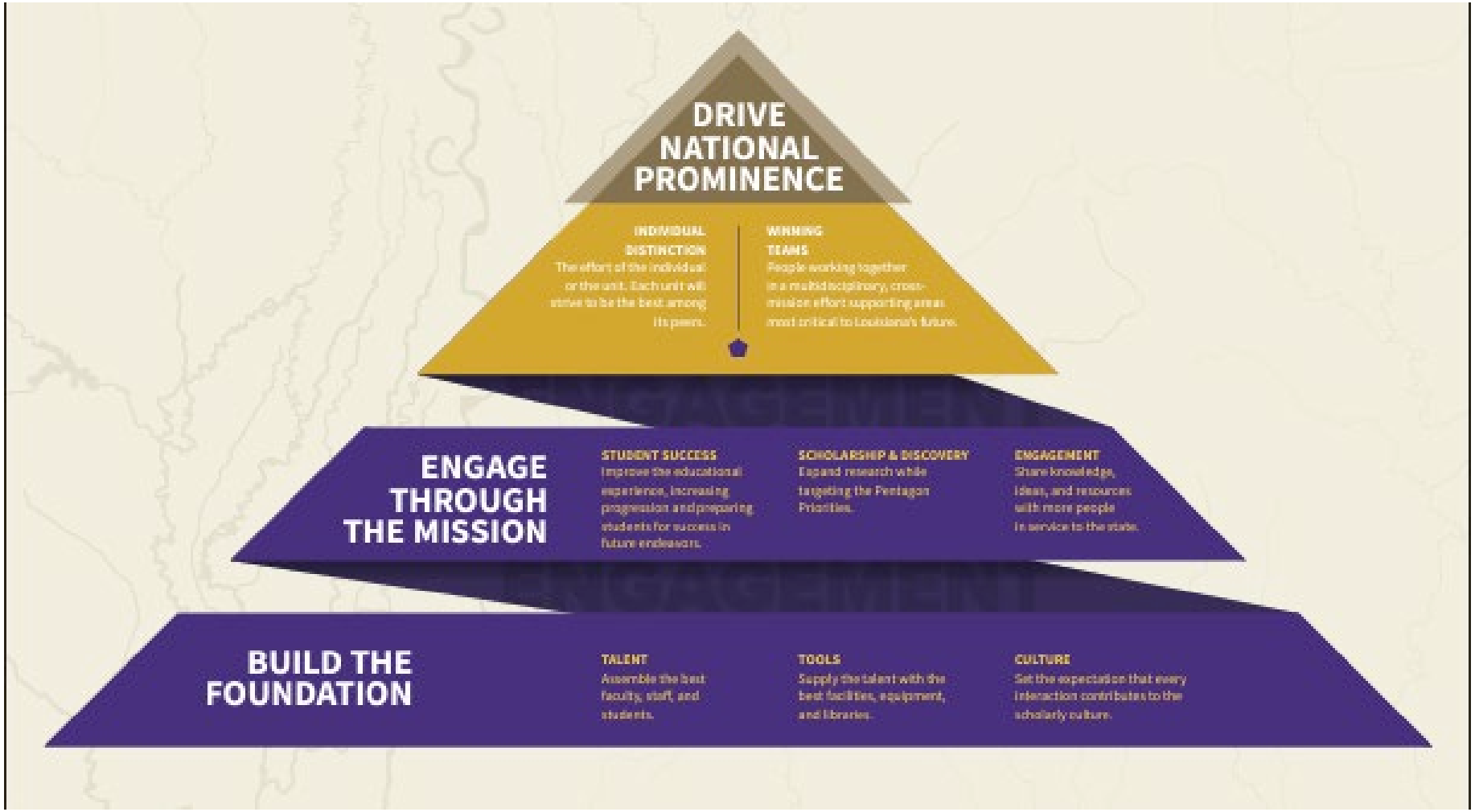
The (Current &) Future of LSU Coastal

Clinton S. Willson, Ph.D., P.E.
Callais & Woods Dean, LSU College of the Coast & Environment
Professor, LSU Department of Civil & Environmental Engineering
Director, LSU Center for River Studies

