

**EEA Conference on Coastal Atlas Development
Copenhagen, Denmark**

**U.S. Experience - Federated
Information Sharing**

**Tony LaVoi
NOAA Coastal Services Center**



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LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

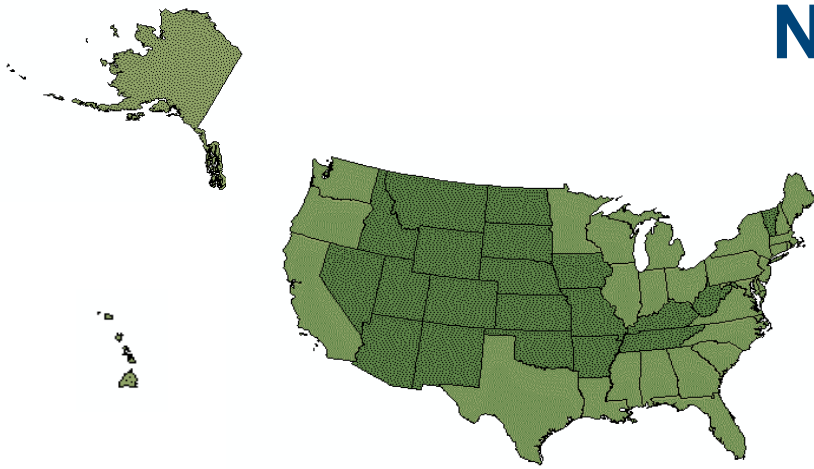
Topics

Status of America's Coasts

Use of GIS in U.S. Coastal Management Agencies

NOAA's Digital Coast

NOAA's Commitment to ICAN





NOAA Coastal Services Center

Mission: linking people, information, and technology in the coastal zone

Customers: organizations impacting coastal communities

Expertise: geographic information systems, remote sensing, training, decision support tools, social science



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**Why are geospatial technologies
and atlases important for coastal
resource management in the
United States?**



America's Coastal Crisis

Communities, Economies and Ecosystems at Risk

Coastal ecosystems are in decline

- Majority of estuaries show signs of eutrophication
- Coastal habitats disappearing at a rate of between 1.2% and 9% a year
- Estimated monetary value of wetland services at \$14.9 trillion



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America's Coastal Crisis

Communities, Economies and Ecosystems at Risk

Coastal communities are more vulnerable

- 53% of population living in coastal areas, only 17% of Nation's land area
- 71% of annual U.S. disaster losses are from coastal storms
- 25,000 beach closings in 2006; 10% beachgoers contract GI illnesses



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America's Coastal Crisis

Communities, Economies and Ecosystems at Risk

Coastal economies are at risk

- 57% of U.S. Gross Domestic Product from coastal watershed counties
- \$6-30 billion per year from beach recreation
- \$10-26 billion per year from recreational fishing
- \$4.9-\$49 billion per year generated from coastal wildlife viewing

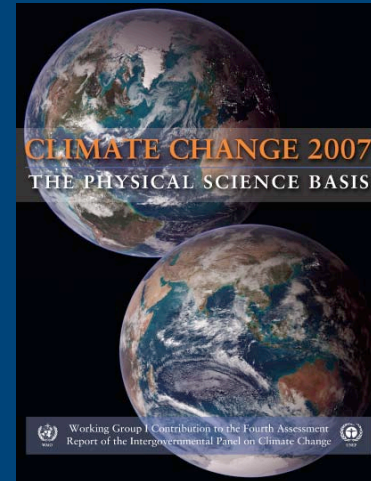


The Demand for Attention

JOINT
OCEAN COMMISSION
INITIATIVE

“Maintaining the economic and ecological viability of our oceans and coasts will require decision makers to have **access to sound information and up-to-date tools and technologies.**”

“While the problems . . . must be addressed at the local level, **additional tools and support** that the Federal government can provide are also needed to truly resolve the most pressing issues.”



