

**Northern Gulf of Mexico Sentinel Site Cooperative
Implementation Plan**

2013-2018



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I. Introduction

NOAA Sentinel Site Program

The NOAA Sentinel Site Program is an initiative focused on leveraging existing resources on a specific issue to identify and respond to issues of concern in a place-based context. The program will initially focus on the impacts of sea level change and is envisioned to incorporate all aspects of the science, service, and stewardship continuum. Through this approach, the program is designed to increase innovations of science-based solutions and transition their application for improved management of coastal regions. Currently, five Cooperatives have been developed: San Francisco Bay, Hawaii, Chesapeake Bay, North Carolina, and the Northern Gulf of Mexico. The Cooperatives work independently on place-based issues and collaborate on efforts and initiatives that have broader, national application.

Northern Gulf of Mexico Sentinel Site Cooperative

Mission statement: *The Northern Gulf of Mexico Sentinel Site Cooperative will improve integration, translation and transition of coastal data and research products in the northern Gulf of Mexico for application by regional and local resource managers, scientists and community leaders for adaptation to sea level rise and coastal inundation.*

This Implementation Plan outlines the goals, objectives, and actions of the Gulf of Mexico Sentinel Site Cooperative. The Cooperative aims to assess the impacts of sea level rise (SLR) and develop capabilities and tools to facilitate conservation of coastal resources by local, state, and regional managers. Proposed initially through NOAA's Gulf of Mexico Regional Collaboration Team (GoMRCT) and building off of the University of Central Florida (Dr. Scott Hagen, principle investigator) Ecological Effects of Sea Level Rise in the Northern Gulf of Mexico (EESLR-NGOM) project funded by NOAA's National Centers for Coastal Ocean Science (NCCOS), this Cooperative leverages the combined capabilities of three National Estuarine Research Reserves (NERRs), NOAA National Ocean Service (NOS), the Gulf of Mexico Alliance (GOMA), the GoMRCT, and the two Gulf Landscape Conservation Cooperatives (LCCs) – Gulf Coastal Plains and Ozarks and Gulf Coast Prairie. As the project develops, the Cooperative will broaden to include additional partners within and external to NOAA. In addition, the Cooperative will ensure alignment of actions with activities associated with the RESTORE Act.

The geographic scope of the Northern Gulf of Mexico Sentinel Site Cooperative is located within the East Gulf Coastal Plain, a sub-region found within the Atlantic Plain Region (Figure 1). This geography was chosen because topography, geologic structure and history, as well as ecological processes are similar (i.e., the marshes function similarly) across the region. It extends eastward from St. Tammany Parish in Louisiana around the Gulf to Levy County, Florida; the landward extent includes the areas defined by parish and county boundaries. The parish/county boundaries were chosen to facilitate the implementation of the Cooperative's goals and objectives at multiple scales, including local, county, and state levels.



Figure 1: Geographic scope of the Northern Gulf of Mexico Sentinel Site Cooperative. The Cooperative includes all coastal counties (blue striping) within the East Gulf Coastal Plain (solid black outline). The map is courtesy of Blair Tirpak.

The area includes the Apalachicola, Weeks Bay, and Grand Bay NERRs as well as several National Wildlife Refuges (e.g., St. Mark's, St. Vincent's, and Grand Bay) and National and State Parks (e.g., Gulf Islands National Seashore). See Appendix B for a full listing of parks, refuges, and preserves. The low level topography within this region makes some coastal ecosystems and communities highly susceptible to the effects of SLR. The combined effects of SLR and tropical storms can have dramatic impacts, including more flooding, faster erosion, land loss, and saltwater intrusion into freshwater resources. Impacts can also reach offshore to valuable resources like oyster reefs and seagrass beds.

Considerable ongoing monitoring and research activities, particularly within the three NERRs sites, provide the baseline information and parameters required for an integrative ecosystem approach to addressing SLR. Key products will include integrated data collection, common models, and tools to help these models inform community decisions related to sea level rise. For example, a critical component of the EESLR-NGOM project is an advisory management committee that provides recommendations for the development of predictive models and tools. These tools and products will allow for assessments of risk and planning, coastal construction guidelines, and resource protection and sustainability needs. Existing connections in the region position NOAA to partner with the NERRs, sister agencies, states, academia, non-governmental organizations, and others, leveraging individual successes to develop a broader picture of sea level rise in the Northern Gulf and to develop alternatives for how to respond to it.