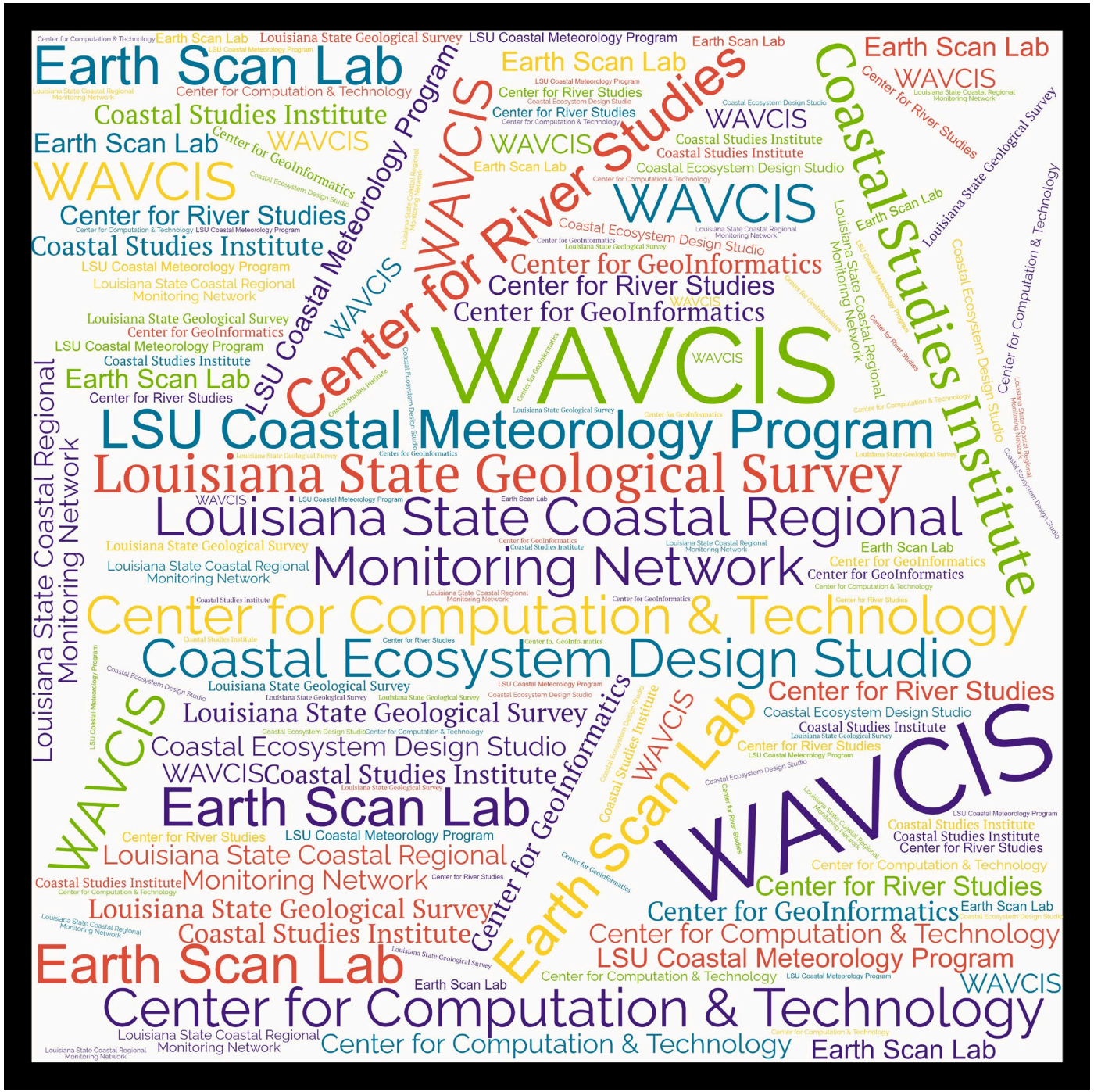
LSU's Aspirational Goals



THE STATEWIDE UNIVERSITY

#ScholarshipFirst

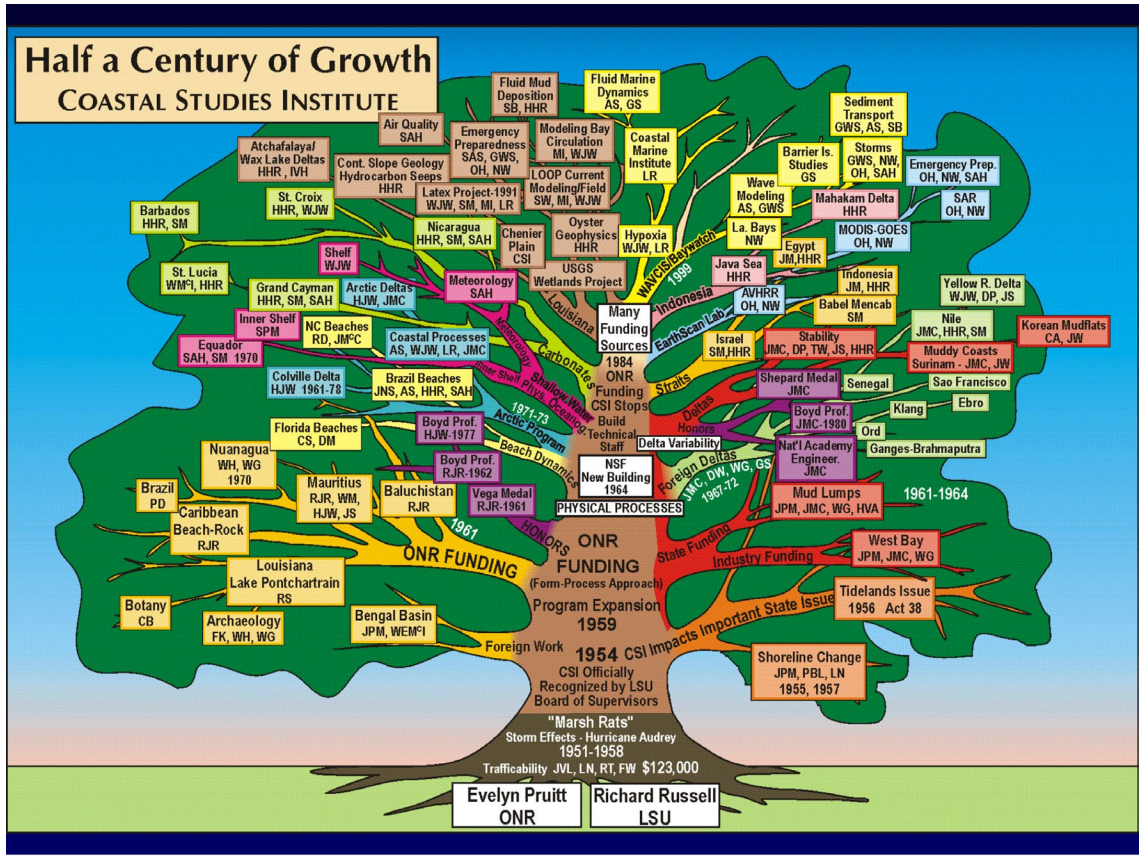
LSU's fierce drive for excellence is rooted in our mission to impact and serve Louisiana—providing pathways to higher learning, addressing critical problems through ground-breaking research and discovery, and bettering the lives of citizens in every parish.


