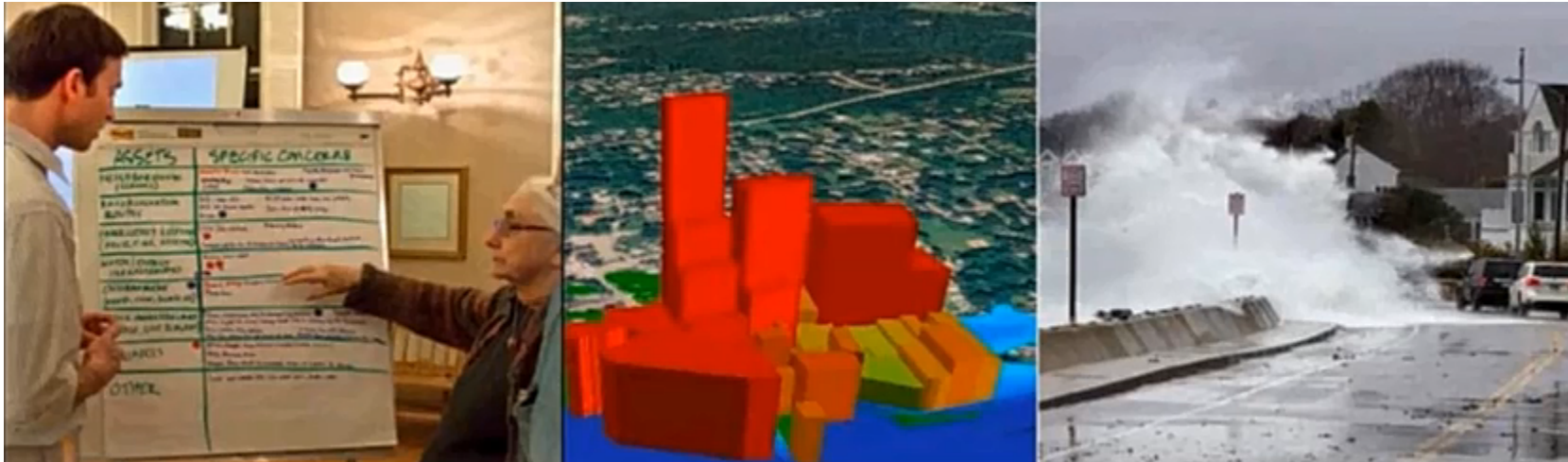


Testing the shift from perceived to anticipated risk using the COAST Approach™.



Catalysis Adaptation
Partners, LLC

Samuel B. Merrill, PhD
May 19, 2014



The Belmont Forum Project

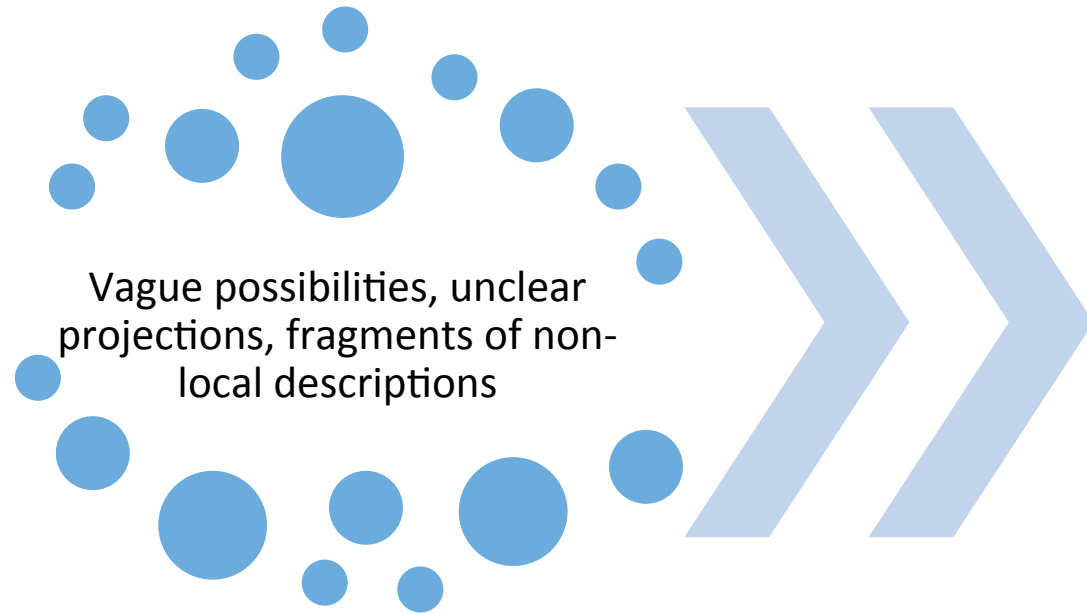
- Funded through NSF, to the University of South Florida.
- Three year study design: 2014 – 2016.
- Asking “Why does the COAST Approach™ seem to work?” and can the answer help speed other adaptation efforts?



