

Preparing for the Next Big Storm: *Coastal Resilience from Tidal Marshes and Marsh Enhancement Projects*

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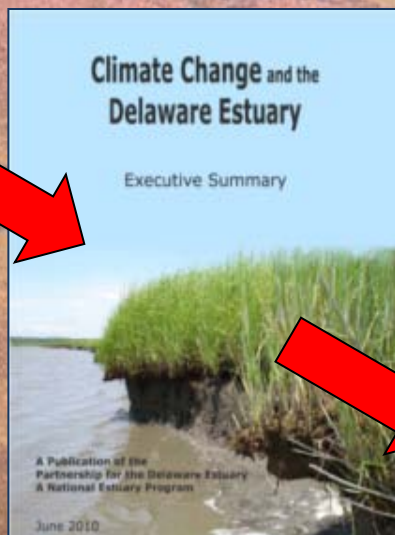


2007



Recognize Problem

2010



Assess Vulnerability & Prioritize Solutions

2011



Translate & Engage

2012-13



Track Change



Action Plans



Adaptation Projects

Future Needs?



Monitoring



Project R&D



Studies



Strategic BMPs

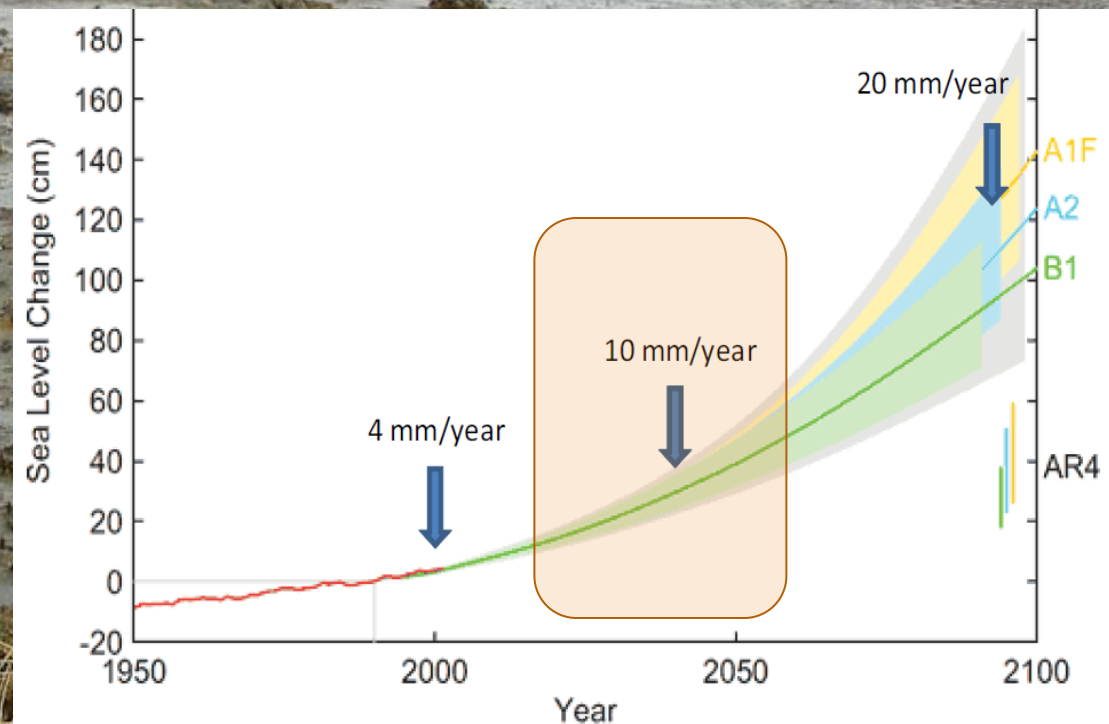
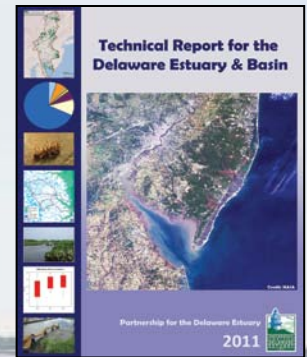
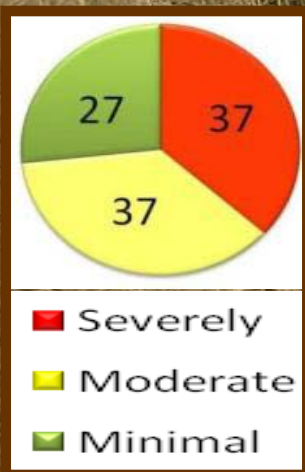