Earth Scan Lab
WAVCIS
Center for River Studies
Coastal Studies Institute
LSU Coastal Meteorology Program
Louisiana State Geological Survey
Louisiana State Coastal Regional Monitoring Network
Center for GeoInformatics
Coastal Ecosystem Design Studio
Center for Computation & Technology

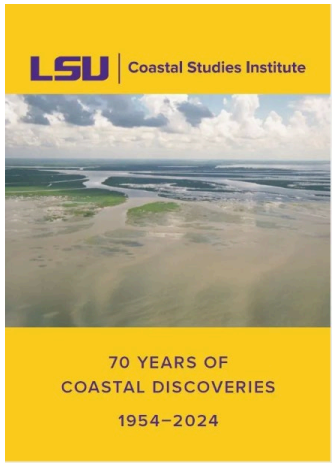
LSU | Coastal Studies Institute

For seven decades, CSI researchers have been advancing knowledge about coastal areas. From leading significant coastal projects (like sediment diversion, marsh creation, barrier island restoration, and submarine landslides) to creating coupled land-ocean-atmosphere numerical models, CSI Fellows have been developing solutions to complex coastal water and sediment challenges.

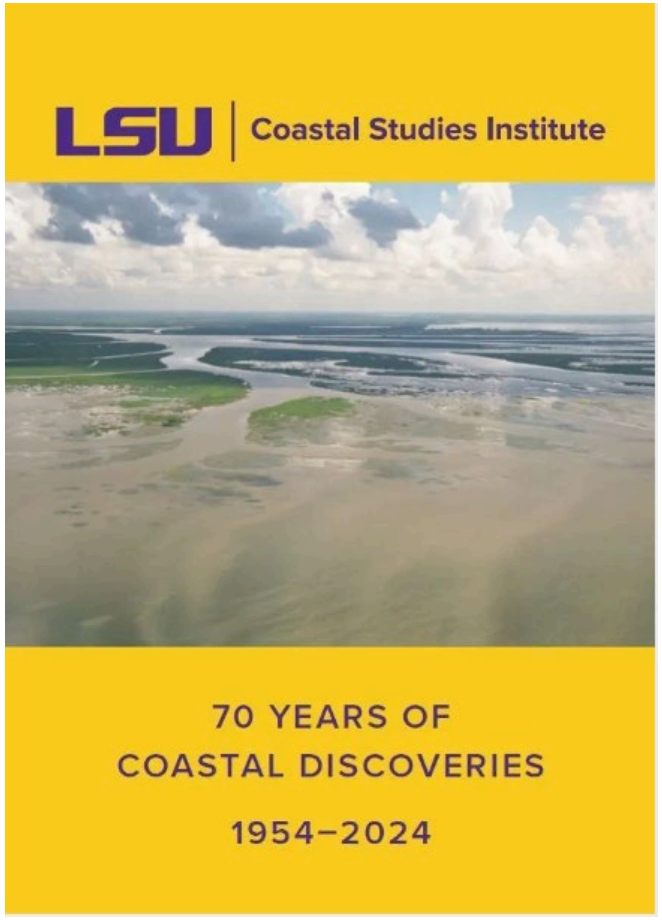
Kehui Xu, Director
kxu@lsu.edu

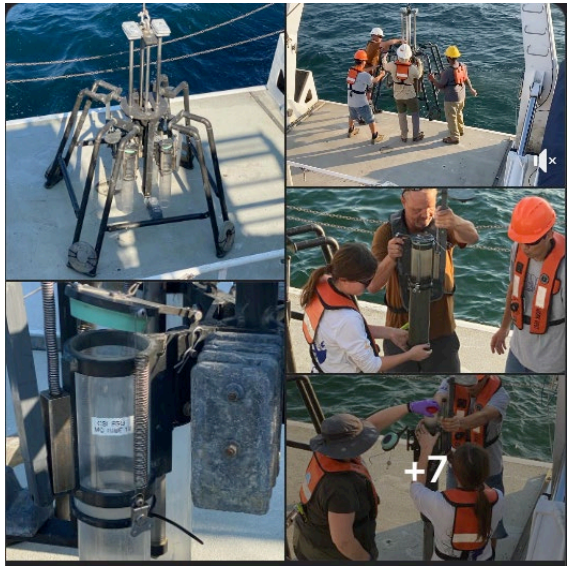


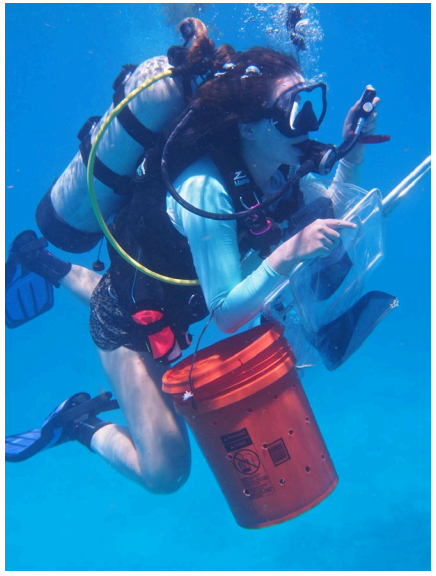
Credit: Harry Roberts



LSU | Coastal Studies Institute







LOUISIANA ARTIFICIAL REEF PROGRAM

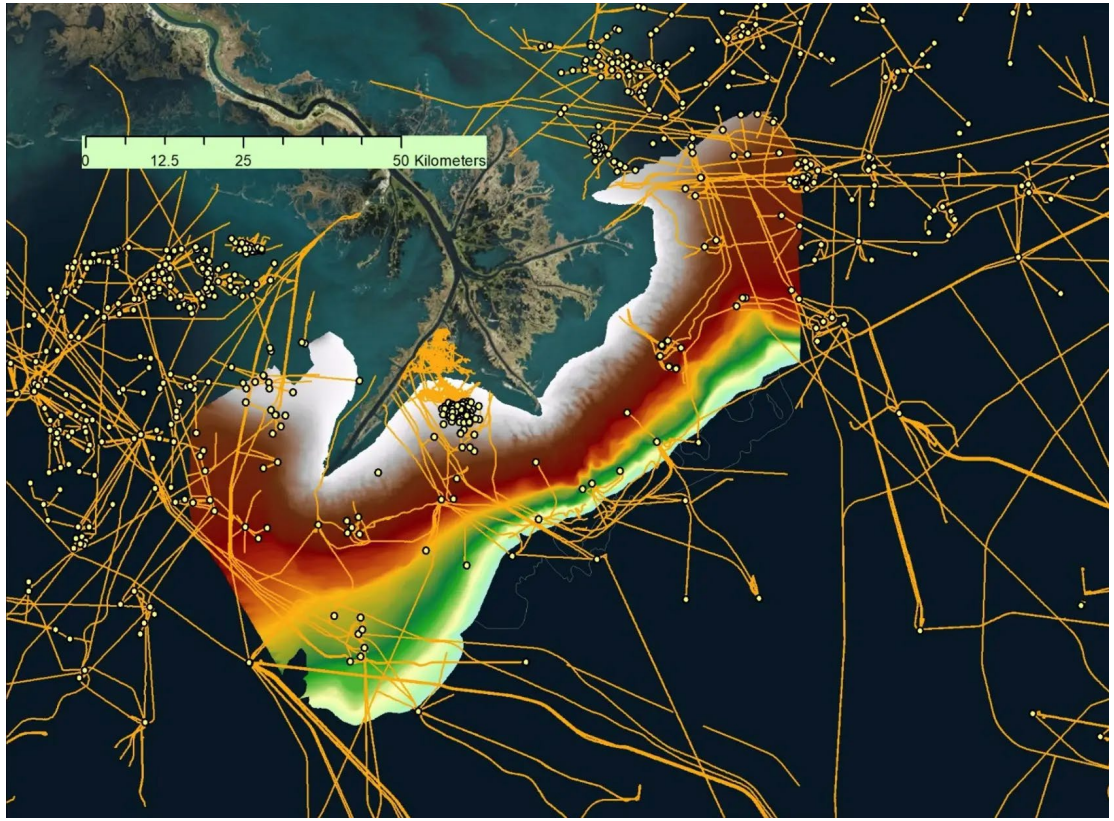
LSU AND TULANE AWARDED $22 MILLION FOR PLAN TO SAVE LOWER MISSISSIPPI RIVER DELTA

MISS DELTA
Mississippi River Delta Transition Initiative

The Mississippi River Delta Transition Initiative, or MissDelta, will include a team of 38 investigators working with the National Academies' Gulf Research Program. The group will engage stakeholders as they work to project the evolution of the disappearing delta through the year 2100 should nothing be done to forestall its erosion or counter threats from increasingly intense hurricanes, rising seas, ground subsidence, diminishing river sediment, coastal dead zones, navigation channel changes and growing maintenance costs. (November 2023)

