

# EPA's River Real Time Monitoring Buoy in the Charles and Mystic Watersheds

- Access to the data has been through a password protected site <http://www.ysieconet.com/>



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# Charles and Mystic River Real-Time Monitoring EPA New England Regional Laboratory

## The Real-Time Monitoring Buoys are off-line for the season

### Purpose:

Environmental Protection Agency (EPA) has established monitoring buoys in the Charles and Mystic Watersheds. These buoys collect and transmit water quality data that is available to the public. EPA has established these buoys to help with the tracking of cyanobacteria blooms and water quality conditions.

Note: All water quality measurements are collected 1 meter below the water's surface  
Last Sonde Verification: 9/30/2010

Click here 

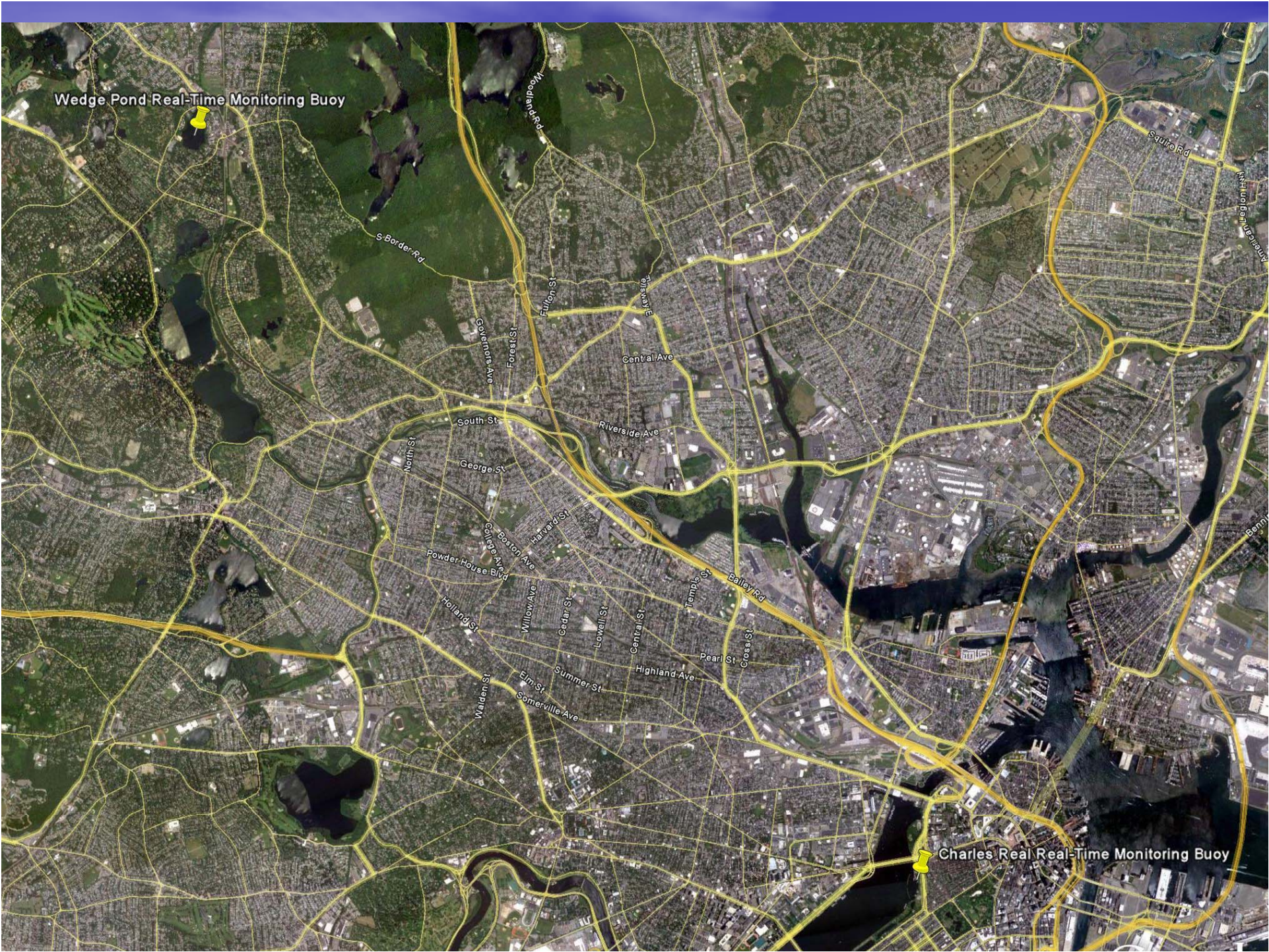


### Project Partners:



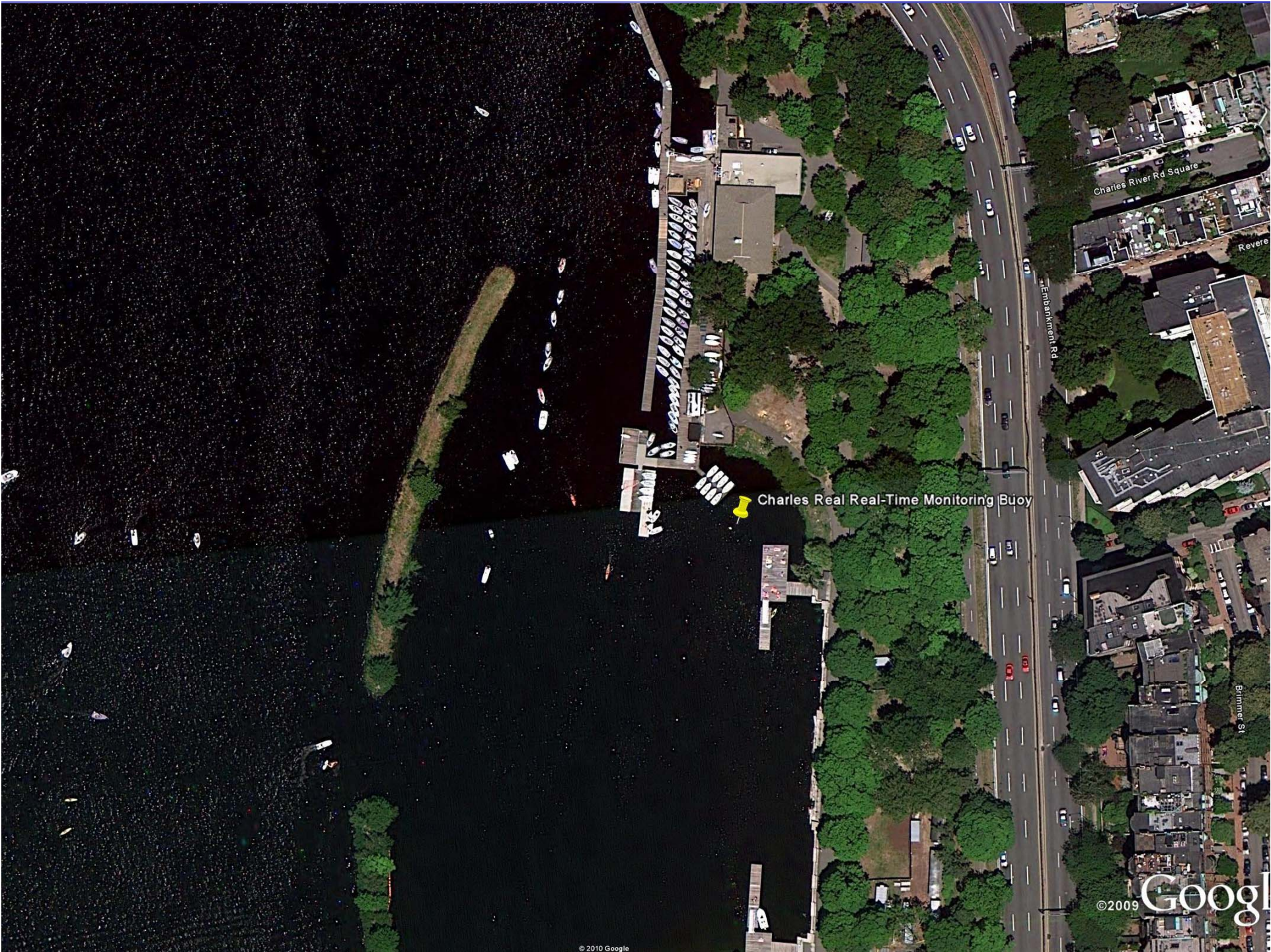
### Disclaimer:

The data presented on this website is considered preliminary data and may be subject to future revision or qualifiers. The data from this site is transmitted directly from the instrument with no or little review. Inaccuracies may be presented because instrument malfunction or physical changes at buoy location.



