

SOUTH CENTRAL

CLIMATE ADAPTATION SCIENCE CENTER



LOUISIANA STATE UNIVERSITY

SITE VISIT SUMMARY



APRIL 26, 2024



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ACKNOWLEDGMENTS & ATTRIBUTION

The South Central Climate Adaptation Science Center would like to express our gratitude for the warm welcome and insightful discussions from those who took the time to make our visit to Louisiana State University possible.

Thank you to everyone who met with us. We appreciate your willingness to share your expertise and experiences. We are grateful to our consortium members for their invaluable insights and to the Louisiana Sea Grant team for their passionate commitment to coastal resilience.

We want to extend a particular note of appreciation to Dr. Kristine DeLong and Dr. Matt Bethel for going above and beyond in coordinating with your students and team to ensure our visit was both productive and informative.

We look forward to nurturing our partnerships further in the future.

Additionally, Codie Winn, an Oak Ridge Institute for Science Education (ORISE) Fellow with the South Central Climate Adaptation Science Center (SC CASC) authored this report and contributed original photographs.

SUMMARY

This report summarizes outcomes from four meetings conducted by South Central Climate Adaptation Science Center (SC CASC) staff at Louisiana State University, April 26, 2024. The meetings were arranged to provide a platform for robust discussions and strategic planning to advance climate adaptation efforts in the SC CASC region. These gatherings facilitated dialogue with SC CASC Principal Investigators at LSU and partners from Louisiana Sea Grant to identify emerging challenges and opportunities for collaboration, and future research. This report summarizes notes from each of the individual meetings.

Meeting Objectives

The SC CASC team seeks to cultivate a spirit of collaboration among partners, facilitating discussions that spanned ongoing research initiatives and potential areas of mutual interest. Additionally, the SC CASC team updated attendees on efforts to enhance the capacity of federal staff within the center and craft an updated comprehensive science plan.

Exploration of Collaborative Initiatives

During these sessions, attendees delved into various themes and topics necessary to advance climate adaptation efforts. Dr. Kristine DeLong led discussions on coral paleoclimate reconstruction that highlights challenges posed by recent environmental events such as coral bleaching. Dr. Chris D'elia provided insights into LSU's research and staff landscapes and highlighted the need to embrace cutting-edge advancements in big data and Artificial Intelligence (AI) in coastal and ocean sciences.

Key Focus on Collaboration

Collaborative action and shared science priorities emerged as focal points, signaling a collective commitment to fostering an inclusive and equitable approach to climate adaptation efforts in Louisiana and with coastal communities.

Forward Momentum

These meetings lay a foundation for future partnerships and to identify key follow-up actions for effective adaptation to climate change and to bolster environmental resilience in the South Central CASC region. The discussions and insights gleaned during these gatherings will catalyze meaningful progress in confronting the multifaceted challenges posed by a rapidly changing climate.

As we move forward, it is essential that we continue the momentum generated by these discussions to leverage our collective expertise and resources to enact change and cultivate a more resilient future for generations to come.

INTRODUCTION

On April 26, 2024, the South Central Climate Adaptation Science Center (SC CASC) orchestrated a series of meetings at Louisiana State University (LSU) to foster collaboration and address pressing challenges in climate adaptation. These sessions gathered SC CASC Principal Investigators (PIs) and partners from Louisiana Sea Grant to facilitate dialogue, strategic planning, and explore potential synergies.

Dr. Kristine DeLong introduced three of her grad students, Kylie Palmer, Nina Susich, and Gwendal Dolou, who are researching coral paleoclimate reconstruction. Discussions revolved around shifts in sea surface temperature, ocean circulation patterns, and recent environmental challenges like coral bleaching events. Both parties acknowledged the importance of sustained dialogue and committed to scheduling follow-up meetings to explore collaboration opportunities further.

Dr. Chris D'Elia highlighted challenges and opportunities for the SC CASC and LSU. These included the navigation of bureaucratic hurdles, embracing advancements in big data, and using Artificial Intelligence. Discussions explored the potential establishment of a meteorology department and the unifying theme of water as strategic foci for LSU. The meeting underscored the need for innovative strategies to overcome challenges and optimize resource allocation.

