EEA/EIONET Workshop

Trieste, Italy --- November 2009

Coastal and Marine Geospatial Information Sharing

Tony LaVoi
NOAA Coastal Services Center

NOAA Coastal Services Center
LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

NOAA Coastal Services Center

Mission - *Linking People, Information, and Technology*

Customers and Partners - *State & Local Coastal Managers*

Primary Themes - *Marine and Land Use Planning & Climate Change Adaption*

Services – *Geospatial Data and Application Development; Social Science; Training; and Partnership Building*

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Overview

Policy Framework

- Ocean & Coastal Mapping Integration Act
- Ocean Policy Task Force

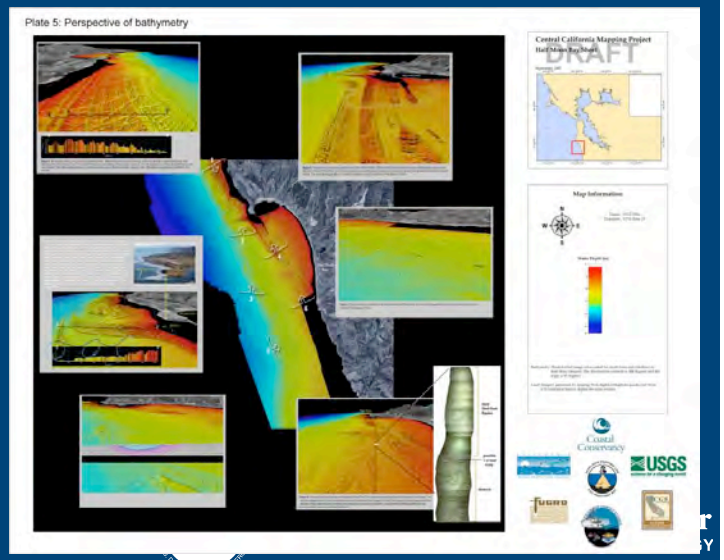
Geospatial Framework

- Multipurpose Marine Cadastre
- Digital Coast

Ocean and Coastal Mapping Integration Act

- *"A bill to establish a coordinated and comprehensive Federal ocean and coastal mapping program and plan"*

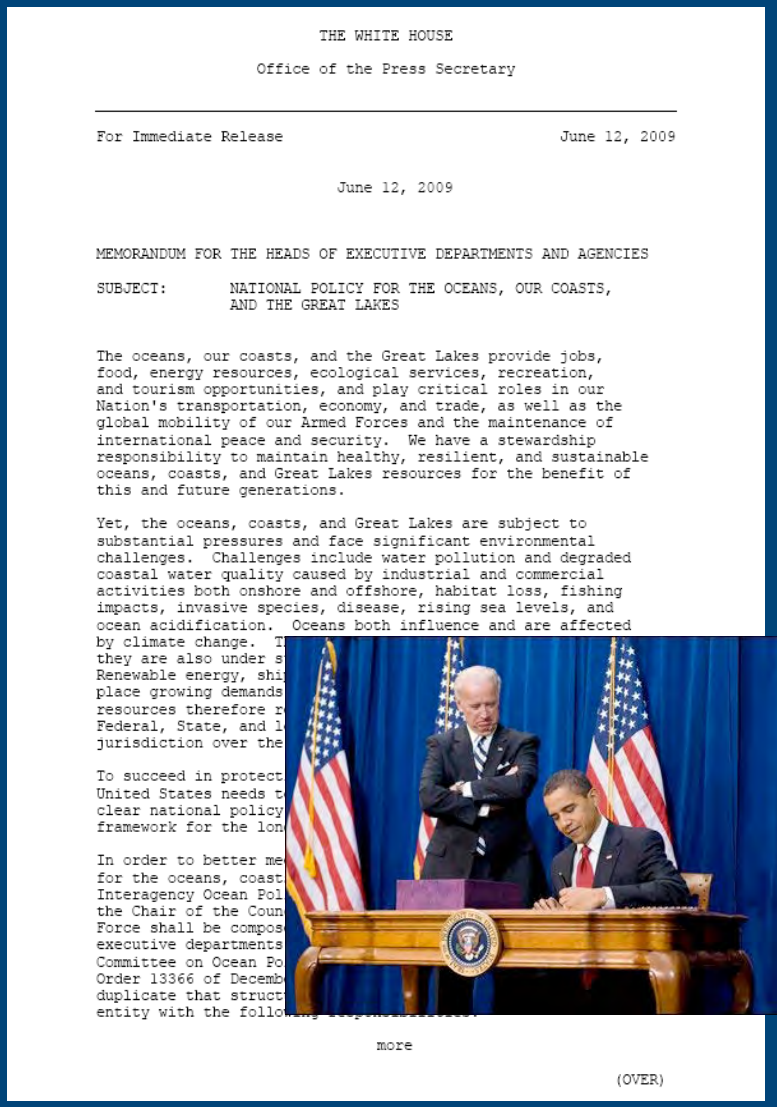
- Plan due to U.S. Congress in 2011 will address mapping requirements and programs; application and data management; standards; technology development; and acquisition planning



