

# *Coastal Resilience Planning Process for New York State Communities*



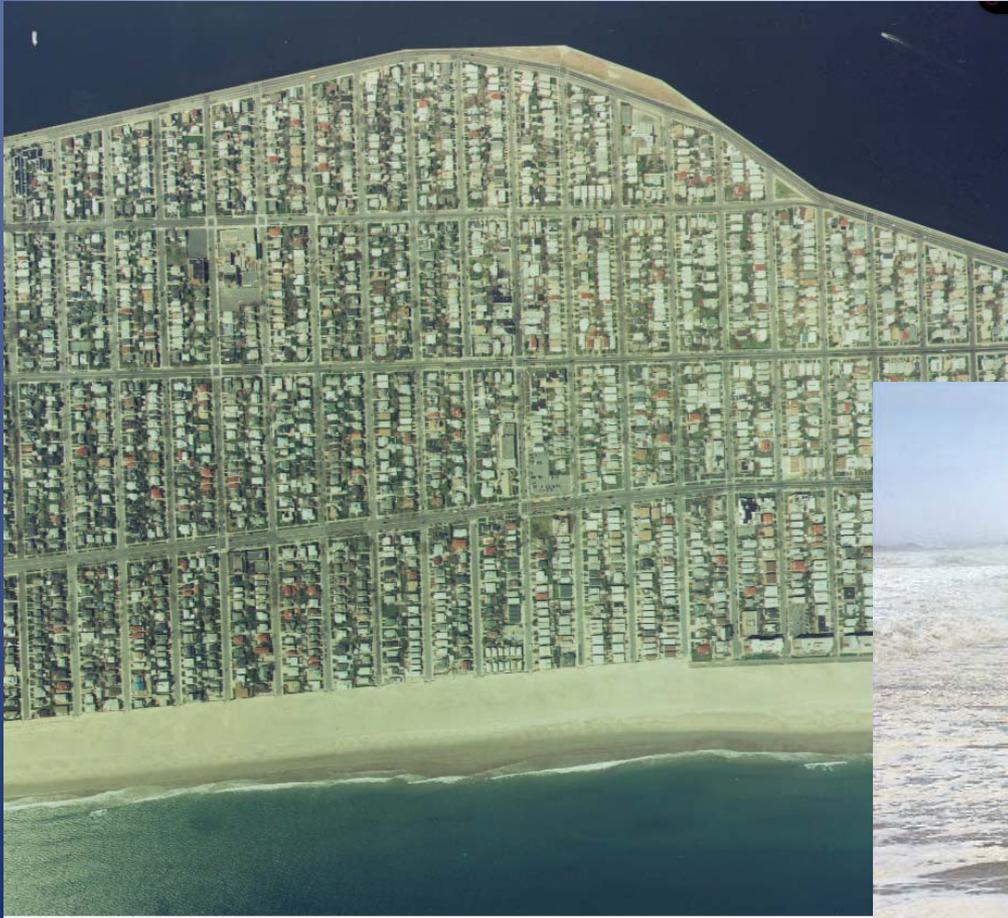
Patricia Bowie & Barry Pendergrass  
New York State Department of State

# Why plan for coastal hazards?



West Meadow Beach - Brookhaven

# Storms & People

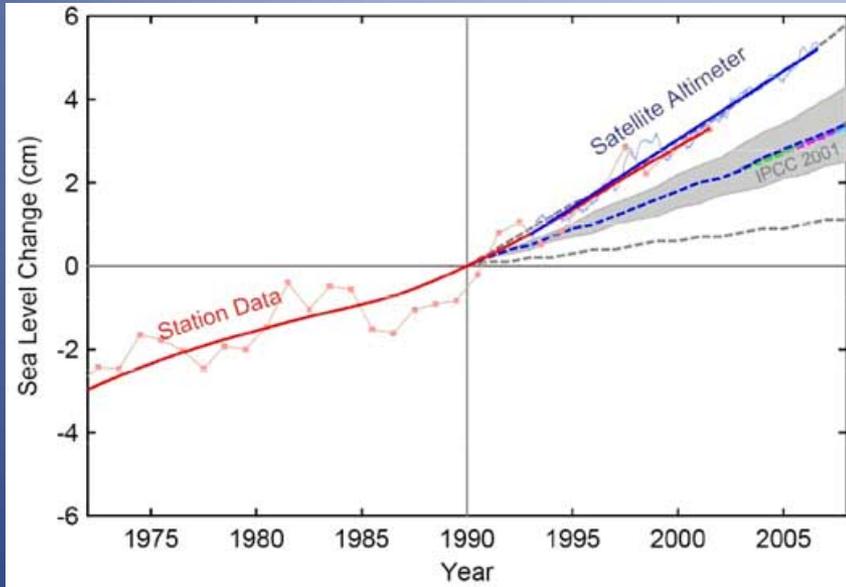


Rockaway, NY  
Area shown: ½ sq. mi.  
Pop. estimate: 9,600  
Highest elev. 10' MSL  
BFE at ocean: 11'



