

Examining the connection between microbial respiration and carbon biogeochemistry

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Geomicrobiology: Why is this important?

- ◆ Why are we concerned about environmental microbes?
 - ◆ Decomposition of matter
 - ◆ Bioremediation (industrial to septic systems)
 - ◆ Driving biogeochemical cycles

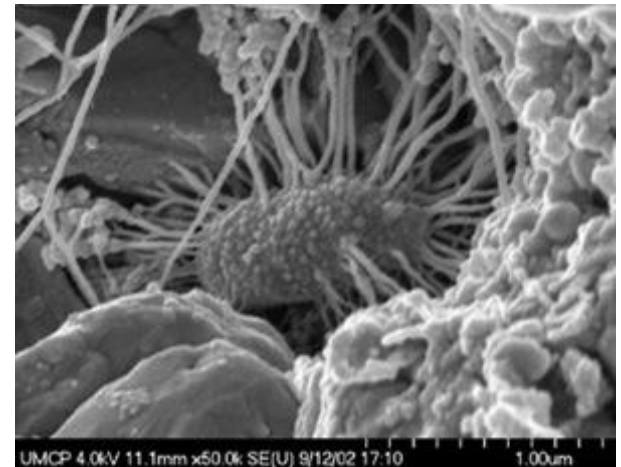
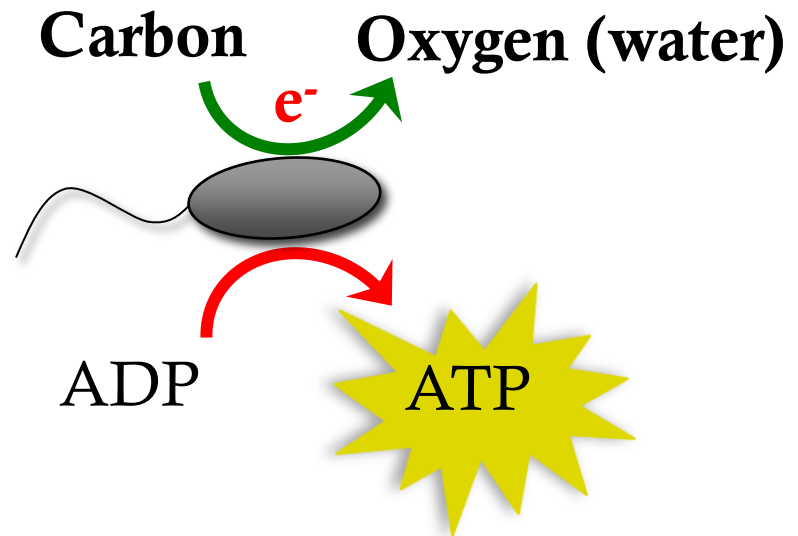


Image from S. Lower

What role does lake stratification play in microbial community metabolism?

- ◆ Lake stratification is a well known phenomenon
- ◆ Dissolved oxygen also stratifies but what about carbon?
 - ◆ Carbon is an electron donor
 - ◆ Oxygen is an electron acceptor