The Belmont Forum Project

- Pre-post surveys of attitudes, values, and willingness to take adaptation action to prepare for SLR and SS.
- Multi-national design:
 - United States (Florida)
 - United Kingdom (Portsmouth)
 - Brazil (Santos)
- Collaborating research teams at universities in each country.
- Catalysis is conducting the pre-post surveys in 3 additional sites TBD as part of the study.





Perceived
Risk



Anticipated
Risk



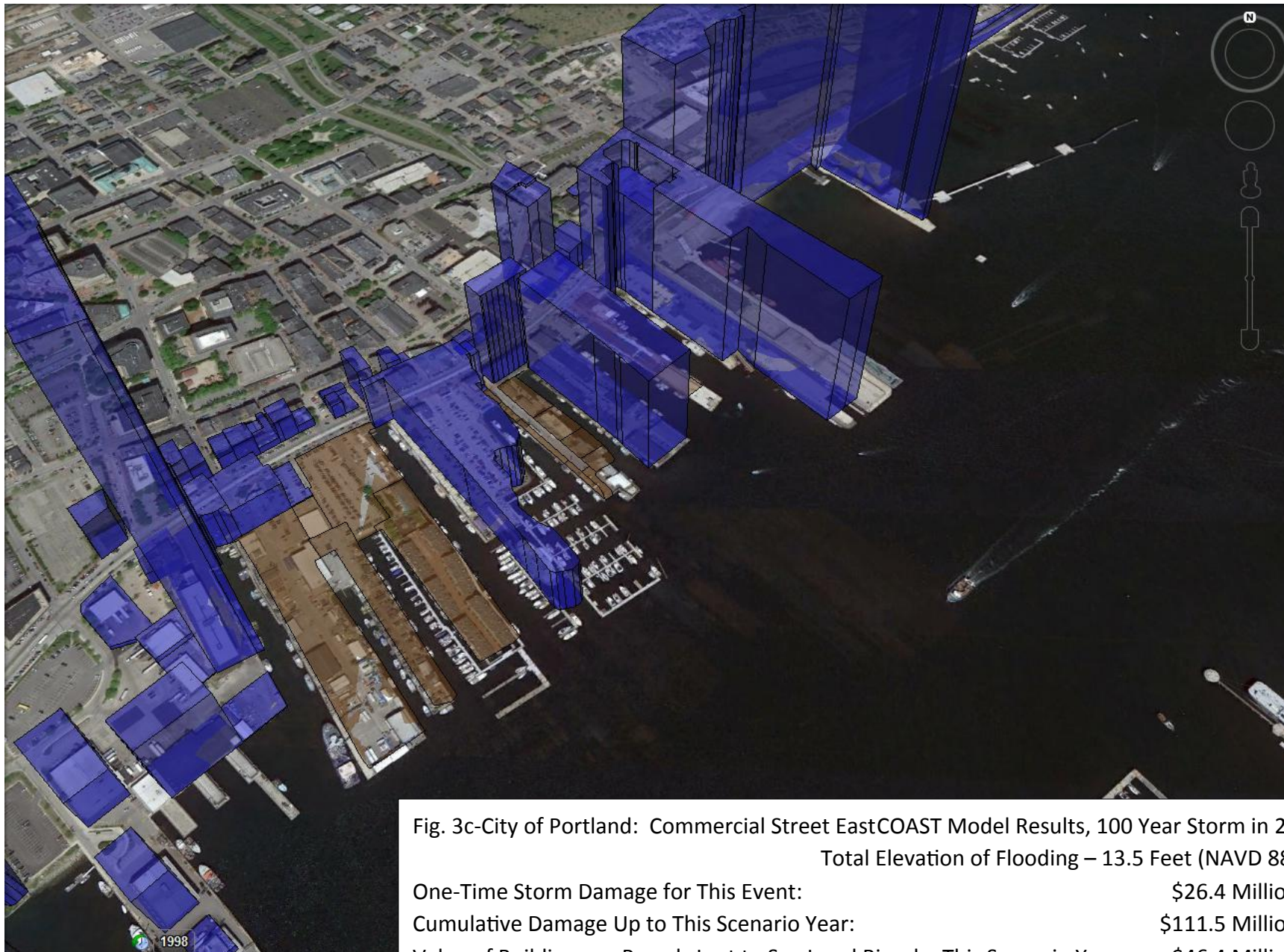


Fig. 3c-City of Portland: Commercial Street EastCOAST Model Results, 100 Year Storm in 2100
Total Elevation of Flooding – 13.5 Feet (NAVD 88)

One-Time Storm Damage for This Event:	\$26.4 Million
Cumulative Damage Up to This Scenario Year:	\$111.5 Million
Value of Buildings on Parcels Lost to Sea Level Rise, by This Scenario Year:	\$46.4 Million





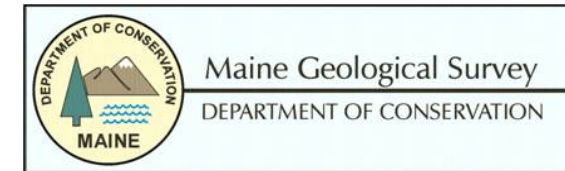


Muskie School of Public Service

University of Southern Maine
Portland, Maine



Partners



Some Project Sites Completed or Underway

Kingston, New York
Piermont, New York
Catskill, New York
Groton/Mystic, Connecticut
Hampton, New Hampshire
Seabrook, New Hampshire
Hampton Falls, New Hampshire
East Machias, Maine
Falmouth, Maine
Portland, Maine
Old Orchard Beach, Maine
Damariscotta, Maine

Scarborough, Maine
Bath, Maine
Cambridge, Massachusetts
Duxbury, Massachusetts
Marshfield, Massachusetts
Scituate, Massachusetts
Duluth, Minnesota
Sarasota, Florida
Key Largo, Florida
Islamorada, Florida
Portsmouth, United Kingdom
Santos, Brazil

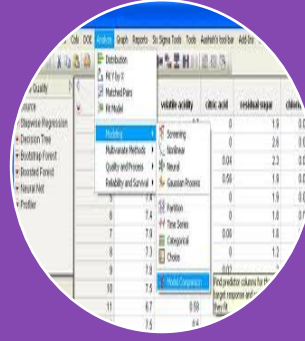




Convene
Stakeholders



Choose
Parameters



Run the
Model



Make
Decisions



Stakeholders identify and select vulnerable assets



Stakeholders select scenarios for sea level rise and storm surge





Core Research Question

- When citizen stakeholders participate in an adaptation planning process that:
 - Uses 3D visualizations of local community impacts,
 - Has SLR curves and SS thresholds selected by stakeholders,
 - Has vulnerable assets selected by stakeholders,
 - Has adaptation actions designed by stakeholders, and
