



More than a Nuisance: Building Creative Pathways to Flood Resilience

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PARTNERSHIP BETWEEN:

Georgia Sea Grant
City of Tybee Island
City of St. Marys
Stetson University
Department of Natural Resources
St. Marys Earthkeepers
Chatham County Metropolitan
Planning Commission
North Carolina Sea Grant

University of Georgia
Carl Vinson Institute of Government
Lamar Dodd School of Art
College of Environment and Design
UGA Marine Extension
Public Service and Outreach

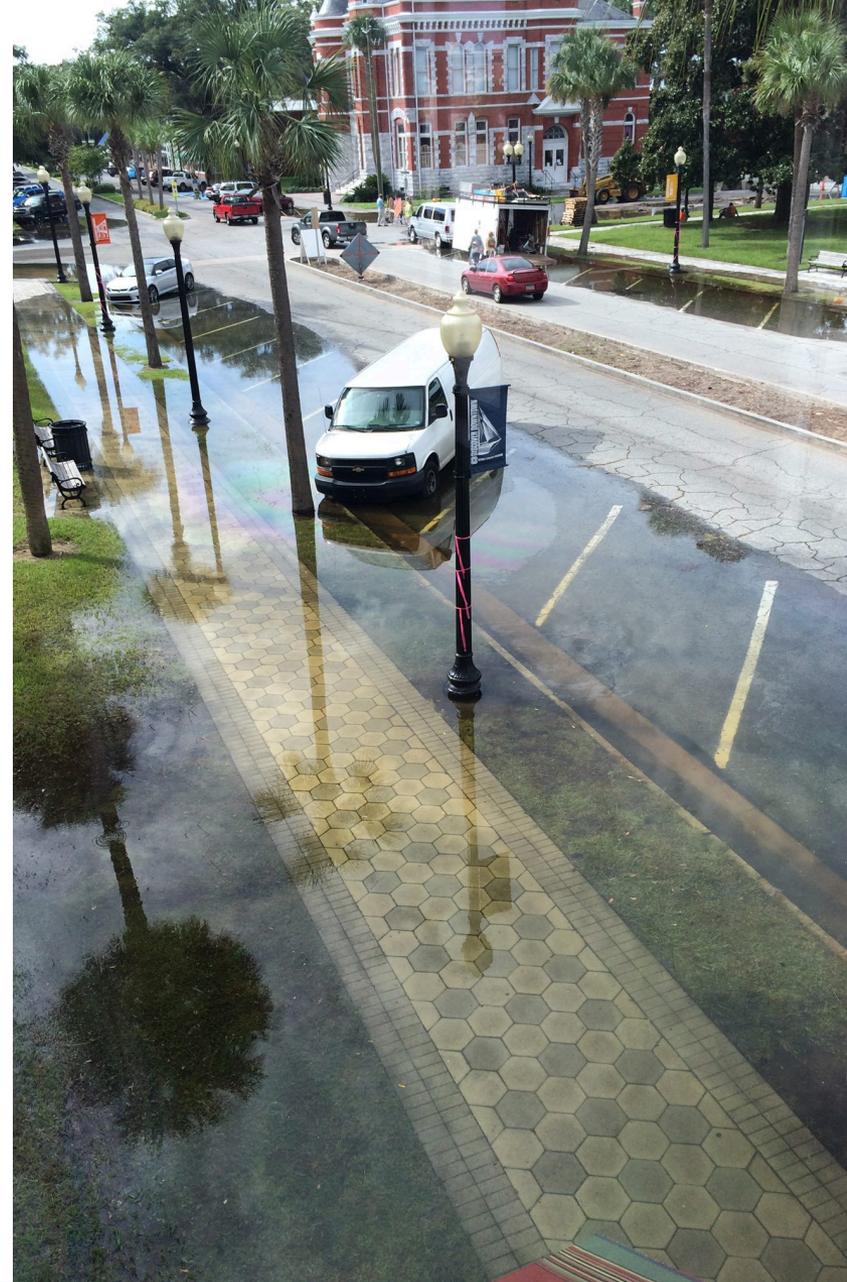
*(Funded by NOAA National Sea Grant
program)*



