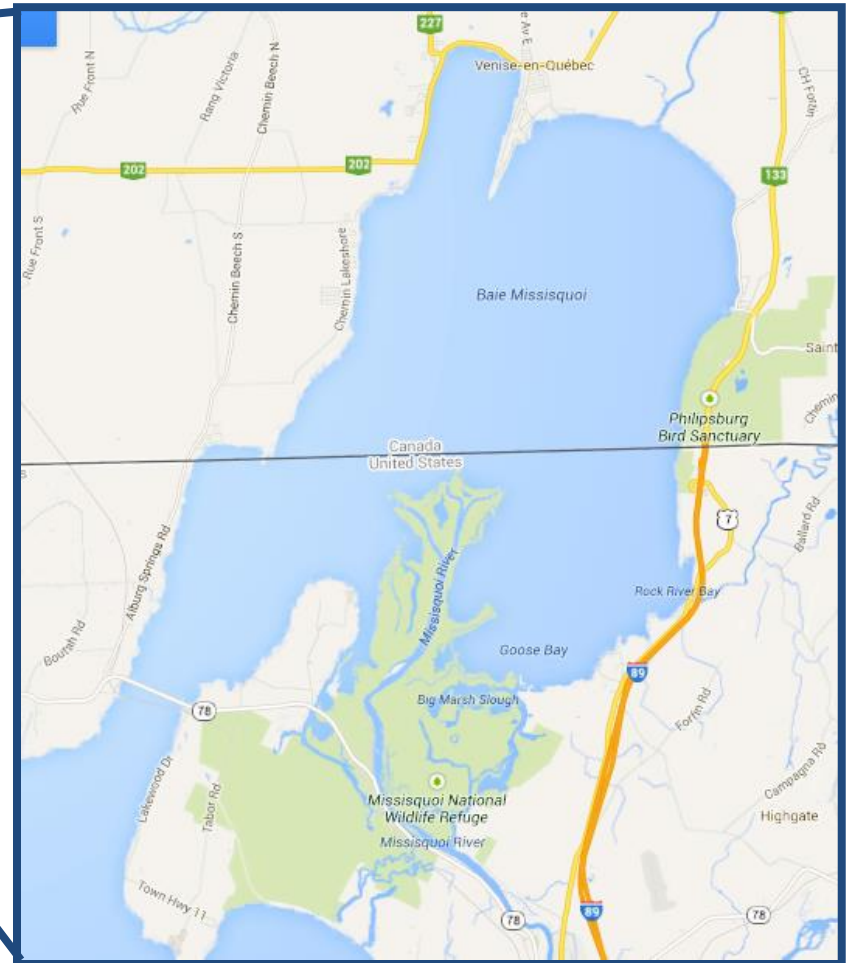


How does water quality affect phytoplankton communities in Missisquoi Bay?

Jessica Mailhot
Peter Isles, Jason Stockwell



Missisquoi Bay



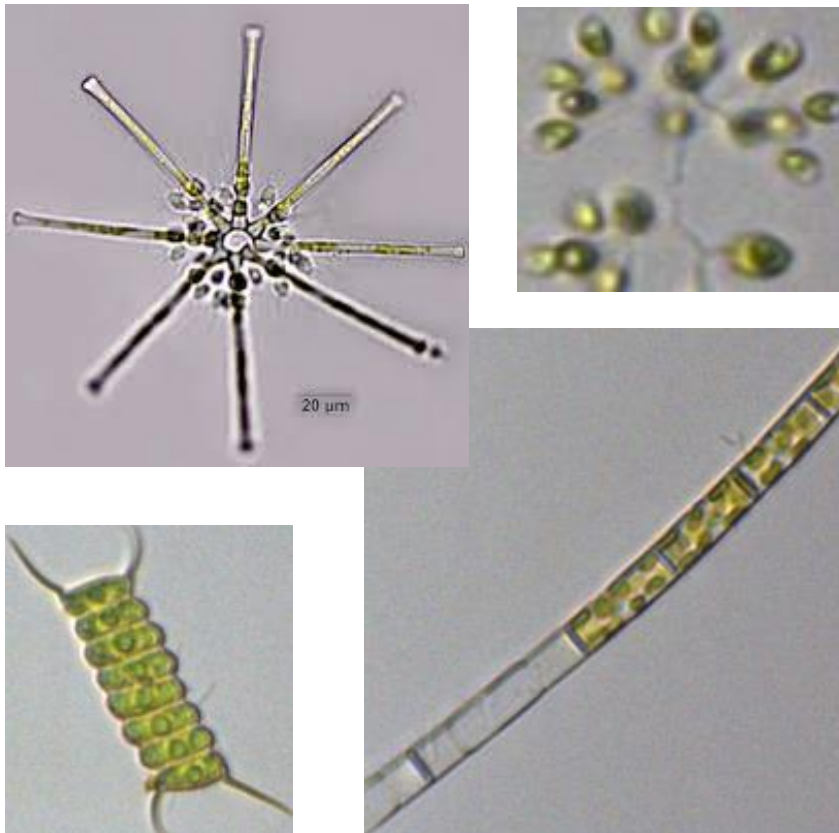
Cyanobacteria develop into dangerous blooms.