Sampling locations

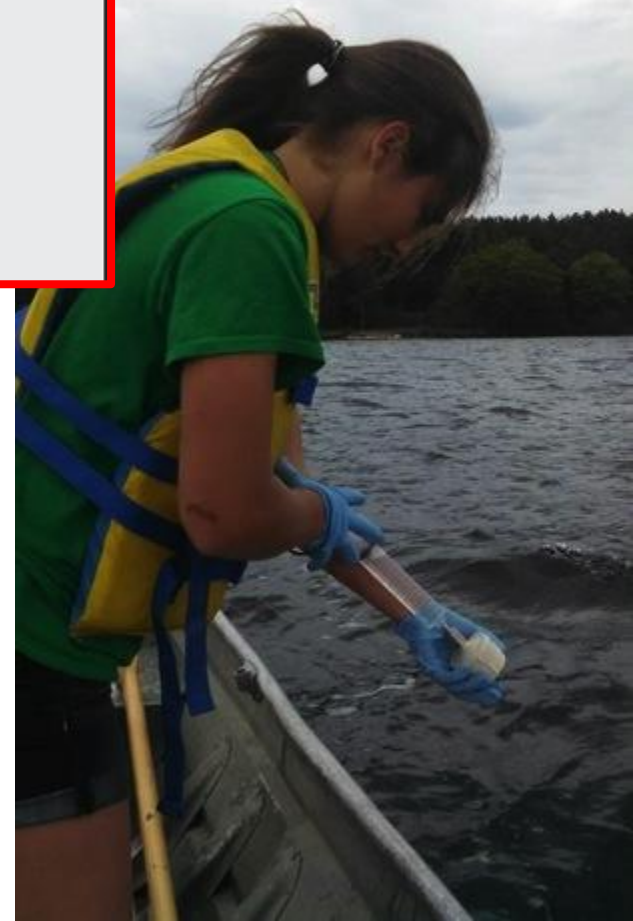
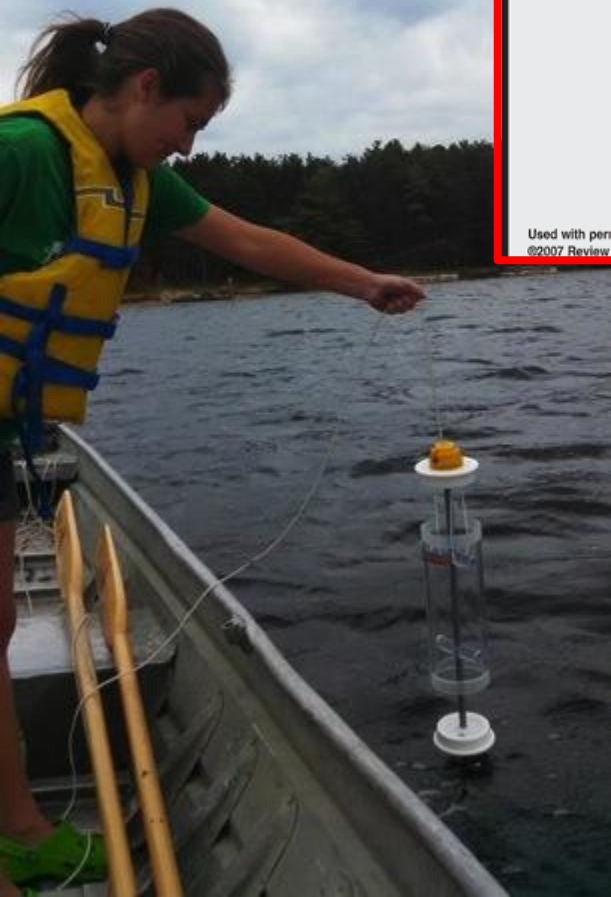
Beaver Island