“Coasts are very likely to be exposed to **increasing risks due to climate change and sea-level rise** and the effect will be exacerbated by increasing human-induced pressures on coastal areas.” – *Intergovernmental Panel on Climate Change (2007)*



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**NOAA believes geospatial
technologies and coastal atlases
will play a critical foundational role
in addressing the threats to
America's coastal communities**



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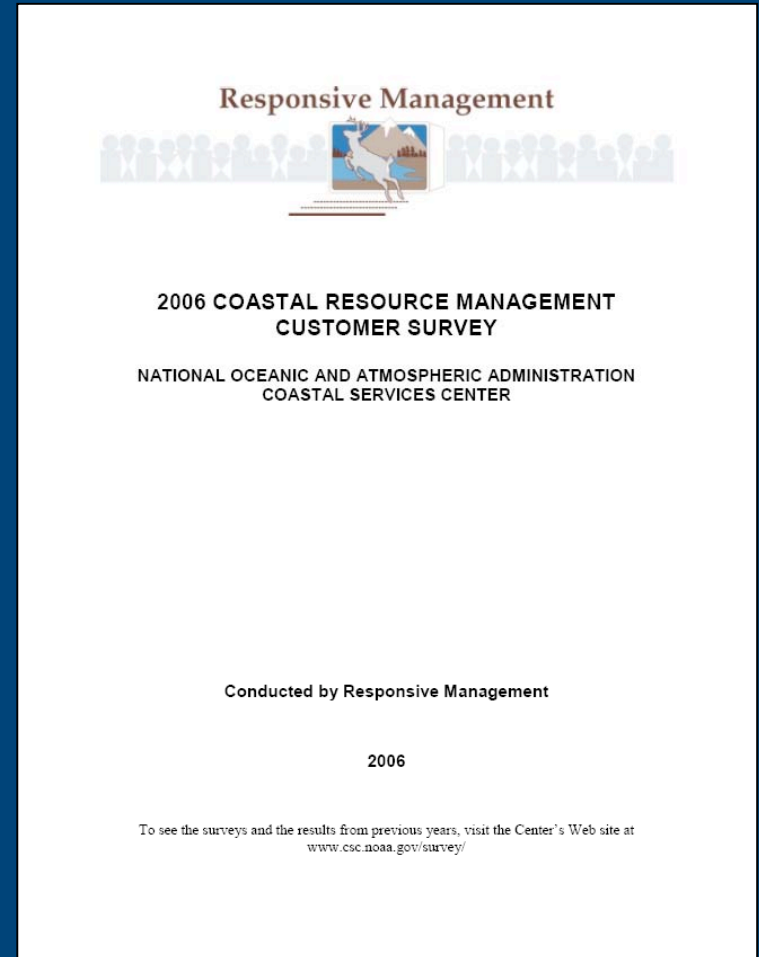
Status of Geospatial Technology Use

National CZM triennial survey

375 responses from across networked CZM community

Results include:

- Geospatial capacity
- Coastal management priorities
- Data requirements and applications



www.csc.noaa.gov/survey/



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Awareness, Use, and Usefulness of GIS and Remote Sensing

Awareness, Use, and Usefulness	GIS	Remote Sensing
Aware of ____	93.1	70.7
Office uses	88.7	58.6
Usefulness = Medium	15.7	26.3
Usefulness = High	74.0	35.4

Trends in Geospatial Technology Use

Percent reporting that their office uses GIS or Remote Sensing . . .	GIS	Remote Sensing
1996 survey	74%	35%
1999 survey	91%	42%
2002 survey	89%	78%
2006 survey	92%	74%



High Priority Management Issues

Coastal Management Issue	%
Land use planning/growth management	59.3
Habitat restoration and monitoring	54.7
Watershed planning	50.5
Public access	46.2
Water quality monitoring	46.0
Nonpoint source pollution	45.8
Flooding/inundation/storm surge	44.5
Erosion	42.9
Shoreline change management	42.7
Protected area management	41.1

Source: NOAA Coastal Services Center Coastal Resource Management Survey – 2006



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Review of State CZM Coastal Mapping Sites

- Status as of July 2007
 - 34 states/territories with CZM programs
 - 21 have some type of “Atlas” product
- Various levels products and technology
 - Download data only
 - Static maps only
 - IMS only
 - Comprehensive Atlas / IMS products
 - Also, wide range of analysis tools and other widgets
- No comprehensive, authoritative National Coastal Atlas



Recap

- **We have critical issues that could be addressed using geospatial technologies**
-and
- **We have a mandate to develop new tools and solutions**
-and
- **We have GIS in use in state CZM programs**
-but
- **No federated coastal atlas system in U.S. – why?**



Why No U.S. Federated Coastal Atlas? (non-technical)

- Geospatial technologies, although used in >90% of CZM programs have yet to become mainstream, operational decision systems
 - ***Yearly progress being made by CZM programs***
- No value proposition yet made to invest in partnering with neighboring states or the entire CZM system
 - ***Regional Ocean Governance and IOOS***
- Lack of critical, systemic issue that coastal atlases can address in a unified manner
 - ***Climate change impacts on coastal systems***
- Absence of vocal champion for federated atlas
 - ***NOAA's Digital Coast initiative a possibility***



NOAA's Digital Coast

The logo for Digital Coast, featuring the words "DIGITAL" and "COAST" stacked vertically. The letter "O" in "COAST" is replaced by a globe icon. To the right of the text is a stylized blue wave graphic.