II. Goals and Objectives

A program logic model was created (**Appendix A**) to assist the Cooperative in developing a five-year implementation strategy. The primary goals of the Northern Gulf of Mexico Sentinel Sites Cooperative are:

- 1) Enhance and expand sea level rise partnerships to maximize effectiveness of data collection, modeling, and response to this information through increased coordination and collaboration;
- 2) Improve science-based capabilities for understanding sea level rise and its impacts; and,
- 3) Foster science-based decisions to support sea level rise and coastal inundation planning and adaptation efforts.

The science goal above includes monitoring and modeling capabilities. Long-term outcomes that describe the intended impacts and benefits of the Cooperative on coastal communities and ecosystems over the five-year period of this plan include:

- A multi-partner sentinel site cooperative exists in the Northern Gulf of Mexico that provides for durable partnerships to address sea level rise;
- Priority data necessary to make accurate sea level rise predictions exists and is being used for adaptation planning;
- The coastal management community uses an ensemble of sea level rise tools and models to inform and guide coastal planning and adaptation; and,
- Decision-makers incorporate sea level rise considerations into existing plans.

These are further supported by a series of short to mid-term outcomes:

| Short-Term | Mid-Term | Progress as of June 2015 |
|--|--|--|
| Goal 1 | | |
| NOAA entities and partners are more aware of the Northern Gulf Sentinel Site Cooperative and the larger sentinel site program. | Relevant NOAA entities and partners are engaged with, participate in, and contribute to the Sentinel Site Cooperative. | NOAA entities and partners are more aware of the NGOM SSC and program and many are actively engaged |
| Goal 2 (Monitoring) | | |
| Resource managers, scientists, and data experts are sharing existing data and information related to sea level rise. | The scientific and coastal management communities have identified priority needs for sea level rise data for the sentinel site cooperative area. | Needs assessments have been compiled and needs have been prioritized at partnership workshops |
| Scientists and managers are working together to communicate sea level rise data assets to external partners. | Scientists and managers are working together to address sea level rise data needs for the sentinel site cooperative. | Partners that work closely with managers and community planners have been engaged to represent this community on the |
| | Scientists and managers are working together to interpret data and understand its limitations. | |
| Goal 2 (Modeling) | | |
| The research community participates in a forum for exchanging sea level rise model information and techniques. | The scientific and coastal management communities understand the uncertainties and capabilities of a suite of sea level rise models. | Coordinating with USGS partners who are developing a model comparison handbook for managers |
| Scientists and managers are working together to identify sea level rise management questions and scenarios that can be addressed through modeling. | Scientists and managers are working together to understand the applications and limitations of models. | Coordinating workshops between scientists and managers to communicate needs and examine latest model capabilities |
| | Scientists and managers are working together to link models available to address priority management questions. | |
| Goal 3 | | |
| Decision-maker needs for SLR information are identified and understood. | Decision-makers have access to relevant data, models, and tools to help them address SLR. | SLR assets list for the NGOM has been compiled and will go online in summer 2015 |
| | Decision-makers understand how to interpret available SLR information and models. | |
| | Decision-makers apply available sea level rise information and models to their work. | |

Outcomes of the Northern Gulf of Mexico Sentinel Site Cooperative support eight of the nine priority objectives of the National Ocean Policy Implementation Strategy as well as the following strategic goals from within NOAA and DOI:

Climate Adaptation and Mitigation

- Assessments of current and future states of the climate system that identify potential impacts and inform science, service, and stewardship decisions
- Mitigation and adaptation choices supported by sustained, reliable, and timely climate services
- A climate-literate public that understands its vulnerabilities to a changing climate and makes informed decisions

Healthy Oceans

- Healthy habitats that sustain resilient and thriving marine resources and communities

Resilient Coastal Communities and Economies

- Resilient coastal communities that can adapt to the impacts of hazards and climate change.
- Comprehensive ocean and coastal planning and management

