Expected Climate Impacts: Science & Economics

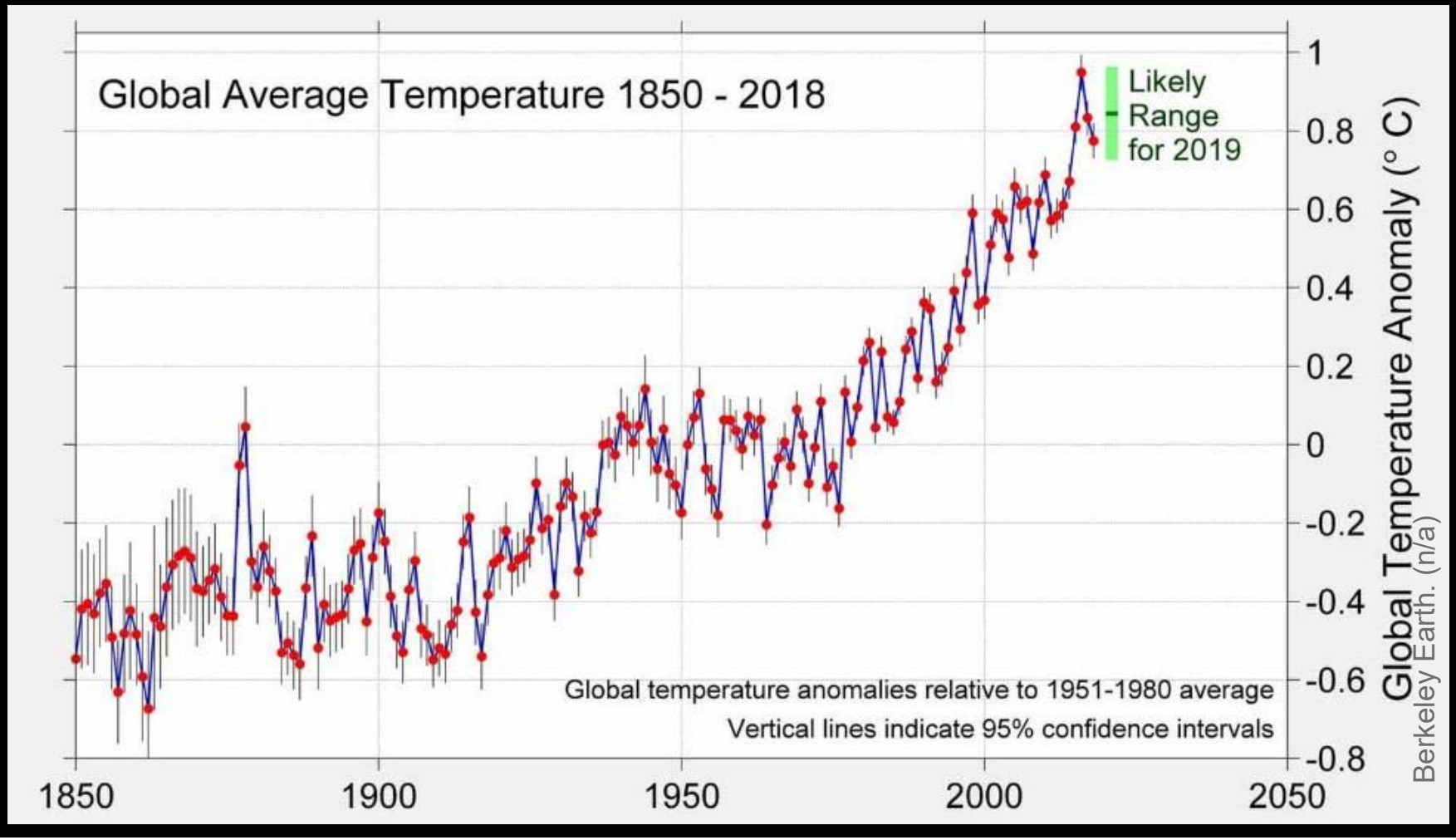
American Shore and Beach Preservation Association's Coastal Summit

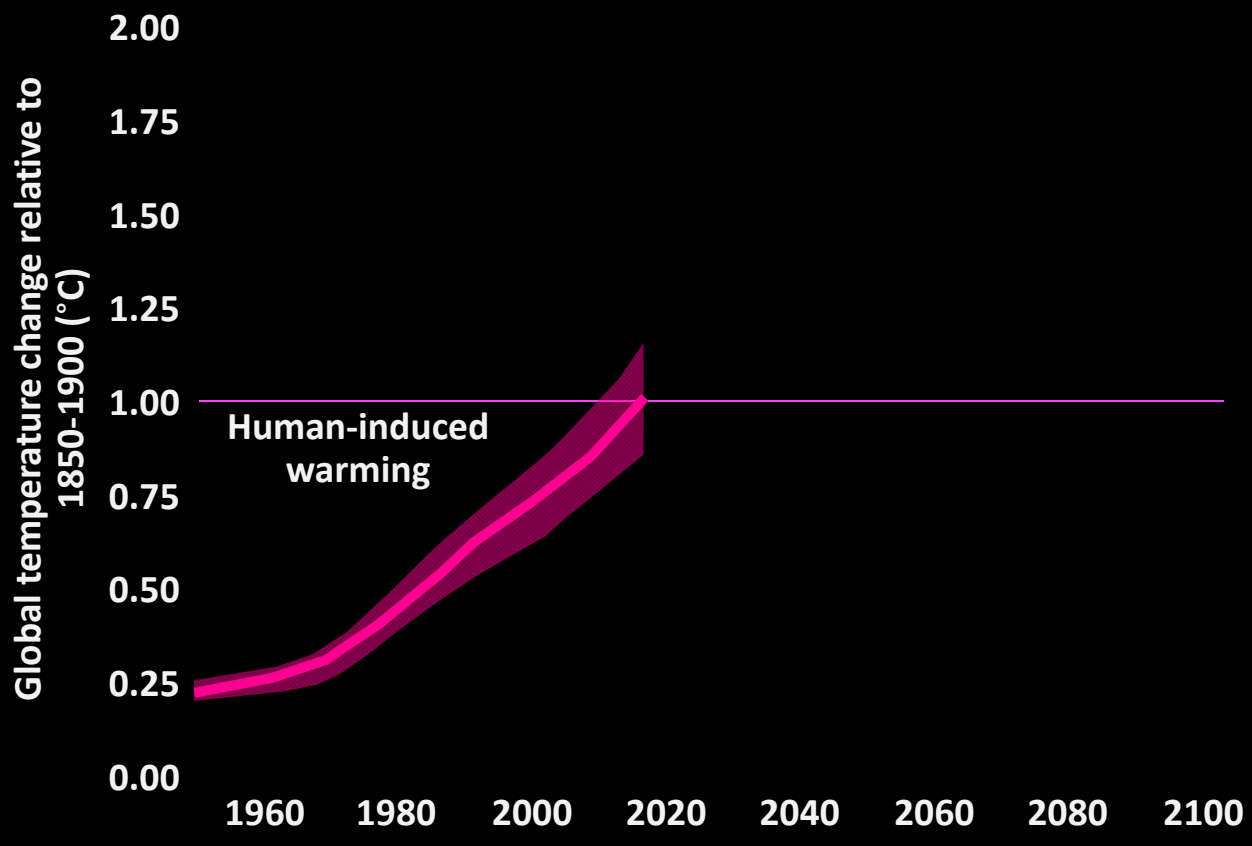
Shana Udvardy, Climate Resilience Analyst

