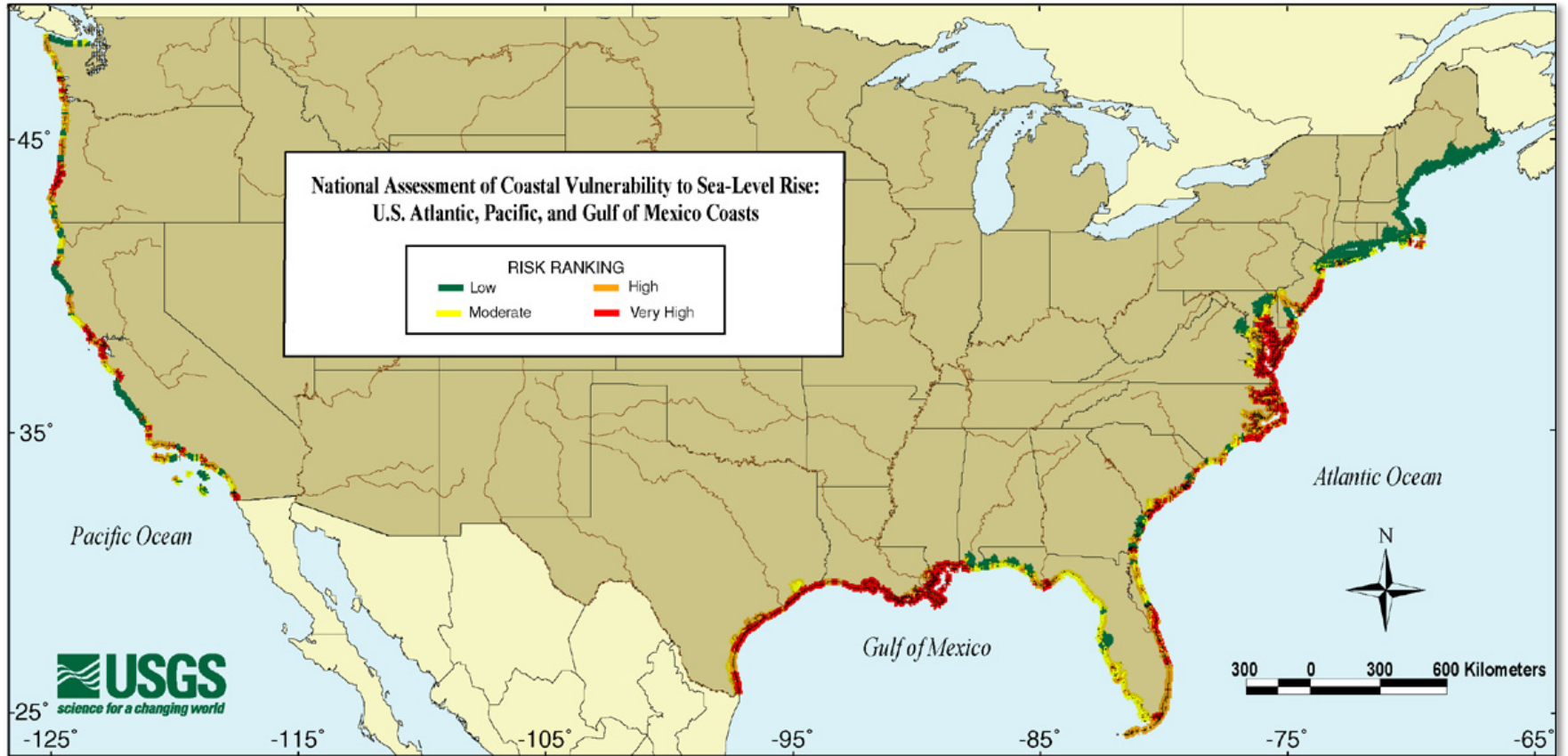


Mid Atlantic Coastal Resilience Institute (MACRI)

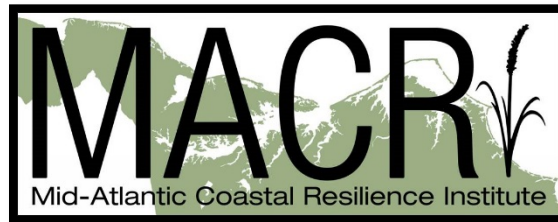
The Path Forward

University of Delaware
Integrating Coastal Flood Research, Modeling and Monitoring to
Improve Coastal Resiliency in the Mid-Atlantic Workshop

Vulnerability to Sea Level Rise



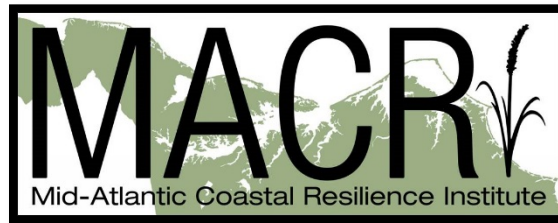
Mid-Atlantic Coastal Resilience Institute