Cooperation and Integration

- Integrate science and management expertise with partners, providing information and best management practices available to support strategic adaptation and mitigation efforts on both public and private lands
- Work to improve the sharing and communications of climate change impact science, including through www.data.gov

The Deepwater Horizon oil spill has generated renewed focus and energy in the Gulf of Mexico to preserve, restore, and increase resilience of coastal communities and ecosystems. The RESTORE Act, developed as a response to the oil spill, has several programs whose goals, objectives, and priorities align with the outcomes of the Sentinel Site Cooperative, including:

Gulf Coast Ecosystem Restoration Council

- Restore, enhance, and protect habitats
- Protect and restore living coastal and marine resources
- Promote community resilience
- Promote natural resource stewardship and environmental education
- Improve science-based decision-making processes

NOAA RESTORE Act Science Program

- Comprehensive understanding of ecosystem services, resilience, and vulnerabilities of coupled social and ecological systems
- Improve monitoring, modeling, and forecasting of climate change and weather effects on the sustainability and resiliency of the ecosystem
- Develop decision-support tools to assist resource managers with management decisions planned to sustain habitats, living coastal and marine resources, and wildlife
- Network and integrate existing and planned data and information from monitoring programs

Individual State Councils

- Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region

- Coastal flood protection and related infrastructure

Centers of Excellence

- Comprehensive observation, monitoring, and mapping
- Coastal and deltaic sustainability, restoration, and protection, including solutions and technology that allow citizens to live in a safe and sustainable manner in a coastal delta in the Gulf region

III. Actions to Achieve Goals, Milestones, Next Steps

Specific objectives, actions, milestones, and required resources are included in **Appendix A**. In general, the actions contained in the Gulf of Mexico Sentinel Site Cooperative Implementation Plan represent a suite of activities ranging from those requiring significant additional resources, little to no funding but additional staff support, and those that are already planned under existing activities and resources. Near-term actions are focused on increasing non-NOAA participation in the Cooperative management team, developing a framework for sea level rise activities, and improving outreach to key constituents, among other related actions. Longer-term actions include those that build off of short-term actions, such as prioritization of monitoring infrastructure needs, and those that will require additional funding, such as the sea level rise model evaluation project.

While the Cooperative seeks to address several short-term actions, specific priority actions include:

- Share information about the Sentinel Site Cooperative with partners at relevant events and meetings,
- Review existing plans to prioritize management questions, variables and select indicators for the Cooperative,
- Develop a framework of a suite of sea level rise scenarios and timeframes for use in modeling applications, and

Coordinate with partners (e.g., NERRS, Sea Grant, LCCs, GOMA) to share relevant climate change and sea level rise information at local workshops and meetings.

Updated in 2015: The partners at the workshop in April, 2015 updated the short-term priorities of the Cooperative and identified several actions to achieve these:

- Consistent sea-level rise scenarios agreed upon by experts
 - Actions: Webinar/workshops of experts to determine; develop a user guide for the recommendations
- Recommendations to managers and decision makers on how to use available information, particularly models, with an understanding of uncertainty and limitations
 - Actions: Identifying local/county stakeholders that will be utilizing the models/tools; webinars with model/tool developers for decision makers/managers; Cross comparison of models; Fact sheet or example detailing for managers how models are applied and which questions to ask
- Inventorying sea-level observation infrastructure (e.g. water level, tide, and COR stations, salinity, elevation) and gap analysis to identify where infrastructure is needed.
 - Actions: Gap analysis of the SET inventory, including recommendations for additional deployments; COR stations and then elevation should be inventoried next

IV. Roles and Responsibilities

With respect to governance, the Gulf of Mexico Cooperative will initially operate under the leadership of a Management Team comprised of a representative from each of the following entities:

- Gulf of Mexico Regional Collaboration Team
- NOAA Office for Coastal Management
- NOAA National Centers for Coastal Ocean Science
- National Estuarine Research Reserves (currently represented by Apalachicola)
- Sea Grant (currently represented by Mississippi-Alabama)
- Florida Fish and Wildlife Conservation Commission
- U.S. Fish and Wildlife Service
- U.S. Geological Survey

As indicated by actions within the Implementation Plan, the Management Team expanded its membership during Years 1 and 2 to include two representatives from U.S. Fish and Wildlife Service and U.S. Geological Survey. The U.S. Geological Survey representative is also affiliated with the Gulf Coastal Plains & Ozarks Landscape Conservation Cooperative.