Ocean Policy Task Force

Memo Established an Interagency Ocean Policy Task Force (OPTF)

- Chaired by White House Council on Environmental Quality
- Members are Senior Policy-Level Officials
- Representation across the Federal Government



THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release June 12, 2009

June 12, 2009

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

SUBJECT: NATIONAL POLICY FOR THE OCEANS, OUR COASTS, AND THE GREAT LAKES

The oceans, our coasts, and the Great Lakes provide jobs, food, energy resources, ecological services, recreation, and tourism opportunities, and play critical roles in our Nation's transportation, economy, and trade, as well as the global mobility of our Armed Forces and the maintenance of international peace and security. We have a stewardship responsibility to maintain healthy, resilient, and sustainable oceans, coasts, and Great Lakes resources for the benefit of this and future generations.

Yet, the oceans, coasts, and Great Lakes are subject to substantial pressures and face significant environmental challenges. Challenges include water pollution and degraded coastal water quality caused by industrial and commercial activities both onshore and offshore, habitat loss, fishing impacts, invasive species, disease, rising sea levels, and ocean acidification. Oceans both influence and are affected by climate change. T
they are also under s
Renewable energy, shi
place growing demands
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To succeed in protect
United States needs t
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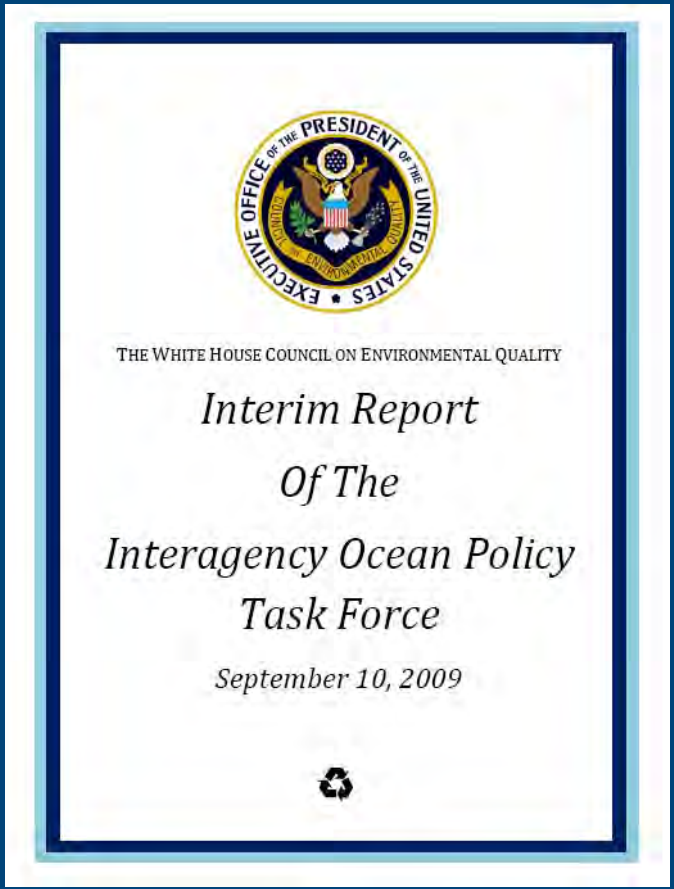
Objectives for a National Policy

- Ecosystem-based Management
- Coastal and Marine Spatial Planning
- Resiliency and Adaptation to Climate Change
- Regional Ecosystem Protection and Restoration
- Water Quality and Sustainable Practices on Land
- Changing Conditions in the Arctic
- Ocean, Coastal, and Great Lakes Observations