Coastal Wetlands are a Priority

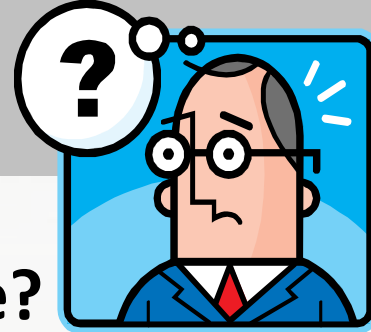
Losing an acre per day (1996-2006)

Most are at least moderately stressed

Future scenarios
are worrisome



Post-Sandy Questions



How important are coastal wetlands for resilience?

How are wetlands responding to sea level rise, storms?

Where will wetlands likely survive in the future?

How do other stressors (e.g. pollution, management practices) affect wetlands and their resilience properties?

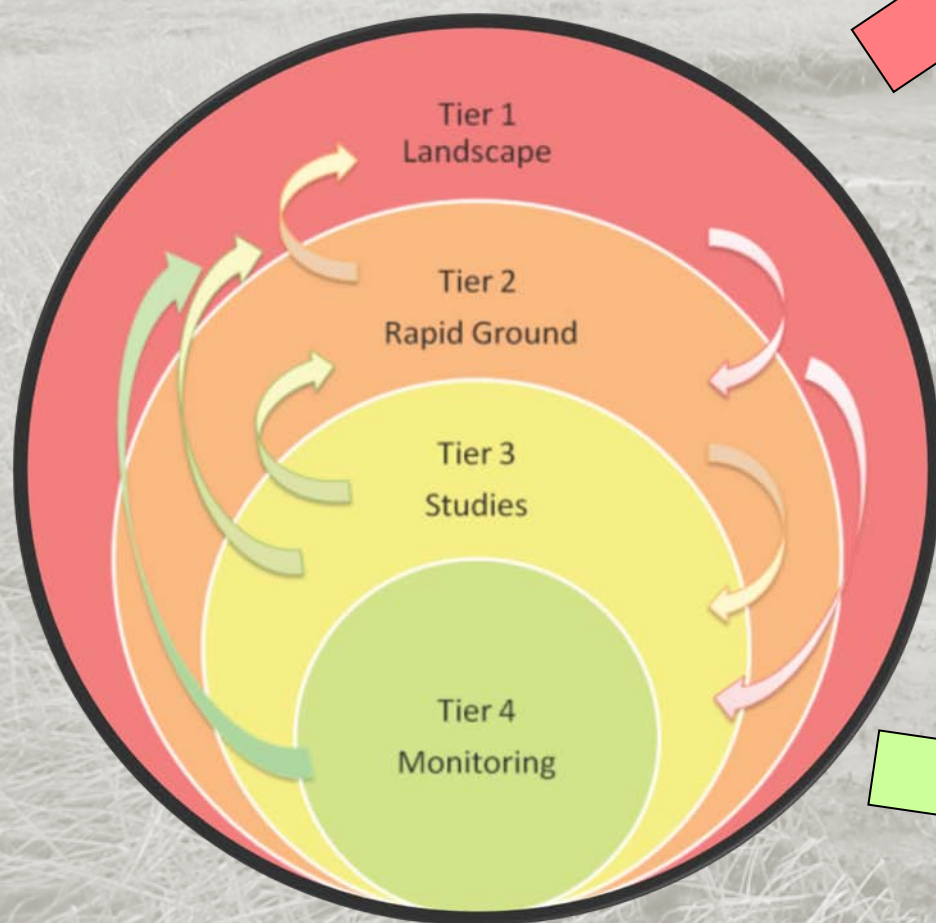
Can declines in coastal wetland condition, ecosystem services and resilience be reversed, and if so what is the ROI (costs & benefits)?

