THE WATER INSTITUTE
OF THE GULF®

BLUE CARBON

In ongoing discussions about reducing levels of carbon dioxide in the atmosphere, blue carbon has emerged as a recognized tool to address this challenge in a sustainable and long-term way. Blue carbon describes the ability of aquatic and wetland plants to capture and store carbon from the air. The carbon captured in coastal wetlands presents an opportunity for restoration and infrastructure protection projects to generate greenhouse gas offset credits and incentivize private investment through the revenue that can be generated from carbon credit markets.

A recent report from the National Academies (National Research Council, 2015) recommends "research and development investment to improve methods of carbon dioxide removal and disposal at scales that would have a global impact on reducing greenhouse warming."

Louisiana's vast coastal wetlands represent the most important stock of wetland carbon in the United States which offers the potential for impactful research leading to meaningful carbon capture.

WHAT WE CAN DO

The interdisciplinary team at the Institute allows experts from many fields to collaborate on identifying and addressing multiple scenarios involved in blue carbon quantification and certification.

- Assess current or proposed coastal restoration projects for potential sediment soil carbon accumulation, storage, and sequestration
- Sampling ecological components of soil carbon accumulation, storage, and sequestration in various habitats (marsh, mangrove, swamp, subtidal)
- Sampling soil to assess land type as well as local and regional vertical accretion rates
- Identify restoration and protection project improvements to maximize blue carbon benefits
- Develop maps of current soil carbon content, accumulation rates, and storage
- Use numerical modeling to determine current and future carbon storage conditions
- Work with partners to identify potential carbon offsets for a planned or current project
- Quantify external sources of carbon that are delivered to a wetland
- Quantify fate of carbon as marshes erode

Because life happens at the water's edge

Field work helps provide the foundational information to better quantify carbon sequestration capabilities among habitat types.

Above: The Institute's blue carbon capabilities include multiple habitat types from freshwater to saltwater.

Applications at regional, state, and international scale

- Identify habitat types, locally or regionally, for broad carbon assessments
- Evaluating alternatives to reflect changing ability for carbon storage and sequestration under shifting climate and man-made changes.
- In the event a blue carbon market emerges, a state-level, integrated assessment of carbon storage could contribute to financial decision making behind coastal restoration.

WHAT WE ANALYZE

The Institute brings a key advantage through our interdisciplinary team including expertise in sediment and soil geology, plant and sediment/soil ecological processes, and expertise around the standards and economics of blue carbon, which all can be represented by the modeling work conducted at the Institute.

* Short-term vertical accretion rates
* Long-term vertical accretion rates
* Organic matter content
* Bulk density content
* Total organic carbon and total carbon content
* Greenhouse gases
* Coastal vegetation
* Above and belowground plant biomass
* Porewater nutrients and salinity
* Rates of carbon storage in the sediment at various time scales
* Physical oceanography for processes driving carbon import and export
* Availability of oxygen in soils
* Decomposition rates

For more information about the Institute's research capabilities and how they can benefit your organization, visit www.thewaterinstitute.org or contact info@thewaterinstitute.org.

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