- Bolstered by climate change and agricultural practices.
- Threaten recreation, property value, and the safety of wildlife, pets and humans.



A Quick Lesson on Phytoplankton

'Greens' - Diatoms



Cyanobacteria



11 separate sampling sites

Phytoplankton
samples and water
quality profiles

In concert with
stationary RACC buoy
temporal study.

July 16 pre bloom

Aug 20 peak bloom

Sept 19 after bloom

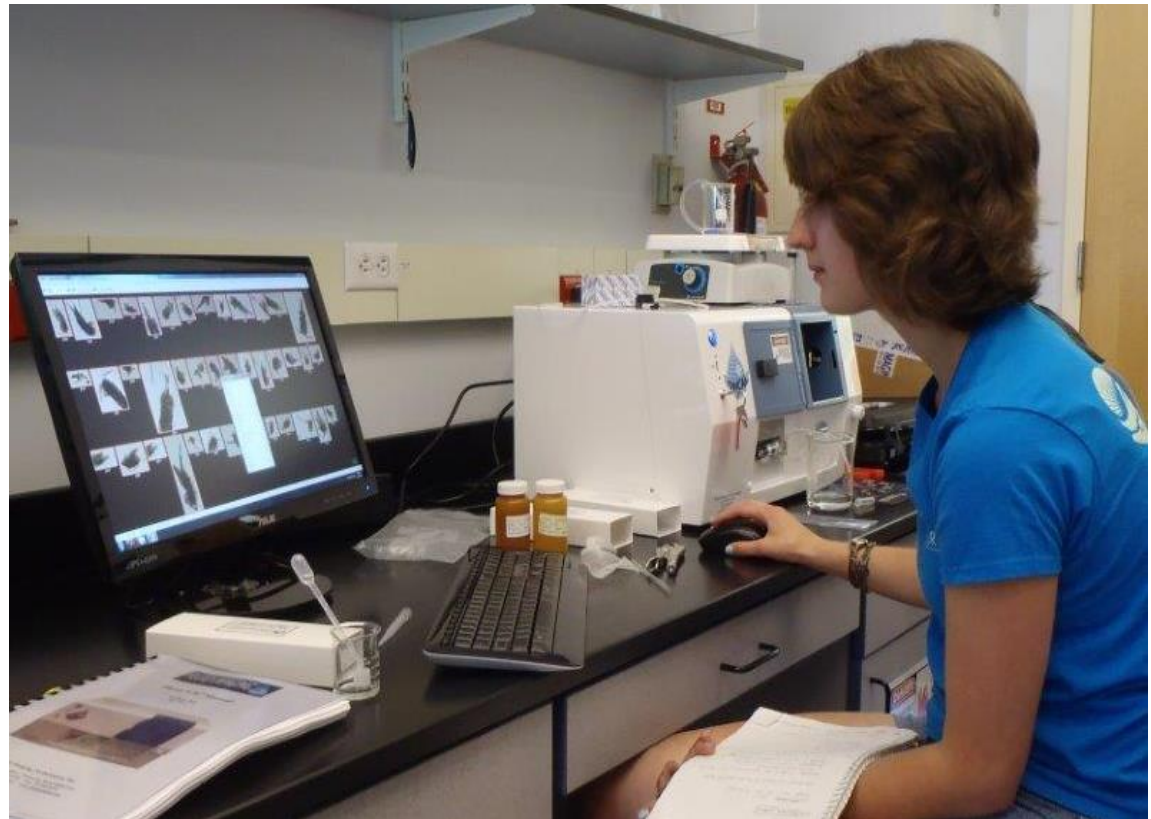


Data amassed using a sonde probe and FlowCAM.

