

MCM LTER webconf 20 Aug 2015

Attending:

Overarching Theme

Prelude –

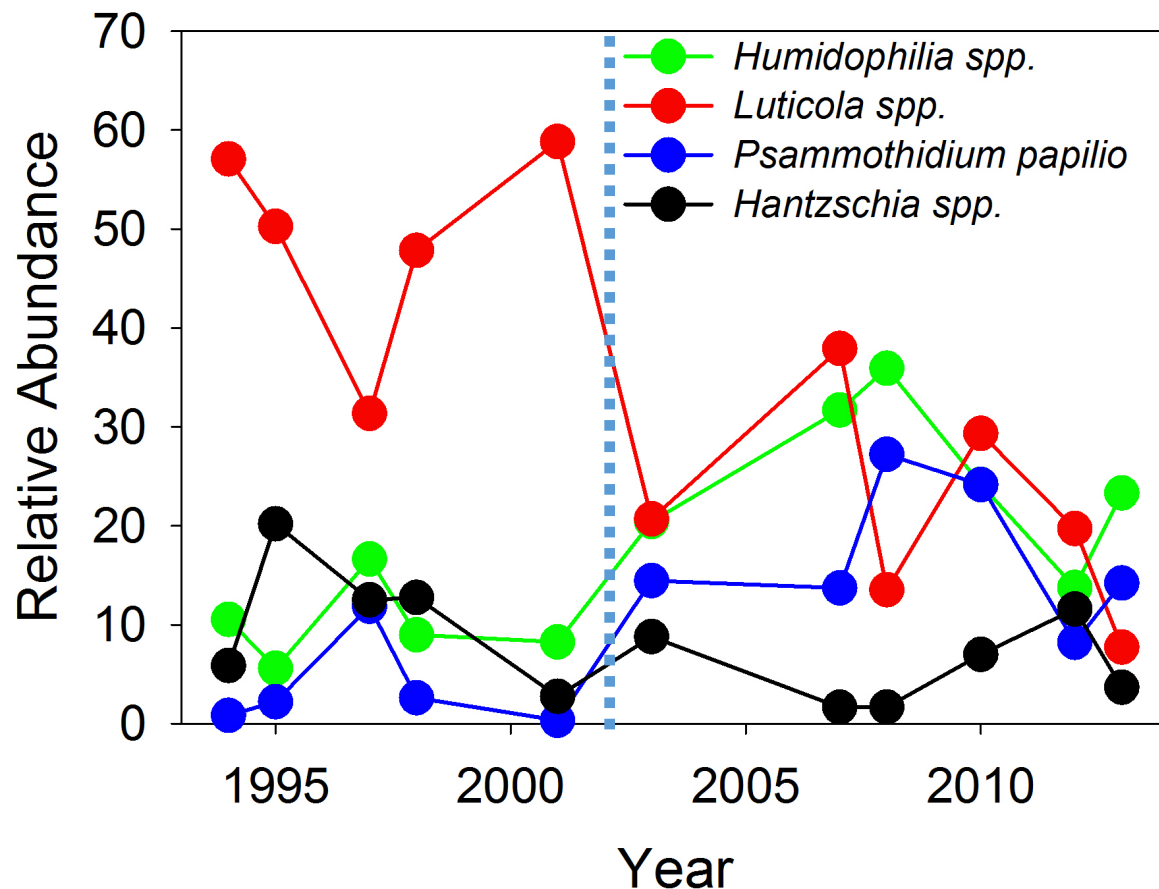
- system is very sensitive to abiotic controls
- after decades of *cooling press*, we have a decade (plus) of *warm pulses*
 - Lake levels were falling → lake levels rising
 - Soil invert populations decreasing → stable/increase
 - Streamflow decreasing pattern → streamflow mean increase, with less trend
 - PPR smooth decline in lakes → jumpy pattern
- Warming will not be a smooth increase, so we need to probably focus on the pulse responses.

Overarching Theme

- How does the MDV ecosystem respond to pulses?
- What's the response time of soils, lakes, streams to a pulse?
- Are interfaces more sensitive to pulses than the landscape units (i.e., moats vs. lakes)?
- Elemental cycling responses? C, N, P these cycles are good integrators of physical and biological processes (structure & fn)

New Stuff Coming to Light...

→ Stream *diatom community shifts*



These results are for Green Creek.

