Climate Sentinels Working Group: G16 Participants (N = 34)

Sommer	Abdel-Fattah
Orlane	Anneville
José Fernandes	Bezerra Neto
Ludmilla	Brighenti
Sudeep	Chandra
Chih-Yu	Chiu
Elvira	de Eyto
Lisa	Doner*
Bruce	Hargreaves
Amy	Hetherington
Peter	Isles
Jean Philippe	Jenny
Ismael	Kimirei
Lesley	Knoll
Alfred Theodore	Kpodonu
Benjamon	Kraemer
Stephanie	Melles
Karen	Moore
Valerie	Ouellet
Melanie	Perello
Gerardo	Perillo
Patricia	Pernica
Don	Pierson*
Rachel	Pilla*
Dave	Richardson*
Nihar	Samal
Carina	Seitz
Hilary	Swain
Nora	Theodore
Jeng-Wei	Tsai
Theresa	Warner
Gesa	Wehenmeyer
Craig	Williamson*
Jacob	Ziegler

** People leading or co-leading projects*

Climate Sentinels Working Group G16 Final Summary
Active Projects

1) **Temperature Sentinels Across the Globe Project** (Geographically Extensive)
   (Rachel Pilla, Craig Williamson; pillarm@miamioh.edu, craig.Williamson@miamioh.edu)

2) **Temperature Sentinels the Northeast USA Project** (Regionally Intensive)
   (David Richardson, richardsond@newpaltz.edu)

3) **Long-term Dissolved Oxygen (DO)**
   (Lesley Knoll, Craig Williamson, knolllb@miamioh.edu, craig.Williamson@miamioh.edu)

4) **Importance of Winter Streamflow to Phytoplankton**
   (Don Pierson dpierson@dep.nyc.gov)

5) **Sediment Processes Project: Combining Lake Geology and Biology**
   (Lisa Doner, Jean-Phillipe Jenny) ladoner@Plymouth.edu jphilippe.jenny@gmail.com)

Long-term changes in thermal structure in lakes across the globe

Rachel Pilla (pillarm@miamioh.edu) & Craig Williamson

1) How have lakes across the globe changed in their thermal structure (epilimnion, hypolimnion, and stratification)?
   - Are there regional "hot spots" of lakes across the globe that better reflect climate change (e.g. warming) and teleconnections (e.g. ENSO) compared to local drivers or individual characteristics of lakes (e.g. land use change, morphometry)?

2) Request for long-term temperature profile data (by end of December 2014)
   - Minimum of 15 years
   - Single temperature profile yearly during time of maximum thermal stratification
   - Lake metadata

Lakes as sentinels in Northeast US: thermal indicators of climate change and teleconnections

Question 1: Are the differences in depth, size, and transparency going to make more effective sentinels of climate change?

H1: Stronger signals in the tranparent lakes

H2: Stronger signals in big, deep lakes

Question 2: Does distance from the coast effect the impact of teleconnections on lake thermal structure?

H3: Coastal lakes will have higher synchronous periodicity with NAO and other teleconnections

Long-term Dissolved Oxygen Trends Project

Co-leaders: Lesley Knoll and Craig Williamson
lesley.knoll@lacawac.org

- Project question:
  - How are summer oxygen dynamics responding to climate change in lakes with sub-epilimnetic oxygen peaks and stable land use?
- Data request:
  - 15+ years of dissolved oxygen/temperature profiles
    - Request profile during maximal stratification
  - Lakes with stable land use over data time period
  - Lakes with sub-epilimnetic oxygen peaks
  - Lake metadata

Long-term dissolved oxygen trends

Co-leaders: Lesley Knoll and Craig Williamson
lesley.knoll@lacawac.org

- Data and metadata received by December 12th
- Skype call late January after initial data assessment

Examining the Importance of Increasing Winter Streamflow on Lake Phytoplankton

Don Pierson, Lesley Knoll, Karen Moore, Amy Hetherington, Peter Isles, Bruce Hargreaves, Lorraine Janus, Sommer Abdel-Fattah, Beverley Wemple

All Welcome!.

Hypothesis: Changes in the timing of Spring runoff, with more runoff occurring in the winter and early spring, will lead to reduced productivity and phytoplankton biomass during the summer stratified period.