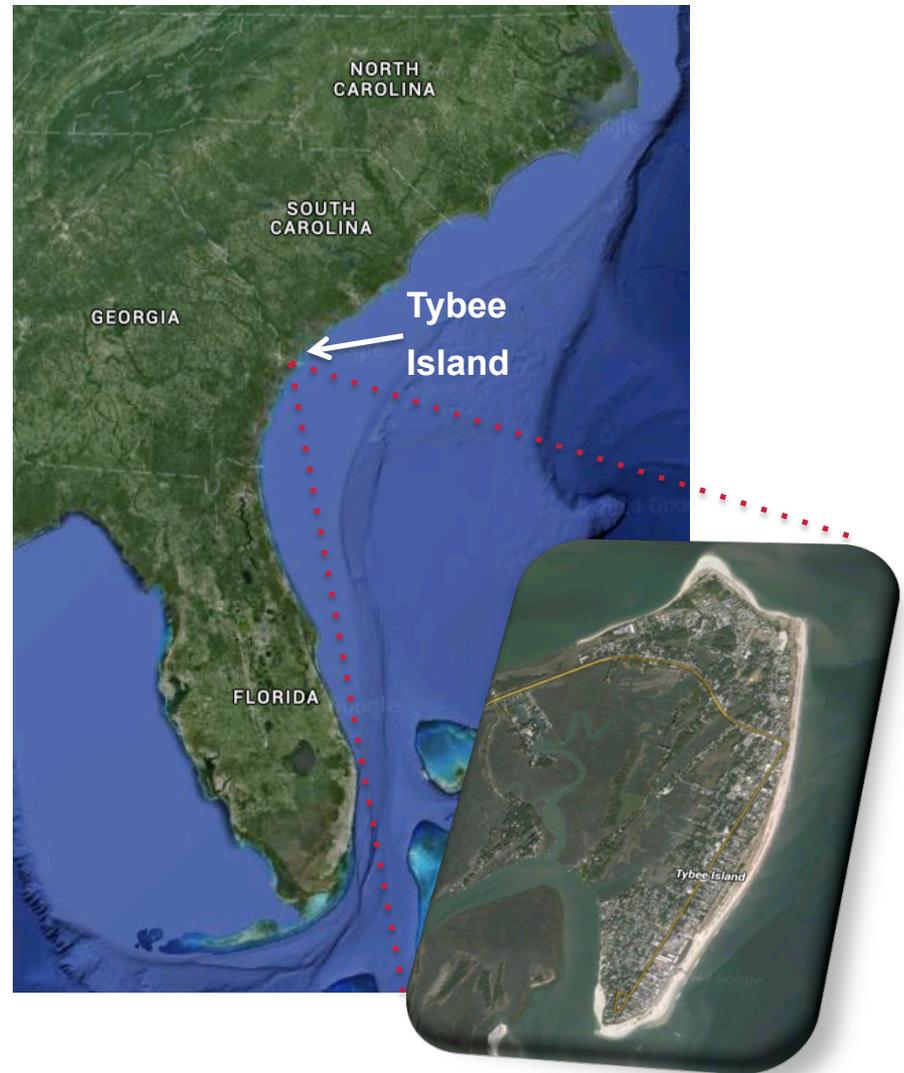
TRIPLE PUNCH

- Supermoon Lunar Eclipse – Sept. 27-29
- Hurricane Joaquin and Rain – Oct. 2-6
- King Tide – Oct. 27 and 28

*Brunswick, GA on Sept. 29, 2015
Photo credit: Kelly Patton*



In 2011, Tybee Island, Georgia Sea Grant and the University of Georgia partnered to seek National Sea Grant funding for climate adaptation planning.