Samuel Bentley, professor and Billy and Ann Harrison Chair in Sedimentary Geology in the LSU College of Science is co-lead on the newly funded $22 million MissDelta project focused on the Louisiana Birdfoot region and LSU lead on the $3.8 million Offshore Analysis of Seafloor Instability and Sediments, or OASIS, project focused on the Mississippi River Delta Front with support from the Bureau of Ocean Energy Management, or BOEM.

LSU STUDIES UNDERWATER MUDSLIDES IN THE GULF OF MEXICO TO UNDERSTAND IMPACTS ON ENERGY INFRASTRUCTURE, SHIPWRECKS

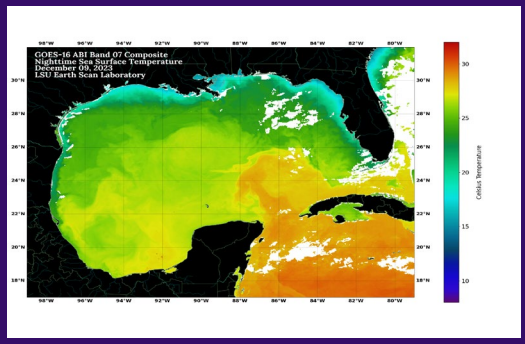


The Mississippi River Delta Front is home to significant energy infrastructure; the dots on the map are platforms while the yellow lines are pipelines. Only about 40 percent of the Mississippi River Delta Front has been mapped before, primarily using pre-1980 technology.

An interdisciplinary team of LSU researchers is coordinating the largest-ever collaborative study of the seabed where the Mississippi River meets the Gulf of Mexico with $3.8 million in support from the Bureau of Ocean Energy Management. Underwater mudslides have been known to displace historic shipwrecks and pipelines by hundreds or thousands of feet and are likely more common than previously thought. (Nov. 2022)

Observing the earth's surface

ESL Director, Nan Walker



LSU was the first university in the U.S. to host a direct broadcast satellite system and image processing lab, Earth Scan Lab (ESL). Receiving data from six satellites, ESL monitors the Gulf of Mexico's Loop Current and eddies to forecast and predict environmental changes.