Sonde recorded temperature, depth, pH, and dissolved oxygen.

Particles in water samples were photographed and categorized.

FlowCAM software calculated phytoplankton biovolume

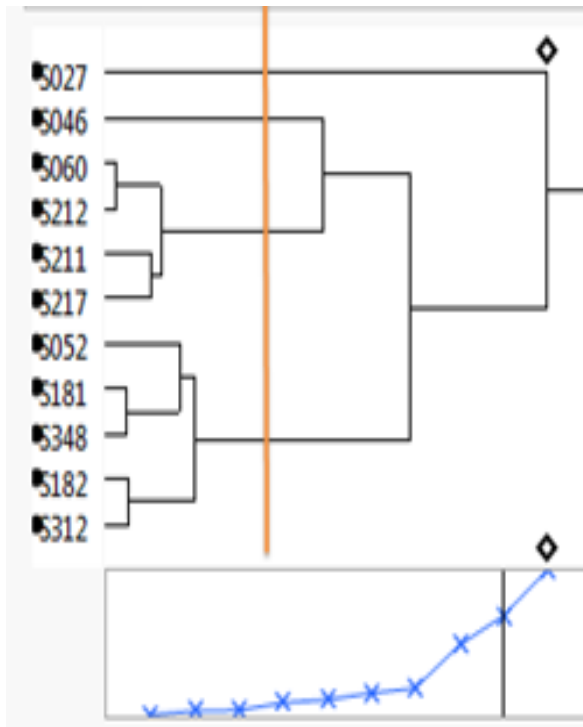


<http://www.globalw.com/products/6820.html>

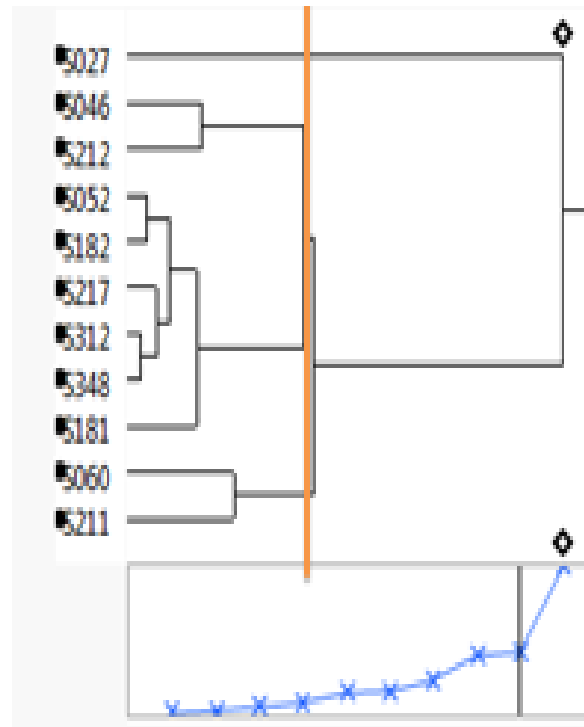
<http://www.uvm.edu/~epscor/new02/?q=node/1535>

Sites of similar biovolume ratios grouped using cluster analysis.

