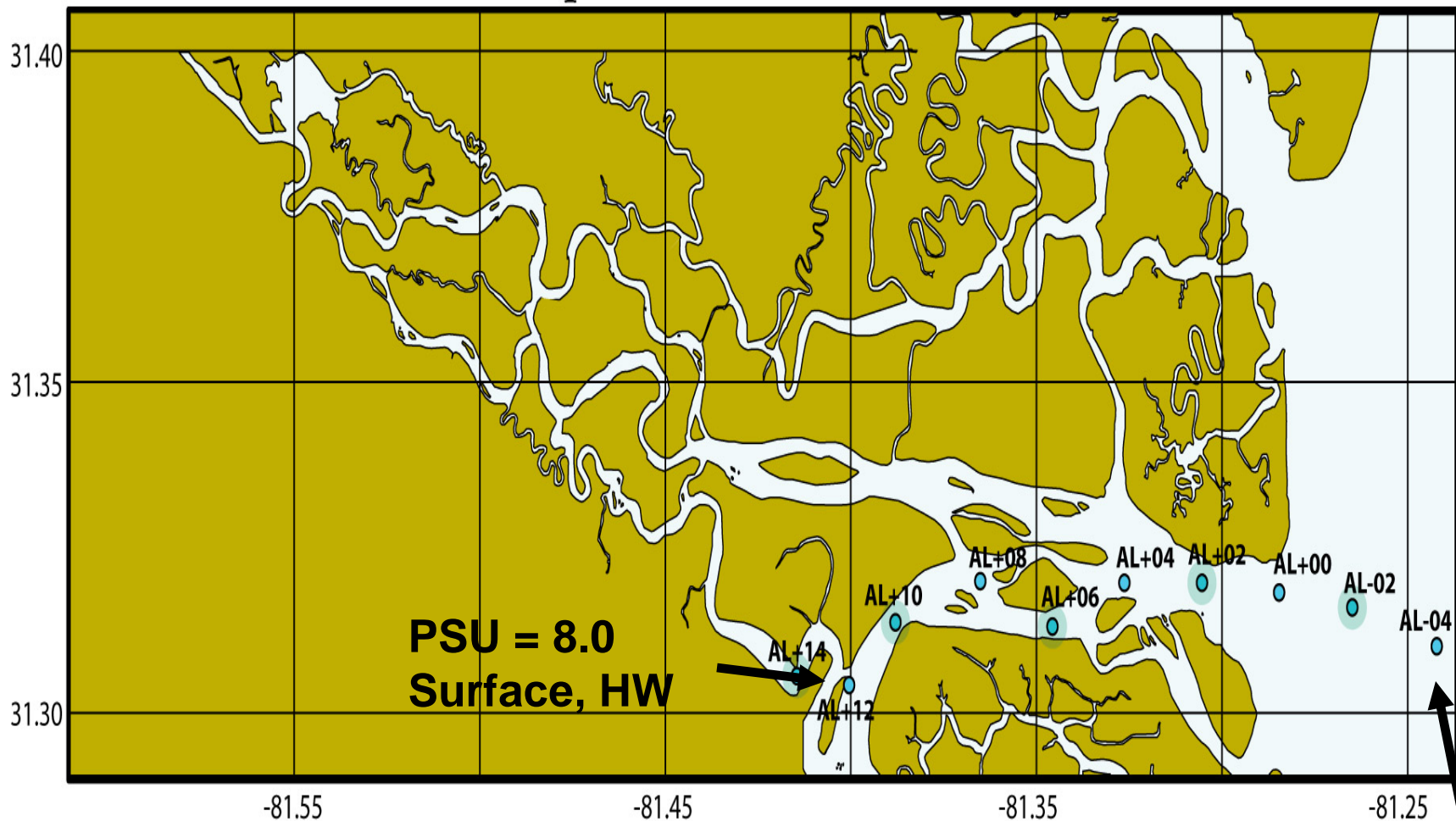
$\text{NO}_3 + \text{NO}_2$  Concentration



