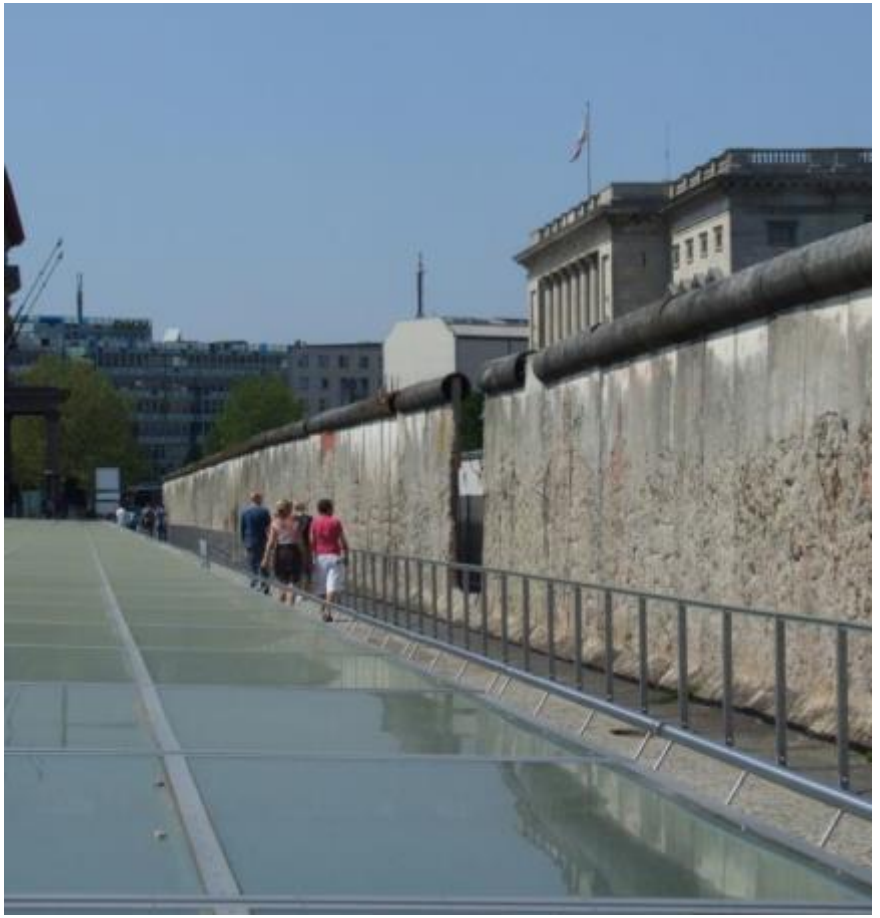
Digital Coast: Geospatial Tools for Coastal Communities

NOAA Hydrographic Services Review Panel
September 17, 2014

Miki Schmidt
Division Chief
Science and Geospatial Services

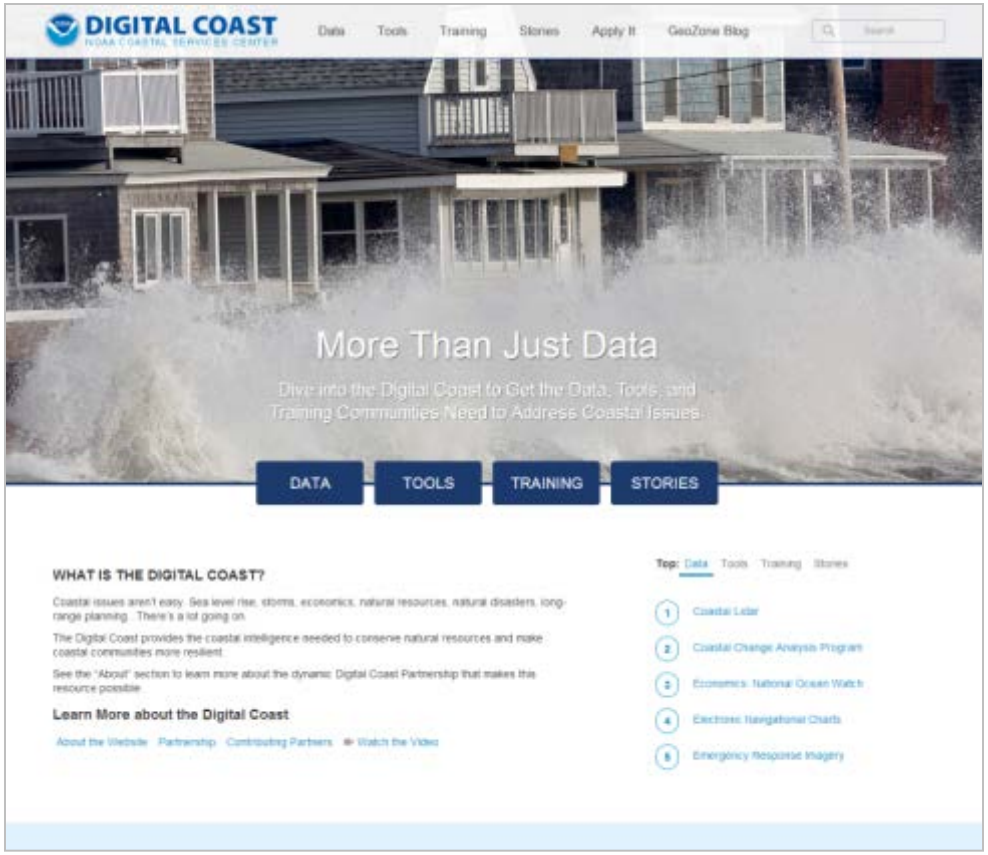
Digital Coast – Addressing Barriers

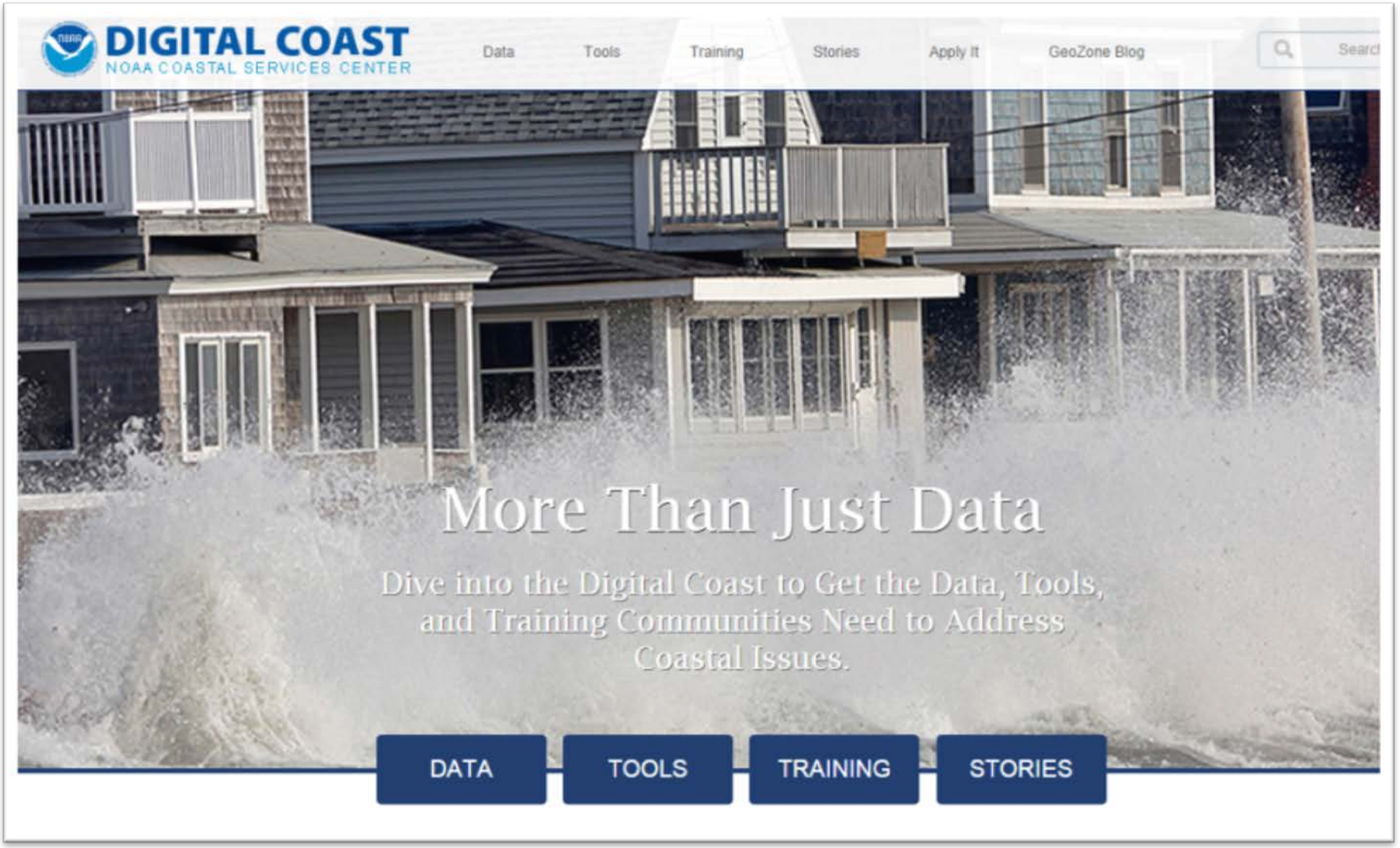
- Coastal data availability
- Data integration and accessibility
- Improved intergovernmental coordination
- Techie and non-techie tools
- Training
- Outreach and awareness



Digital Coast

- **Approach:** Bring the geospatial and coastal management communities together
- **Outcome:** A constituent-driven, integrated, enabling platform supporting coastal resource management that is used




DIGITAL COAST
NOAA COASTAL SERVICES CENTER
Data
Tools
Training
Stories
Apply It
GeoZone Blog
Search
More Than Just Data
Dive into the Digital Coast to Get the Data, Tools, and Training Communities Need to Address Coastal Issues.
DATA
TOOLS
TRAINING
STORIES

DIGITAL COAST
NOAA COASTAL SERVICES CENTER

Data | Tools | Training | Stories | Apply It | GeoZone Blog | Search

Sea Level Rise and Coastal Flooding Impacts Viewer

Contributing Partners: NOAA Coastal Services Center

Overview | In Action | Support | Get It Now

Launch Viewer

Being able to visualize potential impacts from sea level rise is a powerful teaching and planning tool, and the Sea Level Rise Viewer brings this capability to coastal communities. A slider bar is used to show how various levels of sea level rise will impact coastal communities. Additional coastal counties will be added in the near future. Maps are not currently available for Alaska and Louisiana due to elevation data accuracy, hydraulic complexity, and vertical datum transformation gaps.

