

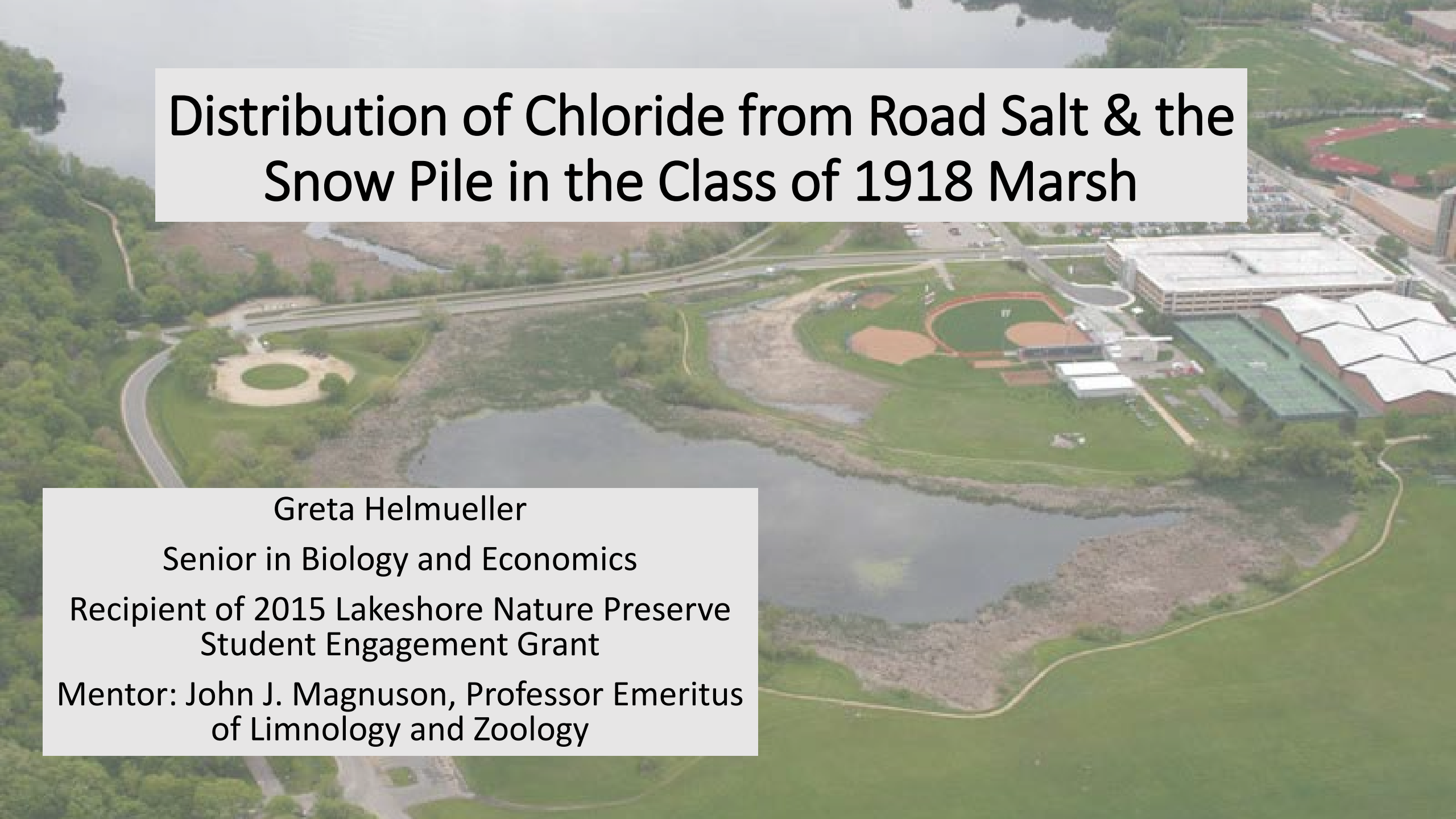
Distribution of Chloride from Road Salt & the Snow Pile in the Class of 1918 Marsh