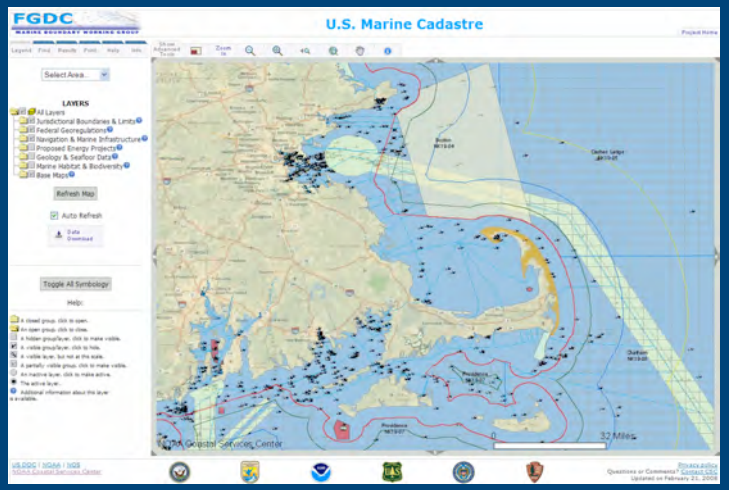
OPTF and Geospatial Information

Framework for Effective Coastal and Marine Spatial Planning will be:

- Comprehensive
- Integrated
- Ecosystem-Based
- Addresses: Conservation, Economic Activity, User Conflict, and Sustainable use of Ocean, Coastal, and Great Lakes Resources