DIGITAL
COAST

Vision

Coastal communities have **easy access** to **organized and relevant** data and tools needed to make more informed decisions



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DIGITAL COAST



Partnerships

- **Network of users**
- **Governance**
- **Advocacy**
- **Outreach**
- **Private Sector critical**

NOAA Coastal Services Center

The Nature Conservancy

Coastal States Organization

National Association of Counties

Association of State Floodplain Managers

National States Geographic Information Council

Requirements

- *Reviewed needs assessments*
- *Attend coalition meetings*
- *Created profiles*
- *Held Digital Coast partner meetings*

Common Issues

Land use planning
Hazards resilience
Water quality
Habitat conservation
Marine spatial planning
Ocean governance
Climate change

Because data alone is not enough...



Digital Coast gives organizations that manage coastal resources easy access to data and related resources.

Data

Learn more about the kinds of data available and download data for your area of interest.

[Click here to learn about data types](#)

Access data for the geographic region of your choice.

[Download Data](#)

Tools

Use these tools to turn data into useful information your organization needs.

[Click here to see a list of tools](#)

Training

Update your skills by participating in one of these training programs.

[Click here to view training courses](#)

Digital Coast in Action

See how data and tools are used to address coastal management issues.

[Click here to see Digital Coast in action](#)

About Digital Coast

Digital Coast provides the total package needed by state, local, and non-profit organizations.

It not only offers easy access to downloadable data, but also the data-specific training, sample applications, and tools needed to address coastal issues.

[Read more...](#)



DATA DOWNLOAD

Single data download system for access to multiple datasets for one area of interest

- *Land cover & land use*
- *Imagery*
- *Lidar*
- *Benthic habitat*
- *Shoreline*
- *Bathymetry*