Rockaway Beach (Hurricane Irene), NY Daily News

# Sea Level Rise



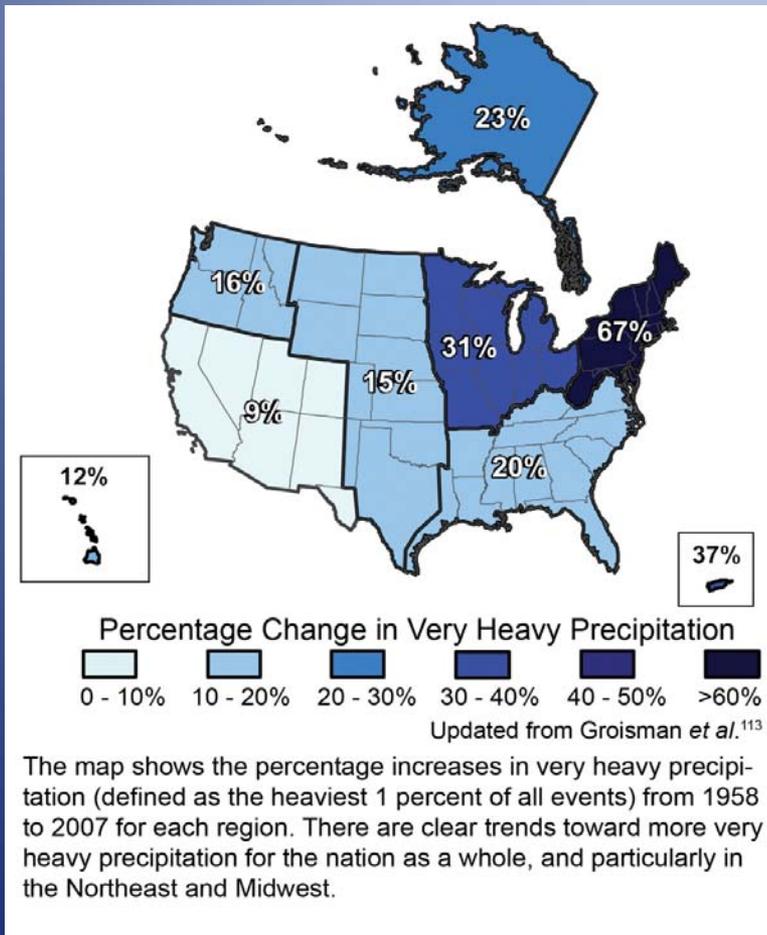
Observed rate of sea level rise is close to double the mean predicted by IPCC models over the past decade.

Rahmstorf et al. 2007. Recent climate observations compared to projections. *Science* 316 no. 5825 p. 709.

