

# Examining the connection between microbial respiration and carbon biogeochemistry

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# Geomicrobiology: Why is this important?

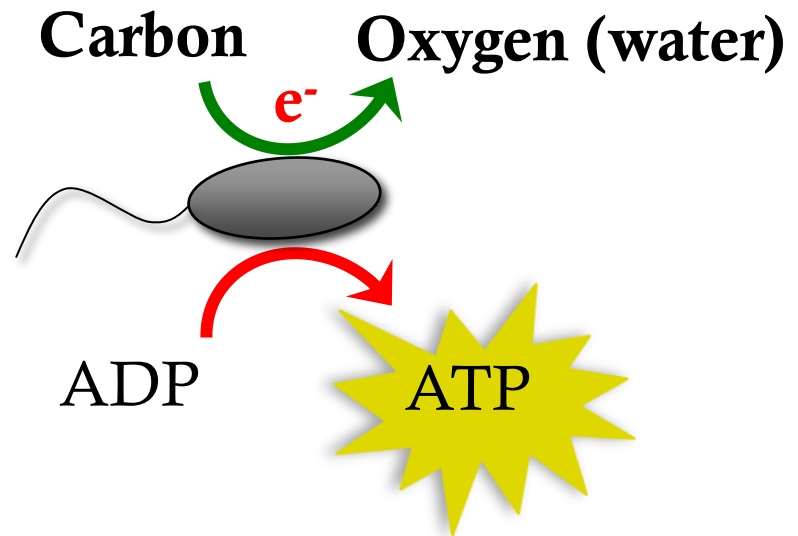
- ◆ Why are we concerned about environmental microbes?
  - ◆ Decomposition of matter
  - ◆ Bioremediation (industrial to septic systems)
  - ◆ Driving biogeochemical cycles



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

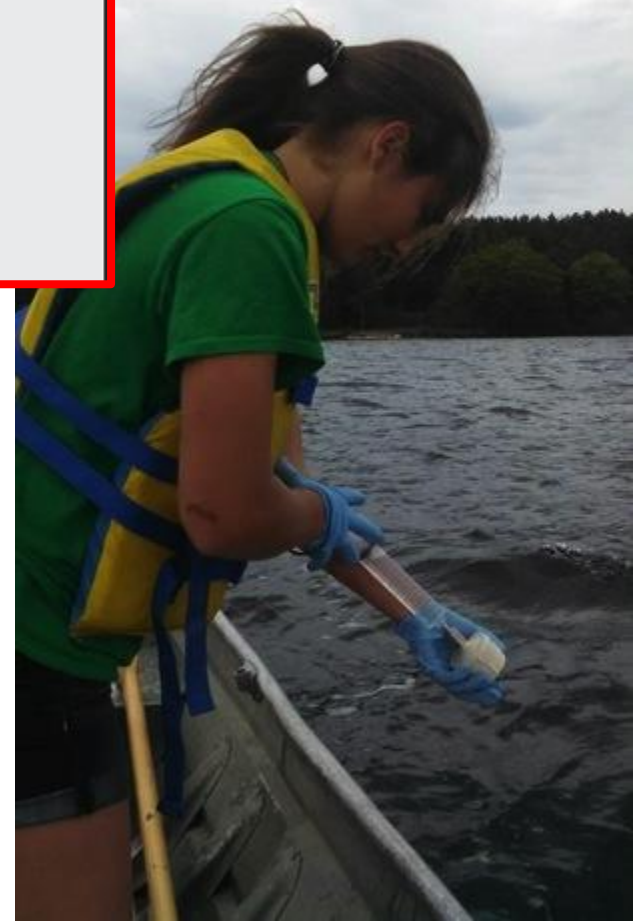
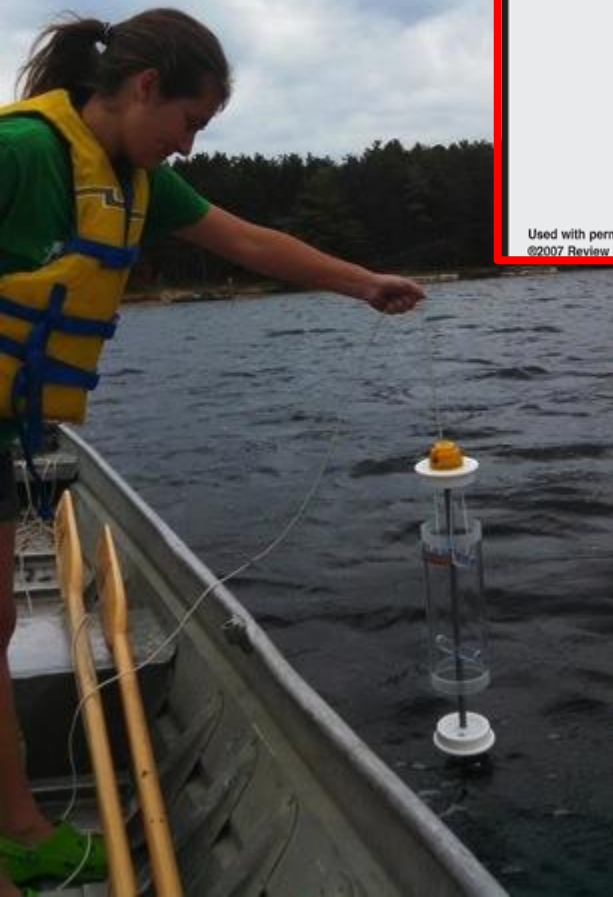
## Beaver Island