Geospatial Framework

Ocean



Multipurpose Marine Cadastre

Coastal

Digital Coast

The Multipurpose Marine Cadastre

A Tool for Planning & Decision Making in the Marine Environment

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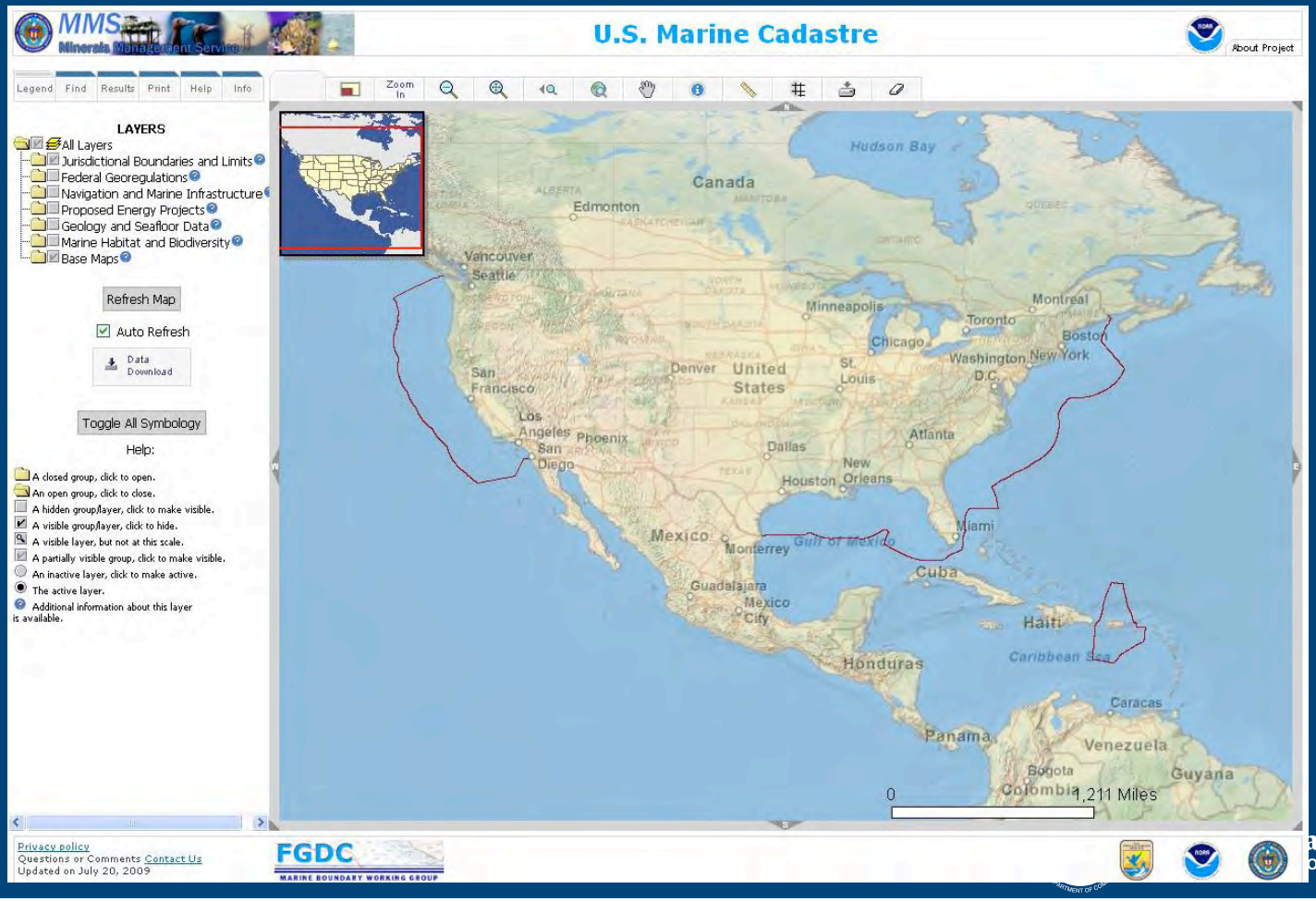
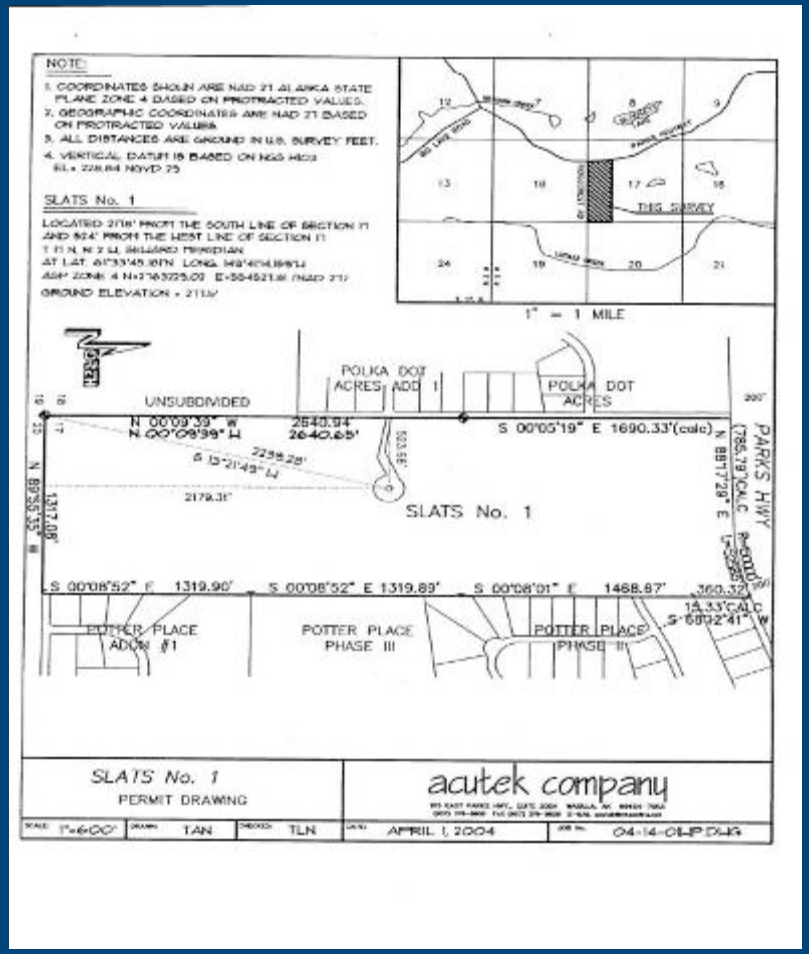
Multipurpose Marine Cadastre

A marine information system for the outer continental shelf and state waters providing framework data to support decision making