Wedge Pond Real-Time Monitoring Buoy

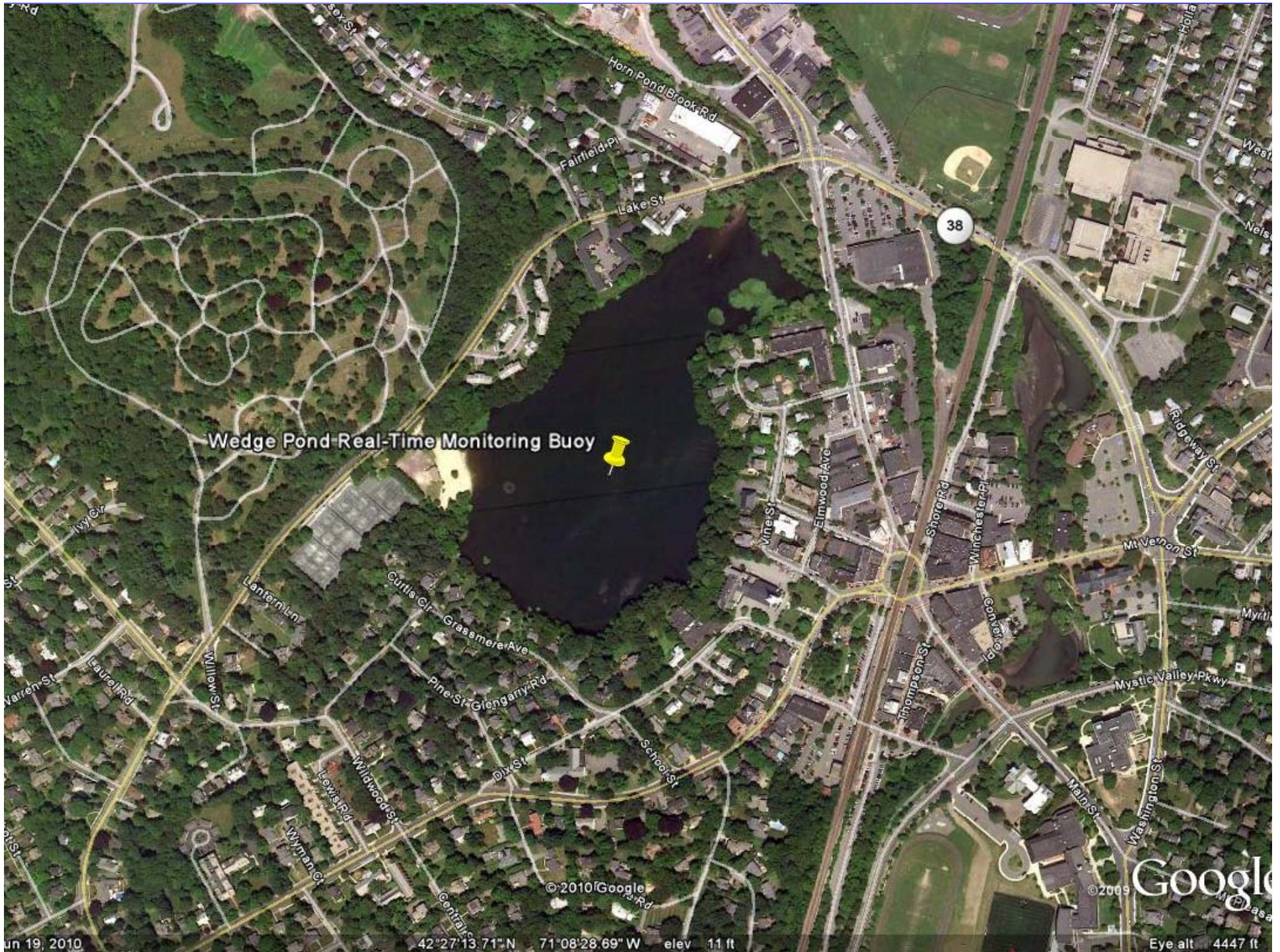
Charles Real Real-Time Monitoring Buoy



Charles Real Real-Time Monitoring Buoy

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Wedge Pond Real-Time Monitoring Buoy



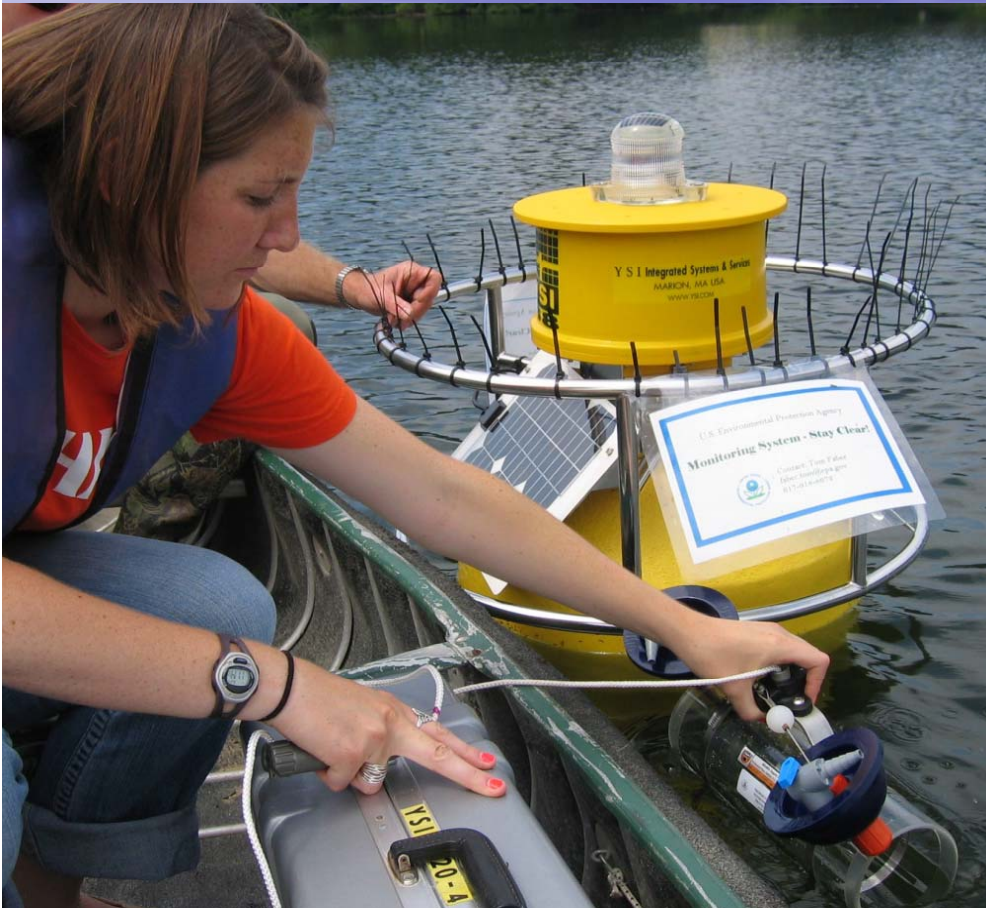




# Sonde Measurements

- Recorded every 15 minutes
- Charles measurement period 5/27-9/30/10
- Wedge Pond measurement period 6/15-9/30/10
- Measurements collected at 1 meter depth
- Parameters
  - Temperature,
  - Conductivity
  - pH
  - Dissolved oxygen
  - Turbidity (Charles only)
  - Chlorophyll
  - Phycocyanin