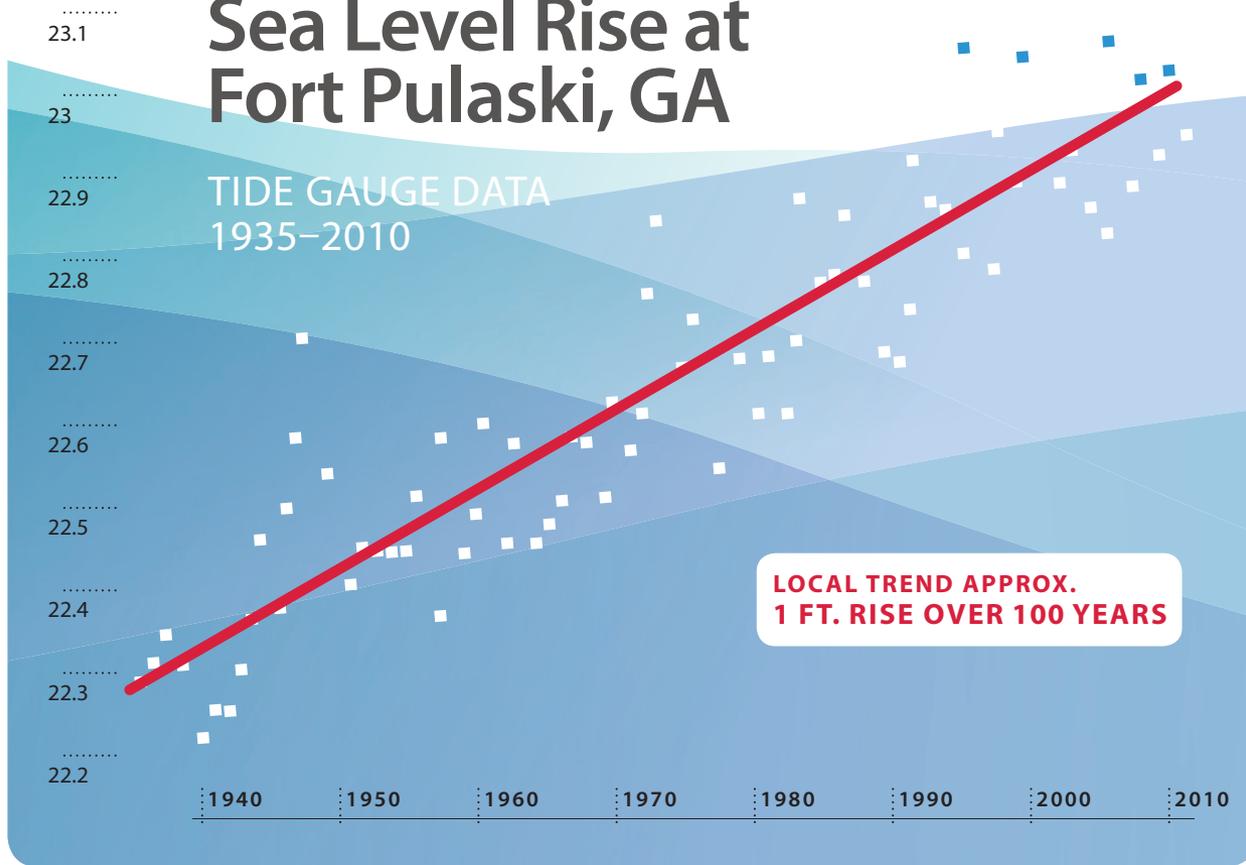


SEA LEVEL RISE IMPACTS



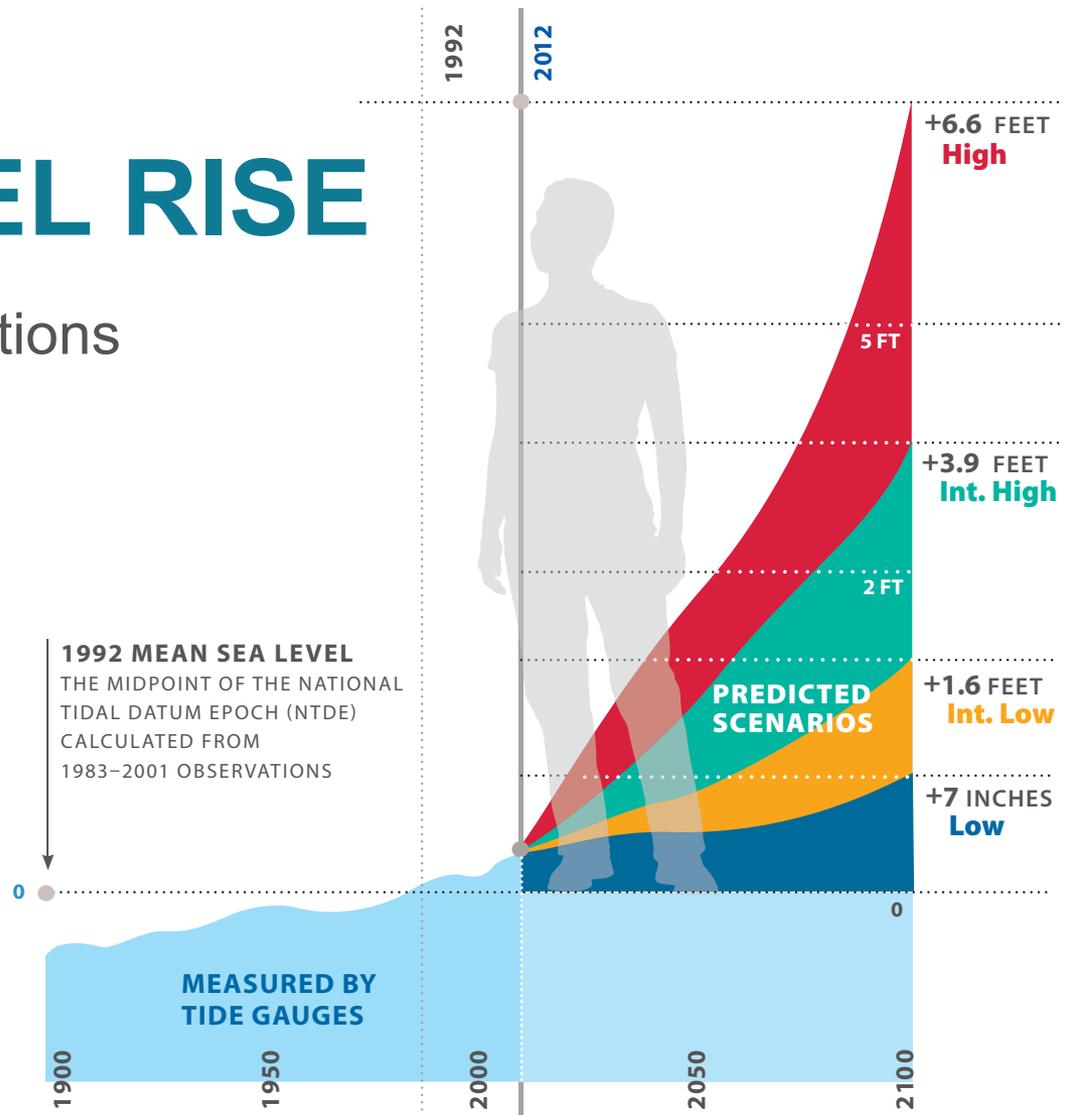
- Property damage
- Flooding of critical infrastructure
- Evacuations and road closures
- Stormwater drainage issues
- Beach erosion
- Saltwater intrusion
- Intensified storm surges
- Loss of livelihoods
- Safety and emergency management concerns

Sea Level Rise at Fort Pulaski, GA



GLOBAL SEA LEVEL RISE

2012 NOAA Predictions



LOCAL KNOWLEDGE

- Community-driven process
- Identify where is vulnerable
- Identify what is most critical and which potential actions to take



LOCAL DECISIONS

2060 Sea Level Rise Scenarios for the Tybee Island Adaptation Plan

Scenario	Projected Increase by 2060*	Source
High	31 inches	Vermeer and Rahmstorf (2009)
Intermediate	14 inches	Vermeer and Rahmstorf (2009)
Low	6 inches	NOAA (2012)