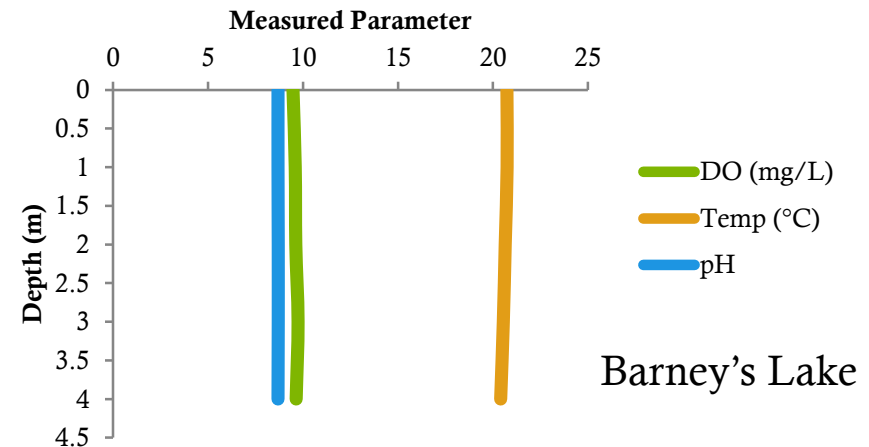
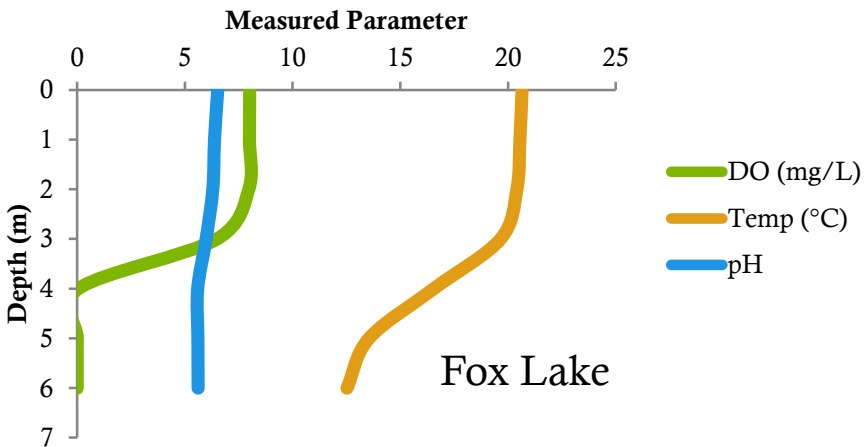
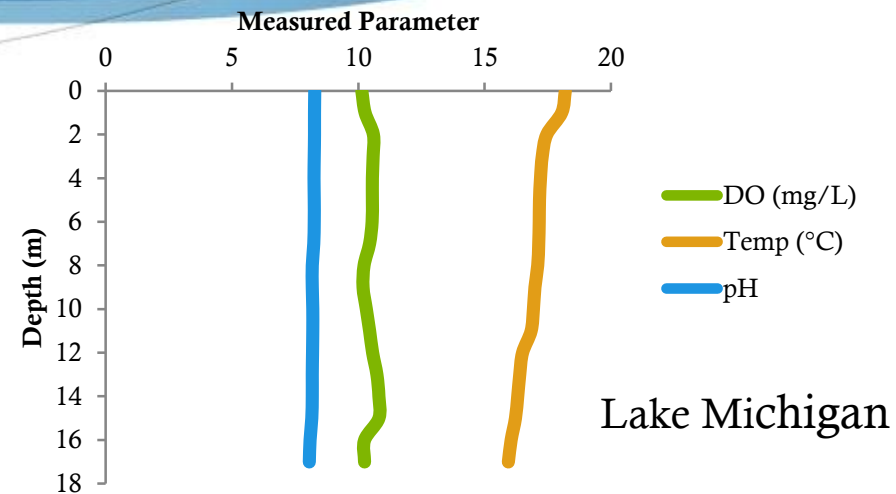
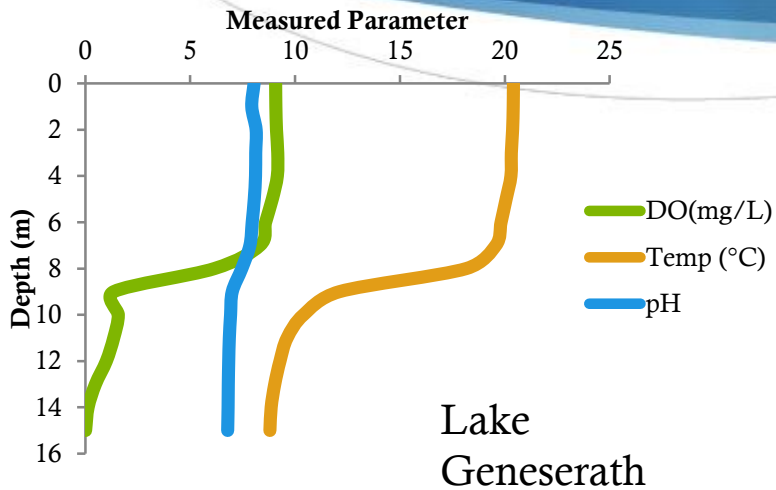
Lake Michigan