# Buoy chlorophyll and phycocyanin correlated with Lab data

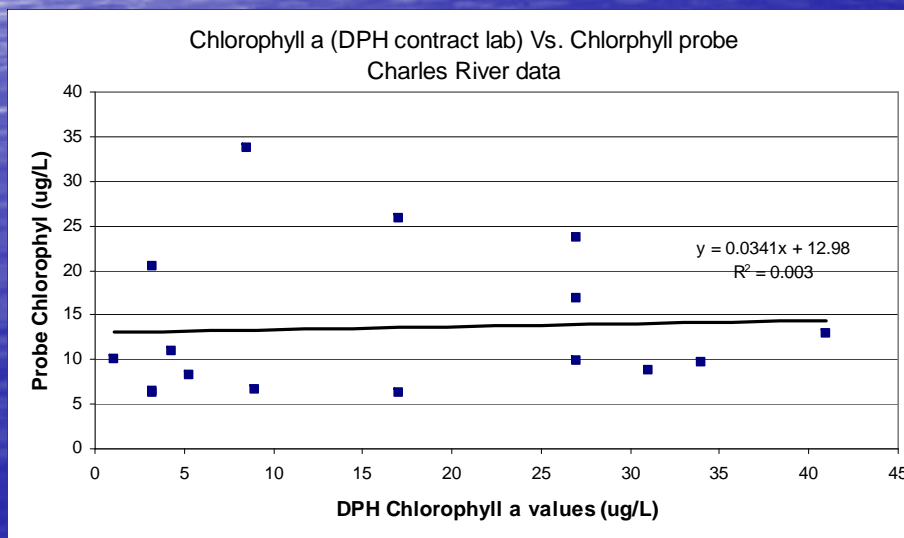
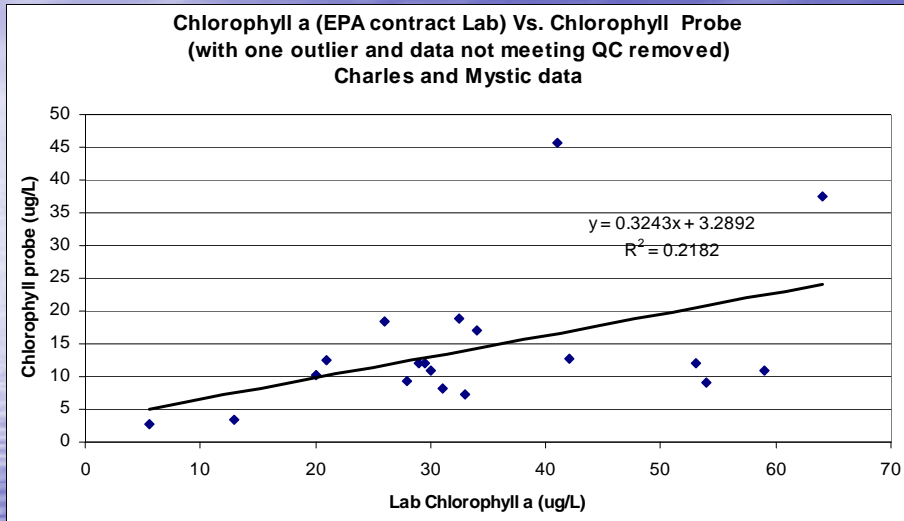


# Buoy chlorophyll and phycocyanin correlated with Lab data

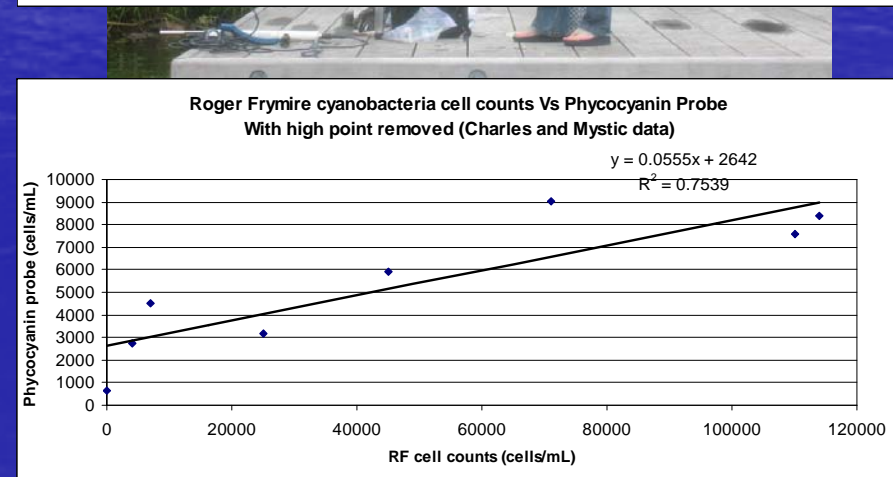
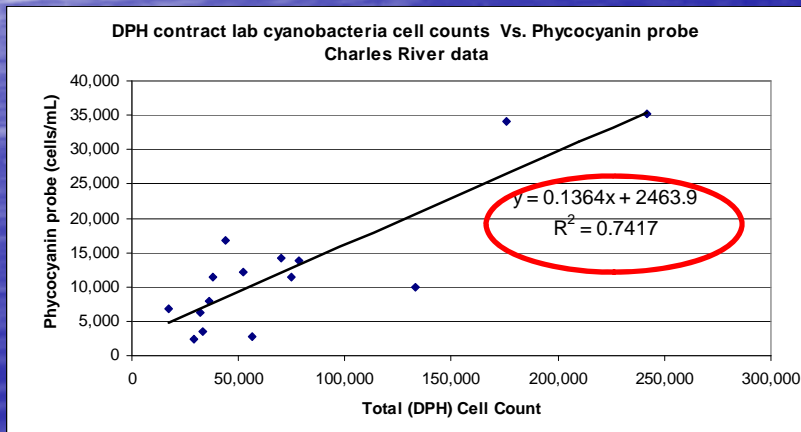
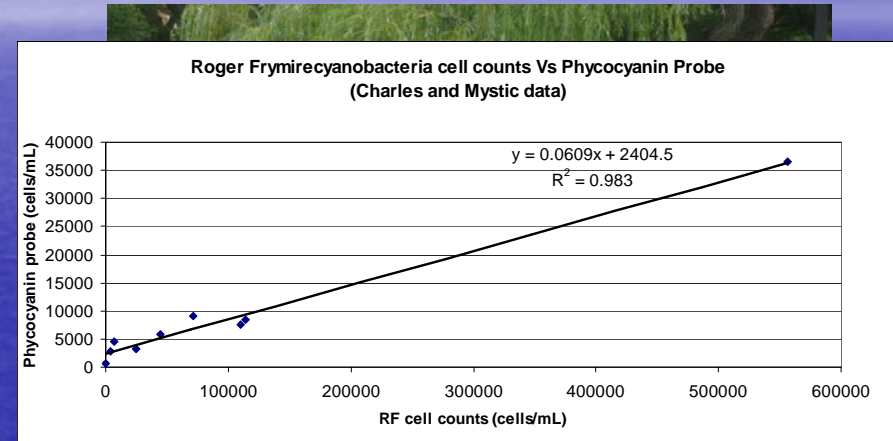
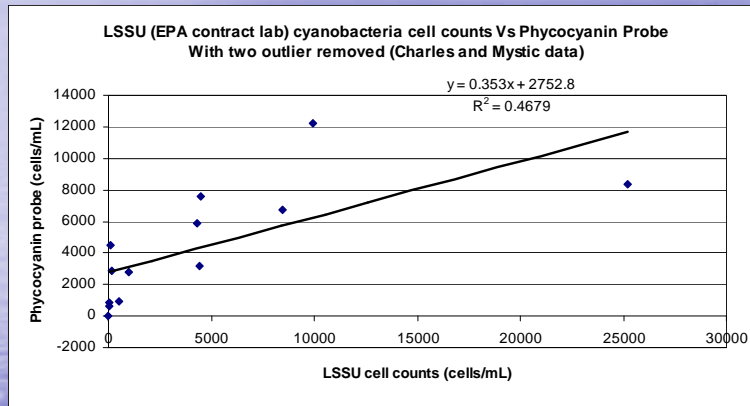
- Chlorophyll a
  - EPA Contract lab
  - DPH data (Charles only)
- Cyanobacteria cell counts
  - EPA Contract lab
  - DPH data (Charles only)
  - Roger Frymire