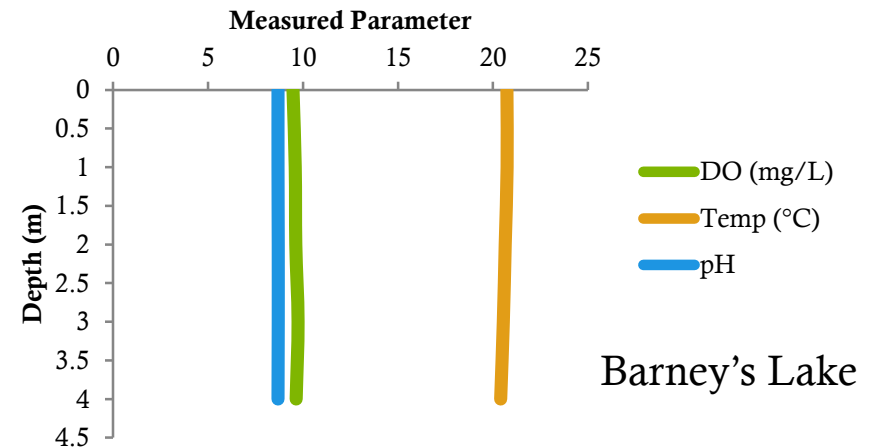
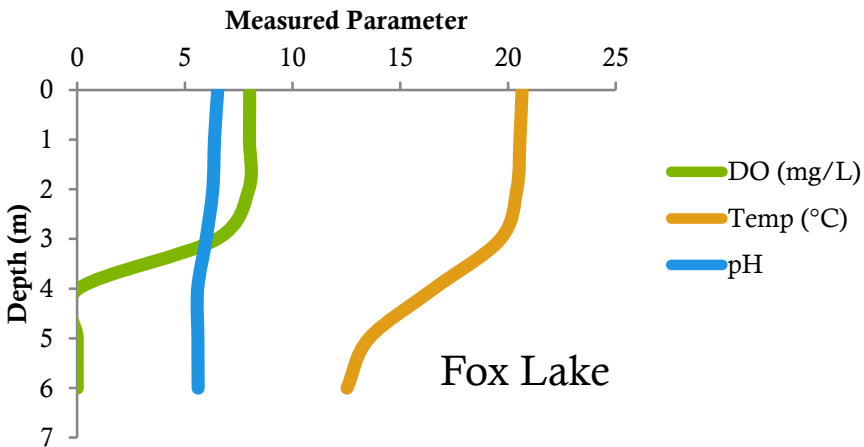
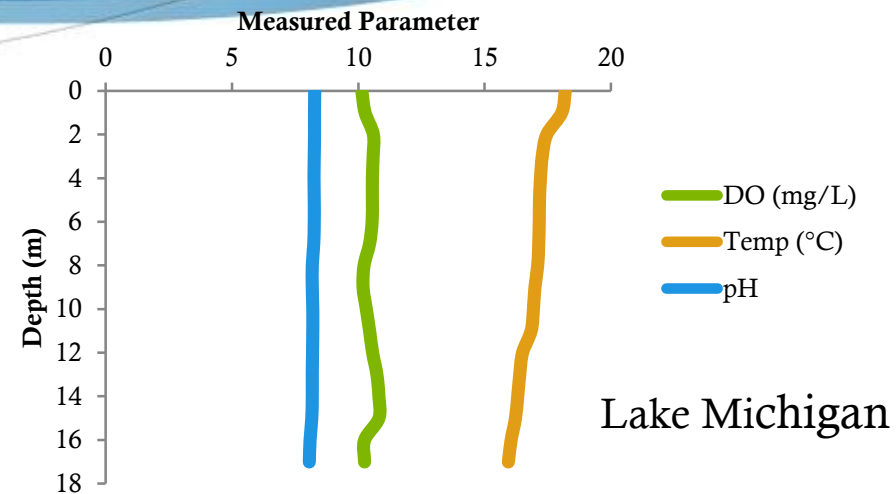
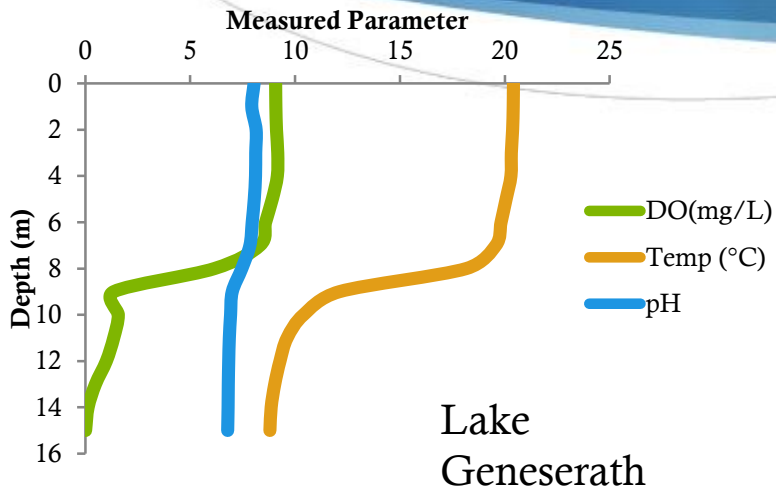
Lake Michigan