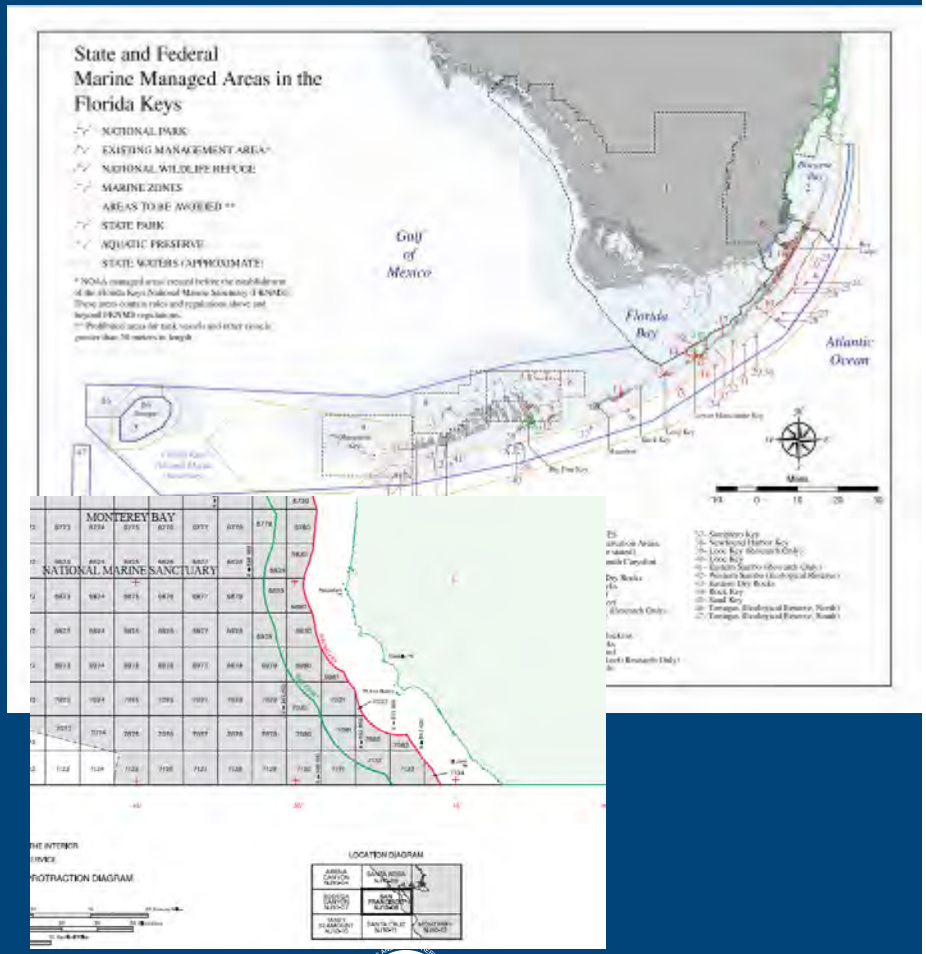


Multipurpose Marine Cadastre

Land-Based Cadastre Example



Marine-Based Cadastre Example



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MMC - History

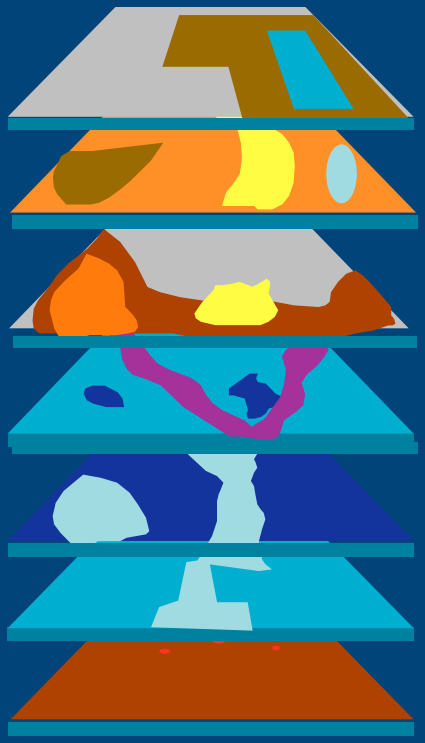
Energy Policy Act of 2005

- Section 388 – Alternative Energy Related Uses on the Outer Continental Shelf (OCS) – develop an OCS mapping initiative

Multi-year, interagency plan which focuses on . . .

