

Leading indicators of cyanobacterial blooms in lakes

Chris Solomon

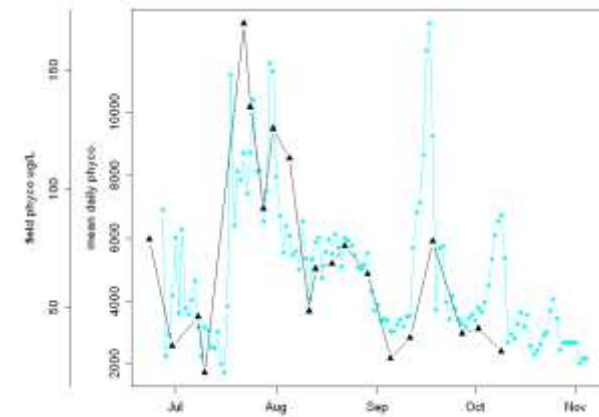
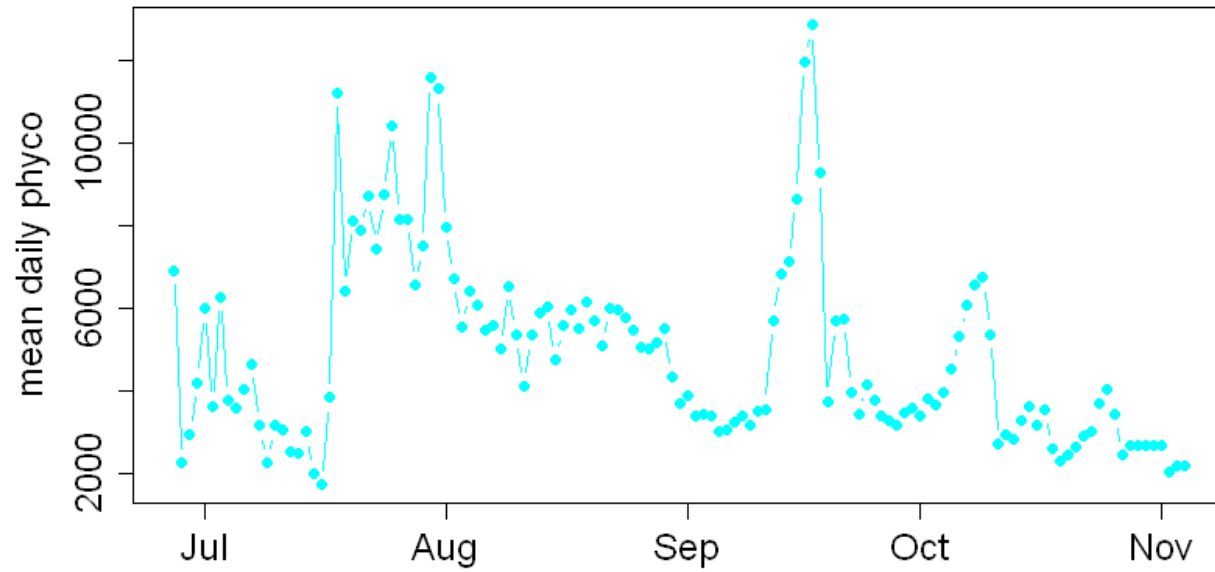
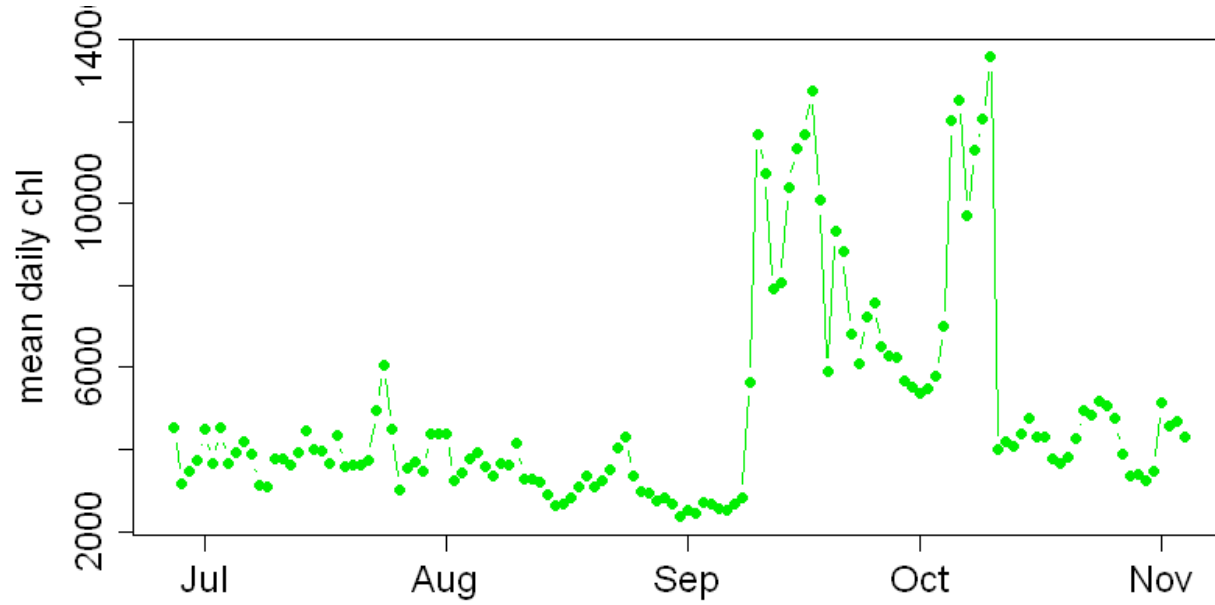
3 Feb 2009