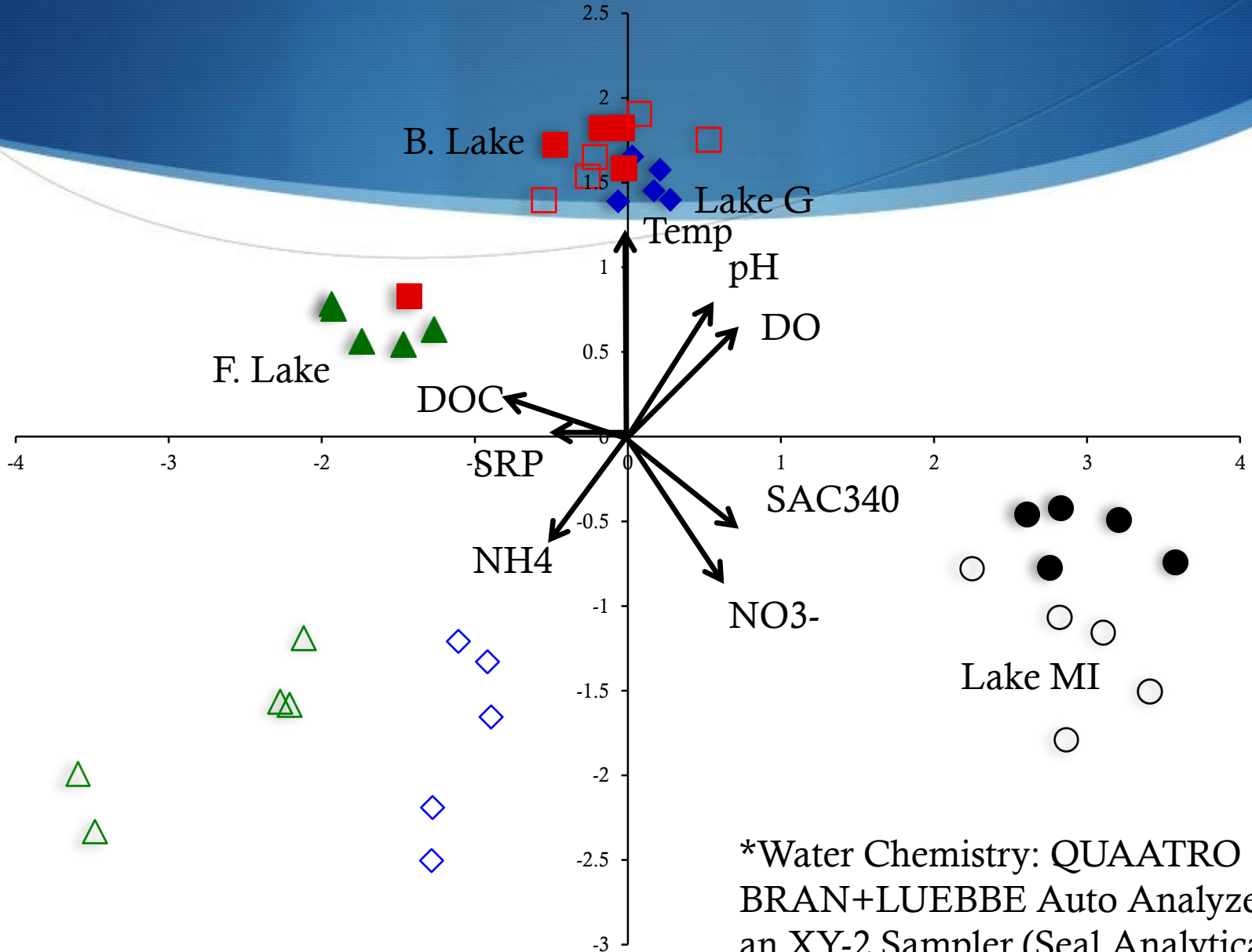
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Stratification and anoxic conditions developed in two lakes

