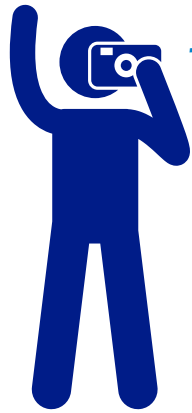


# MINNESOTA RELIES ON THE DIGITAL COAST



**4,922**

Minnesota visitors to the Digital Coast. (560,176 nationwide)



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

## DATA

**3,464** gigabytes of high-resolution elevation data available for Minnesota.



## TOOLS

**50+** decision-support tools applicable for Minnesota challenges.



## TRAINING

Over **1,500** leaders in the U.S. used a Digital Coast training program.



## GEOSPATIAL SERVICES

Over **\$870,000** in private-sector geospatial services awarded for the Great Lakes region.



## INFORMATION

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- Four percent of the population in St. Louis County lives in a floodplain.
- Tourism and recreation is the largest employer among the state's Great Lakes-dependent economic sectors.

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**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 the State of Minnesota.

**Digital Coast**  
[coast.noaa.gov/digitalcoast](http://coast.noaa.gov/digitalcoast)



# Minnesota Recap

*NOAA and the Digital Coast are devoted to supplying Minnesota 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](http://coast.noaa.gov)) to learn more or contact NOAA ([coastal.info@noaa.gov](mailto:coastal.info@noaa.gov)) with your questions or suggestions.*

## DATA

Data represent the core component of the Digital Coast. For Minnesota, 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](http://coast.noaa.gov/digitalcoast/data/coastallidar)

Over 3,464 gigabytes of high-resolution elevation data covering Minnesota'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](http://coast.noaa.gov/digitalcoast/data/ccapregional)

This satellite imagery is used to inventory and categorize the landscape—coastal intertidal areas, wetlands, adjacent uplands, development, 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 Minnesota's coastal protection and restoration efforts. Comparing one year to another is also a good way to spot and document trends.

### Economics

[coast.noaa.gov/digitalcoast/data/enow](http://coast.noaa.gov/digitalcoast/data/enow)

Information about the coastal economy in Minnesota helps people understand how the decisions that impact the coast can also impact the bottom line.

## 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.

### Lake Level Viewer (U.S. Great Lakes)

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

Visualize lake level changes that range from six feet above to six feet below historical long-term average water levels in the Great Lakes, along with potential shoreline and coastal impacts. Communities can use the data behind the tool for habitat and hydrological analysis.

## Coastal County Snapshots

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

Pick a county and hit a button to generate easy-to-understand handouts. Behind the simple charts and graphs are complex county-level data about flooding, wetlands, and economics. Local officials use the snapshots as a planning and communication tool.

## Land Cover Atlas

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

This tool 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 (salt marsh losses to open water, for instance) can be documented. This type of information is useful for planning purposes. Minnesota officials found it particularly helpful as they worked to monitor watershed health along with land use changes.

## Economics: National Ocean Watch Explorer

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

This tool makes economic data easier to use. The economic data provided by the Digital Coast focus on six business sectors dependent on the oceans and Great Lakes: living resources, marine construction, marine transportation, offshore mineral resources, ship and boat building, and tourism and recreation. This tool helps users discover which sectors are growing and declining, and which account for the most jobs, wages, and gross domestic product for coastal communities, the state, and the nation.

## CanVis Visualizations

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

This visualization tool helps users “see” potential impacts from coastal development or lake level change. Users can download background pictures and insert objects (hotels, houses, and other features) of their choosing. This tool is helping Minnesota visualize lake level changes and natural infrastructure techniques.

## OpenNSPECT

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

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

## Coastal Inundation Mapping

[coast.noaa.gov/digitalcoast/training/inundationmap](http://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](http://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](http://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](http://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 2016, over \$870,000 was awarded to private geospatial firms to conduct mapping projects in the Great Lakes region, including mapping land use patterns in the Great Lakes.

# DIGITAL COAST IN ACTION

The following stories illustrate how Digital Coast users are applying geospatial information resources to address coastal issues in Minnesota and the Great Lakes.

## Advancing Restoration in the Great Lakes Region

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

The Great Lakes is the largest system of freshwater resources in the world, but development along the shoreline is degrading the quality of these resources and posing risks to the environment and human health. Improving the quality of the Great Lakes is a top priority for local, state, and federal managers, who used the Digital Coast's Habitat Priority Planner and accompanying data to analyze strategic areas for habitat restoration along the watersheds leading into the lakes. The tool allowed managers to look at sites for wetland restoration, as well as developed areas to be converted into green space and habitat. The tool expedited the process and allowed for prioritization of wetland and habitat restoration.

## Helping Minnesota Residents Understand Local Flooding Issues and Potential Solutions

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

Duluth, Minnesota, experienced a major flooding event in 2012 that cost over \$100 million in damages. With increasing urban development and increasing storm frequency, managers knew they needed to engage local residents in discussions about flooding impacts and mitigation techniques. Minnesota Sea Grant worked with NOAA's Digital Coast to hold a community open house and educate residents about recently identified flood impacts and costs, as well as green infrastructure techniques to reduce those impacts. By using storyboards, members of the community were able to visualize potential flood impacts and understand how to implement mitigation measures.

## Communicating Coastal Flooding Risks around the Great Lakes

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

Living along Lake Michigan, residents understand the risks their homes suffer from flooding but lack the resources to determine the extent of floodwaters and their proximity to this hazard. Managers worked with members of the Association of State Floodplain Managers to find ways to communicate these risks to homeowners. By using the Digital Coast's CanVis tool, they were able to easily show potential flooding and its impacts to shore-abutting residences. From these visualizations, homeowners will gain critical insight into how to protect themselves both physically and financially from the threats of coastal flooding.

## 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.