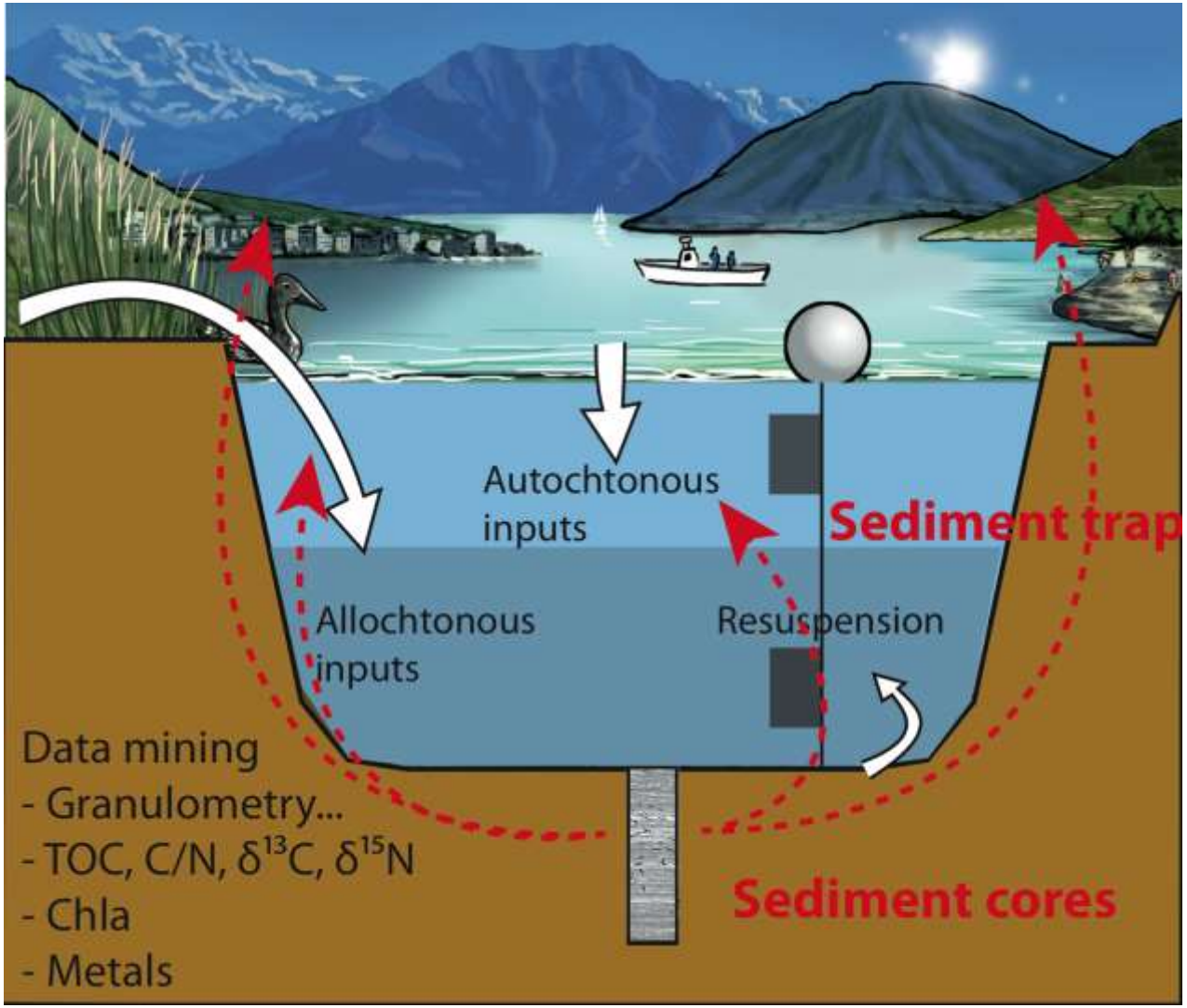
Actions:

- Poll GLEON membership for interest – Nov 2014
- Develop survey on data availability – Dec 2014
- Begin to collect data and develop data base Jan 2014 - future

Data Requirements:

- ***Geographical Location***
  - NE USA, Canada, Scandinavia
  - Not influenced by high mountain snow
  - Stable land use
- ***Lake data requirements***
  - Data from 1990 or earlier – multiple samples/yr that at least cover stratification
  - Measurement of Chlorophyll profiles at least during summer stratification and/or
  - Measurements of hypolimnetic O2 at onset and loss of summer stratification
  - Basic lake info – depth, residence time, water color, watershed area etc.
  - Optional – Total and dissolved N&P, ice cover phenology
- ***Stream data requirements***
  - Stream gauge on major lake inflow or nearby gauge that can be used to index inflow
  - Data from at 1990 or earlier
  - Not influenced by upstream impoundments.

Sediment Processes – combining lake geology and biology



Trap sediments:
"the short term prospective"

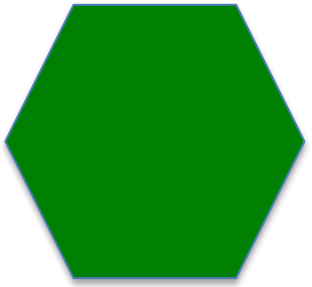
Core sediments:
"the long term prospective"

Sediments reflect lake temperature, productivity, carbon cycle, pH, redox state, plankton and microbiome compositions, watershed fluxes, particulate chemistry, atmospheric deposition (ie mercury)

Our aim: to better understand climate effects on lake systems by integrating lake sediment records with GLEON sensor records.

We welcome:

1. contribution of existing sediment data
2. contribution of existing material from traps and cores
3. collaboration in setting up new traps/core collection



Next steps:

- Collect published data on sediment accumulation rates on large spatial scales (in progress). Modeling relation between lake sediment fluxes and watershed properties (Links with LAGOS's project)
- Collaborate with SAFER in a North/South American hemisphere transect linking climate sentinel datasets in modern and paleo sediments

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