Can we provide site-specific guidance on BMPs and actions to promote the greatest coastal resilience via healthy wetland acreage?

1. Research Priorities - Monitoring

MACWA

Mid-Atlantic Coastal Wetland Assessment



**Remote
Sensing**



**Ground-
Truthing**



**Intensive
Studies**

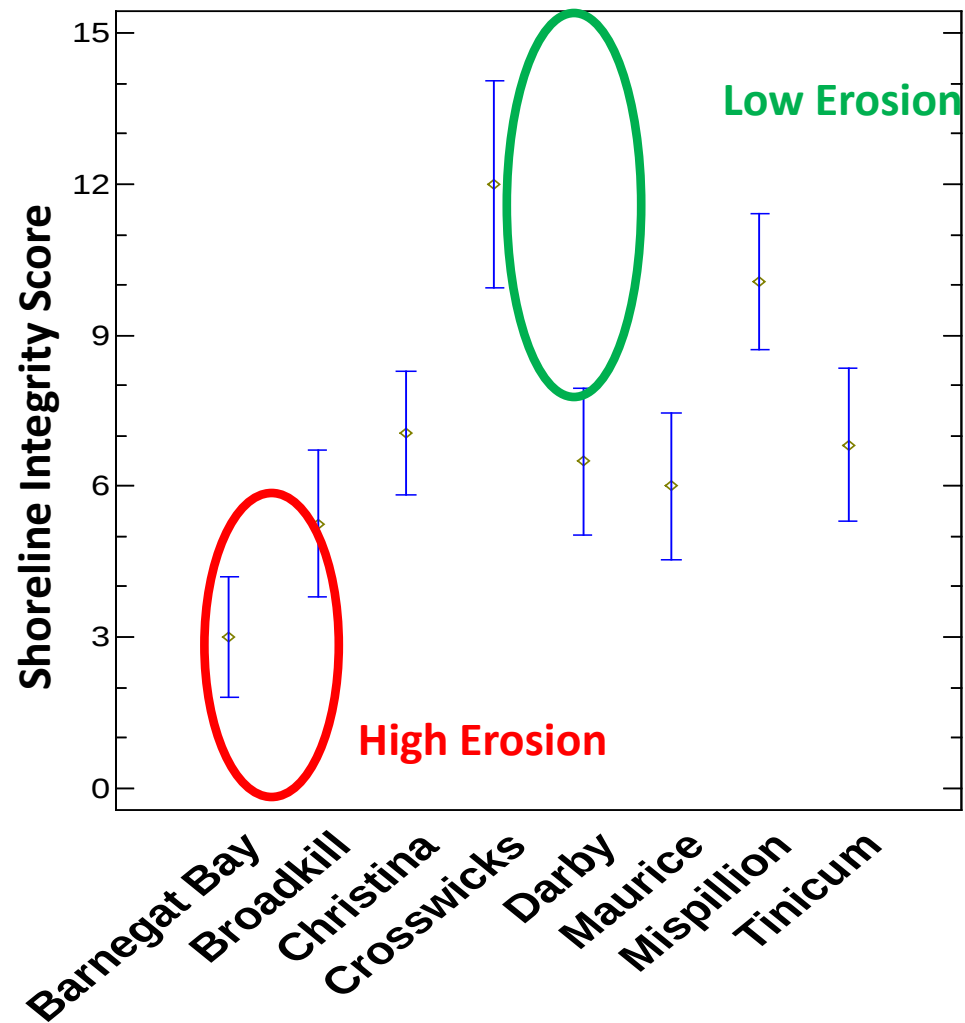


**Station
Monitoring**

1. Research Priorities - Monitoring

MACWA Tier 2

- 1a) Expand and repeat rapid assessments in areas of greatest change
- 1b) Adapt RAM to more directly examine stressor-response relationships along shorelines