 - Compares costs and benefits of each action versus doing nothing, both for snapshots of single flooding events in the future and cumulatively over time,
 - ...



Core Research Question

... is willingness to take adaptation action, or to support a government's efforts to take adaptation action, enhanced?



Sample Survey Questions

How concerned are you that each of the following natural hazards might pose a risk of significant economic impact to your community from physical damage and disruption in your community? (Please select one answer for each).

Responses to choose from (choose one for each hazard):

	NOT CONCERNED	SLIGHTLY	MODERATELY	HIGHLY	URGENTLY	
DON'T	AT ALL	CONCERNED	CONCERNED	CONCERNED	CONCERNED	KNOW
a. Storm surges on the coastline	1	2	3	4	5	99
b. Floods anywhere in your community/area	1	2	3	4	5	99
c. High winds in storms	1	2	3	4	5	99
d. Rising sea levels	1	2	3	4	5	99



Sample Survey Questions

Of these actions that your community's local government might take in response to these threats, how effective do you think each of these might be at reducing impacts:

	DON'T					VERY	KNOW
	NOT AT ALL						
a. Build new or higher seawalls	1	2	3	4	5	99	
b. Build new or higher dikes and/or levees	1	2	3	4	5	99	
c. Elevate residences and businesses	1	2	3	4	5	99	
d. Floodproof residences and businesses	1	2	3	4	5	99	
e. Purchase vulnerable land and structures from owners	1	2	3	4	5	99	
f. Change ordinances so people cannot rebuild after a certain amount of damage from storm surge	1	2	3	4	5	99	
g. Creating/restoring natural infrastructure such as dunes	1	2	3	4	5	99	



Sample Survey Questions

Thinking about the several risk reduction actions you reviewed above, how would you rate your preference for different ways of funding public action on risk reduction, for each action? Please rate by choosing a number on the following scale for EACH risk reduction action AND funding action COMBINATION: 1=LEAST PREFERRED and 5=MOST PREFERRED. If you are opposed to using a type of funding action at all, please use 0 (zero) as your rating.