# Chlorophyll probe had poor correlation with Laboratory data

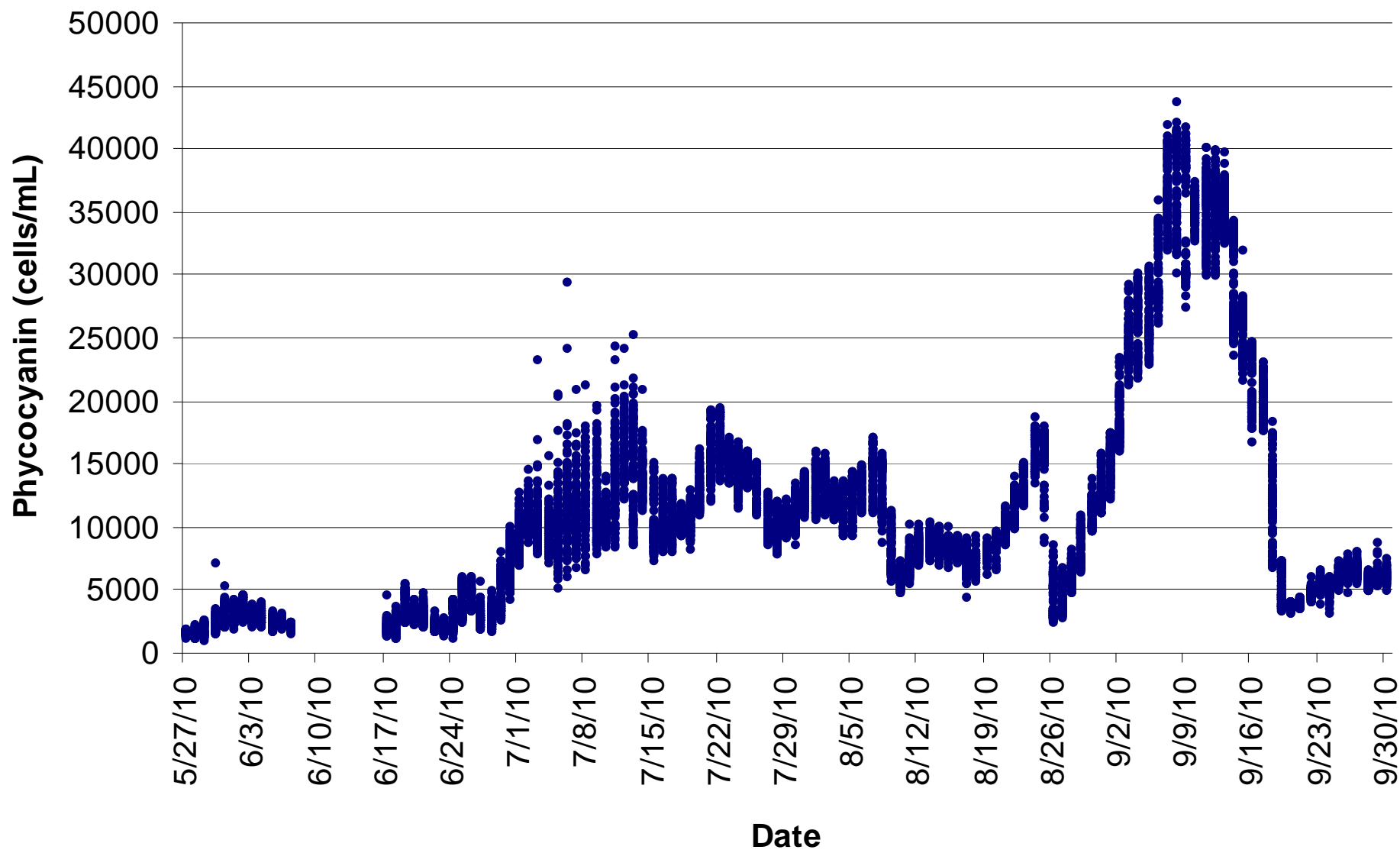


# Phycocyanin probe correlation with Laboratory Cyanobacteria cell counts

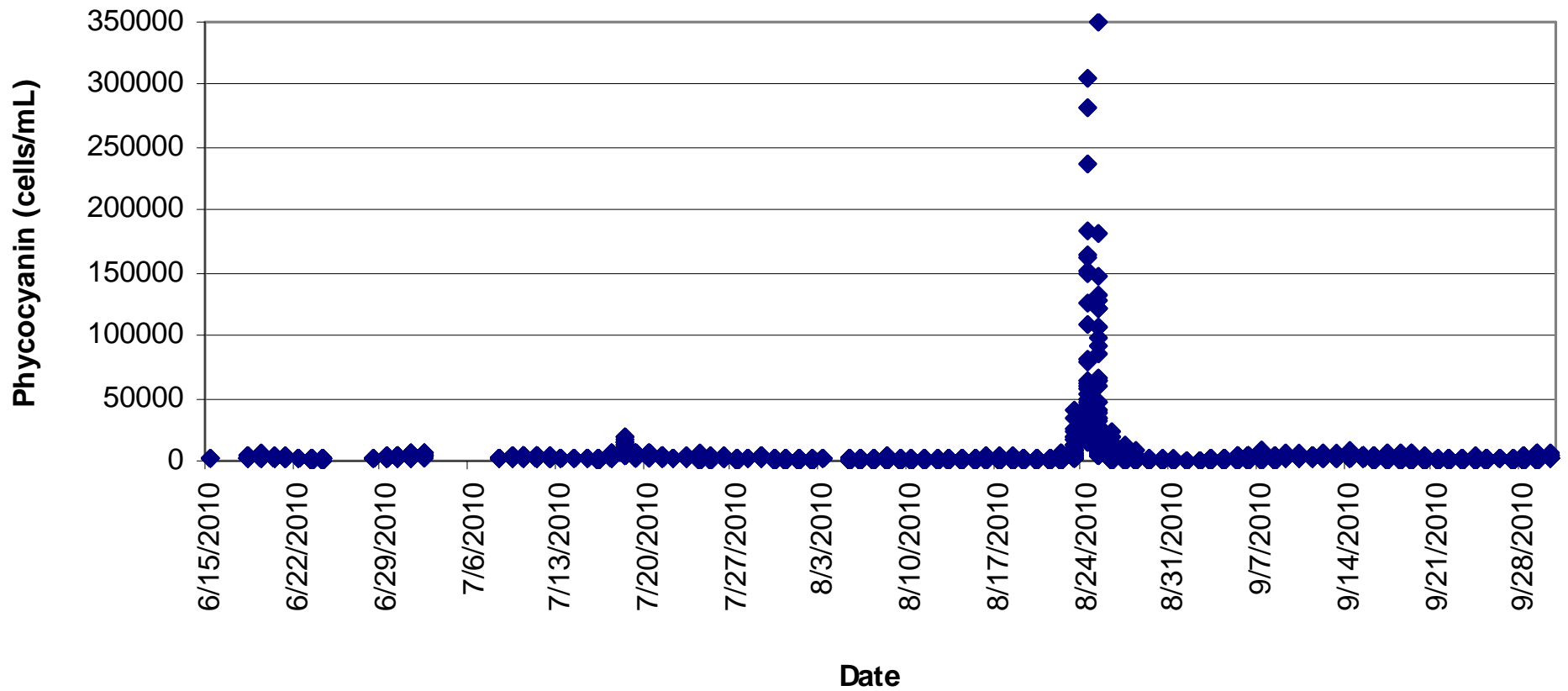


Note: DPH samples collected ~35 feet away at dock 6" deep

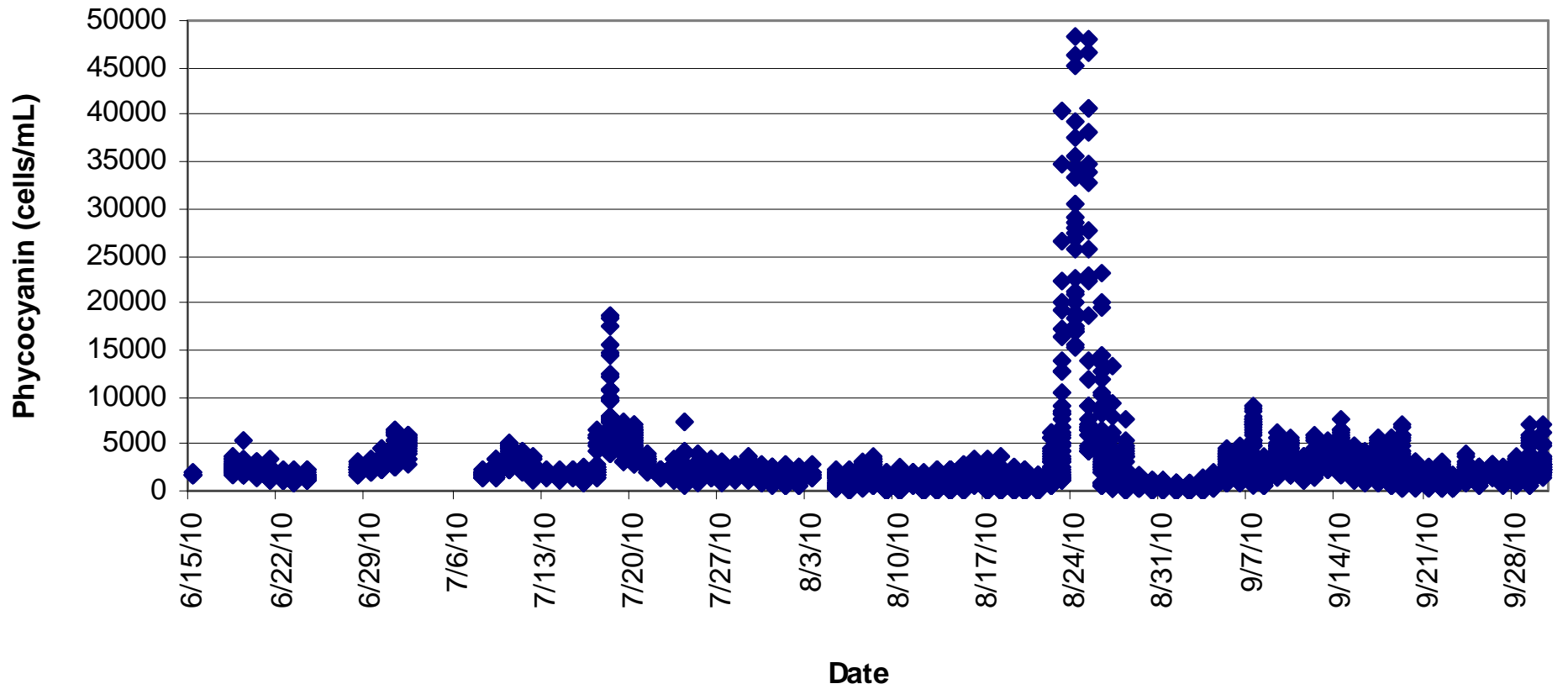
## Chalres RTM Buoy Phycocyanin Concentrations