Features

- **Displays** potential future sea levels
- **Provides** simulations of sea level rise at local landmarks
- **Communicates** the spatial uncertainty of mapped sea levels
- **Models** potential marsh migration due to sea level rise
- **Overlays** social and economic data onto potential sea level rise
- **Examines** how tidal flooding will become more frequent with sea level rise

Acknowledgments

The NOAA Coastal Services Center would like to acknowledge those organizations that provided direct content for this tool or feedback, ideas, and reviews over the course of the tool's development. Specifically, the Center acknowledges the following groups

Videos

- Tool Overview
- First Time Tips

Digital Coast Webinar Series

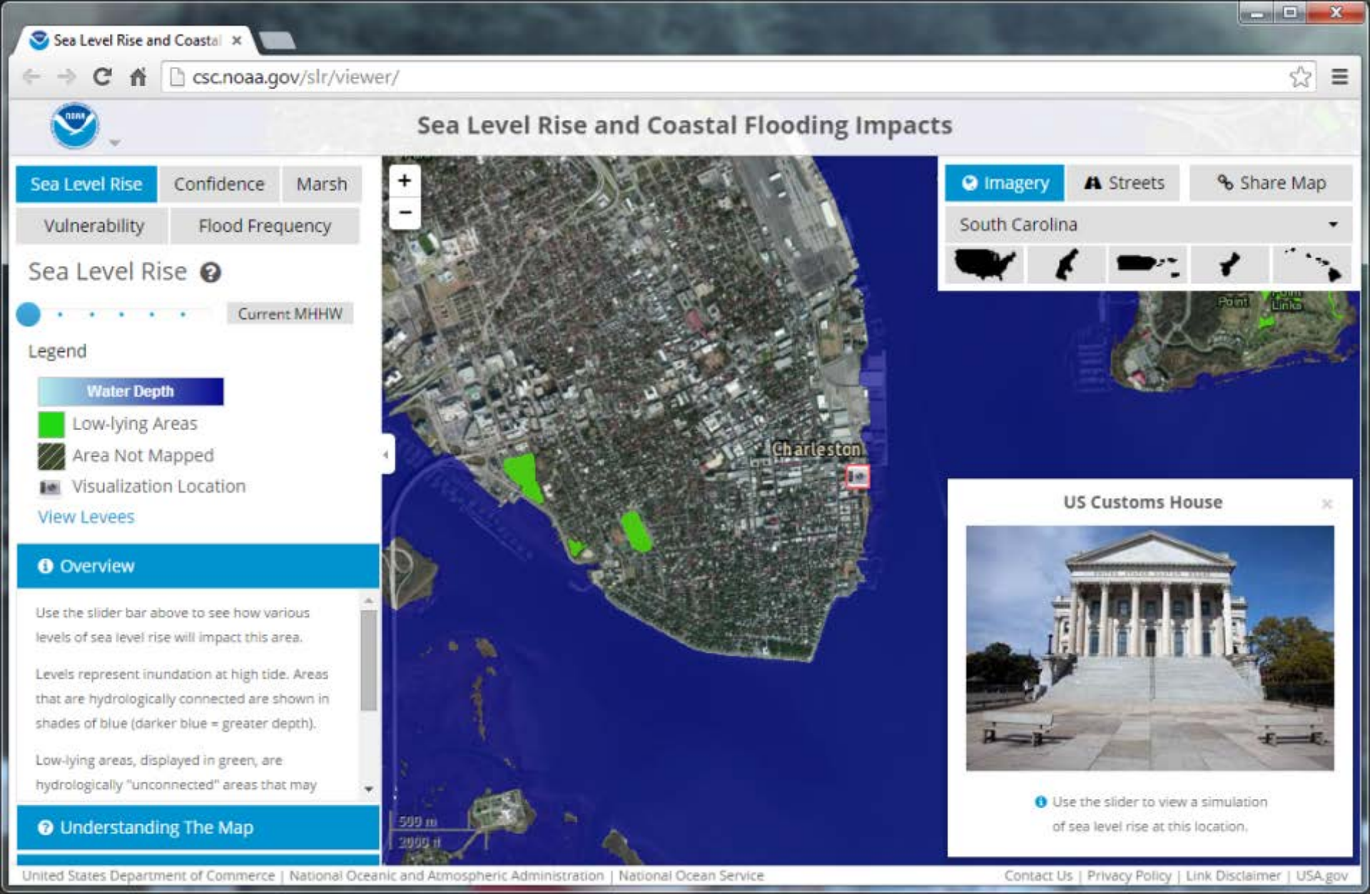
Mapping and Visualizing Sea level Rise and Coastal Flooding Impacts
View recorded webinar

Related Data

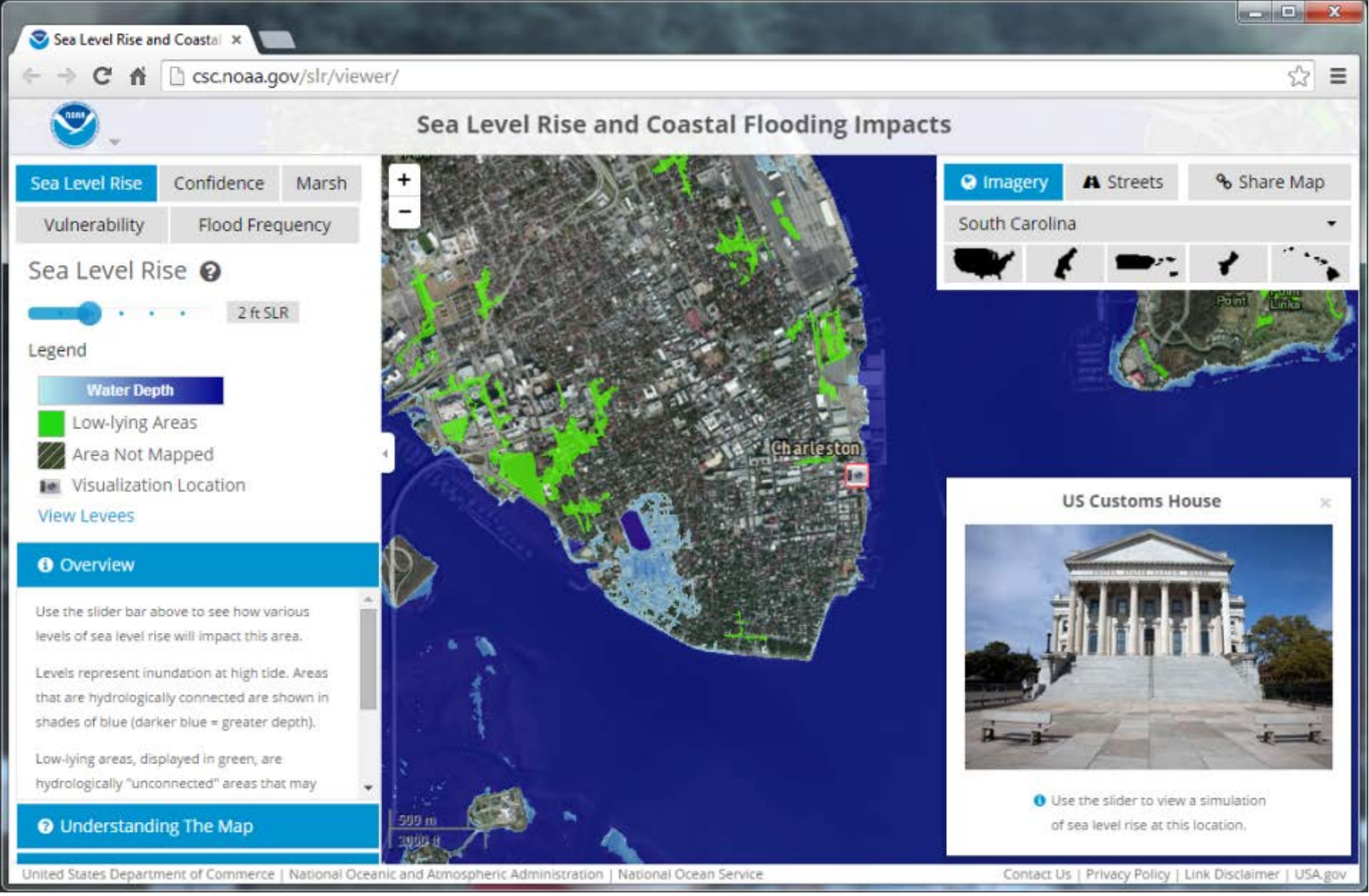
- Coastal Lidar
- Social Vulnerability Index (SOVI)