Science
and
for a
healthy planet
safer world.
Union of
Concerned Scientists

50
YEARS of
SCIENCE
and ACTION
Union of
Concerned Scientists

2018: 4th Hottest Year on Record

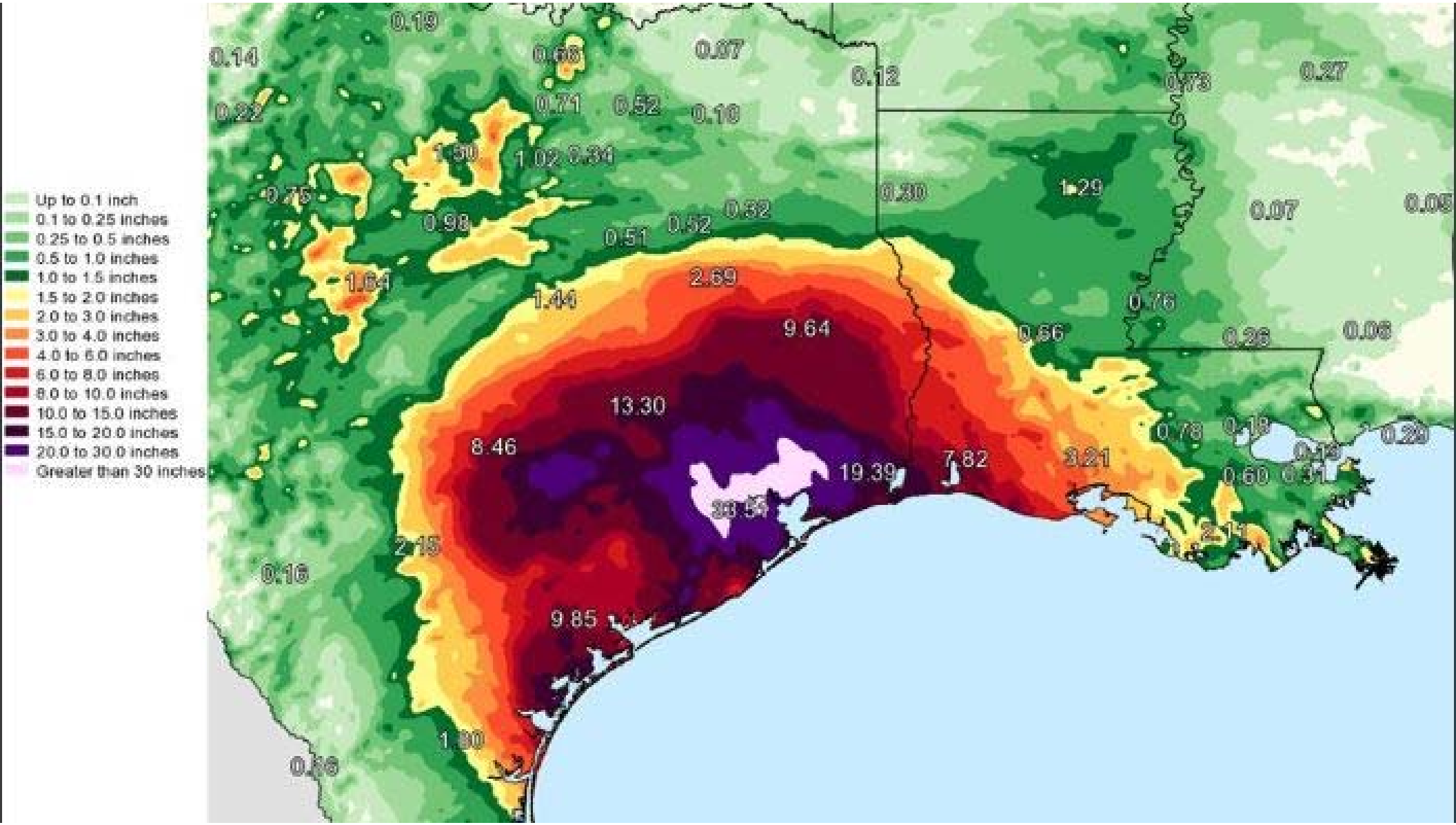




IPCC 2018 SR15 Fig FAQ 1.2

1 °C World

ELLICOTT


Up to 0.1 inch
0.1 to 0.25 inches
0.25 to 0.5 inches
0.5 to 1.0 inches
1.0 to 1.5 inches
1.5 to 2.0 inches
2.0 to 3.0 inches
3.0 to 4.0 inches
4.0 to 6.0 inches
6.0 to 8.0 inches
8.0 to 10.0 inches
10.0 to 15.0 inches
15.0 to 20.0 inches
20.0 to 30.0 inches
Greater than 30 inches
0.19
0.14
0.07
0.12
0.27
0.71
0.52
0.10
1.02
0.34
0.30
1.29
0.07
0.05
0.98
0.51
0.32
1.64
1.44
2.69
9.64
0.66
0.26
0.06
13.30
8.46
19.39
7.82
3.21
0.78
0.19
0.60
0.16
9.85
0.30

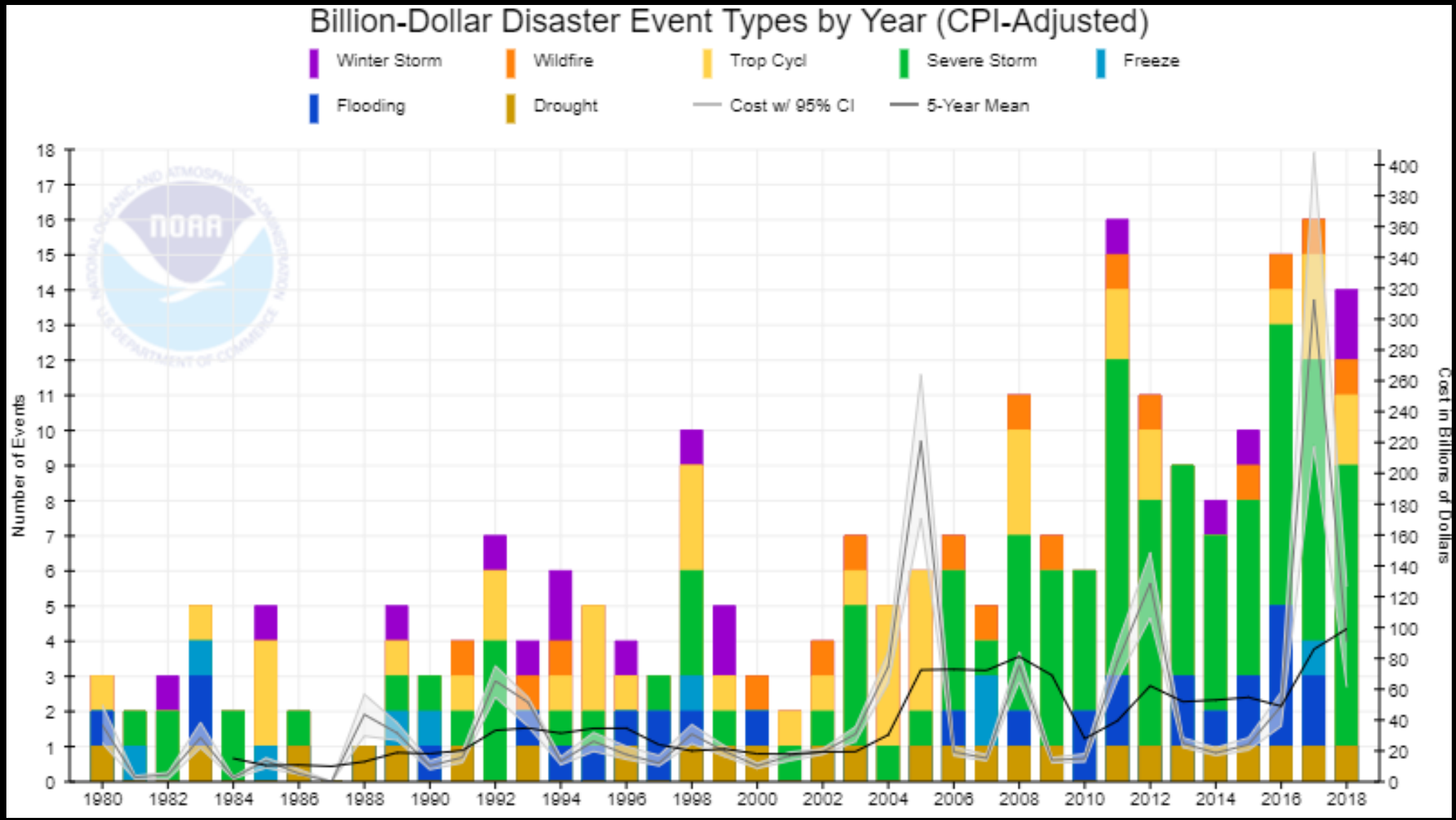
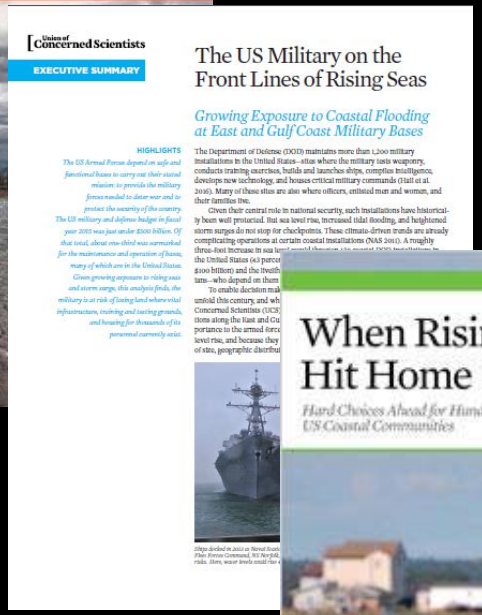

