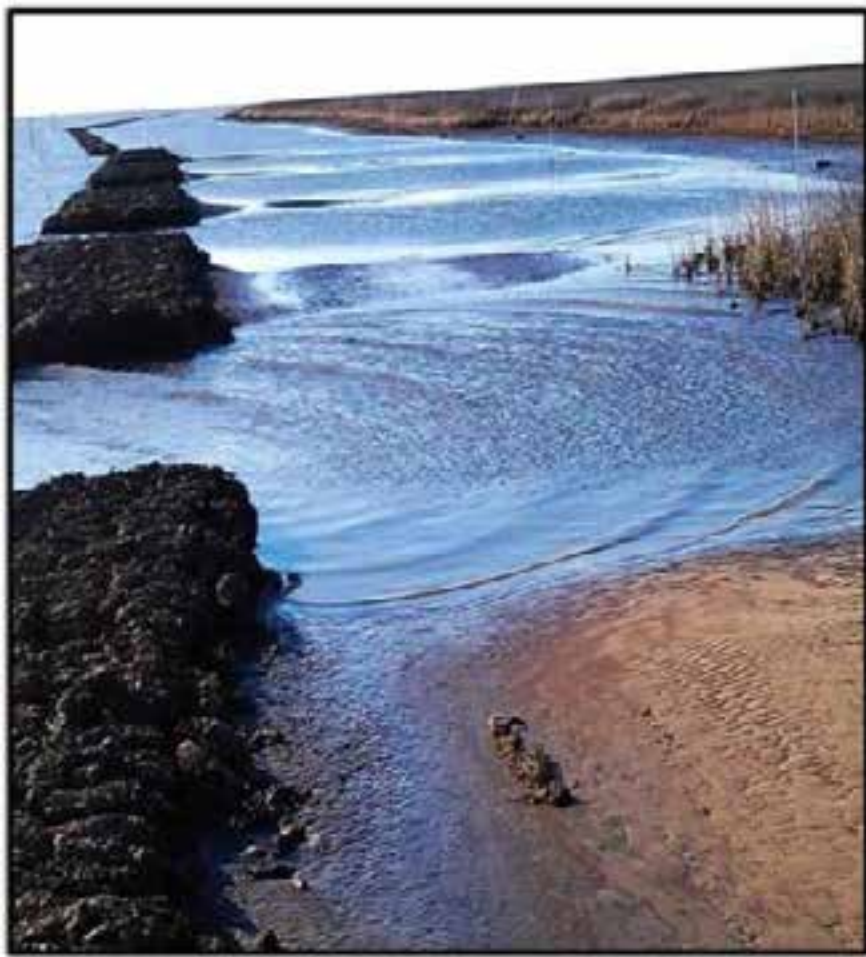


# Data Visualization Tools for Coastal Resilience



ESRI User Conference 2014

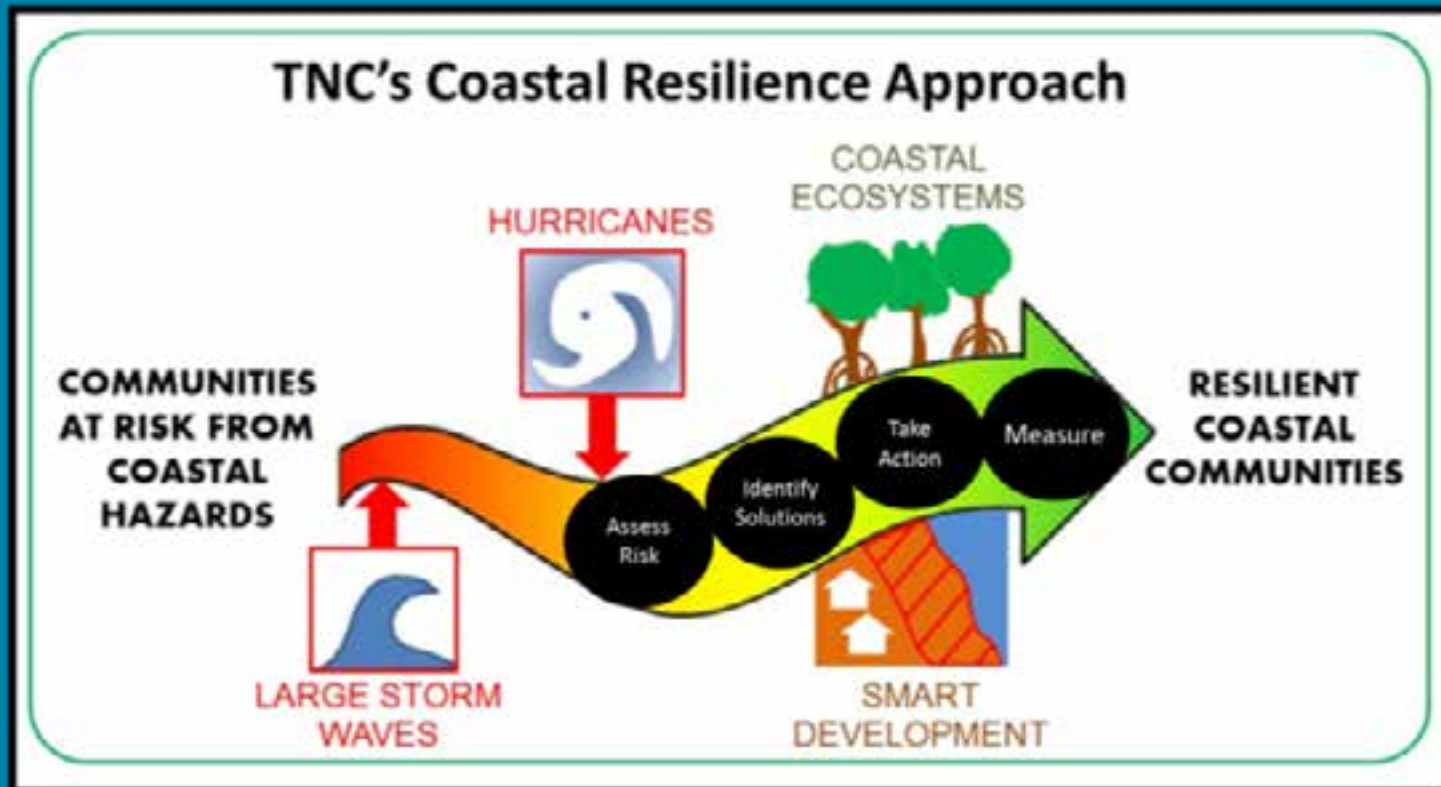
Laura Flessner

NOAA Digital Coast Fellow  
The Nature Conservancy &  
The Assoc. of State Floodplain Managers

# Agenda

- ✓ Overview of Coastal Resilience Network
- ✓ CR 2.0 Platform and “App” Overview
- ✓ Use Cases
- ✓ Questions

# Coastal Resilience Network



COASTAL RESILIENCE



Click on the point markers on the map, or navigate through the list of places below, to visit the Coastal Resilience web maps

## Coastal Resilience mapping portal

Coastal Resilience supports a community of practitioners around the world who are applying planning innovations to coastal hazard and adaptation issues. The network provides access to peer practitioners, tools, information and training focused on nature-based solutions in a consistent and cost effective manner.

# Coastal Resilience 2.0

The screenshot displays the Coastal Resilience 2.0 web application interface. At the top, a navigation bar includes the following elements: "COASTAL RESILIENCE", "GULF OF MEXICO", "GET STARTED", "TOUR", "GO TO ▾", "The Nature Conservancy", "Partners", and "Legal Disclosure".

On the left side, a vertical sidebar contains several tool icons and labels: "Map Layers", "Coastal Defense", "Restoration Explorer", "Risk Explorer", "Community Planning", "Future Habitat", "Switch To Map 2", "Split View", "Save & Share", and "Export Page".

The main area features a map of the Gulf of Mexico region, showing parts of Louisiana, Texas, Florida, and the Yucatan Peninsula. Key cities labeled include Austin, Houston, Baton Rouge, New Orleans, Tallahassee, Jacksonville, Orlando, Tampa, Miami, Brownsville, Corpus Christi, Veracruz, Mérida, Cancun, and Havana. The map is titled "Gulf of Mexico" in the center. A search bar at the top left of the map area is labeled "Search by Address". A "Topographic" dropdown menu is visible in the top right corner of the map area. The Esri logo is located in the bottom right corner of the map area.