The Management Team is primarily responsible for executing the Implementation Plan, developing annual work plans, tracking milestones and reporting progress to NOAA, and communicating the work of the Cooperative to key stakeholders and interested parties. The Coordinator will act as a Point of Contact (POC) for the team to NOAA headquarters, stakeholders, and partners and will be responsible for facilitating completion of actions and activities outlined in the Implementation Plan and work plans. The team will revisit the Implementation Plan on a biannual basis to assess progress on objectives and milestones and make adjustments to keep the Cooperative moving forward. A formal reassessment of the management team composition and implementation plan will occur after 18 months and is described in the *Evaluation Process* below.

Management Team members will convene as needed via meetings and conference calls. Participation on the team is voluntary and management team decisions will be made through consensus.

There exists a broad community of potential partners in the region who are also addressing sea level rise. In order to enhance the success of the Northern Gulf of Mexico Cooperative, the Management Team will strive to communicate and coordinate its activities with as many of these organizations as possible. Specific partners who have engaged in the Cooperative include, but are not limited to:

- Gulf of Mexico Alliance (GOMA)
- Gulf of Mexico Coastal Ocean Observing System (GCOOS)
- Gulf of Mexico Climate Community of Practice (CoP)
- Landscape Conservation Cooperatives (LCCs)
- National Park Service (NPS)
- The Nature Conservancy (TNC)
- NOAA Climate Services
- State Coastal Zone Management Programs

In addition, the Northern Gulf of Mexico Cooperative will leverage a standing management advisory committee formed as a part of the EESLR-NGOM Project. This advisory committee consists of local, state, and federal coastal managers within the Cooperative geography. There are also many other NOAA offices in the region

with capabilities that could potentially support the Sentinel Sites Program. These offices are also considered to be part of the broad community of partners, and they will receive updates about the Sentinel Sites Program through the NOAA Gulf of Mexico Regional Collaboration Team.

V. Resource Identification

Short-term activities of the Gulf Cooperative leverage a number of ongoing activities and projects focused on climate and sea level rise. Several modeling actions build on activities and anticipated products of the NCCOS-funded EESLR-NGOM project as well as the recently completed Gulf Coast Vulnerability Assessment led by NOAA, Gulf of Mexico Alliance (GOMA), Climate Science Centers (CSCs), and the Gulf LCCs. Additional actions focused on outreach will build on activities of the EESLR-NGOM project, the Climate Community of Practice, and GOMA's Habitat Resource and Coastal Resilience Teams. Actions focused on Sentinel Site outreach and Management Team expansion will be completed through in-kind contributions of staff time from the Management Team and the Coordinator. Specific identification of actions and required resources can be found in Appendix A.

A number of forums, workshops, and surveys have previously addressed priority science, data, and management needs associated with sea-level rise in the Gulf of Mexico. These efforts, led by GOMA, NOAA, the Department of Interior, and others, have focused on building consensus and outlining a path forward for addressing gaps and needs. While most of these needs are Gulf-wide, the majority are highly relevant to the Sentinel Site Cooperative region.

The preliminary Northern Gulf of Mexico Cooperative needs identified below were based on outputs from three of these recent needs assessment efforts. The *Gulf of Mexico Climate Data and Scenarios Workshop* was held in May 2012 and focused on modeling and data needs for climate and sea level rise predictions. A focus group comprised of coastal managers from the Cooperative region was held in conjunction with a management committee meeting for the Ecological Effects of Sea Level Rise project, and centered on aligning local management needs with ongoing science and modeling activities in the region. Finally, a stakeholder meeting was held in September 2012 by the Cooperative management team. This stakeholder meeting targeted key representatives of previous or ongoing sea level rise efforts in the Gulf of Mexico and allowed for direct input into the Cooperative implementation plan.