Billion-Dollar Disaster Event Types by Year (CPI-Adjusted)
Winter Storm
Wildfire
Trop Cycl
Severe Storm
Freeze
Flooding
Drought
Cost w/ 95% CI
5-Year Mean
Number of Events
Cost in Billions of Dollars
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320
340
360
380
400
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018

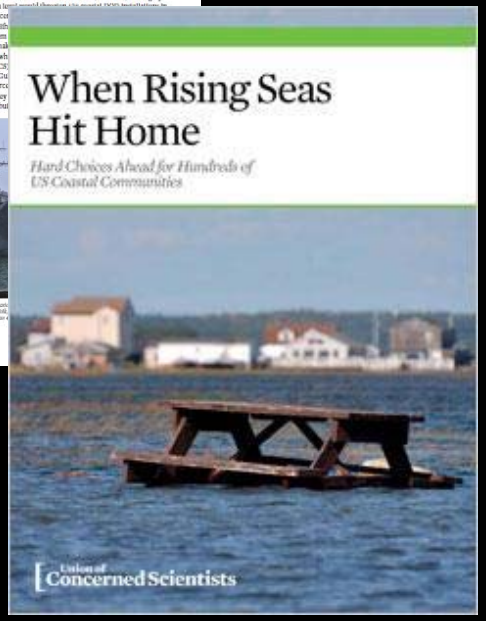
Photo: Hodgejr/Dreamstime.com

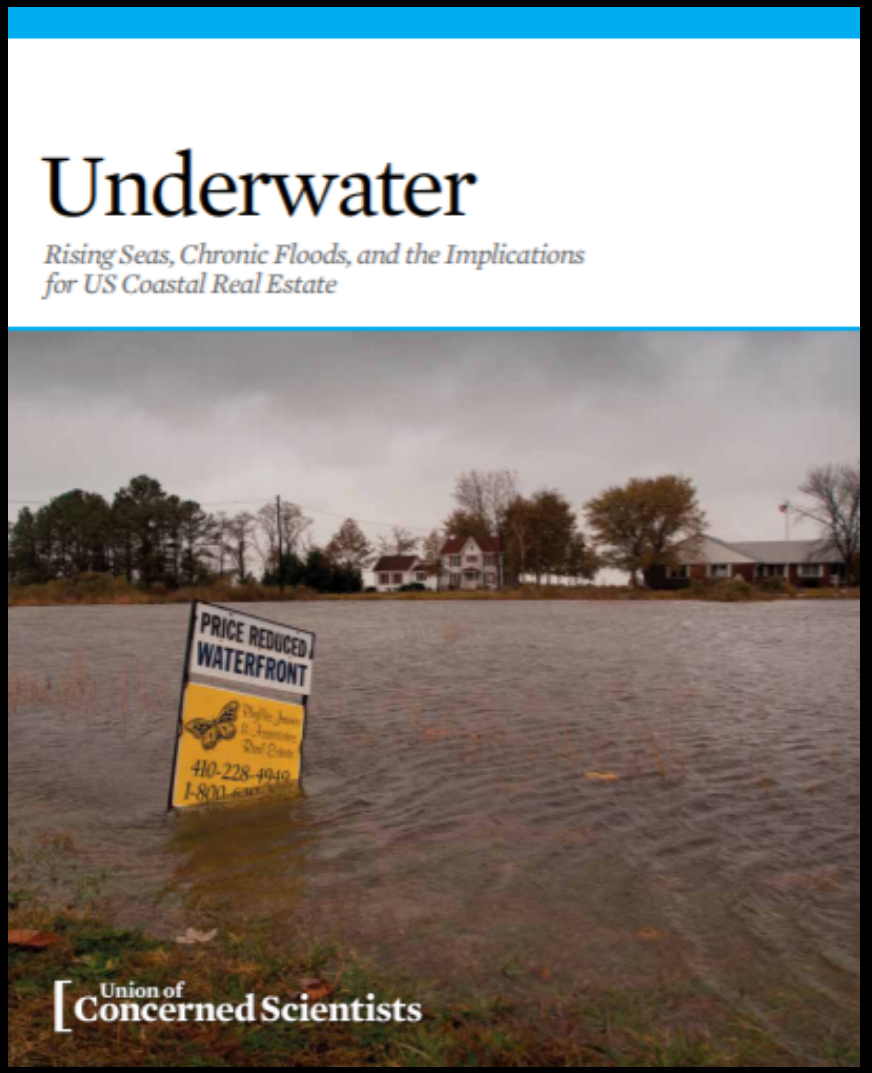
Underwater:

Rising Seas, Chronic Floods, and the Implications for U.S. Coastal Real Estate

Encroaching Tides
How Sea Level Rise and Tidal Flooding Threaten U.S. East and Gulf Coast Communities over the Next 30 Years
Union of Concerned Scientists


Union of Concerned Scientists
EXECUTIVE SUMMARY
The US Military on the Front Lines of Rising Seas
Growing Exposure to Coastal Flooding at East and Gulf Coast Military Bases
HIGHLIGHTS


When Rising Seas Hit Home
Hard Choices Ahead for Hundreds of US Coastal Communities
Union of Concerned Scientists


Underwater
Rising Seas, Chronic Floods, and the Implications for US Coastal Real Estate
PRICE REDUCED
WATERFRONT
Union of Concerned Scientists

