

# Coastal Infrastructure Resilience



**Holly A. Bamford, PhD**  
**Assistant Administrator**  
**NOAA's National Ocean Service**

*Marine Board Spring Meeting*  
*April 8, 2014*



NOAA's NATIONAL OCEAN SERVICE

POSITIONING AMERICA FOR THE FUTURE

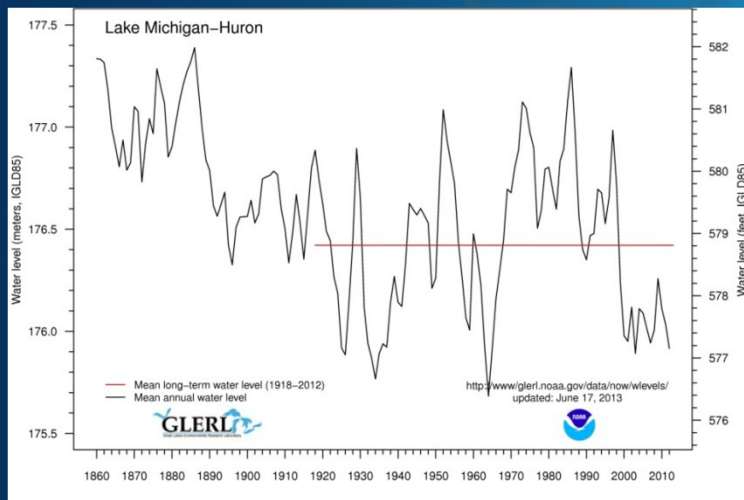
# Overview

- What is the Risk?
- What is at Risk?
- Building Resilient Coastal Economies and Communities through Infrastructure





# What is the Risk?



# Billion Dollar Disasters: Fact of Life

A Record 14 Disasters in the U.S. in 2011  
Three more approaching \$1B



Source: NOAA



NOAA's NATIONAL OCEAN SERVICE

POSITIONING AMERICA FOR THE FUTURE



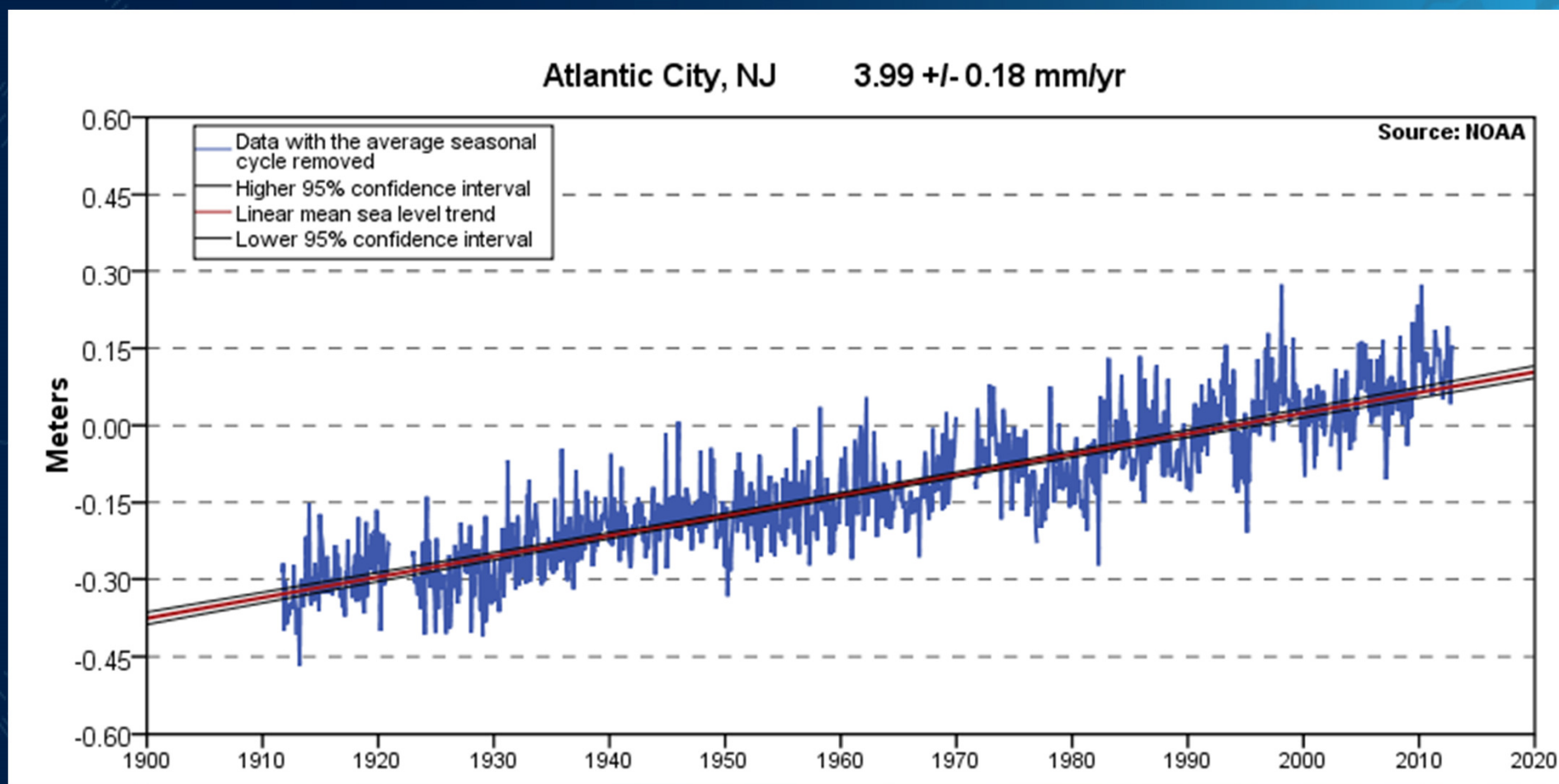
# Weather-related versus Geophysical Events