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Student Engagement Grant

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Snow Pile Adjacent to Marsh



Road Salt and the 1918 Marsh

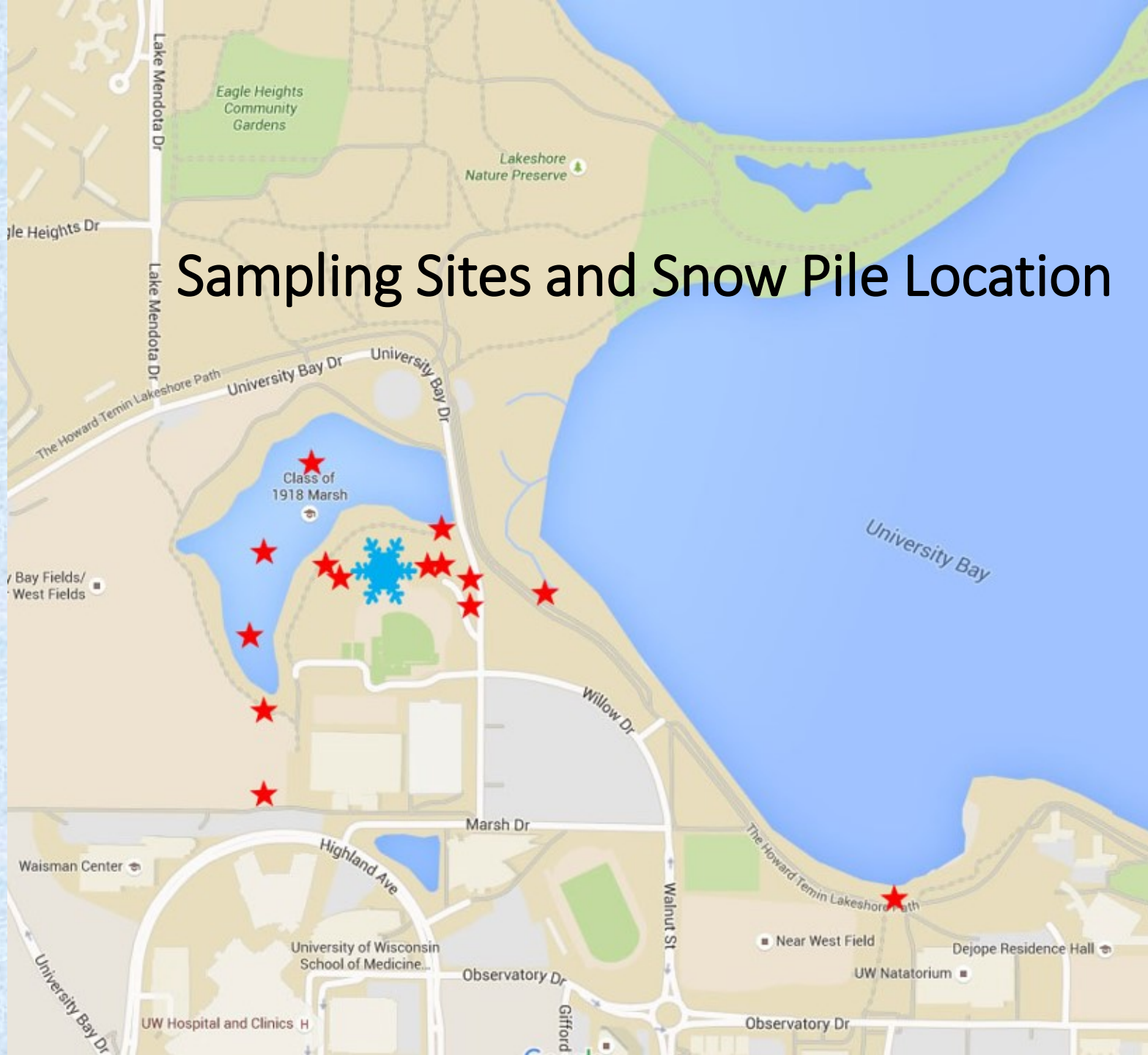


- 1953- Road salt use began in Madison
- Acute Toxicity (aquatic): 757 mg/L
- Chronic Toxicity (aquatic): 395 mg/L
- Continuous Exposer with no effect (aquatic): 230 mg/L
- Taste (humans): 200-300 mg/L

Research Questions

- Are there chloride concentrations in the marsh above the toxicity levels set by the DNR?
- Do chloride levels fully recover from wintertime highs?
- How did the meteorological differences between the two years affect the salt concentrations?

