Hydrodynamics and Sediment Dynamics of Missisquoi Bay, Lake Champlain

2015 VT EPSCoR Student Research Symposium

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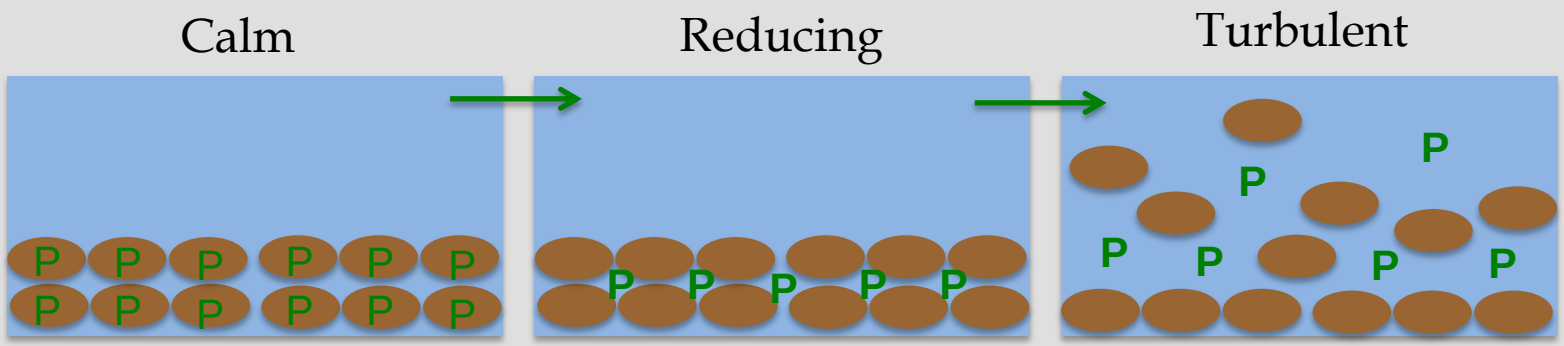
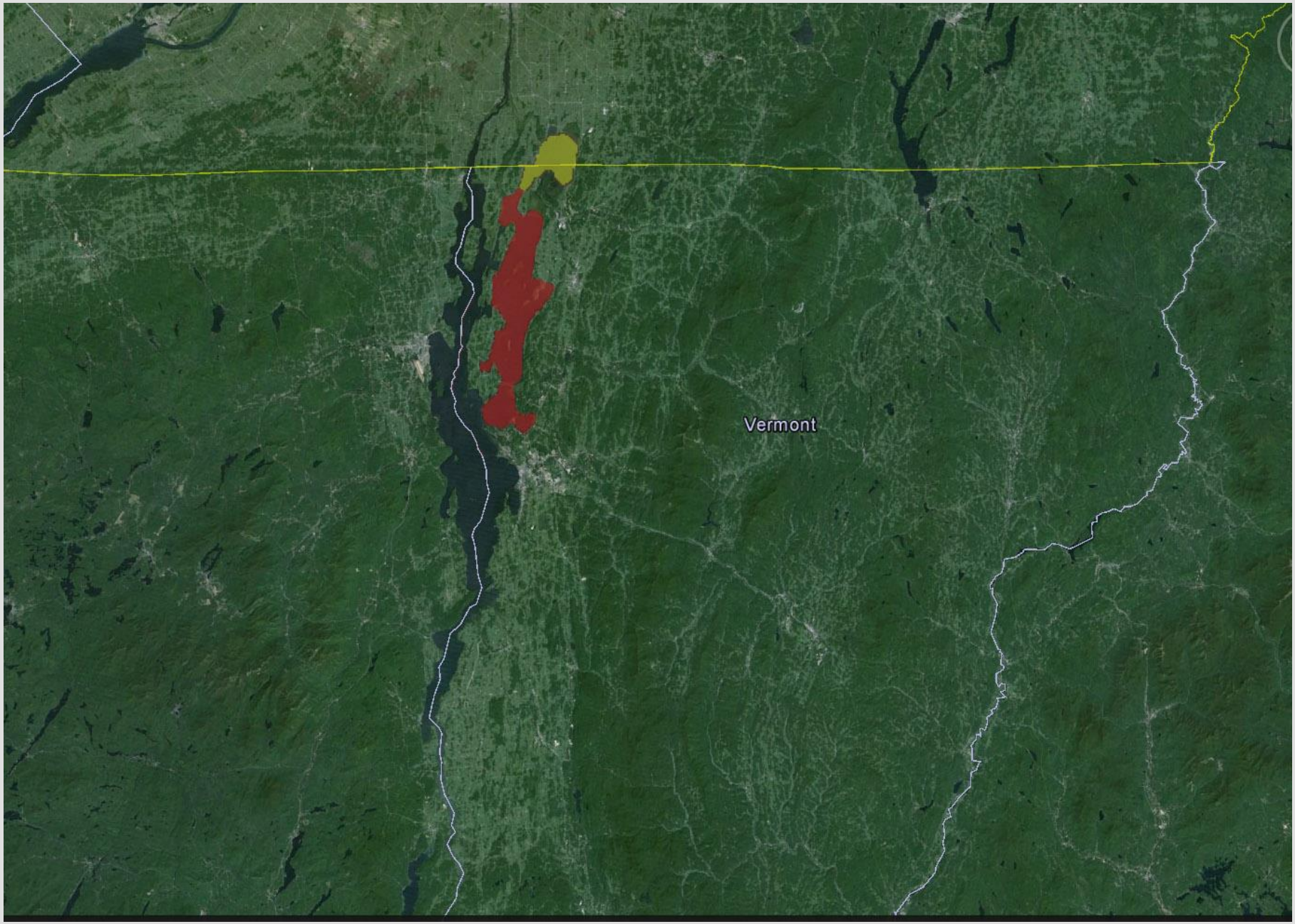
Why does circulation matter?

