Exposure Data and Information

NOAA Office for Coastal Management
coast.noaa.gov/digitalcoast/tools/flood-exposure.html

The following data were used in the Coastal Flood Exposure Mapper and in map services available for use in ArcGIS Online or other online mapping platforms. See ESRI's ArcGIS Online Tutorial for instructions on using map services.

Hazards Exposure

Name	Description	Map Service	Authoritative Source	Significance
Coastal Flood Hazard Composite	Spatial extents of multiple flood hazard data sets combined. Flood hazard data sets include high tide flooding, Federal Emergency Management Agency (FEMA) flood data (V zones, A zones, and 500-year zones treated as individual layers), storm surge inundation for category 1, 2, and 3 hurricanes (from FEMA Hurricane Evacuation Studies), sea level rise scenarios for 1, 2, and 3 feet above mean higher high water (MHHW), and tsunami run-up zones where available.	Coastal Flood Hazard Composite Map Service	Coastal Flood Exposure Mapper	Provides a quick visual assessment of areas most prone to flood hazard events.

Name	Description	Map Service	Authoritative Source	Significance
High Tide Flooding	Areas that flood when coastal flood warning thresholds are exceeded. Derived from the flood frequency layer within the Sea Level Rise and Coastal Flooding Impacts Viewer. For islands in the Caribbean and Pacific, the high tide flooding zones were mapped based on statistical analysis of water level observations at tidal stations in those areas.	High Tide Flooding Map Service	Sea Level Rise Viewer	Areas subject to high tide flooding.
FEMA Flood Zones	Digital FEMA flood data. The data represent the digital riverine and coastal flood zones available as of October 2017 and are a combination of Digital Flood Insurance Rate Maps and Q3 flood data.	FEMA Flood Zones Map Service	FEMA's Map Service Center	Areas at risk from flooding.
Storm Surge	Areas of near-worst-case storm surge flooding scenarios for coastal areas along the Gulf of Mexico, Continental U.S. Atlantic coasts, and select areas in the Caribbean and Pacific islands. Data were derived from storm surge inundation maps created by the National Hurricane Center (NHC) Storm Surge Unit with the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model.	Storm Surge Map Service	National Hurricane Program Center Storm Surge Unit	Areas at risk from storm surge.

Name	Description	Map Service	Authoritative Source	Significance
Sea Level Rise	Sea level rise inundation scenarios ranging from zero to six feet above mean higher high water (MHHW). Derived from data created for the Sea Level Rise and Coastal Flooding Impacts Viewer.	Sea Level Rise Map Service	Sea Level Rise Viewer	Areas likely to be inundated by sea level rise.
Tsunami Inundation	Tsunami inundation zones modeled for individual states and territories.	Tsunami Map Service	National Tsunami Hazard Mitigation Program	Areas likely to be inundated by tsunamis.

Societal Exposure

Name	Description	Map Service	Authoritative Source	Significance
Population Density	People per square mile based upon 2012-2016 American Community Survey (ACS) 5-year estimates. Mapped to Census block groups.	Population Density Map Service	U.S. Census American Community Survey	The more people living in areas exposed to hazards, the more potential there is for harm.
Poverty	Percent of population living below the poverty line based upon 2012-2016 American Community Survey (ACS) 5-year estimates. Mapped to Census block groups. Mapped to Census block groups. Read more on defining poverty.	Poverty Map Service	U.S. Census American Community Survey	People who are living in poverty usually do not have adequate resources to prepare for or respond to hazards.

Name	Description	Map Service	Authoritative Source	Significance
Elderly	Percent of population age 64 or older based upon 2012-2016 American Community Survey (ACS) 5-year estimates. Mapped to Census block groups.	Elderly Map Service	U.S. Census American Community Survey	Elderly may be more susceptible to hazard impacts because they often have limited mobility and continual medical and care needs.
Employees	Number of employees within an area. Data from Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW). Mapped to 2010 Census block groups.	Employees Map Service	Bureau of Labor Statistics	Some of the most devastating disaster impacts to a community include the loss of income associated with business interruption and the loss of jobs as a result of business closures. It is also important to know where people are located if a hazard event occurs during business hours.

Infrastructure Exposure

Name	Description	Map Service	Authoritative Source	Significance
Development	Development classes extracted from 2011 Coastal Change Analysis Program land cover data, including high intensity (80-100 percent constructed materials), medium intensity (50-79 percent constructed materials), low intensity (21-49 percent constructed materials), and open space (less than 20 percent constructed materials) development.	Development Map Service	Coastal Change Analysis Program Land Cover (C-CAP)	Development near areas likely to flood puts people in harm's way and can lead to costly infrastructure repairs.
Critical Facilities	Points representing the locations of hospitals, law enforcement facilities, schools, and fire or EMS stations extracted from the U.S. Geological Survey (USGS) Structures data set for The National Map. Data from Structures database published in March of 2018.	Critical Facilities Map Service	Structures Data Set The National Map	Critical facilities are lifelines for the community and need to be functional before, during, and after an event because of the services they provide (e.g. medical care, transportation.)
Development Changes	Areas converted to development classes between 1996 and 2011. From C-CAP land cover change data.	Development Changes Map Service	Coastal Change Analysis Program Land Cover (C-CAP)	Natural areas are often changed to developed areas, and this creates more exposure to hazards, increasing vulnerabilities.

Ecosystem Exposure

Name	Description	Map Service	Authoritative Source	Significance
Pollution Sources	Selection of facilities subject to regulation. Downloaded from U.S. Environmental Protection Agency's Facility Registration Service (FRS) database in 2018.	Pollution Sources Map Service	Facility Registration Service (FRS)	Pollution can be transferred during flood events, impacting natural areas and making them less resilient.
Development	Development classes extracted from 2011 Coastal Change Analysis Program land cover data, including high intensity (80-100 percent constructed materials), medium intensity (50-79 percent constructed materials), low intensity (21-49 percent constructed materials), and open space (less than 20 percent constructed materials) development.	Development Map Service	Coastal Change Analysis Program Land Cover (C-CAP)	Development adjacent to wetlands, beaches and dunes, and other natural areas and open space receives protection benefits during flood events.
Natural Areas and Open Space	Derived from 2011 C-CAP land cover data. Wetland classes include palustrine forested, palustrine scrub-shrub, palustrine emergent, estuarine forested, estuarine scrub-shrub, and estuarine emergent wetlands. Other natural areas and open space include forest (deciduous, evergreen, mixed), cultivated, pasture-hay, grassland, and scrub-shrub classes. Beaches and dunes were derived from extracting bare land and unconsolidated shore classes adjacent to coastal open water.	Natural Areas and Open Space Map Service	Coastal Change Analysis Program Land Cover (C-CAP)	Natural areas and open spaces can be impacted during flooding events but can also provide protection to communities.

Name	Description	Map Service	Authoritative Source	Significance
Wetland Potential	Derived from the C-CAP Wetland Potential Layer. The Wetland Potential Layer uses a combination of wetland-related data and modeling methods to determine how likely an area is to be a wetland or has the potential to become a wetland.	Potential Wetland Areas Map Service	C-CAP Wetland Potential Layer	Areas identified have the potential to be restored as wetlands and provide protective services.