Sampling Sites and Snow Pile Location



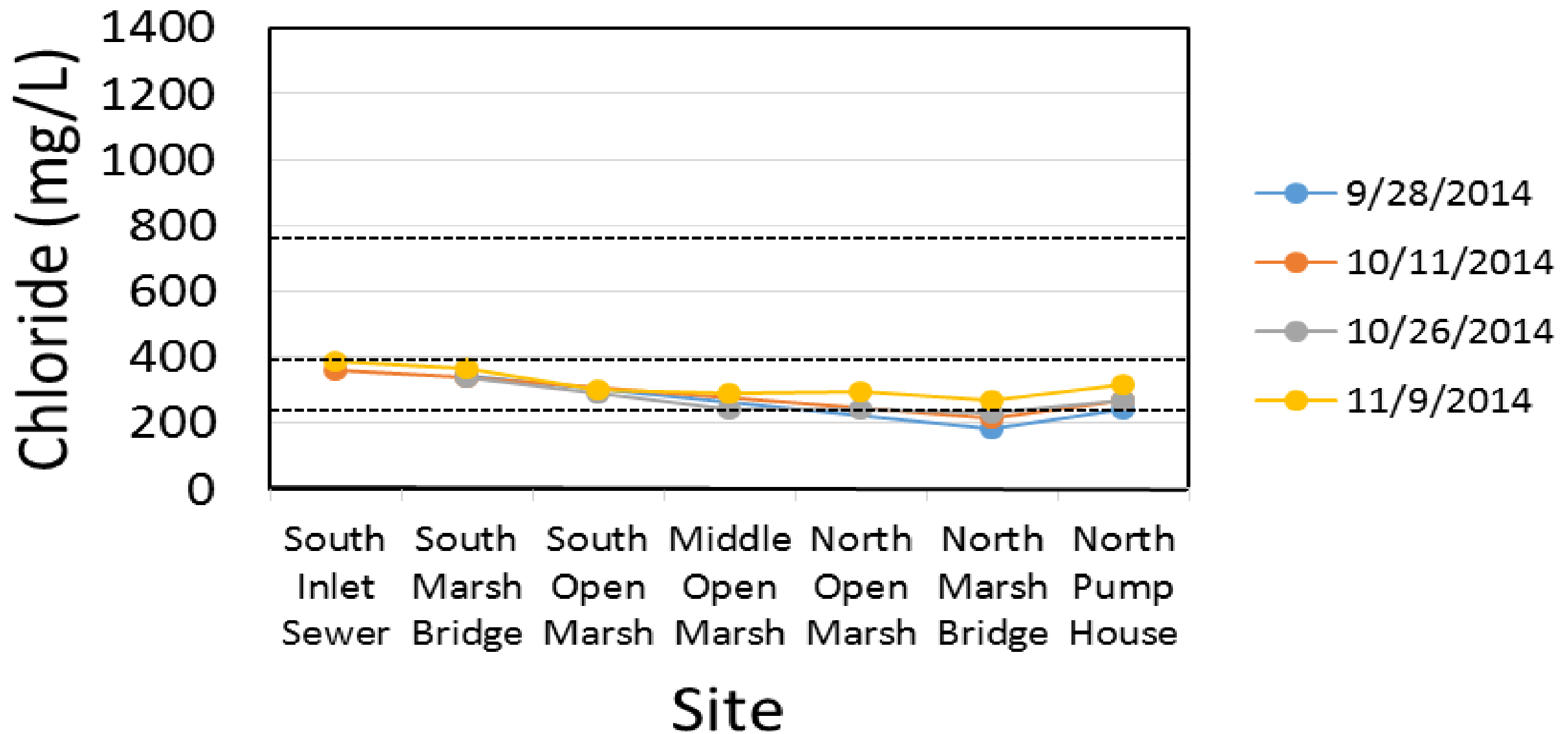
Flow Path Through 1918 Marsh

North Outlet

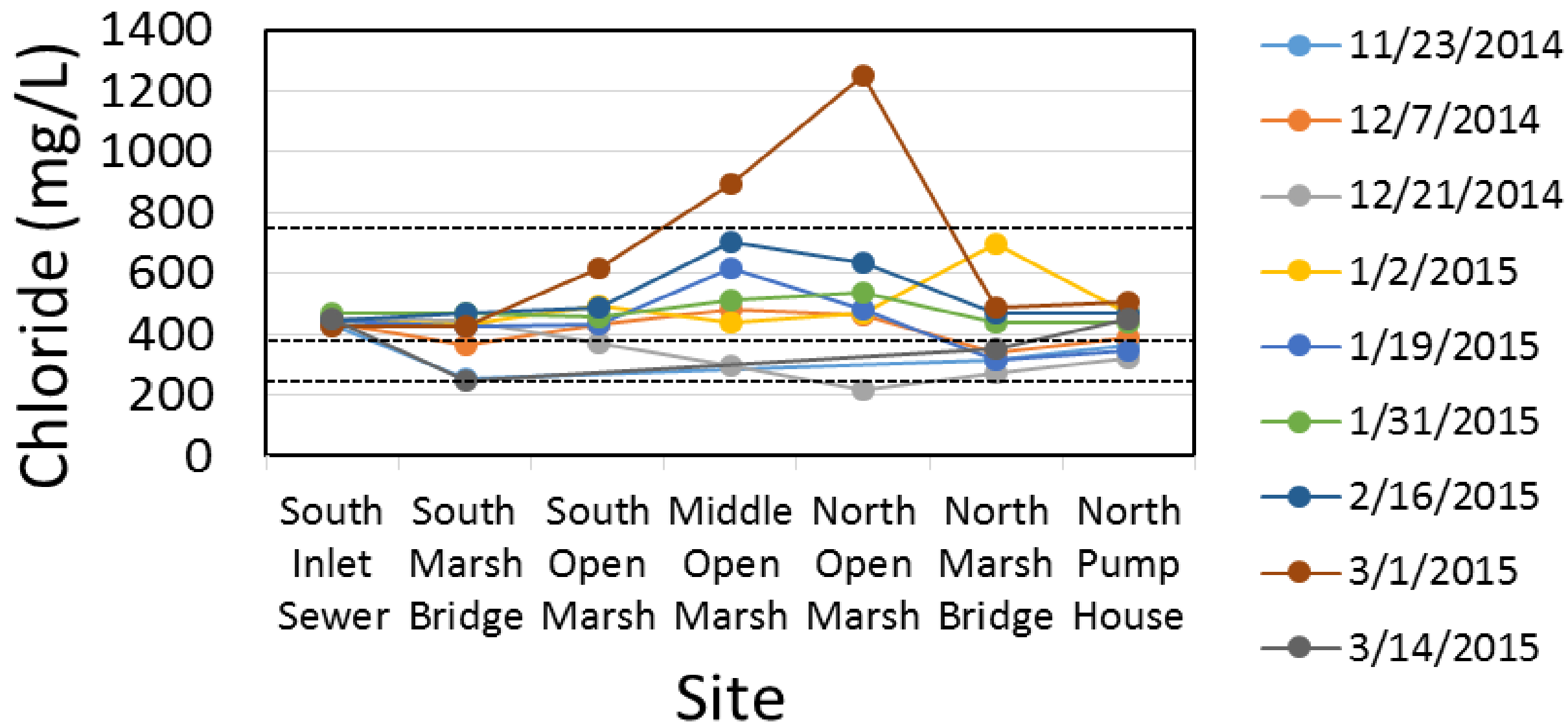
