

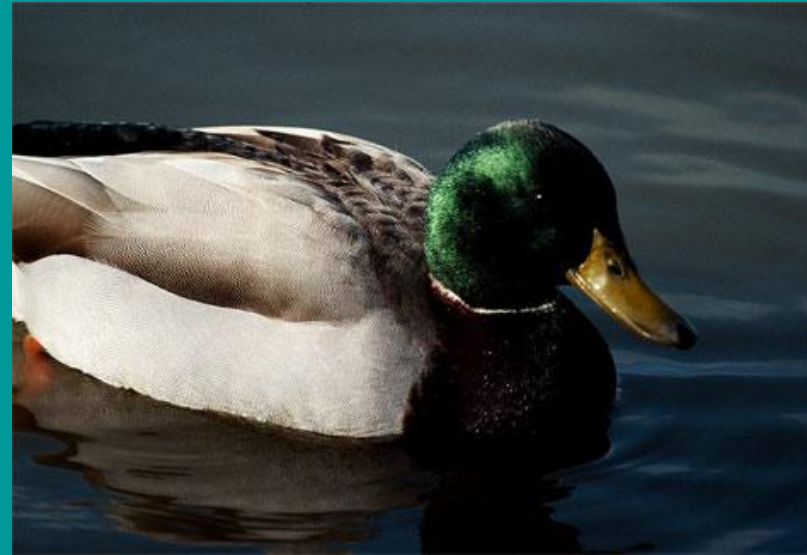
# Trace element particulate pulse and diel (24-hr) variations in a freshwater wetland adjacent to Great Salt Lake

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# Acknowledgements

- Ambassador Duck Club
  - Dick Gilbert
- USGS
  - Dave Naftz, Jay Cederberg, Kim Beisner, Judy Steigler
- BYU
  - Dave Tingey
- U of U
  - Vishal Gupta, Will Mace, Danielle Fox, Rino Dicataldo

