

CREST CACHÉ Student Poster Template

Christian Lopes, Florida International University

Research Mentor: Dr. James Fourqurean

Collaborators: Bryce Van Dam, Christopher Osburn

Goals

- Determine the best method for calculating Net Ecosystem Metabolism (NEP).
- Test the use of pH and DO as indicators for NEP.
- Understand how differences in seagrass densities play a role on the interaction between organic and inorganic carbon cycling.

Impacts:

- Highlight the significance of overlooking assumptions when measuring NEP.
- Develop an analytical tool for measuring the response of an ecosystem to various drivers, considering the photosynthesis and calcification couplet.



Figure 1. Instrument deployment at our seagrass site. To measure how the ecosystem is breathing as a response to

Research Methodology

- Measure carbonate parameters and dissolved oxygen in the water column along diel cycles at sites with high and low primary production.
- Measure the buffering potential of sites along a productivity gradient using a proton and oxygen disequilibrium approach.

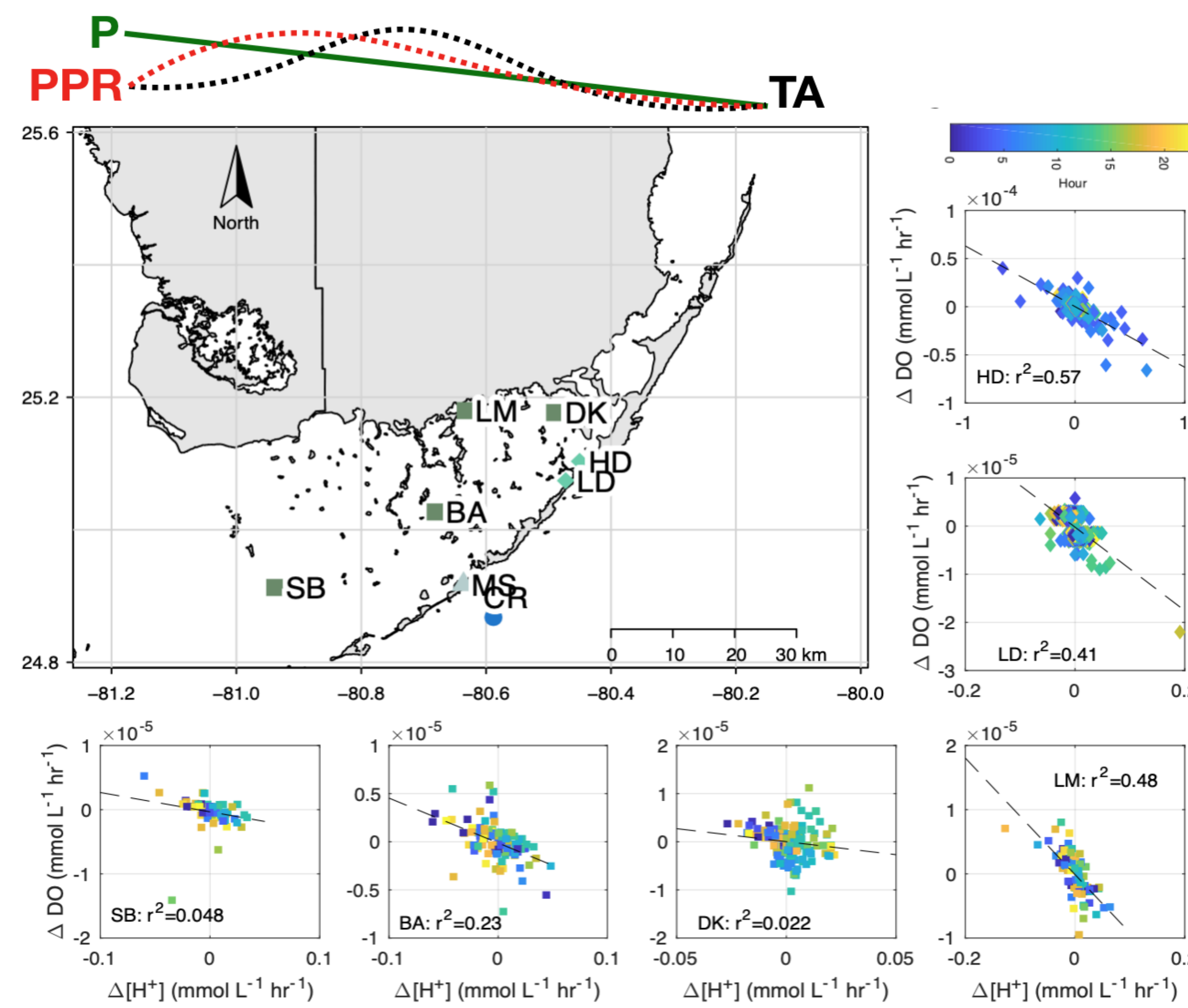


Figure 2. Site map of Florida Bay with buffering potential

Results

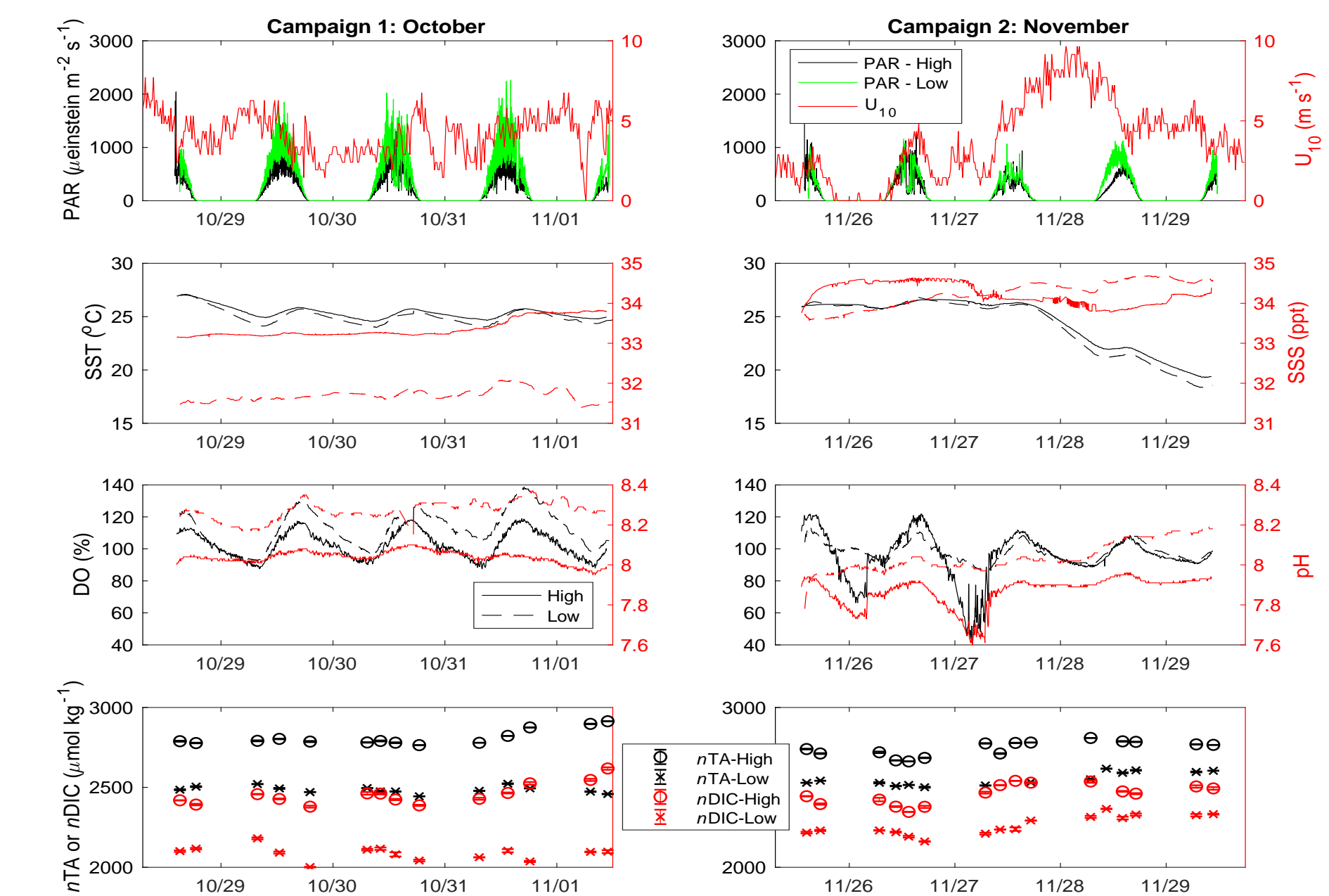


Figure 3. Continuous and discrete measurements of organic and inorganic ecosystem parameters.