South Inlet



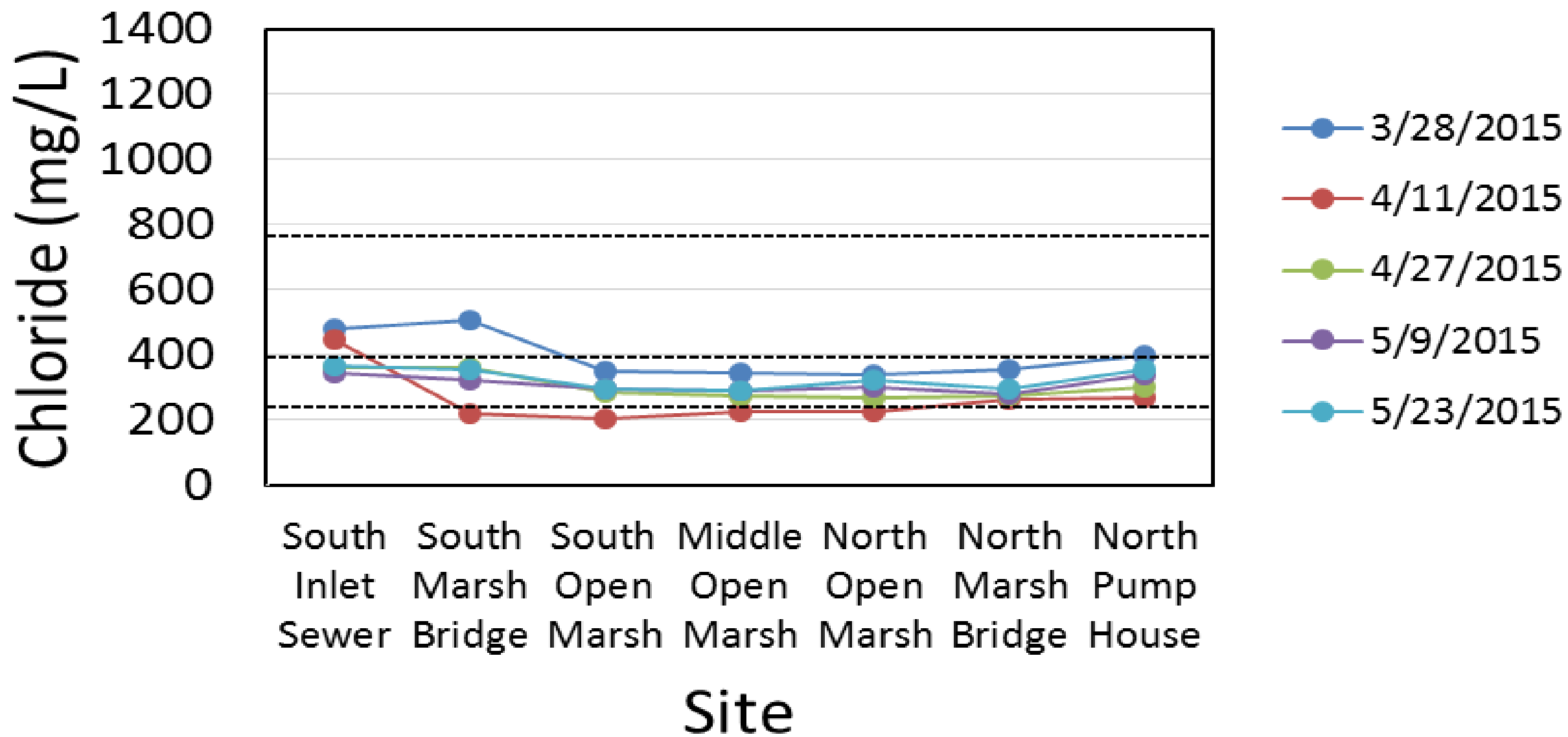
Flow Path Fall 2014



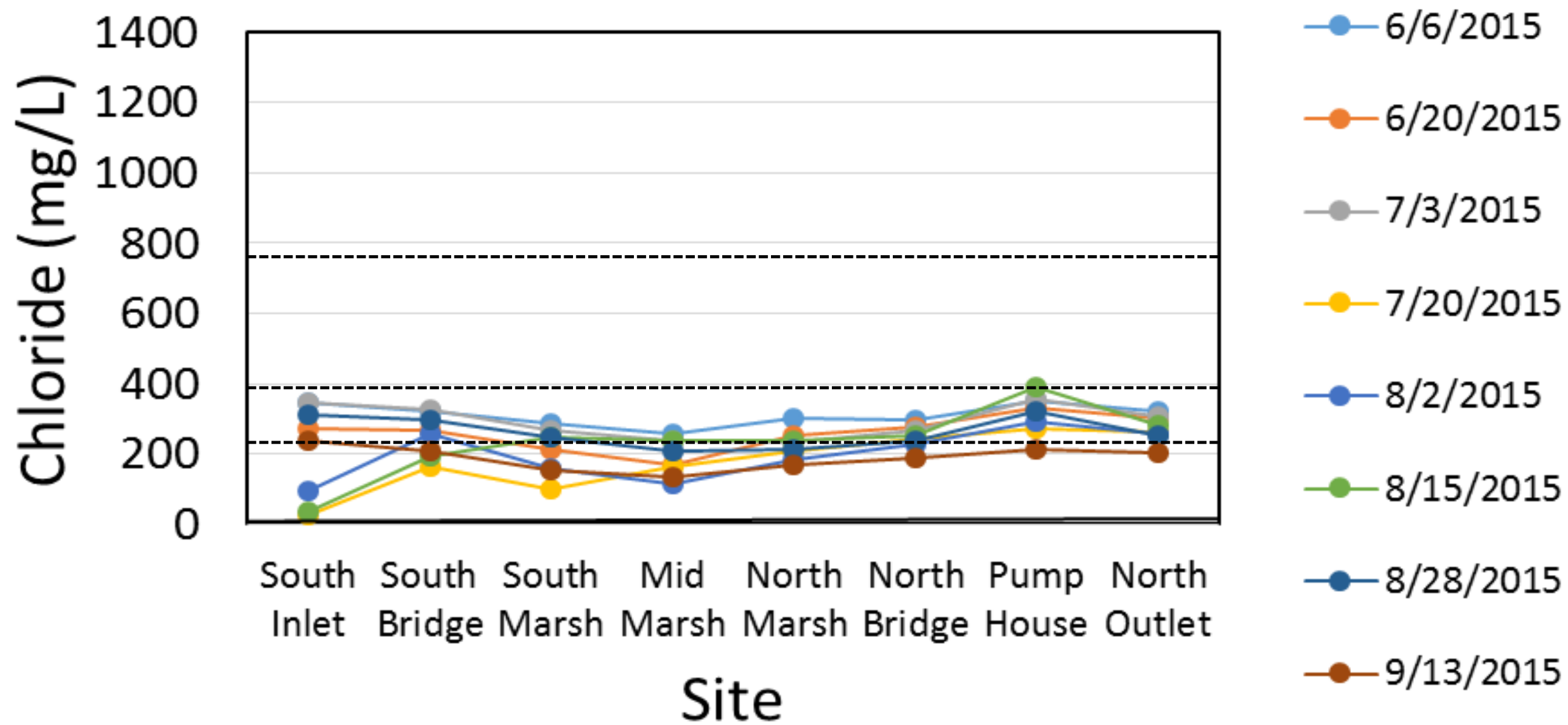
Flow Path Winter 2014-2015