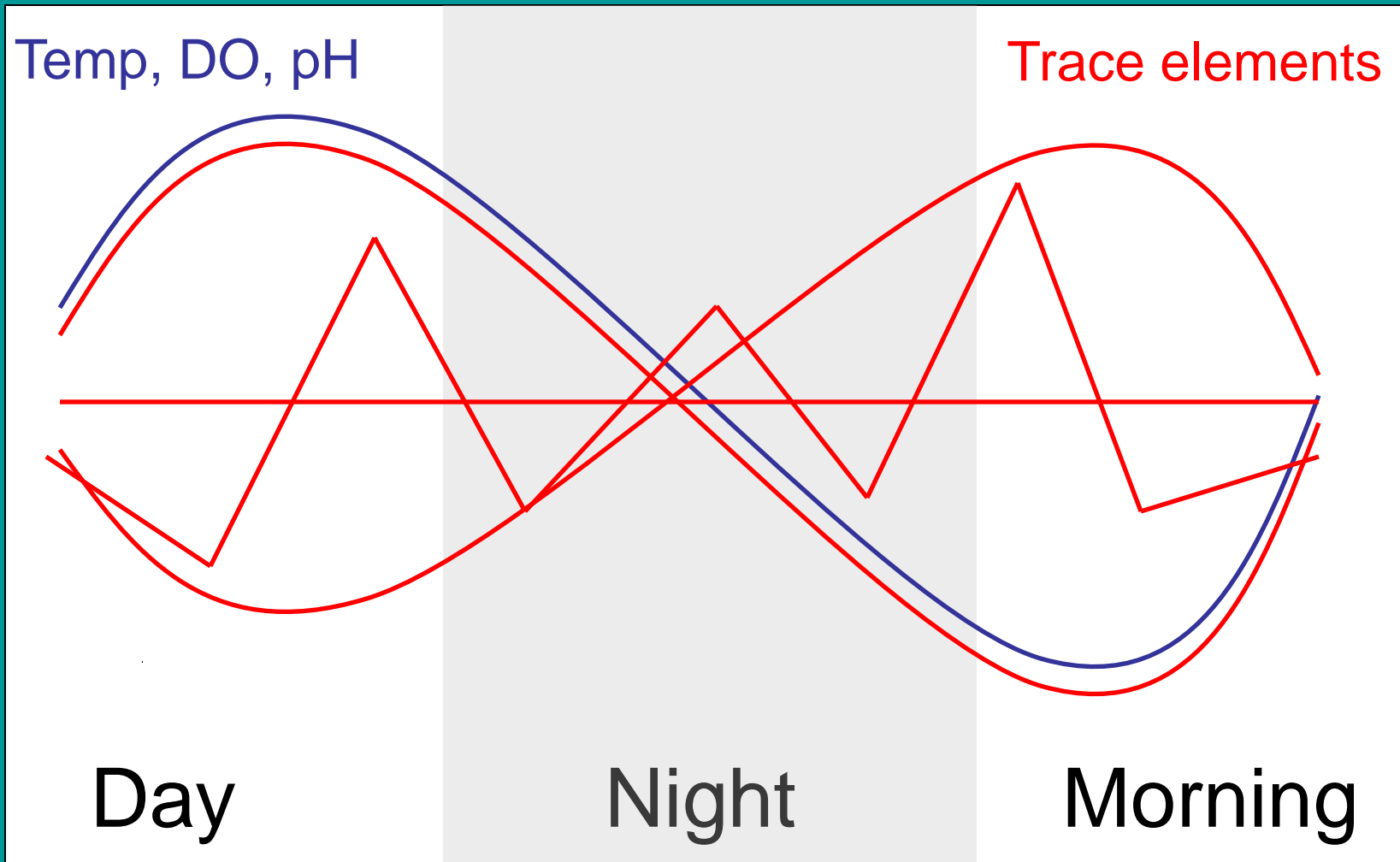




# Thank you...

- Lynn de Frietas
- FRIENDS of Great Salt Lake
- All who made Doyle Stephens Scholarship possible

# Wetland diel (24-hr) studies



# Questions

- Which trace elements show diel (24-hr) variations in GSL freshwater wetlands?
- Is methyl mercury produced during nighttime hours?

# Great Salt Lake Ecosystem



# Sampling sites



Two sampling periods: Aug. 20-21, 2008 & Sep. 14-15, 2009

# Hourly samples

→ Unfiltered samples:



total Hg



methyl Hg



20+ trace elements

→ Filtered samples (<math><0.45\mu\text{m}</math>):



total Hg



methyl Hg



20+ trace elements



DOC



major ions

→ Field measurements:



