Lake Metabolism Working Group

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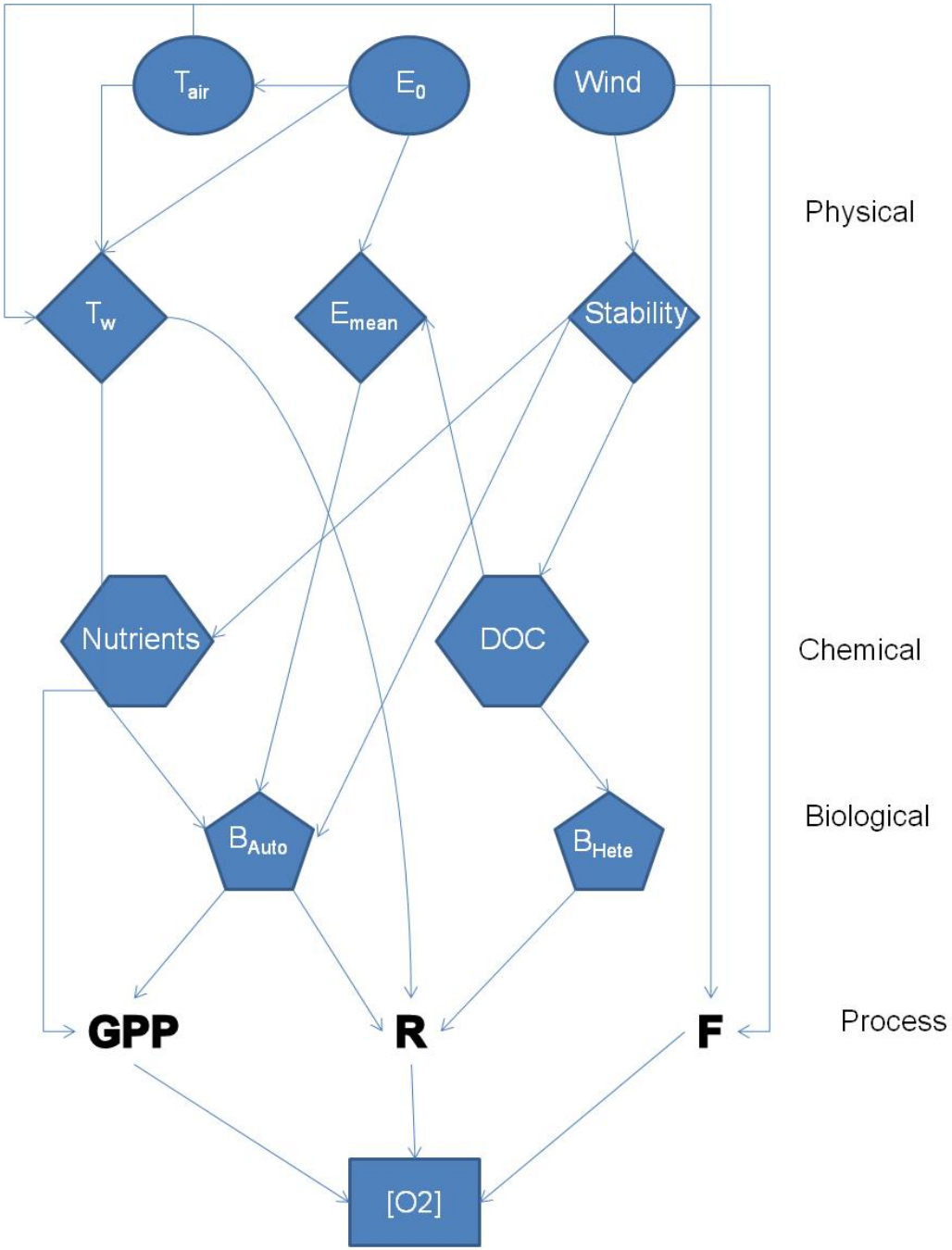
Metabolism models across lake gradients

Goal

- Comparison of high frequency metabolism models across environmental gradients.