A portion of the needs and gaps identified below are direct actions within the Northern Gulf of Mexico Cooperative implementation plan. A comprehensive needs assessment focused on monitoring and modeling will be completed in the early phases of the Gulf Cooperative implementation plan.

A significant administrative need identified for the Northern Gulf of Mexico Cooperative that was met in late 2014 was securing a coordinator focused on the management of the Cooperative and leading the implementation of key actions. Preliminary science and monitoring activities needed to improve adaptation to, and planning for sea level rise in the northeast Gulf of Mexico include (updated in 2015):

- Monitoring:
 - Inventory of Surface Elevation Tables (SET) and other vertical control data. Infrastructure distribution across region with detailed geospatial information.
 - ✓ Status Update (2015): Inventory is completed, now a gap analysis needs to be performed to inform strategic placement in the future
 - Inventory of additional sea-level observation infrastructure (e.g. water level, tide and COR stations, salinity, elevation) and subsequent gap analysis to identify strategic placement of future infrastructure

- Strategic placement and development of Surface Elevation Table (SET) sites to address current gaps.
- Platform for improved data access and management, leveraging the new GOMA Data and Monitoring Priority Issue Team.
- Additional priority data needs:
 - ✓ Elevation data with an uncertainty range that is smaller than the tidal frame. This includes improved LIDAR and marsh elevation data;
 - ✓ Improved bathymetric data in in nearshore waters;
 - ✓ Total suspended solids;
 - ✓ Saltwater intrusion monitoring and research on saltwater intrusion impacts on habitat;
- Science and Modeling:
 - Sustained funding for ongoing sea level rise model development.
 - Ensemble of models providing multiple perspectives on sea level rise impacts and inundation.
 - Interactive effects of hurricanes and sea level rise on habitat loss and inundation. – In progress though EESLR and SLAMM
 - Development of a consistent set of sea level rise projections and scenarios for use across modeling platforms. – In progress, development of a webinar and follow up meetings
 - Design and seek funding for large spatial and temporal scale field experiments to mimic future sea-level conditions and habitat/ecological response to inform models and planning.
- Management Needs:
 - Recommendations for how to use available information, particularly models, with an understanding of uncertainty and limitations. – In progress through USGS and CoP
 - Handbook on adaptation for cultural resources, including implications to the natural environment.
 - Guidance on land acquisition, habitat restoration, and infrastructure placement.
 - Spatially explicit maps capable of detecting likelihood of habitat migration and coastal inundation as well as models capable of incorporating multiple sea level rise scenarios. – In progress through the Gulf Coastal Plains and Ozarks LCC
 - Socioeconomic analysis of the costs of not adapting or planning for sea level rise and economic valuation of threatened resources – Some progress through partners.
 - Local and regional narratives for sea level rise effects being felt today, including historical sites and cultural resources
 - Improved outreach and communication of sea level rise science and issues at the local and community level – ongoing.
 - Improve communication between management and researchers to ensure that both have needs being met

VI. Evaluation Process

The Gulf Cooperative Implementation Plan employs an adaptive approach for evaluation and measuring success. Each action will be evaluated and prioritized based on current level of effort and resources and relationship to other actions of the implementation plan. Progress towards milestones for actions in progress will be documented and tracked. In addition, a work plan for these and short-term actions that will not require significant resources will be developed for year one. All other actions will be identified as those will require additional resources and/or additional staff for completion in out years of the Implementation Plan.

Although the Management Team will consistently evaluate progress towards short-term outcomes, a formal

evaluation (dependent on resources) of progress and implementation plan actions will be conducted at approximately 18 months following finalization of the Plan. A reassessment of Implementation Plan actions will be conducted through targeted stakeholder meetings in conjunction with partner agencies and organizations. Goals, objectives, and actions will be re-evaluated based on the findings of reassessment.

The Sentinel Sites Program has identified a set of relevant GPRAs , and the Gulf of Mexico Sentinel Sites Cooperative will contribute to several of these GPRAs by measuring objectives as follows:

1. Improved climate model performance and utility based on model advancements (planned milestones) and climate assessments benefited (Pilot performance measure)

- Goal 2 Objective: By the end of Year 2, modeling partners will have agreed to a suite of sea level rise scenarios that can be used for planning within the Cooperative.