DO, pH, temp



nitrite, sulfide

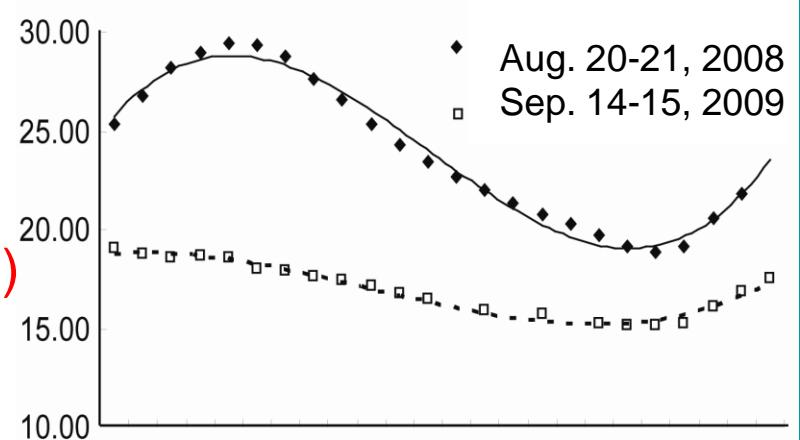




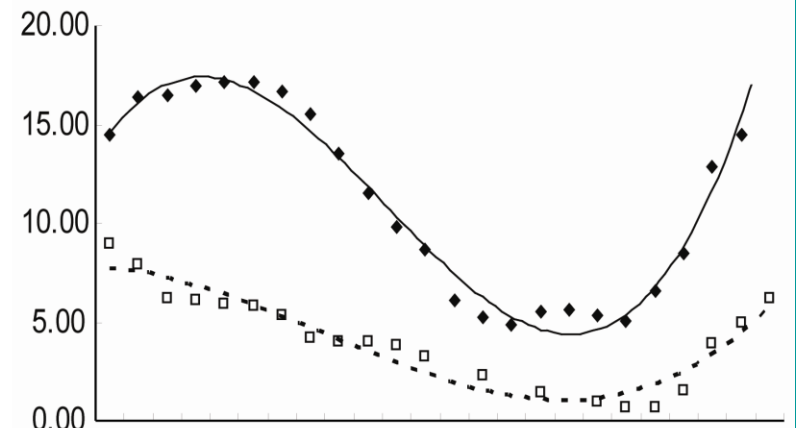
# Diel cycles:

- water temp.
- dissolved oxygen
- pH

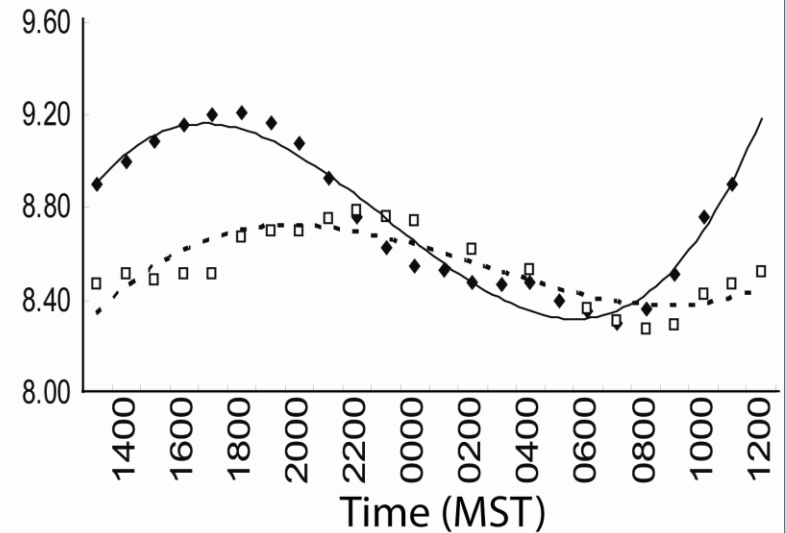
$T_w$   
(deg. C)



DO  
(mg/L)



