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

<table>
<thead>
<tr>
<th>Sommer</th>
<th>Abdel-Fattah</th>
<th>Karen</th>
<th>Moore</th>
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<td>Orlane</td>
<td>Anneville</td>
<td>Valerie</td>
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<td>José Fernandes</td>
<td>Bezerra Neto</td>
<td>Melanie</td>
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<td>Ludmilla</td>
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<td>Sudeep</td>
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<td>Chih-Yu</td>
<td>Chiu</td>
<td>Don</td>
<td>Pierson*</td>
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<td>Elvira</td>
<td>de Eyto</td>
<td>Rachel</td>
<td>Pilla*</td>
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<td>Lisa</td>
<td>Doner*</td>
<td>Dave</td>
<td>Richardson*</td>
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<td>Bruce</td>
<td>Hargreaves</td>
<td>Nihar</td>
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<td>Amy</td>
<td>Hetherington</td>
<td>Carina</td>
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<td>Peter</td>
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<td>Hilary</td>
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<td>Jean Philippe</td>
<td>Jenny</td>
<td>Nora</td>
<td>Theodore</td>
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<td>Ismael</td>
<td>Kimirei</td>
<td>Jeng-Wei</td>
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<td>Lesley</td>
<td>Knoll</td>
<td>Theresa</td>
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<td>Kpodonu</td>
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<td>Benjamon</td>
<td>Kraemer</td>
<td>Craig</td>
<td>Williamson*</td>
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<td>Stephanie</td>
<td>Melles</td>
<td>Jacob</td>
<td>Ziegler</td>
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* 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 transparent 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.
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