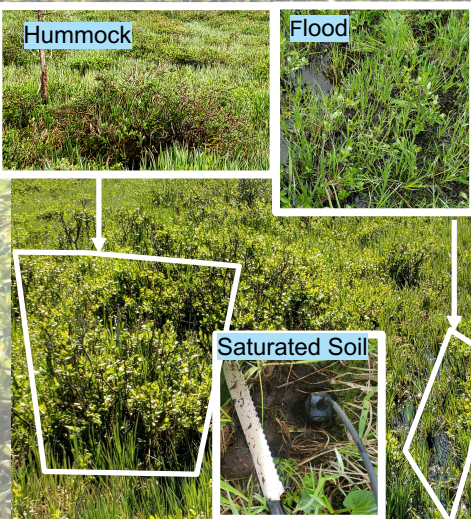


## Introduction

Wetlands can disproportionately influence the water quality and nutrient cycling of their surroundings landscapes<sup>2</sup>. Variation in the arrangement of natural physical features of the landscape can influence a wetland's function and lead to differences in rates of biogeochemical processes<sup>1</sup>. I studied an subalpine wetland with variation in surface characteristics to determine how those characteristics influence environmental conditions (i.e., dissolved oxygen, redox potential(ORP), and pH) that affect biogeochemical processes.

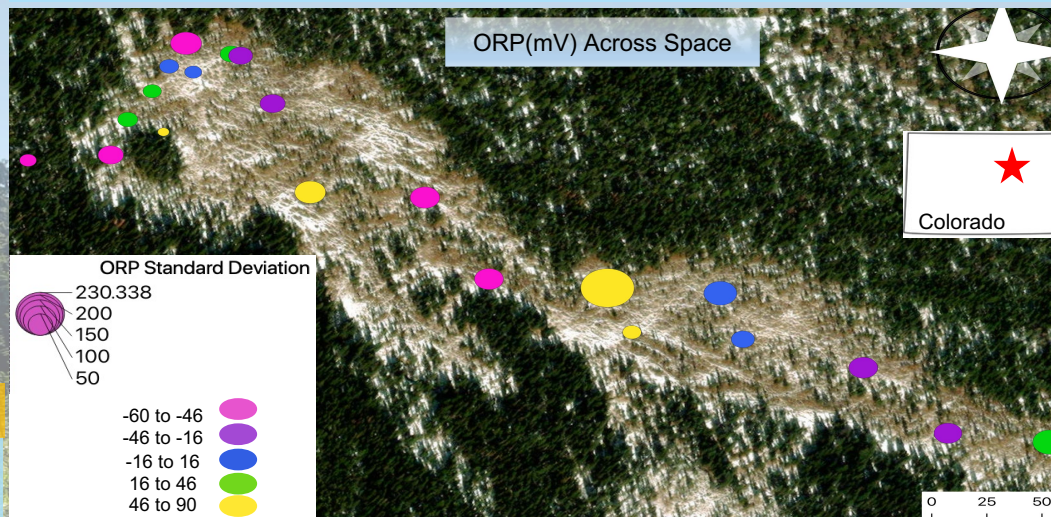
## Methods

- Measurements taken at 105 points grouped into 21 nodes across a subalpine wetland averaging 14484 elevation in the Rocky Mountains, CO
- Surface characteristics grouped by water features and plant community type.
- Measured biogeochemical indicators: Oxidation Reduction Potential(ORP), dissolved oxygen (DO %) and pH in surface or subsurface water(if needed)
- Peak snowmelt



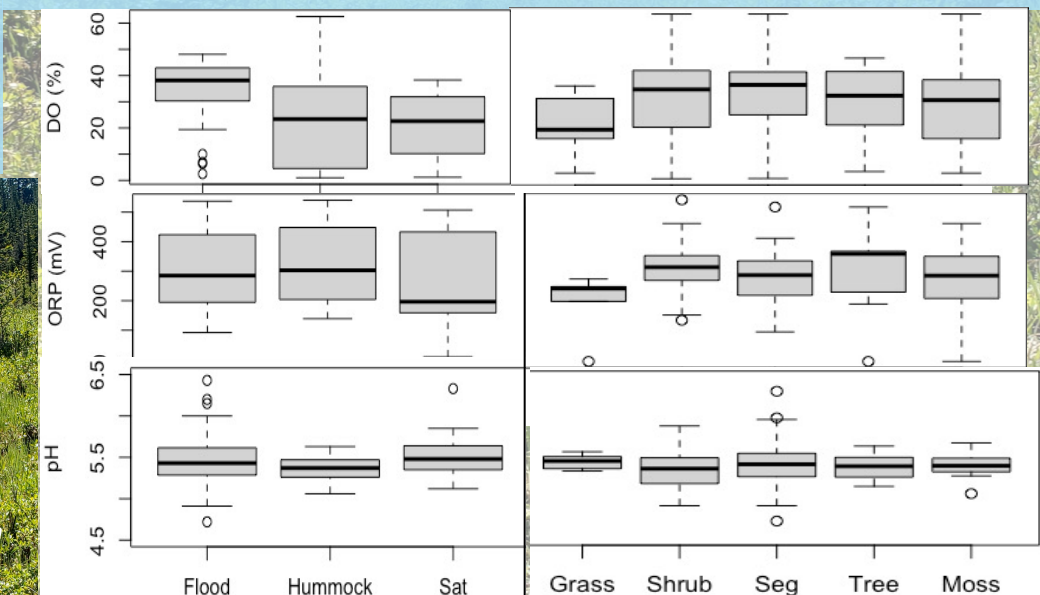
## Question 1: What are the patterns of dissolved oxygen, oxidation reduction potential, and water pH across a subalpine wetland?

Expected: Spatial variation among all indicators.



## Question 2: Are there any patterns associated with surface characteristics?

Expected: Higher DO%, redox potential, and lower pH in hummocks (water features) and grasses and trees (vegetation communities) compared with other groups.



## Results Question 1

- Some spatial pairing observed in the middle of the wetland.
- There was no overall difference between the input and output.
- Results indicate that there was more similarity in the values of these biogeochemical indicators across space than I originally expected. Likely, other factors are important for determining variation in biogeochemical processes, like carbon content and nutrient pools.

**Oxidation reduction potential:** measure of ability to undergo oxidation or reduction.

**Dissolved Oxygen (DO%):** dissolved oxygen in the surface water.

## Results Question 2

- **Water:**  
DO% is significantly higher in flood than in hummock ( $p < 0.05$ ) However, there is no significant difference between DO in flood and saturated areas. No significant difference of ORP values between flooded and hummock areas, ( $p = 0.619$ )
  - **Vegetation:**  
Similar patterns in the DO and ORP among vegetation features, however there was no statistically significant difference between the variables
- \* No significant difference in pH between features

## Suggested Future Work

- Hydrological mapping to track input and export flows.
- Measuring the nutrient pool concentrations
- Study of the rates of biogeochemical processes

## Acknowledgments

Laura Rea, Dana Stamo, Alicia Christensen, LTER-funding- (DEB - 1637686) , Rebecca Batchelor