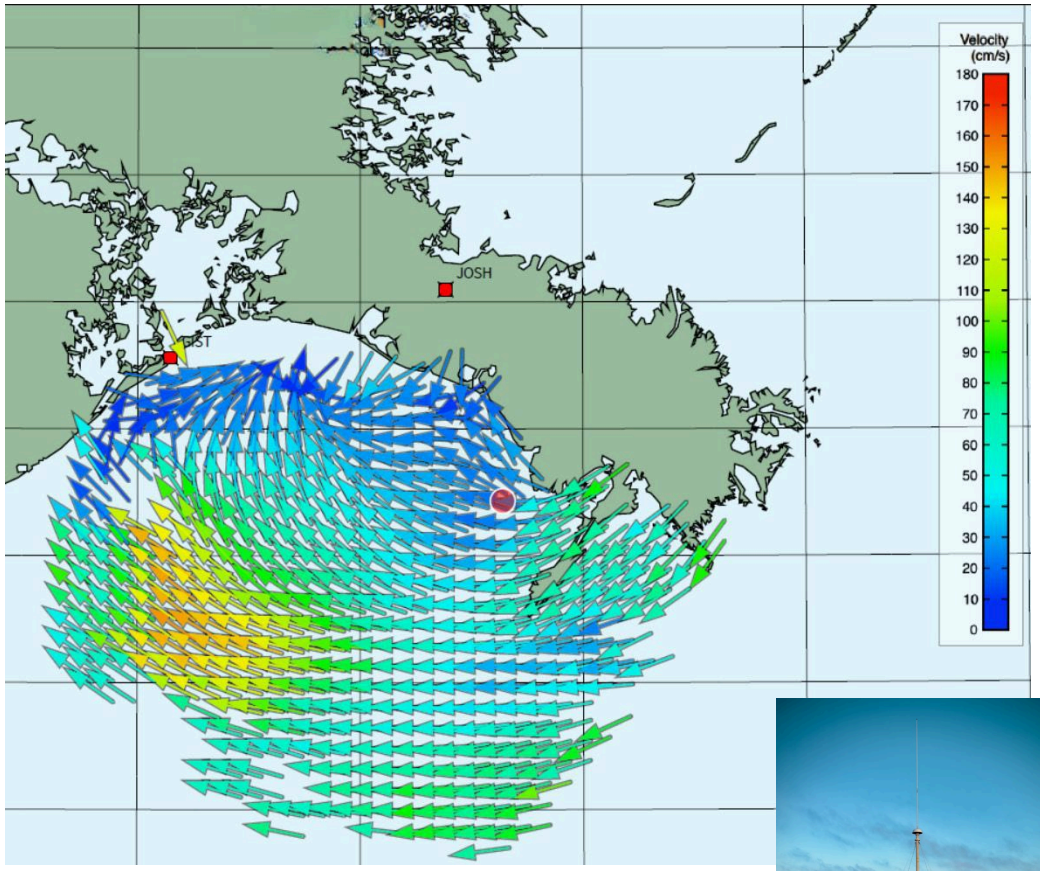
"WAVCIS monitoring stations provide essential meteorological and oceanographic data using sensors and satellite transmission systems stationed on oil platforms. This information is useful for emergency response and assisting operations support for offshore industries, commerce, and research and education." Chunyan Li, professor, WAVCIS Director and CSI Fellow

C 4 G

LSU Center for GeoInformatics

- Access CORS Data
- Participate in a GPS on Transformational Tool Progress Dashboard
- Improve Louisiana's GEOID
- Support NSRS Modernization
- Operates a CORS Reference Network across Louisiana

More (new) observations: HF Radars



A CODAR HF radar antenna similar to the ones that will be used on the Louisiana coastline.
– Photo credit: Laura Pederson, CODAR

ACTIONS & DEEDS

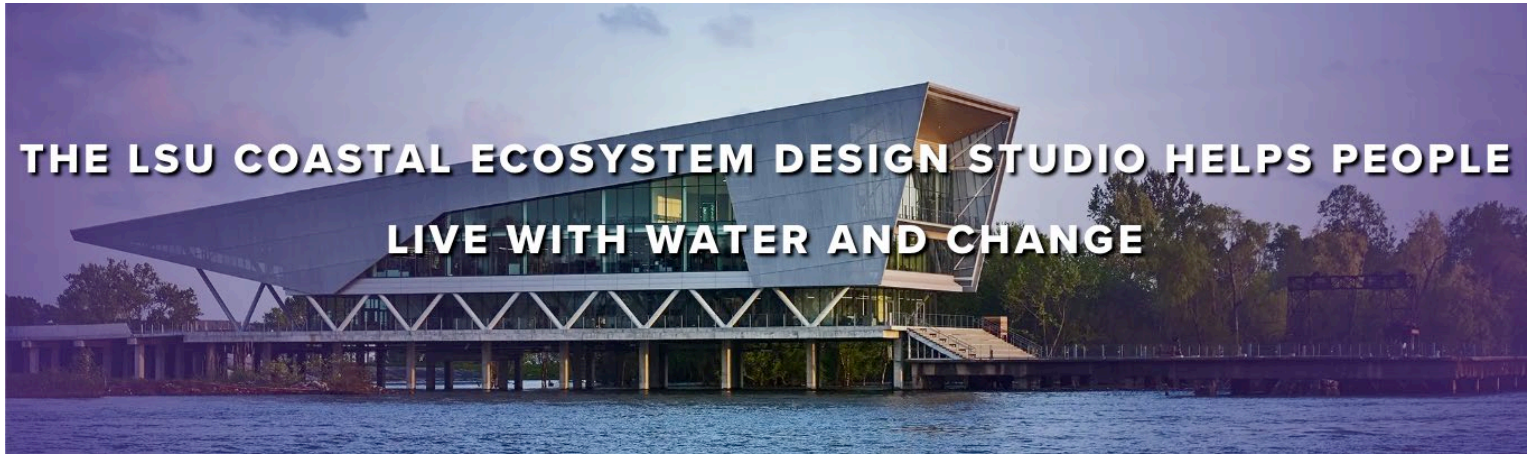
Creating Innovative Ecosystem Design Solutions to Protect Coastal Infrastructure at U.S. Military Bases

Anticipating Threats to Natural Systems, or ACTIONS

LSU, the U.S. Army Engineer Research and Development Center's Environmental Laboratory (ERDC-EL), and the University of Delaware are cataloging and analyzing existing and potential hazards on Louisiana's coastlines as sea levels rise and the climate changes. Their work is helping military operations to anticipate, prepare for, and respond to climate-induced hazards.