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The screenshot displays the Coastal Resilience 2.0 web application interface. At the top, a navigation bar includes the following elements: "COASTAL RESILIENCE", "GULF OF MEXICO", "GET STARTED", "TOUR", "GO TO", "The Nature Conservancy", "Partners", and "Legal Disclosure".

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The main area features a map of the Gulf of Mexico region, showing parts of Louisiana, Texas, Florida, and the Yucatan Peninsula. Major cities like Austin, Houston, New Orleans, Baton Rouge, Tallahassee, Jacksonville, Tampa, Miami, and Havana are marked. The map is titled "Gulf of Mexico" and "COASTAL PLAIN". A search bar at the top left of the map area is labeled "Search by Address". A "Topographic" dropdown menu is visible in the top right corner of the map area.

The Esri logo is located in the bottom right corner of the map area.



# Tools to Visualize Socio-Economic Risk

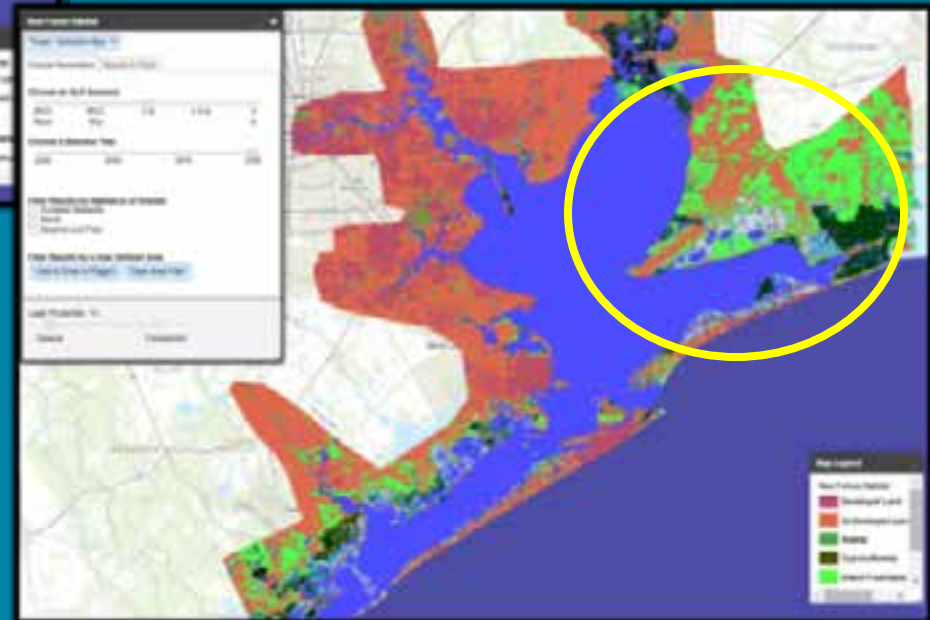
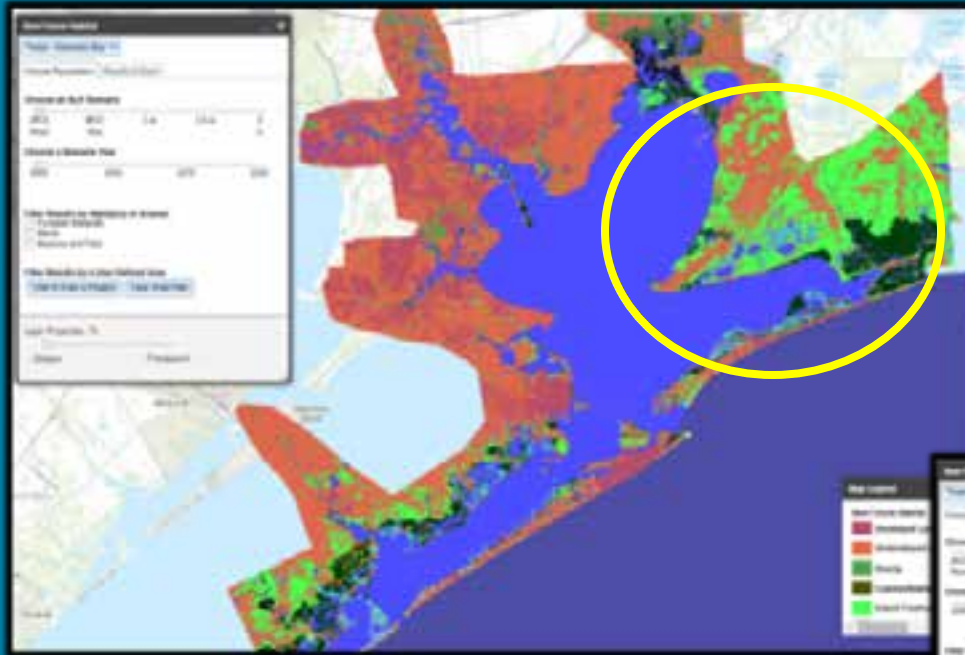