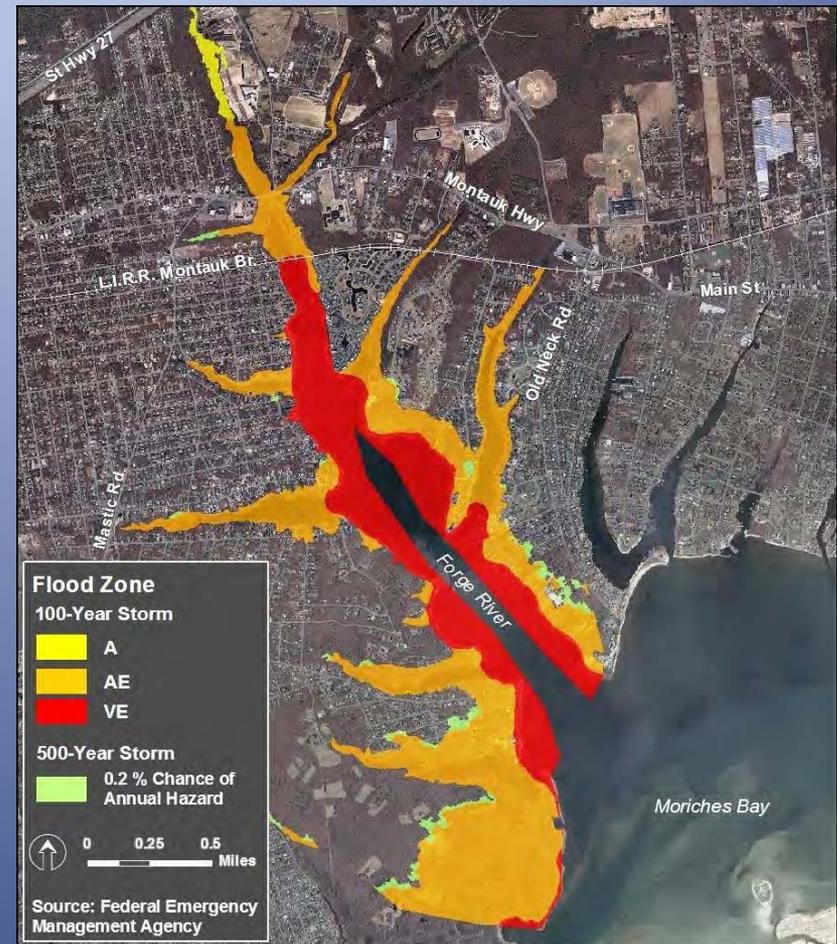
Lower Hudson and Long Island projections: NYSERDA ClimAID

	2020s	2050s	2080s
GCM	+2-5 in	+7-12 in	+12-23 in
Rapid Ice Melt	+5-10 in	+19-29 in	+41-55 in

# Precipitation



US Global Change Research Program, 2009.



Forge River WMP, 2012. (Brookhaven Town)

# Post-event Recovery



Bronxville  
(Westchester Co.)  
NY Daily News



Patchogue  
NY Daily News

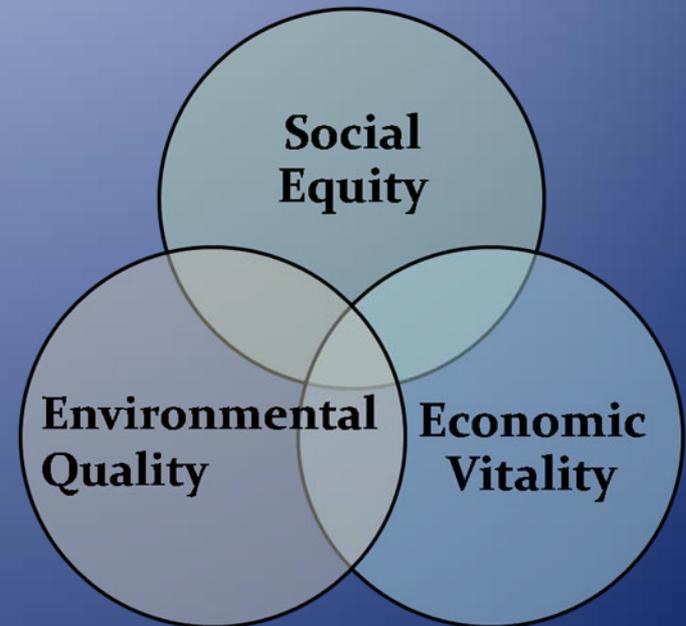


Lake Placid  
MSNBC

# What is community resilience?

“The ability to sustain ecological services, life support systems, biological diversity, and economic vitality characterizes a resilient community.”

*Restore natural protective features to promote safety and livability.*



# Coastal Resilience Plans: How are they different?

- Comprehensive regional or local coastal hazard plans
- Quantitative method for risk assessment
- Across sectors: social-cultural, environment, economy
- Models effectiveness of proposed measures
- Integrate with other plans
- Local Waterfront Revitalization Program option