--Note that *Luticola* drops off after the flood year and *Humidophilia* and *Psammothidium* take off after the flood.

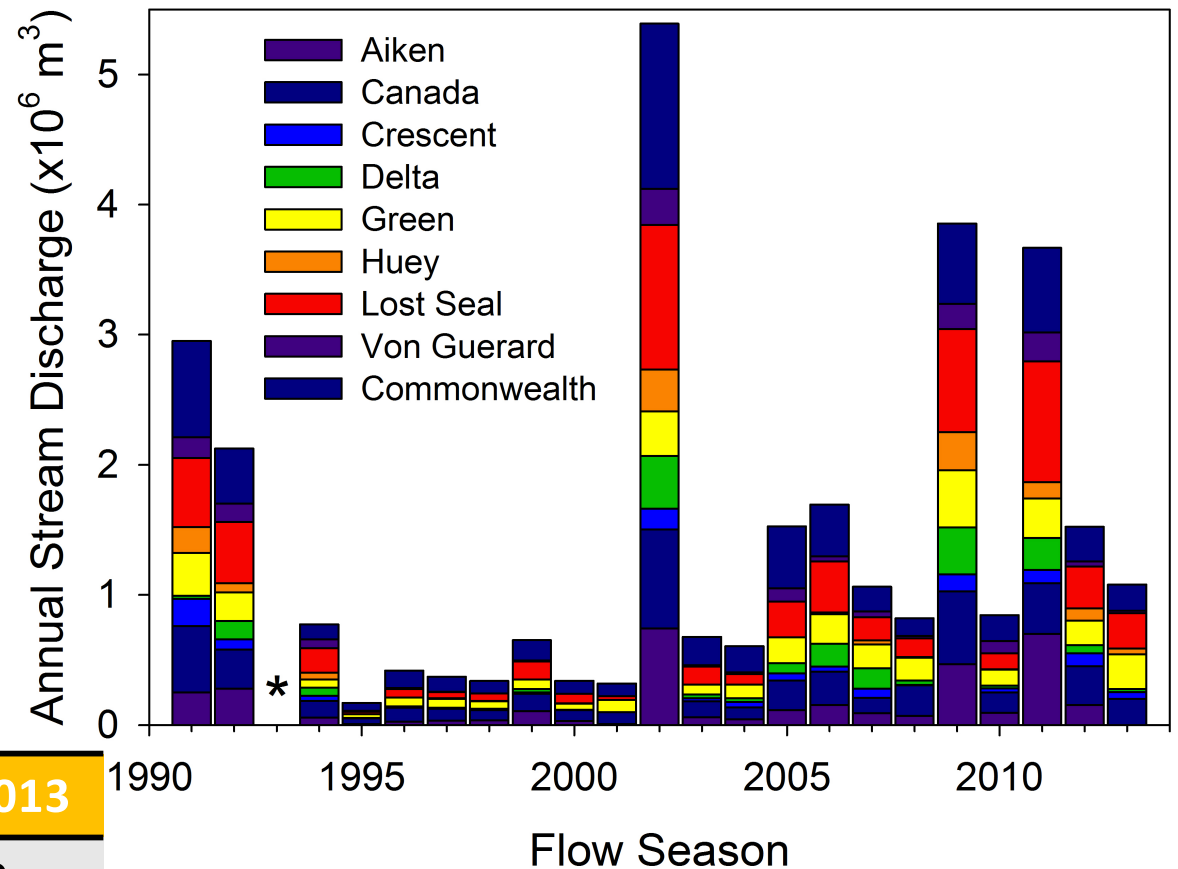
-- Good example of community shifts dependent on physical processes

New Stuff Coming to Light...

→ *Annual meltwater variance*

As I mentioned in the email from last weekend...