# Implementation

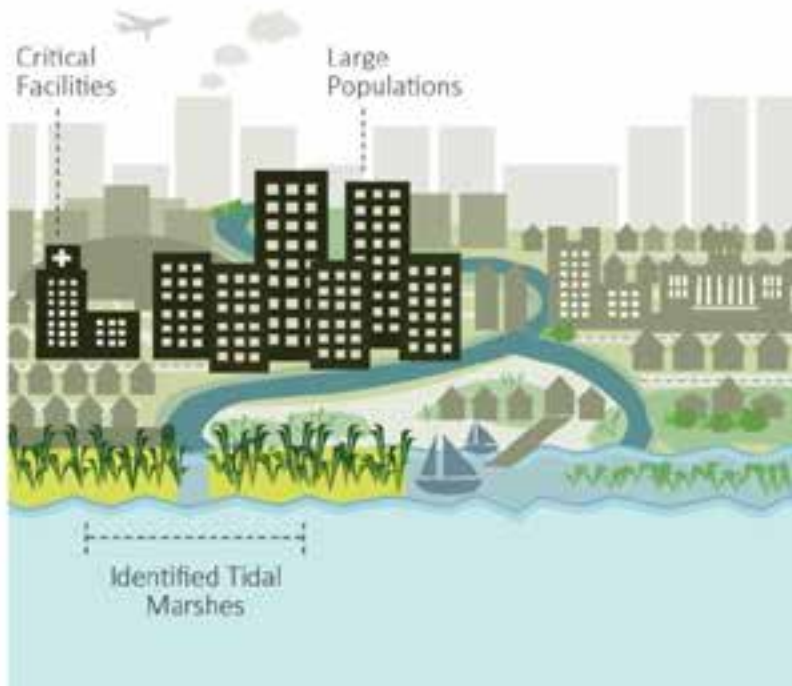


# Tools to Visualize Ecological Risk



# Tools to Identify Solutions

**Scenario A:** Highlights marshes that reduce flood risk to critical facilities and number of people exposed.



**Scenario B:** Highlights marshes that reduce flood risk to building costs and amount of roads exposed.



# Tools to Identify Solutions

The screenshot displays the Habitat Explorer web application interface. At the top, navigation tabs include "COASTAL RESILIENCE", "NEW YORK & CONNECTICUT", "GET STARTED", "TOOL", "GO TO", "The Nature Conservancy", "Features", and "Legal Disclaimers". A left sidebar contains icons for "Map Layers", "Flood Risk Level Risk", "Habitat Explorer", "Community Planning", "Future Habitat", "Search (New)", "Full View", and "New & Share". The main content area features a "Habitat Explorer" panel with a "NY & CT" dropdown and instructions: "Modify the sliders to change the values on the map (refresh takes a couple seconds)". It includes a "Toggle Marsh Status on or off" checkbox and several sliders for "Ecological Variables (weight)" and "Socioeconomic Variables (weight)".

**Ecological Variables (weight):**

- Marsh Size: Low, Medium, High
- Usefulness of Shoreline Armoring: Low, Medium, High

**Socioeconomic Variables (weight):**

- Cost of Buildings Exposed: Low, Medium, High
- Amount of Critical Facilities Exposed: Low, Medium, High
- Amount of Roads Exposed: Low, Medium, High
- Amount of People Exposed: Low, Medium, High
- Average Flood Vulnerability: Low, Medium, High

A "Map Legend" in the bottom right corner shows a color scale for "Habitat Explorer - NY & CT" with "Low" (light green) and "High" (dark blue) categories. The background map shows a coastal area with various colored overlays representing different risk levels. An "esri" logo is visible in the bottom right corner.

