

# Tools for Building Community Resilience to Coastal Hazards

New Partners for Smart Growth  
January 31, 2015



OFFICE FOR COASTAL MANAGEMENT  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

# Planning Resources for Resilience

- **Communicating Exposure to Hazards**
  - Coastal County Snapshots
  - CanVis Visualization Software
- **Assessing Hazard Impacts**
  - Sea Level Rise Viewer
- **Using Green Infrastructure to Adapt to Impacts**
  - Green Infrastructure for Coastal Resilience Training



# Understanding What Is Exposed to Flooding



## Coastal County Snapshots

Overview

In Action

Get It Now

Coastal County Snapshots turn complex data into easy-to-understand stories, select a coastal county of interest and the website does the rest, providing information more resilient to coastal hazards.

Local officials can use the snapshots as a planning tool to assess their county's benefits provided by natural resources. The handouts generated by the snapshots are working with governing bodies and citizen groups.

### Features

- **Assesses** a county's exposure and resilience to flooding
- **Analyzes** a county's dependence on the ocean or Great Lakes for a healthy economy
- **Examines** the benefits a county receives from its wetlands
- **Compares** counties to each other or for regional analysis
- **Allows** users to download a PDF report for the snapshot of their choice

Current topics include:

- Flood exposure
- Wetland benefits
- Ocean and Great Lakes jobs



[coast.noaa.gov/digitalcoast/tools/snapshots](http://coast.noaa.gov/digitalcoast/tools/snapshots)

Flood Exposure, Wetland Benefits, and Ocean Jobs

# County Wetland Benefits Snapshot

## Pamlico County, NC

### Wetland Benefits Snapshot Pamlico County, North Carolina

COASTAL COUNTY SNAPSHOTS  
www.csc.noaa.gov/snapshots/

#### Protecting Wetlands = Coastal Communities That Are Safer, Cleaner, and More Economically Productive

Healthy wetlands provide more than just a pretty view. Wetlands are a pivotal part of the natural system, supplying tremendous benefits for coastal communities. Even small acreages can provide some level of benefit. The location, health, and size of individual wetlands also play a role. This snapshot demonstrates three key benefits of wetlands in Pamlico County.

**52%**  
116,436 acres  
of Pamlico County's land area is wetland.



Based on 2006 NOAA land cover.

#### More Economically Productive: Wetlands Support Fishing Economies

Coastal wetlands provide habitat for many aquatic species that contribute to local food supplies and fishing-related industries.

In addition to providing a base for commercial fishing jobs and revenue, wetlands also support recreational and charter fishing. These economic benefits extend beyond county boundaries.

Based on 2011 ENOW and 2011 ENOW for Self-Employed Workers.

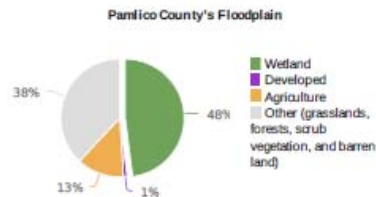
Commercial Fishing	County	State
Jobs	217	3,358
Output from businesses	\$13.7 million	\$151.3 million
Revenue from self-employed	\$9.9 million	\$90.4 million

#### Safer: Wetlands Reduce Flood Impacts

41% (89,679 acres) of Pamlico County's land area is in the floodplain.

Wetlands located in coastal and riverine floodplains can protect people and their property, community infrastructure, and agricultural investments from floods. Wetlands act as natural sponges, holding floodwaters and lowering flood heights.

Based on Best available as of 2010 FEMA Flood Zones (100-year); 2006 NOAA land cover.



# Visualizing Flooding

## CanVis

Contributing Partners: [NOAA Office for Coastal Management](#) [USDA National Agroforestry Center](#)

Overview

In Action

Support

Get It Now

Use this easy-to-use visualization tool to “see” potential community impacts from coastal development or sea level rise.

### Features

- **Download** your background picture
- **Create** a vision of the future by adding objects—docks, buildings, rising water, and more—to the photo using the expansive photo objects library

[Learn more.](#)



### Technical Assistance

Ask a question anytime by emailing [coastal.info@noaa.gov](mailto:coastal.info@noaa.gov).