**Relative to 2010 and including 0.05 in/yr of local subsidence*

LOCAL DECISIONS

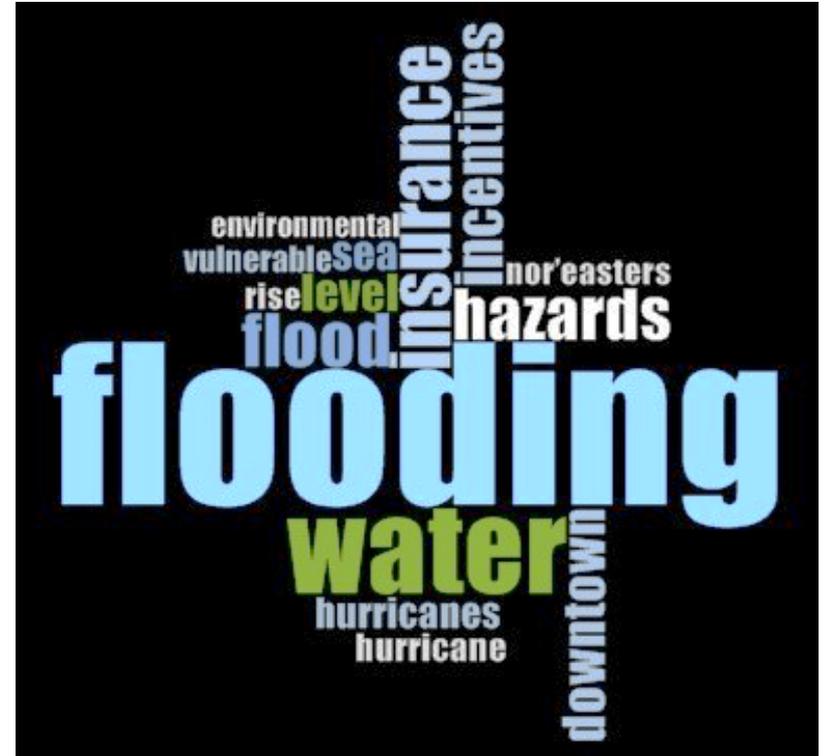


Cost-benefit analysis of potential adaptation actions:

- Renourishment of the beaches
- Raising U.S. Highway 80 by three to four feet
- Elevating the wells and lift stations out of the flood zone