Developing Engineering Practices for Ecosystem Design Solutions, or DEEDS

LSU, the US Army Engineer Research and Development Center (ERDC) and the University of Delaware are using nature-based designs to help protect military infrastructure from the impacts of climate change. Researchers are building a library of coastal protection designs that use features native to the coastal ecosystems themselves.



CEDS is a trans-disciplinary institute that works to envision and design sustainable systems that reduce vulnerability to increased storm strength, coastal hazards, habitat degradation, and global environmental change.

- Research
- Capacity Building
- Visual Communication
- Community Planning
- Design Speculation

Projects | Programs | Planning and Design

- ANTICIPATING THREATS TO NATURAL SYSTEMS (ACTIONS) – U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER (ERDC)
- DEEDS – U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER (ERDC)
- INLAND FROM THE COAST – NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE, AND THE ROBERT WOOD JOHNSON FOUNDATION
- BATON ROOTS MASTER PLAN – NATIONAL ENDOWMENT FOR THE ARTS, OUR TOWN GRANT
- LSU CENTER FOR RIVER STUDIES – STATE OF LOUISIANA, COASTAL PROTECTION AND RESTORATION AUTHORITY (CPRA)

Flood Insurance Research & Tools

Louisiana FloodMaps Portal (LSU AgCenter)

The LSU AgCenter FloodMaps system is unique in that it integrates flood risk information with ground elevation data.

Real Estate Research Institute (RERI)

RERI studies trends in the Louisiana real estate market. (College of Business)

"LSU researchers to release tool that determines flood insurance premiums" (Houma Today, Nov. 1, 2023)

LSU researchers to release tool that determines flood insurance premiums. A group of LSU graduate students are reverse engineering FEMA's flood protection formula and are providing a tool to determine homeowners' and buyers' flood premiums.

"Protecting House and Home: Louisiana's Number-One Key to Resilience" (July 2021)

LSU researchers, from coastal scientists and engineers to sociologists and psychologists, are working to protect Louisiana residents and homeowners from the potentially devastating impacts of flooding. From economics to equity to emotion and psychological well-being, there are solutions to living in a flood-prone state.

Carol Friedland, Ph.D.
Director, LaHouse
cfriedland@lsu.edu

(10/02/24) BATON ROUGE, La. — The LaHouse Research and Education Center has been awarded $1.5 million from the National Science Foundation (NSF) to develop a software prototype aimed at reducing flood risk across Louisiana.

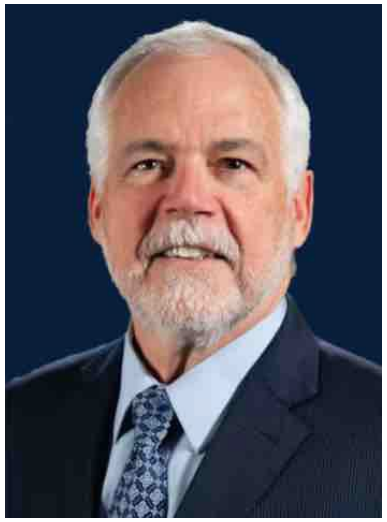
“We know that Louisiana is poised to lose billions of dollars by 2050 due to flooding,” said Carol Friedland, director of LaHouse. “This tool will empower communities across the state with data-driven insights, enabling them to make informed decisions that can significantly reduce flood-related damages and help safeguard our future.”