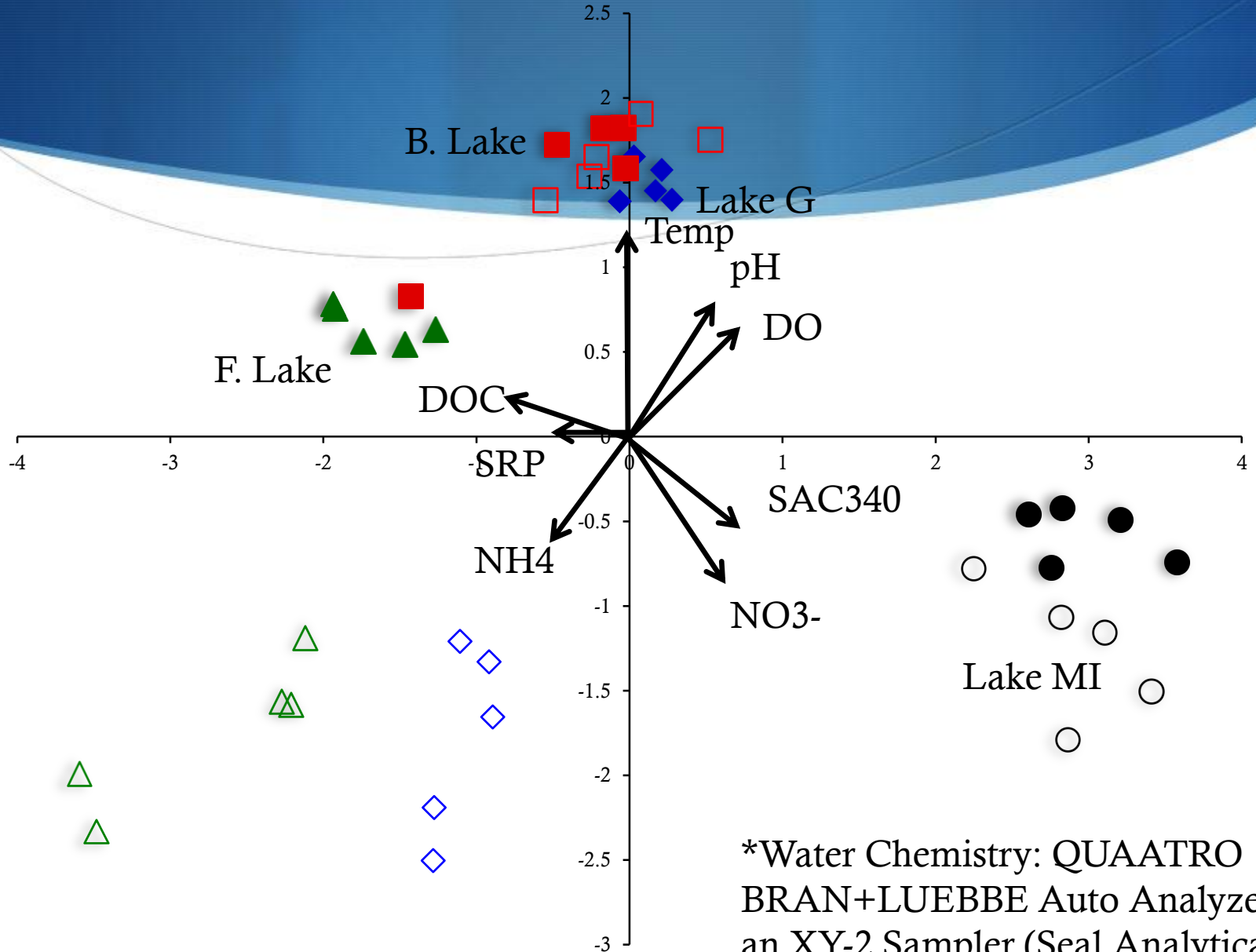
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# Stratification and anoxic conditions developed in two lakes