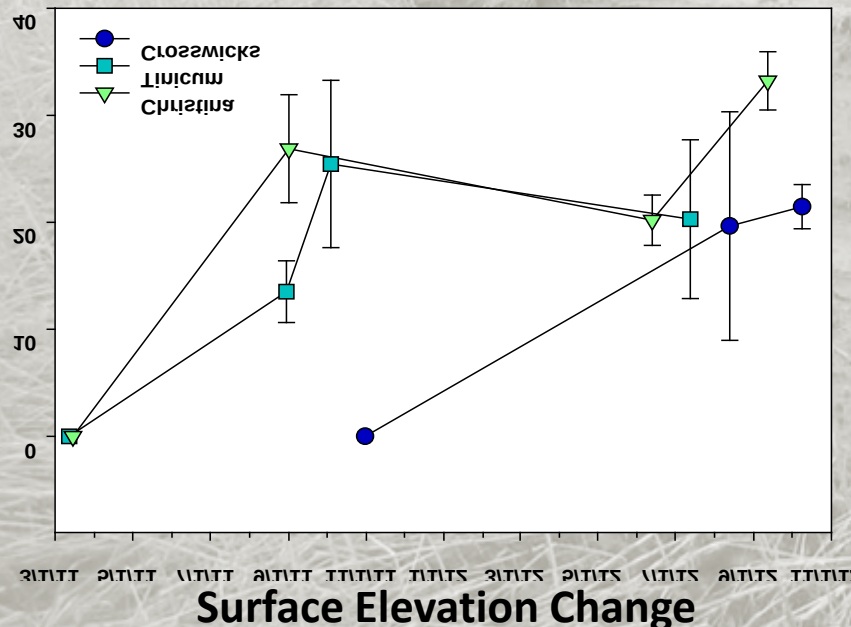


1. Research Priorities - Monitoring

MACWA Tier 4

1c. Sustain station monitoring (<50% funded next 3-4 years)

1d. Add shoreline metrics to station monitoring to examine integrity and functions of edges



