SCOTT HEMMERLING, Ph.D.

THE WATER INSTITUTE
OF THE GULF

Company Role
Director of Human Dimensions

Project Role / Focus Areas
- Community vulnerability & resilience
- Social policy planning
- Urban data analysis & integration with modeling
- Qualitative research & integration

Education
- Ph.D. - Geography, Louisiana State University - 2007
- M.S. - Urban Studies, University of New Orleans - 1999
- B.S. - Environmental Studies, State University of New York at Buffalo - 1992

Professional Membership
- American Association of Geographers

Experience Profile

Scott Hemmerling, Ph.D. is the Director of Human Dimensions for The Water Institute of the Gulf, focusing on research related to climate adaptation and community resilience. A cultural geographer with more than twenty years of experience investigating the impacts of environmental change on coastal communities, his recent work is focused on developing approaches to incorporate local knowledge into assessments of community resilience and quantifying the social value of ecosystem restoration projects.

Dr. Hemmerling is the principal investigator on the Louisiana Coastal Atlas project, a geographical study examining the effects of historical social, economic, and environmental stresses on community resilience. He is also working on several projects to develop methodological approaches for measuring socioeconomic change in coastal communities. This includes a social impact assessment methodology for coastal restoration projects and a human-systems monitoring plan as part of the Louisiana's System-Wide Assessment and Monitoring Program (SWAMP). Most recently, Dr. Hemmerling developed approaches to incorporate local knowledge into assessments of community resilience and quantify the social value of ecosystem restoration projects.

Professional Experience

The Water Institute of the Gulf

• *Director of Human Dimensions*	2015-Present
• *Associate Director of Human Dimensions*	2013-2015

National Wetlands Research Center

• *Geographer – U.S. Geological Survey*	2006-2013
• *GIS Specialist –* IAP World Services	2005-2006

Louisiana State University

• *Research Assistant – Coastal Marine Institute*	2001-2005
• *Graduate Assistant – CADGIS Research* Lab	1999-2001

Selected Projects (continued on page 2)

Louisiana Climate Initiatives Task Force. Louisiana Governor's Office of Coastal Activities (Ongoing)

The Water Institute is advising the Governor's Office through a one-year planning process to support the Climate Initiatives Task Force in developing a roadmap and specific actions to meet the state's ambitious goal of net zero greenhouse gas emissions by 2050. This effort engages more than 140 multidisciplinary experts across the Task Force, four Advisory Groups, and six Sector Committees, as well as the public, throughout a transparent and collaborative planning process grounded in a Structured Decision Making (SDM) framework. For the Task Force, Dr. Hemmerling developed a survey to provide a structured way for Advisory Groups to provide input on the impacts of potential net greenhouse gas emission strategies on other objectives for the state of Louisiana, such as increasing people's well-being, strengthening the economy, and conserving natural resources.

Partnership for our Working Coast (2019-current). Convened an environmental competency group consisting of local stakeholders and coastal scientists to identify nature-based solutions and beneficial use for dredged material. This research uses participatory modeling and social return on investment methods to guide the competency group and co-develop beneficial use projects that will maximize regional social-ecological resilience. Funded by Shell, Chevron, Danos, Greater Lafourche Port Commission and National Fish and Wildlife Foundation.

Assessing Risk and Resilience in Coastal Louisiana (2019-2020). An integrated risk mapping model was developed to capture how social and physical interventions designed to reduce the susceptibility and exposure of communities and engineered systems to coastal hazards can improve the resilience of these systems. The final framework was used analyze the quantitative interactions among infrastructure, environment, and society in southeast Louisiana and measure the relative effects of different types of investments. The final data model incorporated stakeholder engagement outputs to identify local variations in resilience. Funded by the Walton Family Foundation and the Foundation for Louisiana.

Participatory Modeling: Connecting Local Knowledge and Scientific Understanding (2017-2019). During five meetings in 2018, representative community members in St. Bernard Parish were involved in a fact-finding and participatory modeling activity with a number of numerical modelers. The goal of the community/researcher collaboration was to co-design a computer model representing the hydrology and ecology of Breton Sound Estuary and then use the model to test different nature-based restoration and protection projects. The models were adjusted based on the community group's feedback. Supported by the Science and Engineering Plan of The Water Institute of the Gulf.