PC Cyanobacteria Abundance



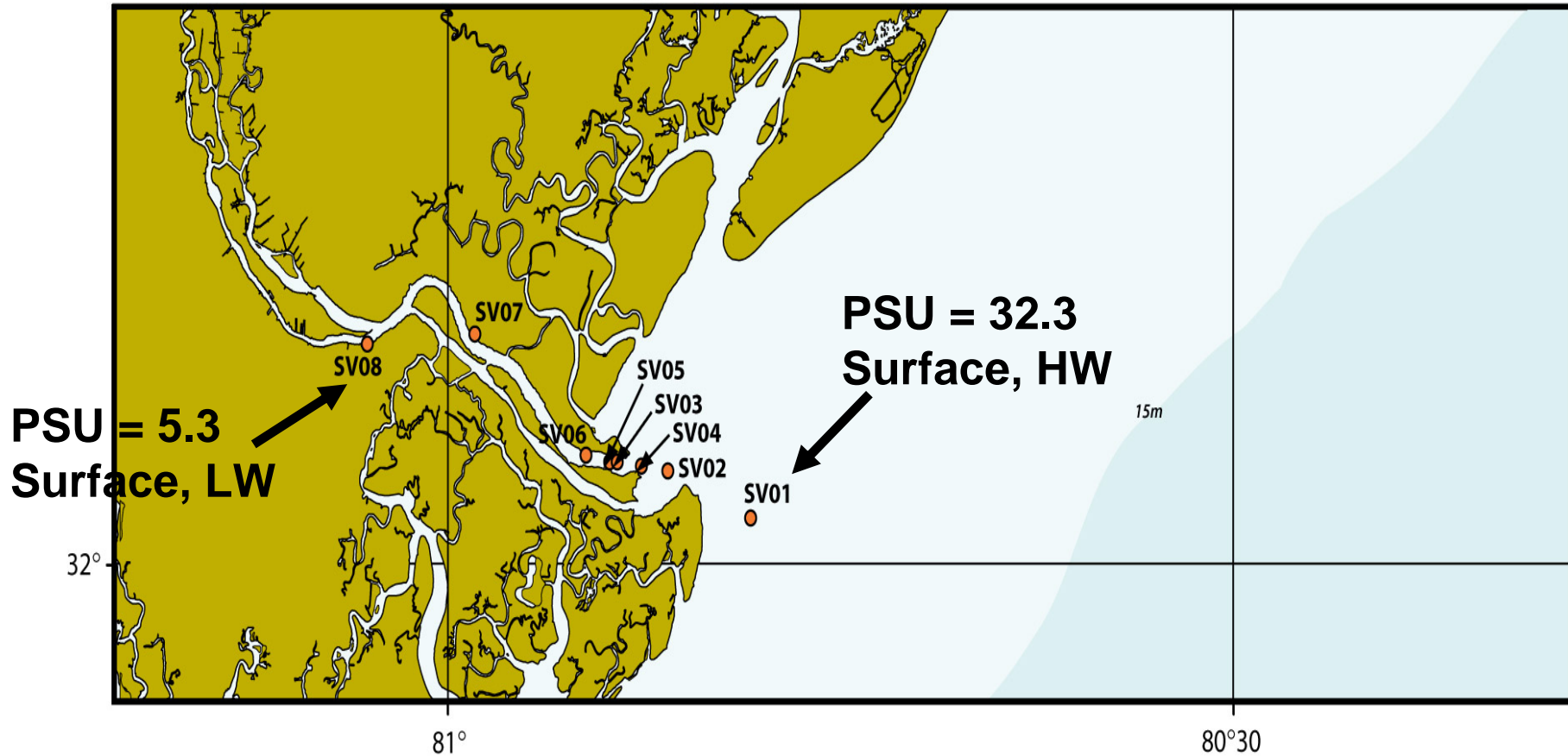
# Altamaha River Transect, September 27, 2005



