DETERMINING LOCALIZED RISK PERCEPTION AND IMPACTS OF PREDICTED SEA-LEVEL RISE (SLR) TO ENHANCE STAKEHOLDER MITIGATION PLANNING THROUGH VISUALIZATION TOOLS

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Marshes are essential buffer zones between land and water in estuaries and coastal zones, they are disappearing rapidly, and those that remain are often in poor health. The most dramatic coastal marsh losses in the U.S. are in the northern Gulf of Mexico. These disappearing marshes serve as a vital habitat for a diverse and unique range of flora and fauna, a cushion between coastal waterfront-dependent communities and the open waters of the Gulf, and an integral resource for the economic and social viability of these communities. Therefore, coastal community leaders, government officials, and natural resource managers must be able to accurately assess and predict a given coastal landscape's sustainability and/or vulnerability, especially as this coastal habitat continues to undergo rapid and dramatic changes associated with natural and anthropogenic activities such as accelerated relative Sea Level Rise (SLR).

A multi-disciplinary research team has been conducting a NOAA Sea Grant funded project to use a regional approach to refine the NOAA SLR Visualization Tool for local implementation in areas experiencing two different driving mechanisms of coastal wetland habitat change (subsidence versus erosion). This collaborative research aims to determine the different ways in which two different stakeholder groups (traditional ecosystem users and resource managers) evaluate risk and plan mitigation strategies associated with coastal habitat change due to predicted SLR resulting from climate change.

To achieve this goal, the research team is determining; (1) a method for producing localized vulnerability/sustainability maps based on predicted inundation and redistribution of coastal wetlands under accelerated SLR for two regionally representative systems; the first is an ecosystem-dependent coastal Louisiana indigenous Native American community, and the second is a Mississippi natural coastal preserve. Results from physical information derived from data and modeling of subsidence, erosion, engineered restoration and coastal protection features, historical land loss, and future land prediction under SLR that are complemented with traditional ecological knowledge (TEK) offered by the collaborating local ecosystem users will be integrated for these assessments; and (2) how and whether the results of such an approach can provide more useful information for assessing localized impacts of SLR and associated risk that may later be applied across the Gulf Coast by Sea Grant and NOAA among others. We are currently finalizing work for this research project, and intend to present the results in achieving the project objectives that includes; analyses of scientific field data collected related to marsh vegetation biomass characteristics, analyses of TEK data collected, and mapping products developed.