- Building a sea wall
- Stormwater retrofits

Lessons Learned

- Keep it **local**
- Keep it **relevant**
- Find your **points of entry**
- Complex problems require **diverse forms of knowledge**



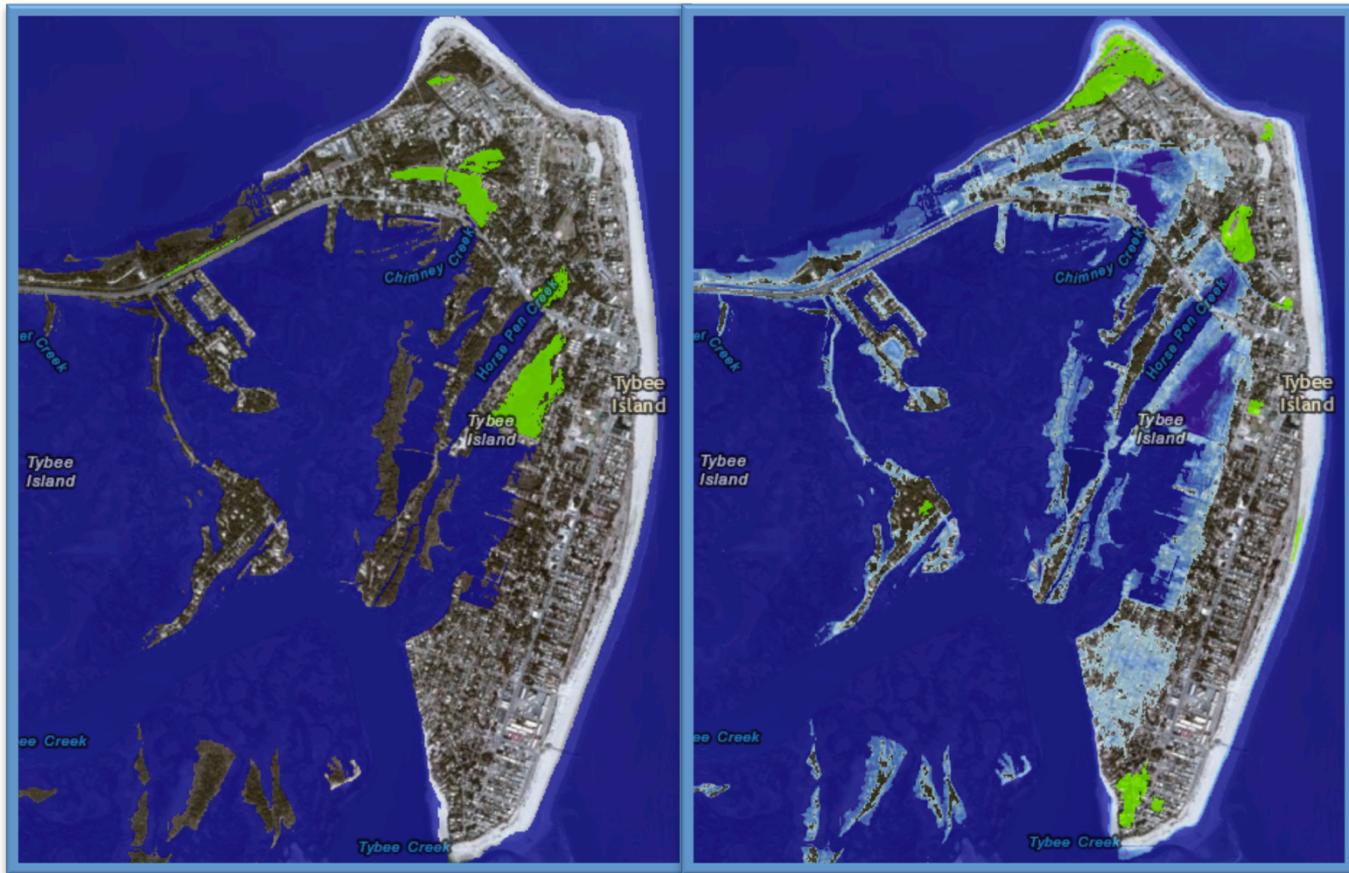
Top 15 words most mentioned in St Marys interviews. - Nvivo Software analysis.