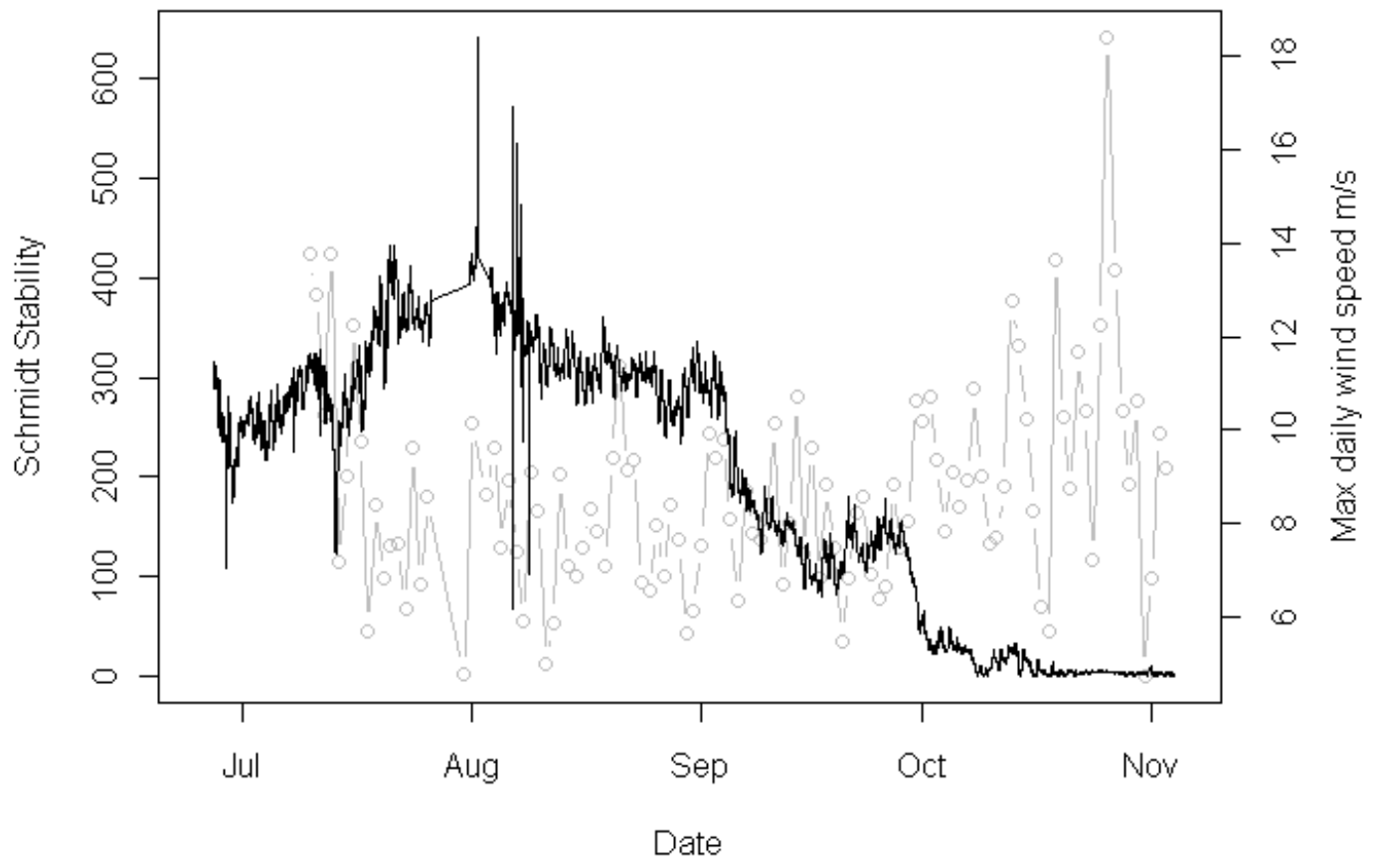
Regime shifts in ecosystems

- Regime shift: Rapid shifts to alternate stable states
- One example: Cyanobacterial blooms
- Interest in developing leading indicators
 - Changes in variability of system?



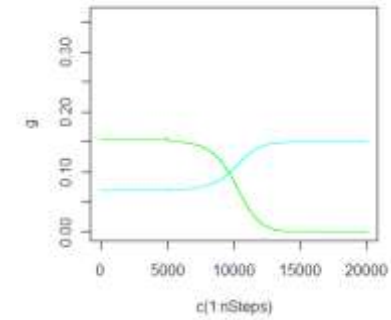
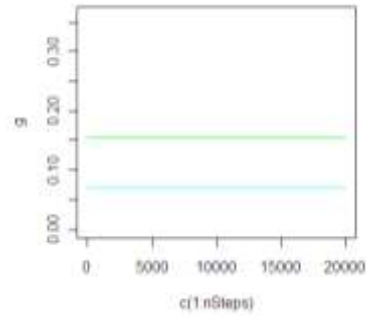
Lake Mendota – chl and phycocyanin