Finding the Means: Investment and Adaptation in Vulnerable Communities (2018-2019). This study used stakeholder insight to assess the social impact of nonstructural mitigation measures and potential funding streams through a series of semi-structured interviews and qualitative data analysis. The study sought to identify the main social tipping point(s) in the implementation and/or funding process for nonstructural residential programs at which it would become so taxing on the community that residents would choose to move elsewhere. Funded by Tulane Institute on Water Resources Law and Policy.

Building Community Resilience to a Changing Louisiana Coastline through Restoration of Key Ecosystem Functions (2015-2017). Synthesized technical data from natural and social scientists as well as traditional ecological knowledge gathered through a series of community local knowledge mapping workshops to examine the social, cultural, and economic value of key ecosystems in coastal Louisiana. These data were integrated to develop a model of ecosystem-based adaptation in coastal Louisiana that was informed by both scientific and community landscape knowledge. Funded by Louisiana Sea Grant.

2017 Coastal Master Plan: Coastal Louisiana Social Vulnerability Index (SVI) (2016-2017). The social vulnerability index calculated for coastal Louisiana offers valuable insights into the social and economic conditions that increase community vulnerability to hazards events. This index enabled an assessment of the relative vulnerability of communities and was used to interpret the findings of Louisiana Coastal Master Plan metrics by comparing metric results across the vulnerability categories determined in this report. Providing community level information to the Planning Tool supports evaluation of how communities with different levels of vulnerability may be affected by restoration projects and alternatives. Funded by the Coastal Protection and Restoration Authority of Louisiana.

Selected Publications
1. **Hemmerling, S.A.**, DeMyers, C.A, & Parfait, J. (2021). Tracing the flow of oil and gas: A spatial and temporal analysis of environmental justice in coastal Louisiana from 1980 to 2010. Environmental Justice (In Press).
2. Barra, M., **Hemmerling, S.A.**, & Baustian, M.M. (2020). A model controversy: Using environmental competency groups to inform coastal restoration planning in Louisiana. Professional Geographer, Volume 72, Number 4, pp. 511-520.
3. **Hemmerling, S. A.**, Carruthers, T. J. B., Hijuelos, A. C., & Bienn, H. C. (2020). Double exposure and dynamic vulnerability: Assessing economic well-being, ecological change and the development of the oil and gas industry in coastal Louisiana. Shore & Beach, Volume 88, Number 1, pp. 72-82.
4. Baustian, M. M., Jung, H., Bienn, H., Barra, M., **Hemmerling, S.A.**, Wang, Y., White, E., & Meselhe, E. (2020). Engaging coastal community members about natural and nature-based solutions and assessing their ecosystem functions. Ecological Engineering: X, Volume 5.
5. **Hemmerling, S.A.**, Barra, M., Bienn, H.C., Baustian, M.M., Jung, H., Meselhe, E., Wang, Y., & White, E. (2020). Elevating Local Knowledge through Participatory Modeling: Active Community Engagement in Restoration Planning in Coastal Louisiana. Journal of Geographical Systems, Volume 22, Number 2, pp. 241-266.
6. **Hemmerling, S.A.**, Barra, M., & Bond, R.H. (2020). Adapting to a Shrinking Coast: Restoration, Protection, and Social Justice in Coastal Louisiana. In S. Laska (Ed.), Louisiana's Response to Extreme Weather- A Test Case for Coastal Resilience. Cham, Switzerland: Springer International Publishing.
7. Meselhe, E., Wang, Y., White, E., Jung, H., Baustian, M.M., **Hemmerling, S.A.**, Barra, M., & Bienn, H. (2020). Development of a local knowledge-based predictive tools to assess effectiveness of natural and nature-based solutions for coastal restoration and protection planning. Journal of Hydraulic Engineering, Volume 146, Number 2.
8. Curtis, J.W., Curtis, A., & **Hemmerling, S.A.** (2018). Revealing the Invisible Environments of Risk and Resiliency in Vulnerable Communities through Geospatial Techniques. in Tsunamis: Detection, Risk Assessment and Crisis Management. Aggeliki Barberopoulou, ed. Hauppauge, NY: Nova Science Publishers.