1. Research Priorities - Monitoring

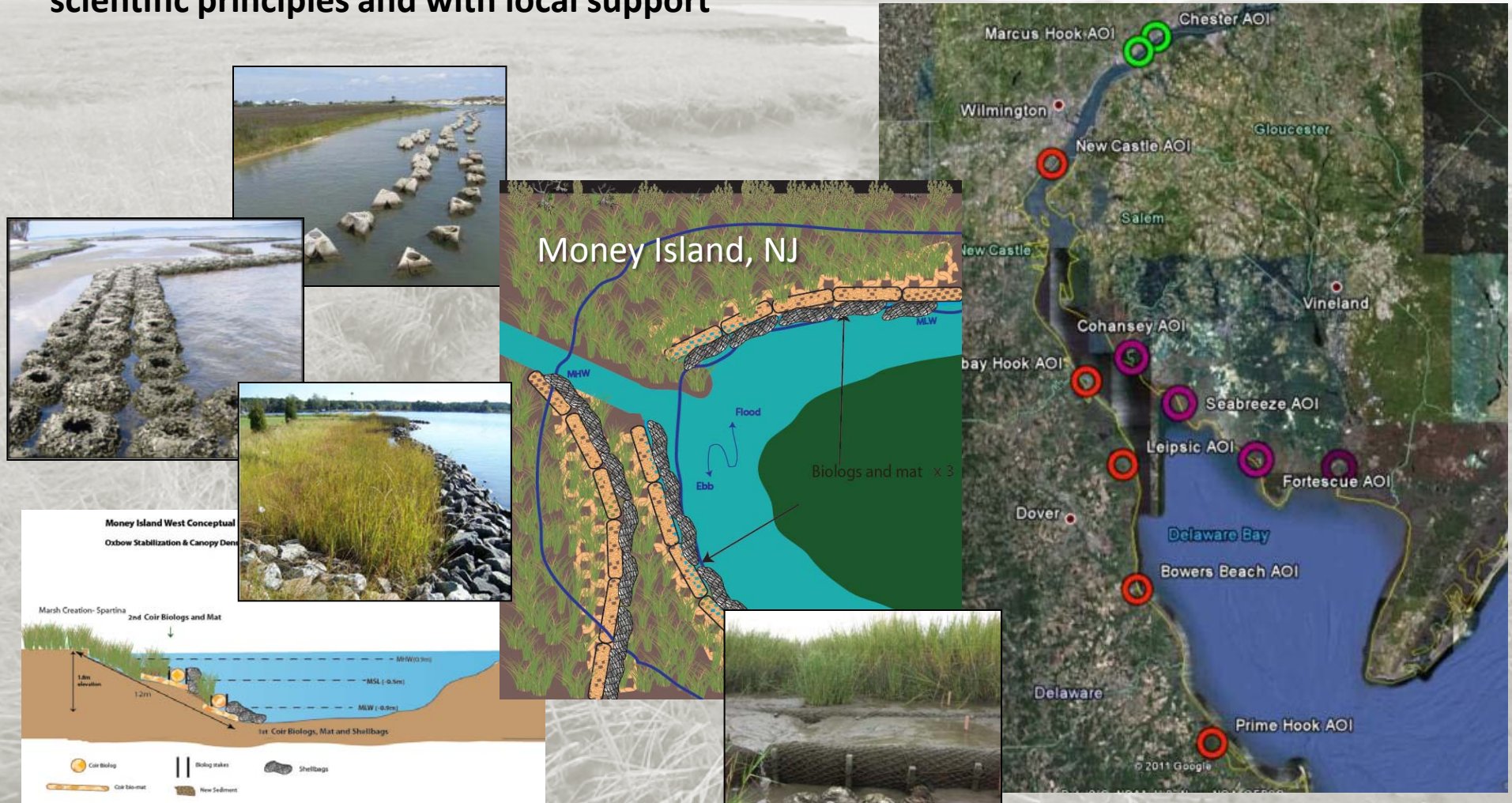
Shoreline Condition

1e. Perform a shoreline condition inventory around the state



2. Research Priorities – Project R&D

Dozens of pilot projects have been conceptualized in the Delaware Estuary and Barnegat Bay, designed with scientific principles and with local support



2. Research Priorities – Project R&D



Interest in living shorelines, dredge sediment application, etc., has increased. But funding to test key concepts in projects has not kept pace with interest



2a) Install, monitor and adaptively manage new Living Shoreline and sediment placement R & D projects, including larger scale “hybrids”

2b) Form a LS Technical Group to share data and lessons learned

3. Research Priorities - Studies

Coastal Wetlands for Shoreline Defense

3a. How does storm surge buffering services vary with wetland type, locale and condition?

(Are these studies underway by others?)



3b. What physical and biological features convey natural levee-building, and can they be enhanced?

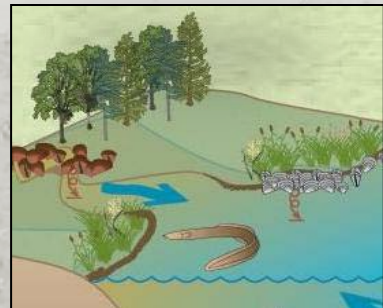
(Pilot efforts and proposals are in development)



3c. How does pollution (e.g., nutrients) contribute to weakened coastal wetland health and resilience?

(Pilot efforts and proposals are in development)

3d. Do coastal habitat mosaics (e.g. combinations of wetlands, SAV, oyster reefs) convey heightened resilience when in close proximity? *(Proposals in devel.)*



4. Research Priorities – Strategic BMPs

Marsh Futures

4) Strategic, Science-Based Prioritization of Places and Tactics (BMPs, Resilience Proj.)