**Georgia Coastal Ecosystems LTER cruise:  
transects from mouth of river inland during  
low and high tides**

**PSU = 29.6  
Surface, HW**

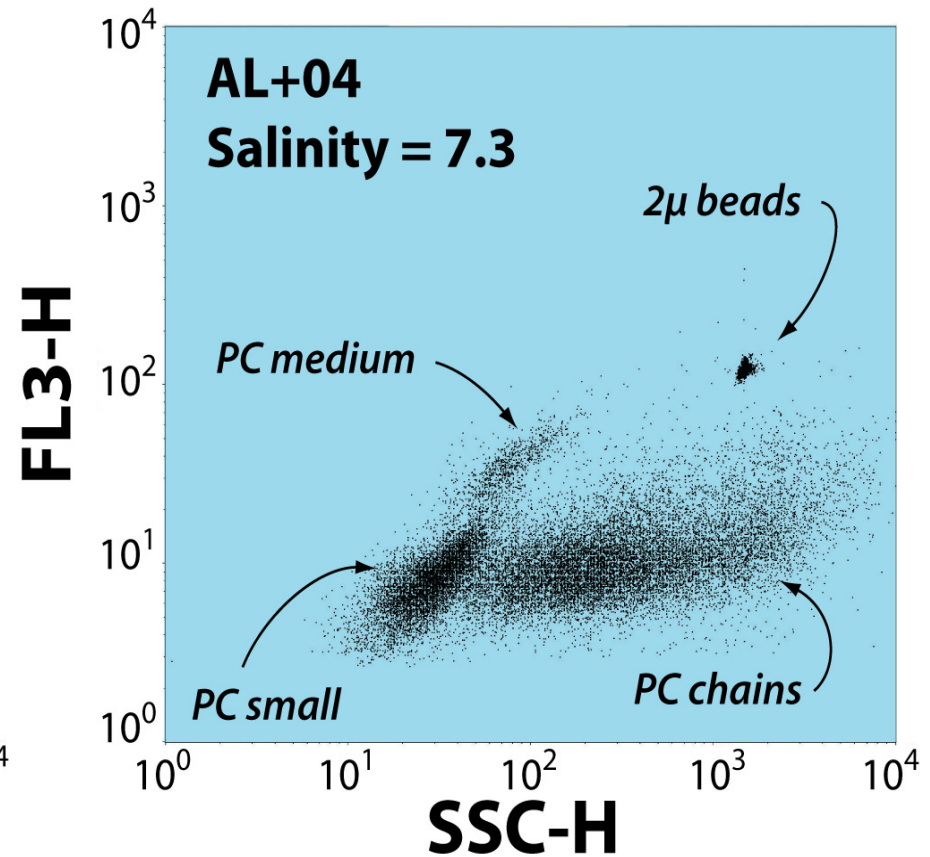
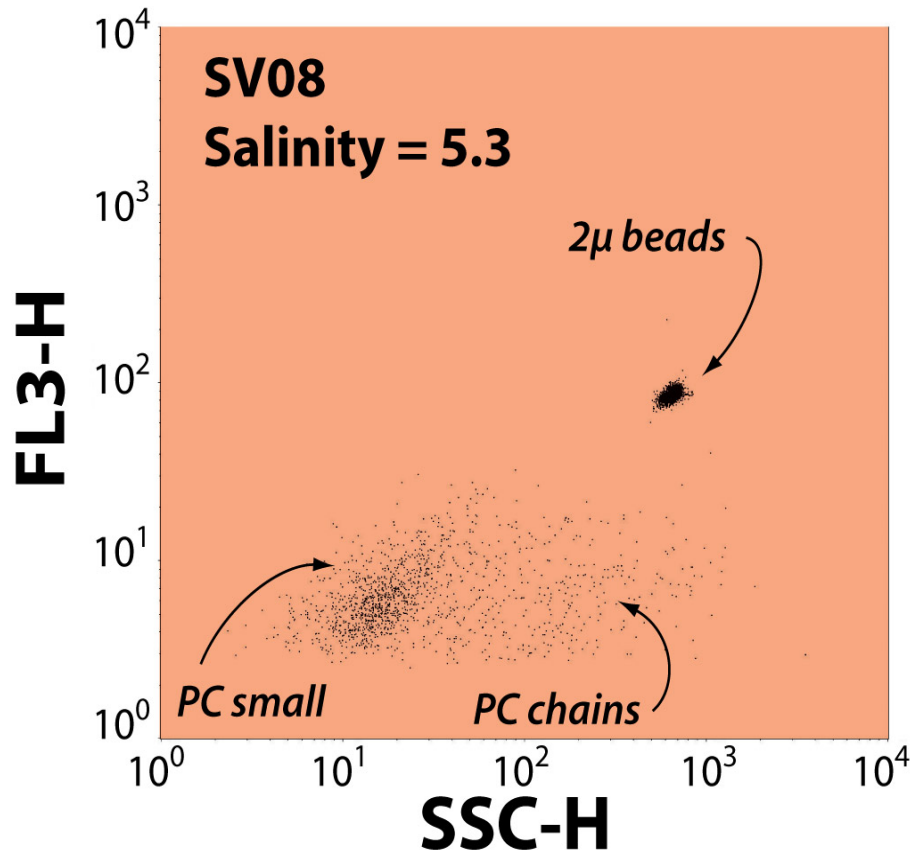
## Savannah River Transect, September 20, 2005



**Samples were taken as the tide went out, starting from high water (HW) at the mouth of the river to low water at SV07 and SV08**



# PC containing picoplankton in the Savannah and Altamaha Rivers



# Flow Cytometer Schematic

