The Marsh Equilibrium Model (MEM III) is a web accessible model that provides users with a hands-on tool to simulate how tidal marshes interact with the physical environment to maintain functionality under various sea level rise scenarios. MEM is a 1-dimensional model, developed by Dr. James Morris (University of South Carolina) and funded in part by NOAA's Ecological Effects of Sea Level Rise program, that provides a suite of outputs including marsh elevation, productivity, and carbon sequestration. The web interface provides pre-calibrated inputs or allows users to input their own site-specific information. Users can experiment with differing sediment loads, tidal regimes including micro or macro ranges, marsh depth and biomass. Understanding the relationship between these factors and marshes allows natural resource managers to account for how to understand the fate of existing marshes and assess the value of possible mitigation actions. Based on input data, users are provided an estimate of when a marsh will lose functionality and transition to open water. All outputs are displayed via graphs on the online interface and results can be downloaded for use in other application or development of specific graphic products.
**Audience**

MEM is designed for scientists and managers with a moderate degree of technical expertise. MEM comes pre-calibrated for five sites, including three in the Northern Gulf of Mexico. For the most useful results, users must provide specific biological inputs. If that biological information is not available, users can still use pre-calibrated biological inputs and receive valuable information. A users guide and sample exercises are provided on the tool site.

**Decision-Support**

MEM was developed to understand the relationship between marshes, water level, and other factors over time. At its core, MEM provides a projection of the vulnerability of a marsh to sea level rise, including impacts on productivity, elevation, and carbon sequestration. Manipulation of physical input parameters allows users to examine possible mitigation options and assess their impact over time. Specific examples include raising the marsh platform elevation, changes in suspended sediment concentrations, and tidal regime.

**What’s Next?**

Through the EESLR program, scientists at LSU coupled the MEM model with ADCIRC (a hydrodynamic model) to create Hydro-MEM. Hydro-MEM provides a more holistic, landscape level projection of marsh response to changing water levels. Initial application of Hydro-MEM in the Gulf was conducted at the three Northern Gulf NERRS. MEM and Hydro-MEM are now being applied through EESLR to additional sites in the Northern Gulf of Mexico and will be used to inform economic impact analyses and ecosystem service valuations.

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**Gulf of Mexico Climate Community of Practice Updates**

Join us at the 2017 Gulf of Mexico Climate Outreach Community of Practice Meeting is now open! The meeting will be in Covington, LA from May 16-18, 2017. Registration is $100, and the registration fee is waived for local government officials. [Click here to register online](mailto:), or contact Melissa Daigle (mtrosc2@lsu.edu) for more details.

The "decision-support tree project" has a name! Introducing the Gulf Tools for Resilience Exploration Engine, or Gulf TREE. Want to stay up-to-date on the project and progress on building the Gulf TREE? Come check it out and sign up for project updates [HERE](mailto:).