Related Training

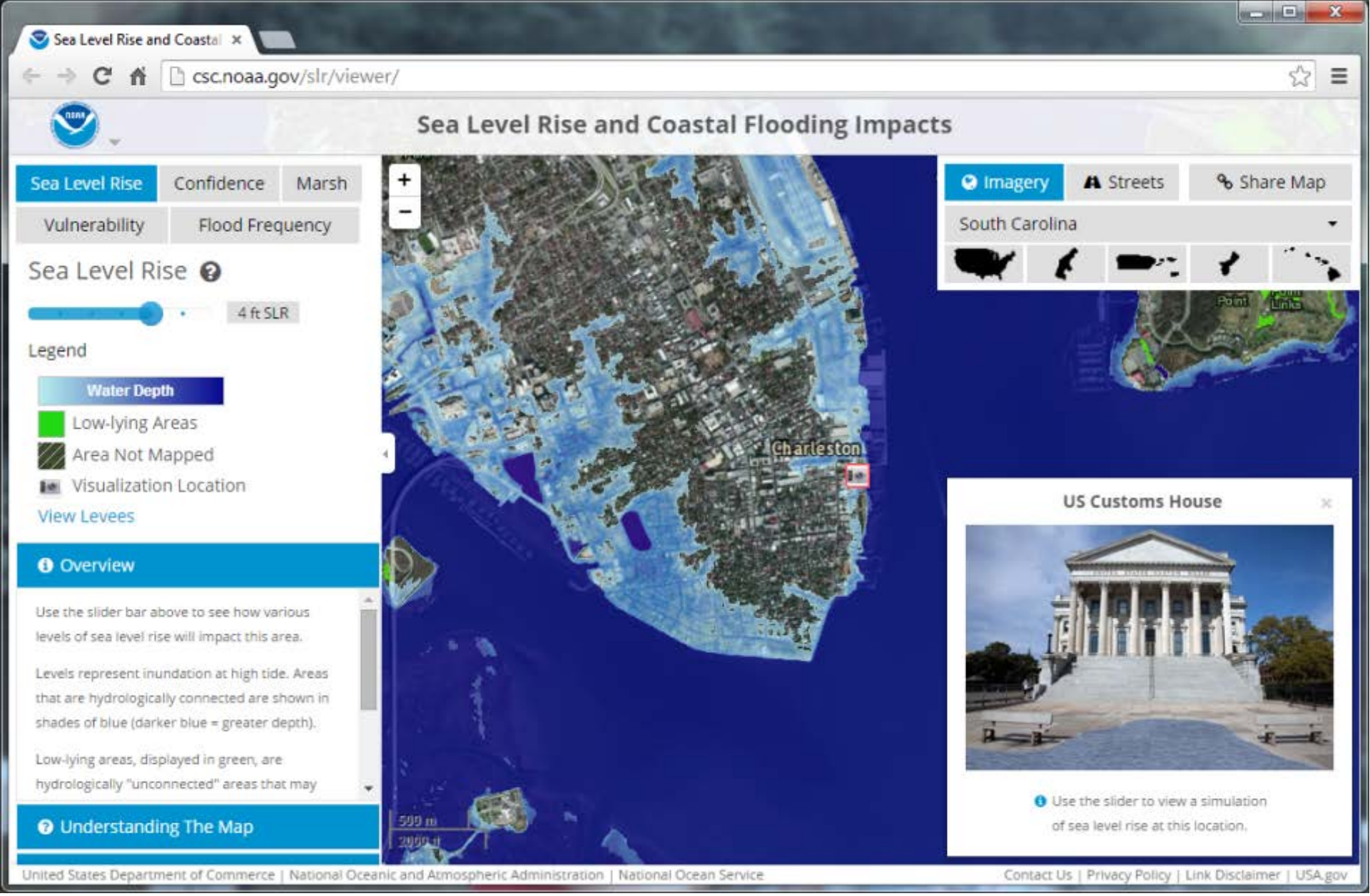
- Climate Adaptation for Coastal Communities
- Coastal Inundation Mapping



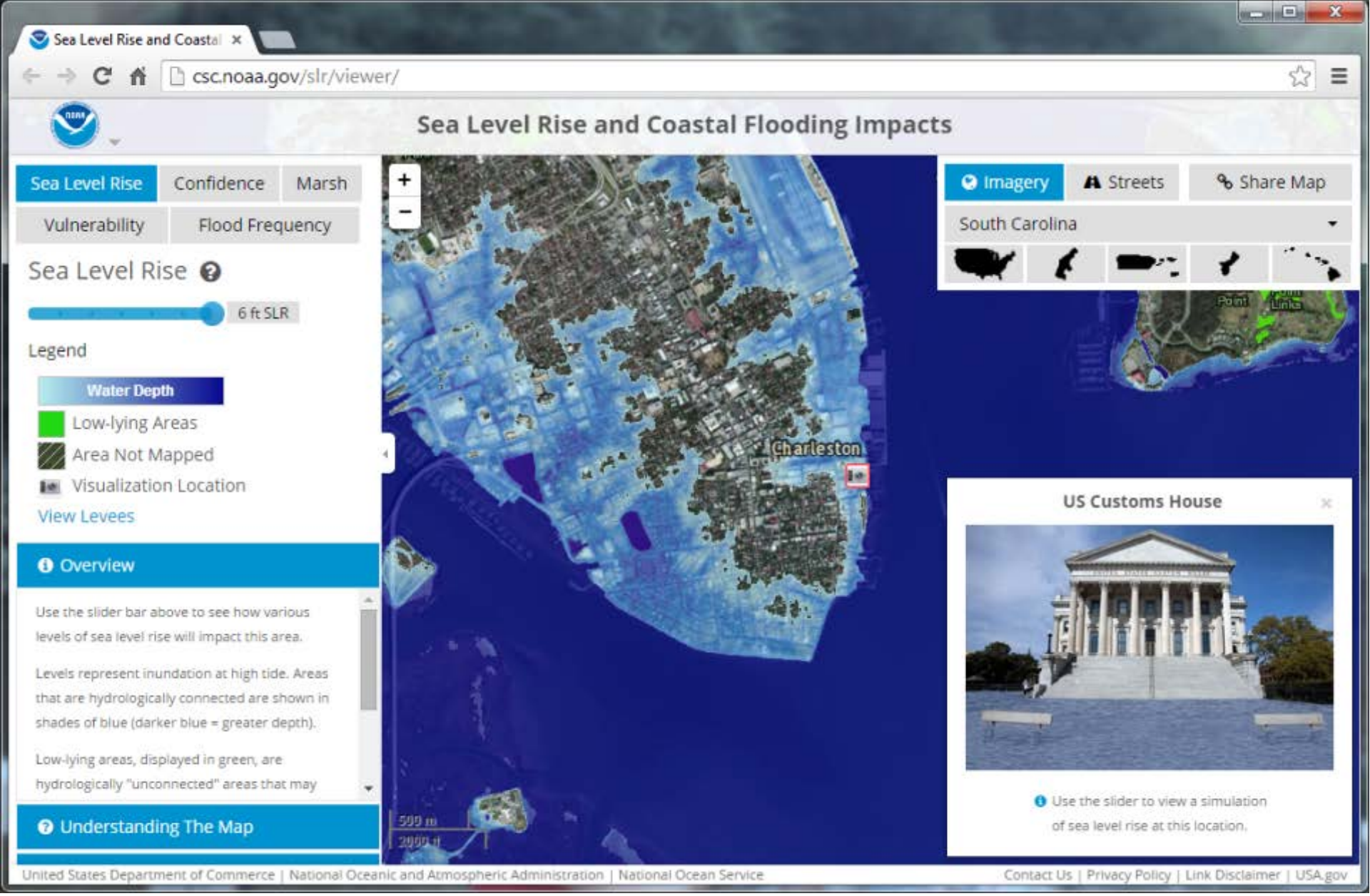
Office of Ocean and Coastal Resource Management | Coastal Services Center



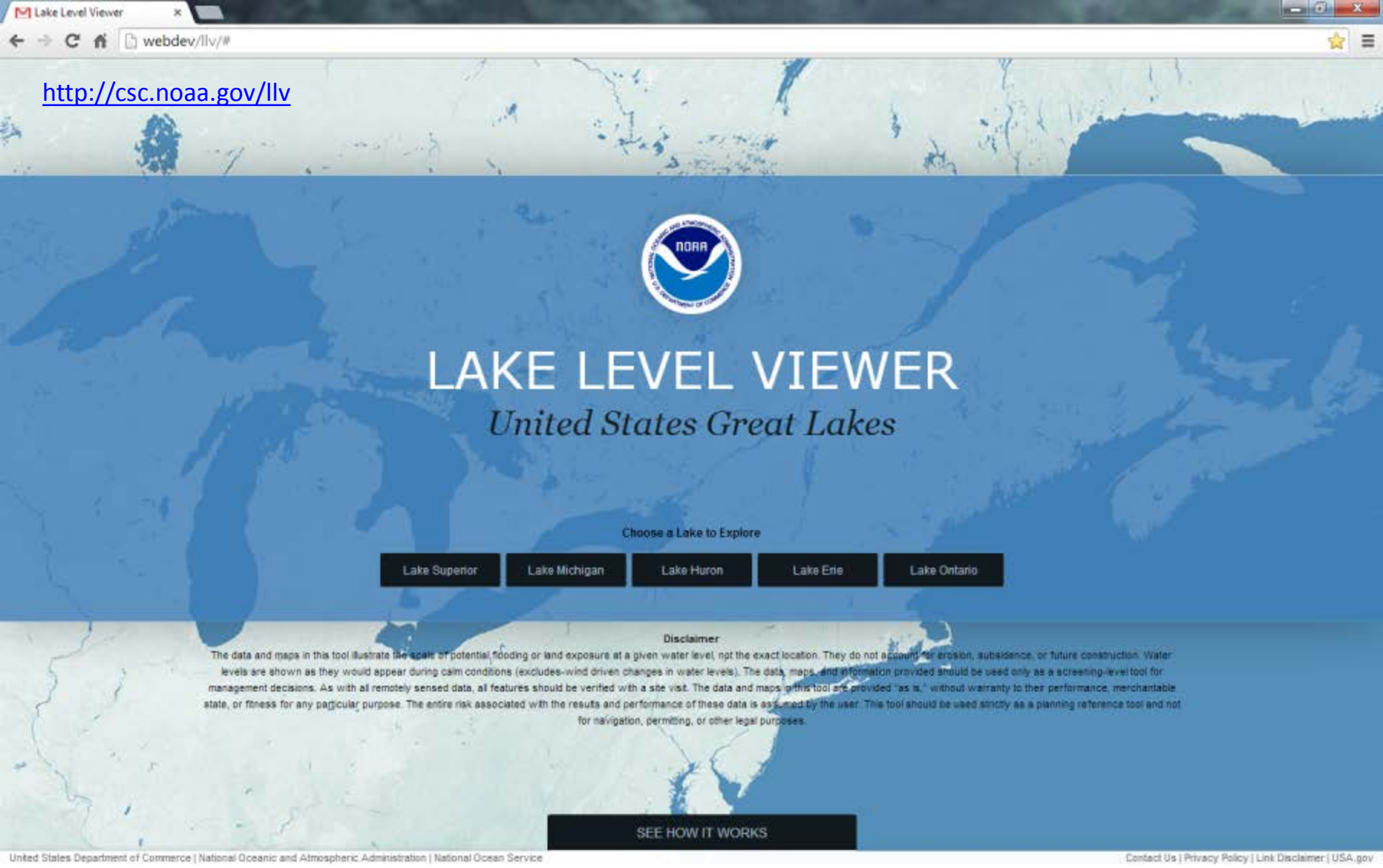
Office of Ocean and Coastal Resource Management | Coastal Services Center