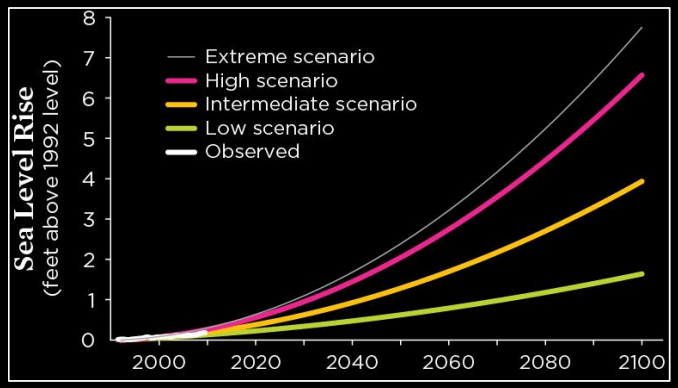
[Defining Chronic Inundation

Photo: Emily Michot/The Miami Herald via AP

[Mapping Chronic Inundation

1. Tide gauge records

2. Sea level rise projections



3. Digital Elevation Models

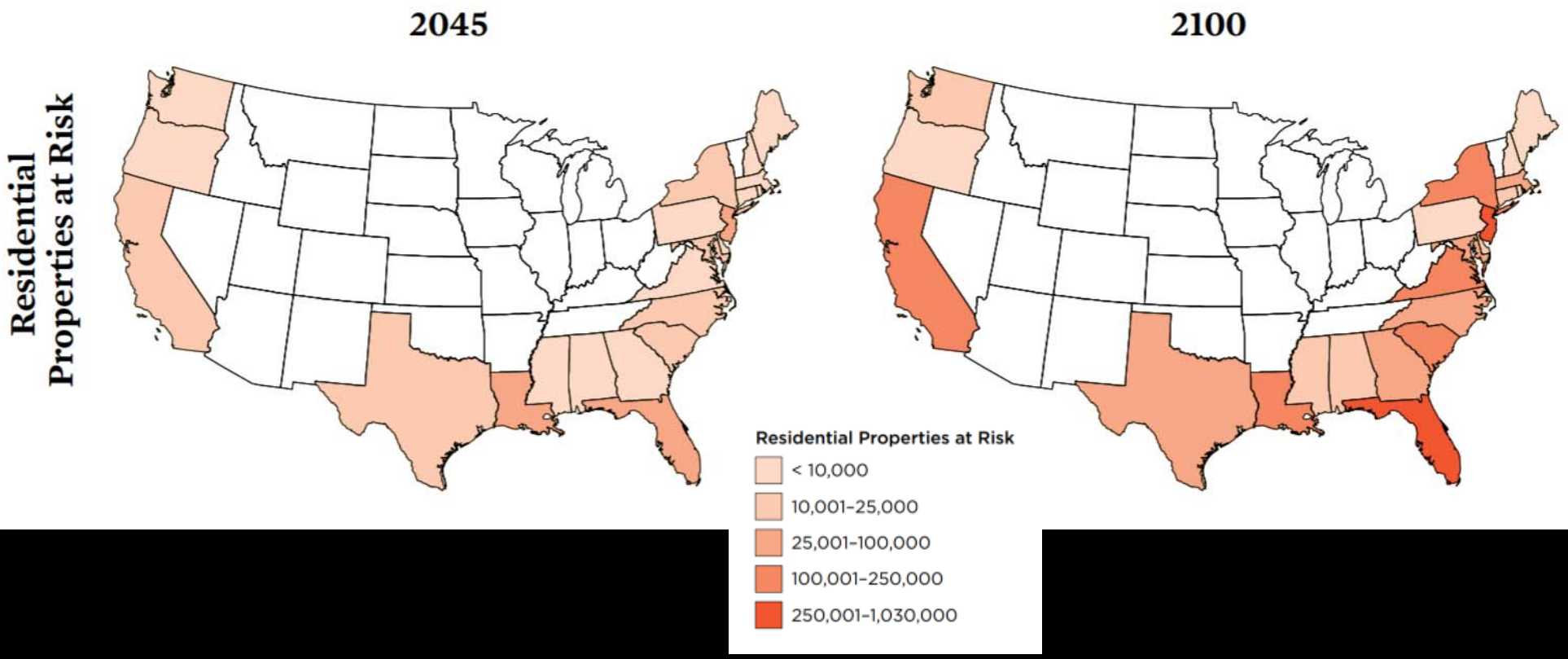
4. Property data from Zillow

[What does this mean for coastal property?

[Homes at risk

A National Overview

300,000+ homes in 2045
2.4 million homes in 2100



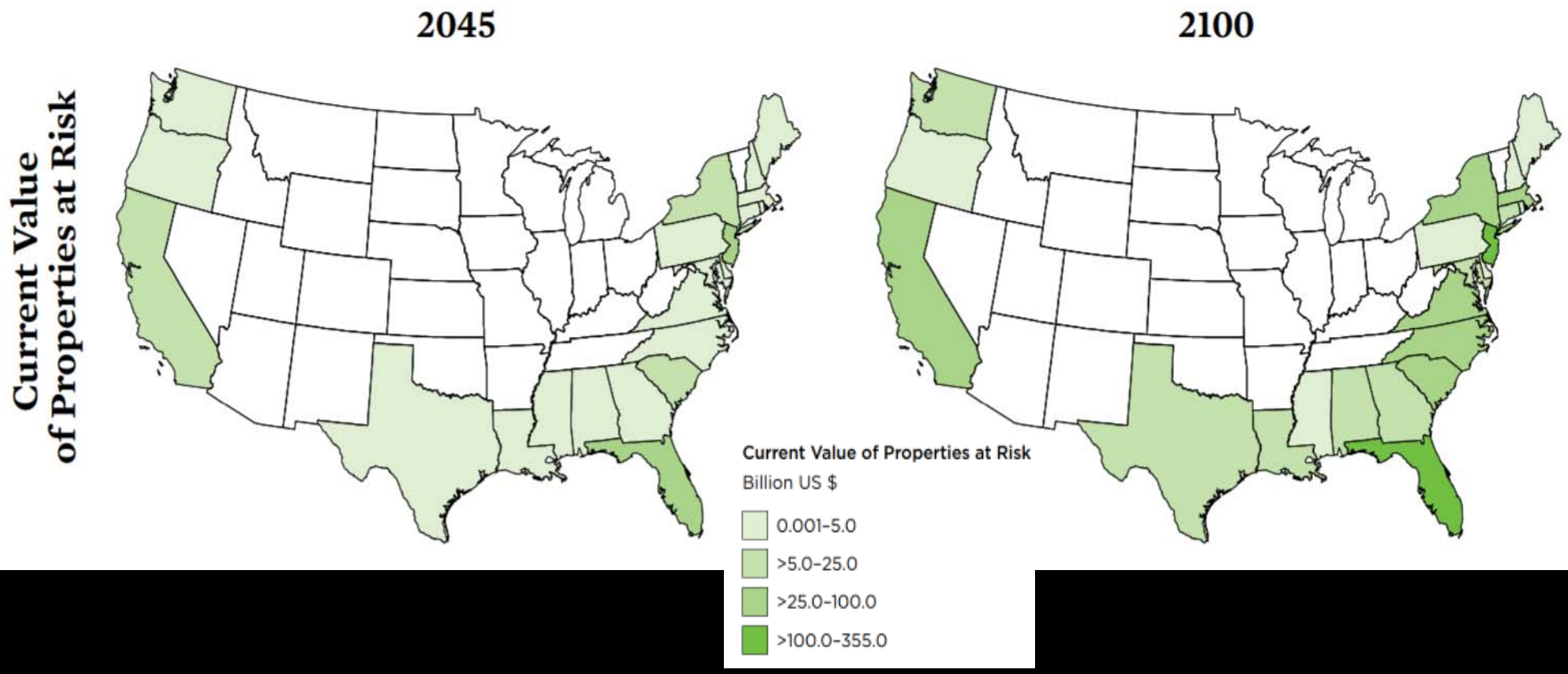
Data provided by third parties through the Zillow Transaction and Assessment Dataset (ZTRAX). More information on accessing the data can be found at https://www.zillow.com/ztrax.

[Value at risk

A National Overview

2045: $117.5 B

2100: $1 Trillion



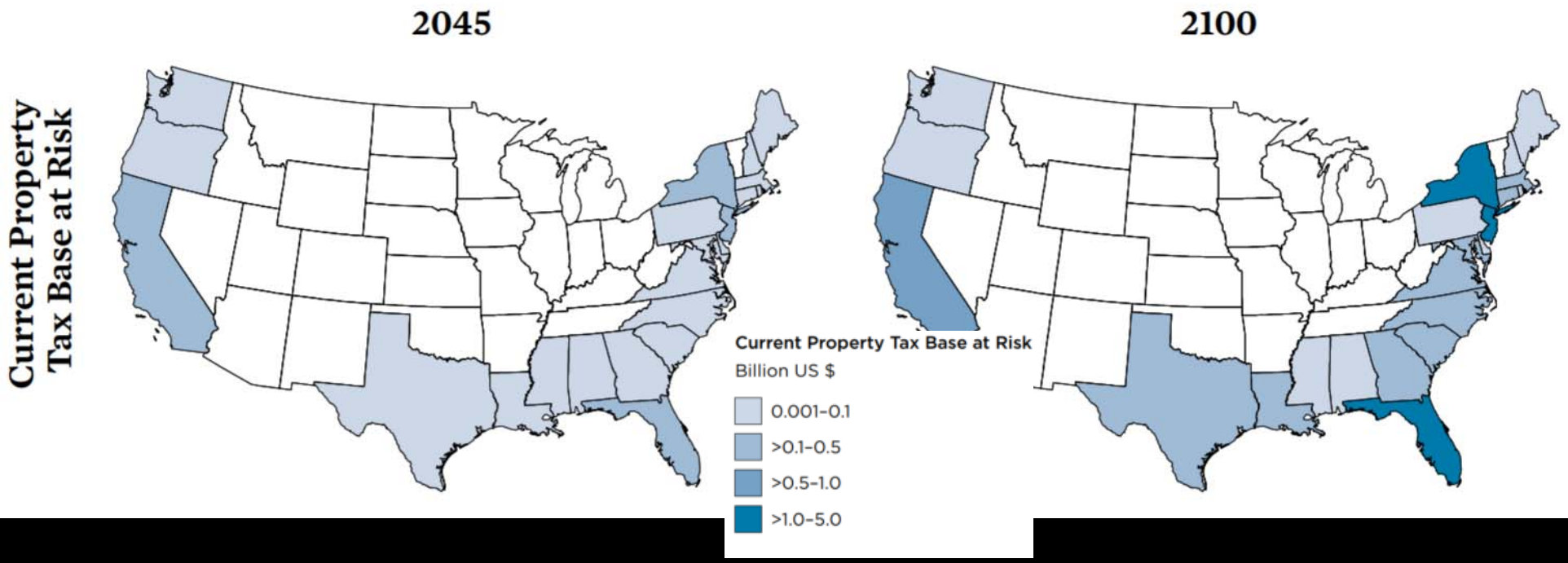
Data provided by third parties through the Zillow Transaction and Assessment Dataset (ZTRAX). More information on accessing the data can be found at https://www.zillow.com/ztrax.