- Data compilation
- Data access, standardization, and viewing
- Case studies
- Partnership development
- Capacity building

Multipurpose Marine Cadastre Data Themes



Marine Cadastre

Georegulations

Marine Infrastructure

*Geology and Seafloor **

*Marine Habitat and Biodiversity **

*Human Uses **

Base Maps

* Denotes significant gaps in data

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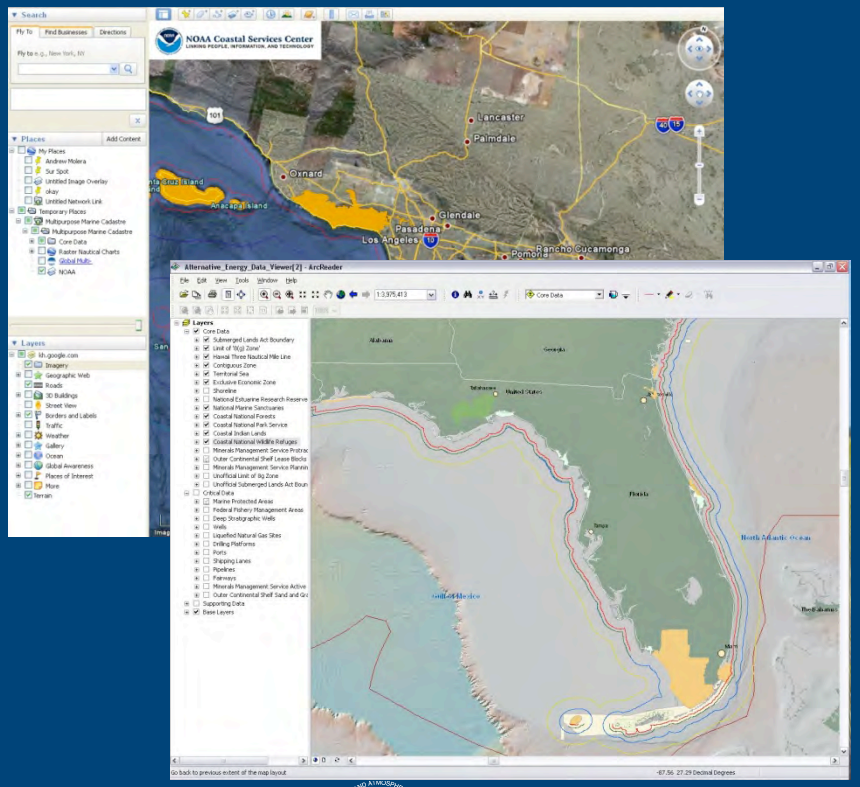
Data Management and Viewers

Data available from the authoritative source in easily accessible formats

- Mix of locally hosted data and web services

Web-based and client-side viewers provide data access, decision support and map making functionality

- ArcIMS/ArcGIS Server
- ArcReader
- Google Earth



Case Studies

Issue: Alternative Energy Development

Task: Develop mapping applications to support energy planning and regulations

Issue: Need data and maps for wave energy reports

Task: Provide data and map services to support ocean planning

Issue: Need system to support hydrokinetic project permit review

Task: Map critical habitat data

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Building the Digital Coast

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DIGITAL COAST

Vision

Easy access to data and tools

Coastal organizations come together to address coastal issues

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Partnership Group

- Association of State Floodplain Managers
- Coastal States Organization
- National Association of Counties
- National States Geographic Information Council
- The Nature Conservancy

Priority Issues

- Land use planning
- Hazards and community resilience
- Water quality
- Habitat conservation
- Marine spatial planning and ocean governance
- Climate change

DIGITAL COAST

Building the Digital Coast

Phase one is now available; additional data and information will be available in phase two, which is scheduled for release in late fall.

Learn more...

Digital Coast Partnership

Phase two is being led by the Digital Coast partner network. These partners, who are either primary users of the system or content providers, will help NOAA prioritize the components that will be added during phase two and all future expansion efforts.

Learn more...

Data

Learn more about the kinds of data available and download data.

Tools

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

Training

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

Digital Coast In Action

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

Digital Coast Data

Immediate access to data for the geographic region of your choice.

Download Data

About Digital Coast

Digital Coast is being built to provide the total package needed by state, local, and non-profit organizations not only offering easy access to downloadable data, but also the data-specific training, sample applications, and tools needed to address coastal issues.