# Implementation

## **NYS 2100 COMMISSION**

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Recommendations to Improve  
the Strength and Resilience of  
the Empire State's Infrastructure



# Tools to Identify Solutions

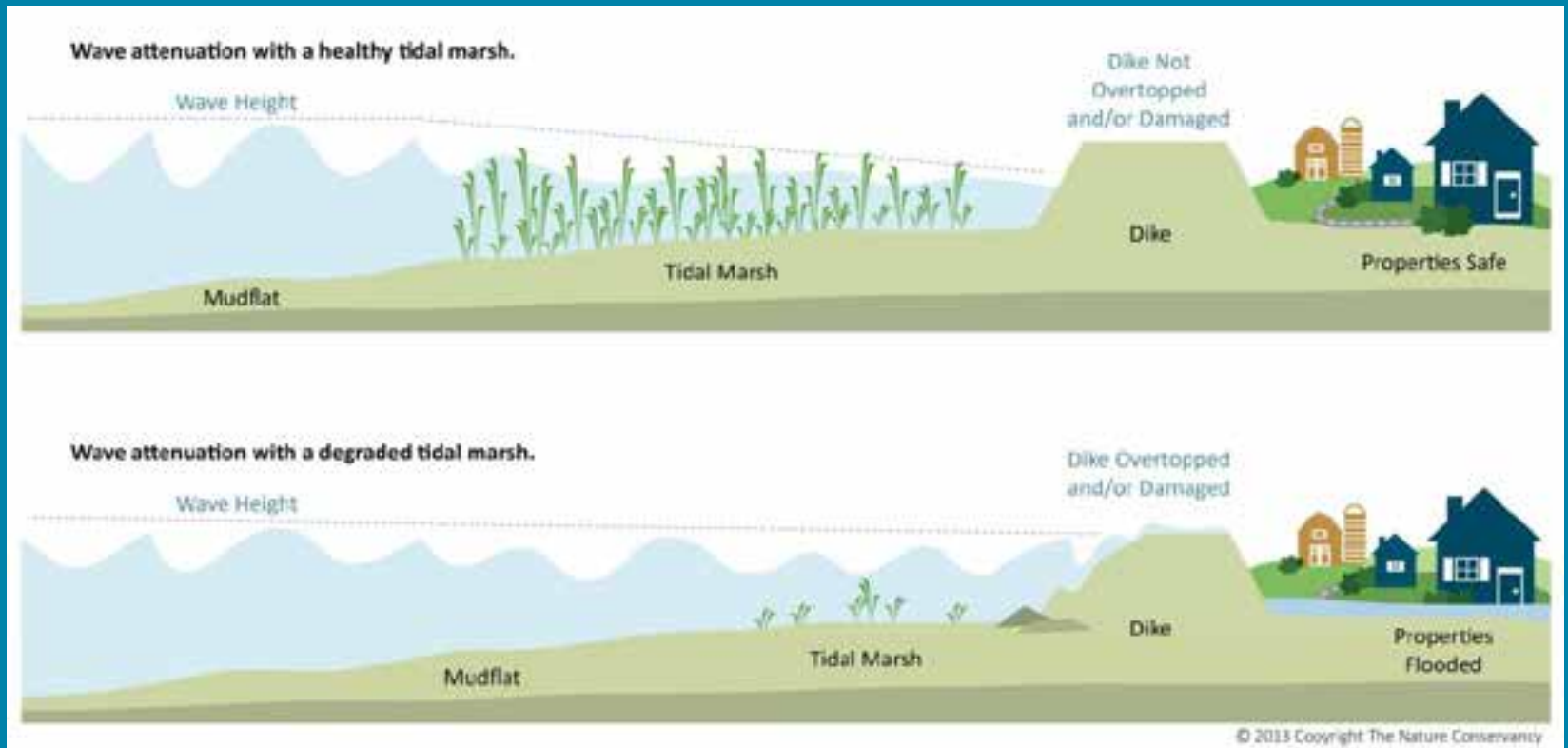
The screenshot displays a web-based map interface for coastal resilience. At the top, a navigation bar includes the following elements: "COASTAL RESILIENCE", "GULF OF MEXICO", "GET STARTED", "TOUR", "GO TO ▾", "The Nature Conservancy", "Partners", and "Legal Disclosure".