Flow Path Spring 2014-2015



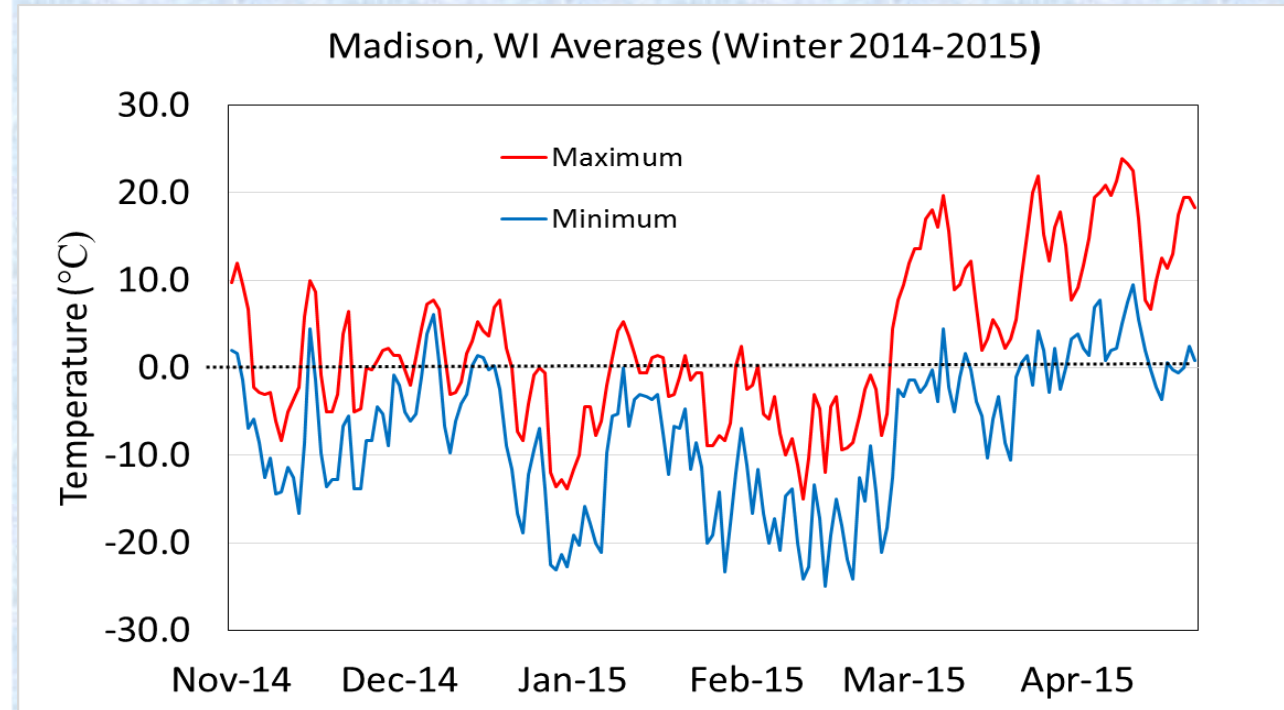
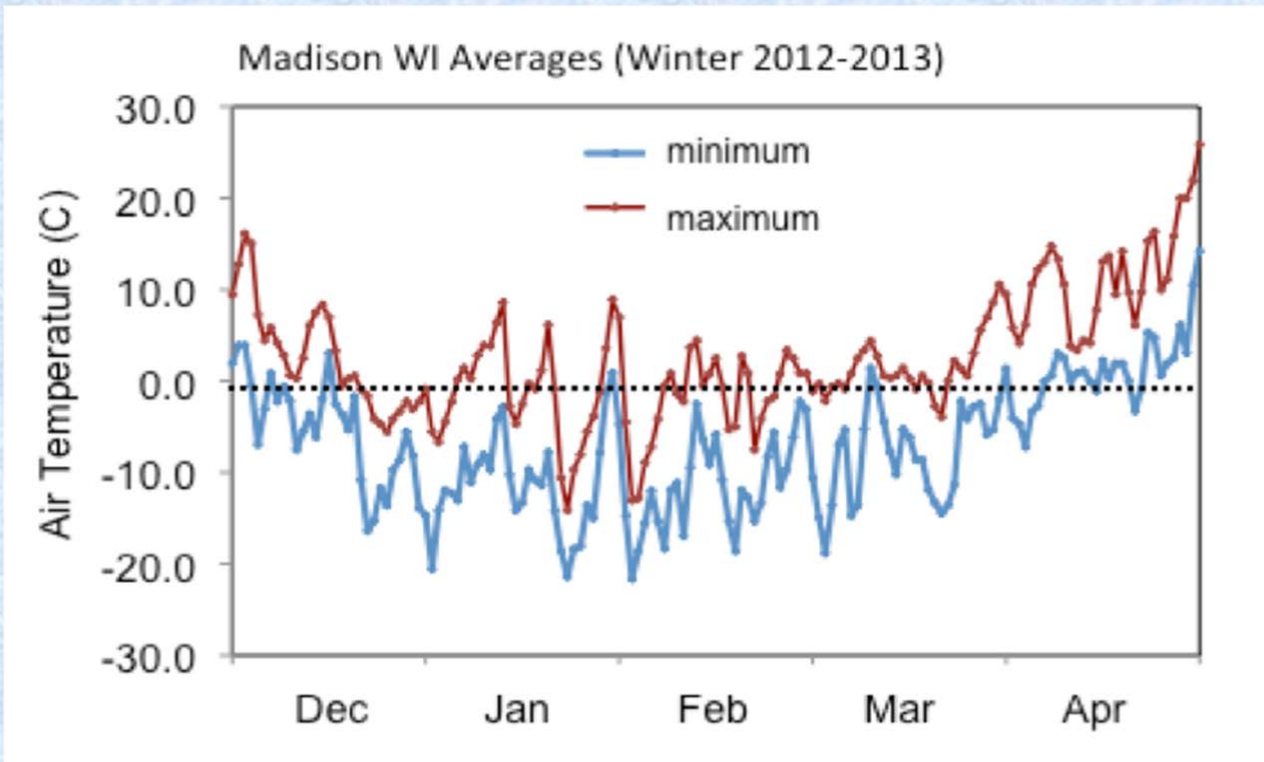
Flow Path Summer 2015