### Mystic RTM Buoy Phycocyanin Concentrations

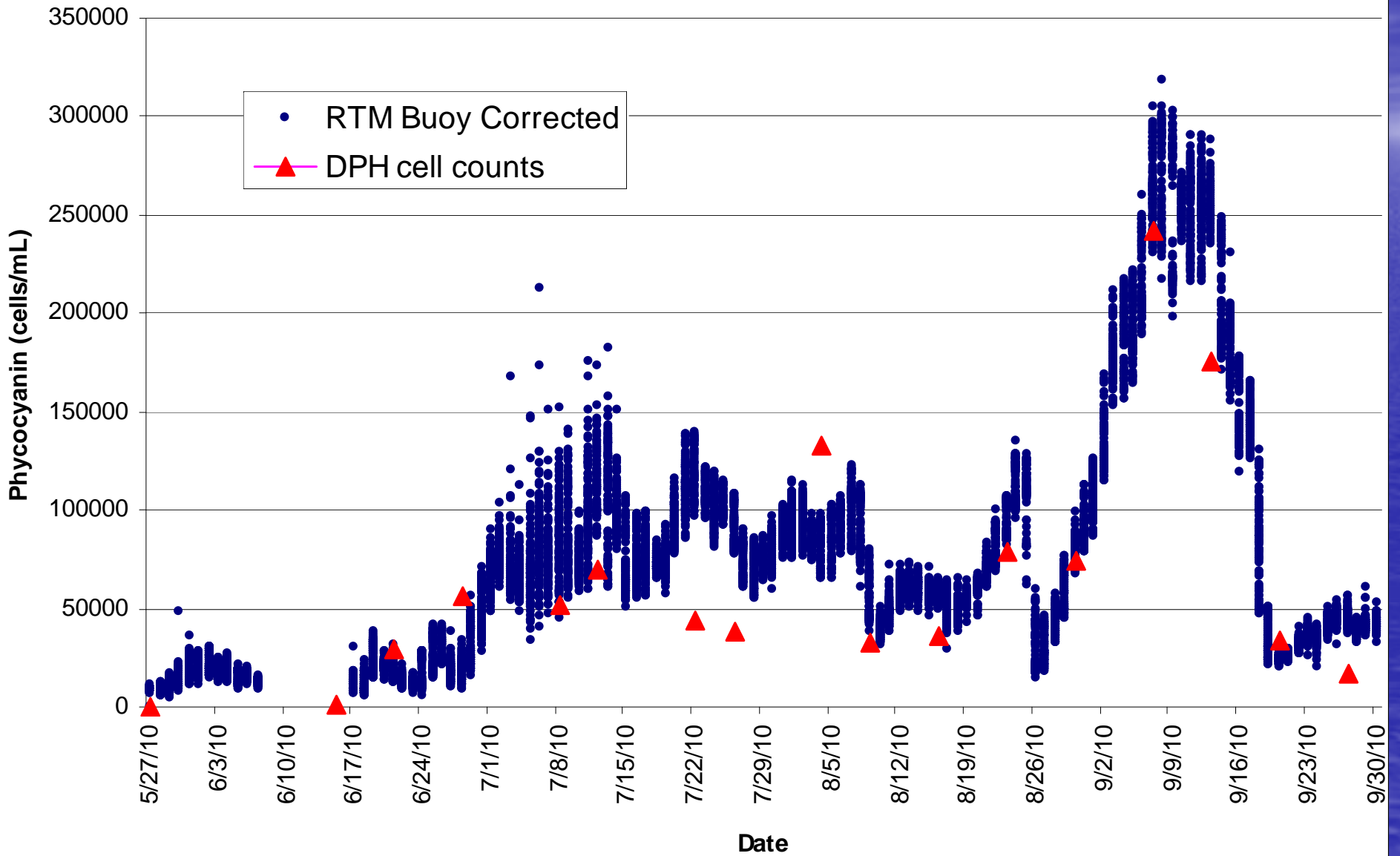


### RTM Buoy Phycocyanin Concentrations (Mystic Data)

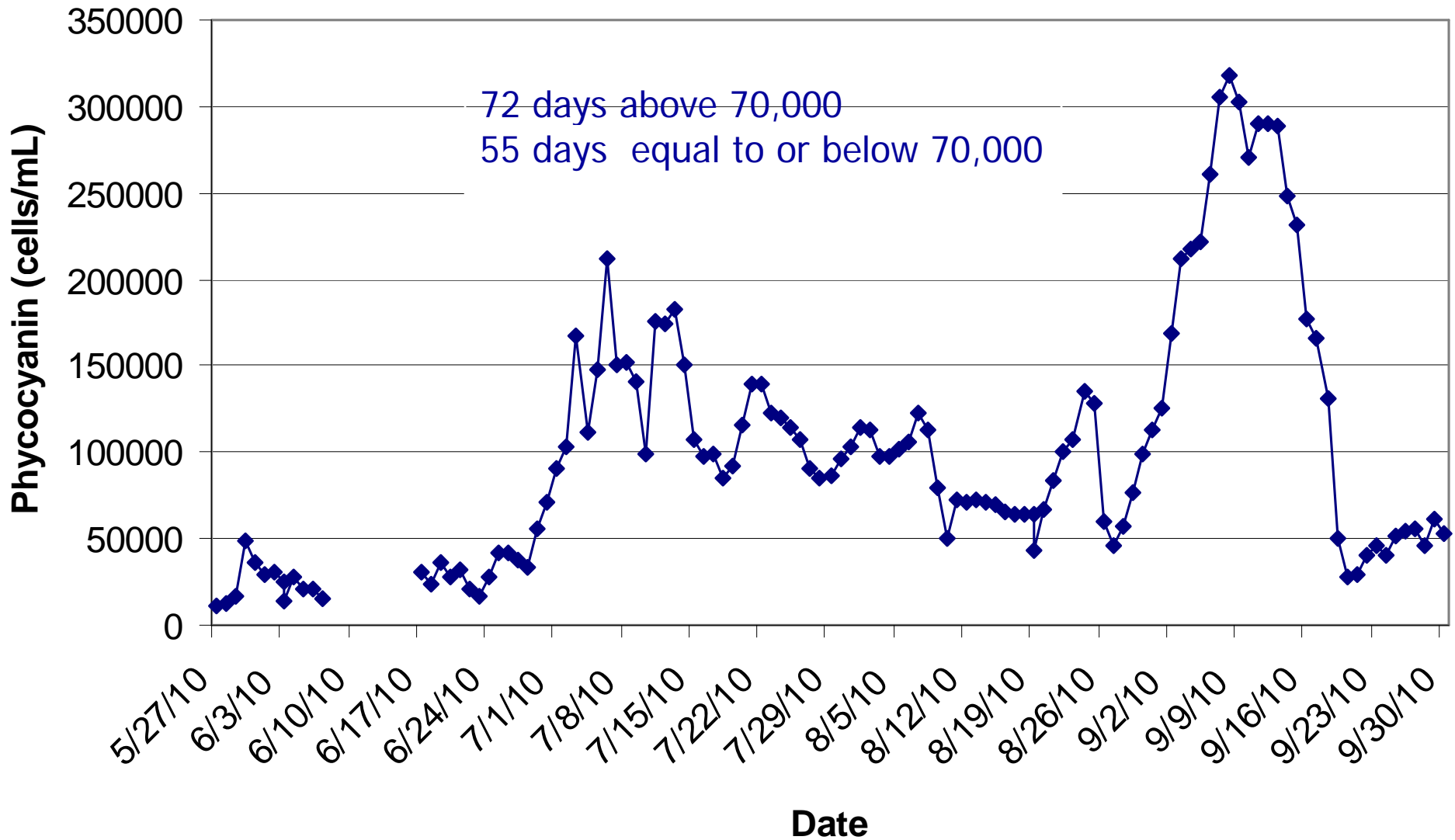




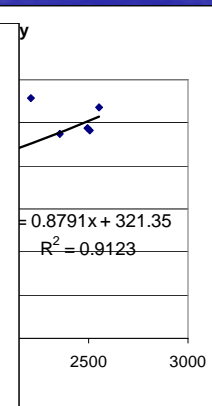
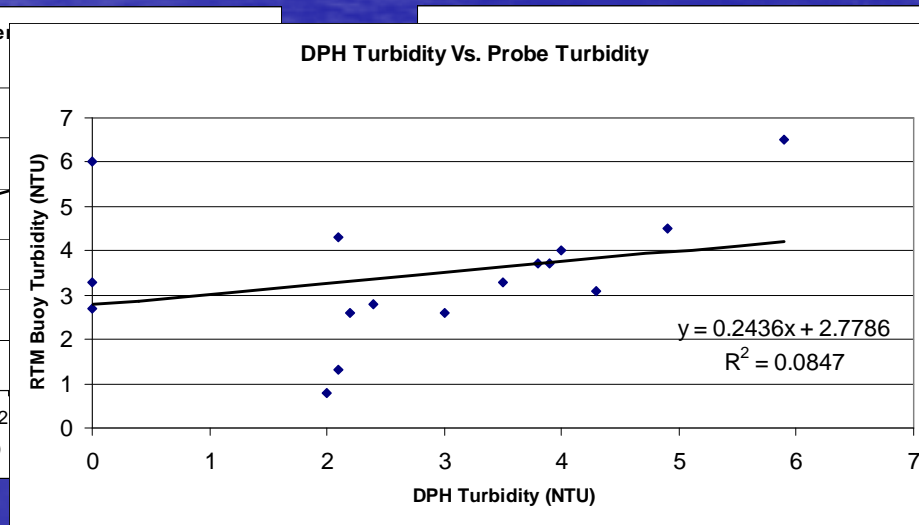