On the left side, a vertical sidebar contains several tool icons and labels: "Map Layers", "Coastal Defense", "Restoration Explorer", "Risk Explorer", "Community Planning", "Switch To Map 2", "Split View", "Save & Share", and "Export Page".

The main map area shows a topographic view of the Gulf of Mexico region, including parts of Texas, Louisiana, and Mexico. Key geographical features and cities are labeled, such as "EDWARDS PLATEAU", "Chihuahua", "Monterrey", "San Antonio", "Houston", "Austin", "Dallas", "New Orleans", "Baton Rouge", "Guadalajara", "Mexico City", and "Veracruz". A search bar at the top left of the map area is labeled "Search by Address" and contains the text "Ciudad".

In the bottom right corner, there is a "Map Legend" panel, which is currently empty. The Esri logo is visible in the bottom right corner of the map area.

# Tools to Identify Solutions



# Tools to Identify Solutions

COASTAL RESILIENCE | PUGET SOUND, WASHINGTON

GET STARTED | The Nature Conservancy | Partners | Legal Disclosure | Tour

Map Layers

Coastal Defense

Map 1

Map 2

Split View

Save & Share

Export Page

Search by Address

Topographic

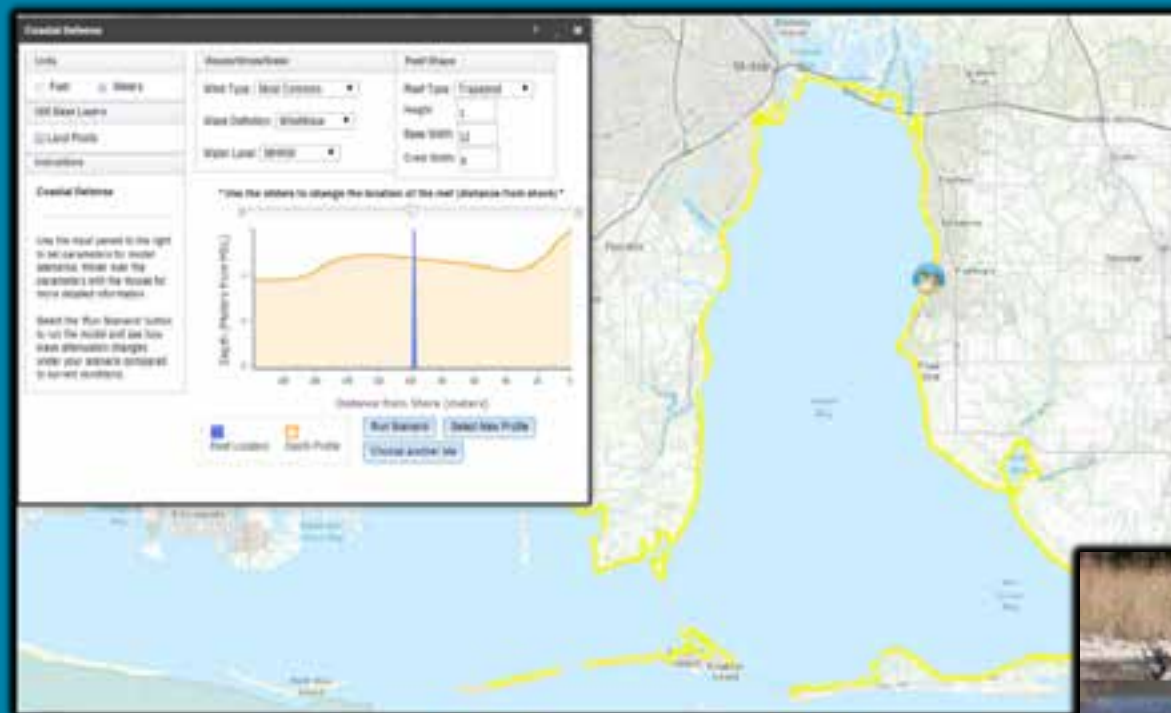
The image shows a web-based map interface for coastal resilience planning in the Puget Sound region of Washington. The map is a topographic view showing terrain elevation, water bodies, and major cities including Vancouver, Seattle, Tacoma, and Everett. A search bar at the top left allows for address-based searches. On the left side, there is a vertical toolbar with icons for map layers, coastal defense, and navigation. The top navigation bar includes 'COASTAL RESILIENCE', 'PUGET SOUND, WASHINGTON', and links for 'GET STARTED', 'The Nature Conservancy', 'Partners', 'Legal Disclosure', and 'Tour'. The map interface includes a search bar, a 'Topographic' map style selector, and a vertical toolbar on the left with icons for map layers, coastal defense, and navigation. The map shows various cities and parks, with a hand cursor pointing to a location on the western coast of the Puget Sound.