[Tax base at risk

A National Overview

By 2045: $1.5 Billion

By 2100 = $12 Billion



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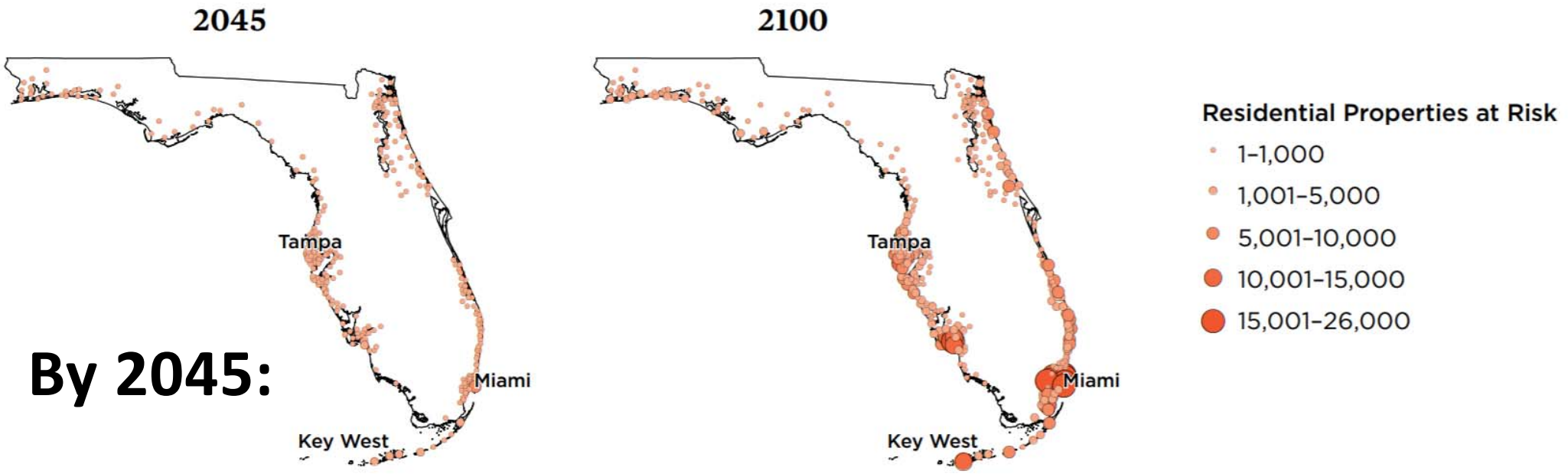
[Acute exposure in Florida: Homes at risk



By 2045:

- **64,000 Florida properties (2100, 1 million)**
- **$26 billion in property value (2100, $350 billion)**
- **$350 million in annual property tax (2100, $5 billion)**

Data provided by third parties through the Zillow Transaction and Assessment Dataset (ZTRAX). More information on accessing the data can be found at https://www.zillow.com/ztrax.

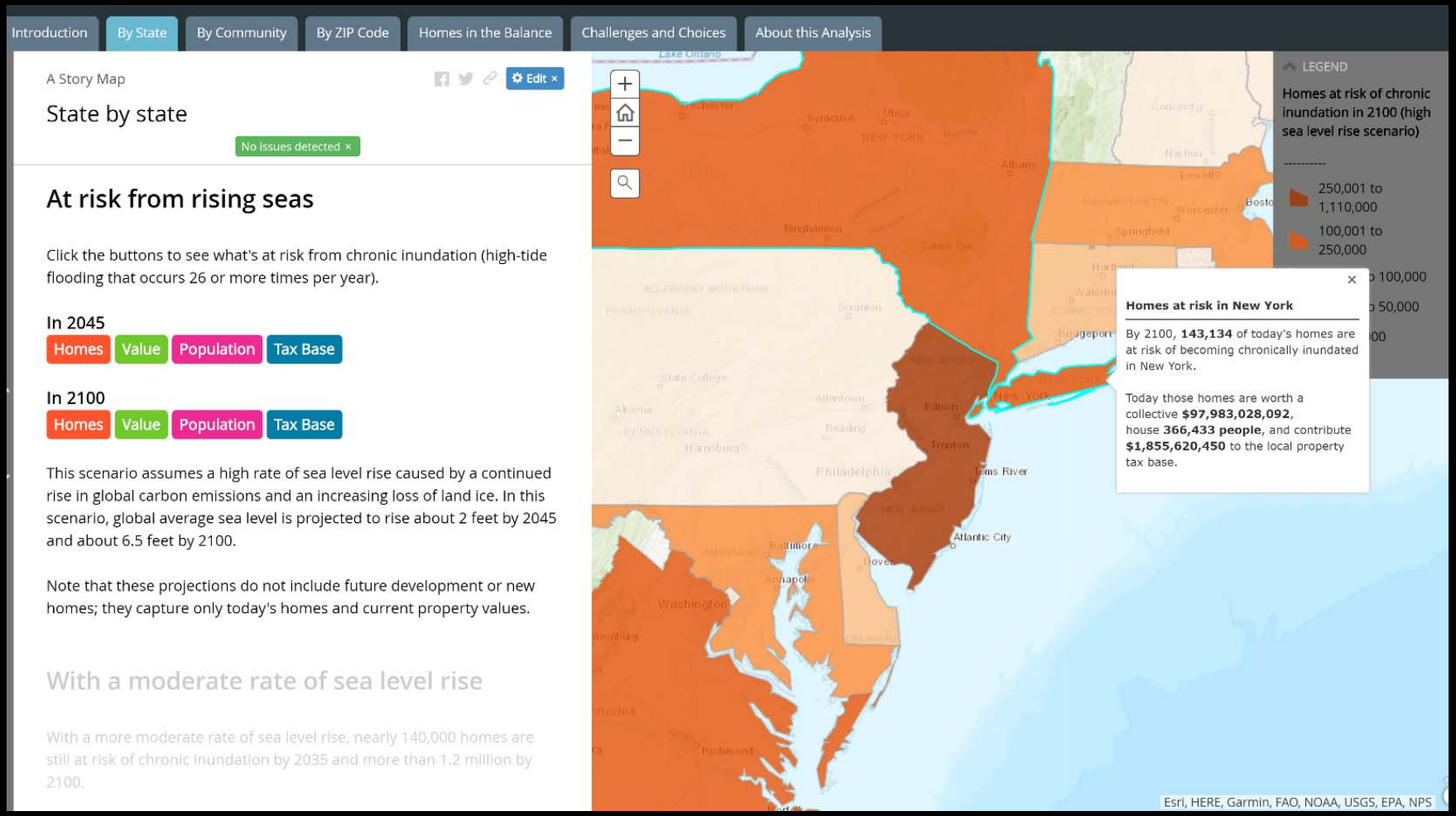
Interactive map:

Is your state, community, zip-code at risk?