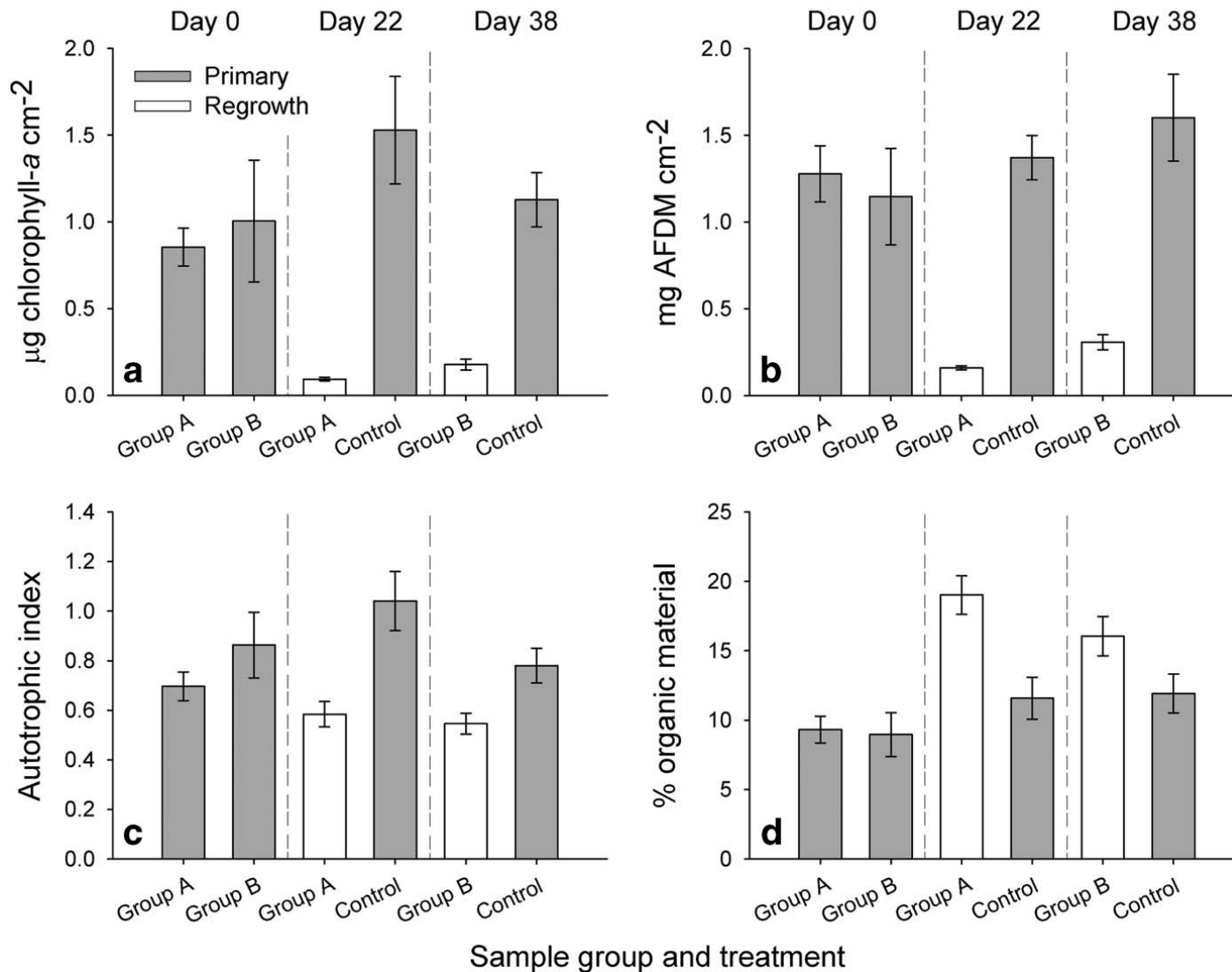
Updated re-analysis



$\times 10^6 \text{ m}^3$	1990-2001	2003-2013
Annual Mean	0.85	1.59
Std Deviation	0.93	1.13
Variance	86	128

And, if you scour mats in the stream channels...

Rock regrowth and controls over a summer



- Tyler Kohler's new *Ant. Sci.* paper...

Fig. 5. Biomass as a. chl a, b. ash free dry mass (AFDM), c. autotrophic index (AI = chl a:AFDM) and d. the percent organic material for each group of rocks and associated controls for the 2012–13 summer. Grey bars indicate the primary samples and white bars indicate regrowth. Samples are arranged by date. Error bars indicate standard error.