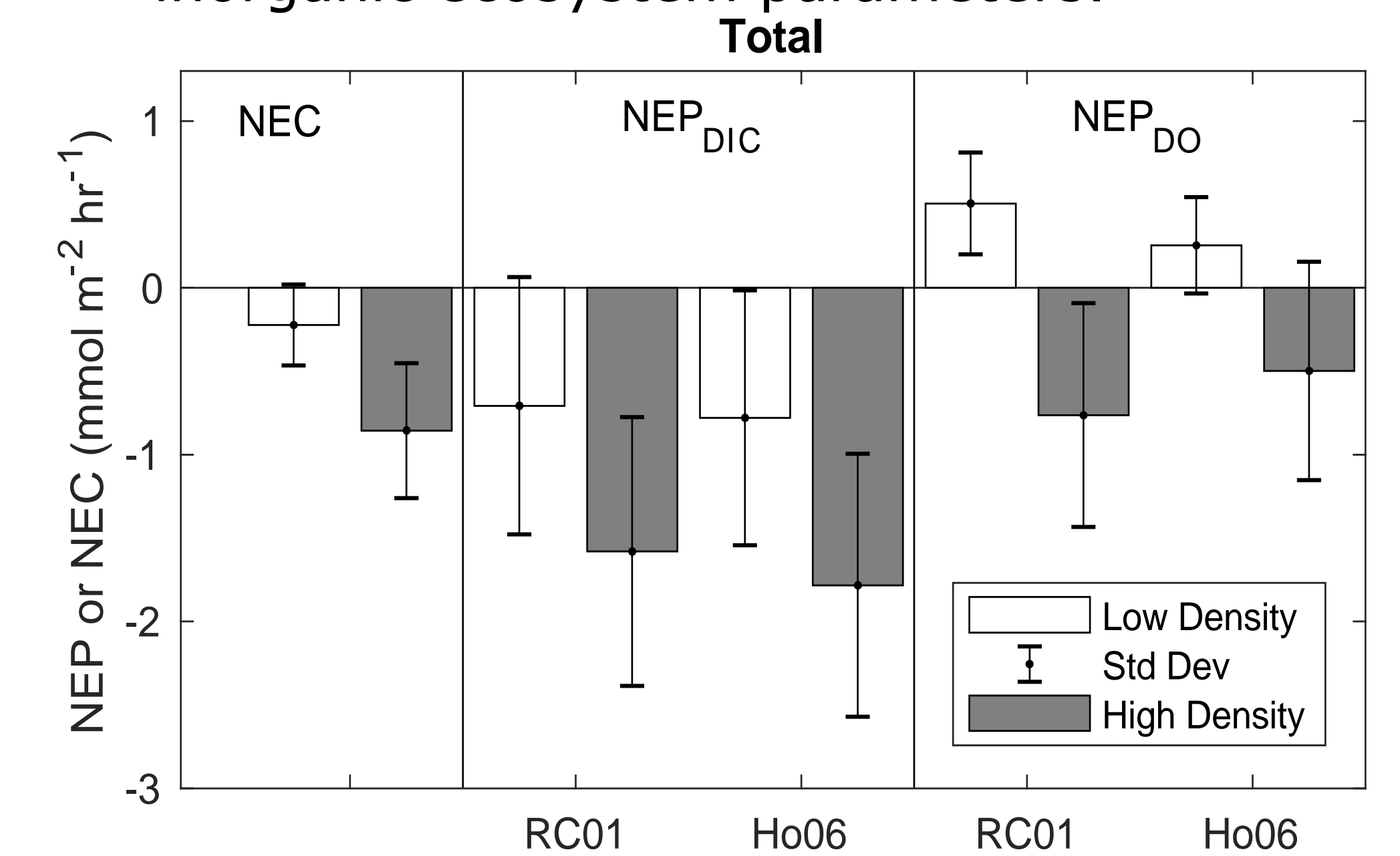


Figure 4. NEP using the DIC and DO approach at high and low seagrass sites using two endpoint model calculations for gas transfer velocities. Net Ecosystem Calcification between High and Low density sites

Conclusions:

- NEP_{DIC} is better than NEP_{DO} in a buffered system.
- Inorganic carbon cycling has a greater influence on buffering potential of systems.