The Louisiana Sea Grant meeting encompassed discussions on coastal equity, diversity, inclusion, and justice, emphasizing joint efforts and the impact of research programs and projects. Partnerships, funding mechanisms, and ongoing initiatives were explored, with a focus on shared science priorities. Examples of successful joint ventures, including research projects and tribal resilience activities, were highlighted, with future plans to have follow-up meetings and share information, tools, and data.

In conclusion, these meetings laid a solid foundation for future partnerships and identified key areas for collaboration to enhance climate adaptation efforts and environmental resilience for coastal Louisiana. Moving forward, sustained engagement and collaborative action will be essential to address the complex challenges posed by climate change effectively.

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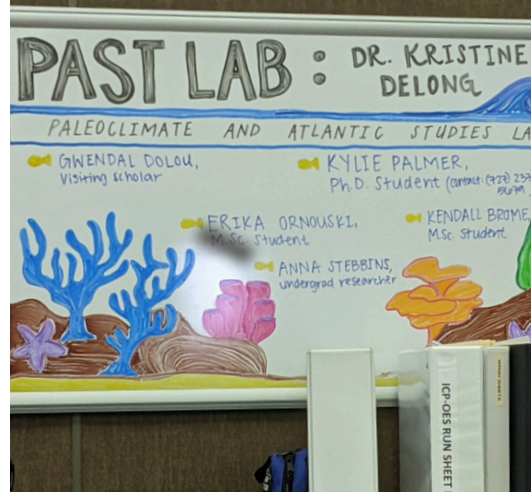
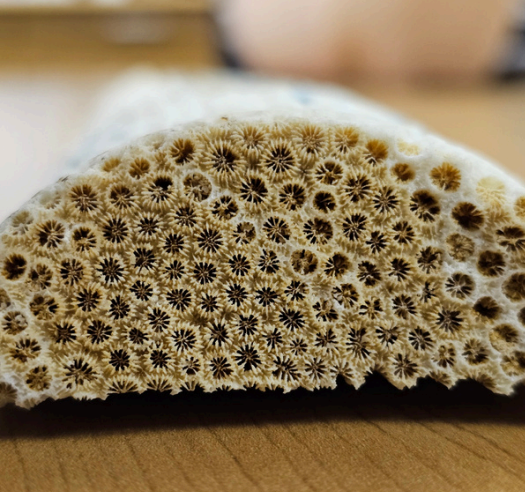
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DR. KRISTINE DELONG

PALEOCLIMATE AND ANTHROPOLOGICAL STUDIES (PAST) LABORATORY

The South Central CASC team convened at Dr. Kristine DeLong's Paleoclimate and Anthropological Studies (PAST) Laboratory to discuss ongoing research projects and potential areas of collaboration.

Dr. Kristine DeLong, a Co-Principal Investigator (Co-PI) and lead of the Coastal Community of Practice (CoP) within the SC CASC, provided insights into her current research endeavors. She highlighted her investigation into shifts in sea surface temperature and ocean circulation patterns in the Gulf of Mexico and the Caribbean Sea. Utilizing chemical variations in the skeletons of large boulder-size corals, Dr. DeLong's research aims to reconstruct historical climate data spanning centuries.

During the meeting, the significance of the Flower Garden Banks National Marine Sanctuary, offshore of Galveston, Texas, known for hosting some of the most pristine coral reefs in the region, was discussed. Despite a significant presence of oil platforms in this area, there appears to be successful communication and collaboration among oil companies, researchers, and conservation organizations, aiming to mitigate potential environmental impacts and ensure the sustainability of the marine ecosystem.

Dr. DeLong also discussed recent environmental challenges facing coral reefs, notably the unprecedented coral bleaching event recorded during the Summer of 2023. This bleaching event was primarily driven by anomalously high water temperatures, posing a severe threat to the health and vitality of the reef ecosystem. Kylie Palmer highlighted ongoing conservation efforts, such as AI pinging of coral reefs, as an effort to preserve coral populations in the face of such challenges.