## How to Get Started:

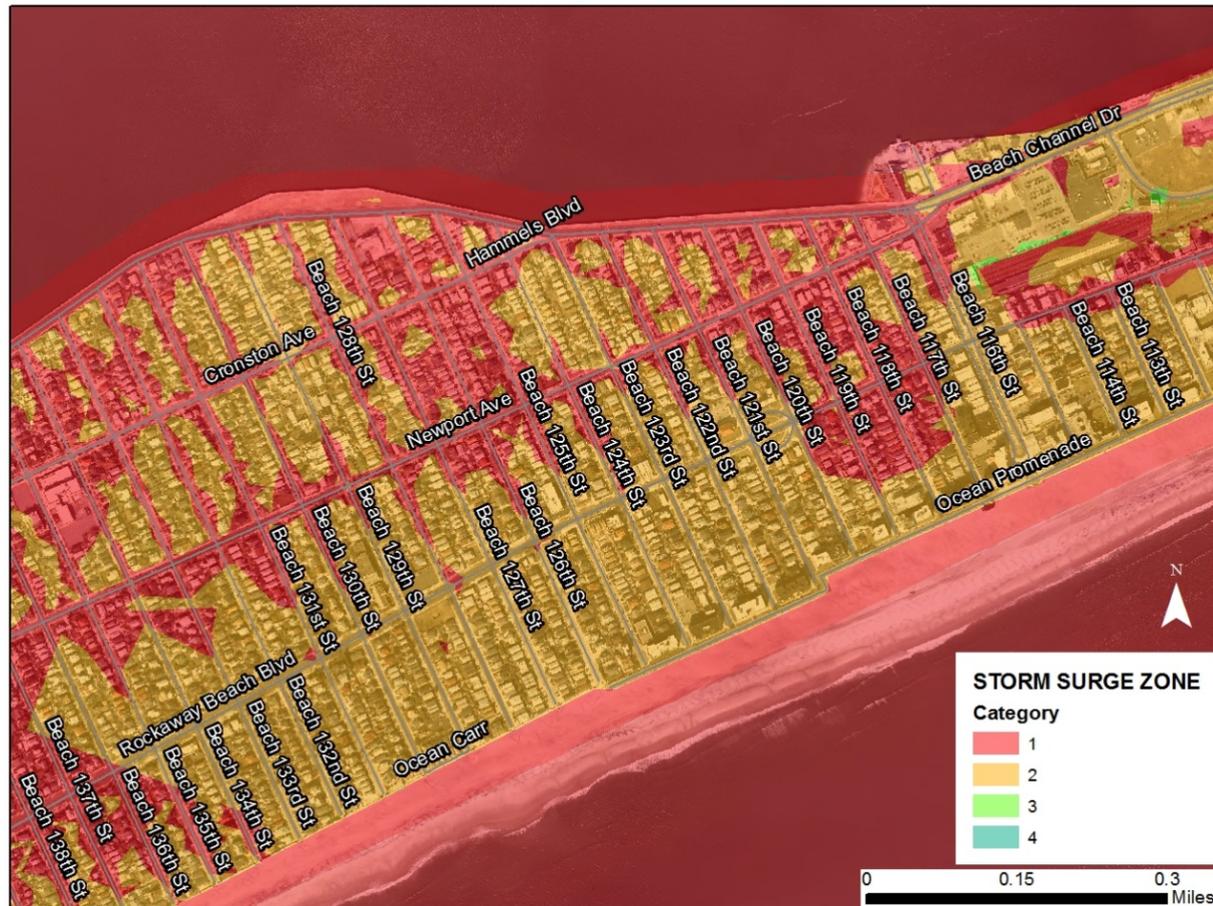
- Recognize the value of hazard planning for your community – Good planning saves money.
- DOS Coastal Resilience Plan guidebook and technical assistance
- Competitive, cost-share grants available through the Environmental Protection Fund – Title 11 LWRP
  - Consolidated Funding Application (CFA) announcement in Spring

<http://www.regionalcouncils.ny.gov>

# Coastal Resilience Plan Process:

- Form committee
- Include public participation
- Complete the Workplan
  - Preliminary Risk Mapping
  - List involved assets
  - Detailed Risk Assessment
  - Evaluate Community Resilience
  - Select Measures
  - Integrate with Community Plans
  - Compile Preferred Strategy
- Adopt and Implement
- Monitor and Adapt

# Preliminary Risk Assessment: Mapping



# Detailed Risk Assessment: Assets

$$\text{Risk} = \text{Hazard} \times \text{Exposure} \times \text{Vulnerability}$$

## Disaster Risk



adapted from IPCC SREX



# The CRP Guidance: Quantitative Process

$$\text{Risk} = \text{Hazard} \times \text{Exposure} \times \text{Vulnerability}$$

## HAZARD SCORE

The likelihood of an event occurring within a specific planning timeframe

5	Very likely	>90% chance
4	Likely	66-90%
3	Possible	33-66%
2	Unlikely	10-33%
1	Very unlikely	1-10%

## EXPOSURE SCORE

Influence of local topographic and geomorphic features on the severity of damages