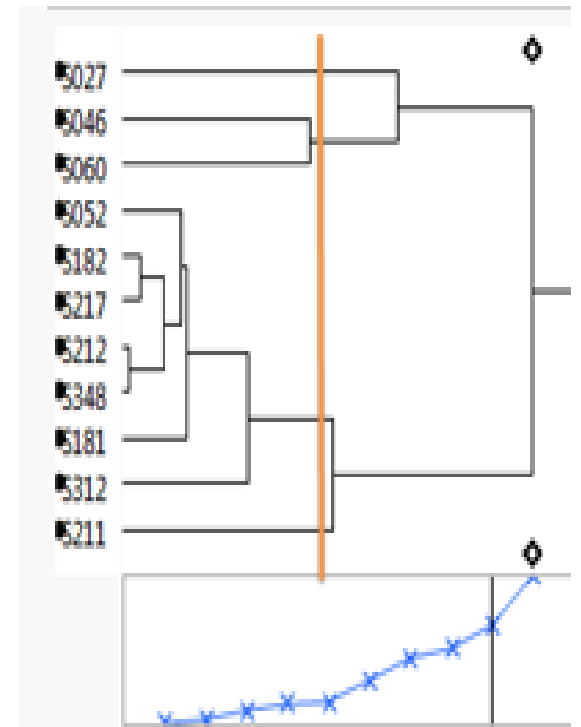
7-16



8-20

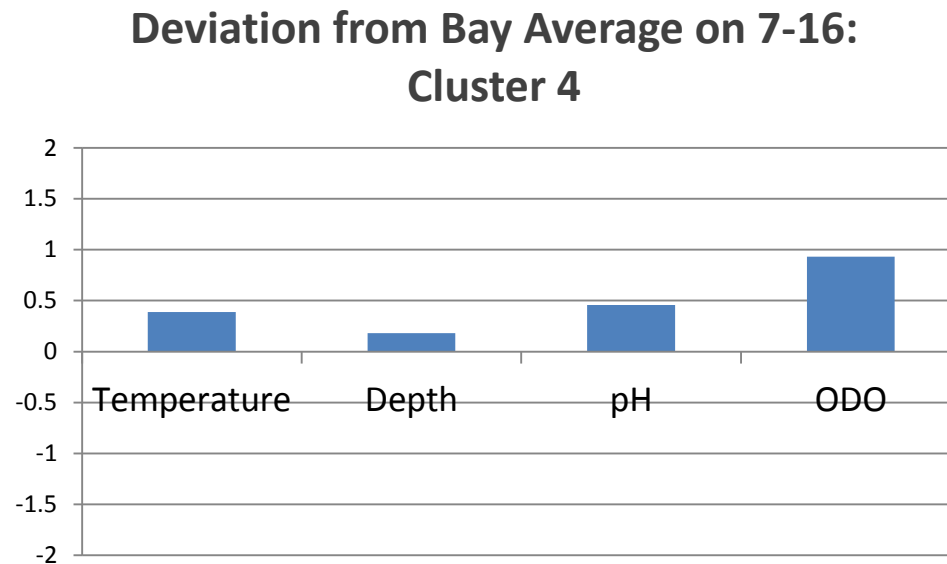


9-29



Physical characteristics of clusters compared to the rest of the Bay.

- Standardized values illustrate how far from average each cluster is.

