Greenhouse Gas Emissions for Utah Wetlands

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Goals

- Examine influence of alterations to biology and chemistry of wetlands upon nutrient assimilative capacity and greenhouse gas (GHG) emissions
- Measure greenhouse gas emissions from wetlands to determine their contribution to local GHG budgets

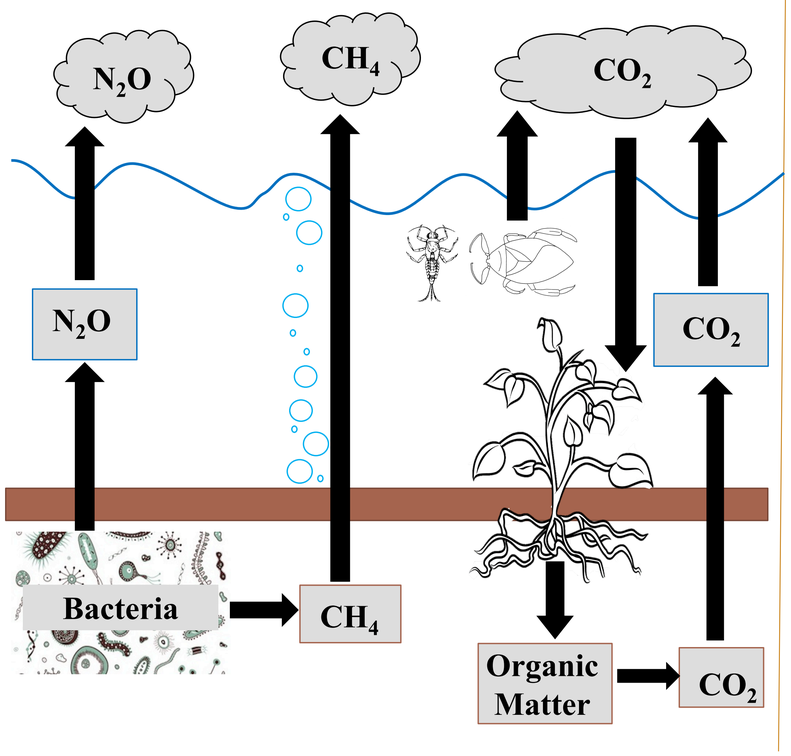


Figure 1. Movement of GHG through wetland ecosystem

Research Methods

Install mesocosms in Farmington Bay.

Using floating domes on surface of mesocosms, test influence of differing water chemistry GHG emission rates.

Experimental treatments:

- Control
- Diluted nutrients
- Increased salinity
- Submerged aquatic vegetation removal

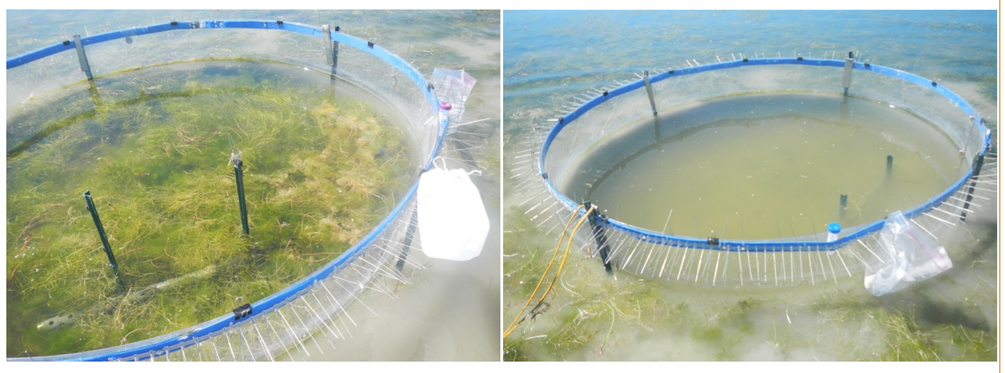
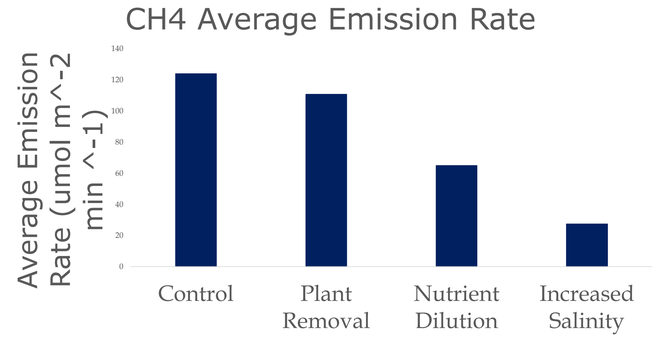


Figure 2. Mesocosm with plants intact (left) and mesocosm with plants removed (right).

Results

- Dilution treatment: decreased emission rate
- Increased salinity treatment: decreased emission rate
- Plant removal treatment: decreased emission rate



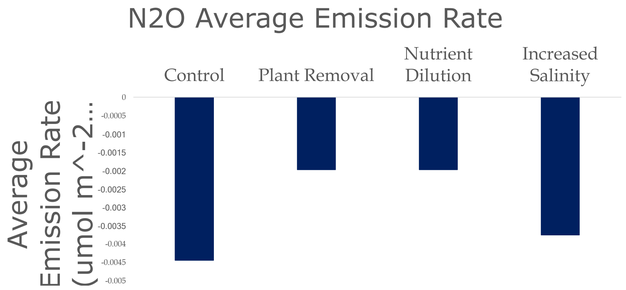


Figure 3. Emission rates for experimental treatments

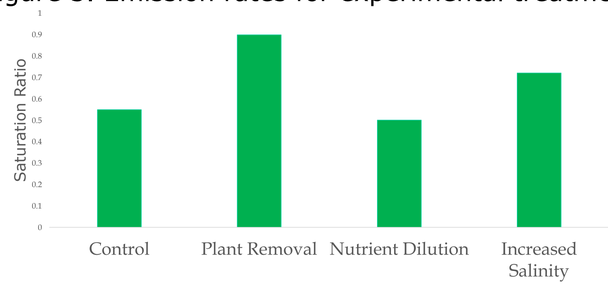


Figure 4. N2O Concentrations in Ambient Air and Dissolved in Mesocosms

Relevance

- Wetlands perform numerous ecosystems services
  - Flood and drought protection
  - Biodiversity maintenance
  - Water purification
- Better understanding wetland contribution to GHG budgets
- Better understand influence of human activity on wetland GHG emissions

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