



MISSION: **water**

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Aerial footage, coastal Louisiana.
Photo: The Institute

BATTLING WETLAND LOSS in Coastal Louisiana



THE WATER INSTITUTE OF THE GULF



● Monitoring Site

When The Water Institute of the Gulf

(the Institute) was founded in 2011 in Baton Rouge, Louisiana, it set out a mission to provide independent research and technical expertise to ensure resilient coastal communities and sustainable water systems worldwide.

Created through a collaborative effort involving the State of Louisiana, Senator Mary Landrieu, and the Baton Rouge Area Foundation (BRAAF), the Institute connects academic, public, and private research providers and conducts applied research to serve communities and industry. In all endeavors, the Institute’s goal is to increase understanding of natural and human aspects of deltaic, coastal, and water systems; to develop tools that apply knowledge to restore coasts and ecosystems; and to reduce risk for people and infrastructure.

As stated by President and CEO Charles “Chip” Groat, Ph.D., the expertise knowledge base being built today at the Institute is exportable. “Today, we are actively engaged in projects in other locations in the U.S. and around the world, including the Mekong River Delta and Latin America,” said Dr. Groat. “This initial portfolio of work is critical and will serve as a foundation for diverse future opportunities.”

However, located on the Mississippi River Delta, the Institute has to look no further than its home state to confront the harsh reality that wetlands are disappearing at an alarmingly swift rate – a phenomenon occurring across the globe.

At the rate of a **football field disappearing every hour**, land loss in Louisiana is more than a local concern, it is a national dilemma. In addition to being called home by millions of residents, Louisiana’s coast and wetlands greatly support America’s energy industry and an interlaced port system that carries over 25% percent of all US waterborne commerce, and creates international business and trade opportunities.

The state’s wetlands house recreational and economically important fisheries – blue crabs, shrimp, oysters, menhaden, and more – comprising 25% of America’s seafood. Also, these wetlands provide the critical benefits of physical protection from storms and hurricanes. Unless restoration activities are successfully planned and implemented, land loss will continue to threaten, reduce, and eliminate these valuable assets and the communities they support.

To assist in restoration projects designed to restore and sustain lands in the delta and along the coast, the Louisiana Coastal Protection and Restoration Authority (CPRA) tasked the Institute with developing and applying a basin-wide integrated biophysical model. In order to create such a model, one that links water, sediment, and nutrient dynamics of the Mississippi River to complex processes of the estuary, an advanced set of tools and technology was needed.

For example, the Institute used many YSI multiparameter sondes in the estuaries of the Breton Sound and Barataria basins to collect water quality data such as salinity, temperature, turbidity, and oxygen.

This helped produce a calibrated and validated model capable of simulating critical coastal processes and predicting the effects on land change, vegetation, and nutrient dynamics resulting from proposed sediment diversions – engineered crevasses in the lower Mississippi River where riverine sediment is discharged into the basins to help build land. The model output findings were then used by CPRA to understand how different sediment diversions and their operations could slow down predicted wetland loss.

Breton Sound, June 2014.
Photo: The Institute



Who’s Minding the Planet?



Above: Leland Moss, research associate, records data for NOAA from a YSI EXO multiparameter sonde handheld.

Photos:
The Institute

Below: Cyndhia Ramatchandirane, research associate, performing maintenance on a YSI EXO sonde used for long-term monitoring.



The Water Campus in Baton Rouge.



// The YSI...sonde was essential in collecting the varied hydrological data necessary for validating our decision... //

“The YSI multiparameter sonde was essential in collecting the varied hydrological data necessary for validating our decision support tool,” said Melissa Baustian, Ph.D. co-principal investigator for this work and a coastal ecologist with the Institute. “The outputs of our integrated model have already been used by CPRA to decide which coastal restoration diversion projects they will pursue – that’s huge for the future of rebuilding Louisiana’s coast. The model continues to inform critical decisions on an ongoing basis.”

Through a cross-disciplinary approach, the Institute integrated links between data, models, and end users to continuously deliver high quality information to help sustain coastal Louisiana and its most valuable resources. As with its projects involving YSIs, the organization works to develop and apply tools that support effective and transparent decision making and that ensure livable communities and thriving economy and environment.

The Institute serves as the RESTORE Act Center of Excellence for Louisiana and will soon join CPRA and the Louisiana State University (LSU) Center for River Studies as the first tenants of The Water Campus in Baton Rouge, fostering an international destination for research, unprecedented views of the Mississippi River, and a collaborative culture to better understand and manage the complex relationship between water, land, and people.

Governmental agencies, business, and industry interests can thoughtfully plan for sustainable infrastructure, ecosystems, economies, and emergency preparedness by leveraging the Institute’s knowledge and capabilities, and the organization welcomes opportunities to apply its expertise with new partners to face new challenges.



For more information about the Institute’s research capabilities and how they can benefit your organization:



thewaterinstitute.org