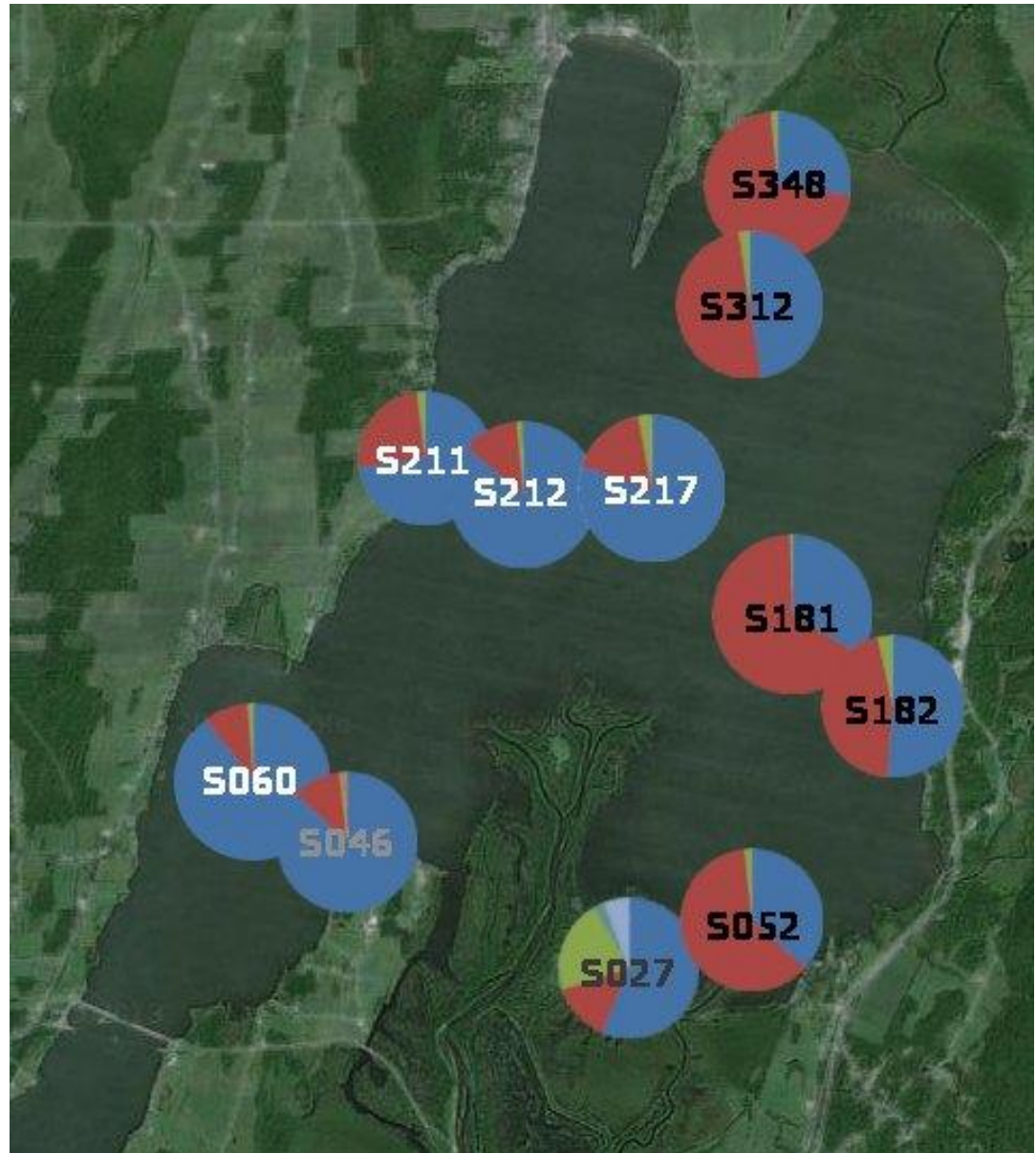


July 16

Overall diatom dominance

S027 is the most diverse

Little variation in total biovolume

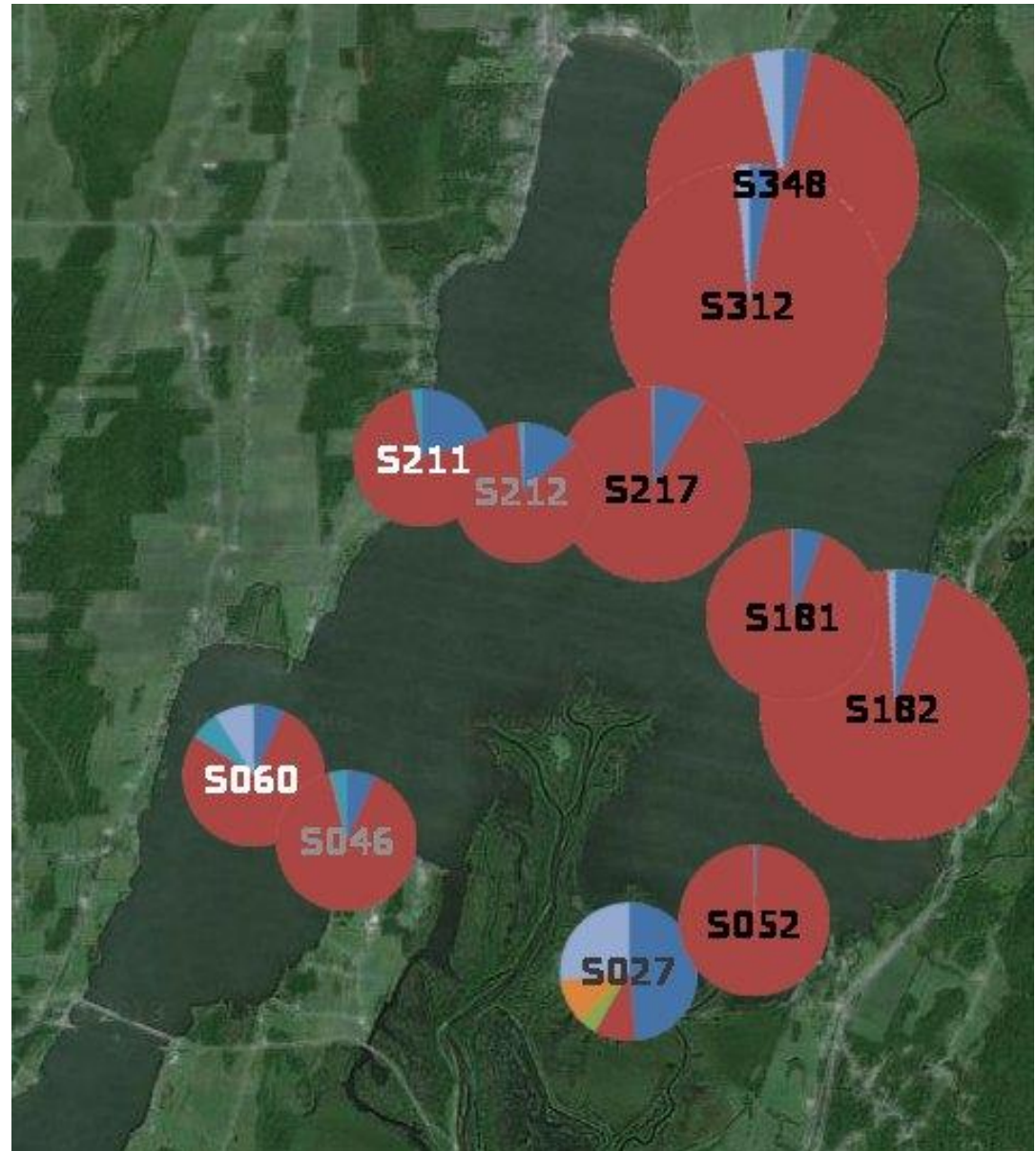


Aug 20

Major increase in cyanobacteria dominance

S027 the most diverse

Increase in biovolume

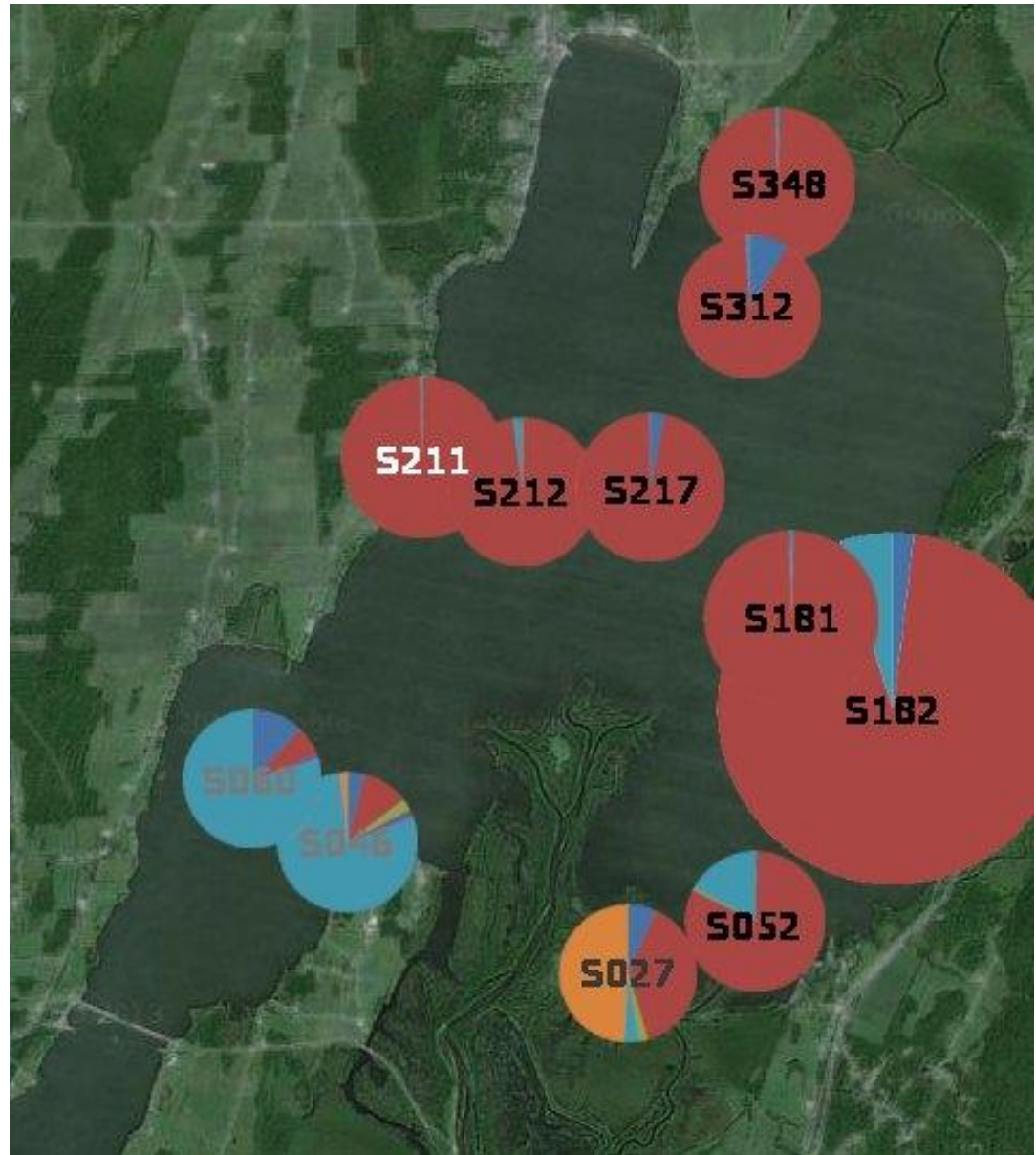