The group acknowledged the value of continued dialogue to explore opportunities for collaboration. As a result, it was agreed that follow-up meetings would be scheduled to delve deeper into potential collaborations.

The SC CASC team had the pleasure to meet three of Dr. DeLong's grad students, who shared their research in the PAST Lab.

DR. DELONG'S STUDENTS

Gwendal Dolou

Second-year doctoral student researching coral growth, climate impacts, and historical changes by analyzing elemental composition. His work involves studying modern coral samples from the Flower Garden Banks National Marine Sanctuary offshore of Galveston, Texas, and coral fossils from Little Cayman in the Caribbean Sea. Gwendal focuses on coral paleoclimate reconstruction, utilizing calcium variability to understand past climate conditions.

Nina Susich

Master's student specializing in coral-based paleoclimate reconstructions using multiple geochemical proxies. She is investigating changes in sea surface temperature and river runoff using specimens from a Haitian coral microatoll collected in the Gulf of Gonâve, west of Port-au-Prince, Haiti, after the 2010 earthquake. Coral microatolls are circular colonies that grow around the skeletal remains of previously living coral structures.

Kylie Palmer

Ph.D. candidate and a South Central CASC-supported Graduate Research Assistant working on coral-based paleoclimate reconstructions using various geochemical and physical characteristics preserved in coral. Her study site is in the Dry Tortugas National Park in the Gulf of Mexico, west of Key West, Florida, where she examines monthly sea surface temperature variability by reconstructing coral records spanning from 1755 to 2005.



Coral microatolls uplifted after earthquake in 2010
Photo Credit: Fred Taylor, Univ. of Texas

While meeting with the SC CASC Team, Dr. Chris D'Elia gave insight into challenges such as department development and academic workforce, the benefits of research portfolio analysis, and identifying areas for potential future success for LSU.

Prospects of Establishing a Meteorology Department: Past endeavors to establish a meteorology department at LSU have faced hurdles. Yet, the prospect of integrating coastal meteorologists into the Environmental Forecasting Center emerged as a viable alternative. However, funding constraints pose a significant challenge to this initiative.

Addressing Academic Workforce Challenges and Funding Shortfalls: There are concerns about the lack of succession plans for retiring academics exacerbated by insufficient funding to the department from the university.

Embracing Big Data and AI: Dr. D'Elia emphasized the urgency of catching up on big data and AI advancements, highlighting their transformative potential in advancing research capabilities and staying competitive in the academic landscape.

Water as a Unifying Theme: During the discussion, it was suggested that identifying ground water as a unifying theme through climate could lead to more opportunities for LSU to be involved. This could be a focus area to consolidate efforts and resources in water-related research endeavors. Dr. D'Elia discussed concerns about local groundwater issues, especially the adverse effects caused by the industrial sector. He believes that LSU has an opportunity to lead the way in framing and resolving these issues, highlighting the importance of a comprehensive understanding and strategic interventions.

Research Portfolio Approach: Dr. D'Elia highlighted the effectiveness of research portfolio analysis in guiding strategic focus areas. He emphasized the importance of long-term projects, identifying overall needs, and addressing immediate gaps to optimize resource allocation.

Dr. Chris D'Elia provided insights into the challenges and opportunities at LSU. Embracing big data and AI advancements can transform research capabilities and position LSU. The unifying theme of water can consolidate efforts and resources to optimize resource allocation. Overall, the meeting emphasized the need for innovative strategies to navigate bureaucratic hurdles.



LOUISIANA SEA GRANT

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PROJECT COLLABORATION AND FUNDING MECHANISMS:

Participants discussed the potential for collaborative project funding, emphasizing the benefits of pooling resources and expertise to address complex coastal challenges effectively. The meeting delved into the funding mechanisms available through the SC CASC and Sea Grant. The SC CASC has discretionary funding. Both centers have small financial grants. The SC CASC's Pilot Research Grants support proof-of-concept initiatives and research workshops. Sea Grant's mini-grants, processed on a rolling basis, address emerging opportunities and critical needs, thus facilitating timely responses to coastal issues.