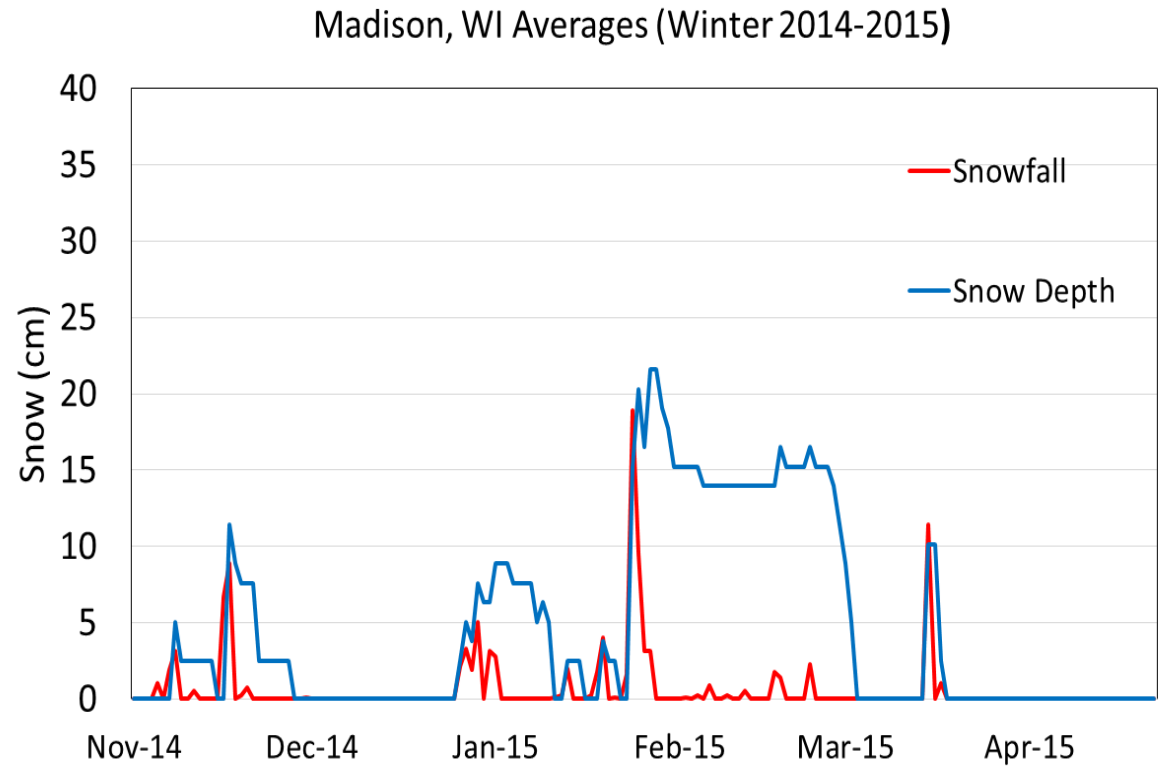
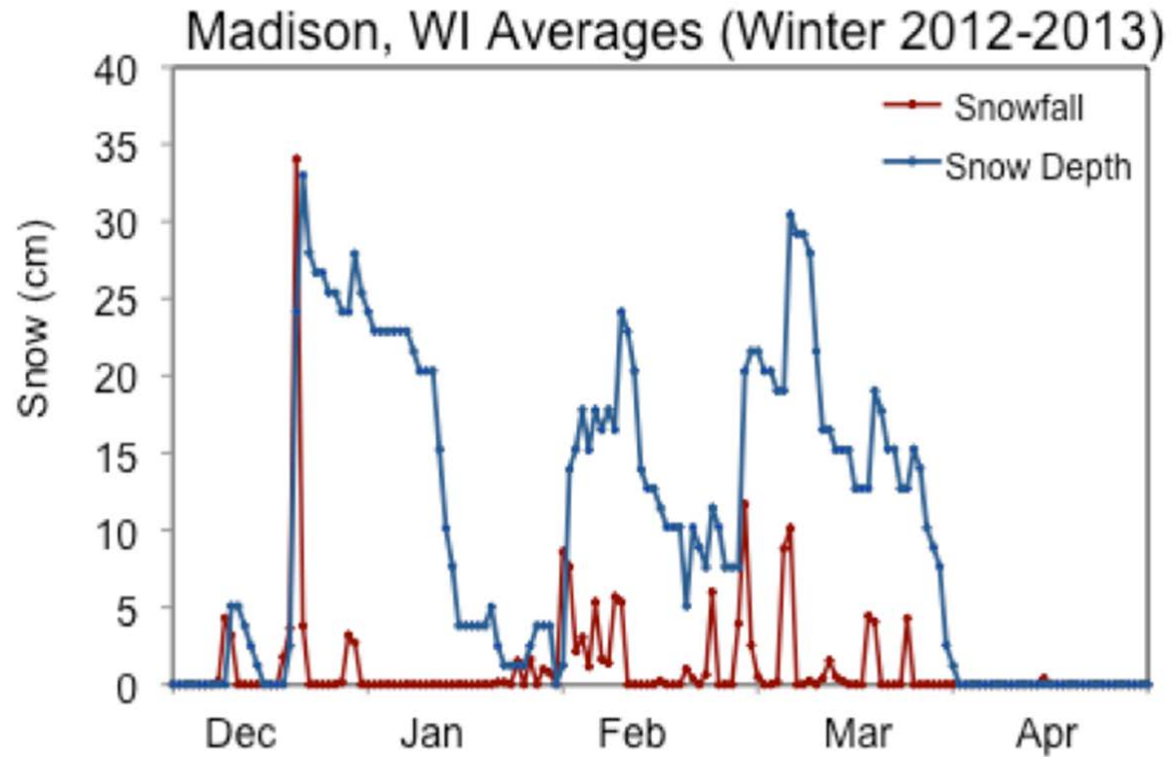
Snow Pile Comparison