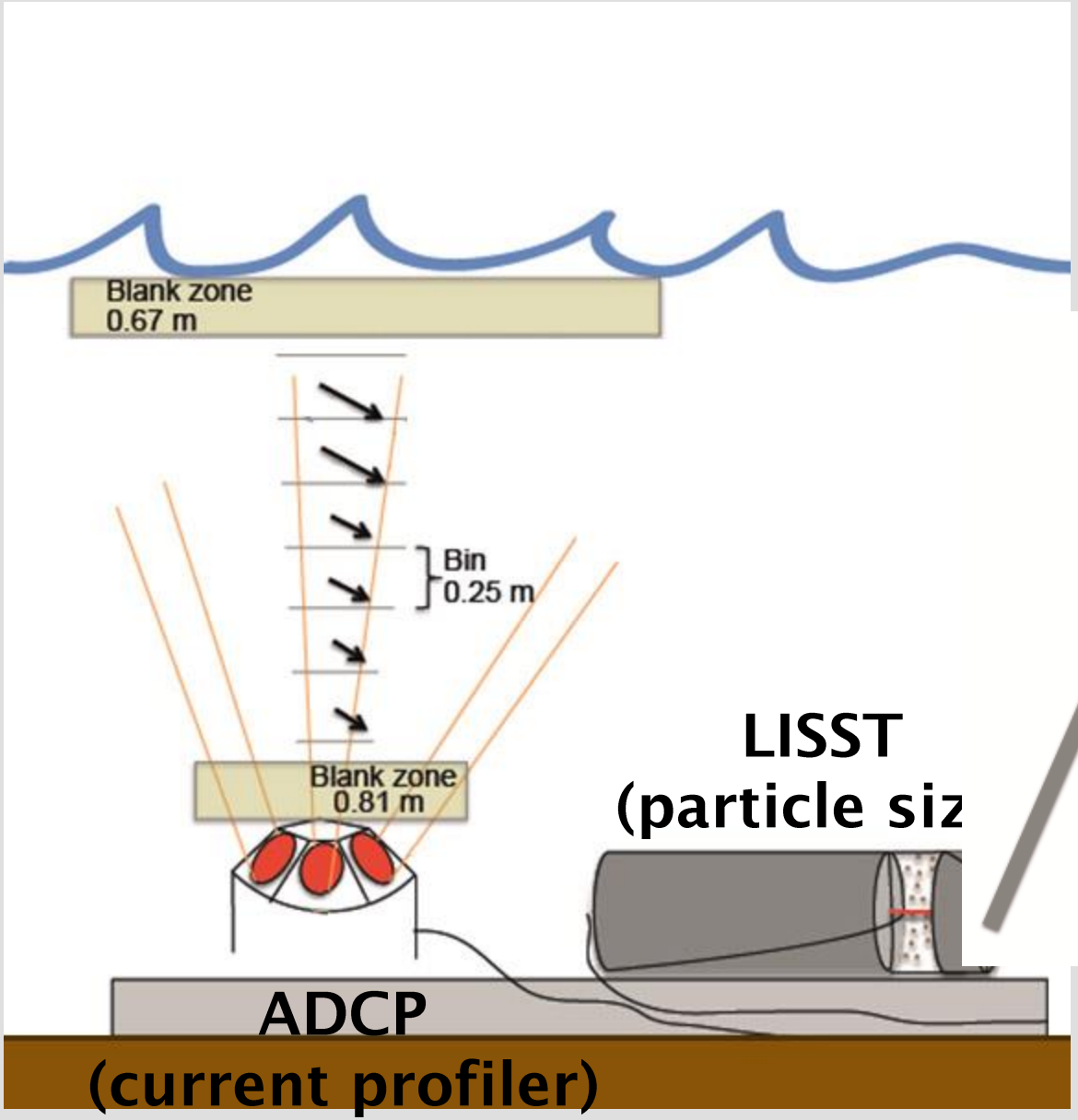
- Currents control the mobility of all chemical constituents and pollutants in the water
- Surface currents
  - Distribute and spread algal blooms
  - Transport phytoplankton and zooplankton
- Bottom currents
  - Move/re-suspend sediment