### Related Training

- [CanVis](#)

### Related Tools

- [Sea Level Rise Viewer](#)

# CanVis Tool



Seattle Boardwalk – Sea Level Rise – Before



Charleston Customs House – 1.5m SLR - Before



Seattle Boardwalk – Sea Level Rise – After



Charleston Customs House – 1.5m SLR - After

## Visualizing and Communicating Alternatives

[coast.noaa.gov/digitalcoast/tools/canvis](https://coast.noaa.gov/digitalcoast/tools/canvis)

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# Visualizing Sea Level Rise and Inundation



## Sea Level Rise Viewer

Contributing Partners: NOAA Office for Coastal Management

Overview

In Action

Support

Get It Now

Launch Viewer

Select a geography and use the slider bar to simulate various sea level rise scenarios (from one to six feet above the average highest tides) and the corresponding areas that would be impacted by flooding. Click the camera icons for pictures that depict how local landmarks could be affected. Additional tabs provide information about marsh impacts, nuisance flood frequency, and social and economic data.

Maps are not currently available for Alaska and Louisiana due to the accuracy of existing elevation data, the hydraulic complexity of the coast, and gaps in vertical datum transformation.

### Features

- **Models** potential marsh migration due to sea level rise
- **Examines** how tidal flooding will become more frequent with sea level rise
- **Enables** access through mobile devices
- **Produces** shortened URLs for easy map sharing through email and social media
- **Provides** access to Web map services and underlying geospatial data
- **Offers** supporting documents and information on sea level rise mapping

### Acknowledgments

The NOAA Office for Coastal Management acknowledges the [many organizations](#) that helped guide the development of this tool.