Meet Communities Where They Are

- **Listen**
- Know your **audience**
- Find a **point of entry**: What is going to enable dialogue?
- Identify **planning parameters**: How far into the future can you plan? What is on the table and what is not?



Town Hall Meeting in St. Marys, GA



Tybee Island today and under three feet of sea level rise.

Source: NOAA Office for Coastal Management's Sea Level Rise and Coastal Flooding Impacts Viewer (<http://coast.noaa.gov/slr>)

COMMUNITY RATING SYSTEM

The Community Rating System recognizes communities who take steps to reduce their flood risk.





CLASSIFICATION & PREMIUM REDUCTION

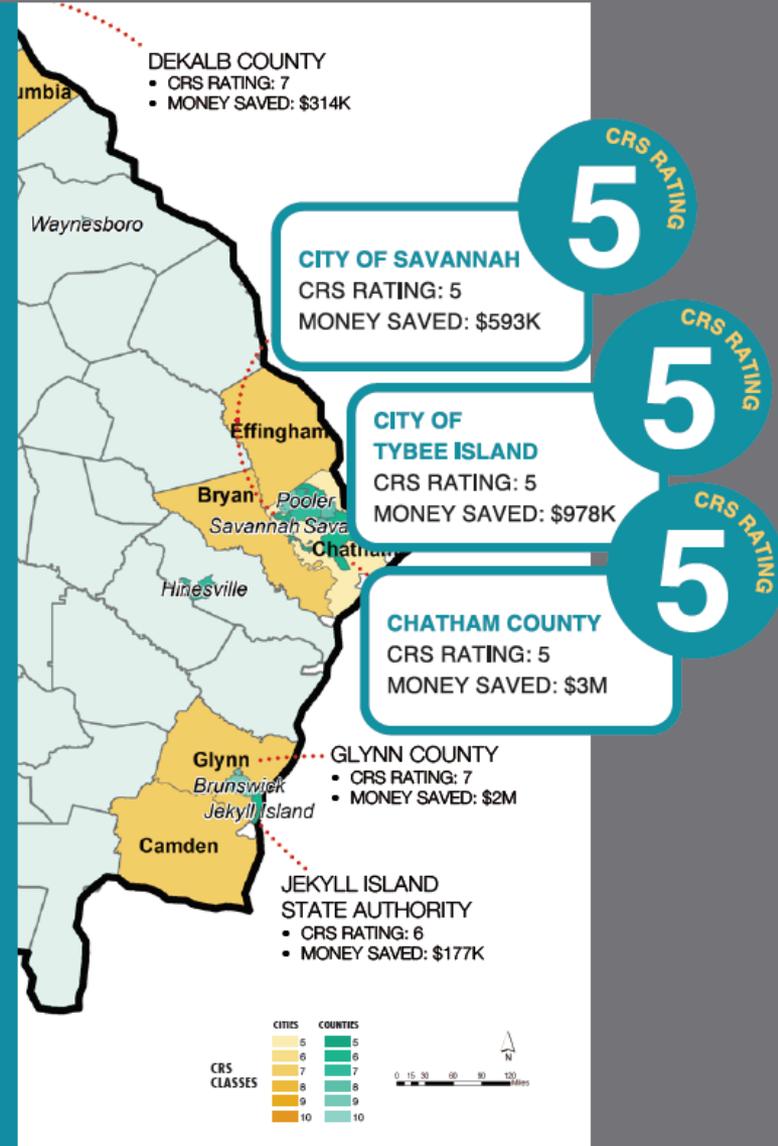
PARTICIPATION CAN LOWER COMMUNITY FLOOD INSURANCE RATES

CREDIT POINTS	CLASS	PREMIUM REDUCTION	
		SPECIAL FLOOD HAZARD AREA	NON-SPECIAL FLOOD HAZARD AREA
4,500 +	1	45 %	10 %
4,000 - 4,499	2	40 %	10 %
3,500 - 3,999	3	35 %	10 %
3,000 - 3,499	4	30 %	10 %
2,500 - 2,999	5	25 %	10 %
2,000 - 2,499	5	20 %	10 %
1,500 - 1,999	7	15 %	5 %
1,000 - 1,499	8	10 %	5 %
500 - 999	9	5 %	5 %
0 - 499	10	0 %	0 %

GEORGIA COMMUNITIES WITH THE HIGHEST CRS SAVINGS:

CRS:	Location:	Money Saved:
5	Chatham County	\$3 Million
7	Glynn County	\$2 Million
5	City of Tybee Island	\$978,000
5	City of Savannah	\$593,000
7	DeKalb County	\$314,000
6	Jekyll Island State Authority	\$177,000

*ESTIMATES BASED ON 2014 PREMIUMS USING 2015 CRS RATINGS.



WHAT IS SEA GRANT?

- NOAA resource embedded within every coastal and Great Lakes state
- Based out of universities and state agencies in 33 states
- Boundary institution facilitating community-driven planning processes