LaHouse
Research & Education Center

Louisiana Social, Environmental, and Economic Resilience (LA-SEER) Center

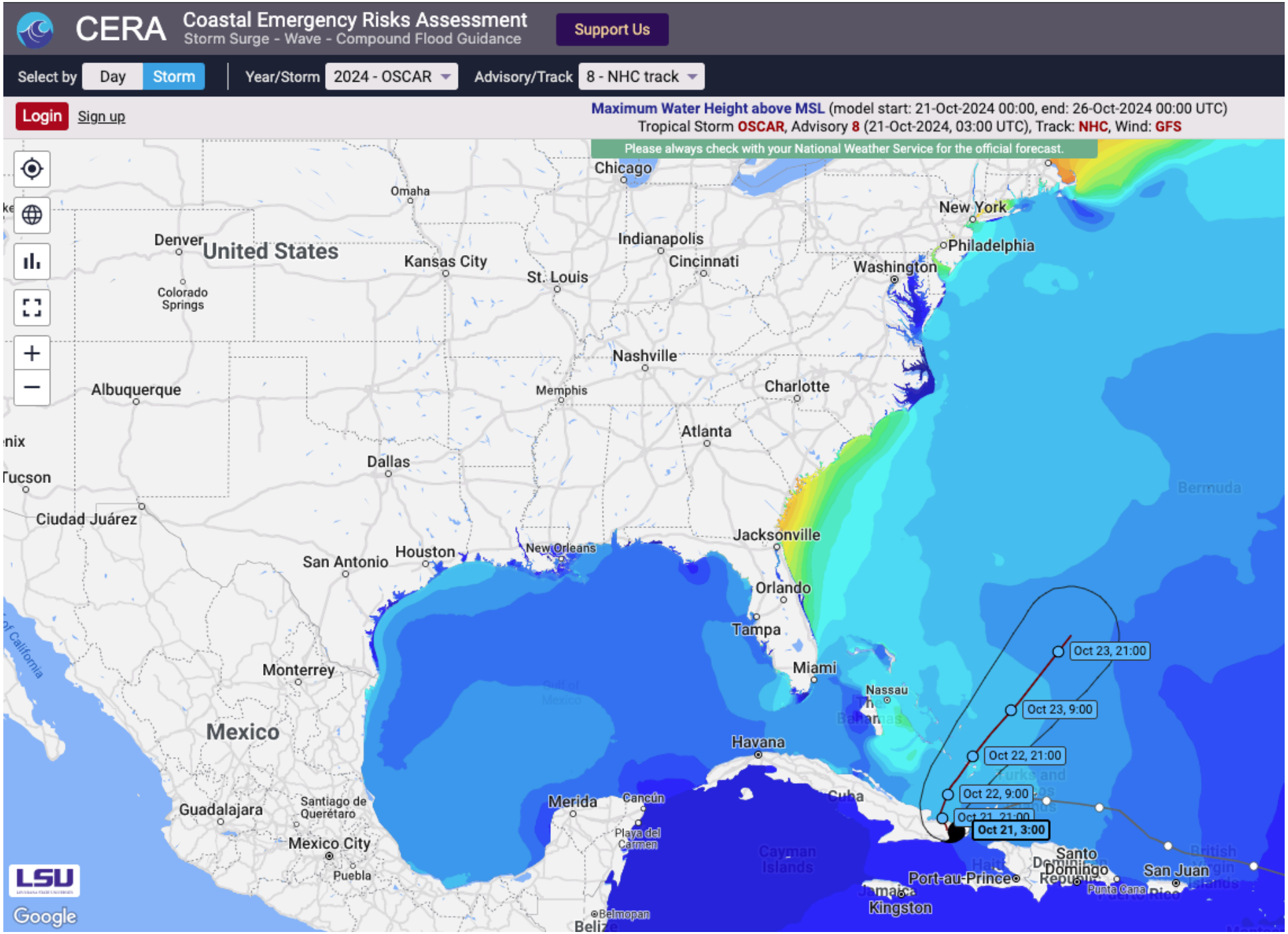
Climate to Weather to Ocean/Coast/Land

- Louisiana Office of State Climatology
  - Jay Grymes
  - Nazla Bushra
  - Kyle Brehe
- Housed in the LSU College of Coast & Environment
- Partial appointments
  - GOHSEP
  - LSU Ag Center



- Coastal Meteorology
  - Bob Rohli
  - Paul Miller

- New B.S. Coastal Meteorology
  - Starting in Fall 2025
  - Two new faculty lines
  - Critical Mass for education & research


CERA
Coastal Emergency Risks Assessment
Storm Surge - Wave - Compound Flood Guidance
Support Us
Select by
Day
Storm
Year/Storm
2024 - OSCAR
Advisory/Track
8 - NHC track
Login
Sign up
Maximum Water Height above MSL (model start: 21-Oct-2024 00:00, end: 26-Oct-2024 00:00 UTC)
Tropical Storm OSCAR, Advisory 8 (21-Oct-2024, 03:00 UTC), Track: NHC, Wind: GFS
Please always check with your National Weather Service for the official forecast.
Chicago
Omaha
New York
Denver
United States
Indianapolis
Philadelphia
Cincinnati
Kansas City
Washington
St. Louis
Colorado Springs
Nashville
Albuquerque
Memphis
Charlotte
Atlanta
Dallas
Tucson
Ciudad Juárez
Jacksonville
Houston
New Orleans
San Antonio
Orlando
Tampa
Miami
Monterrey
Nassau
Mexico
Havana
Guadalajara
Santiago de Querétaro
Merida
Cancún
Cuba
Playa del Carmen
Mexico City
Puebla
Port-au-Prince
Santo Domingo
San Juan
Punta Cana
Kingston
Belmopan
Oct 23, 21:00
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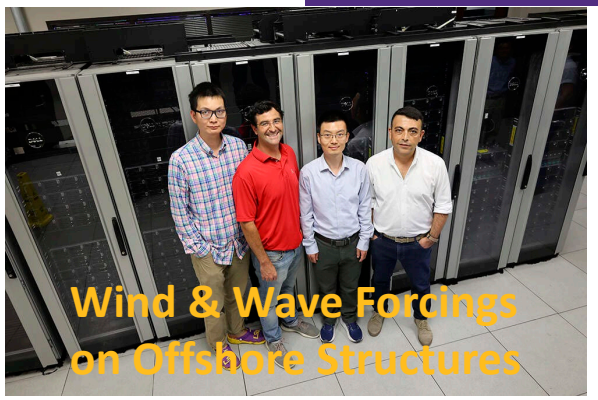
LSU
Google

LSU INSTITUTE FOR ENERGY INNOVATION



- Carbon capture, utilization and storage +
- Hydrogen +
- Low-carbon Fuels +
- Coast +
- Community Engagement +
- Environmental Justice +

CAREER Awards

Junhong Liang, Associate Professor, Department of Oceanography & Coastal Science (2020)

Matt Hiatt, Assistant Professor, Department of Oceanography & Coastal Sciences (2022)

Paul Miller, Assistant Professor, Department of Oceanography & Coastal Sciences (2023)

Corina Barbalata, Assistant Professor, Department of Mechanical and Industrial Engineering (2024)

Kevin Smiley, Associate Professor, Department of Sociology (2024)