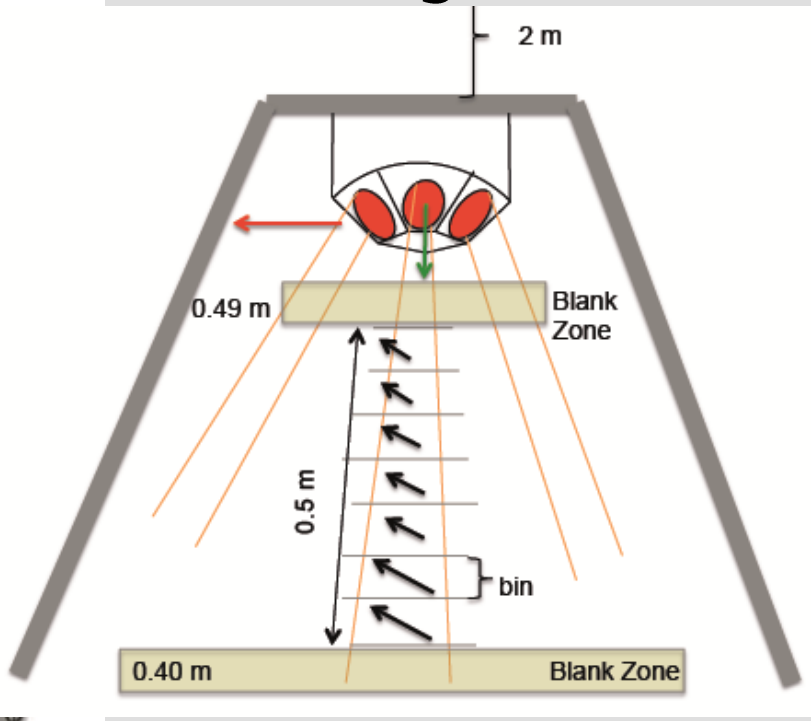
Missisquoi Bay



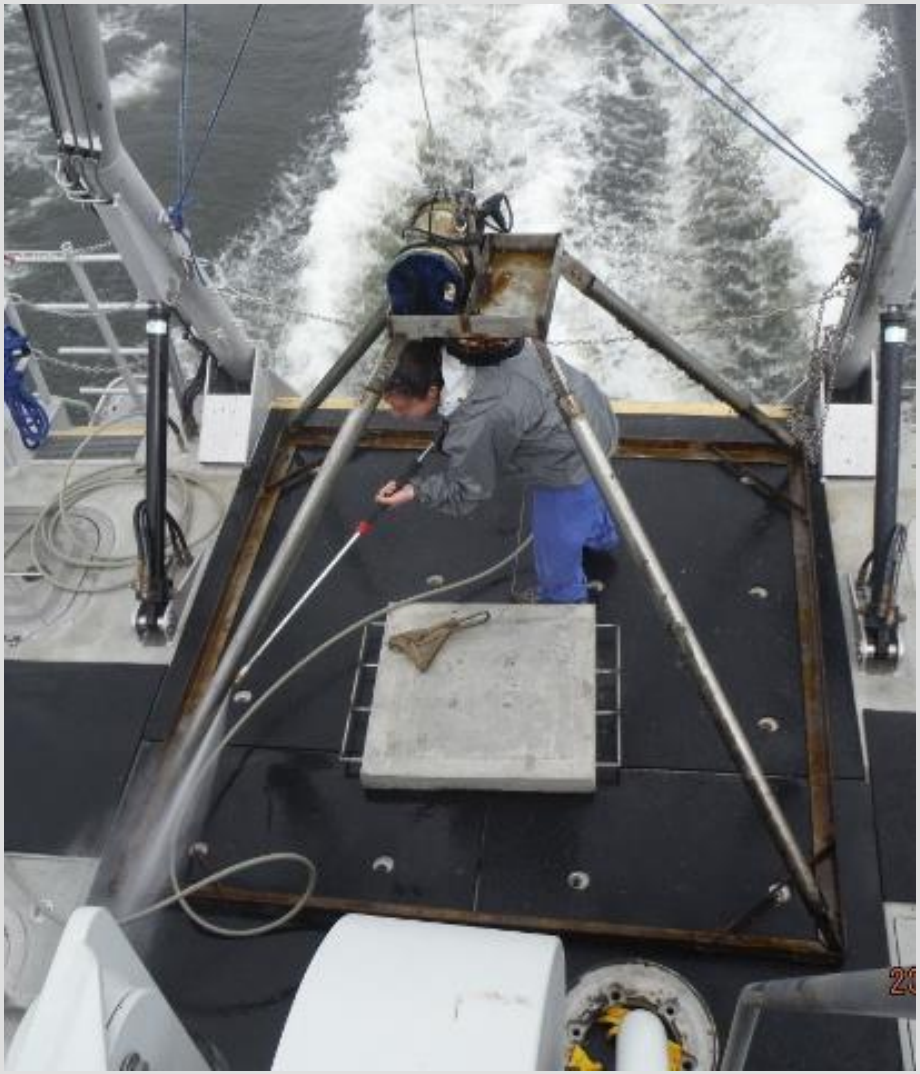
Instrumentation - ADCPs

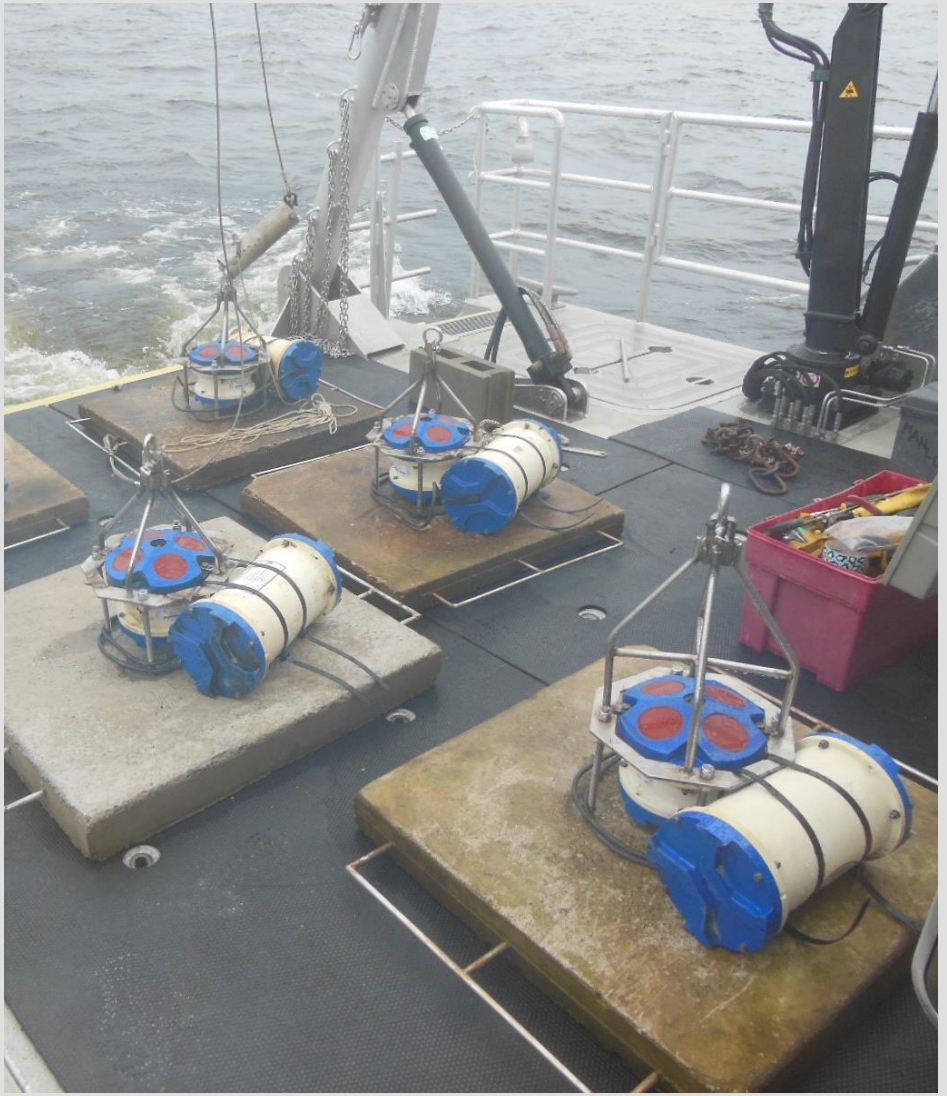


Downward-looking ADCP

