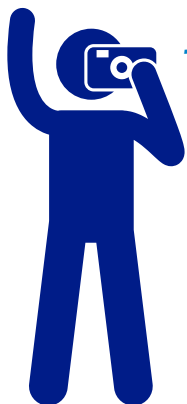# PUERTO RICO RELIES ON THE DIGITAL COAST

*That's because the **Digital Coast** has a lot to offer **Puerto Rico.***

6,536
Puerto Rico visitors to the Digital Coast.
(763,454 nationwide)

DATA
837 gigabytes of high-resolution elevation data available for Puerto Rico.

TOOLS
50+ decision-support tools applicable for Puerto Rico challenges.

TRAINING
Over **1,800** leaders in the U.S. used a Digital Coast training program.

GEOSPATIAL SERVICES
Over **$430,000** in private-sector geospatial services awarded for the Southeast and Caribbean region.

INFORMATION

- In 2012, the ocean economy of this territory accounted for nearly $922 million in total wages.
- This territory's coral reefs have an average economic value of $1.1 billion per year.
- The Northeast Marine Corridor and Culebra Island is home to many species of corals, seagrass beds, and mangroves.

SAVING TIME AND MONEY
411% was the return on investment calculated for the Digital Coast.

IT'S A WEBSITE.
NOAA owns the Digital Coast, but the resources inside, while vetted by NOAA for applicability and quality, come from various organizations with one common but important thread: content is solely focused on coastal community needs. The site contains not only data, but also the tools, training, and information communities need to make data truly useful. Three out of four Digital Coast users surveyed say they couldn't do their jobs without this important resource!

The short report that follows highlights Digital Coast interactions with Puerto Rico.

Digital Coast
coast.noaa.gov/digitalcoast

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE
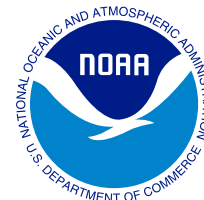
Puerto Rico Recap

NOAA and the Digital Coast are devoted to supplying Puerto Rico with the data, tools, and information most needed by coastal communities. This report highlights the resources frequently used during this reporting period. Please visit the website (coast.noaa.gov) to learn more or contact NOAA (coastal.info@noaa.gov) with your questions or suggestions.

DATA

Data represent the core component of the Digital Coast. For Puerto Rico, data holdings include elevation, land cover, aerial imagery, and county-level socioeconomic data. Examples are highlighted below.

Coastal Lidar
coast.noaa.gov/digitalcoast/data/coastallidar
Over 837 gigabytes of high-resolution elevation data covering Puerto Rico's entire coastal zone are available. These types of data are critical for all types of modeling, including those that predict flooding potential.

Land Cover
coast.noaa.gov/digitalcoast/data/ccapregional
This satellite imagery is used to inventory and categorize the landscape—wetlands, development, forests, agriculture use, etc. Nothing provides a big picture view of a region like land cover data. These data are used to identify high-priority landscapes for Puerto Rico's coastal protection and restoration efforts. Comparing one year to another is also a good way to spot and document trends.

TOOLS

"Data alone is not enough" is a frequent Digital Coast refrain. Going the extra step and including the tools and training needed to make data truly useful is a hallmark of the Digital Coast website. Users have access to over 50 data analysis, visualization, and other decision-support tools. Examples are highlighted below.

OpenNSPECT
coast.noaa.gov/digitalcoast/tools/opennspect
This tool is often used to investigate potential water quality and flooding impacts from climate change, development, and other land uses. Communities also use this information to reduce these impacts by identifying suitable areas for restoring wetlands and developing riparian buffers.

TRAINING

Coastal officials have to stay on top of their game, which is why the Digital Coast's "training academy" provides over 125 learning resources, from online courses to training brought to your location. A few examples are provided below. To see the full suite, visit *coast.noaa.gov/digitalcoast/training/home*.

Coastal Inundation Mapping

coast.noaa.gov/digitalcoast/training/inundationmap

This classroom course provides baseline information about the various types of flooding and teaches methods for mapping current and potential flooding scenarios. The course offers 16 hours of continuing education credits for the GIS Professional (GISP) and American Institute of Certified Planners (AICP), and Certified Floodplain Manager (CFM) professional certifications.