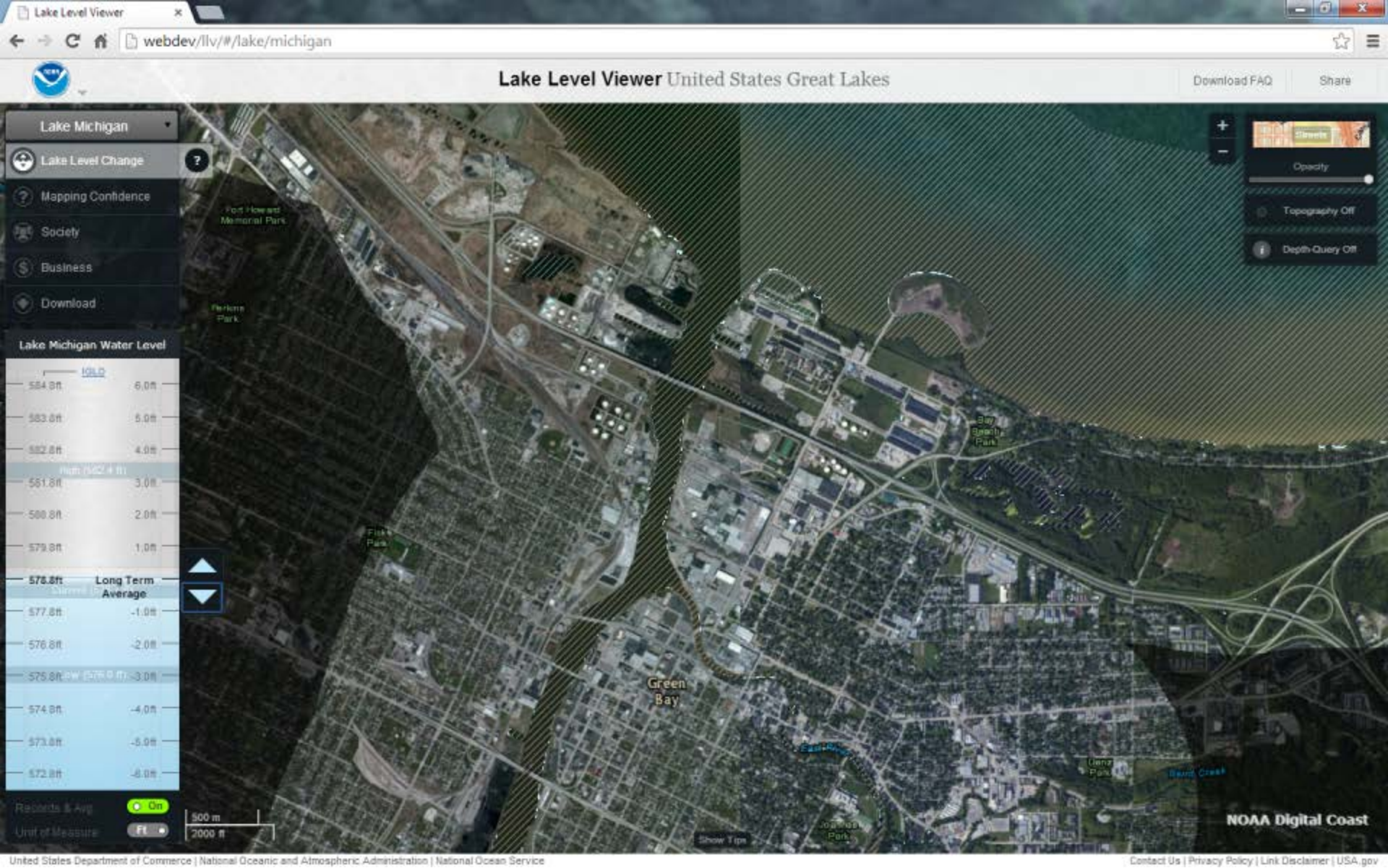


Office of Ocean and Coastal Resource Management | Coastal Services Center

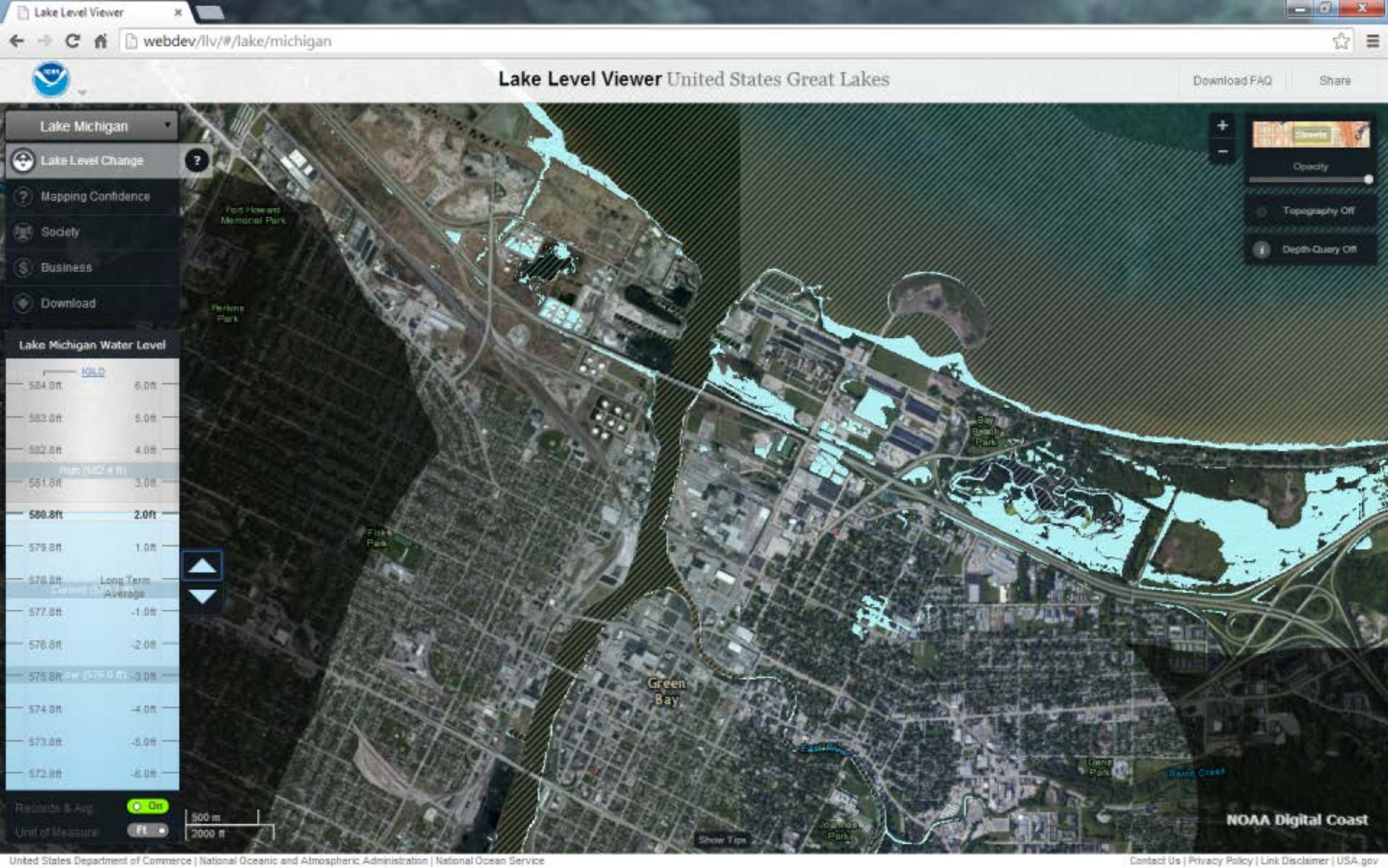


Office of Ocean and Coastal Resource Management | Coastal Services Center

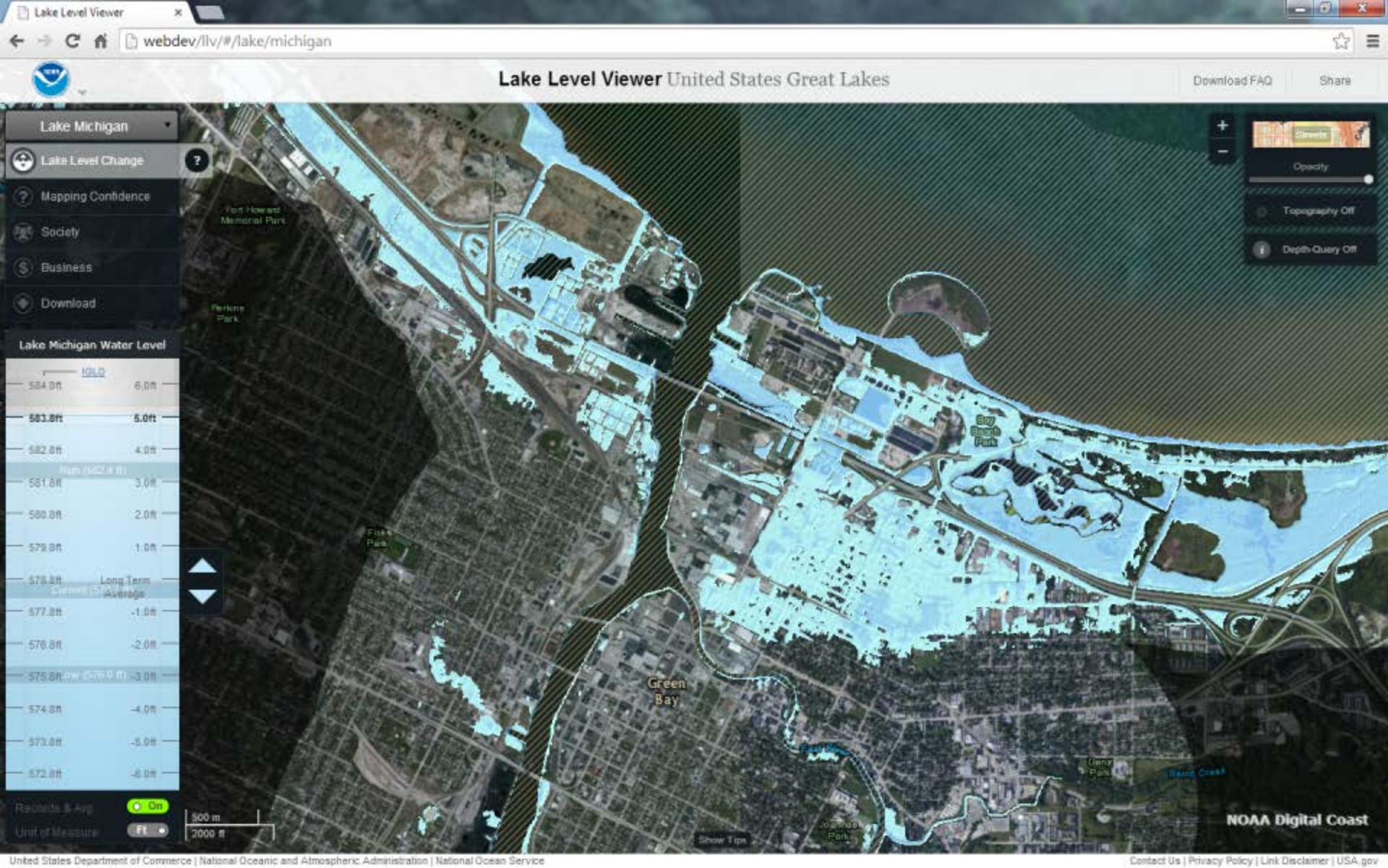

Lake Level Viewer
webdev/llv/#
http://csc.noaa.gov/llv
LAKE LEVEL VIEWER
United States Great Lakes
Choose a Lake to Explore
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
Disclaimer
The data and maps in this tool illustrate the scale of potential flooding or land exposure at a given water level, not the exact location. They do not account for erosion, subsidence, or future construction. Water levels are shown as they would appear during calm conditions (excludes wind driven changes in water levels). The data, maps, and information provided should be used only as a screening-level tool for management decisions. As with all remotely sensed data, all features should be verified with a site visit. The data and maps in this tool are provided "as is," without warranty to their performance, merchantable state, or fitness for any particular purpose. The entire risk associated with the results and performance of these data is assumed by the user. This tool should be used strictly as a planning reference tool and not for navigation, permitting, or other legal purposes.
SEE HOW IT WORKS
United States Department of Commerce | National Oceanic and Atmospheric Administration | National Ocean Service
Contact Us | Privacy Policy | Link Disclaimer | USA.gov