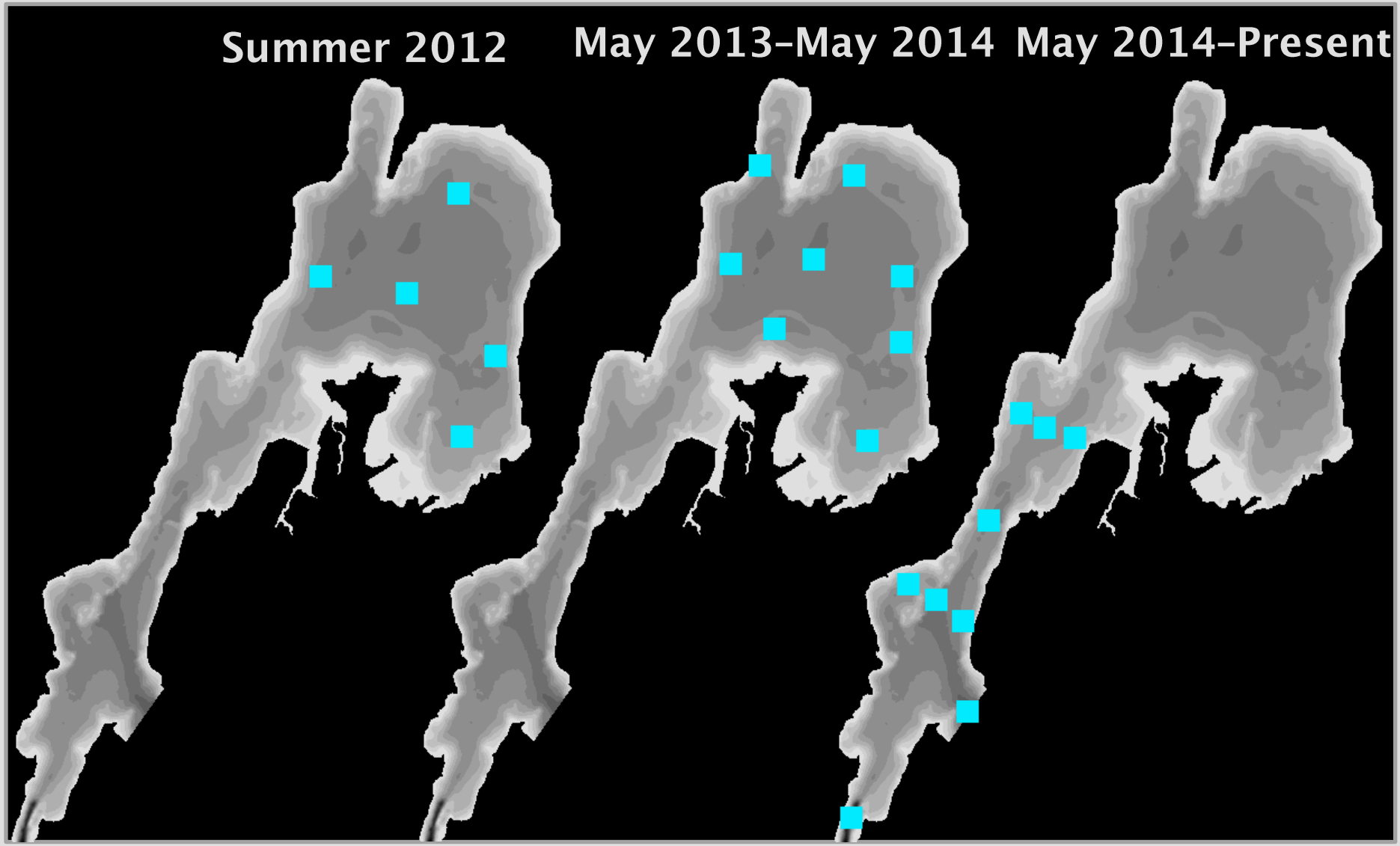


Instrumentation - ADCPs



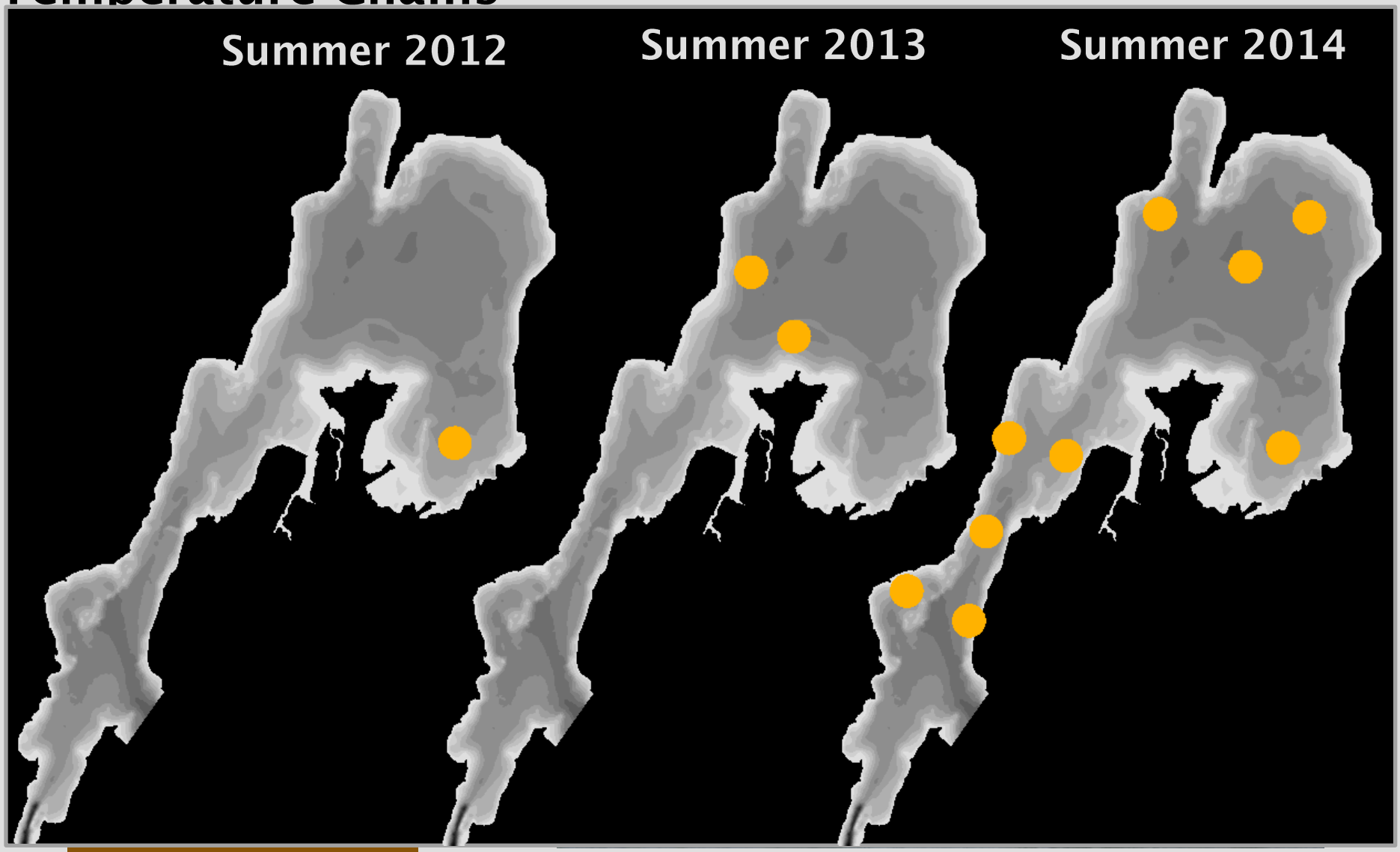


Instrumentation - ADCPs

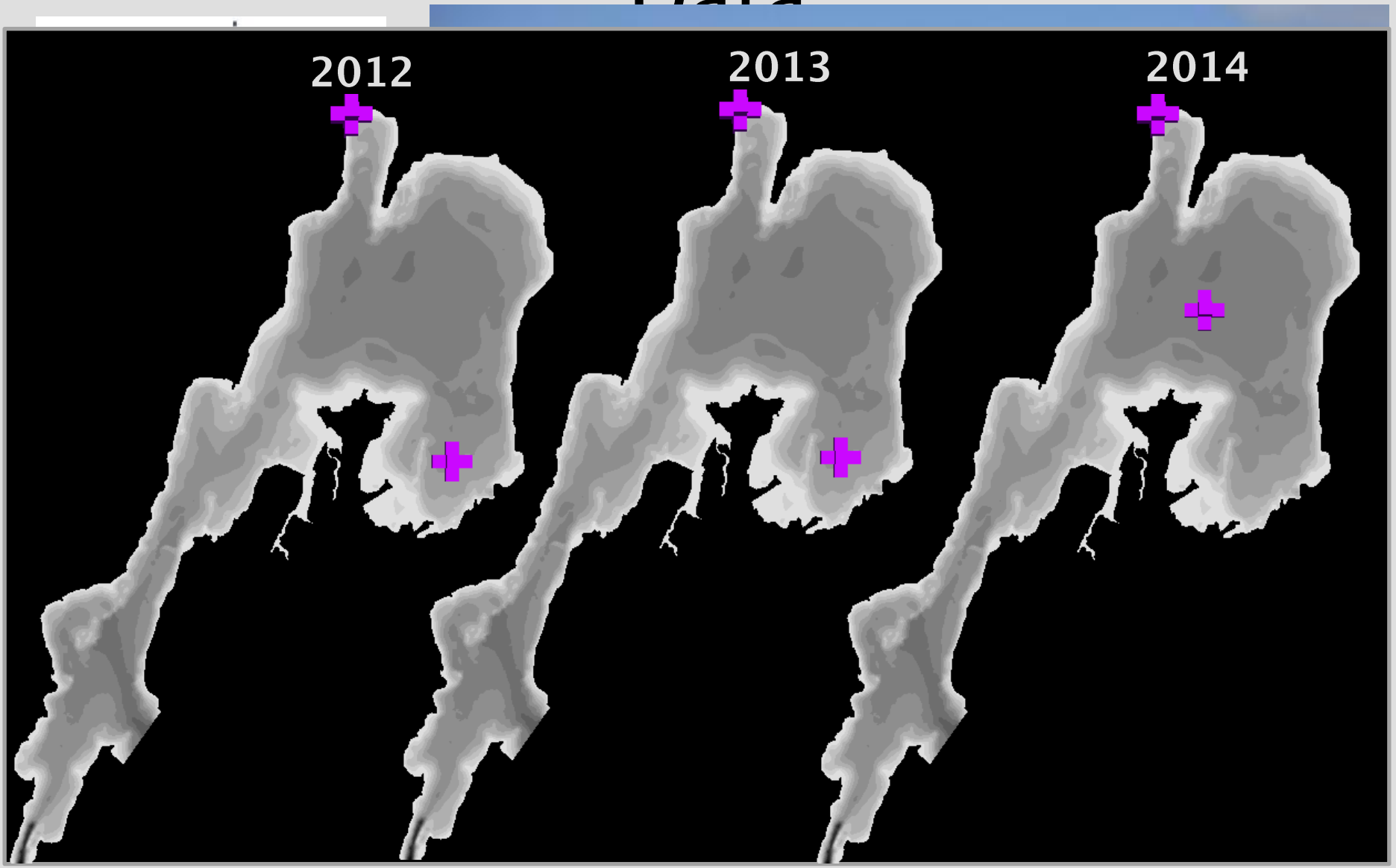