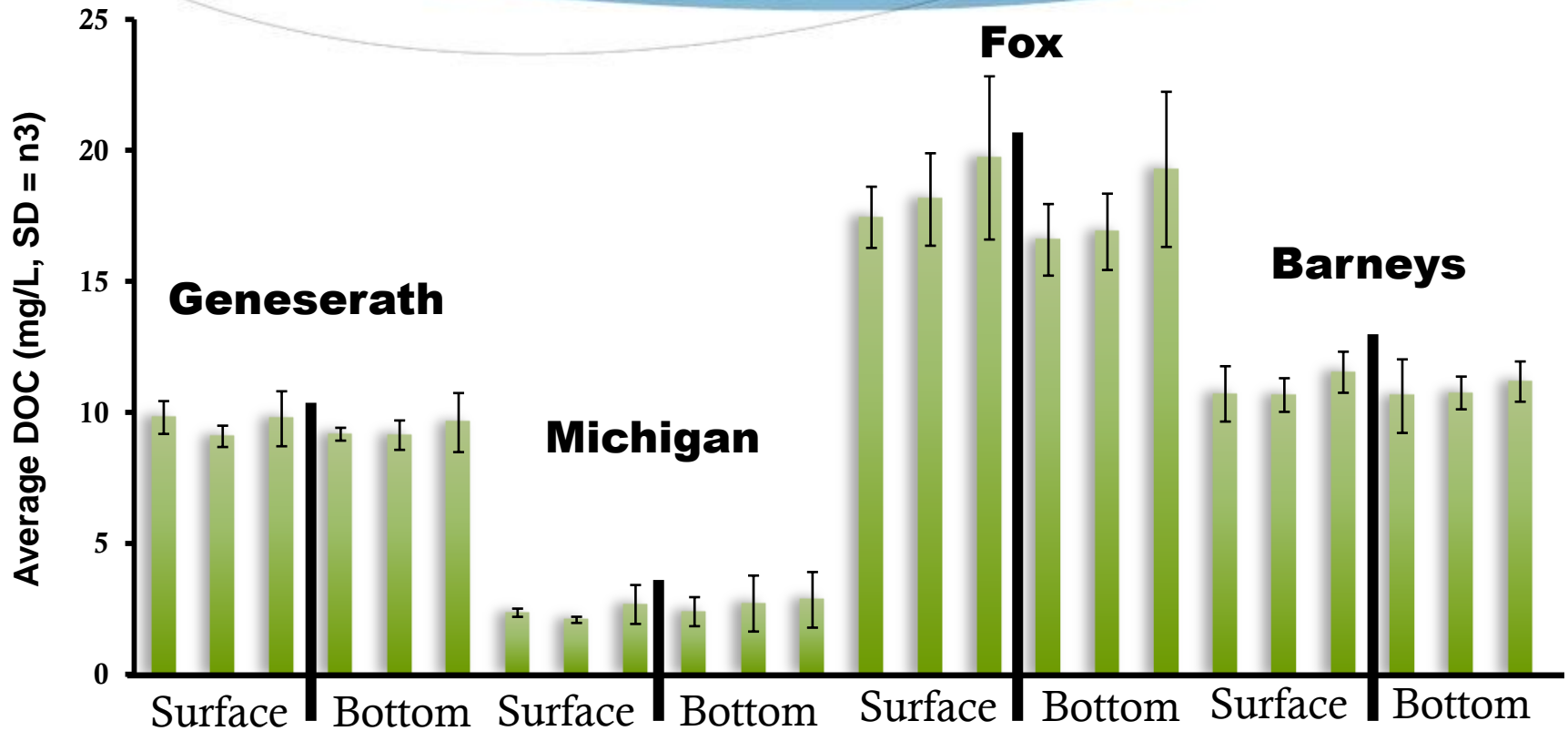


Water Chemistry PCA

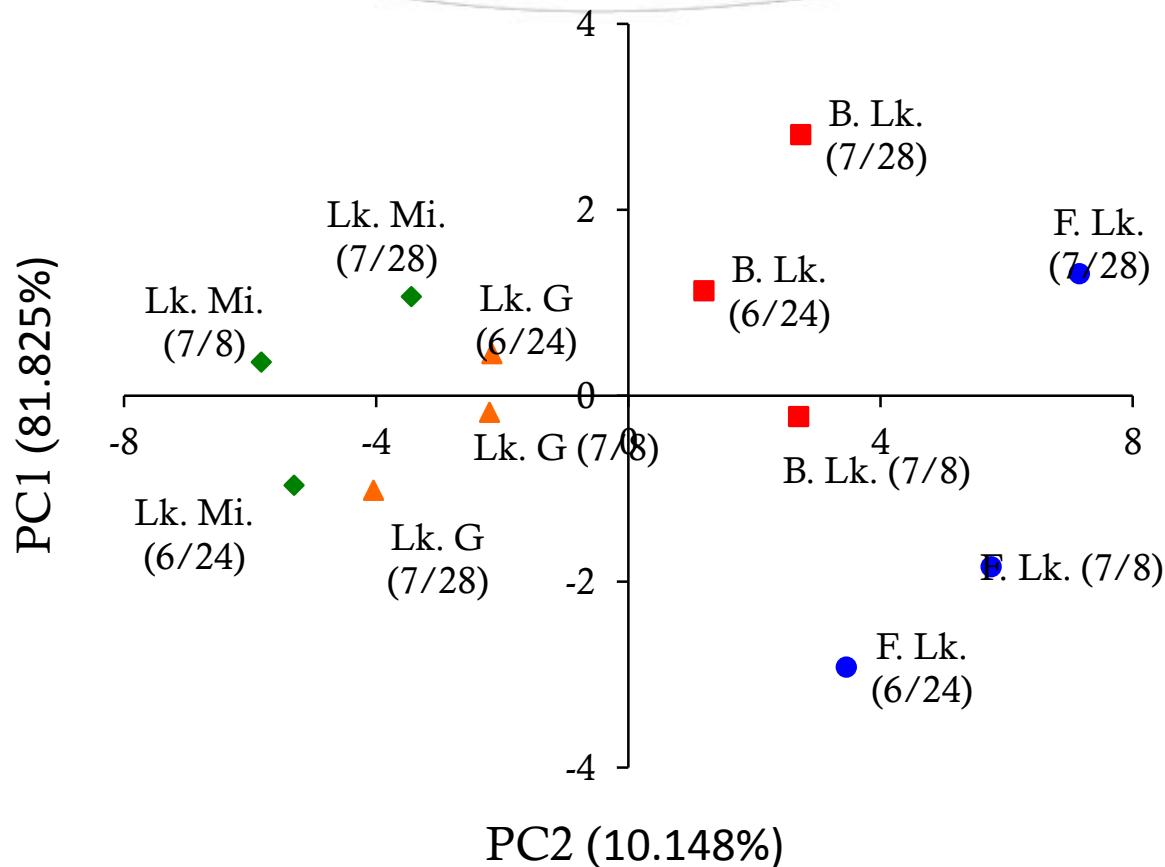


*Water Chemistry: QUAATRO BRAN+LUEBBE