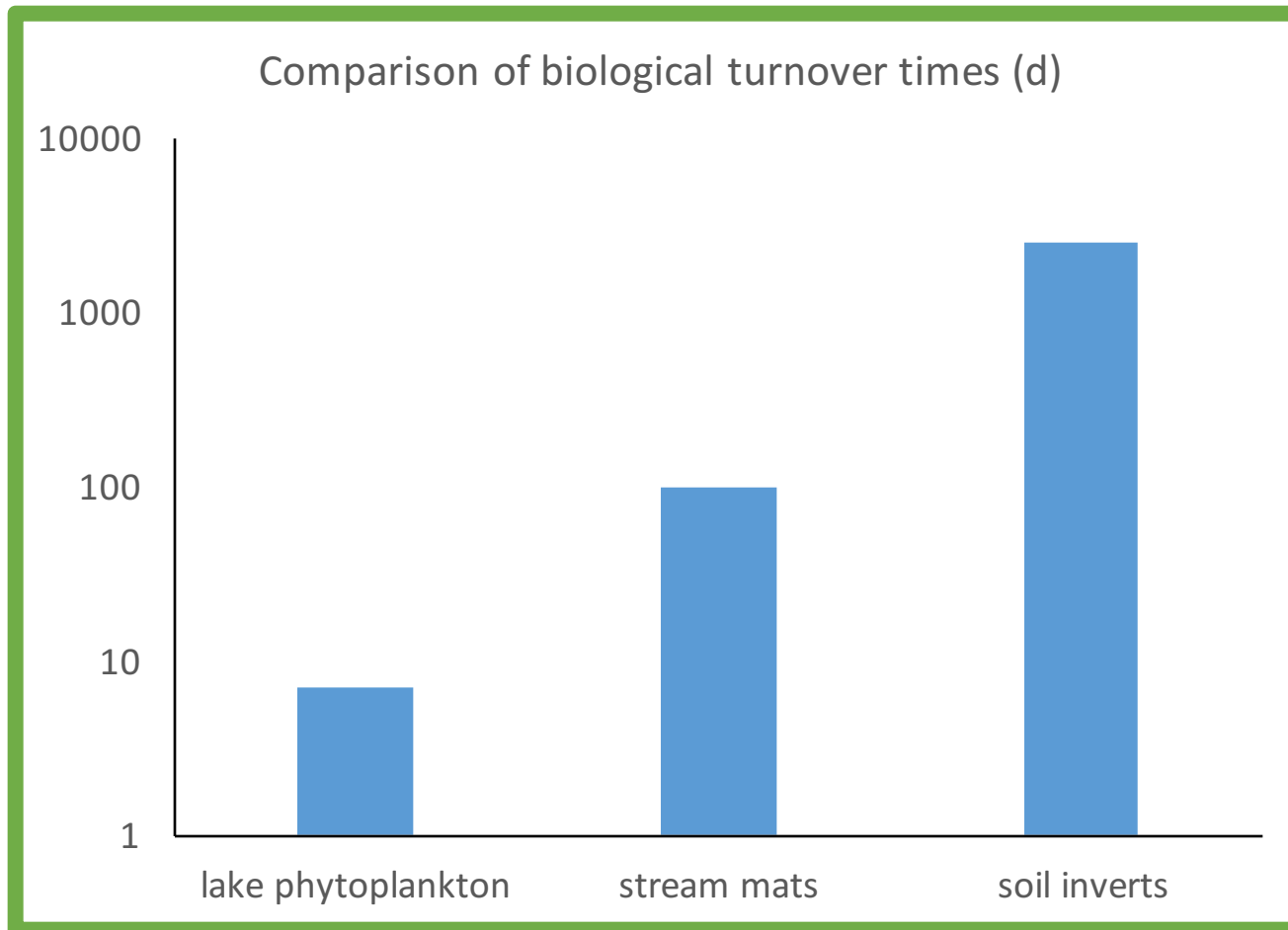
JP's new idea

- Test the following hypothesis (could be null)
“ecosystem processes are controlled from the top down during a press but more bottom up during a pulse”
 - In lakes, for example, floods may introduce nutrients but may also eliminate top-down effects...
 - *Do we have some data to support this?*
- Firstly, is this compelling to everyone?
- Can we demonstrate ‘top-down’ controls from the cooling period?

JP's other (related) idea

- *“If floods become more frequent, MCM will never reach an equilibrium state.”*
- Were we in an equilibrium state during the cooling period? How do we define?

Is 'stability' related to biological turnover?



- 1) Lakes: 7 days (personal communication w/JP during some discussion in the past)
- 2) Streams: 1%/day (so, 100 days, estimated from Tyler's new paper)
- 3) Soils: 7 years (personal communication w/Byron during some discussion in the past)

Spectra of Stability

→ structure & function?