Instrumentation – Temperature

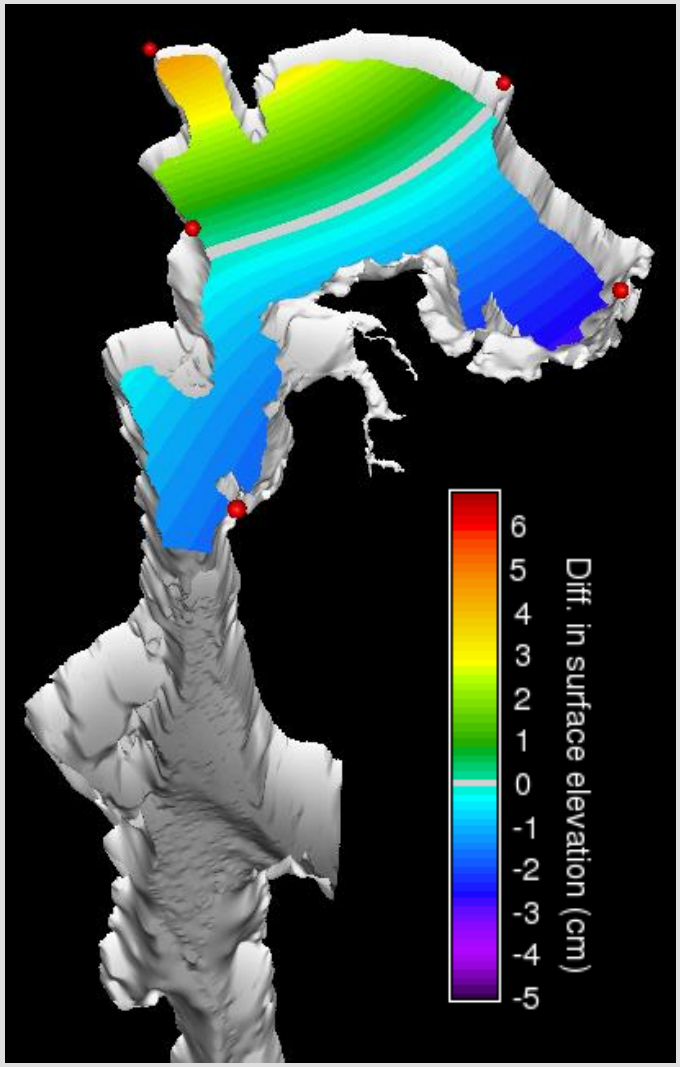
Temperature Chains

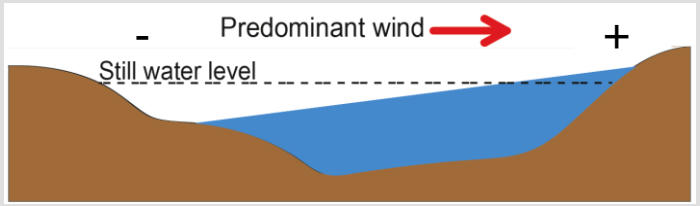


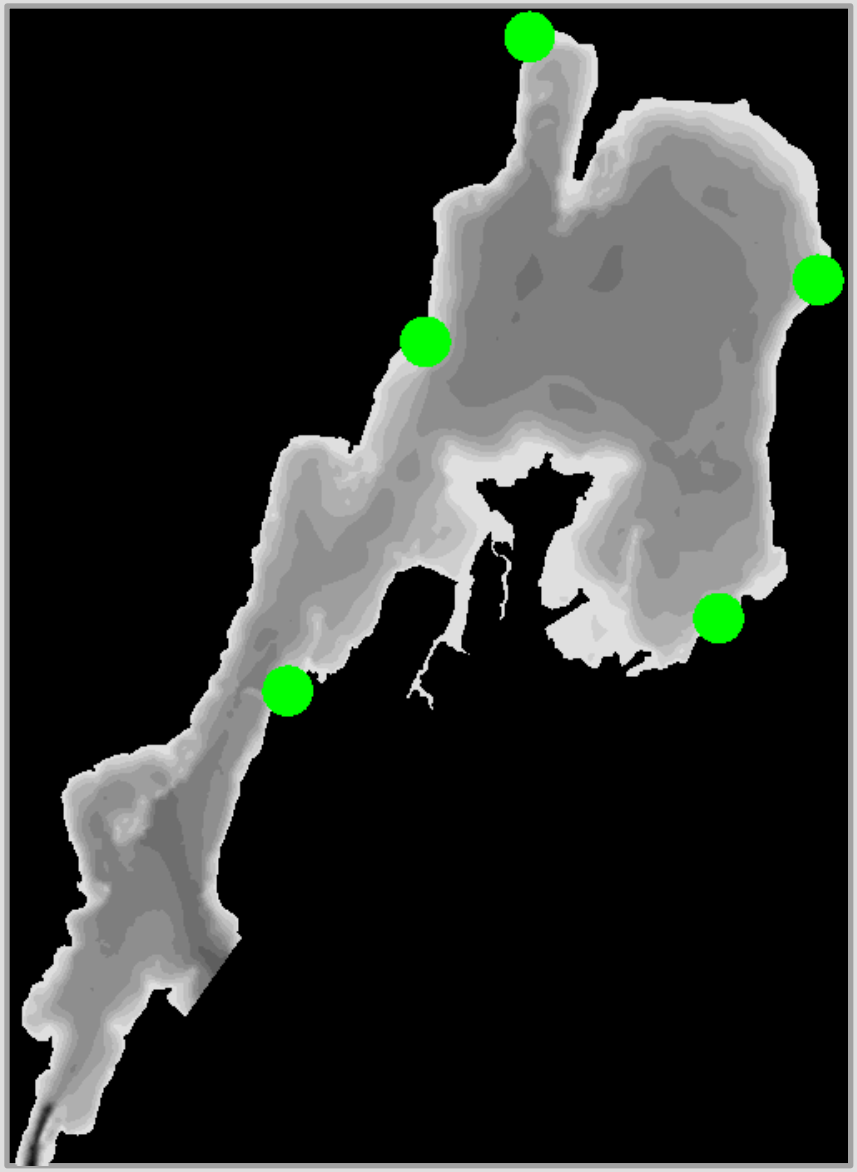
