

EESLR 2016 – Dynamic sea level rise assessments of the ability of natural and nature-based features to mitigate surge and nuisance flooding

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Total Project Cost: \$1,200,000.
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Summary

Extensive transdisciplinary efforts since 2010 in the northern Gulf of Mexico (MS, AL, and the FL panhandle) have resulted in a capability to model the coastal dynamics of sea level rise and assess hydrodynamic and ecological impacts at the coastal land margin. The establishment of this paradigm shift (i.e., beyond “bathtub” approaches) was made possible, in no small part, by directly involving coastal resource managers at the initial stages and throughout the project process. Potential deleterious effects of sea level rise (SLR) to barrier islands, shorelines, dunes, marshes, etc., are now better understood. The paradigm shift, input from coastal resource managers and future conditions provide a rationale to evaluate and quantify the ability of Natural and Nature-based Feature (NNBF) approaches to mitigate the present and future effects of surge and nuisance flooding.

The objectives for this transdisciplinary project are to: (1) refine, enhance, and extend the coupled dynamic, bio-geo-physical models of coastal morphology, tide, marsh, and surge; (2) advance the paradigm shift for SLR assessments by linking economic impact analysis and ecosystem services valuation directly to these coastal dynamics of SLR; (3) establish and engage a Management Transition Advisory Group (MTAG) throughout the entire project process; and (4) deliver our results via a flexible, multi-platform mechanism that allows for region-wide or place-based assessment of NNBFs. Through the completion of these objectives this project will address all three of the EESLR research priorities.

Identification of potential members for a Management Transition Advisory Group (MTAG), led by a dedicated MTAG PI, have already begun. This presumptive formulation is necessary as the MTAG will play a key role in sharing knowledge of locations of present-day nuisance flooding, help identify key focal regions of study, suggest plausible NNBF approaches to be assessed, and guide the development of the process by which end results are delivered to stakeholders. The MTAG will be directly involved over the four year cycle via quarterly webinars and annual workshops to affect the project scope and enhance the outcomes.

Hydrologic Unit Code (HUC) polygons will be employed to facilitate communication of results across various scientific, policy, and management disciplines and enable easy data delivery to the MTAG and other stakeholders. The utility of the HUCs is multifaceted as they are a standardized GIS feature with attributes that will benefit economic and ecosystem services valuation (ESV). Further, results can be pushed through a NOAA ESRI server for web-based data delivery for a single HUC, or region-wide, without specialized software required of the end-user. Access to these data products will increase integration of science into management decisions along the NGOM coast.