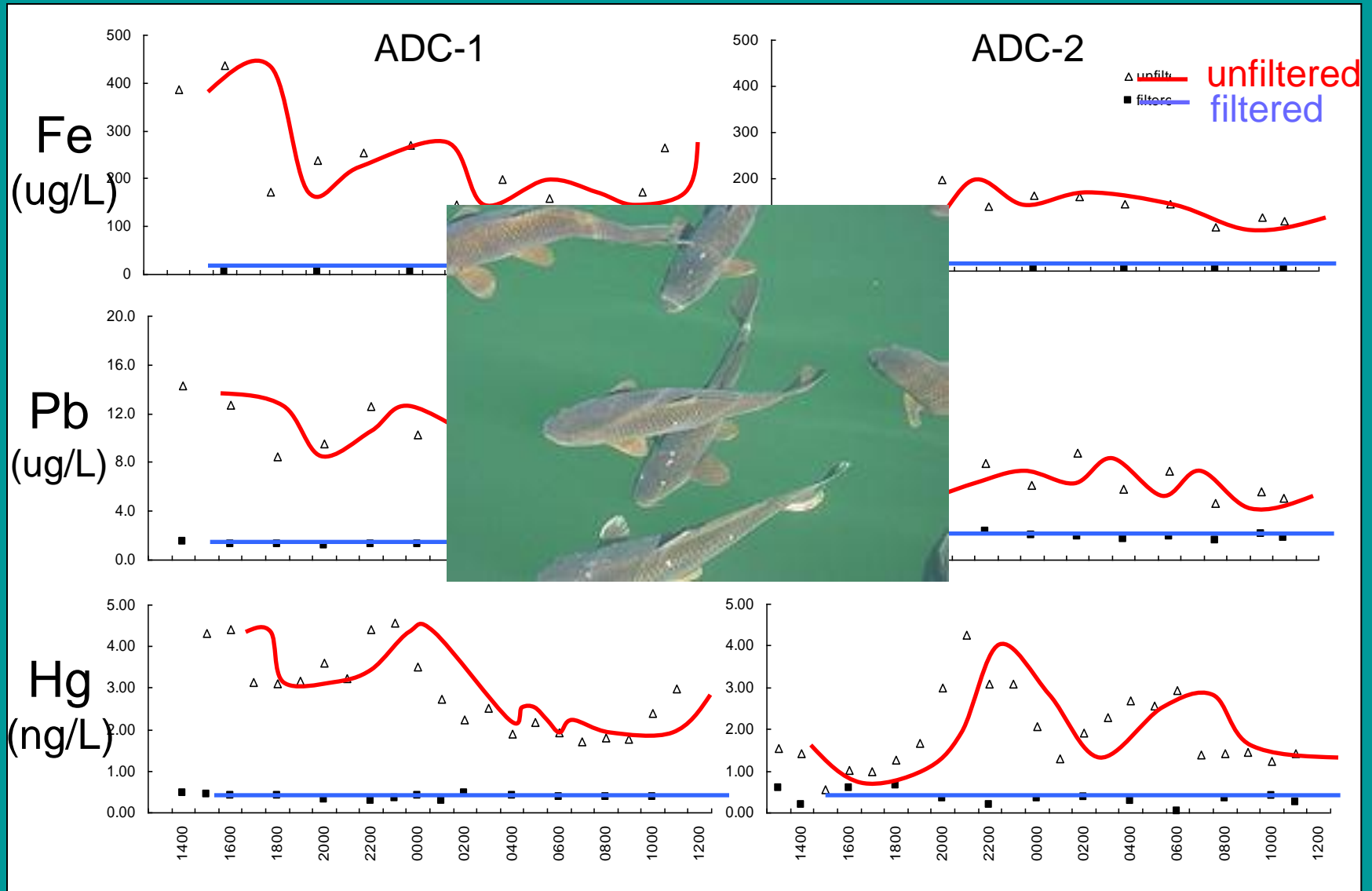
pH





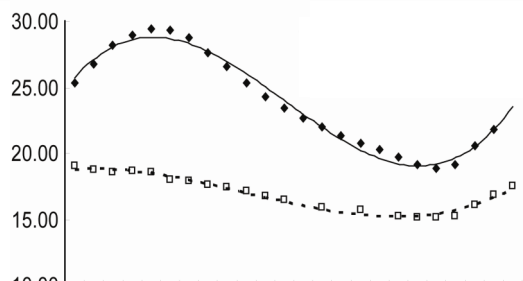
# Particulate trace elements

August 20-21, 2008

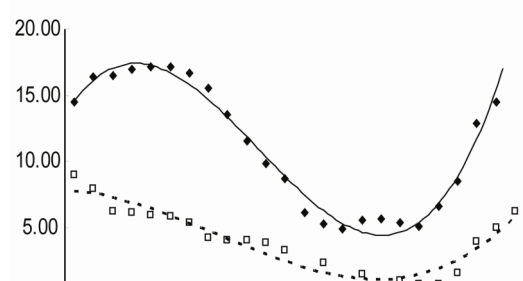


# Dissolved trace elements

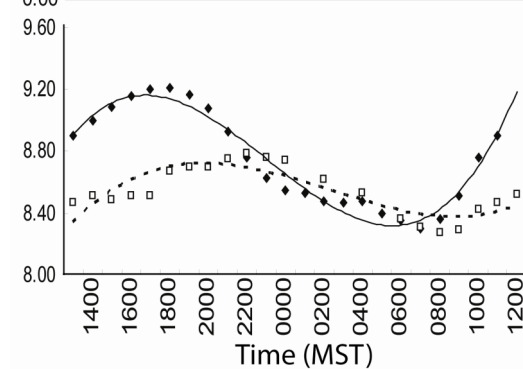
$T_w$



DO

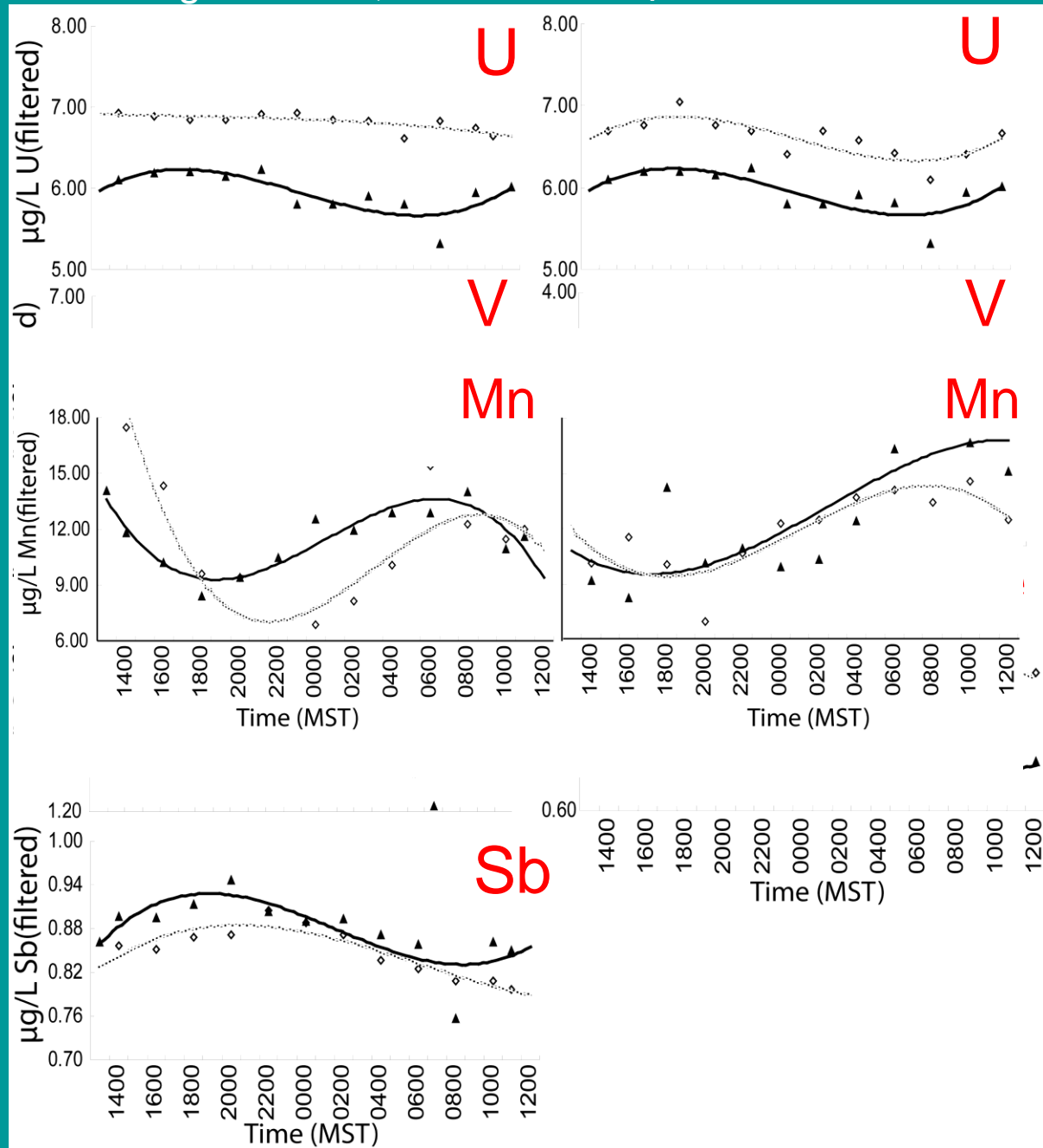