Source: Munich RE



# Sea Level Trend: Atlantic City, NJ



Mean Sea Level Trend



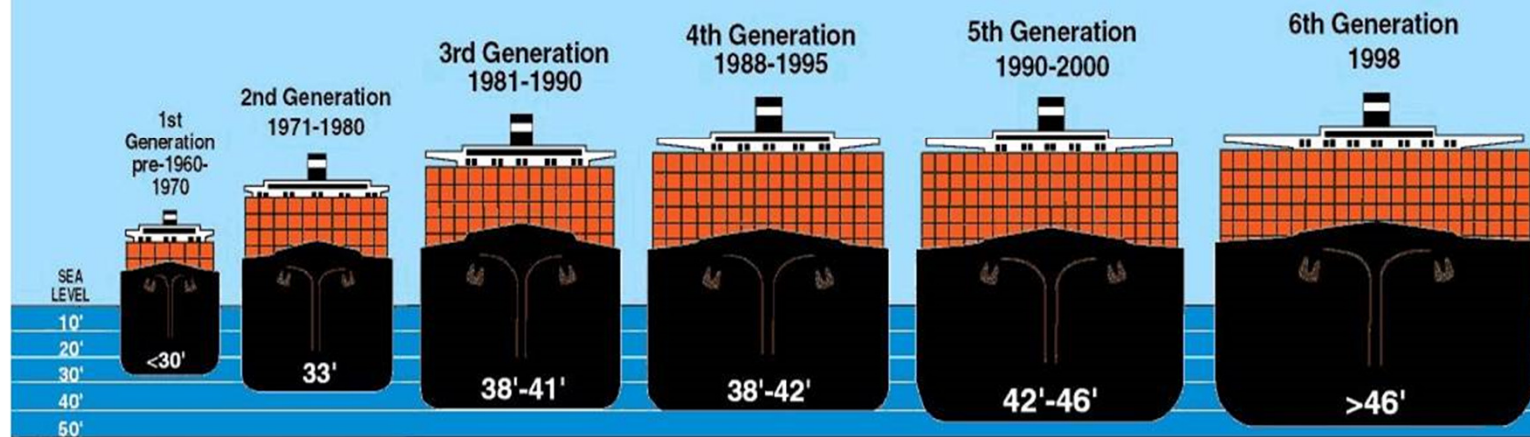
NOAA's NATIONAL OCEAN SERVICE

POSITIONING AMERICA FOR THE FUTURE

# Coastal Transportation:

## Increased Ship Size

### Evolution of Container Ships



**Maersk EEE Draft: >50'**  
**Length: 400 m**





# What is at Risk: A Coastal Nation






# Coastal Communities: Steadily Growing

In 2010:

A small amount of land and a large  
number of people means high density

Each box  
represents 1  
square mile.