Use our mapping tool
Google: UCS Underwater
OR
www.ucsusa.org/underwater

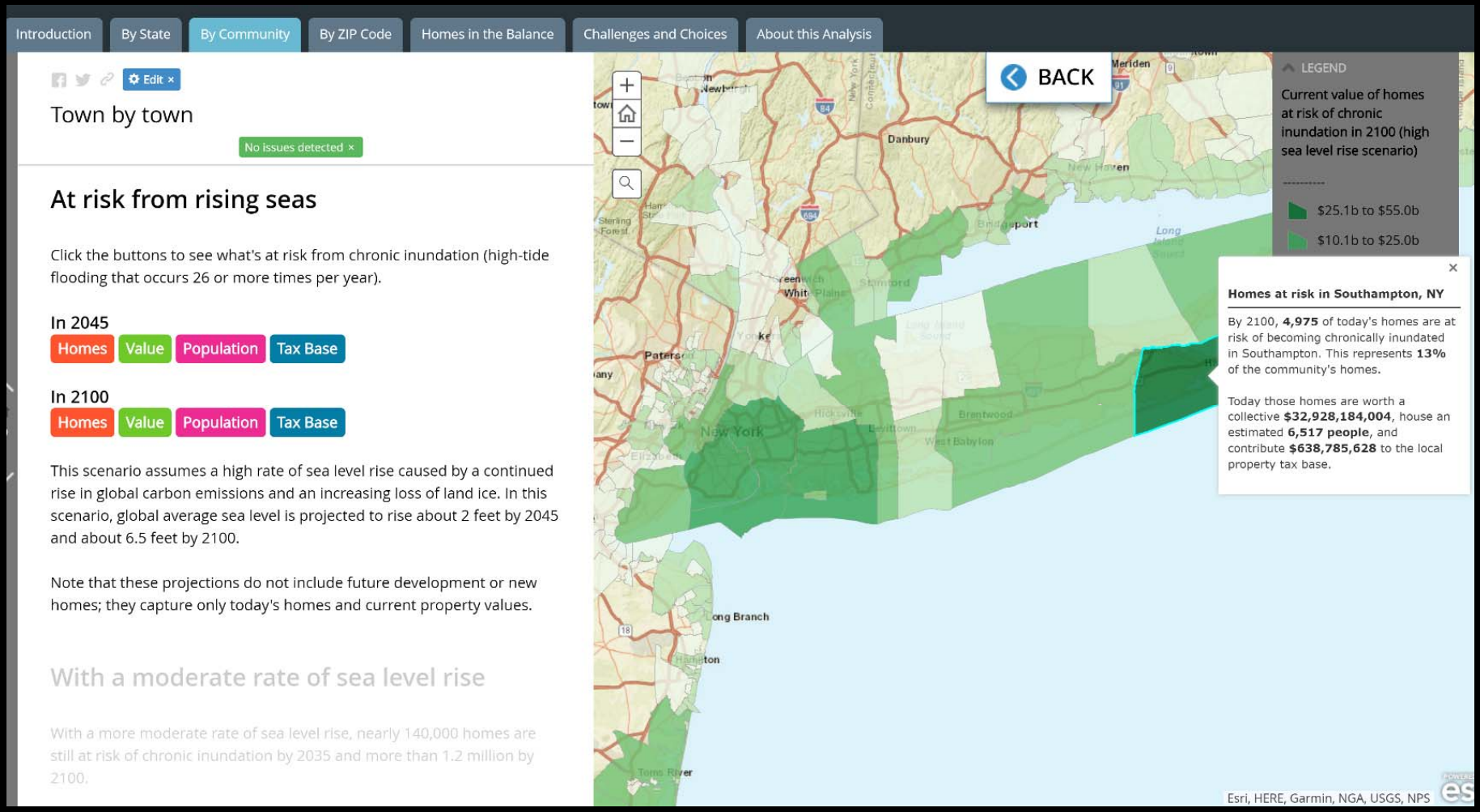
Data provided by third parties through the Zillow Transaction and Assessment Dataset (ZTRAX). More information on accessing the data can be found

[Interactive map: state-level results



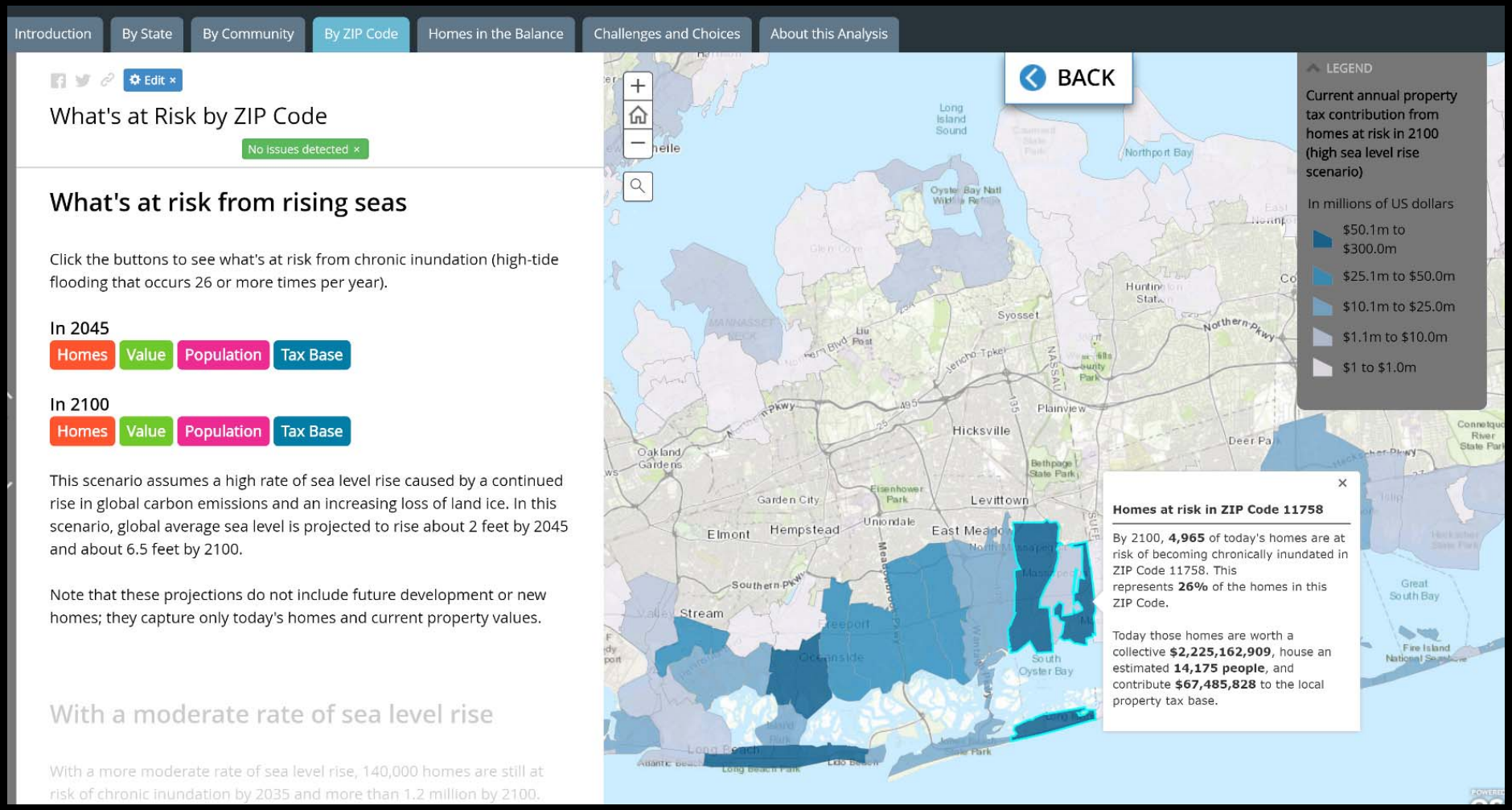
Data provided by third parties through the Zillow Transaction and Assessment Dataset (ZTRAX). More information on accessing the data can be found