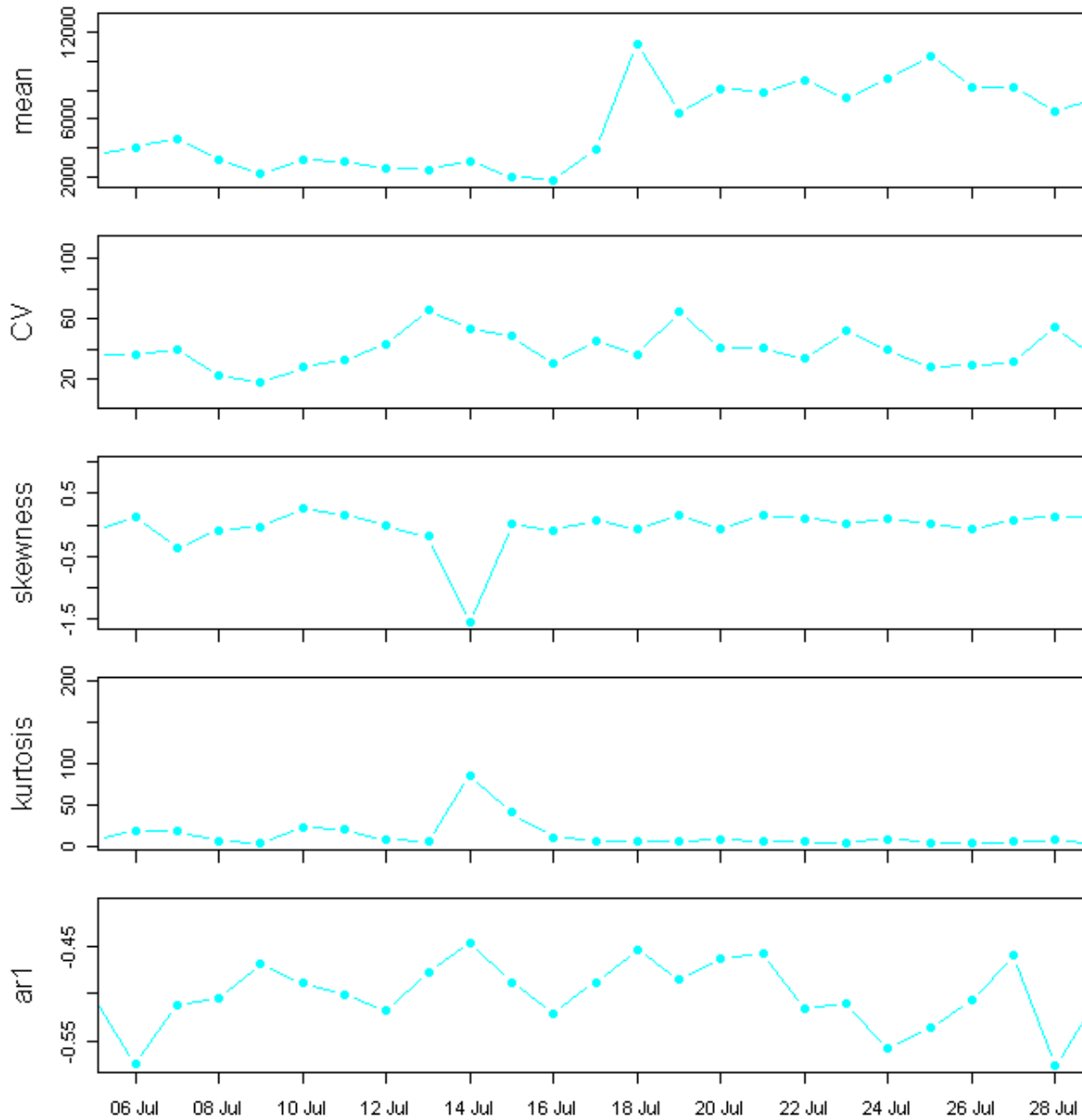
Two approaches

- Models

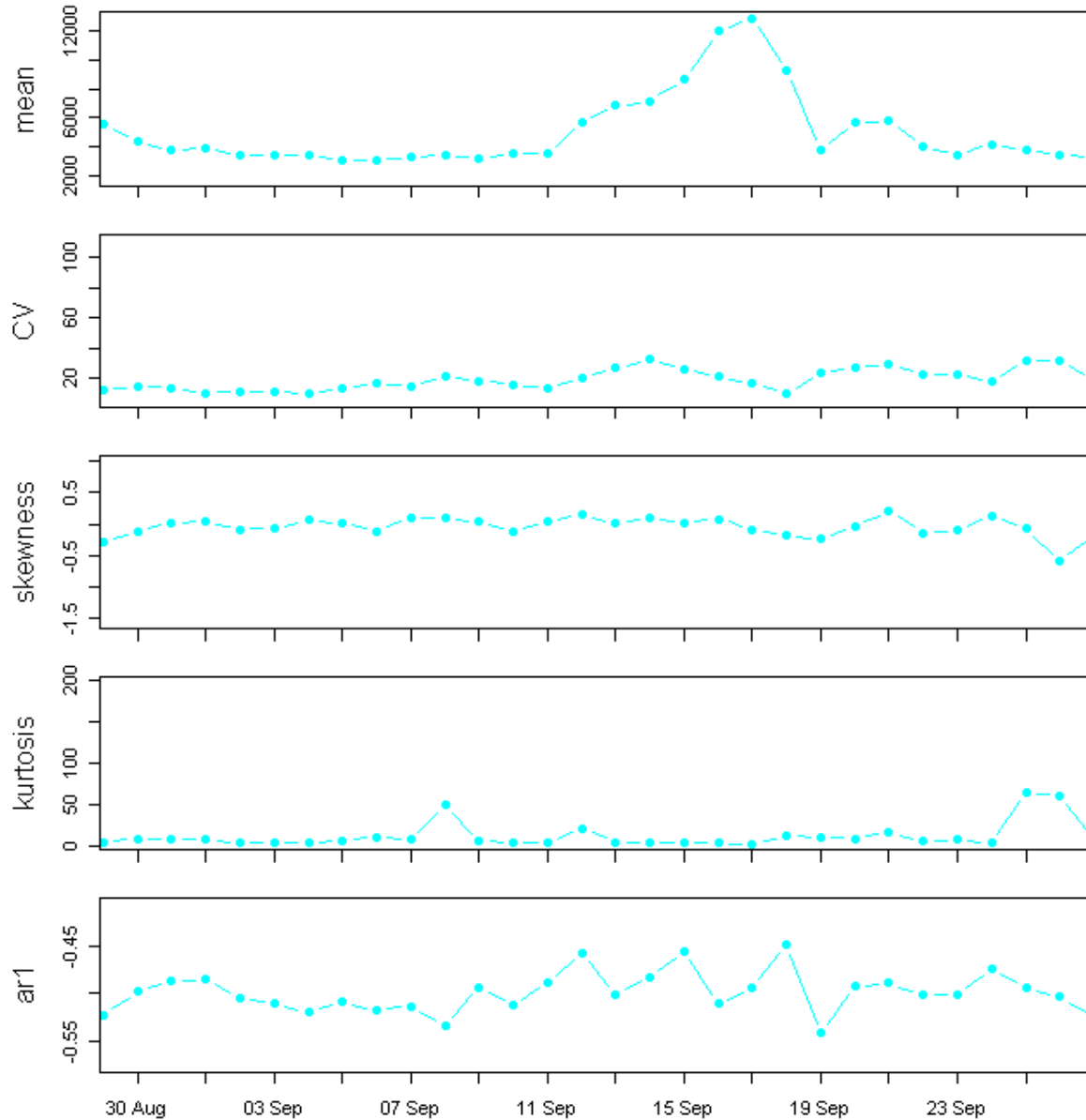


- Data

Leading indicators? – July bloom