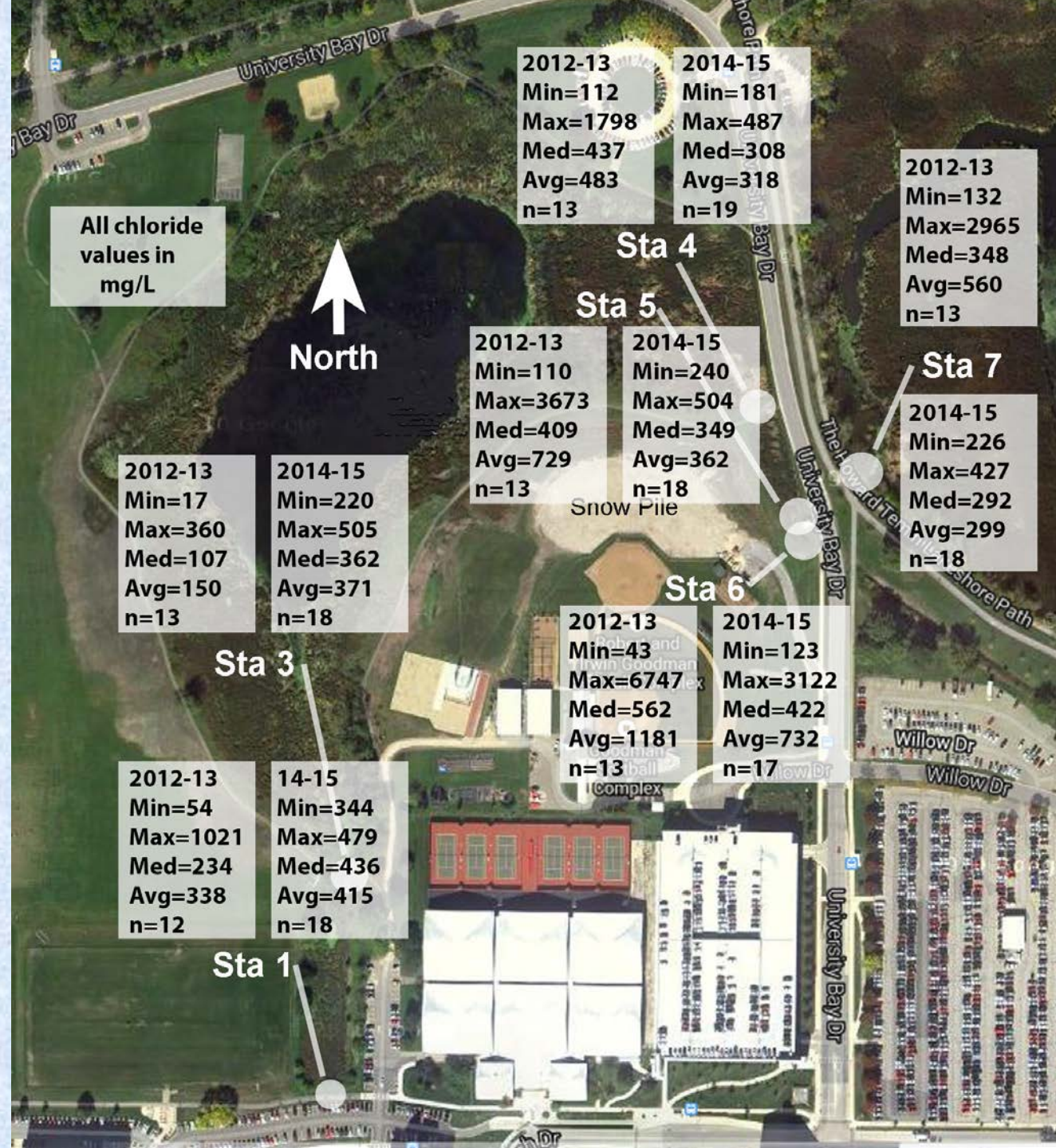


Temperature Comparison

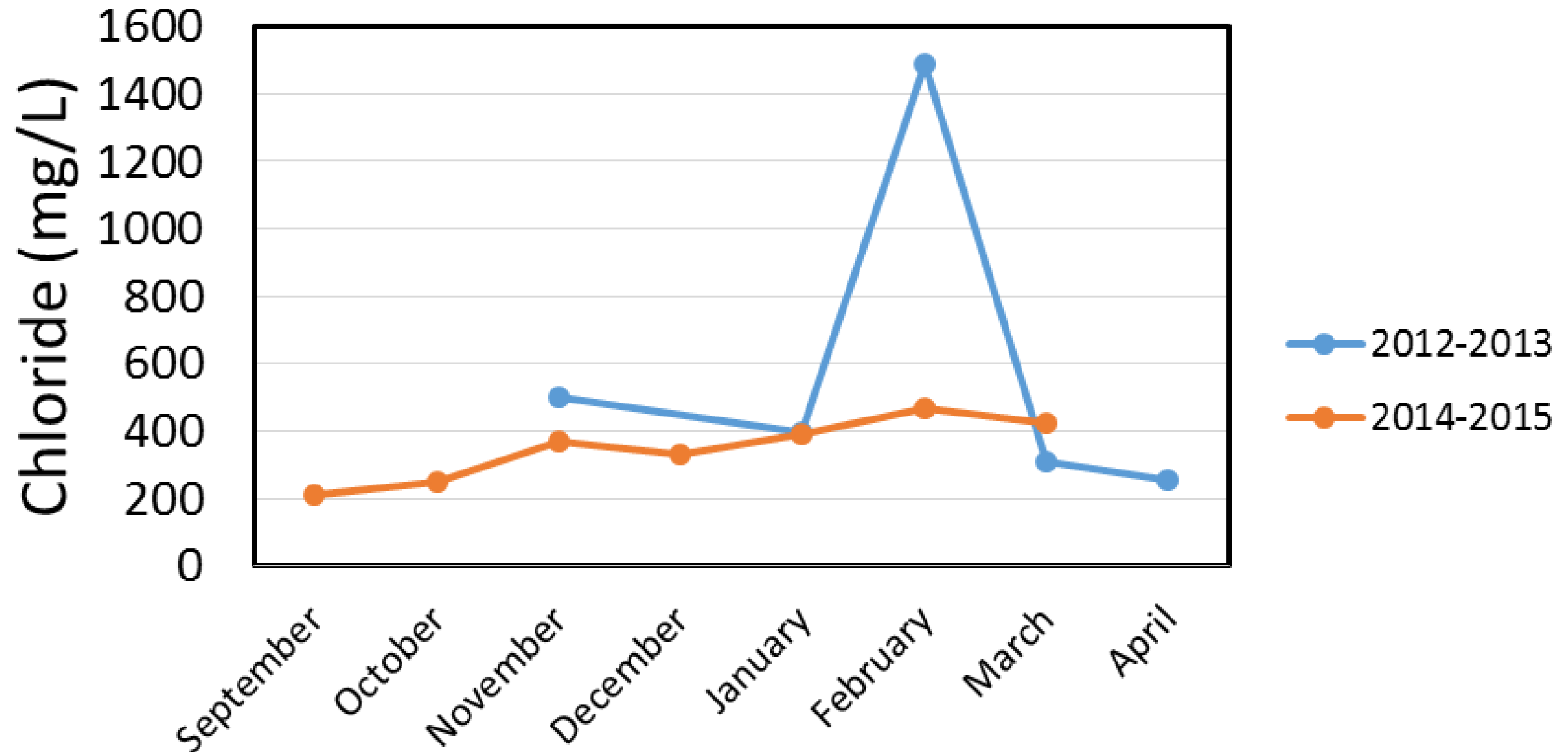


Snow Fall Comparison

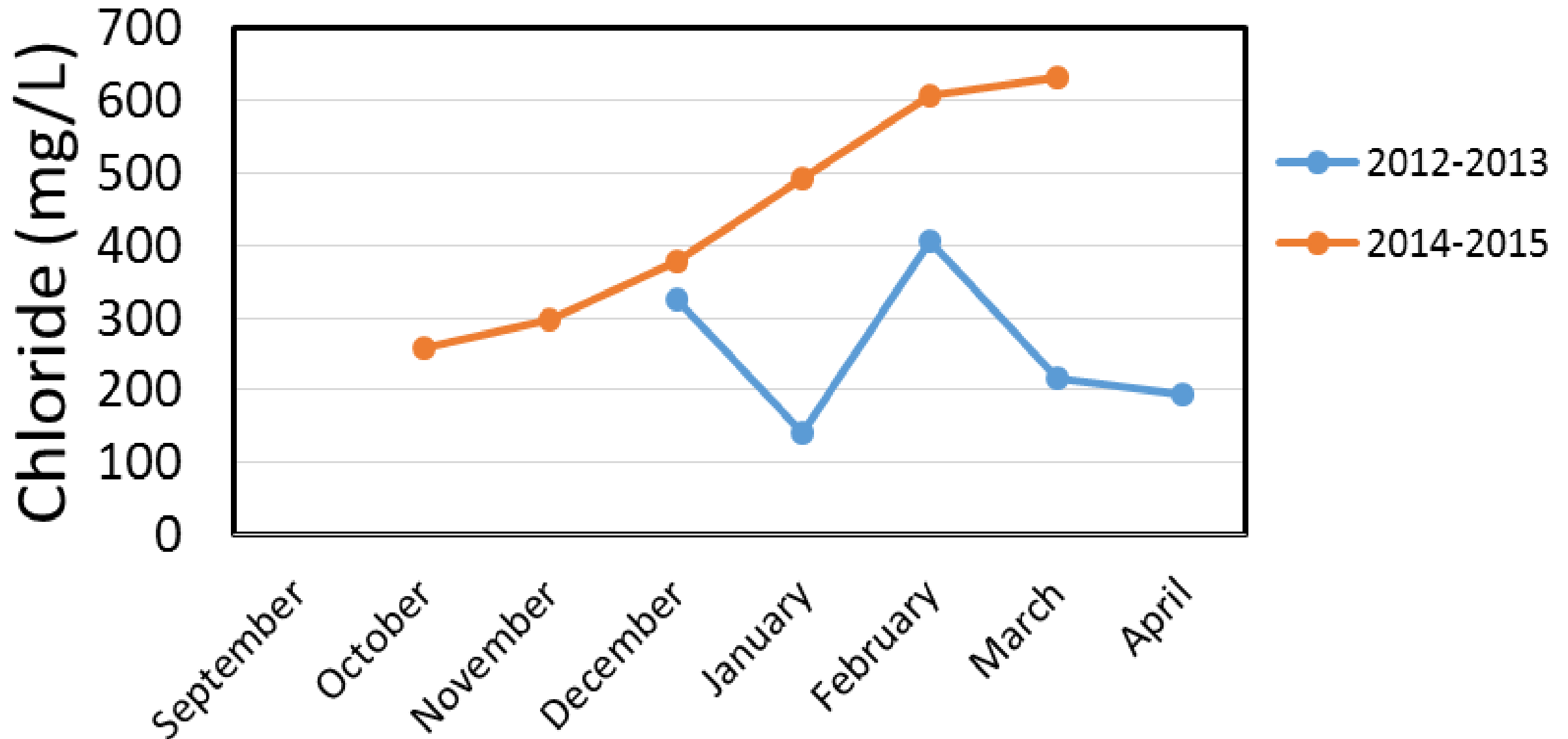




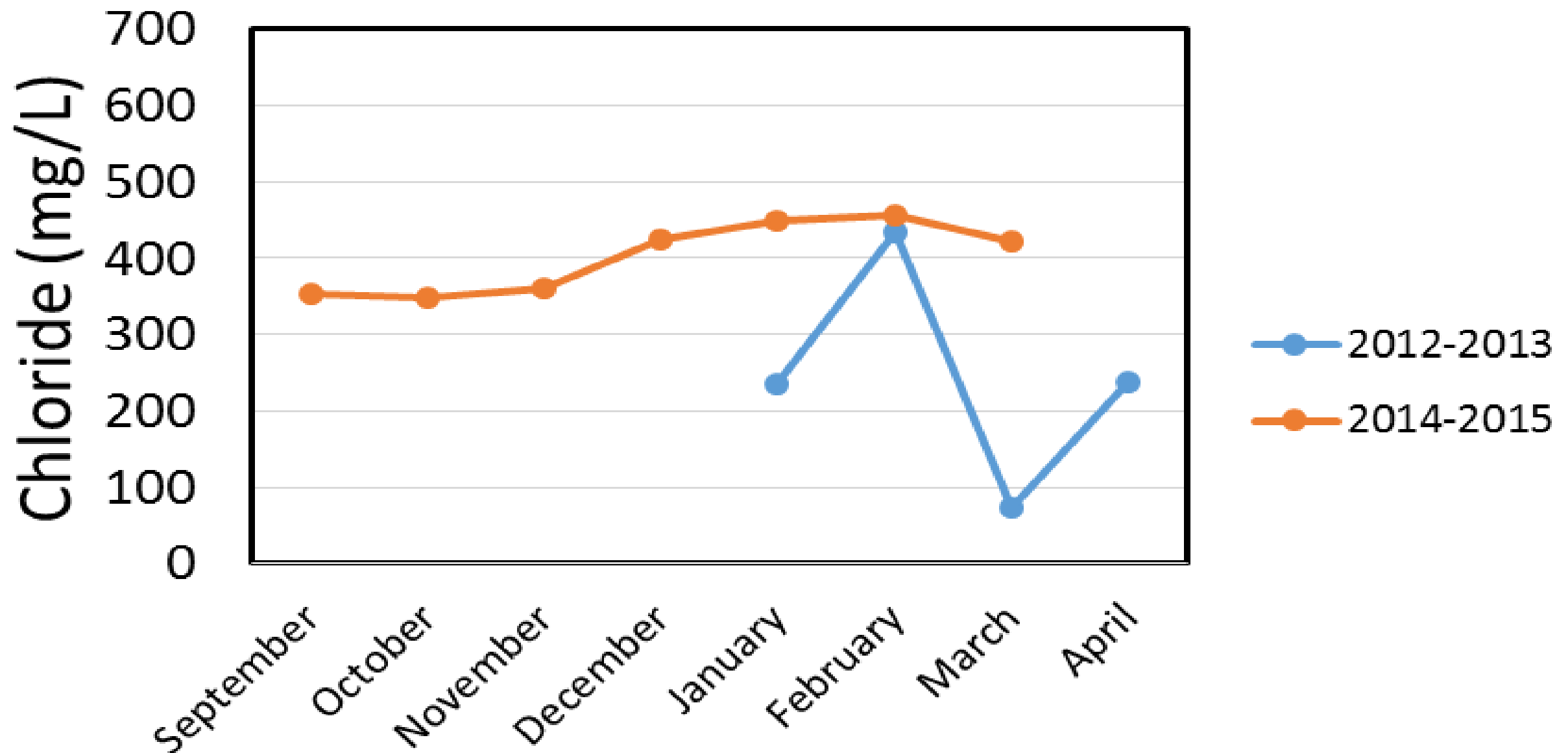
North Marsh Year Comparison



Open Marsh Year Comparison



South Marsh Year Comparison



Conclusions

- Chloride levels similar in Fall 2014 and Spring/Summer 2015
 - Some recovery?
- Winter of 2012-2013 more variable than 2014-2015
 - Highs and lows more extreme
- Values above some/all of toxicity standards
 - Fall/Spring/Summer- around chronic and continuous
 - Winter- around chronic and acute



Future Questions

- How much of the elevated chloride levels in the winter was due to an influx of road salt, and how much was due to the chloride concentrating as the water froze?
- Are the chloride concentrations correlated with precipitation/snow melt events?
- Further statistical analysis needed
- What are the baseline chloride levels?

THANK YOU!