INFORMATION SHARING AND COLLABORATIVE EVENTS AND WORKSHOPS:

The teams deliberated on potential collaborative ventures, including sharing insights from upcoming meetings and exploring mutual interests in research projects or tools. Also, Sea Grant hosts a weeklong Early Career Faculty Training called LADIA (LA Discover Innovation Application). Dani Dilullo, the Director of Education & Engagement, coordinates the event. The prospect of engaging with Sea Grant's Early Career Faculty Training program sparked enthusiasm, opening doors to exciting new possibilities for collaboration.

PRIORITIES AND PROJECTS:

Attendees identified overlapping science priorities between SC CASC and Sea Grant, facilitating collaboration in funding projects. Examples of ongoing collaboration were highlighted (see below), including Melissa Daigle's work with Funded PI Dr. Megan LaPeyre and Dr. Matt Bethel's work with SC CASC-CART intern Haylee Kraker on specific research projects emphasizing the need for collaboration in funding projects aligned with climate science and adaptation.

Examples of Ongoing Collaboration:

- Melissa Daigle's work with Megan LaPeyre on her SC CASC SC-funded project, [A Roadmap for Developing Resilient Coastal Shellfish Populations: Using Spatial and Process-Based Modelling for Restoration Under Current and Predicted Future Water Quality Conditions.](#)
- Matt Bethel is leading a [project, in collaboration with the Pointe-au-Chien Indian Tribe \(PACIT\),](#) to develop effective nature-based solutions that mitigate climate-related hazards and contribute to the community's climate adaptation and resilience goals. Dr. Bethel shared the project's findings with a case study called "Mapping Climate Change Impacts and Traditional Ecological Knowledge for Potential Mitigation and Adaptation Strategies," prepared in cooperation with the Conservation and Adaptation Resources Toolbox (CART) intern Haylee Kraker, hosted at the SC CASC.

TRIBAL RESILIENCE AND CULTURAL RESOURCES:

The group discussed ongoing tribal resilience planning activities, highlighting the importance of culturally sensitive approaches and addressing concerns regarding data sovereignty in collaborative projects. There are many potential opportunities for collaboration in Tribal resilience and cultural resources. The SC CASC ensured that Sea Grant was aware of the Tribal Liaisons who play critical roles in our capacity to form relations and partnerships with Tribal Nations, Pueblos, and Tribal Organizations.

CLIMATE CHALLENGES IN LOUISIANA AND COASTAL RESTORATION EFFORTS:

The Sea Grant team highlighted major climate issues in Louisiana, such as flooding and wetland loss, and discussed ongoing efforts in coastal restoration. They also raised concerns about potential policy changes that might affect the project plans for river water diversion projects and the impact on the continuity of Sea Grant's learning program.

DREDGED MATERIAL USAGE:

The group explored issues related to the use of dredged material in restoration projects, including challenges posed by federal standards and the need for ecological mandates supported by scientific evidence. The SC CASC informed the group about funding USGS researcher Dr. Camille Stagg and her project, [Restoring Texas Coastal Wetlands: Decision Support for the Beneficial Use of Dredged Material](#).

FUTURE PLANS:

SC CASC informed the group on their future endeavors, including the Climate Adaptation Technical Service (CATS) program, which will provide climate modeling technical services. They also explored the possibility of hosting "deep-dive" events for rapid synthesis on management-driven themes. Sea Grant expressed interest in nominating researchers to participate.

CONCLUSION:

The meeting concluded with a recognition of numerous areas for potential collaboration between SC CASC and Sea Grant, spanning project funding, shared science priorities related to coastal resilience and cultural resource management. Plans for follow-up actions were outlined to maintain momentum and foster continued collaboration. Overall, the meeting laid a solid foundation for future partnerships aimed at addressing the complex challenges of climate adaptation and environmental resilience in the South Central region.



PARTICIPATION LIST

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MEETING SCHEDULE

Louisiana State University

Thursday, April 26th

8:30 am - 3:00 pm

Start time	End Time	Activity
8:30 am	9:15 am	Dr. Kristine DeLong
10:30 am	11:30 am	Dr. Chris De'lia
11:30 am	1:00 pm	Lunch
1:00 pm	3:00 pm	Sea Grant