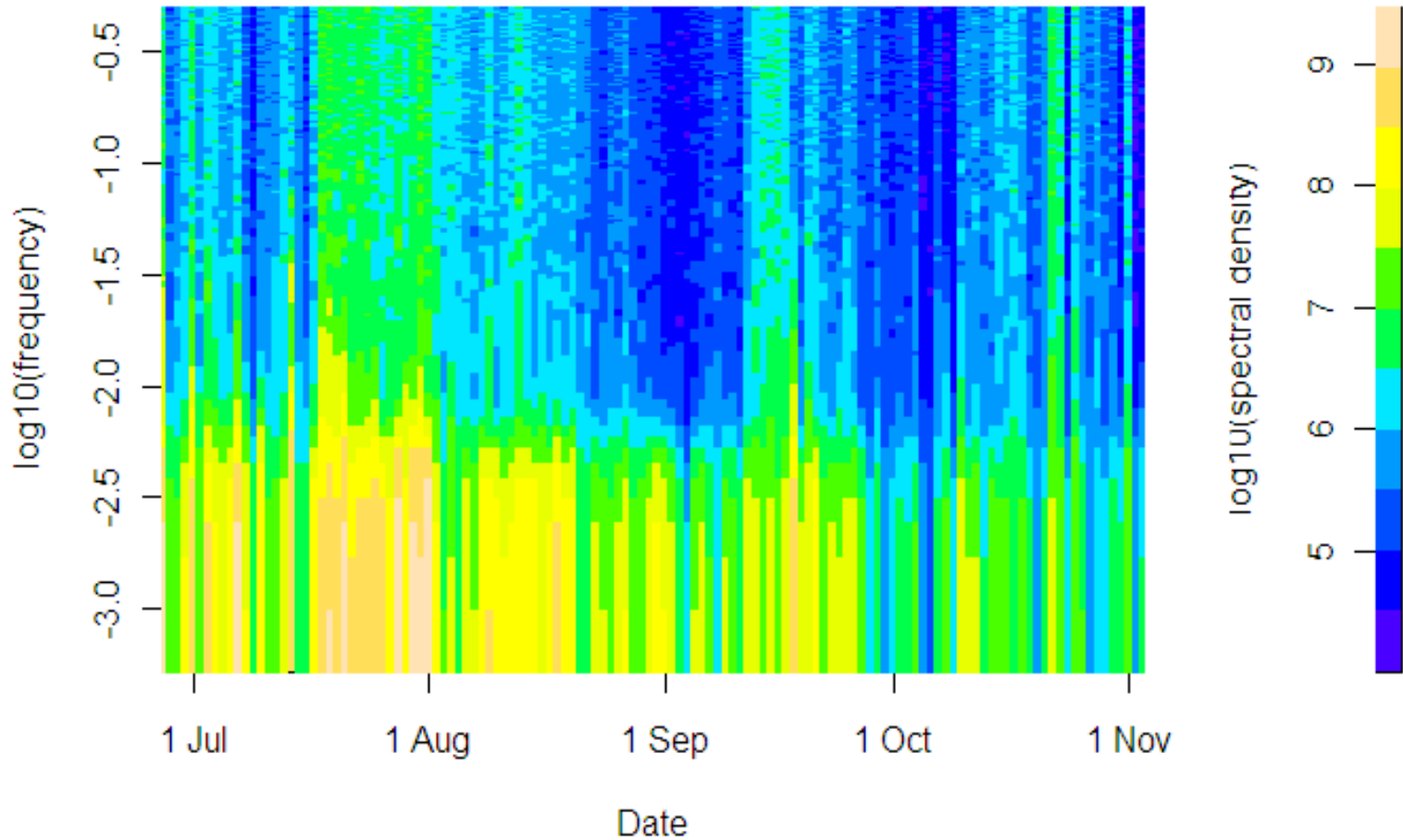


Leading indicators? – Sept bloom



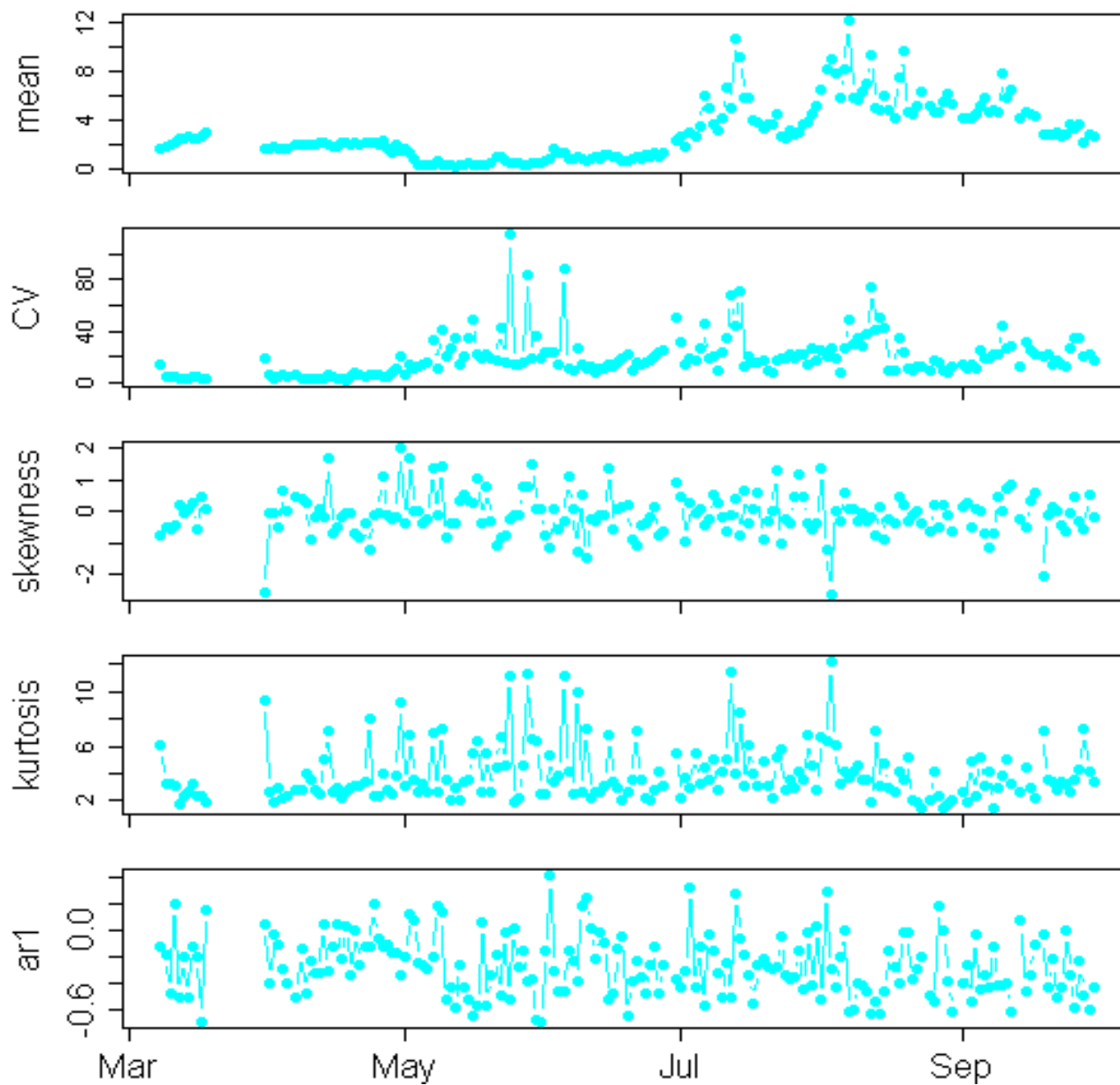
Lake Mendota