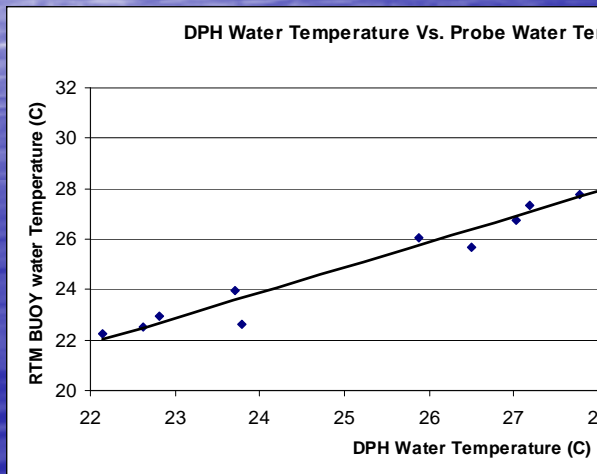
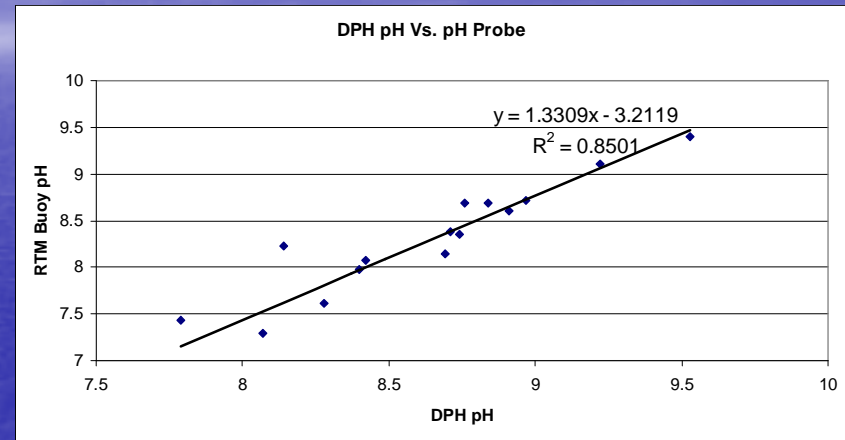
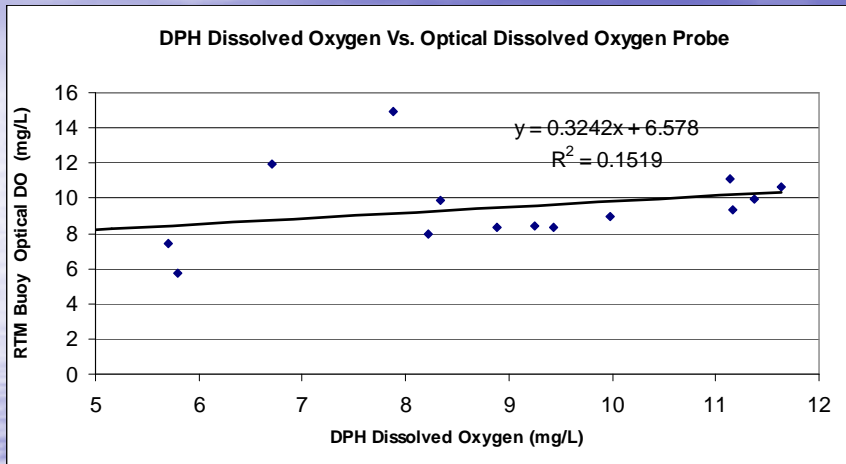
# Charles RTM Buoy Phycocyanin Corrected (w/DPH values) Concentrations



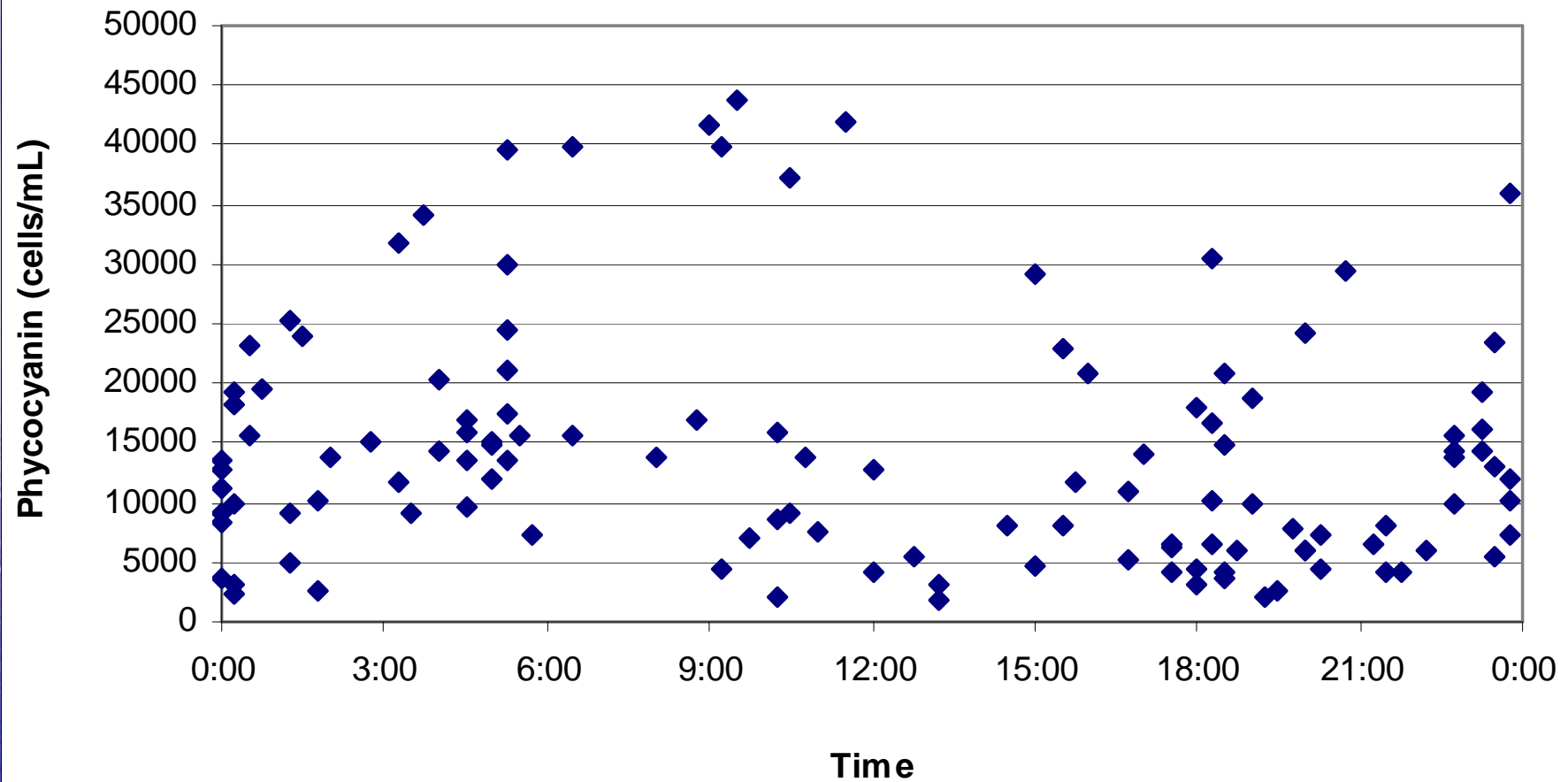
# Charles RTM Buoy Daily Max Phycocyanin corrected (DPH) values