Green Infrastructure Practices and Benefits Matrix

coast.noaa.gov/digitalcoast/training/gi-practices-and-benefits

Green infrastructure (also called natural infrastructure) is the way to go for communities looking to reduce flooding. This quick handout provides important information about some of the most common techniques in use.

Seven Best Practices for Risk Communications

coast.noaa.gov/digitalcoast/training/risk-communication

The title alone speaks to most people—this is a skill everyone benefits from. The Digital Coast has many resources devoted to this topic, but this online training course is particularly popular.

GEOSPATIAL CONTRACTING

Through the Digital Coast, coastal organizations in need of geospatial data or services benefit from the use of the Coastal Geospatial Services Contract (*coast.noaa.gov/idiq/geospatial.html*). This contracting vehicle provides a way for local, state, and federal agencies to use a streamlined process to obtain services from the nation's top geospatial firms. In fiscal year 2017, over $430,000 was awarded to private geospatial firms to conduct mapping projects in the Southeast and Caribbean region, including the acquisition and processing of lidar data.

DIGITAL COAST IN ACTION

The following stories illustrate how Digital Coast users are applying geospatial information resources to address coastal issues in the Southeast U.S.

Identifying Sources of Pollution That Impact Coral Reef Communities in the Virgin Islands

coast.noaa.gov/digitalcoast/stories/coralreef-vi

Land-based sources of sediment and pollution are a major threat to coral reefs. Local resource managers have the difficult task of identifying watersheds that contribute runoff leading to coral reef decline. The U.S. Environmental Protection Agency used NOAA's land cover data from the Digital Coast, combined with coral reef survey data, to analyze the relationship between runoff and reef health in the U.S. Virgin Islands. This information was then used to inform land use decision-making processes in the area to decrease runoff and improve coral reef resilience.

Applying Green Infrastructure to Stem Runoff and Safeguard Puerto Rico's Corals

coast.noaa.gov/digitalcoast/stories/playa-tamarindo

At Playa Tamarindo on Culebra Island, sediment runoff and cars driving on the beach imperiled coral reefs and a local waterway. Partners addressed the problem by planting vegetation in bare soil, installing a gravel parking lot to absorb excess water, and placing rocks in specific areas to channel excess water into thicker greenery, where it is absorbed. Scientists used the Digital Coast's OpenNSPECT tool to analyze how effective these measures were in reducing polluted runoff, and then made further natural-infrastructure improvements. Initial studies show sediment loads in marine habitats have gone down, lessening the impacts to nearby corals in this NOAA Habitat Blueprint area.

Evaluating Restoration Effectiveness to Reduce Runoff and Protect Corals in Puerto Rico

coast.noaa.gov/digitalcoast/stories/guanica-bay

Runoff from agriculture, deforestation, and coastal development threaten coral reef ecosystems. Coffee farmers in southwestern Puerto Rico, an area that receives over 100 inches of rainfall annually, worked with scientists to reduce agricultural runoff by transitioning from sun-grown coffee to shade-grown coffee crops. Converting the bare hillsides to forested areas that support shade-grown coffee protects water quality, provides higher yields, and reduces irrigation needs. Thirty-six coffee farms covering 1,800 acres are now participating in this ridge-to-reef effort that is resulting in more resilient reefs, more stable coasts, and profitable coffee farms. NOAA's Coral Reef Conservation Program and National Marine Fisheries Service Restoration Center were involved in collaborating, planning, and funding this project.

The Digital Coast Partnership

One of the goals of the Digital Coast is to unify groups that might not otherwise work together. As a result, the Digital Coast Partnership is building not only a website, but also a strong collaboration of coastal professionals intent on addressing common needs. Currently, the eight members of the Digital Coast Partnership include the 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, Nature Conservancy, and Urban Land Institute. The responsiveness of these organizations and the direct lines of communication fostered by the effort have proven essential for ensuring the success and continuing relevance of the Digital Coast, and for allowing the platform to evolve and adapt to changing needs and priorities.