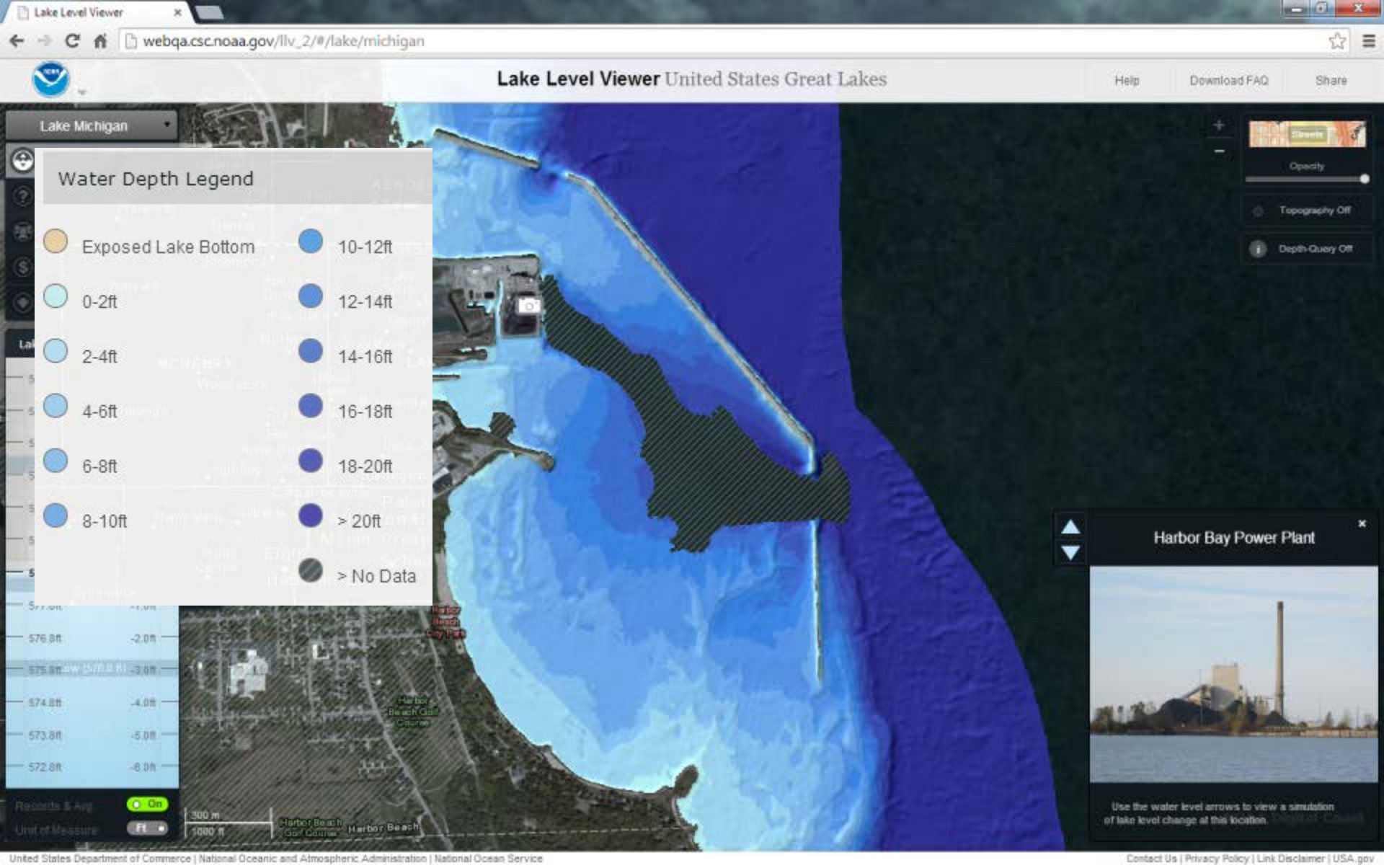
Office of Ocean and Coastal Resource Management | Coastal Services Center



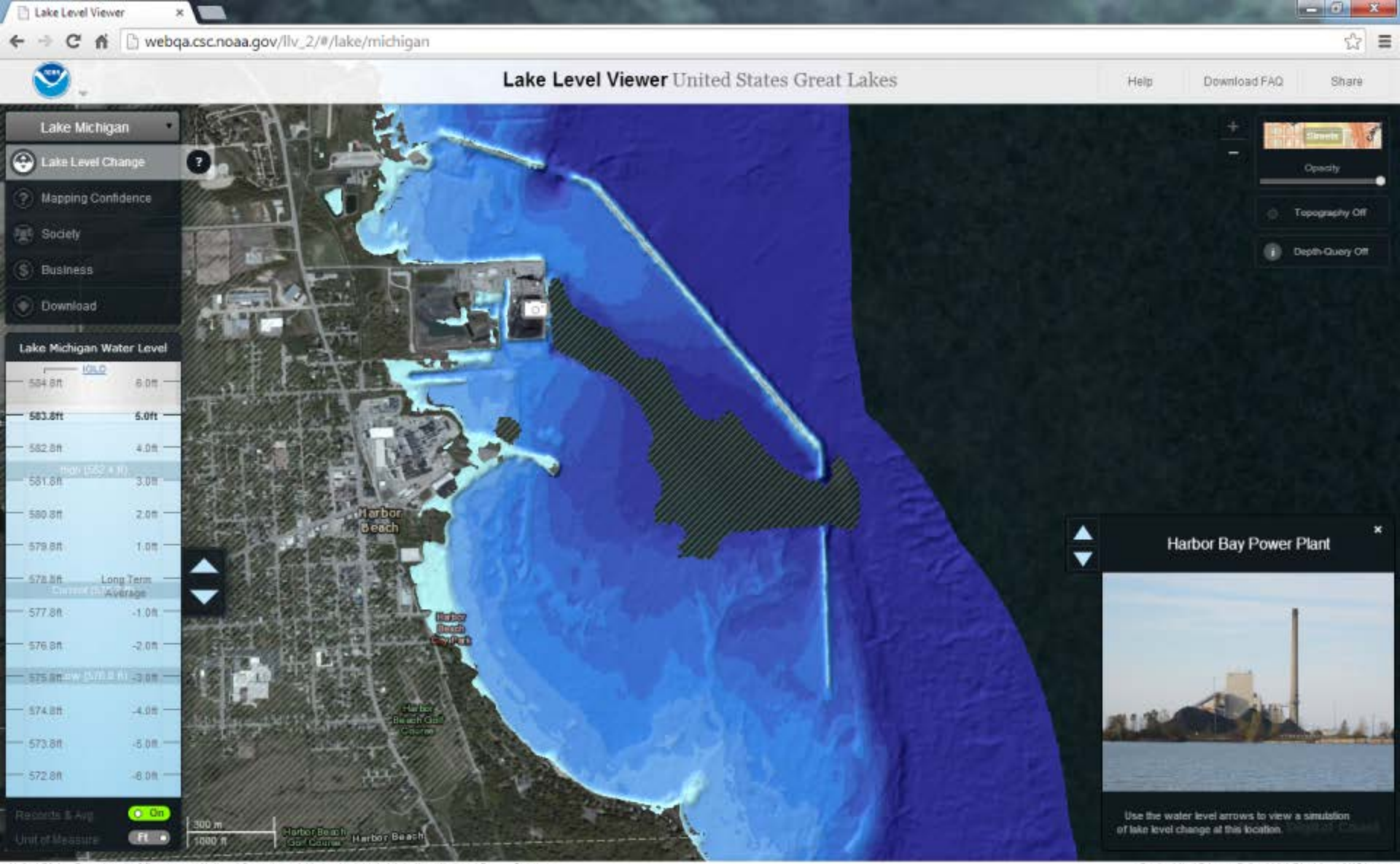
Office of Ocean and Coastal Resource Management | Coastal Services Center