Auto Analyzer with an XY-2 Sampler (Seal Analytical).

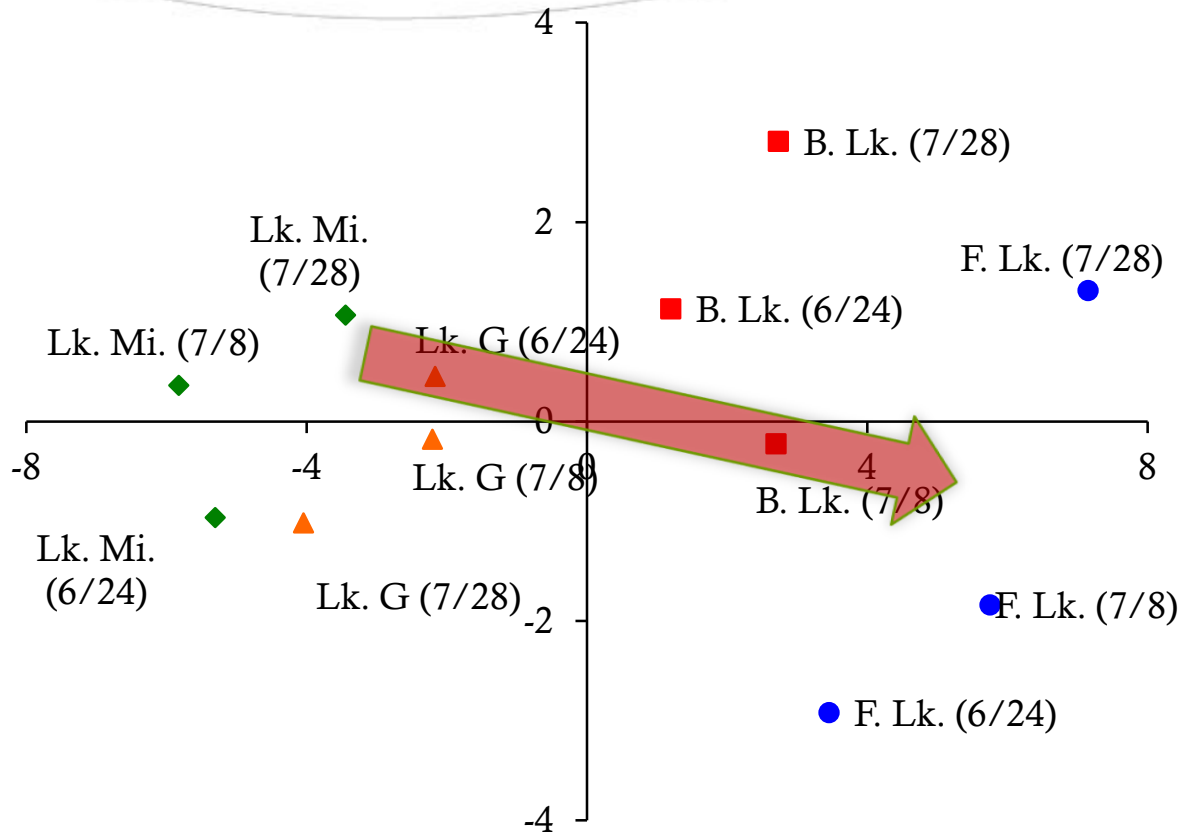
DOC (DOM) did not change with stratification