- Vision
 - The Mid-Atlantic will be the best understood coastline in the United States and a destination for coastal science research and public policy integration for coastal resilience worldwide.
- Purpose/Outcome
 - The Mid-Atlantic Coastal Resilience Institute will be the platform to combine and leverage the capabilities of participating institutions to provide an unprecedented integration of science and its applications to understand, predict, and integrate resilience for both human and natural coastal communities into local, state, and regional policy planning.
- Objectives
 - Leverage combined research technology and asset capabilities of partners
 - Create an unprecedented, multi-variable prediction model using world-class satellite, in-situ, and precision-scaled data to assist local decision-makers
 - **Allow local and regional stakeholders to provide recommendations** for MACRI research objectives



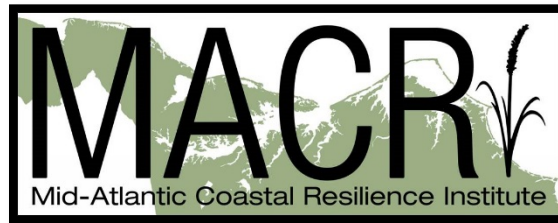
Mid-Atlantic Coastal Resilience Institute



- NASA Goddard Space Flight Center
- Chincoteague Bay Field Station of the Marine Science Consortium
- College of William and Mary
- The Nature Conservancy
- University of Delaware
- University of Maryland
- University of Virginia
- U.S. Fish and Wildlife Service
- U.S. Geological Survey
- **New Members: Old Dominion University, Rutgers University, and National Park Service**



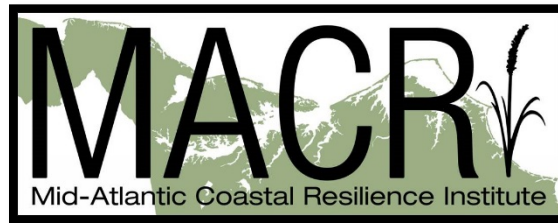
Mid-Atlantic Coastal Resilience Institute



- Inaugural workshop held on August 28, 2014
- Discussions on communication, strategic planning, and opportunities for collaboration
- Created working groups whose deliverables will feed into the Strategic Plan
 - Inventory of assets and research projects
 - Stakeholder advisory group roles and members
 - Communications and outreach
- Established short-term goals
 - Synthesis of remote sensing capabilities and data
 - Validation of Global Precipitation Monitoring Mission
 - Extension of Coastal Flood Monitoring System



Next Steps



- Finalize Agreement for ODU, Rutgers, and National Park Service membership
- Strategic Plan session late October/Early November
 - Research themes
 - Advisory group/stakeholder participation
 - Communication/governance
- Ongoing collaboration for National Toolkit Applications and Whole of Government Approach to Climate Resilience
- Collaborative research opportunities: introducing IBIS



Proposed Research Themes



- Seaside barrier island system dynamics and evolution
- Marsh migration
- Sea level rise and storm surge
- Climate change effects on biodiversity and human health



IBIS – Integrated Barrier Island System Project



Source: GISS
http://www.giss.nasa.gov/research/features/201508_risingseas/wallops_oli_2015206.jpg

IBIS – Integrated Barrier Island System Project

IBIS is a long-term (5+ year) project which will include the following elements of study along the coastlines of Assateague Island and Wallops Island:

- Establishment of a high-resolution in situ observation system;
- Coastal (including shallow-water) LiDAR;
- Coastal and back-bay bathymetry;
- Historical barrier island movement;
- Geology of barrier islands;
- Local sediment transport;
- Biodiversity of barrier islands with different management strategies;
- Unmanned aerial vehicle and unmanned submersible vehicle use for remote sensing;
- Barrier island management strategy effects and effectiveness;
- Upscaling to LandSat data; and
- Downscaling from cubesat data.

This project would be managed the MACRI and would include the following partners:

- NASA
- USACE
- USFWS
- USGS
- VIMS
- Accomack-Northampton Planning District Commission
- Chincoteague Bay Field Station
- TNC
- Town of Chincoteague
- Mid-Atlantic Aviation Partnership Association for Unmanned Vehicle Systems International