Dr. Kevin Smiley, National Science Foundation CAREER Award Recipient

— Photo Credit: LSU

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Muriel Bruckner, Ph.D.
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Matt Brand, Ph.D.
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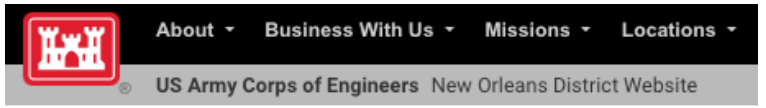
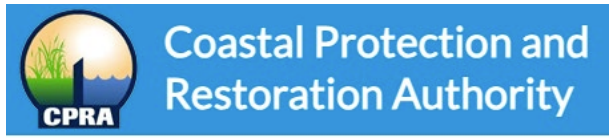
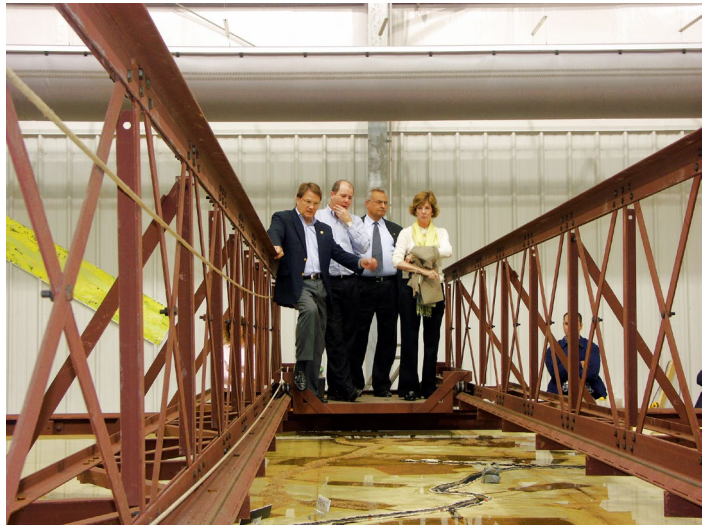
MS Coastal & Ecological Engineering

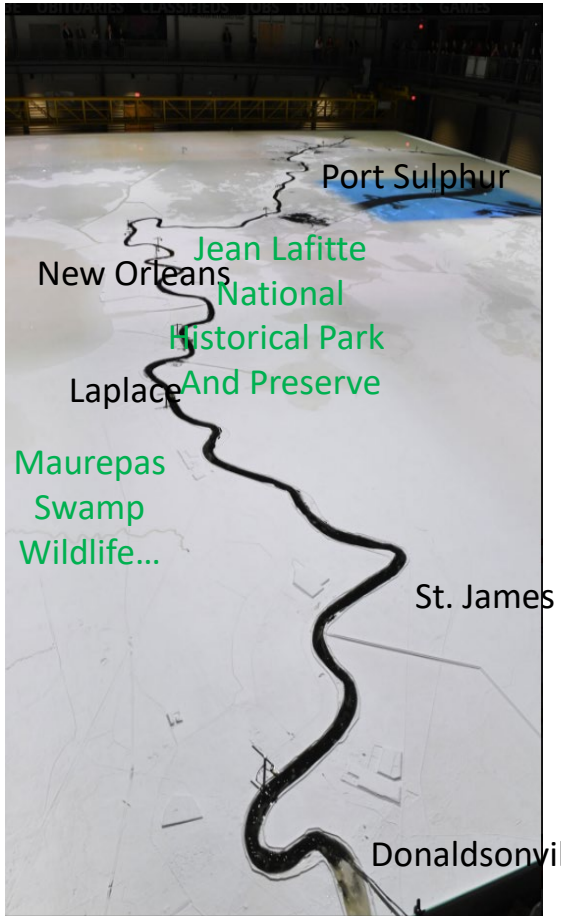


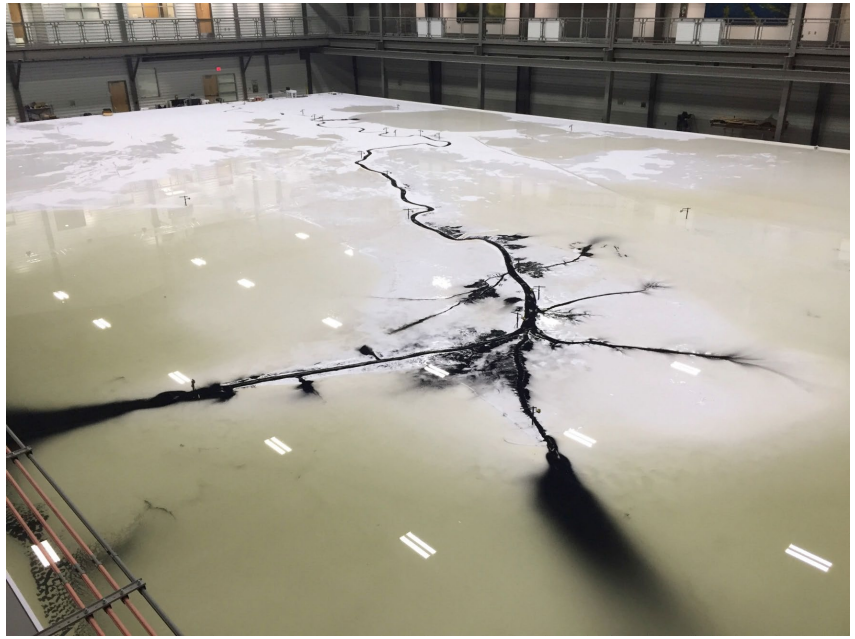


LSU Center for River Studies (v1.0)



LSU | Center for River Studies





Thank you!