### 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 \(SOVI\)](#)

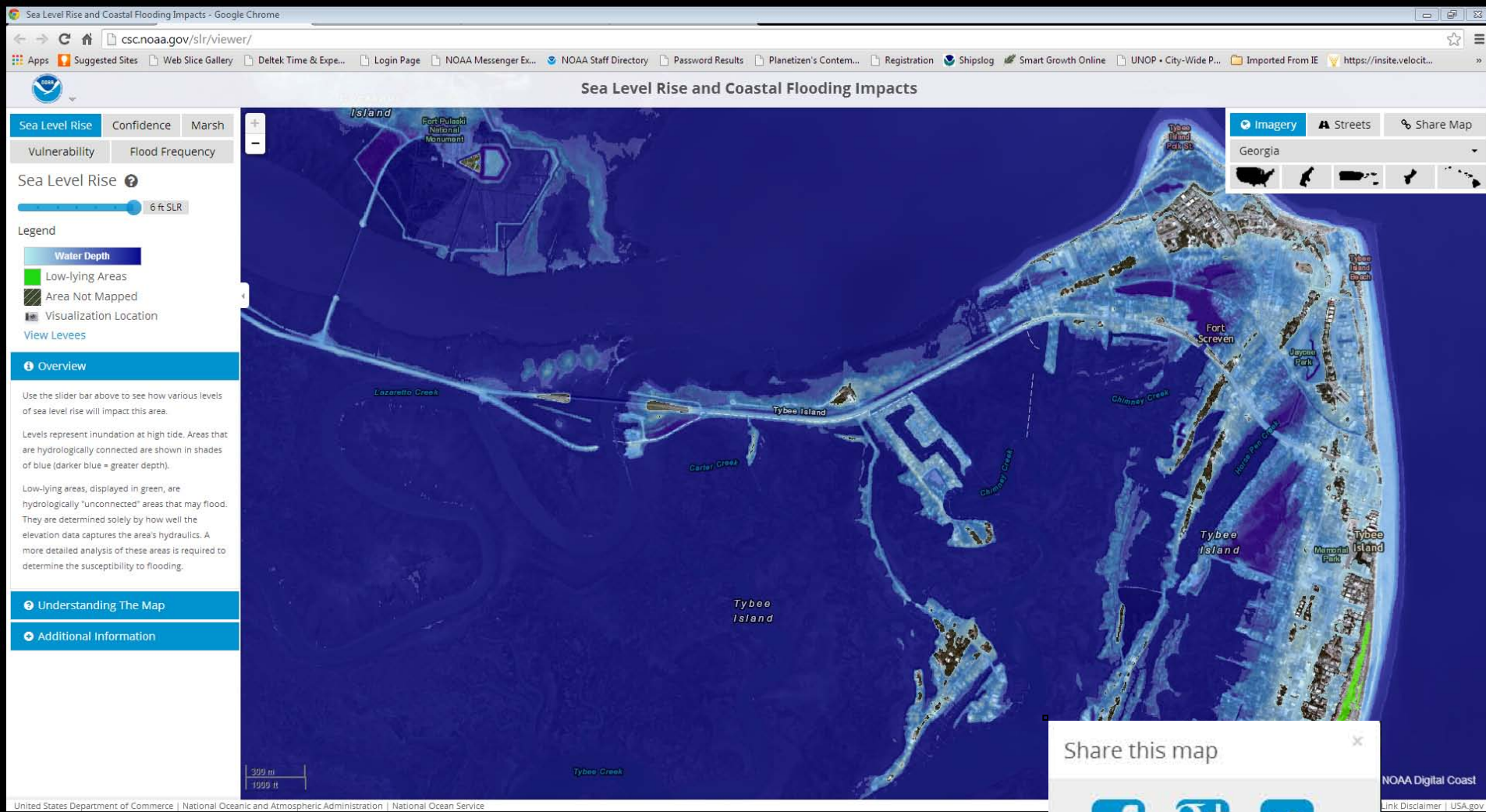
### Related Training

- [Climate Adaptation for Coastal Communities](#)
- [Coastal Inundation Mapping](#)

[coast.noaa.gov/digitalcoast/tools/slr/](http://coast.noaa.gov/digitalcoast/tools/slr/)



# Visualizing Sea Level Rise and Inundation



[coast.noaa.gov/digitalcoast/stories/tybee](http://coast.noaa.gov/digitalcoast/stories/tybee)

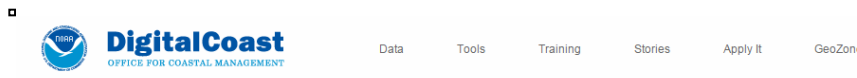
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# Understanding Green Infrastructure

## Concepts and Practices



### Introducing Green Infrastructure for Coastal Resilience

Contributing Partners: NOAA Office for Coastal Management

#### Overview

During this full-day introductory workshop, participants will learn fundamental green infrastructure concepts and practices that can play a critical role in making coastal communities more resilient to natural hazards. Local speakers will share expertise on local and regional ecosystems, existing green infrastructure projects of various scales, and ways in which green infrastructure has been integrated into planning processes.

Through presentations and group discussion, participants will learn about a range of natural assets and green infrastructure approaches that can improve coastal community resilience. Most importantly, participants will make valuable connections with a diverse group of both new and experienced green infrastructure practitioners.

Six hours of [certification maintenance](#) credits for this course have been approved by the American Institute of Certified Planners. Five core [continuing education credits](#) have been approved for certified floodplain managers.

#### What You Will Learn

After completing this course, participants will be able to

- **Recognize** green infrastructure terms and concepts
- **Understand** the ecological, economic, and societal benefits of green infrastructure
- **Understand** the wide variety of contexts and scales of approaches referred to as "green infrastructure" today
- **Identify** new or existing planning processes suitable for integrating green infrastructure concepts and techniques
- **Identify** local green infrastructure activities and experts with additional information and resources

#### Host Requirements

This training is provided by request and will be fulfilled as resources are available. Classes can be taught at the NOAA Office for Coastal Management [training facility](#) or brought to your organization. The office reserves the right to cancel the course in the event of low enrollment. The cost is minimal for participants and host organizations. Please review the on-site [host responsibilities, costs, and site requirements](#). To apply to host a course at your location, [please fill out our host form](#), and a trainer will contact you.

#### Contact Information

For additional course or individual registration information, e-mail [ocm.training.request@noaa.gov](mailto:ocm.training.request@noaa.gov).