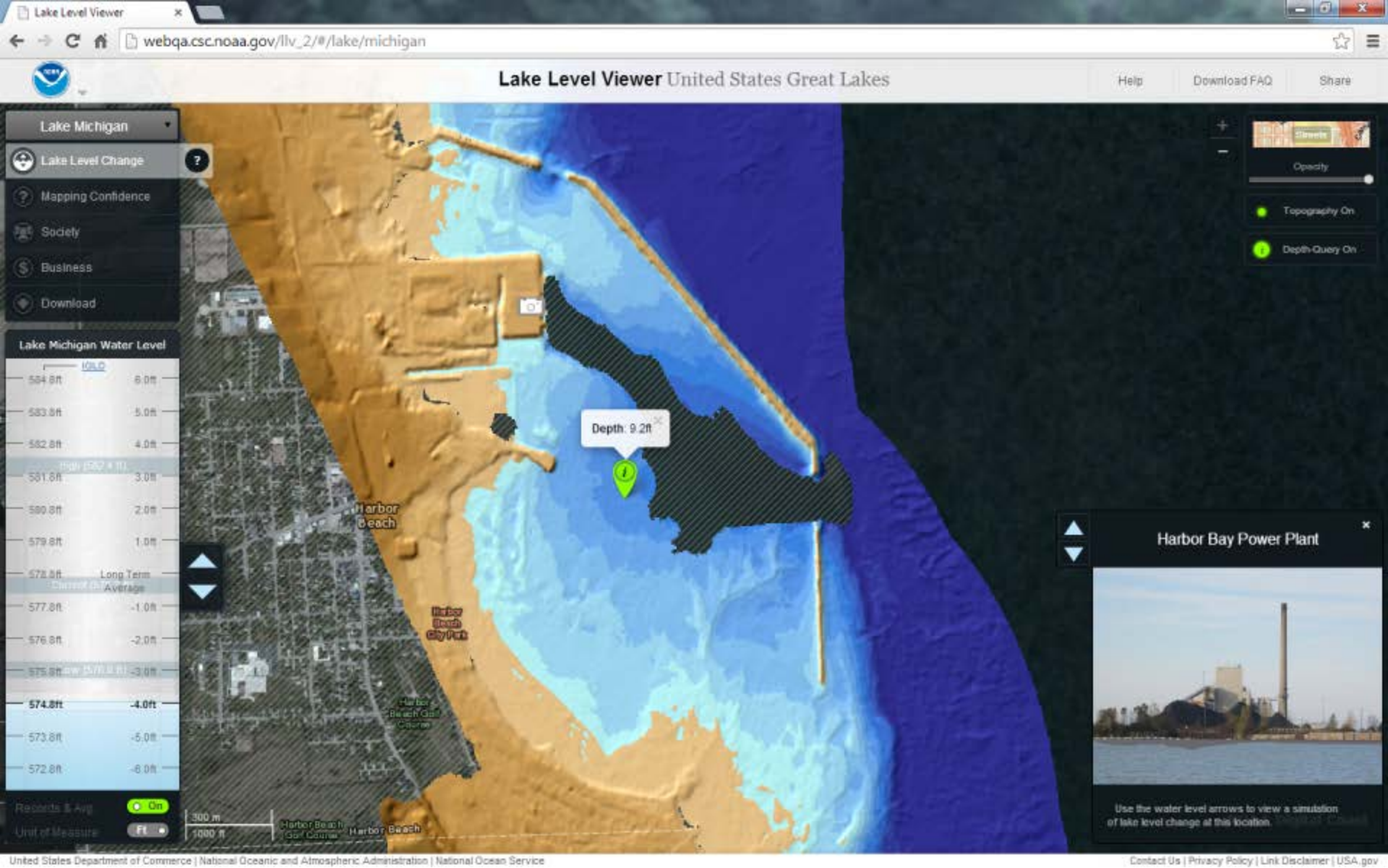
Office of Ocean and Coastal Resource Management | Coastal Services Center



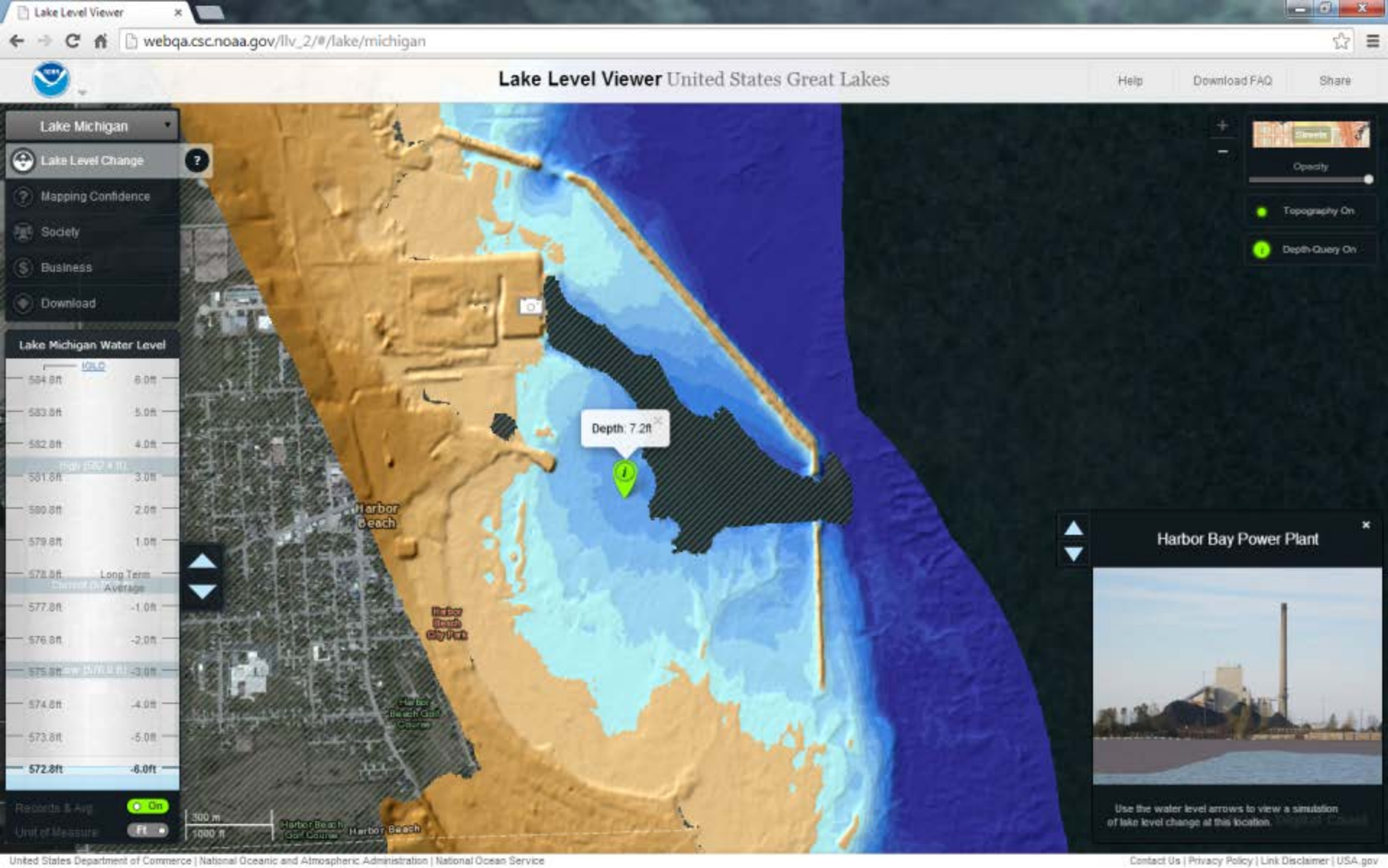
Office of Ocean and Coastal Resource Management | Coastal Services Center



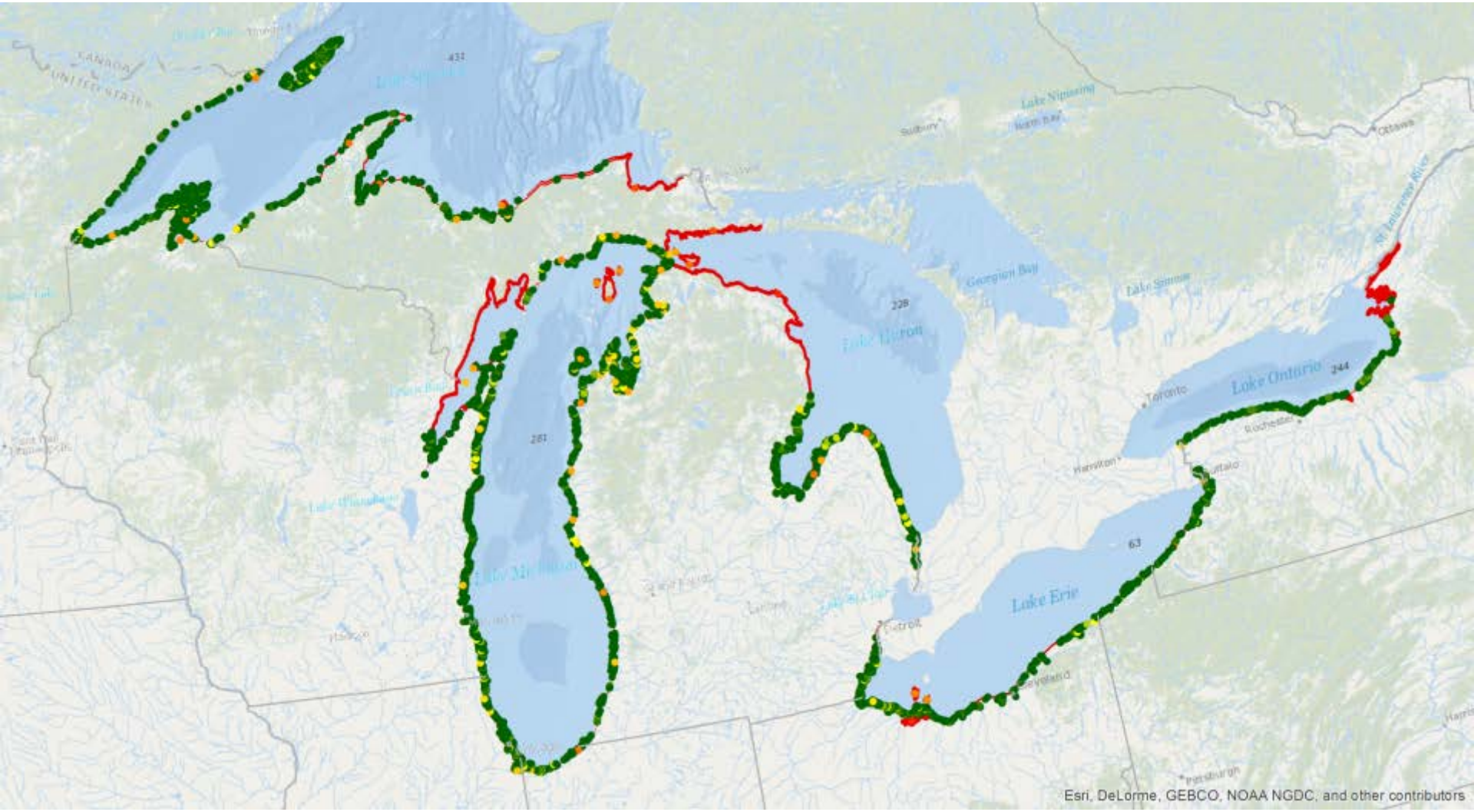
Office of Ocean and Coastal Resource Management | Coastal Services Center