 = 10 persons

**39%**  
of the people on  
**10%**  
of the land

Coastal  
Shoreline Counties

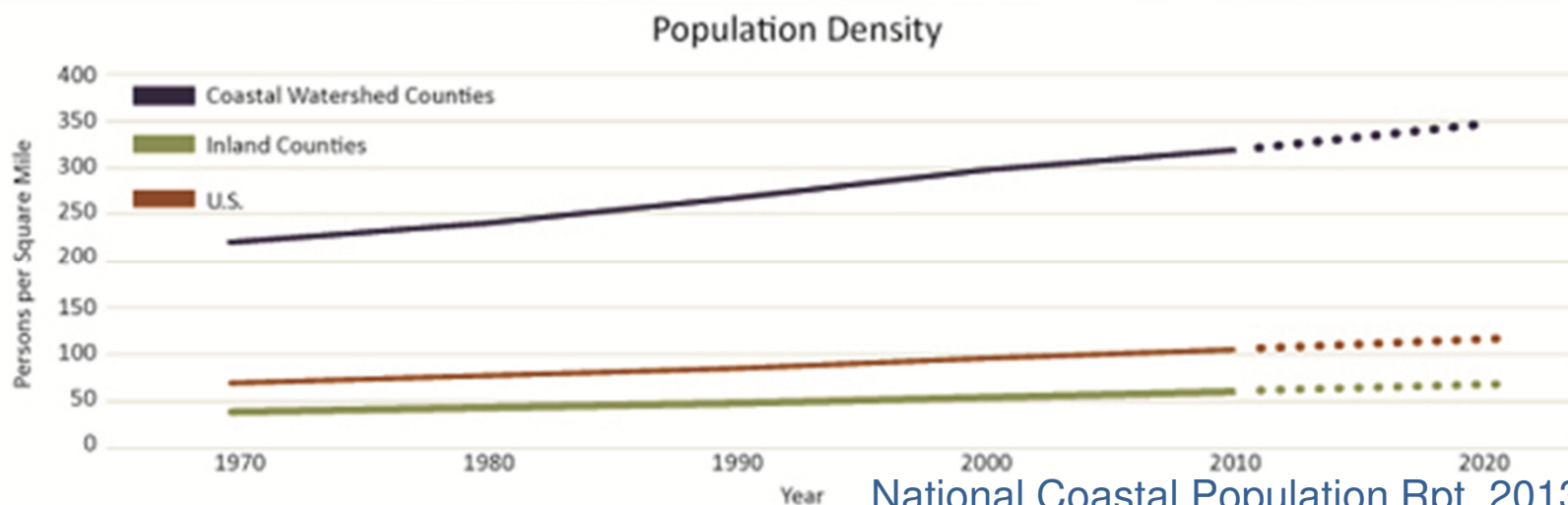
**52%**  
of the people on  
**20%**  
of the land

Coastal  
Watershed Counties

**105** persons/mi<sup>2</sup>



United States



National Coastal Population Rpt, 2013

# Coastal Economies:

## Vital to U.S. and International Markets

- 98% of products in U.S reach us through ports.
- 45% of U.S. GDP is generated in coastal shoreline counties.
  - \$6.6 trillion
  - 51 million jobs & \$2.8 trillion in wages
- Coastal tourism and recreation is significant portion of U.S. economy.
  - Beach recreation alone ~\$30 billion annually.





# Managing Risk: Who Pays?



# Managing Risk: A Systematic Approach

Ensuring Safe, Efficient, and  
Environmentally Sound Marine Navigation

Supporting  
Community Livability

Promoting Resilience to Coastal Hazards





# How do we get there?



# Coastal Intelligence: Foundational Data