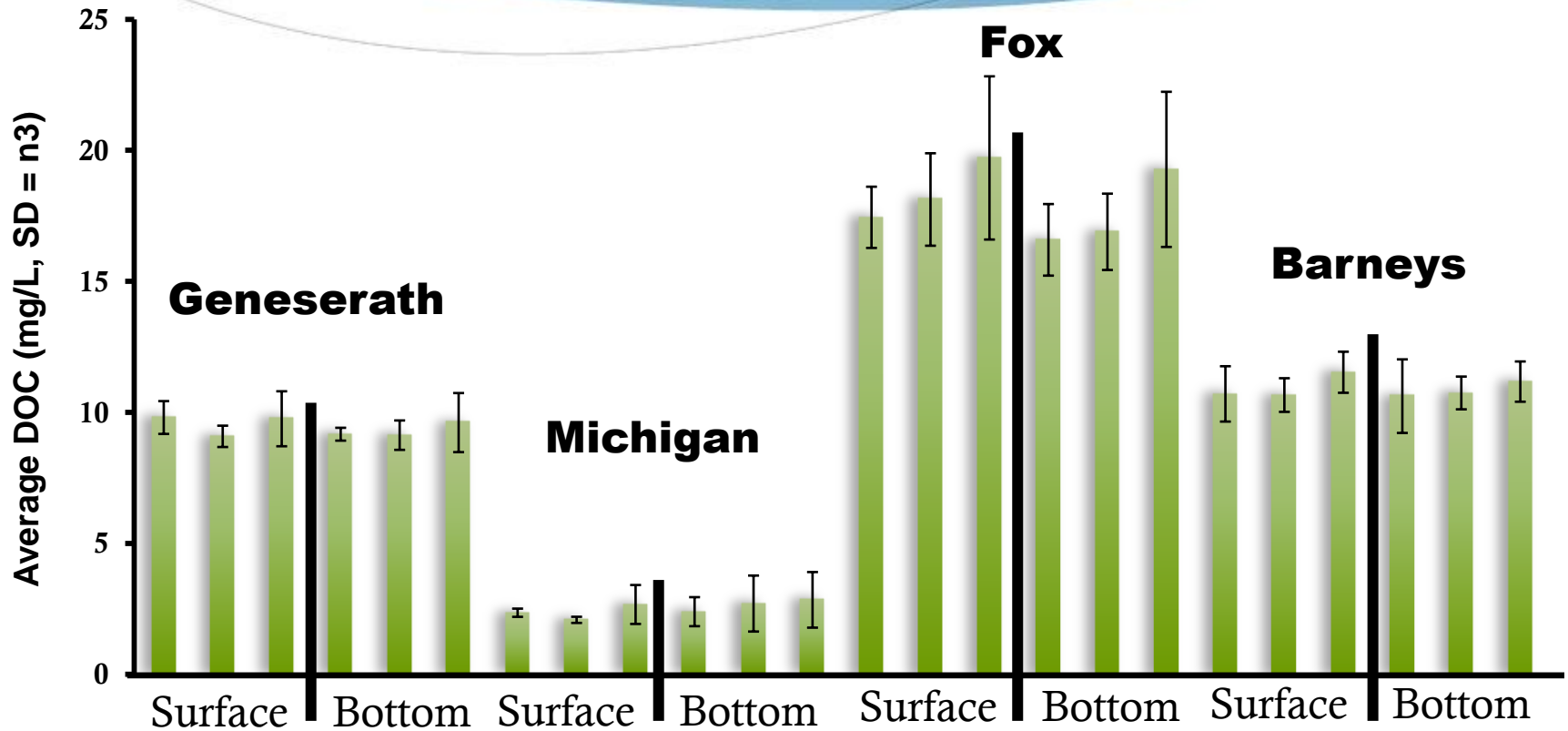


# Water Chemistry PCA

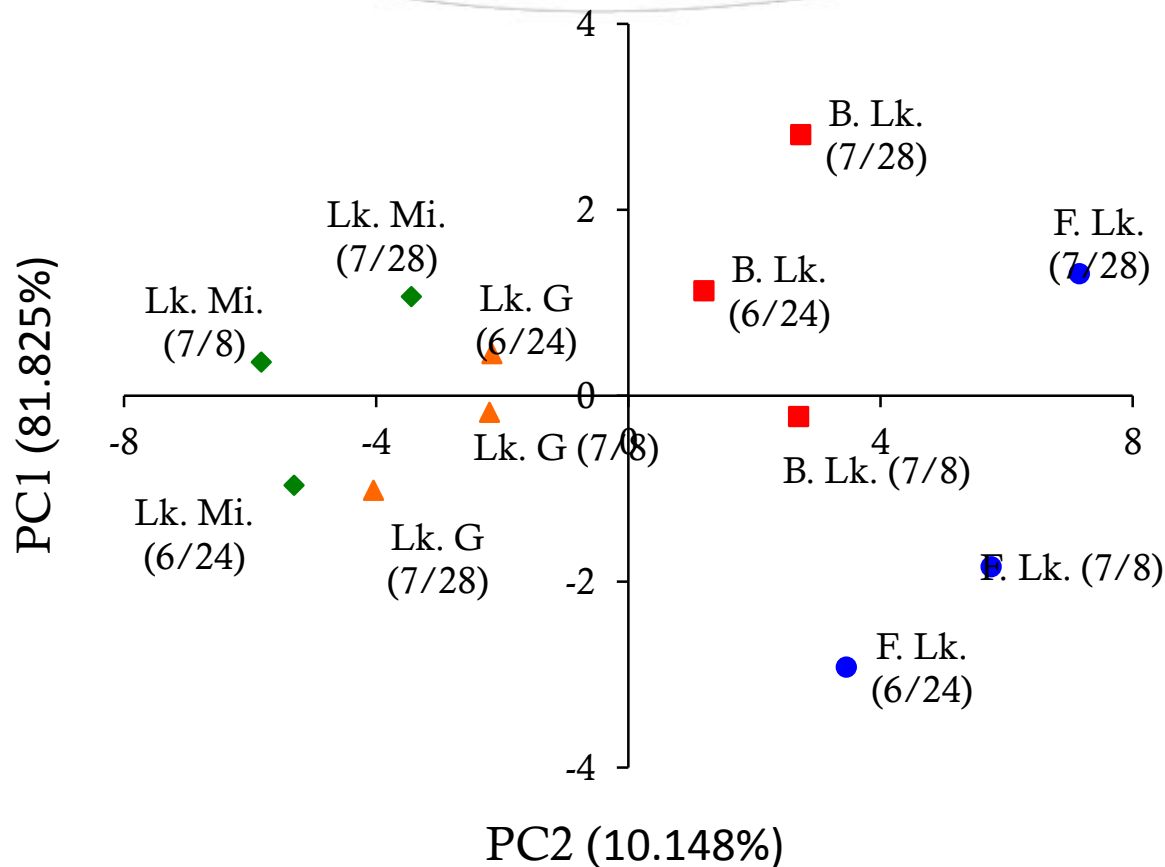


\*Water Chemistry: QUAATRO  
BRAN+LUEBBE Auto Analyzer with  
an XY-2 Sampler (Seal Analytical).