[Interactive map: community-level results



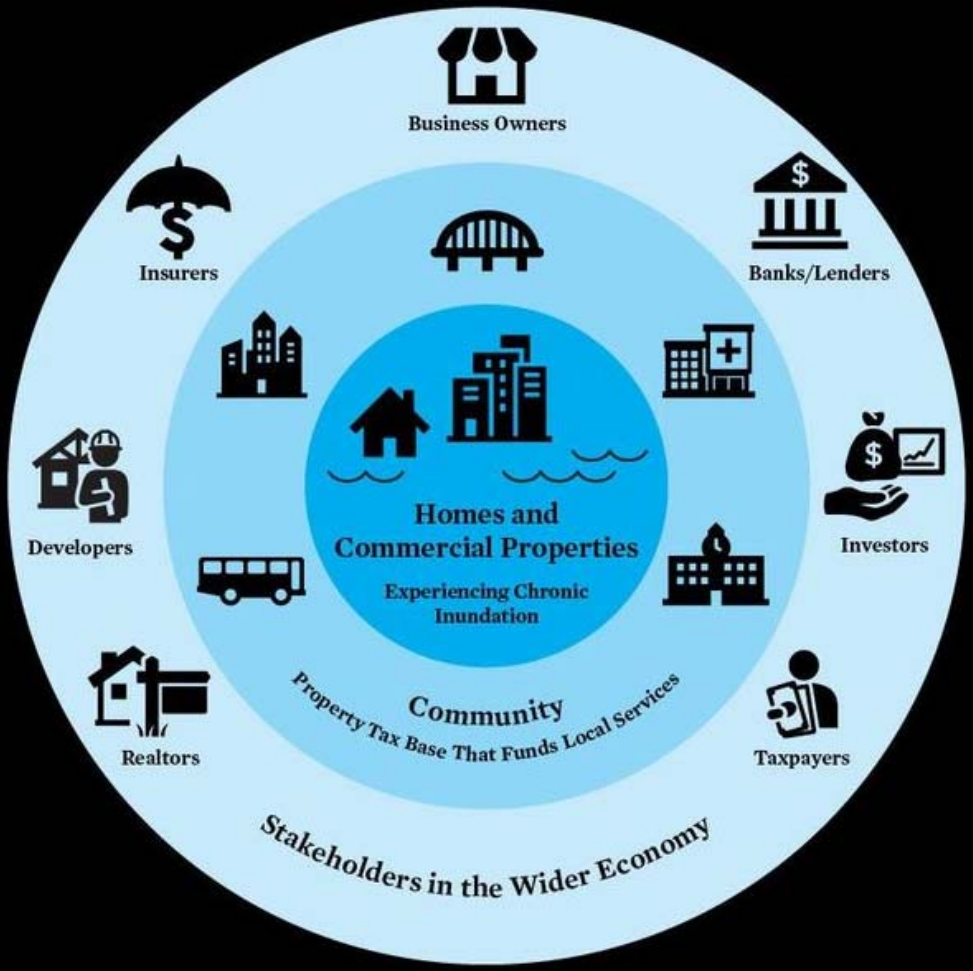
Data provided by third parties through the Zillow Transaction and Assessment Dataset (ZTRAX). More information on accessing the data can be found

[Interactive map: ZIP code-level results



Data provided by third parties through the Zillow Transaction and Assessment Dataset (ZTRAX). More information on accessing the data can be found

Economic Reverberations of Chronic Flooding



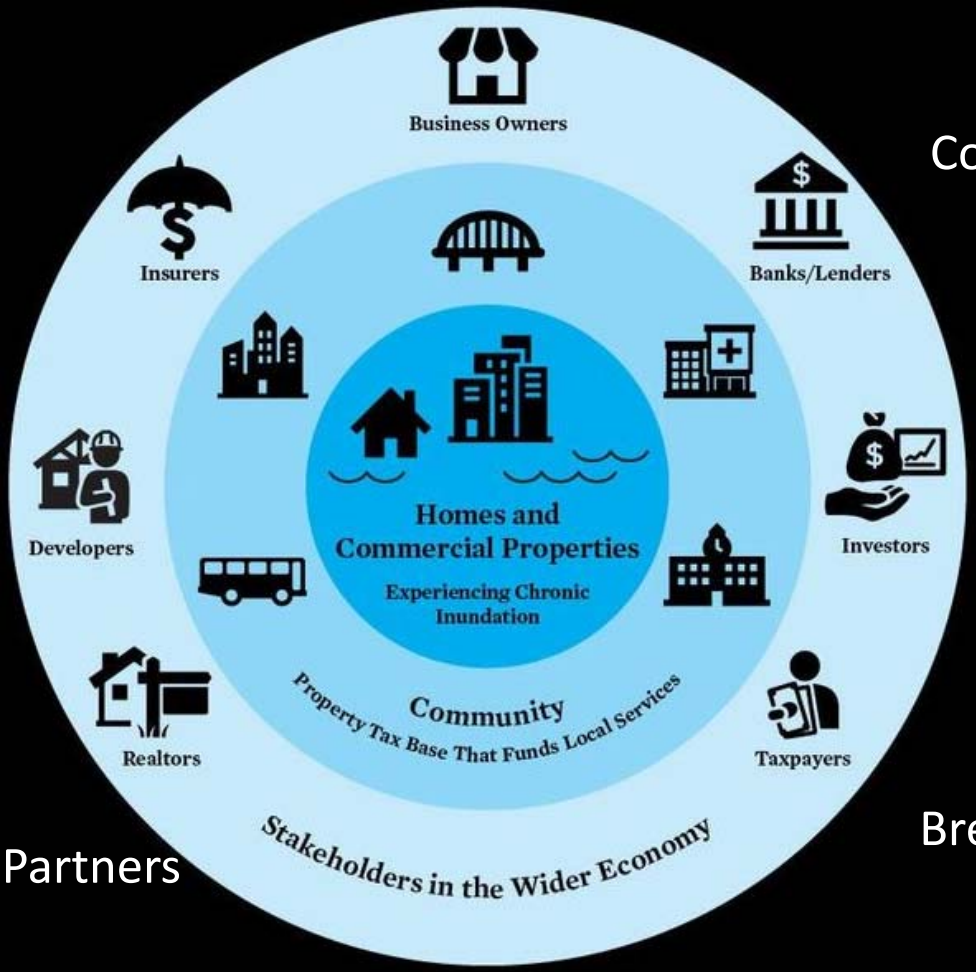
Market experts: “Matrix of Voices”

CERES

AIR Worldwide

Bentall Kennedy

Enterprise Community Partners



Consumer Mortgage Coalition

S&P Global Ratings

Wharton Risk Center

Breckenridge Capital Advisors

"As an investment manager, one of the biggest challenges is the disconnect between time horizons for investments in bonds— sometimes they can be as short as three to five years—and the time frame for significant tipping points when, say, 50 to 70 percent of a city's tax base is at risk of flooding."

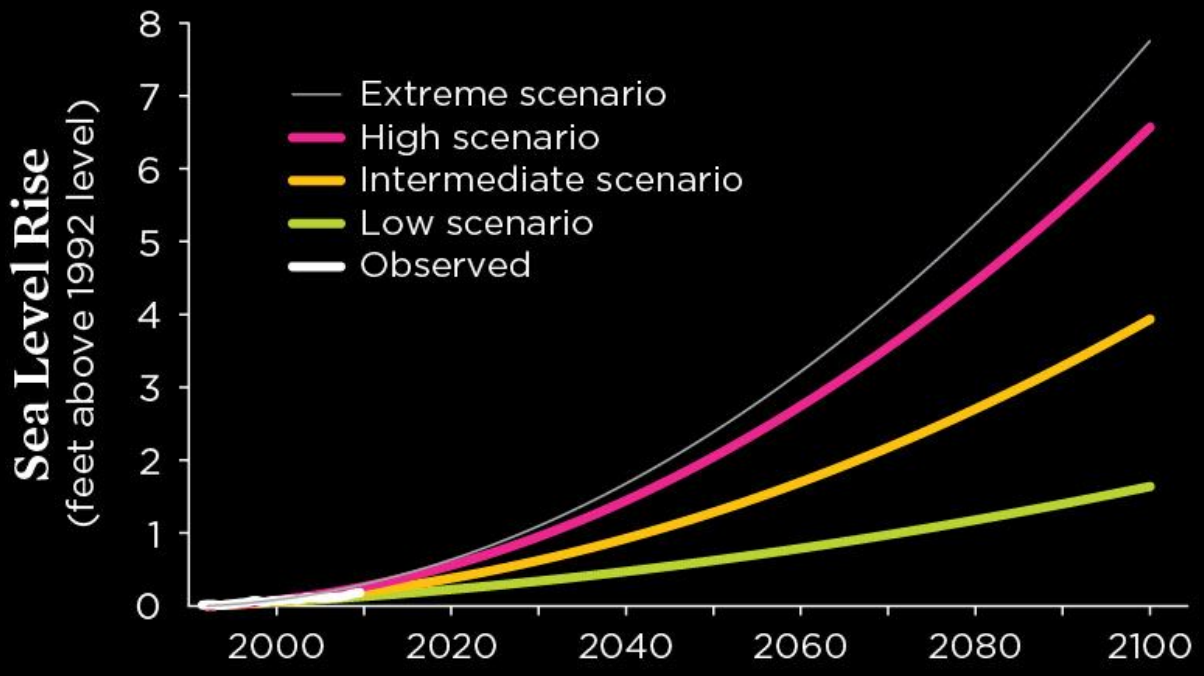
- Andrew Teras, Vice-President and Senior Analyst, Breckinridge Capital Advisors