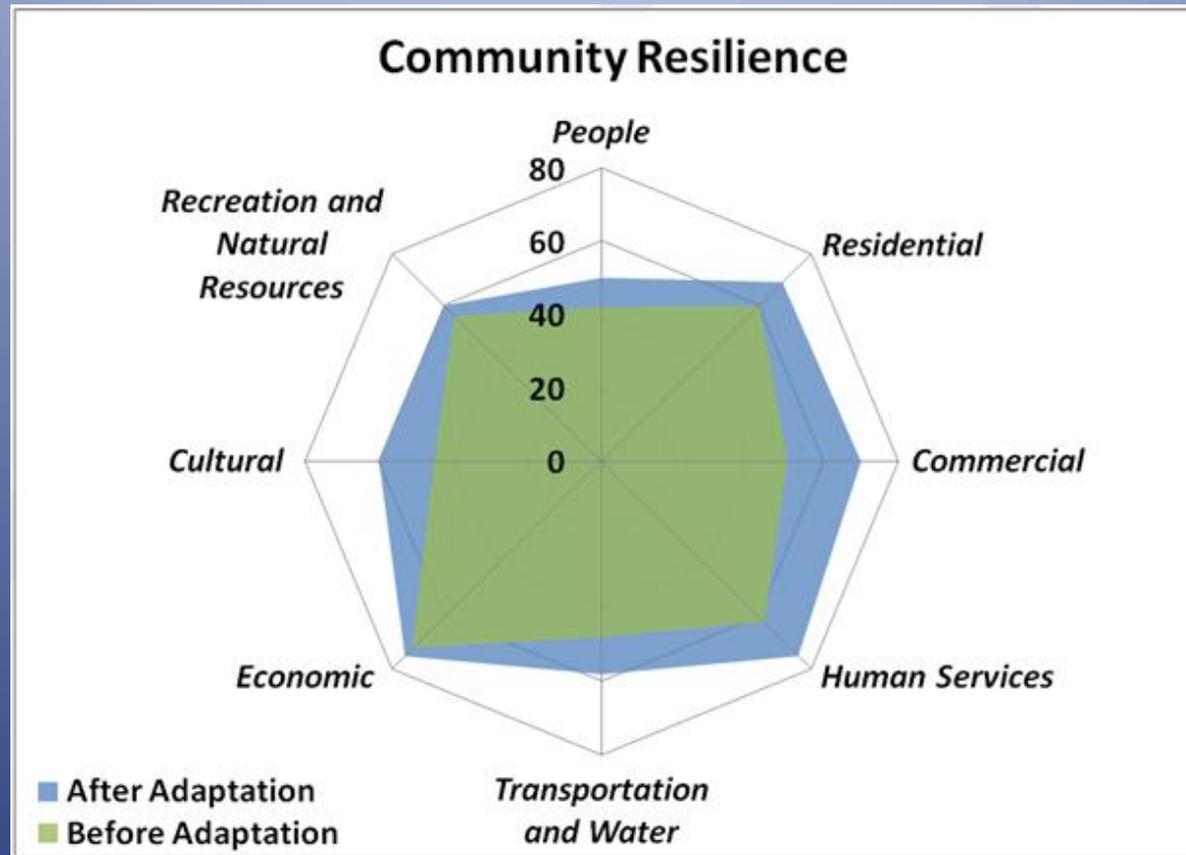
4	Very high	(scores are weighted)
3	High	
2	Moderate	
1	Low	

## VULNERABILITY SCORE

Level of impact to critical resources

5	Major	(permanent loss)
4	Significant	
3	Moderate	(days out of service)
2	Minor	
1	Insignificant	(short term, inconvenience)

# Community Resilience Measure



## Select Measures – 7 Classes

- Natural Protective Features
- Market Pricing
- Land Use Management
- Information/Behavior Modification
- Resilient Construction
- Structural Defenses
- Acceptance

# Integrate with Community Plans

- Local Waterfront Revitalization Plan
- Comprehensive Land-use
- FEMA Hazard Mitigation
- Capital improvement
- Economic development
- Open space conservation
- Storm water management
- NFIP: Community Rating System

## Assemble Preferred Strategy

- Link with capital construction schedules, development standards, zoning, land-use regulations
- Coordinate resources to facilitate implementation
- Evaluate post-storm response

# Adapt and Transform

