Sea Level Rise and Coastal Flooding Impacts Viewer

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EBM Tools Network
What Data Are Needed to Determine SLR Impacts?

(Dec. 09 Sea Level Rise and Inundation Community Workshop Executive Summary)

www.csc.noaa.gov/publications/inundation-workshop.html

1. Data to understand land forms and where and how water will flow (e.g. elevation/bathymetry)

2. Monitoring data and environmental drivers (e.g. tides, water levels)

3. Consistent sea level rise scenarios and projections across agencies to support local planning

4. Data to characterize vulnerabilities and impacts of sea level rise (e.g. land use, natural resources)

5. Community characteristics (e.g. demographics, societal vulnerabilities)

6. Legal frameworks and administrative structure (e.g. zoning, permitting requirements)
Importance of Elevation Data

Profile in Charleston, South Carolina

30-meter NED data (1 arc second)

10-meter NED data (1/3 arc second)

Lidar data

NED – National Elevation Dataset
In Charleston, South Carolina
Vulnerable Areas Are Lower Than We Thought

Up to 3 meters (10 feet) LOWER!!
Resolution Requirements

5-meter Resolution

10-meter Resolution
The Ocean Is Not a Flat Surface

(especially in bays and estuaries)

~4 foot difference

MHHW
Tidal Surface
Vertical Transformation

Using VDatum to convert between tidal, orthometric, and ellipsoidal datums

• Vertical Datum Transformation Tool

• Developed jointly by NOAA’s Office of Coast Survey and the National Geodetic Survey

• Provides a method to accurately combine topographic (orthometric) and bathymetric (tidal) elevation data

• Application is limited to the region it was developed for
Sea Level Rise and Coastal Flooding Impacts Viewer
Components: Impacts of Sea Level Rise

Visualize impacts for mean higher high water 6-foot sea level rise scenarios overlaid on aerial imagery, street map, and terrain map.
Components:
Communicate Mapping Confidence

Visualize the mapping confidence of the inundation area.
Components:
Visualize Marsh Impacts

Visualize the impacts of sea level rise scenarios on marshes using Coastal Change Analysis Program (C-CAP) data.
Consider impacts of flooding on society and economy.

Components:
Social and Economic Vulnerability

Social Vulnerability Index (Cutter)

Bureau of Labor Statistics (Department of Labor)
- Businesses, employees, wages
Communicate that today’s flood is tomorrow’s high tide. Consider the increased frequency and duration of everyday flooding.

Components: Coastal Flood Frequency
Sea Level Rise and Coastal Flooding Impacts

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Sea Level Rise

Legend
- Water Depth
- Low-lying Areas
- Area Not Mapped
- Visualization Location

Overview

Use the slider bar above to see how various levels of sea level rise will impact this area.

Levels represent inundation at high tide. Areas that are hydrologically connected are shown in shades of blue (darker blue = greater depth).

Low-lying areas, displayed in green, are hydrologically "unconnected" areas that may flood. They are determined solely by how well the elevation data captures the area's hydraulics. A more detailed analysis of these areas is required to determine the susceptibility to flooding.

Understanding the Map

Additional Information
Sea Level Rise and Coastal Flooding Impacts
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Sea Level Rise
- Current MHHW

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National Oceanic and Atmospheric Administration

Sea Level Rise

1 ft SLR

Legend

Water Depth

Low-lying Areas

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Sea Level Rise

Legend

Water Depth

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Sea Level Rise and Coastal Flooding Impacts

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Sea Level Rise

6 ft SLR

Legend

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Low-lying Areas

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Understanding the Map

Additional Information
Available via NOAA Digital Coast Tools

http://www.csc.noaa.gov/digitalcoast/tools/slrviewer
Thank-you!

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http://csc.noaa.gov/slr