Office of Ocean and Coastal Resource Management | Coastal Services Center


Lake Level Viewer
webqa.csc.noaa.gov/llv_2/#/lake/michigan
Lake Level Viewer United States Great Lakes
Help
Download FAQ
Share
Lake Michigan
Lake Level Change
Mapping Confidence
Society
Business
Download
Lake Michigan Water Level
584.8ft 6.0ft
583.8ft 5.0ft
582.8ft 4.0ft
581.8ft 3.0ft
580.8ft 2.0ft
579.8ft 1.0ft
578.8ft Long Term Average
577.8ft -1.0ft
576.8ft -2.0ft
575.8ft -3.0ft
574.8ft -4.0ft
573.8ft -5.0ft
572.8ft -6.0ft
Opacity
Topography On
Depth-Query On
Depth: 7.2ft
Harbor Beach
Harbor Bay Power Plant
Use the water level arrows to view a simulation of lake level change at this location.
300 m
1000 ft
United States Department of Commerce | National Oceanic and Atmospheric Administration | National Ocean Service
Contact Us | Privacy Policy | Link Disclaimer | USA.gov

Gaps Within Coverage

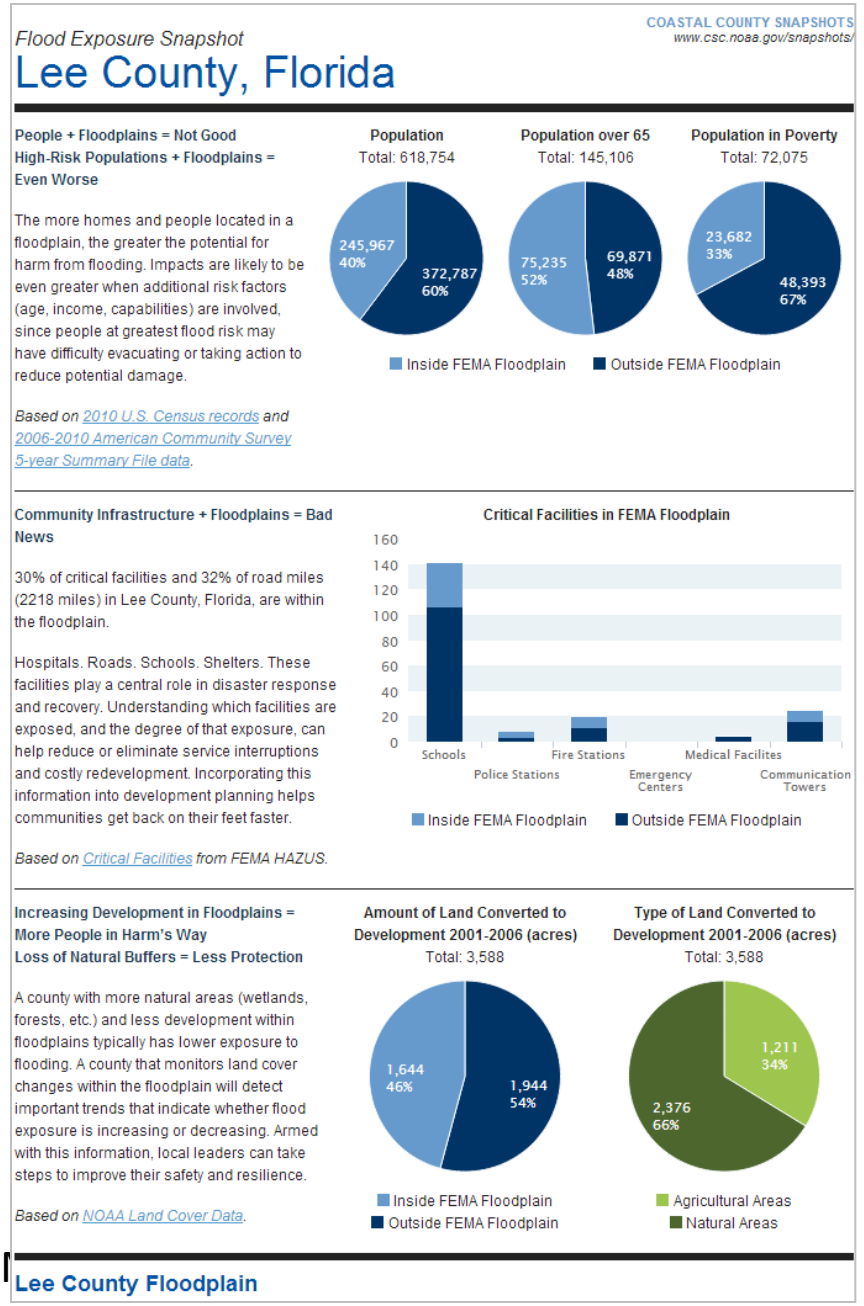


County Snapshots

Offi

Flood Exposure Snapshot

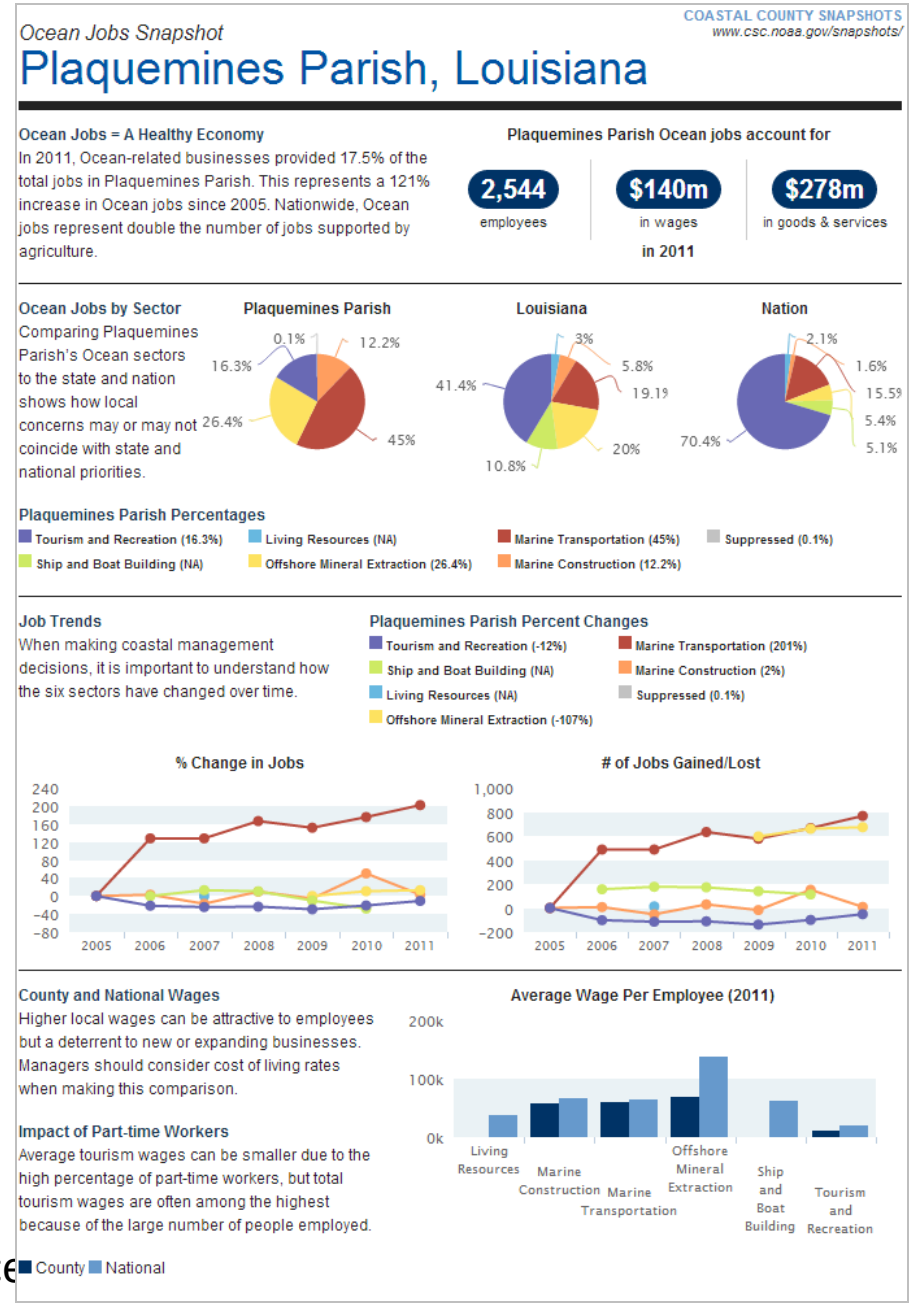
- Provides information on flood risk related to:
  - Vulnerable populations
  - Critical facilities
  - Land cover change over time
- Based on data obtained from FEMA, U.S. Census, and NOAA



Office of Ocean and Coastal Resource M

Ocean Jobs Snapshot

- Provides quick visuals and statistics related to the ocean economy for the Economics: National Ocean Watch (ENOW) coastal counties
- Provides big picture context that allows you to quickly see how you compare to the state and nation



Office of Ocean and Coastal Resource

DIGITAL COAST
NOAA COASTAL SERVICES CENTER

Data | Tools | Training | Stories | Apply It | GeoZone Blog

Port Resilience Planning Tool

Overview

When officials plan for the infrastructure of port communities, a clear focus on resilience will pay off many times over in terms of safety and economic stability. This prototype tool provides checklists, maps, and data for assessing resilience in the areas of marine transportation, port communities, and coastal hazards. It is intended for those involved in infrastructure planning for ports and surrounding communities and those responsible for freight-related infrastructure project development or review.

Features

- **Provides** checklists of resilience factors to consider
- **Shows** data on resilience indicators for 26 U.S. port communities
- **Uses** geospatial data to illustrate resilience factors in Tampa Bay, Florida

Launch Now ›

Marine Transportation

Resilience Planning Tool

To be resilient, port communities should have the infrastructure and resources needed to sustain safe, secure, and economically viable marine transportation operations.

Resilience assessment and planning resources in this section help officials answer the following questions:

Water-Side Capacity

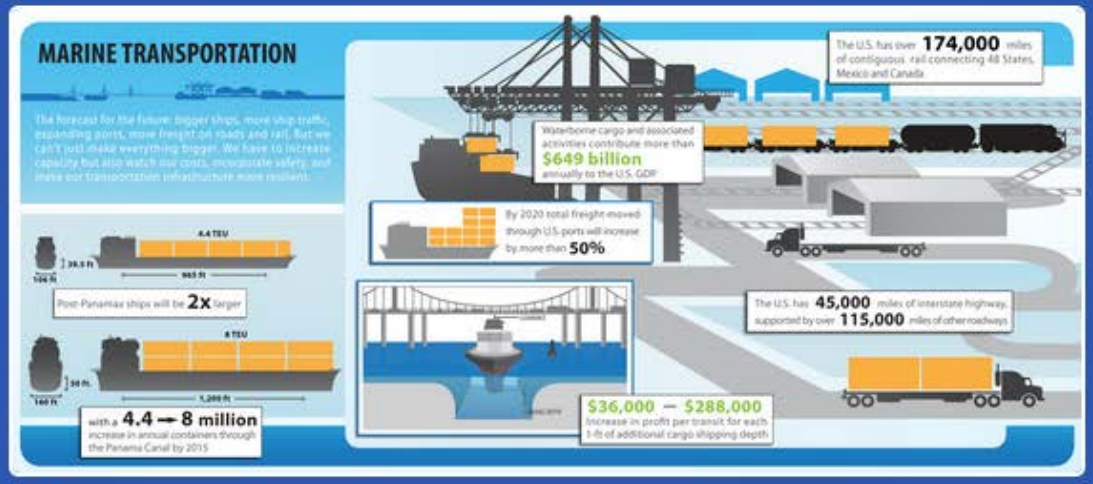
Does the water side of the marine transportation system infrastructure have adequate capacity to support current and projected freight transportation demands?