Instrumentation – Meteorological Data



Instrumentation – Water Level



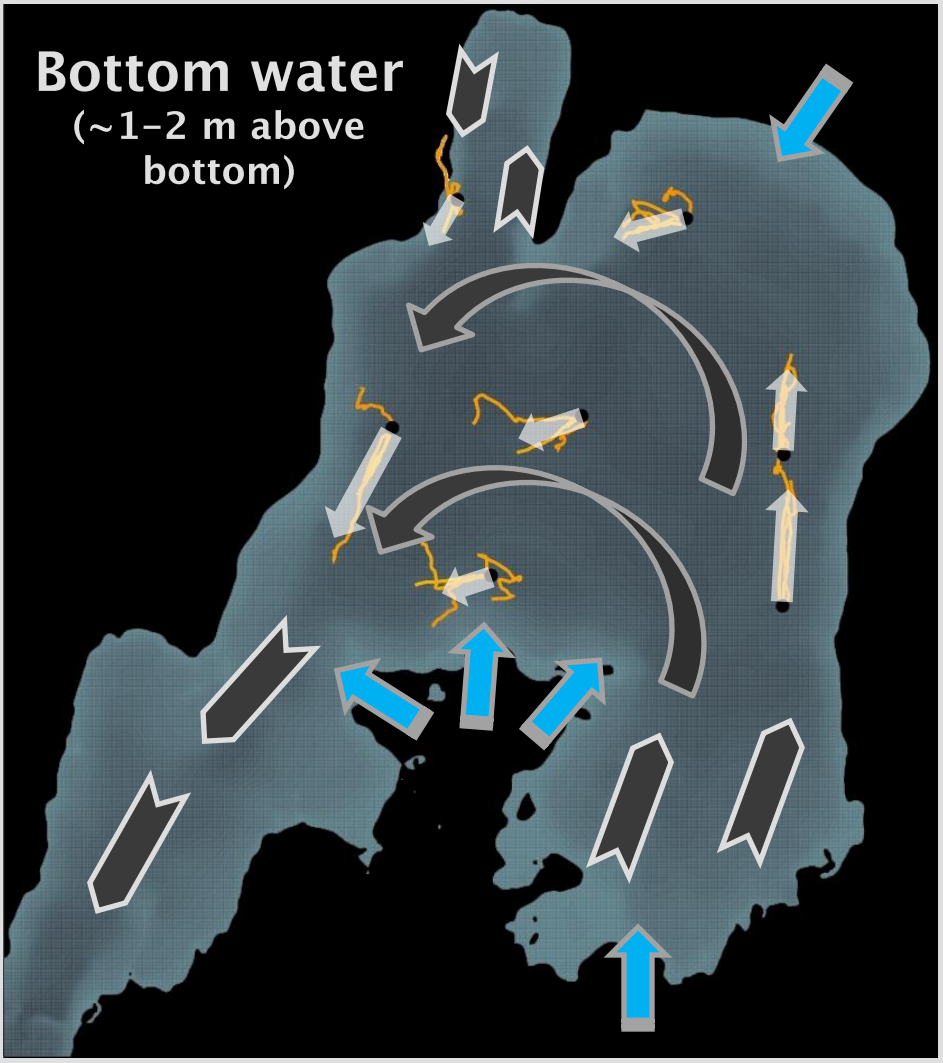


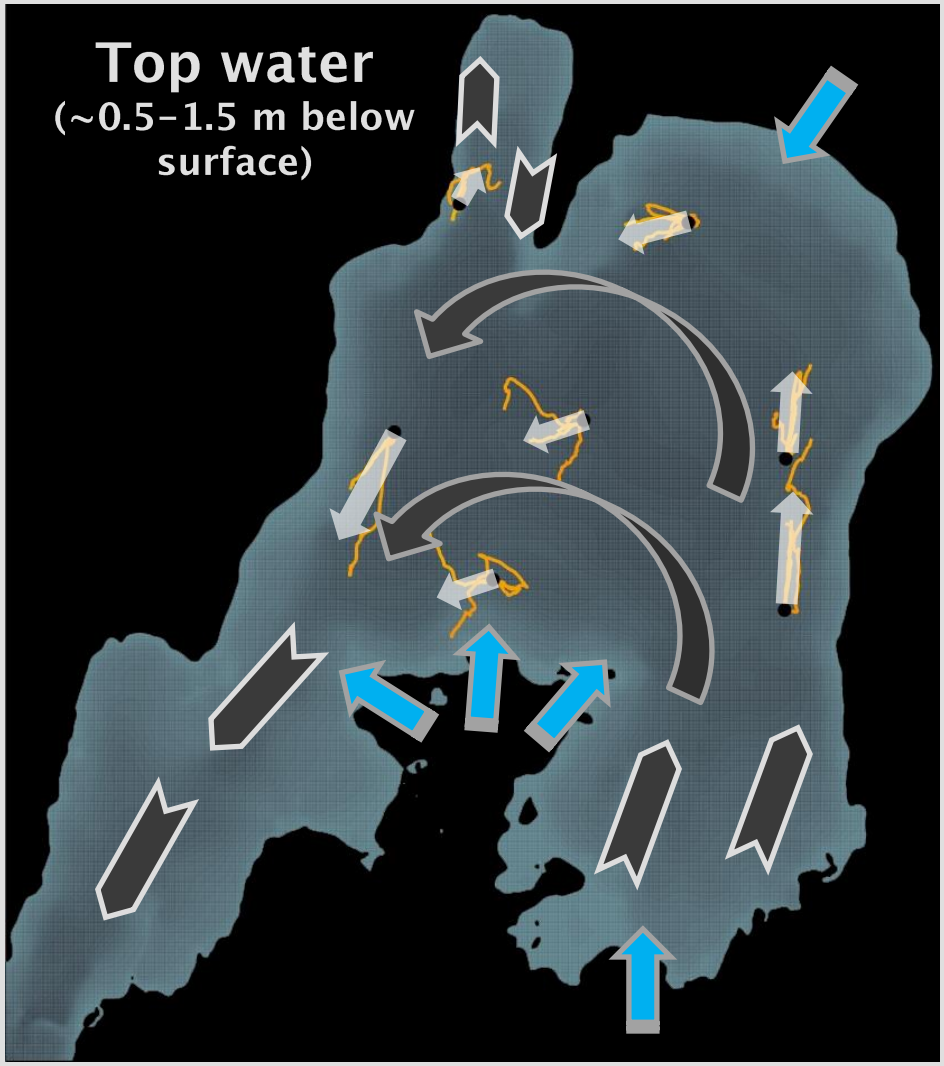


What's the "mean" circulation pattern?