2. Annual percent of U.S. states and territories that use NOAA climate information and service to improve decision making in the face of a changing climate.

- Goal 1 Objective: By the end of Year 2, 75% of Cooperative members understand how to access a suite of relevant NOAA products and services.
- Goal 2 Objective: By the end of year 2, at least 80% of partners will report an increase in their awareness of existing SLR data sets.
- Goal 2 Objective: By the end of Year 5, at least 80% of partners will report an increase in their use of existing sea level rise data sets.
- Goal 3 Objective: By the end of Year 1, at least 80% of decision-makers who attend a sea level rise workshop hosted by a sentinel sites partner will report an increase in ability to access SLR science and tools that help them in their planning and adaptation efforts.
- Goal 3 Objective: During Years 2-5, at least 70% of decision-makers who receive data and/or tools from SSP partners will report an intention to apply this information to their work.

Appendix A

Logic Model

Goal: Enhance and expand sea level rise partnerships to maximize effectiveness of data collection, modeling, and response to this information through increased coordination and collaboration

| Resources | Actions | Milestones | Objectives | Short-Term Outcome | Mid-Term Outcome | Long-Term Outcome |
|------------------|---|---|---|--|--|---|
| No new resources | Enhance communication about the Northern Gulf Sentinel Site Cooperative across NOAA line offices and with partners via the Gulf Regional Team | <p>a) Include sentinel site in Gulf Regional Annual Operating Plan (2013/Year 1-2,)</p> <p>b)Additional NOAA Line Offices join management team. (Year 1-2)</p> <p>Update: More NOAA line offices understand and contribute to the SSC. The SSC was included in the Gulf Regional Annual Operating Plan in 2013 Newsletter and annual partnership calls were developed</p> | By the end of Year 1, 90% of the active NOAA Regional Collaboration Team members will understand what the Sentinel Site Management Team activities are in the Gulf of Mexico. | NOAA entities and partners are more aware of the Northern Gulf Sentinel Site Cooperative and the larger sentinel site program. | Relevant NOAA entities and partners are engaged with, participate in, and contribute to the sentinel site. | A multi-partner sentinel site cooperative exists in the northern Gulf of Mexico that provides for durable partnerships to address sea level rise. |
| No new resources | Respond to partner needs through sharing an inventory of relevant NOAA assets to increase leveraging opportunities. | <p>Inventory is completed (Year 1-2)</p> <p>Update: SLR Assets list compiled in 2015 and published online, broader than just NOAA assets</p> | By the end of Year 2, 75% of Cooperative members understand how to access the suite of relevant NOAA products and services (Climate Services and others) | | | |
| No new resources | Share information about SSP with external partners at relevant events and meetings (e.g., RESTORE, Gulf of Mexico Alliance, and others). | <p>At least one non-NOAA partner becomes member of management team (Year 1-2)</p> <p>Update: FWS and USGS each added a representative to the management team in 2014. 2015 GOMA added a representative</p> | By the end of Year 2 , the Cooperative Management Team will expand to include at least 2 new individuals who reflect broader NOAA and external agency partnerships | | | |

Goal: Improve science based capabilities for understanding sea level rise and its impacts