Land-Side Capacity

Does the land side of the marine transportation system infrastructure have adequate capacity to support current and projected freight transportation demands?

Transportation Safety

Does the marine transportation system infrastructure adequately support current and projected safety needs?



View Sources and Print (PDF)

Port Communities

Resilience Planning Tool

To be resilient, port communities should effectively balance economic, environmental, and societal benefits and costs associated with marine transportation operations.

Resilience assessment and planning resources in this section help officials answer the following questions:

Community Livability

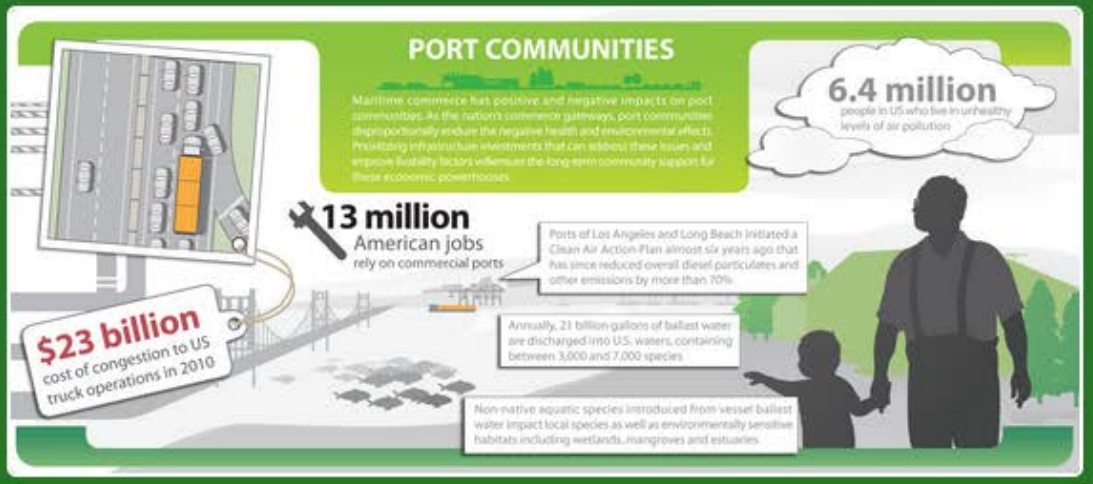
Does the port and surrounding community collaboratively evaluate and address marine transportation system impacts on health, safety and quality of life for local residents?

Natural Resources

Does the port and surrounding community collaboratively address marine transportation system impacts on the health, function and sustainability of critical natural resources?

Economic Development

Does the port and surrounding community collaboratively invest in marine-related economic development, workforce training and community education?



View Sources and Print (PDF)

Coastal Hazards

Resilience Planning Tool

To be resilient, port communities should be able to keep marine transportation moving, businesses open, and people working despite impacts from hazardous events.

Resilience assessment and planning resources in this section help officials answer the following questions:

Hazard Risks

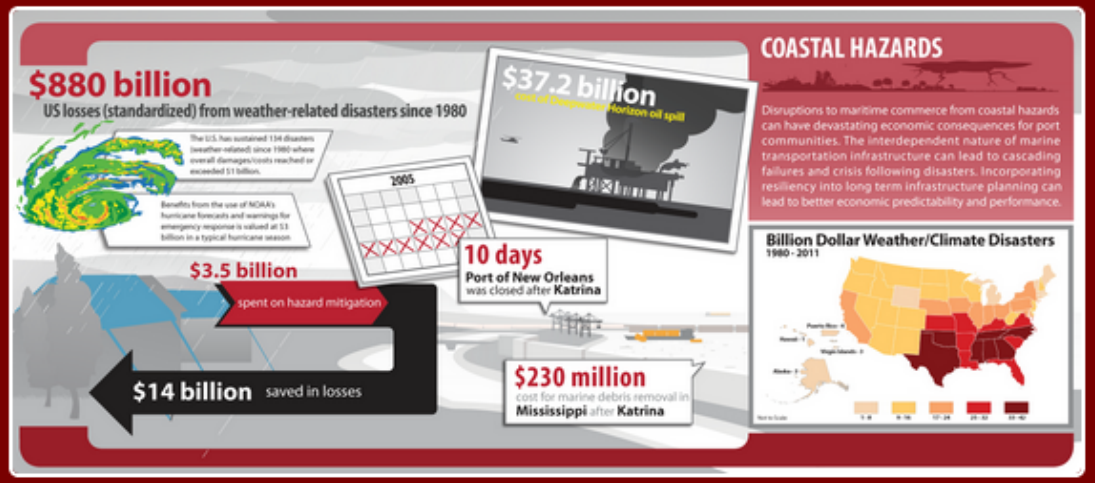
Does the port and surrounding community collaboratively evaluate and address marine transportation system impacts on health, safety and quality of life for local residents?

Community Vulnerabilities

Does the port community adequately address key physical, social, and economic vulnerabilities that increase disaster impacts or delay disaster recovery of the marine transportation system?

Disaster Responses

Does the port and surrounding community collaborate effectively on disaster response, recovery, and mitigation to improve marine transportation resilience?



View Sources and Print (PDF)

Hazard Risks Port Profiles

Resilience Planning Tool

Checklist | Port Profiles | Local Maps | Local Story

Charleston, SC

Hurricane, Severe Storm
Most Frequent Disasters

5
Presidential Disaster Declarations (1964-2011)

Medium
Probability of High Water Level Events

High
Probability of Low Water Level Events

Related Data and References

Community Vulnerabilities Port Profiles

Resilience Planning Tool

Checklist | Port Profiles | Local Maps | Local Story

Charleston, SC

21%
Population Change (2000-2010)

14%
Population Over 65 (2010)

14%
Population in Poverty (2010)

1,730 acres
Agricultural Land Lost To Development (1996-2006)

15,850 acres
Natural Lands Lost To Development (1996-2006)

Related Data and References

Community Vulnerabilities Local Maps

Resilience Planning Tool

Checklist | Port Profiles | Local Maps | Local Story

Coastal Flood Risk

Ports and surrounding communities that are aware of their vulnerabilities tend to incur fewer losses from coastal hazards. As with many low-lying coastal areas, the Tampa Bay region is particularly vulnerable to coastal flooding.

The map shows the FEMA flood zone in blue.

Related Data and References

Community Vulnerabilities Local Maps

Resilience Planning Tool

Checklist | Port Profiles | Local Maps | Local Story

Development Vulnerabilities

Floodplains with more natural landscapes and less urban development typically have a lower exposure to flooding. Local planners can take steps to improve their resilience by monitoring land cover changes within the floodplain, allowing them to detect trends that indicate an increase in flood exposure. In Pinellas, Hillsborough, and Manatee Counties, 941 out of 6,070 acres (16%) of land developed from 2001 to 2006 were in the FEMA floodplain.

The map shows the areas converted to development (red) and the flood zone (blue).

Related Data and References

Digital Coast - An Enabling Platform Facilitating Use and Application

DISCOVER

Information on the C-CAP land cover data set on the Digital Coast website

DOWNLOAD

Land cover data for your community via the Data Access Viewer

MAP

Develop mash-ups with ESRI and OGC map services

ANALYZE

Change in your county with the Land Cover Atlas

LEARN

From data experts through recorded webinars

SHARE

Outcomes with others though Stories in the Field

DATA → **INFORMATION** → **ACTION**

Selected Resources

Sea Level Rise Viewer – http://csc.noaa.gov/digitalcoast/tools/slrviewer/

Land Cover Atlas – http://csc.noaa.gov/digitalcoast/tools/lca/

Coastal County Snapshots – http://csc.noaa.gov/digitalcoast/tools/snapshots

Lake Level Viewer - http://www.csc.noaa.gov/llv/

Port Resilience Tool - http://csc.noaa.gov/digitalcoast/tools/port

Coastal Flood Mapper - http://csc.noaa.gov/digitalcoast/tools/flood-exposure

U.S. Interagency Elevation Inventory - http://www.csc.noaa.gov/inventory/#

Coastal Lidar Data - http://www.csc.noaa.gov/digitalcoast/data/coastallidar

CanVis - http://www.csc.noaa.gov/digitalcoast/tools/canvis/

Economics: National Ocean Watch - http://csc.noaa.gov/digitalcoast/tools/enow

Marine Cadastre - http://csc.noaa.gov/digitalcoast/tools/mmc

TNC Coastal Resilience 2.0 - http://csc.noaa.gov/digitalcoast/tools/coastalresilience

USGS Coastal Hazards Portal- http://csc.noaa.gov/digitalcoast/tools/hazards-portal

Coastal GeoTools 2015 – http://coastalgeotools.org

Contact Information

Miki Schmidt
nicholas.schmidt@noaa.gov
843-740-1237

csc.noaa.gov/digitalcoast

Digital.Coast@noaa.gov

http://www.facebook.com/NOAADigitalCoast

@NOAADigCoast

Partners and Contributors

Digital Coast Partnership

- American Planning Association
- Association of State Floodplain Managers
- Coastal States Organization
- National Association of Counties
- National Estuarine Research Reserve Association
- National States Geographic Information Council
- The Nature Conservancy
- Urban Land Institute

A Sampling of Contributors

Federal

- NOAA
- U.S. Army Corps of Engineers
- U.S. Geological Survey

State

- Mississippi State Coordinating Council for Remote Sensing and GIS
- Maryland Department of Natural Resources

Academic

- University of South Carolina
- University of Hawaii

Nongovernmental

- Resources for the Future
- Management Association for Private Photogrammetric Surveyors

Private

- Dewberry
- Fugro EarthData
- PhotoScience
- Sanborn
- Woolpert