Wallops Island: Launch Range and Living Laboratory

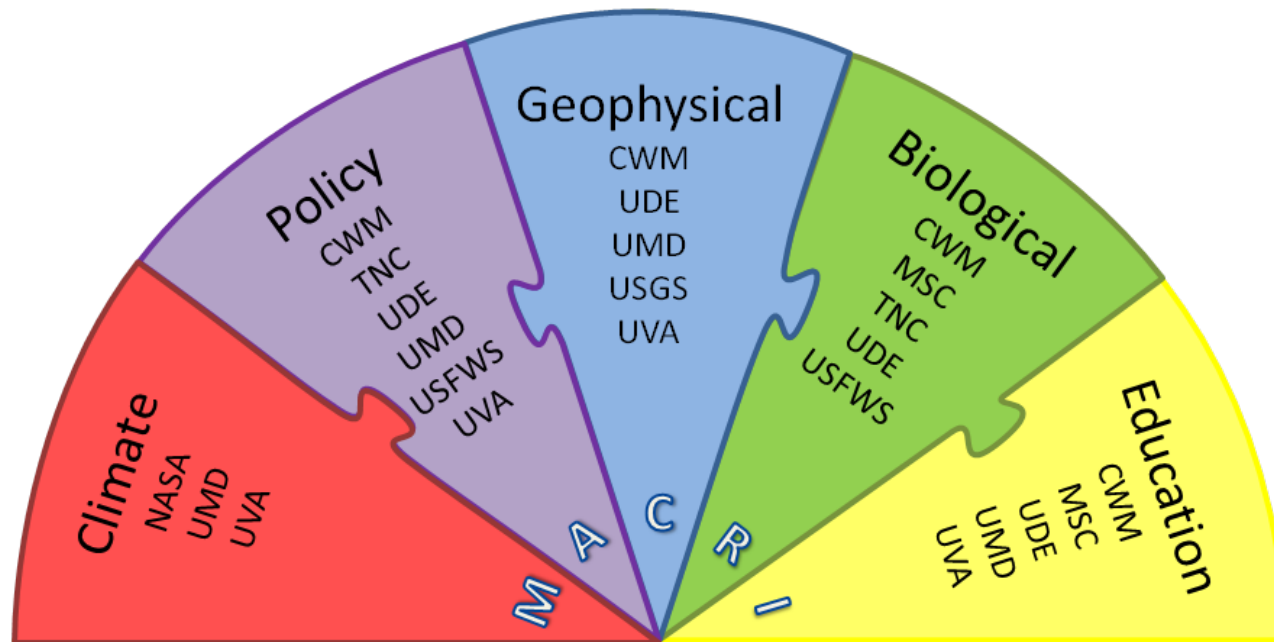


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Coastal Resilience Modeling Tool

- Currently aligning existing datasets, multiple disciplines, and both local and regional expertise to create a coastal resilience model scaled for Wallops Island as a beginning
- In the future, the model will expand to include, and be ground-truthed in, the other barrier islands in the Mid-Atlantic, owned by our partners
- The end goal is a tool that can be used by decision-makers in any of the nation's coastal areas



Coastal Resilience Modeling Tool

- Goddard is excited to lead efforts in developing this tool
- Wallops is the ideal testbed – a living laboratory
- We will get it right at Wallops so that local decision-makers everywhere can get it right at home
- Planning to expand the tool from Wallops Island to the barrier islands north and south
- Aiming for inclusion in the White House National Security Council's Climate Toolkit



 **CLIMATE RESILIENCE TOOLKIT**

Science tools and information for a climate-resilient nation

The U.S. Climate Resilience Toolkit provides scientific tools, information, and expertise to help people manage their climate-related risks and opportunities, and improve their resilience to extreme events. The site is designed to serve interested citizens, communities, businesses, resource managers, planners, and policy leaders at all levels of government.

toolkit.climate.gov

The National Challenge

In response to the President's Climate Action Plan and Executive Order to help the nation prepare for climate-related changes and impacts, resources have been gathered from across the U.S. federal government to help people take action. The impacts of climate change—including an increase in prolonged periods of excessively high temperatures, more heavy downpours, an increase in wildfires, more severe droughts, permafrost thawing, ocean acidification, and sea-level rise—are affecting communities, businesses, natural resources, energy, economies, and public health across the nation.

Now is the time to act. For many people, taking a "business as usual" approach has become more risky than building resilience to climate change. There are win-win opportunities for communities and businesses to reduce their vulnerability to climate variability and change while also boosting local economies, creating jobs, and improving the health of their local ecosystems. This is a "climate smart" approach—investing in activities that build resilience and capacity while reducing risk.

Resilience, Risk, and Uncertainty

Resilience refers to characteristics of a community, business, or environment that enable it to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions.

Every community and business faces climate-related risks. The risk of a future event can be described as the probability (or likelihood) of that event combined with the severity of its consequences. In other words, risk is the chance of a loss. Though it isn't always possible to assign likelihoods to future conditions, decision makers can bound their risk by:

- » Using plausible and multiple scenarios that characterize the type of decision,
- » Determining the time horizon over which the decision and its implementation is considered,
- » Considering the level of tolerance for risk, and
- » Examining opportunities for phased adaptive actions.

Communities and businesses are encouraged to take an "iterative" approach to risk management that allows them to make forward progress while acknowledging that there are irreducible uncertainties.

Uncertainty should not delay taking action.

Planning and acting at a community, business, city, or state scale will be necessary for our nation to build resilience.