| Resources | Actions | Milestones | Objectives | Short-Term Outcomes | Mid-Term Outcomes | Long-Term Outcomes |
|---|--|---|---|---|--|---|
| No new money but will take staff time to coordinate | Identify scientists, managers, and data and model experts with interests related to sea level rise adaptation planning | <ul style="list-style-type: none"> A network of experts has been established for sharing data and models (Year 1-2) <p>Update: Coordinator has expanded Cooperative partners to include scientists, modelers, and managers and is working to establish mechanisms (quarterly calls, newsletter, and annual meeting) for</p> | By the end of the process, 80% of participating resource managers, scientists, and data experts identify the SSC as an important mechanisms for identifying and sharing sea level rise data. | Resource managers, scientists, and data experts are sharing existing data and information related to sea level rise. | The scientific and coastal management community have identified priority needs for sea level rise data for the sentinel site cooperative area. <u>Update:</u> Needs were identified at stakeholder engagement meetings in 2012 and 2015 | Priority data necessary to make accurate sea level rise predictions exists and is being used for adaptation planning. |
| No new resources | As data sets are identified, SSP partners are working to share them at relevant workshops and meetings. | <p>*Link to Goal 3 through this shared milestone: Workshops/meetings are scheduled (Years 1-5) **Specific examples might include a)coordination meetings with LCCs to discuss the Gulf Coast Vulnerability Assessment; b)forums between scientists and managers to discuss current conditions and expected changes/impacts.</p> | <p>By the end of Year 2, 80% of partners will report an increase in their awareness of existing SLR data sets.</p> <p>By the end of Year 5 at least 80% of SSP partners will report an increase in their use of existing SLR data sets.</p> | <p>Scientists and managers are working together to communicate SLR data assets to external partners. <u>Update:</u> Assets are shared through the SSC website, partner websites, and shared at local and regional meetings.</p> | Scientists and managers are working together to address sea level rise data needs for the sentinel site cooperative area. | |
| Need money and staff time. | 1. Review existing plans to, prioritize management questions, variables and select indicators for the Cooperative (near term, Cooperative led) | <p>Workshop is held to define priority monitoring questions, available data, and gaps between the priority questions and available data <u>Update:</u> Partnership works was held to identify priorities and leveraging opportunities to fill gaps/needs</p> | <p>By year 5, at least 1 identified priority sea level rise data need is being addressed by the Cooperative and/or partners. <u>Update:</u> A SET inventory was created and is available on-line.</p> | | Scientists and managers are working together to interpret data and understand its limitations. | |
| Funding required for workshops, analysis, reporting, etc. | Develop framework that addresses priority monitoring questions, variables, and indicators | A framework has been developed to address data needs and priority monitoring questions. | | | | |

| | | | | | | |
|---|--|--|--|--|--|--|
| Funding required for workshops, analysis, reporting | Assess the ability of existing observational infrastructure to address priority monitoring questions | <u>Update:</u> A SET inventory was successfully conducted and a plan to do a gap analysis is underway. Other infrastructure inventories have been prioritized and will be addressed next | | | | |
|---|--|--|--|--|--|--|

| Modeling | | | | | | |
|---|---|---|---|---|--|---|
| No new money but will take staff time to coordinate | Identify and engage scientists, managers, and data and model experts with interests related to sea level rise adaptation planning | A network of experts has been established for sharing data and models (Year 1-2) | By the end of year two, partners have agreed to a suite of sea level rise scenarios that can be used for planning within the Cooperative <u>Update:</u> A webinar will be held to address this in Fall, 2015 | The research community participates in a forum for exchanging sea level rise model information and techniques. | The scientific and coastal management communities understand the uncertainties and capabilities of a suite of sea level rise models. | The coastal management community uses an ensemble of sea level rise tools and models to inform and guide coastal planning and adaptation. |
| No resources required, but will take staff time to coordinate | Review existing plans to, prioritize management questions, variables and select indicators for the Cooperative (near term, Cooperative led) | | By the end of the process, modeling partners have applied agreed upon sea level rise scenarios to at least one sea level rise modeling application | | | |
| No resources required, leveraging EESLR and GVA | Develop a framework of a suite of sea level rise scenarios and timeframes for use in modeling applications. | A suite of sea level rise scenarios and timeframes is developed (year1- 2) | By the end of the process, 80% of participating resource managers, scientists, and model experts identify the SSC as an important mechanisms for assessing and understanding sea level rise tools and models. | Scientists and managers are working together to identify sea level rise management questions and scenarios that can be addressed through modeling | Scientists and managers are working together to understand the application and limitations of models | |
| No new money but will take staff time to coordinate | Conduct an inventory of completed and ongoing model development and application within the Cooperative. | Completed inventory of sea level rise models (year 1-2). <u>Update:</u> SLR assets inventory completed and cooperation with partners at USGS and Climate Community of Practice who are conducting similar work | By the end of Year 2 at least 80% of partners will report an increase in their awareness of existing SLR tools and models. | | Scientists and managers are working together to link models available to address priority management questions | |
| Funding required for project | Initiate sea level rise model evaluation and comparison and begin the development of a test-bed for future model assessments. | Project to evaluate sea level rise models has been funded and initiated (year 4-5). <u>Update:</u> Funding applied for in April 2015 | | | | |

