2013 Selected Limnological Features
Cayuga Lake, 1998-2012

- LSC monitoring program sites
- site 8 pelagic zone
- site 1, 3, 4, 5, 7 shelf sites
Whole Lake Monitoring Sites, 2013

- 9 in-lake sites
- 1 site in inlet near mouth
- 2 times per month, April-October
More Frequent South Monitoring Sites, 2013

- weekly
- June-September
Results: Long-term Lake Trophic State Metrics

- 1998 – 2012, from LSC monitoring
- Jun-Sept. avg.

<table>
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<tr>
<th>Year</th>
<th>Chl (µg·L⁻¹)</th>
<th>TP (µg·L⁻¹)</th>
<th>SD (m)</th>
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pelagic, LSC study
shelf, LSC study

1/15/2014
Relationships Between Trophic State Metrics

- 1998 – 2012, from LSC monitoring
- Jun-Sept avg.
- added 2013, pelagic = 3, shelf = 2

![Graph](image)

- Chl (µg·L⁻¹)
  - pelagic, 2013, site 3
  - shelf, shelf (site 2)

- TP (µg·L⁻¹)
  - pelagic, LSC study, site 8
  - shelf, LSC study, (sites 1,3,4,5,7)

- SD (m)

Year

1/15/2014

Upstate Freshwater Institute
Color Contour for Cayuga Lake: May 21, 2013

- upper lake waters
- turbidity inputs to site 4 area
- lower Chl$_{f}$
- before noteworthy stratification
Color Contour for Cayuga Lake: June 18, 2013

- upper lake waters
- evolving T stratification, longitudinally variable thickness (seiche activity)
- Chl₇ extends deeper than epilimnion
Color Contour for Cayuga Lake: June 25, 2013

- distinct seiche pattern for T, thicker epilimnion at north end
- resuspension signal at north end, high \( c_{660} \)
- variable Chl\(_f\) longitudinally, likely linked to seiche
Color Contour for Cayuga Lake: July 25, 2013

- seiche activity, with piling of epilimnion at the south end
- strong longitudinal structure in Chl$_f$
- elevated c$_{660}$ in south surface waters
Profiles for Cayuga Lake:
Sep. 17, 2013

- whole water column
- benthic nephloid layer (BNL) higher $c_{660}$ at bottom in deep area
- likely due to sediment resuspension
Longitudinal Patterns of Phosphorus Species

- study averages for surface waters
- highest at southern end
- mostly associated with PP
- greatest variability at southern end
- mid-lake minima
Longitudinal Patterns of Phosphorus Species

- study averages for surface waters
- veracity of this partitioning yet to be established
- highest at southern end
- greatest variability at southern end for PP and PIP
- less spatial differences for POP
- mid-lake minima

![Graph showing the distribution of PP, POP, and PIP at different stations across the lake](image)
Longitudinal Patterns of Phosphorus Species

- study averages for surface waters
- highest at southern end
- greatest variability at southern end
- mid-lake minima
Longitudinal Patterns of SD

- study averages
- greatest variability at mid-lake
- mid-lake maximum

* site 1 didn’t include dates with SD on bottom in avg. so may be bias false low

* depth at site less then 10m, max depths for these sites are approximately as follows; site 1 = 4m, site 2 – 7m, site 9 = 4m, and site I = 3m
Longitudinal Patterns of Chl\textsubscript{f}

- study averages for surface waters
- greatest variability at southern end
- north end minima
60m Lake P data vs. $\text{LSC}_{\text{eff}}$

- season average (April – Oct.)
- LSC intake depth at 73 m between sites 2 and 3
60m Lake P data vs. LSC\textsubscript{eff}

- season average (April – Oct.)
- LSC intake depth at 73 m between sites 2 and 3
80m Lake P data vs. LSC_{eff}

- season average (April – Oct.)
- LSC intake depth at 73 m between sites 2 and 3
Season average (April – Oct.)

LSC intake depth at 73 m between sites 2 and 3

generally consistent with lake-wide conditions
Frequent South

- Gradient extending from site 1 to site 3
- Sustain early July increase at site 3 pelagic
- Gradient extending from site 1 to site 3
Frequent South

- Decreasing gradient extending from site 1 to site 3
- No gradient
- Increasing gradient extending from site 1 to site 3

TP (%uP/L)

Chl (%uL/L)

SD (m)