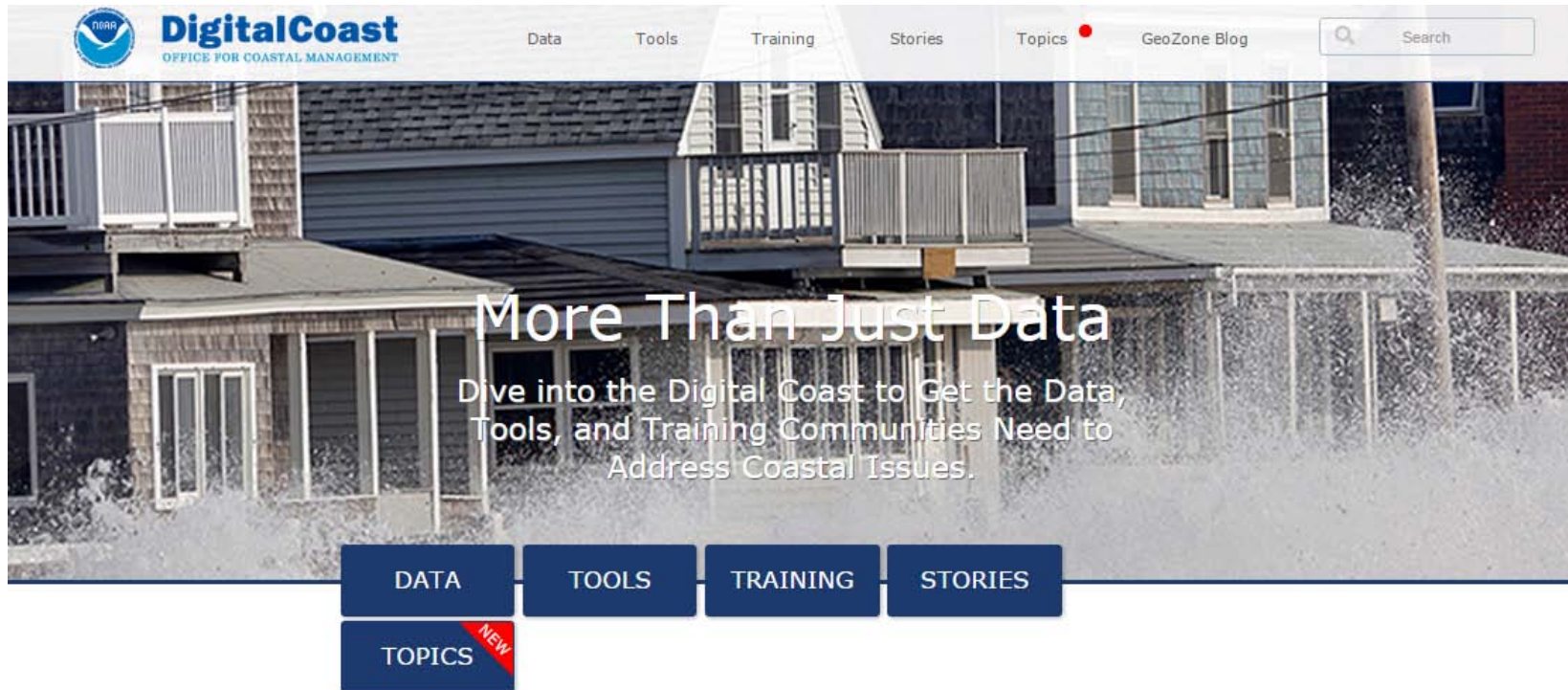


[coast.noaa.gov/digitalcoast/training/green](https://coast.noaa.gov/digitalcoast/training/green)



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# Digital Coast



## What is the Digital Coast?

This NOAA-sponsored website is focused on helping communities address coastal issues and has become one of the most-used resources in the coastal management community. The dynamic Digital Coast Partnership, whose members represent the website's primary user groups, keeps the effort focused on customer needs.

Learn more in our About section, or just dive in. And please provide feedback as often as possible. Hearing from you is what makes the Digital Coast work.

## Learn More about the Digital Coast

[About](#) [Contributing Partners](#) [Watch the Video](#)

Top: [Data](#) [Tools](#) [Training](#) [Stories](#)

- 1 [Coastal Lidar](#)
- 2 [Coastal Change Analysis Program](#)
- 3 [Economics: National Ocean Watch](#)
- 4 [Electronic Navigational Charts](#)
- 5 [Emergency Response Imagery](#)

[coast.noaa.gov/digitalcoast/](https://coast.noaa.gov/digitalcoast/)

# Partnership Organizations



# For Additional Questions

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