Goal: Facilitate the transfer of science-based information to inform SLR planning and adaptation efforts at the local level

| Resources | Actions | Milestones | Objectives | Short-Term Outcome(s) | Mid-Term Outcomes | | Long-Term Outcome (s) |
|---|--|---|--|---|--|---|--|
| No new money but will take staff time to coordinate | Compile existing SLR information needs assessments | Inventory of existing NA (Year 1) <u>Update:</u> SLR needs assessments were compiled by OCM, a follow up document is being drafted | By the end of Year 1 (and continuing into subsequent years), SSP partners will understand the SLR information and tool needs of local decision-makers in the project area. | Decision-maker needs for SLR information are identified and understood. <u>Update:</u> This is a shared outcome with the Climate CoP. The annual CoP meetings provide a forum for sharing needs. | Decision-makers have access to relevant data, models, and tools to help them address SLR. <u>Update:</u> Sharing information and tools/models through CoP via webinars and tools cafes. Also working on this with NERRs through connecting Scientists and Citizens project. | Decision-makers understand how to interpret available SLR information and models. | Decision-makers incorporate SLR considerations into existing plans <u>Update:</u> Sea Grant programs have been funding communities to incorporate SLR into hazard mitigation plans. We have plans for Biloxi, Oceans Springs, Waveland, Orange Beach. |
| No new money but will take staff time to coordinate | 1. Identify relevant data sets and tools that meet decision maker needs. 2. Conduct gap assessment between decision-maker needs and available tools and data. | Inventory of existing data sets and tools for management use (Year 1-2) Gap assessment is complete (Year 1-2) <u>Update:</u> Will work on a paper during summer 2015 to identify gaps in needs and existing tools/data. | During Year 1 (and subsequent years), at least 80% of decision-makers who attend a SLR workshop hosted by an SSP partner will report an increase in ability to access SLR science and tools that help them in their planning and adaptation efforts. | | | Decision-makers apply available SLR information and models to their work. | |
| Will take new \$\$ and staff time | Develop guidance that explains how to interpret the data and tools. Include limitations of the tools, too. | "How-to" guide for data and tools is complete. (Year 4-5) <u>Update:</u> Funding has been applied for and coordination with USGS conducting similar work | During years 2-5, at least 80% of decision-makers who receive data and/or tools from SSP partners will report an ability to apply this information to their work. | | | | |

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|------------------|--|---|--|--|--|--|--|
| No new resources | Coordinate with partners (e.g., NERRS, Sea Grant, LCCs, GOMA) to share relevant climate change and sea level rise information at local workshops and meetings. | Workshops/meetings are scheduled (Years 1-5) **Specific examples might include a)coordination meetings with LCCs to discuss the Gulf Coast Vulnerability Assessment; b)forums between scientists and managers to discuss current conditions and expected changes/impacts. <u>Update:</u> Partnership workshop was held, funding obtained to conduct additional workshops in year 2015 and two more in 2016 | | | | | |
| No new resources | Develop a mid-term evaluation | Mid-term evaluations are conducted (Years 2-5). | | | | | |

APPENDIX B

SENTINEL SITES WITHIN THE COOPERATIVE BOUNDARY

Identified refuges, parks, and preserves that are managed areas with a commitment to long-term monitoring:

Big Branch Marsh Refuge
Mississippi Crane Refuge
Grand Bay Refuge
Bon Secour Refuge
St Vincent Island Refuge
St Marks Refuge
Lower Suwanee Refuge
Cedar Keys Refuge
Fort Pickens Aquatic Preserve
Yellow River Marsh Aquatic Preserve
Rocky Bayou Aquatic Preserve
St Andrew's State Park
St Joseph Bay Aquatic Preserve
Apalachicola National Estuarine Research Reserve
Grand Bay National Estuarine Research Reserve
Weeks Bay National Estuarine Research Reserve
Alligator Harbor Aquatic Preserve
Big Bend Seagrasses Aquatic Preserve
Gulf Shores State Park