Spring discharge events

April 2014, 1-week PVDs





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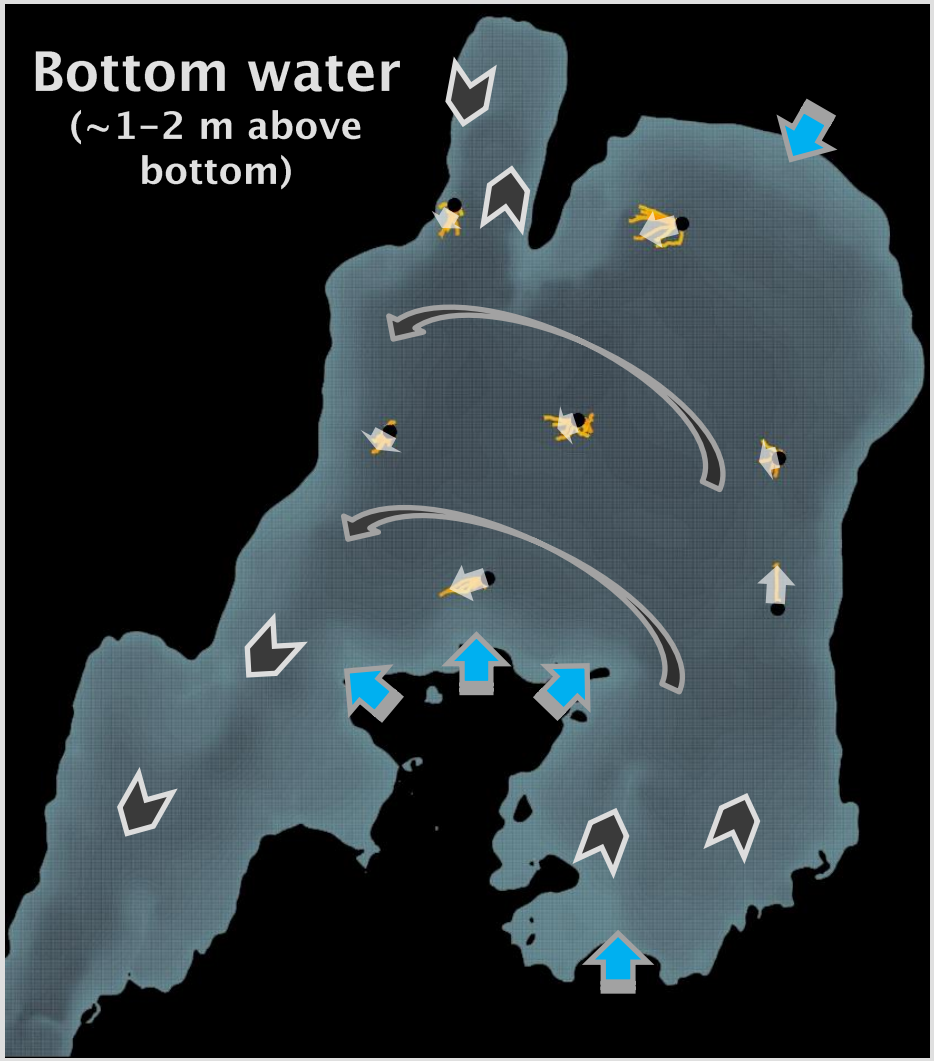
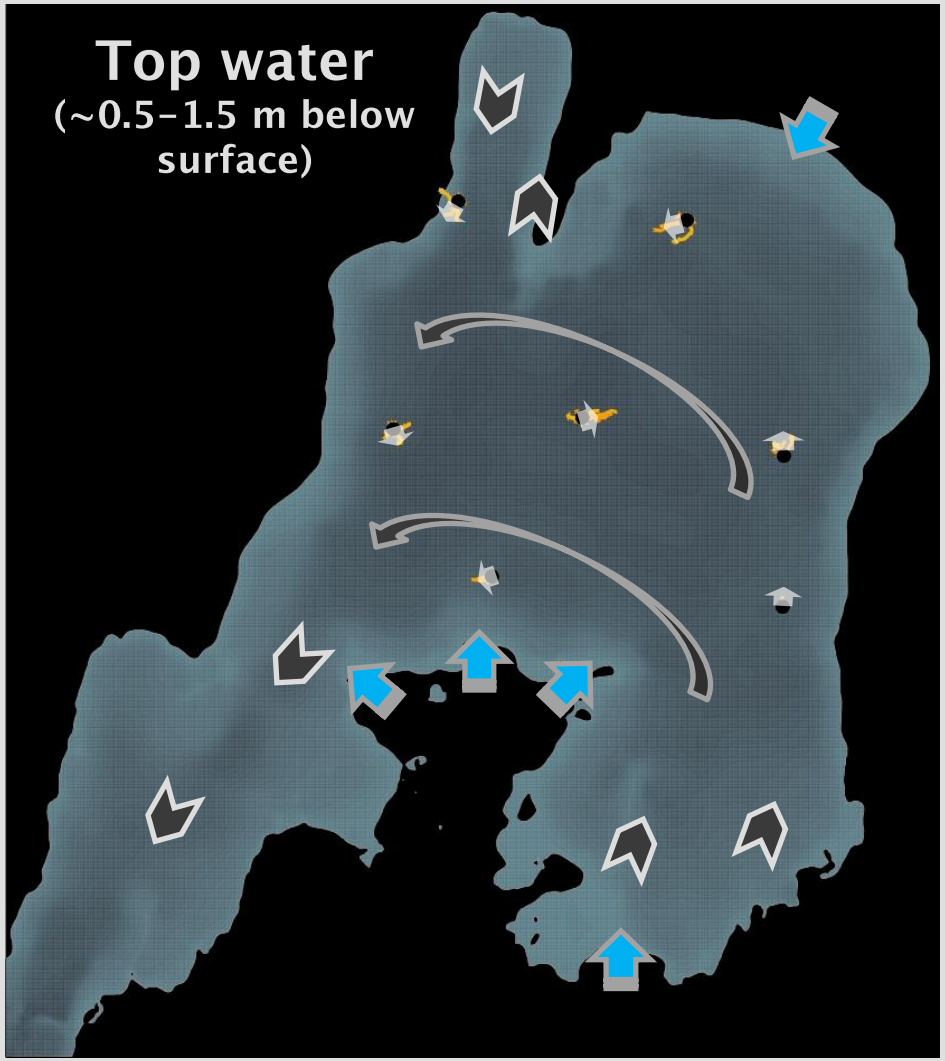
Winter circulation – ice covered