Sept 29

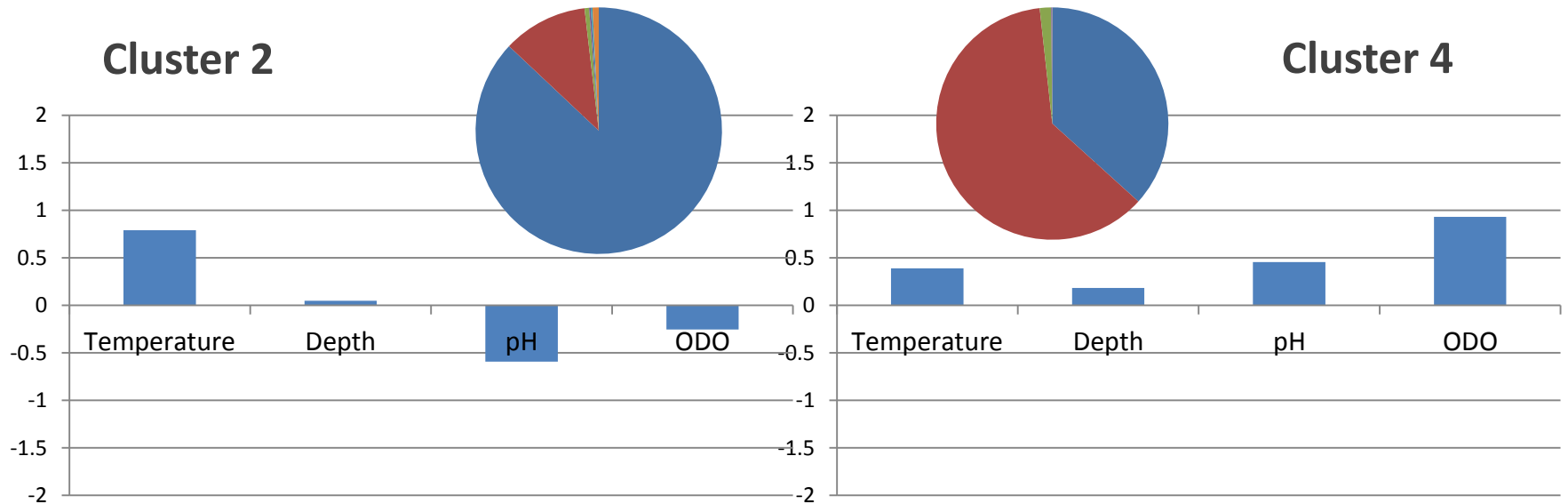
Most sites remain cyanobacteria dominant.

S027 still most dominant, but S046 and S060 also very diverse

Most sites decreased in total biovolume



No conclusive patterns between biovolume ratios and water qualities.



Cyanobacteria blooms threaten both ecosystem stability and human safety.

- Concentrations in the North and East remain the most extreme.
- Proximity to other water sources challenge cyanobacteria dominance.
- These trends can help predict high risk areas.

Special thanks

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