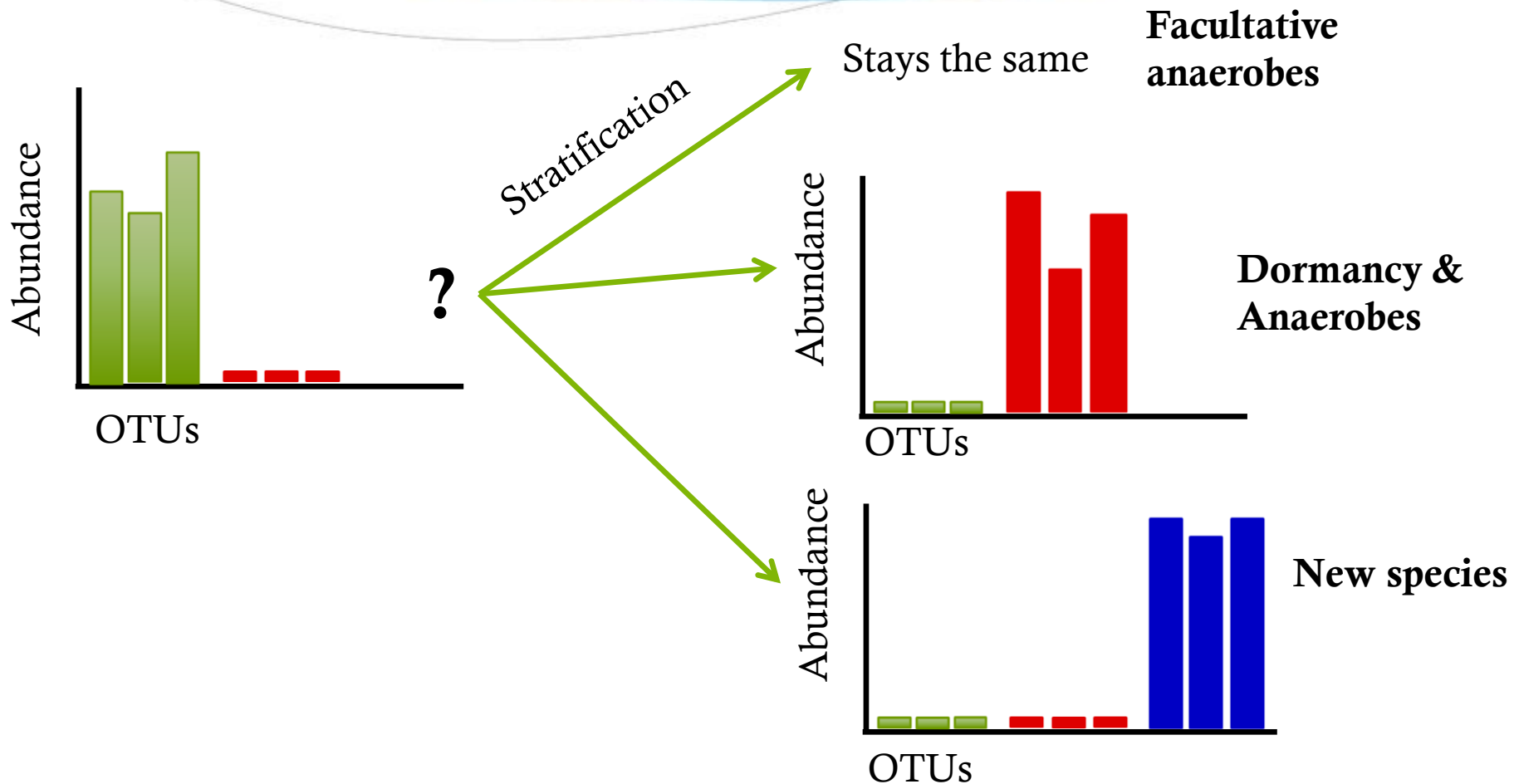
Microbial metabolism varied in each lake



Variation in metabolism follows the DOC gradient between the lakes



Future work will determine the microbial communities response



Acknowledgments

- ◆ Dave Schuberg, Don Uzarski, and John Gordon
- ◆ CMUBS
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- ◆ REU group



Thank You!!

Questions?

