Guam and the Digital Coast

The Digital Coast is a partnership effort and community resource for organizations that manage the nation's coastal resources.

Initiated and led by the National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management, the Digital Coast provides geospatial data and the tools and methods needed to turn these data into useful information. Digital Coast resources range from high-resolution data to on-site training opportunities. People use these resources to address timely coastal issues, including land use, coastal conservation, hazards, ocean planning, community resilience, and coastal economics, all of which are of critical importance to Guam. The site was launched in 2008.

Guam Benefits

The numbers below are from fiscal year 2015.

DIGITAL COAST BY THE NUMBERS

526	Guam visitors to the Digital Coast website
5	Guam communities that used the Digital Coast
187	Gigabytes of high-resolution elevation data available for the territory
456,615	Total visitors to the Digital Coast website
411%	Return on investment*

*More information on the benefits and costs of the Digital Coast can be found here: *http://1.usa.gov/1O8fFDa*

DATA

Guam elevation, land cover, aerial imagery, and county-level socioeconomic data, provided by various trusted sources, are available through the Digital Coast's Data Access Viewer. Some of the most commonly accessed Guam-based data are highlighted below.

Coastal Lidar

coast.noaa.gov/digitalcoast/data/coastallidar

Over 187 gigabytes of high-resolution elevation data covering Guam's entire coastal zone are available. This type of data is critical to the development of models that examine potential local flooding impacts from coastal storms and sea level rise.

Land Cover

coast.noaa.gov/digitalcoast/data/ccapregional

Land cover data provide inventories of coastal intertidal areas, wetlands, and adjacent uplands for the coastal regions. These data are used to identify high-priority landscapes for Guam's coastal protection and restoration efforts.

TOOLS

The Digital Coast website provides access to over 50 data analysis, visualization, and other decision-support tools that assist coastal managers in deriving critical information from coastal data sets. Many of these tools are web-based, which extends the reach of GIS functions to anyone with an Internet connection.

Tsunami Information Service

coast.noaa.gov/digitalcoast/tools/tsunamimap

This tool provides tsunami evacuation maps and information for Hawaii and Guam. Residents and visitors can interact with maps and find education and awareness information on the web or by downloading the app.

C-CAP Land Cover Atlas

coast.noaa.gov/digitalcoast/tools/lca

This tool from the Coastal Change Analysis Program (C-CAP) makes land cover data easier to access and understand by eliminating the need for desktop GIS software. General trends in land cover change (such as forest losses or new development) are summarized, and specific changes of interest (salt marsh losses to open water, for instance) can be highlighted. This type of information is useful for planning purposes. Guam's managers have found this data helpful while analyzing water quality, land use, and more.

CanVis

coast.noaa.gov/digitalcoast/tools/canvis

This visualization tool helps users "see" potential impacts from coastal development or water level change. Users can download background pictures and insert objects (hotels, houses, and other features) of their choosing. This tool helped Guam visualize sea level rise and green infrastructure techniques.

OpenNSPECT

coast.noaa.gov/digitalcoast/tools/opennspect

This tool is being used to investigate potential water quality impacts from development, other land uses, and climate change. The tool simulates erosion, pollution, and their accumulation from overland flow. Uses include helping communities identify areas for restorable wetlands and riparian buffers to reduce pollution and flooding in watersheds.

TRAINING

In fiscal year 2015, over 1,500 coastal professionals received training on a variety of technical and process-based topics through the Digital Coast *(coast.noaa.gov/digitalcoast/training/list*). Courses taught participants a variety of skills, such as how to apply GIS tools and methods to coastal issues, and how to develop data sets that model the extent of coastal inundation.

GEOSPATIAL CONTRACTING

Through the Digital Coast, coastal organizations in need of geospatial data or services benefit from the use of the NOAA Office for Coastal Management's Coastal Geospatial Services Contract (*coast.noaa.gov/idiq/geospatial.html*). This contracting vehicle provides a way for local, state, and federal agencies to take advantage of a streamlined process to obtain services from the nation's top geospatial firms. In fiscal year 2015, over $44,000 was awarded to private geospatial firms to conduct mapping projects in the Pacific Islands, 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 Pacific Islands region. More stories featuring how users in Guam are applying Digital Coast Products and data will be available soon.

Assessing Potential Hazard Risk in Tutuila, American Samoa

coast.noaa.gov/digitalcoast/stories/tutuila

Often the hazards that pose threats to the islands of American Samoa happen simultaneously, resulting in many different types of damage to property, resources, and life. Local managers developed the Tutuila Hazard Assessment Template (T-HAT) to identify areas at risk for multiple hazards within the main island of Tutuila. T-HAT, a lightweight Internet mapping application, uses GIS hazard data collected from NOAA's Office for Coastal Mangement–Pacific Islands and allows users to query the data for hazard information. The tool has helped the American Samoa Coastal Management Program assess permits in light of potential hazard risks.

Assessing Land-Based Threats to Coral Reef Habitats in Laolao Bay, CNMI

coast.noaa.gov/digitalcoast/stories/laolaobay

Land-based sources of pollution, including sediment, are one of the primary threats to coral reef environments for many island environments. Up-to-date and accurate maps combined with traditional ecological knowledge are needed to effectively manage these reef environments. Managers in CNMI used the Digital Coast's Nonpoint-Source Pollution and Erosion Comparison Tool and the Habitat Priority Planner to generate maps for use during a community-based watershed assessment process. The combination of these maps and traditional ecological knowledge created relevant information to assess current problems. Managers also will use these maps to develop ecosystem-based management plans and place-based conservation projects to address the decline in coral reef health.

Mapping the Urban Realm to Enhance Community Resilience in Hawaii

coast.noaa.gov/digitalcoast/stories/urban-realm

Tropical urban forests provide a wide range of environmental and socioeconomic services, including protection from catastrophic storms, sea level rise, and coastal erosion, as well as absorption of stormwater runoff that can otherwise impact coral reefs and nearshore marine ecosystems. In 2009, Hawai'i's Kaulunani Urban and Community Forestry Program used Coastal Change Analysis Program data from the Digital Coast to develop a data layer characterizing the urban realm. Using this information, the state was better able to identify urban forests and develop a set of long-term management activities and environmental literacy initiatives. This, in turn, will ultimately enhance the resilience of coastal Hawai'i communities.

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.