

2022 DELTA SCIENCE FELLOW **FINAL REPORT**



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Focus

Refining models of carbon
sequestration rates in
tidal wetlands

Award

\$60,548

Research Mentor

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Community Mentors

Dr. Lisamarie Windham-Myers,
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PROJECT

Wetland ecosystems can serve as powerful carbon sinks and play a key role in mitigating climate change. But wetlands can also be a source of carbon if, for example, their soils are disturbed. This research, conducted in collaboration with the U.S. Geological Survey, aimed to refine current models of carbon sequestration rates in tidal wetlands by incorporating new data on the export of dissolved inorganic carbon into other coastal and ocean waters.

RESEARCH CONCLUSIONS

One year of continuous high-frequency atmospheric and hydrologic data was collected from Eden Landing Ecological Reserve between March 3, 2021, and March 9, 2022, with gaps in the dataset (due to sensor failure) filled using a machine-learning algorithm. Further data was collected through bottle sampling. Preliminary data analysis shows a significant export of dissolved inorganic carbon during the growing season. Additionally, a net gain of dissolved inorganic carbon was noted during the winter months, though the source remains unidentified. These results, by refining our understanding of carbon sequestration in wetlands, will help shed light on the potential benefits and tradeoffs of restoration, and aid in management decision-making.



And eddy covariance tower was built in the marsh to collect the data.

"These results offer valuable information that can guide wetland management decisions as we face climate change and rising sea levels."