Dec. 2013 to Mar. 2014, 1-week PVDs





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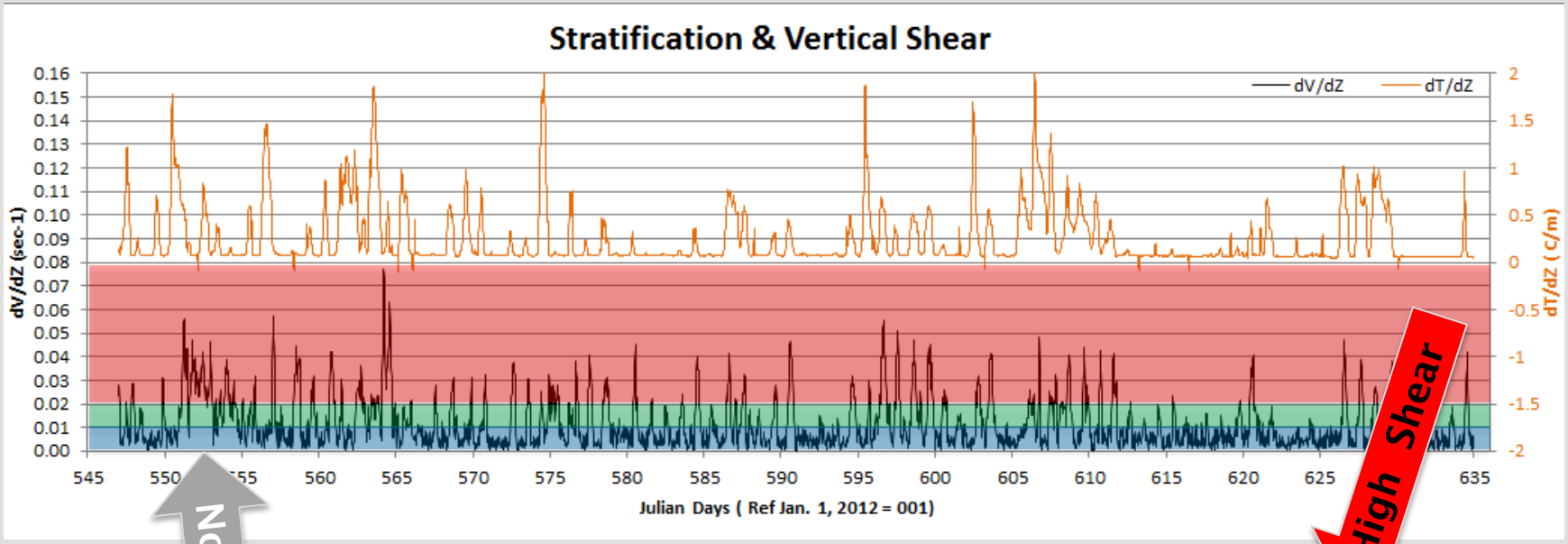
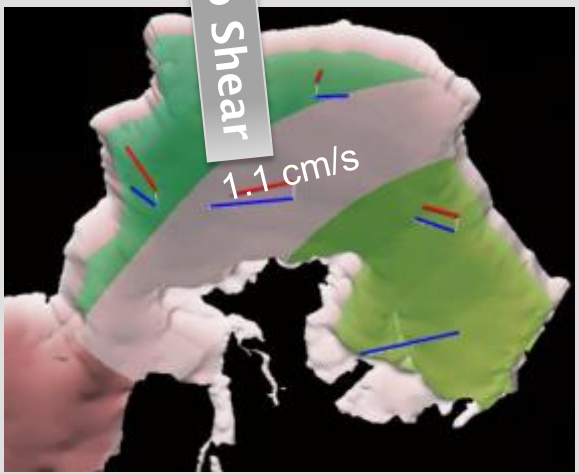
Vertical shear events

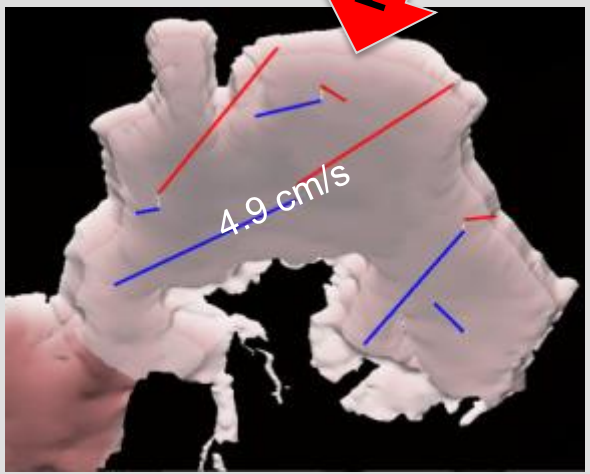
Requirements:

(1) Wind-forced setup

(2) Stratification (> 0.04˚C)







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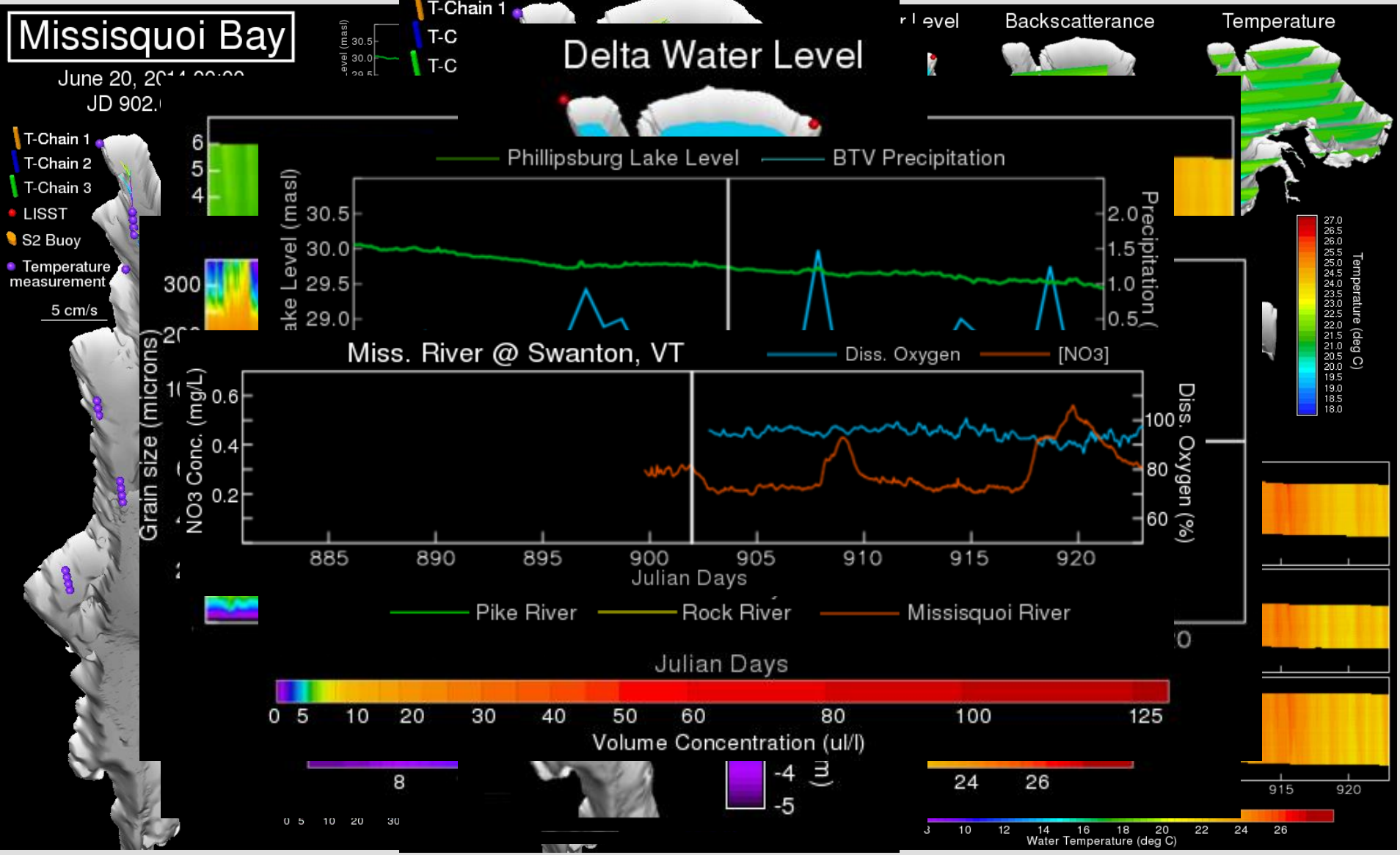
under imations



Questions?