# Implementation



# Tools to Identify Solutions



RESTORE  
COASTAL  
ALABAMA  
100-1000



# Data Visualization at All Scales



Town of Guilford  
Community Coastal Resilience Plan  
July 15, 2018

Prepared by:  
Town of Guilford  
30 Harbor Road  
Guilford, Connecticut 06430

**Guilford**  
Town of Guilford  
Guilford, Connecticut

Partial funding provided by the National Oceanic and Atmospheric Administration (NOAA) through the Gulf of Maine Coastal Program (GOMCP) and the National Coastal Resilience Program (NCRP) as part of the Gulf of Maine Coastal Resilience Program - Resilient Communities and Resilient Ecosystems for People and Ecosystems in the Gulf of Maine.

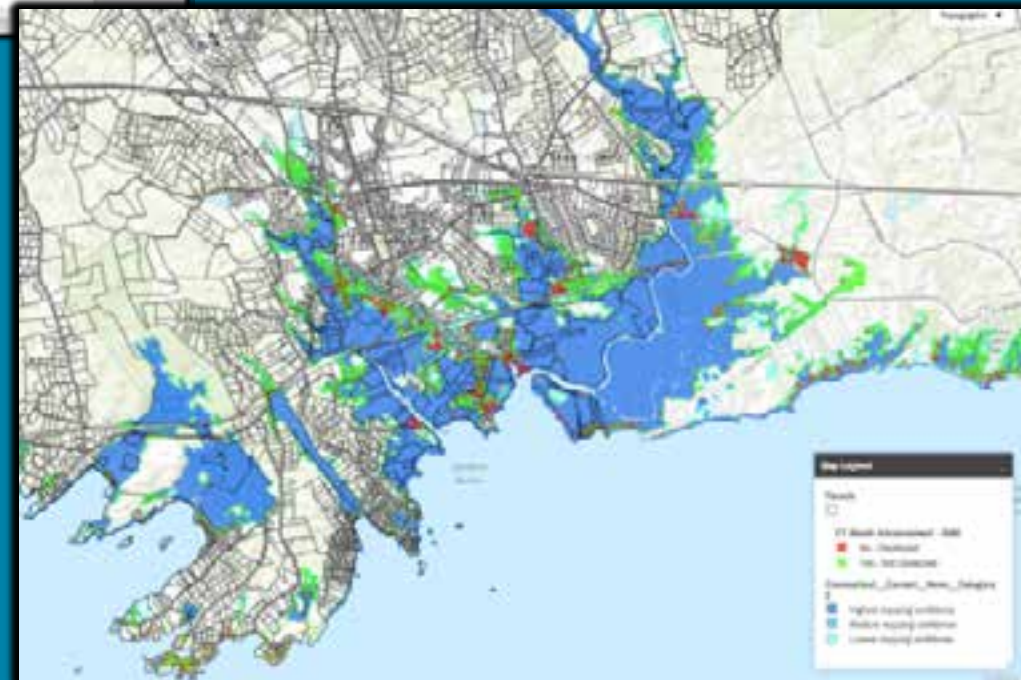
**Gulf of Maine Coastal Resilience**

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New Haven, CT 06510  
www.nature.org

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270 Prospect Street, Room 100  
Guilford, CT 06430

LEED LAB



# So what?



# THANK YOU!

[www.maps.CoastalResilience.org](http://www.maps.CoastalResilience.org)

<https://github.com/CoastalResilienceNetwork>

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laura.flessner@tnc.org