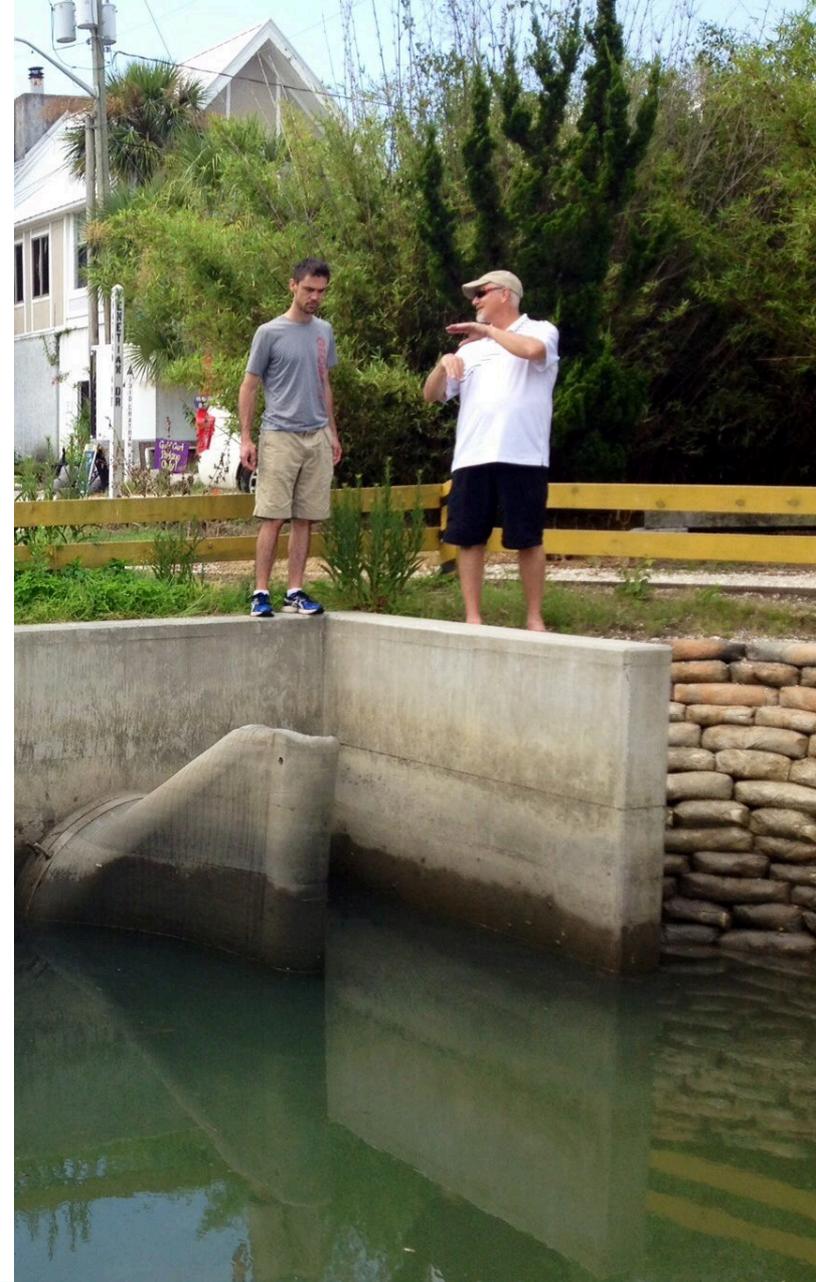
WHY PARTNER WITH SEA GRANT?

- Embedded in coastal communities for over 40 years
- Trusted brokers of information
- Facilitators in times of conflict
- Works hand-in-hand with local governments and



HOW CAN SEA GRANT HELP?

- Vulnerability assessments
- Public engagement
- Benefit-cost analysis
- GIS mapping
- Legal questions
- Climate communications
- Participation in FEMA's Community Rating System



LOCAL IMPACTS

- **4,000 people** reached through outreach
- Data to be used in **beach renourishment** with U.S. Army Corp of Engineers
- GA DoT incorporating sea level rise into modification of **U.S. Highway 80**
- City unlikely to pursue building **seawall**
- Installed **tide gates** to prevent backflow



LOCAL IMPACTS

- Building a **Living Shoreline** to battle erosion
- Studying voluntary **buyout program** for repetitive loss properties
- Qualified for extra **flood insurance discounts** under FEMA's Community Rating System – from 7 to 5



NATIONAL IMPACTS



U.S. Climate
Resilience
Toolkit

Get Started **Taking Action** Tools

Taking Action > Show Don't Tell: Visualizing Sea Level Rise to Set Planning Priorities >



- Senator Sheldon Whitehouse (RI) visited Tybee on **SE Climate Road Trip** and praised efforts on Senate Floor
- Tybee included as case study in federal government's **U.S. Climate Resilience Toolkit**
- Union of Concerned Scientists report in Nov. 2014: "Organizations in Georgia that are collaborating on solutions, such as the Carl Vinson Institute, Georgia Sea Grant, and the state's Coastal Management Program, can **provide leadership and vision** for other such efforts nationwide."

AWARDS



- 2014 Sea Grant National Superior Outreach Programming Award
- 2014 Superior Outreach Programming Award for the South Atlantic Sea Grant region
- 2013 Four for the Future Award by Georgia Trend Magazine
- 2013 University of Georgia Public Service and Outreach Faculty Fellowship Award

MODEL

for sea level rise and climate adaptation planning throughout the Southeast

These projects are using cutting-edge methods that are also being employed in other cities and counties throughout the Southeast.





Questions?

VISIT US ON THE WEB:
<http://georgiaseagrant.uga.edu>