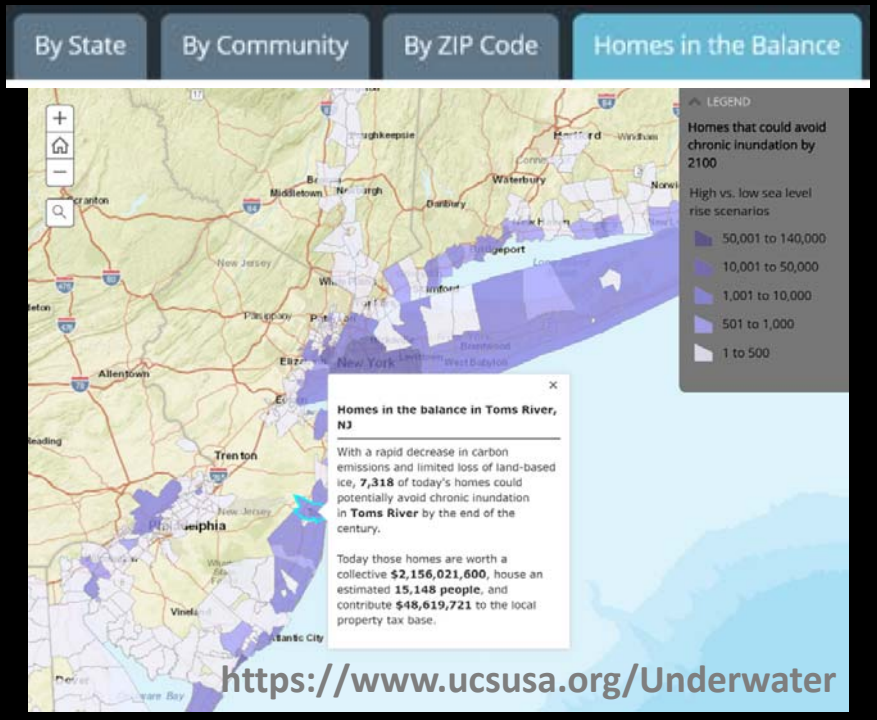
“S&P Global Ratings see the uniform and transparent disclosure by governments of the potential effects of gradual environmental change and extreme weather events as both an important input into our assessment of management's ability to respond to the risks and one of the largest challenges to the market.”

- Kurt Forsgren, Managing Director , Infrastructure Sector Lead
S&P Global Ratings

Low Sea Level Rise Scenario: Real Estate Risks Drastically Reduced

Nationwide: **85% of US homes** (**worth $782 billion**) could be spared





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Our Challenges and Choices

TCFD | TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

NATIONAL FLOOD INSURANCE PROGRAM

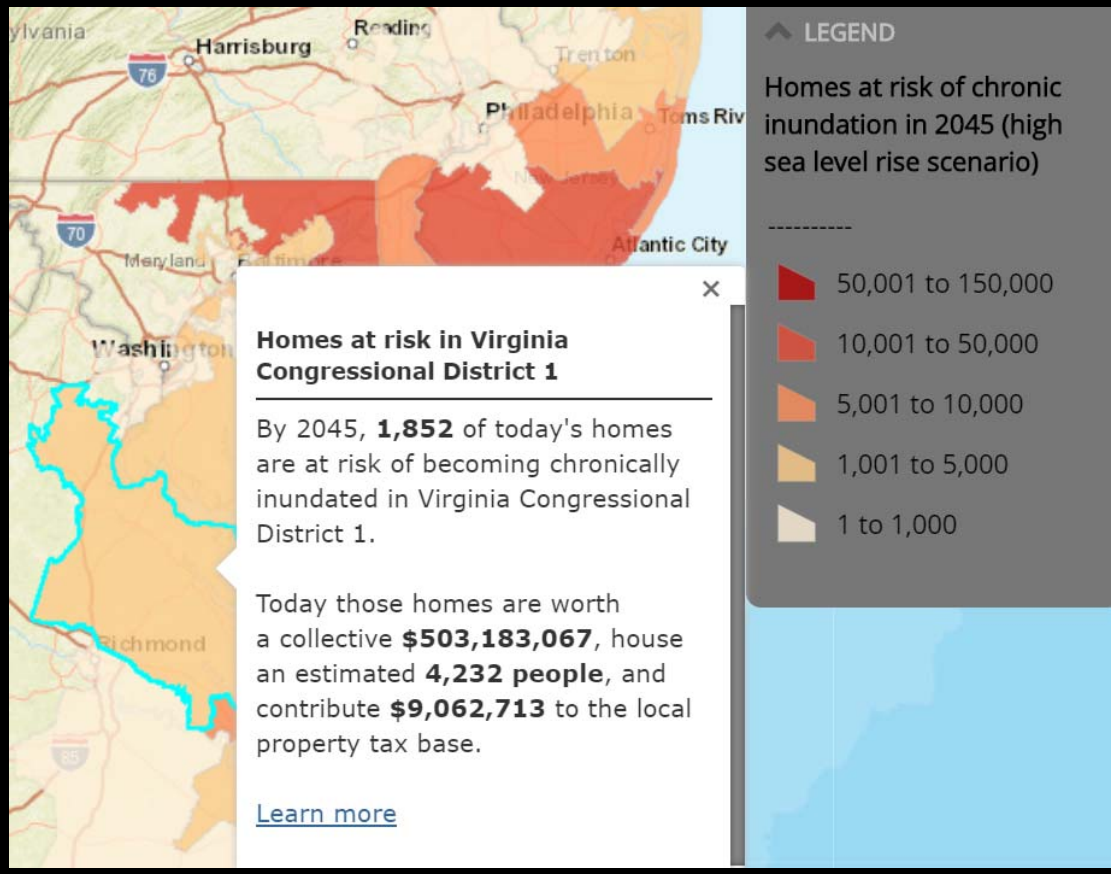
- ✓ Know the risk
- ✓ Realign policies and market incentives to reflect risk
- ✓ Reform existing policies
- ✓ Planning for a resilient future for all

[Congressional Districts: VA CD 1 - 2045

https://www.ucsusa.org/coastaldistricts

At Risk

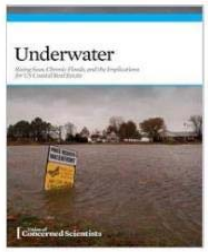
- 1,852 of homes
- Worth $503M
- 4,232 people
- $9M local property tax base



Data provided by third parties through the Zillow Transaction and Assessment Dataset (ZTRAX). More information on accessing the data can be found

Suite of Products

Underwater: Rising Seas, Chronic Floods, and the Implications for US Coastal Real Estate (2018)



Hundreds of thousands of homes are at risk of chronic flooding due to sea level rise over the coming decades. The implications for coastal residents, communities, and the economy are profound.

[DOWNLOAD]

Full report >
Technical backgrounder >
Insights from market experts >
Complete data by state >
Complete data by community >
Complete data by ZIP Code >

Información disponible en español

If you or somebody you know is looking at coastal real estate, here are some smart questions to ask about tidal flooding. Read the brochure online or print it using this printer-friendly layout.

Explore interactive maps of the analysis

Interactive maps show how many homes are at risk by state, community, and ZIP Code. The maps also show the current property value, estimated population, and the property tax base at risk.

State-specific information (press releases)
California (English | Spanish) -- Delaware -- Florida (English | Spanish) -- Georgia -- Louisiana -- Maryland -- Massachusetts -- New Hampshire -- New Jersey (English | Spanish) -- New York (English | Spanish) -- North Carolina -- Pennsylvania -- South Carolina -- Texas (English | Spanish) -- Virginia -- Washington

Download data for all years and sea level rise scenarios included in this analysis (Excel)
By state -- By community -- By ZIP Code

Thank you. Any questions?

Shana Udvardy
Report

sudvardy@ucsusa.org
ucsusa.org/underwater

Photo: Maureen Drennan