# Other parameter comparisons with DPH and RTM Buoy

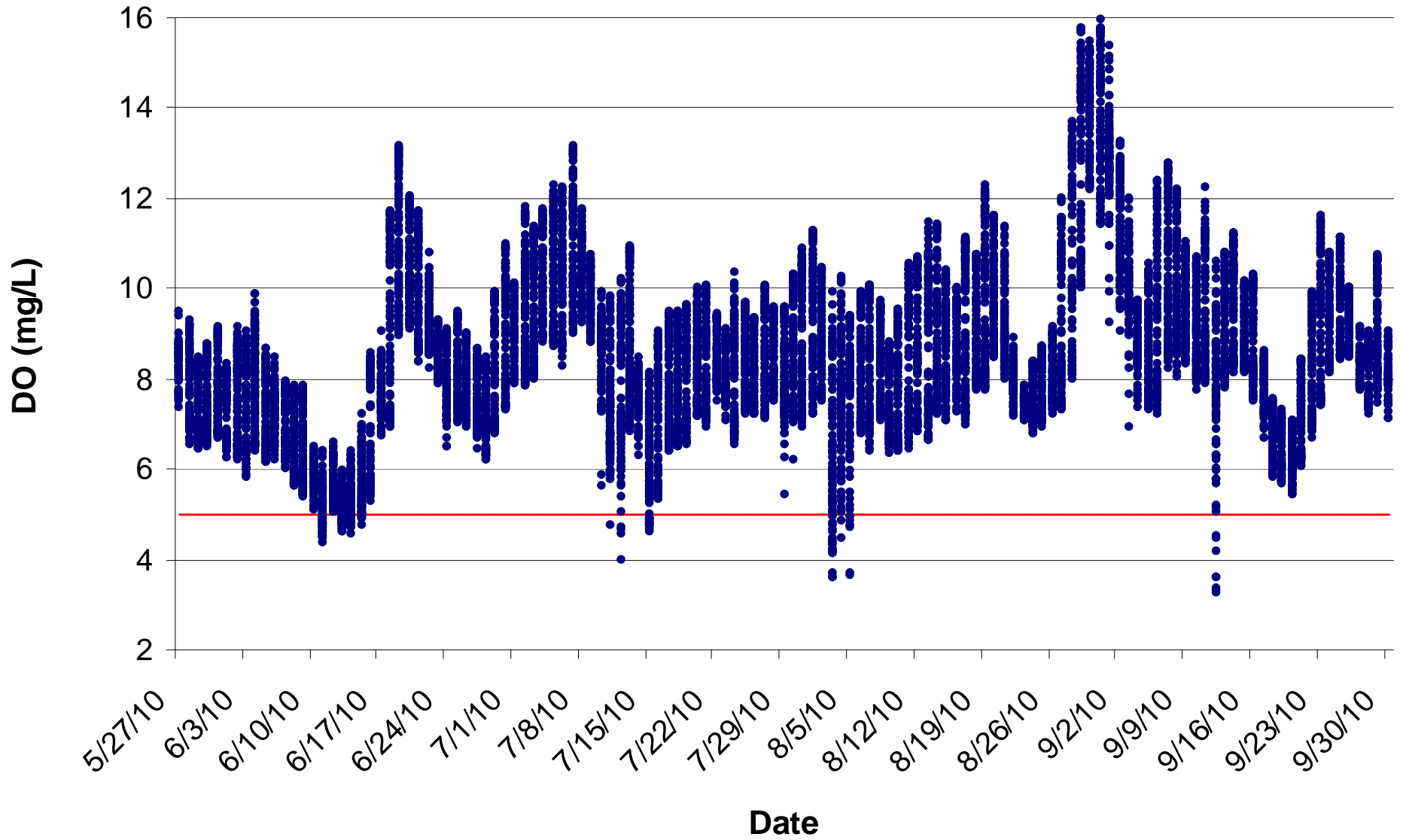


## Charles Maximum Phycocyanin Concentrations

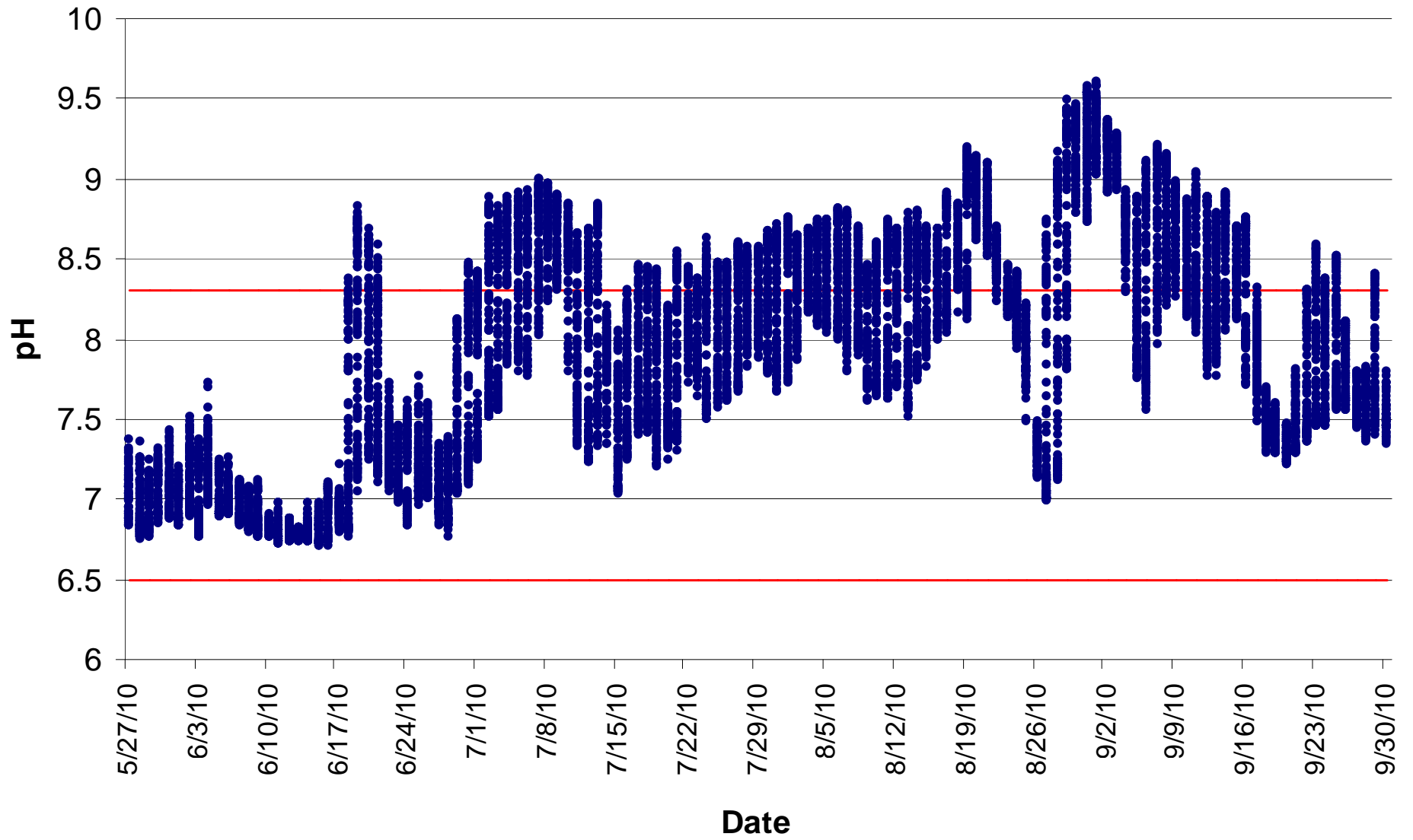


70% of the Maximum daily values occurred  
between 6:00 pm and 6:00 am

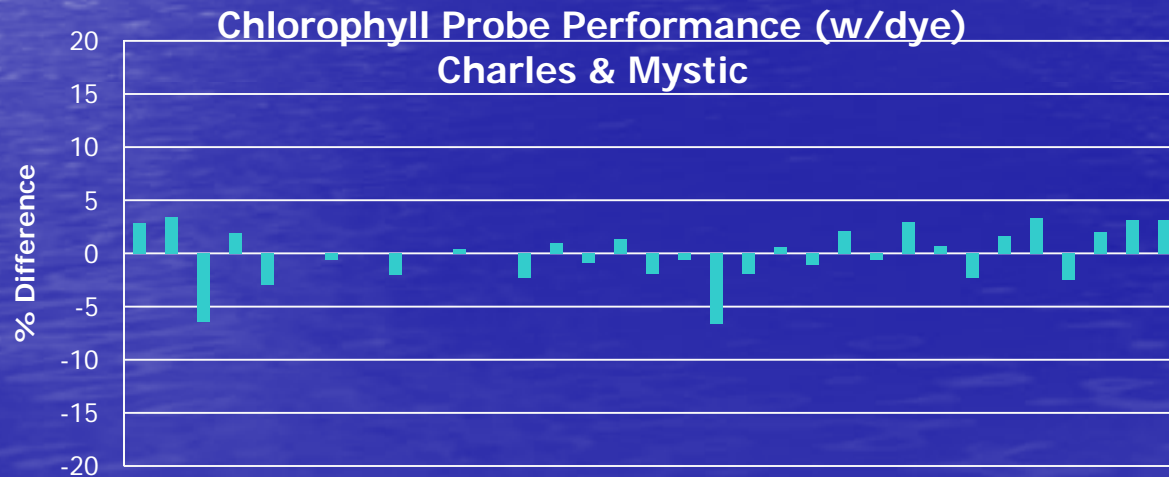
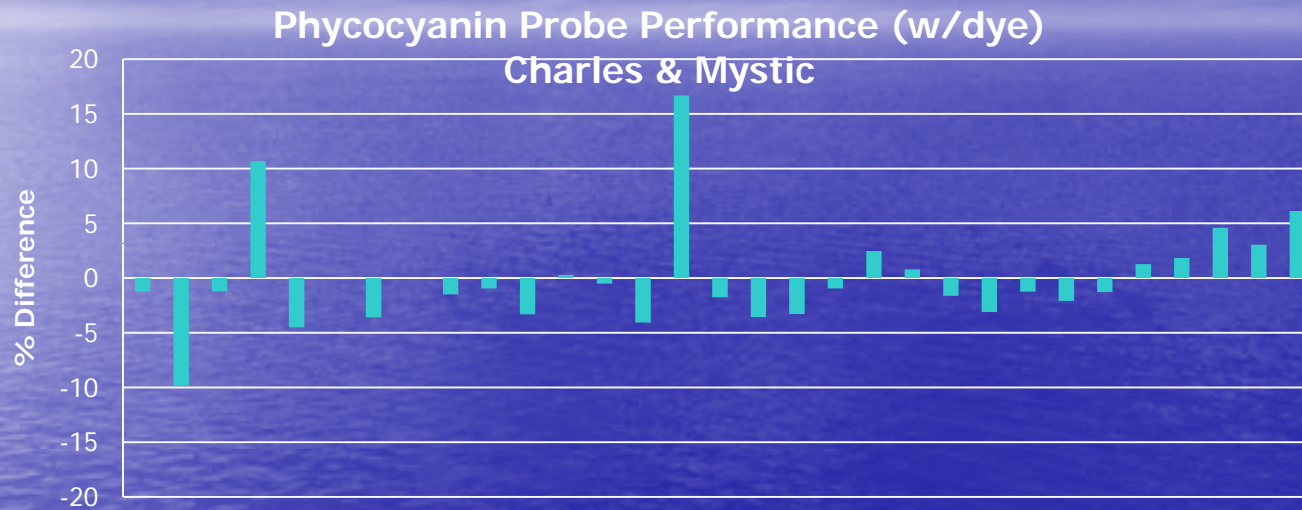
# Charles RTM Buoy Dissolved Oxygen Concentrations



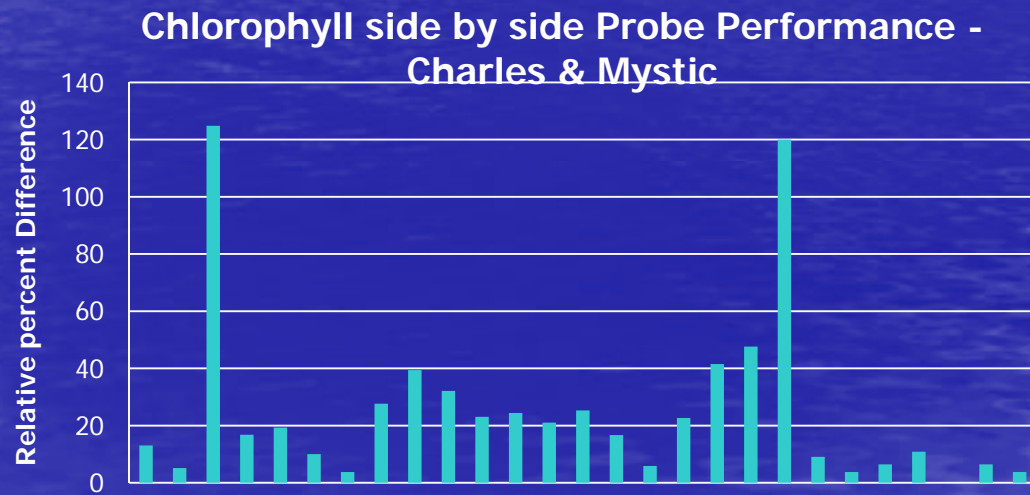
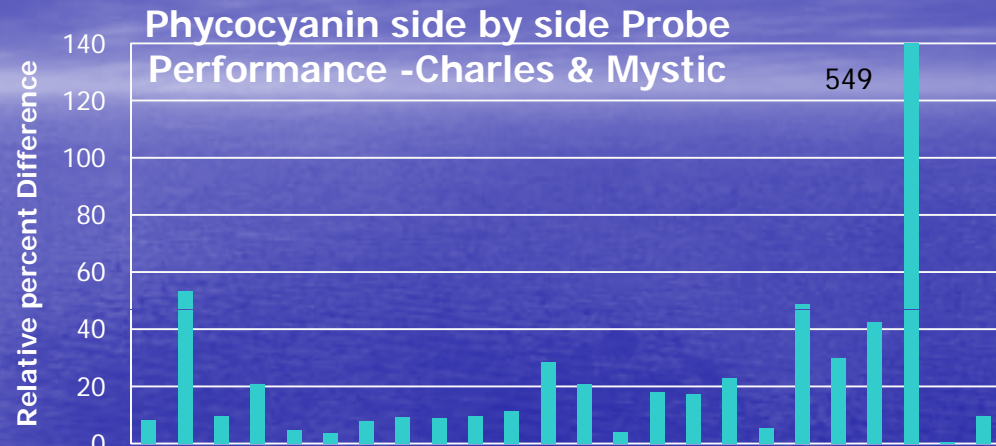
# Charles RTM Buoy pH



# Post deployment probe verification with Rhodamine dye



# Side by Sonde measurement during sonde swap





# Next steps for RTM Buoy Project

- Evaluation user feedback was positive
  - Most interest in tracking cyanobacteria blooms
  - Relocating Mystic Buoy
- Plan on deploying again in the Charles and Mystic next summer
- Investigate Public website
- Exchange Sondes every 2 weeks instead of weekly

# Next steps for RTM Buoy Project

Continued

- Investigate different calibration methods for chlorophyll and phycocyanin probes
  - Use single dye standard for both probes
  - Phycocyanin
    - Develop in-house (*Microcystis aeruginosa*) culture
    - Initially correlated culture cell counts with dye concentration probe response
    - Adjust probe calibration from most recent field sample counts
  - Chlorophyll
    - Develop in-house fluorometric method for chlorophyll a (EPA Ref. method 445)
    - Correlate chlorophyll a concentrations with dye concentration probe response
    - Adjust probe calibration from most recent field sample chlorophyll a concentration



# Questions?