# DOC (DOM) did not change with stratification

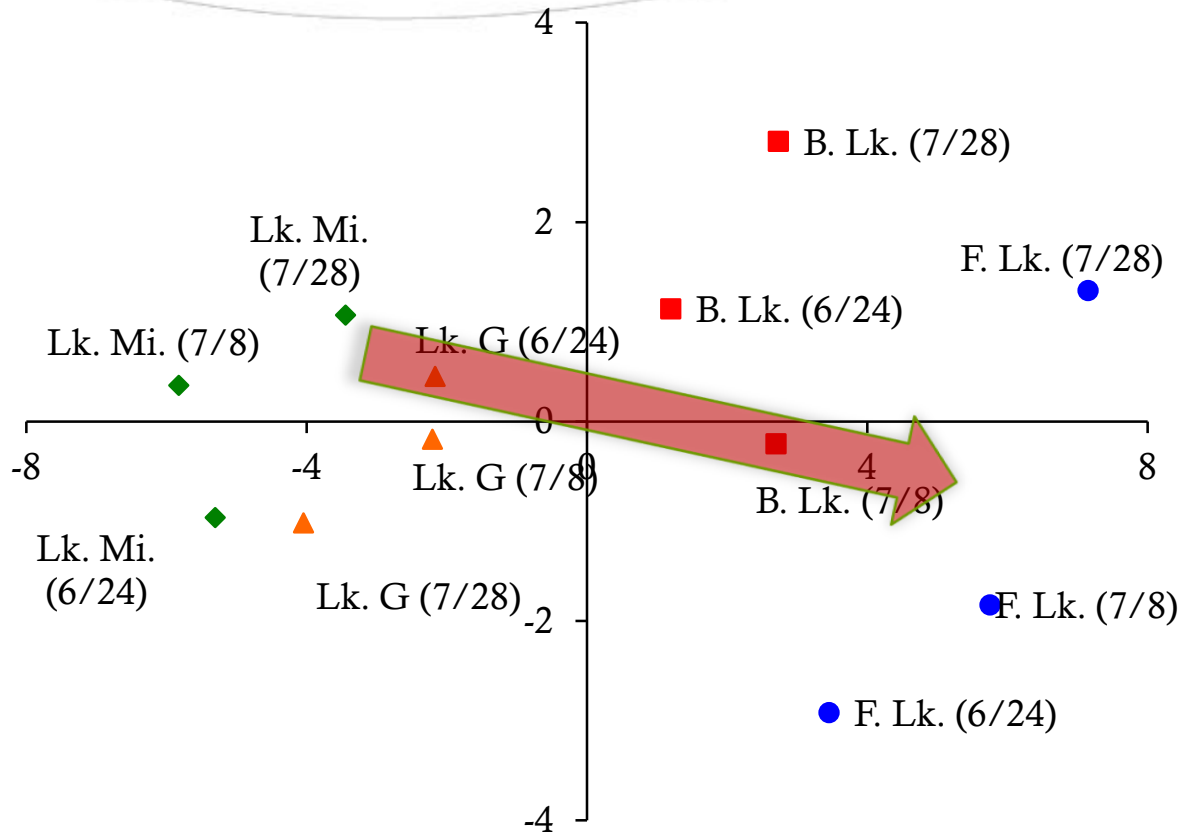


# Microbial metabolism varied in each lake

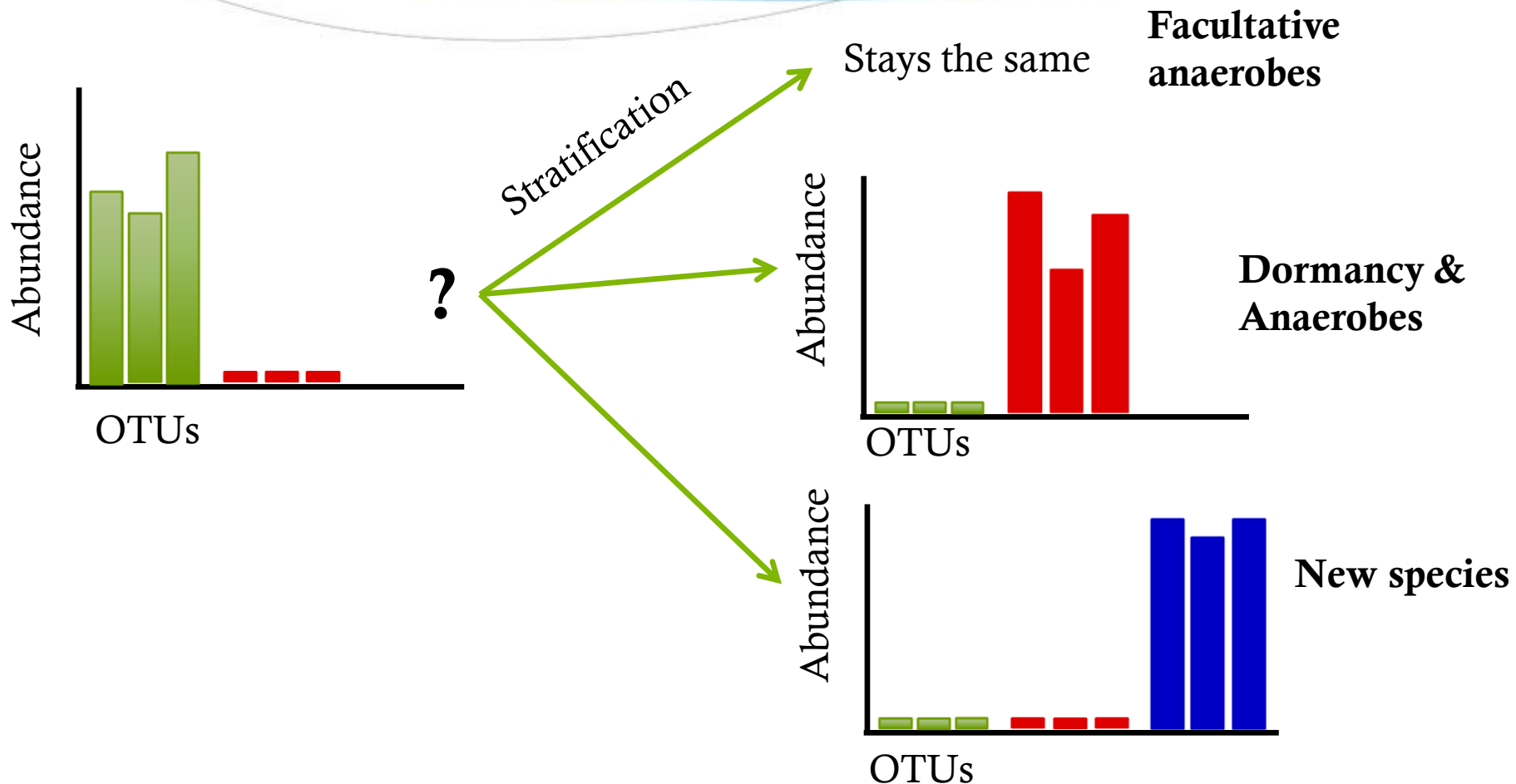




# Variation in metabolism follows the DOC gradient between the lakes



# Future work will determine the microbial communities response



# Acknowledgments

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



# Thank You!!

## Questions?