pH

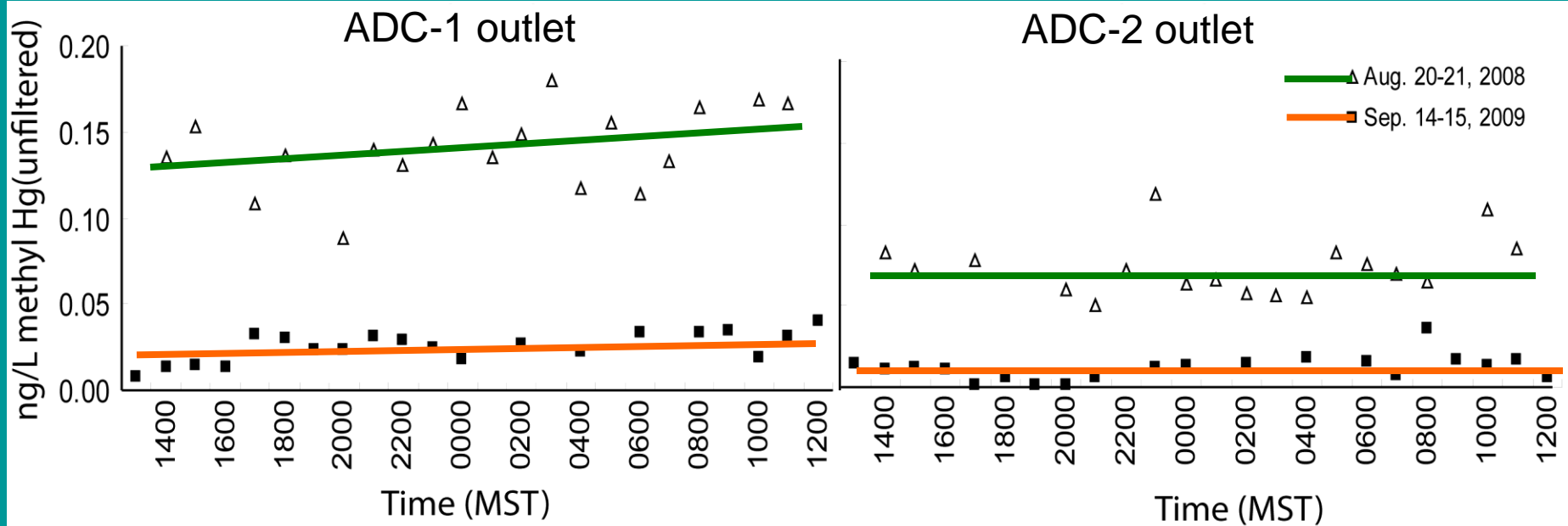


August 20-21, 2008

September 14-15, 2009



# Methyl mercury



Consistently low methyl mercury concentrations, no diel cycle

# Conclusions

- Diel cycles must be constrained
  - Trace element loads in rivers and streams
  - Potential nighttime production of toxic species
- Random particulate signals
  - Al, Fe, Hg, Pb
  - Settling/resuspension of suspended solids
- Dissolved trace elements correlate to T, DO, pH
  - U, Se, Sb, V, Mn (opposite trend)
  - Possibly due to sorption/desorption as pH decreases/increases
- Low methyl mercury at ADC
  - No diel variations