Gradients

- Latitudinal
- Trophic status
- Stability
- Lake Size
- Watershed area
- Water clarity
- Depth

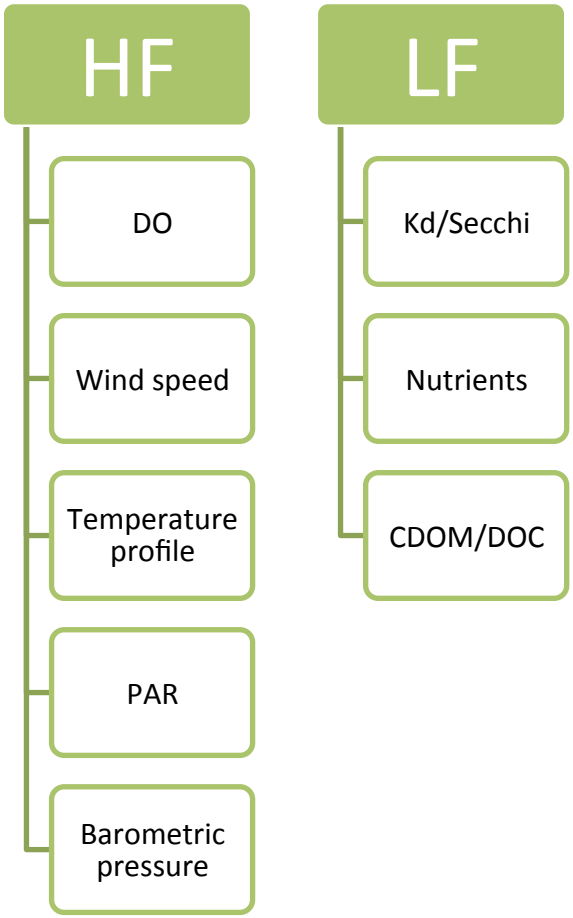

T_{air}
E_0
Wind
Physical
T_w
E_{mean}
Stability
Nutrients
DOC
Chemical
B_{Auto}
B_{Hete}
Biological
GPP
R
F
Process
[O2]

$$\Delta DO = GPP - R - F + \varepsilon$$

R	GPP	Flux
• Temperature • Photohistory • [DOC/POC]	• Linear function of PAR • Light saturation • Photoinhibition	• Wind speed • Cooling • Heating

Datasets

- Lakes around the globe



Timeline

- November: select the models
- December: request data
- Dec/2013 - March/2014: collect data
- Apr-Aug/2014: analyze data
- G16: draft outline of the paper

The coupling of O2 and CO2 dynamics in lakes

Empirical observation: at times oxygen and CO2 dynamics seem to be coupled and there are times where a dramatic decoupling occurs

Goals/Questions

- Assess/identify periods where the uncoupling occurs
- Explore some underlying processes: What are the drivers and are these drivers common to the lakes where this observation occurs?
- Is this a systematic feature of lakes?

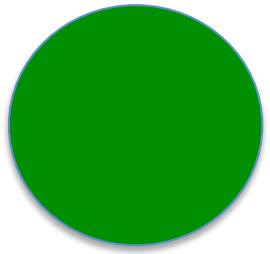
Objective

- Who can supply high frequency data?
  - O_2/pCO_2
  - O_2/pH
  - O_2/DIC or HCO_3
- Measurements from no less than 10 days to 1 season/year

Timeline

- Data Requests at end of November
- Data Collection: 4 months, aim for end of March
- Skype 1st week of April
  - Share and divide responsibilities
  - How will we analyze the data
- Data Analysis complete for GLEON 16
  - Results and comparison between data sets

Lakes in the Catchment



Who: Paul Hanson, Samantha Oliver, Tom Harmon, Jessica Corman, Roxanna Ayllon, Luciana Brandao, Laura Gagliardi, Carlos Yarzun, Brian Reid, Eliane Elias, Jose Fernandez, Federico Quintans, Lucy Crockford, Denise Bruesewitz, Beverley Wemple, Vijay Patil, Jake Zwart, Rick Hooper, Facundo Scordo, Margaret Dix, Vicky Veerkamp, Katie Weathers

Is there a signal linking flood/storm pulse and in-lake processes (metabolism, state changes – temp vs oxygen) across a gradient of catchment size and catchment connectivity?

Working towards developing a manuscript

Timeline

Data acquisition: Initial focus on Solomon et al. sites, may expand to more sites. Initial data requests by end of November

Literature context: Outline by end of December

Group coordinators: Tom Harmon, Brian Reid, Denise Bruesewitz