Phycocyanin spectral density



Muggelsee

2008



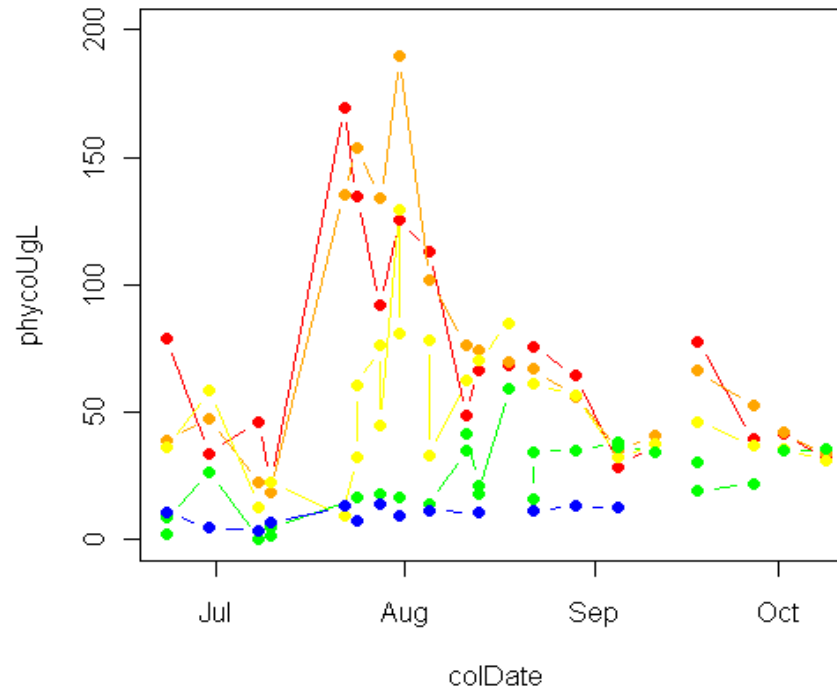
Next steps

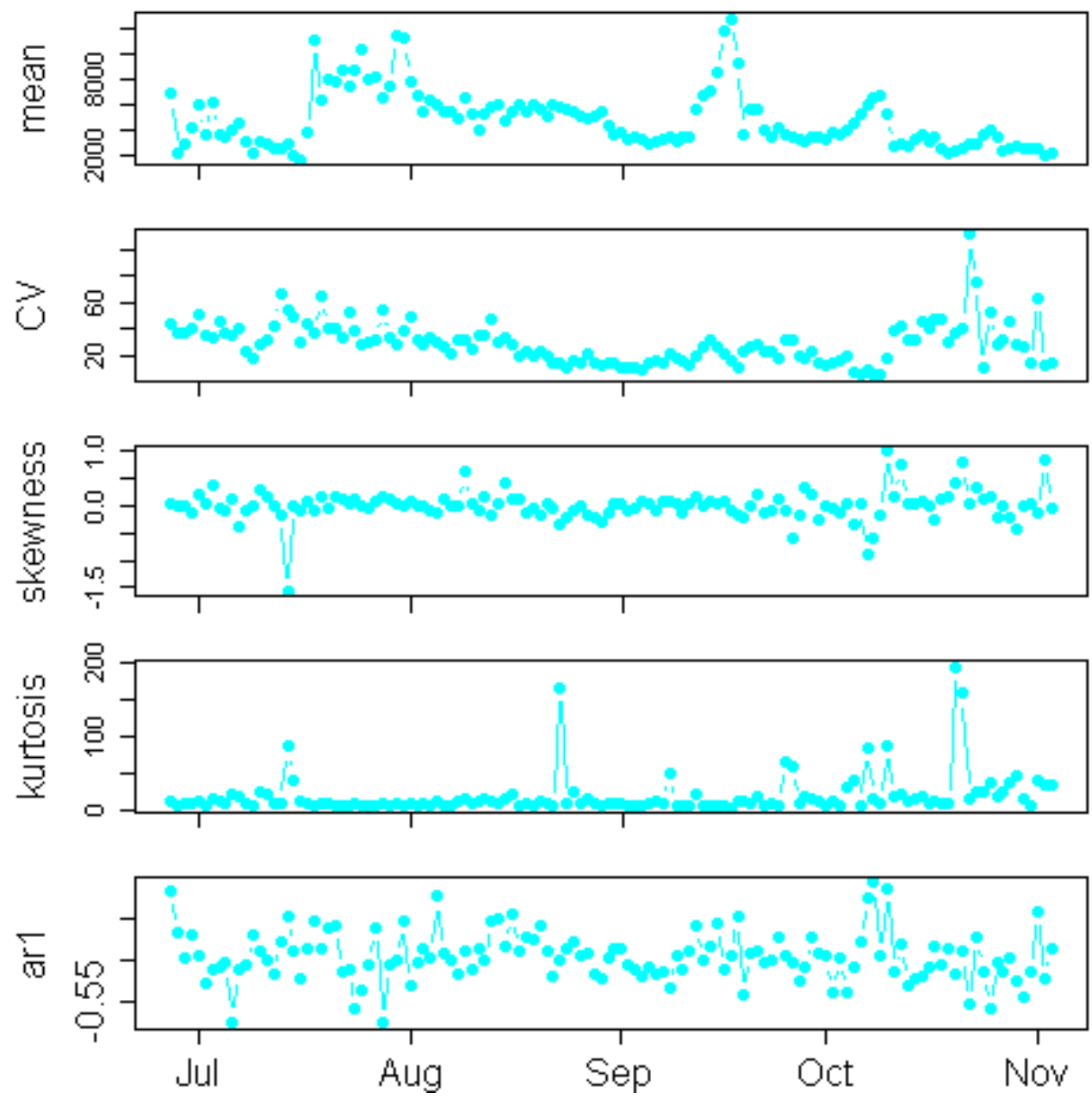
- Final data QA
- Models – what are expectations?
- Finalize analyses
- Additional lakes – high frequency measurements!

Mendota field phyco data

Field phyco data at different depths:

- red 0.4 m
- orange 2.0 m
- yellow 5-8 m
- green 8-13 m
- blue 20 m





Sensor issues 14 July?