Funding Risk Reduction From (rate 1 to 5 or 0):

	Property Tax Increase	Special Sales Tax	Local Benefit District Paid by Affected Owners	General Obligation Public Bonds
a. Build new or higher seawalls	_____	_____	_____	_____
b. Build new or higher dikes and/or levees	_____	_____	_____	_____
c. Elevate residences and businesses	_____	_____	_____	_____
d. Floodproof residences and business	_____	_____	_____	_____
e. Purchase vulnerable land and structures from owners	_____	_____	_____	_____
f. Change ordinances so that people cannot rebuild after a certain amount of damage from storm surge	_____	_____	_____	_____
g. Create/restore natural infrastructure such as dunes and wetlands to reduce coastal hazard	_____	_____	_____	_____



Core Research Question

“... is willingness to take adaptation action, or to support a government’s efforts to take adaptation action, enhanced?”



Core Research Question

- “... is willingness to take adaptation action, or to support a government’s efforts to take adaptation action, enhanced?”
- Stratify respondents based on demographic group and attitudes about humans in relation to nature, to see if observed shifts in willingness are different between groups.



Sample Survey Questions

People have different views about managing the environment around us. We want to know if you agree or disagree with each of the different views below. Please choose one answer for each of the items (Likert 1 – 5):

We are approaching the limit of the number of people the Earth can support.

Humans have the right to modify the natural environment to suit their needs.

When humans interfere with nature it often produces disastrous consequences.

Human ingenuity will insure that we do not make the Earth unlivable.

Humans are seriously abusing the environment.

The Earth has plenty of natural resources if we just learn how to develop them.

Plants and animals have as much right as humans to exist.

The balance of nature is strong enough to cope with impacts of modern industrial nations.

Despite our special abilities, humans are still subject to the laws of nature.

The so-called “ecological crisis” facing humankind has been greatly exaggerated.

From Riley, Dunlap, et al. 1978



**Dominant
Social
Paradigm**



**New
Ecological
Values**



Uses

- Should help further refine the COAST Approach™ and similar risk-based stakeholder engagement methods.



Uses

- Should help further refine the COAST Approach™ and similar risk-based stakeholder engagement methods.
- Should help inform outreach efforts for SLR and SS adaptation with different types of stakeholder groups.



Uses

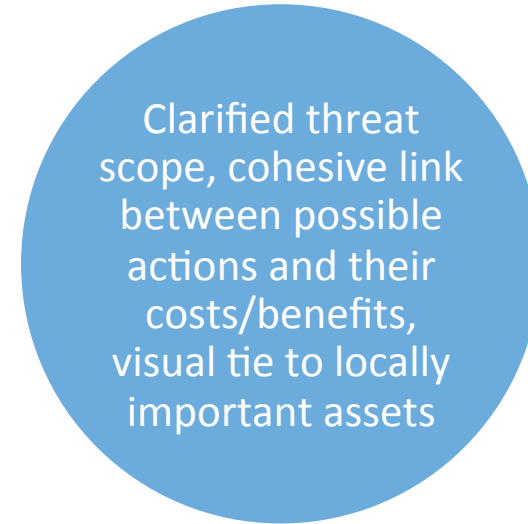
- Should help further refine the COAST Approach™ and similar risk-based stakeholder engagement methods.
- Should help inform outreach efforts for SLR and SS adaptation with different types of stakeholder groups.
- Additional sites will strengthen results.
 - The survey is easy to replicate.
 - Besides the six locations through 2016, others will follow, enhancing lessons learned.





Vague possibilities, unclear
projections, fragments of non-
local descriptions

Perceived
Risk



Clarified threat
scope, cohesive link
between possible
actions and their
costs/benefits,
visual tie to locally
important assets

Anticipated
Risk





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