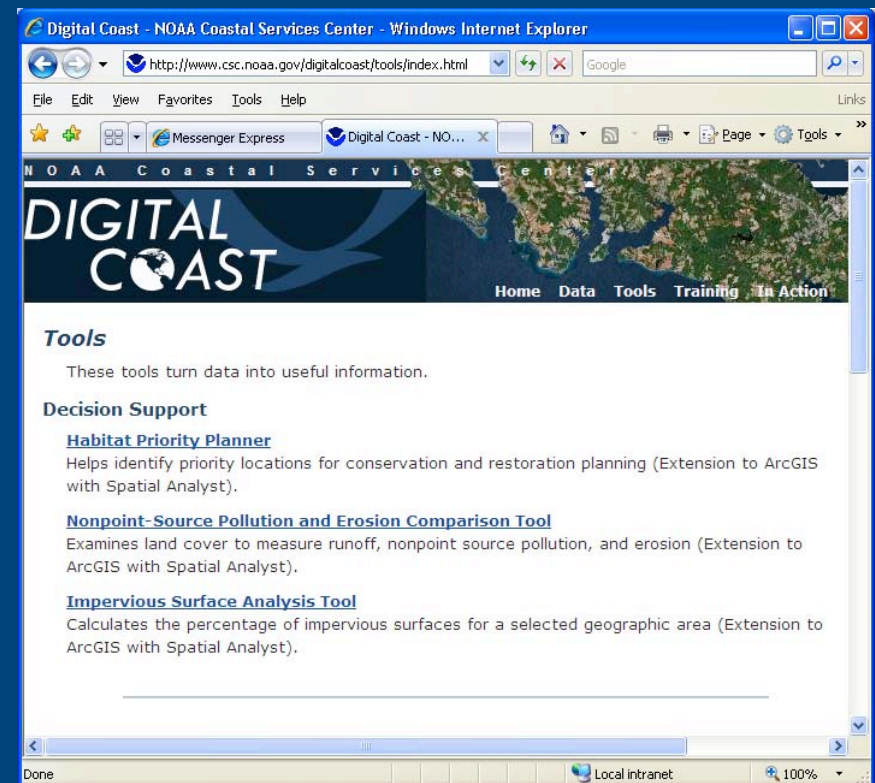


A screenshot of a web browser window displaying the Digital Coast Data Access Viewer. The browser title is "Digital Coast : Data Access Viewer - Windows Internet Explorer". The address bar shows the URL "http://maps.csc.noaa.gov/dataviewer/viewer.html". The page header includes the "DIGITAL COAST" logo and the text "Digital Coast : Data Access Viewer". Below the header is a navigation menu with "Legend", "Data Search", "Results", and "Help". The main content area features a map of the Charleston, South Carolina area, showing land cover and bathymetry. The map is overlaid with a grid. To the left of the map is a legend panel with a tree view of data layers: "CSC Data", "High Resolution Imagery", "Moderate Resolution Imagery", "Elevation", "Land Cover", "Benthic Habitat", "NOAA Shoreline", and "Base Data". Below the legend are controls for "Refresh Map", "Auto Refresh" (checked), and "Maptips" (unchecked). At the bottom of the page, there is a footer with "US DOC | NOAA | NOE", "NOAA Coastal Services Center", and a "Privacy policy" link. The browser status bar at the bottom shows "Zoom Out", "Local intranet", and "100%".

DECISION SUPPORT TOOLS

*Desktop and web-based
decision support and data
handling applications*

- *Habitat Priority Planner*
- *Nonpoint-Source Pollution and Erosion Comparison Tool*
- *Impervious Surface Analysis Tool*
- *Hurricane Evacuation Zones Mapping Tool*
- *Lidar Data Handler*
- *Electronic Navigational Chart Handler*



TRAINING

Classroom and online training opportunities and best practices

- *Introduction to ArcGIS I*
- *Coastal Applications Using ArcGIS*
- *Conservation Data Documentation*
- *Remote Sensing for Spatial Analysts*
- *GIS Tools for Strategic Conservation Planning*
- *Coastal Inundation Mapping*
- *Coastal No Adverse Impact*

A screenshot of a web browser window showing the Digital Coast training page. The browser title is "Digital Coast - NOAA Coastal Services Center - Windows Internet Explorer". The address bar shows the URL "http://www.csc.noaa.gov/digitalcoast/training/index.html". The page content includes the Digital Coast logo, a navigation menu with "Home", "Data", "Tools", "Training", and "In Action", and a "Training" section with introductory text and a list of technical and topical training topics.

Digital Coast - NOAA Coastal Services Center - Windows Internet Explorer

http://www.csc.noaa.gov/digitalcoast/training/index.html

File Edit View Favorites Tools Help

DIGITAL COAST

Home Data Tools Training In Action

Training

Training provided by the NOAA Coastal Services Center is limited to current Center partners from the nonprofit, local, state, and federal government sectors. Classes can be taught at the Center's [training facility](#) in Charleston, South Carolina, or can be brought to your organization. Please review our remote training requirements (PDF) for host responsibilities, costs, and site requirements.

Technical

- [Introduction to ArcGIS](#)
- [Coastal Applications Using ArcGIS](#)
- [Assessing GIS for Your Organization](#)
- [Remote Sensing for Spatial Analysts](#)

Topical

- [GIS Tools for Strategic Conservation Planning](#)
- [Coastal Inundation Mapping Course](#)

Local intranet 100%

DIGITAL COAST IN ACTION

Examples of decisions being made using geospatial technologies

- *Visualize sea level rise impacts*
- *Gather regional governance data*
- *Develop conservation plans*
- *Get public involved in planning*
- *Educate about hazard risks*
- *Create runoff scenarios*



A screenshot of a web browser window displaying the Digital Coast website. The browser title is "Digital Coast - NOAA Coastal Services Center - Windows Internet Explorer". The address bar shows the URL "http://www.csc.noaa.gov/digitalcoast/action/index.html". The page content includes the heading "Digital Coast In Action" and a brief introduction: "See how data and tools are used to address coastal management issues. Click on a symbol on the map to learn more." Below this, there are five interactive buttons: "Land Use" (orange), "Coastal Conservation" (green), "Hazards" (red), "Water Quality" (blue), and "Marine Planning" (grey). At the bottom of the page is a map of the United States with various colored icons overlaid on different regions, corresponding to the buttons above. The browser interface includes standard navigation buttons, a search bar, and a taskbar at the bottom showing "Done" and "Local intranet".

NOAA CSC Commitments to ICAN

- **Link to all U.S. coastal ‘atlases’ via Digital Coast**
- **Conduct systematic inventory of all CZM Internet-based mapping initiatives**
- **Make available any applicable geospatial training or best practice materials to ICAN partners**
- **Promote ICAN within U.S. Federal Geographic Data Committee organizational members**
- **Explore funding opportunities for ICAN via U.S. sources**





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