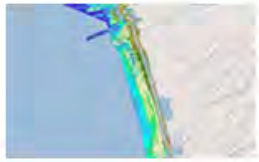
Data

Filter by Category: All Categories

Orthoimagery

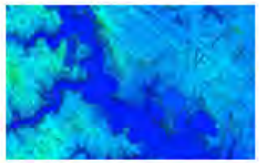
NOAA CSC High-Resolution Orthoimagery
Acquired to support projects with state and local partners, these data sets have variable specifications and geographic extents.

USACE CHARTS Orthomosaics
Created from individual images collected by the Compact Hydrographic Airborne Rapid Total Survey (CHARTS) system.

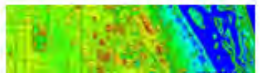


USACE CHARTS Bottom Reflectance
The seafloor reflectance from multiple flightlines that are collected by the Compact Hydrographic Airborne Rapid Total Survey (CHARTS) system.

Elevation



NOAA CSC Coastal Lidar
Lidar data sets contributed by many different entities and groups. The Center standardizes and distributes the data in user-specified formats, resolutions, and datums.



NOAA CSC Coastal IfSAR
A high-resolution, remotely sensed elevation data product. The coastal IfSAR holdings

Featured Data Resource

The **Mississippi Geospatial Clearinghouse (MGC)** provides access to a comprehensive spatial information warehouse of Geographic Information Systems (GIS) resources of Mississippi for use by government, academia, and the private sector.

Access additional data resources

Data

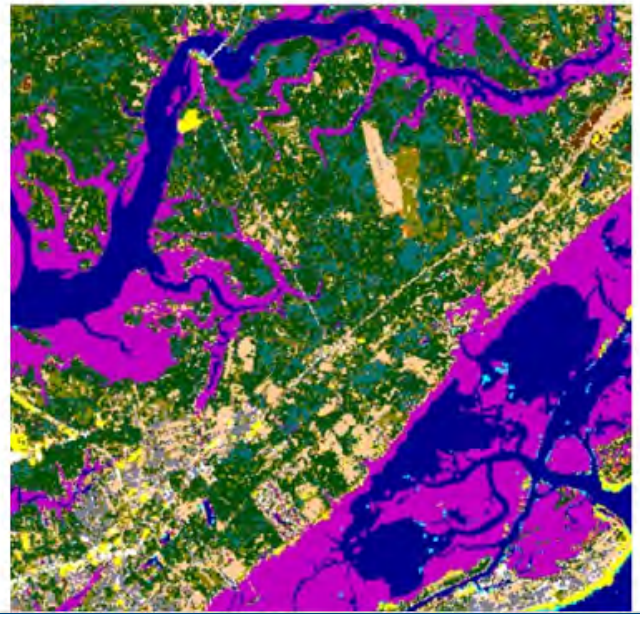
Coastal Change Analysis Program Regional Land Cover

Produced and distributed by the NOAA Coastal Services Center

The Coastal Change Analysis Program (C-CAP) is nationally standardized land cover and land change information for the coastal regions of the U.S. C-CAP products feature inventories of coastal intertidal areas, wetlands, and adjacent uplands with the goal of monitoring these habitats by updating the land cover maps every five years. C-CAP products are developed using multiple dates of remotely sensed imagery and consist of raster-based land cover maps for each date of analysis, as well as a file that highlights what changes have occurred between these dates and where the changes were located.

NOAA has completed two time periods (1996 and 2001) for most areas of the country and is currently working to complete a 2005 – 2006 update to these data by 2010.

1972 1986



Data Specifications

Area of Coverage: Coastal intertidal areas, wetlands, and adjacent uplands of the contiguous U.S., Puerto Rico, the U.S. Virgin Islands, Hawaii, and the Pacific Islands territories

Date(s) Available: 1992, 1996, 2001, and 2005 (vary by location)

Format: IMG, GeoTIFF, GoogleEarth KMZ

Resolution/Scale: 30 meter pixels (1:100,000)

Minimum Mapping Unit: 30 meter pixels (1/4 acres)

Tools

Analysis Tools

Use data to produce value-added results based on application.

Habitat Priority Planner
Helps to identify priority locations for conservation and restoration planning (extension to ArcGIS with Spatial Analyst)

Nonpoint-Source Pollution and Erosion Comparison Tool
Examines land cover to measure runoff, nonpoint source pollution, and erosion (extension to ArcGIS with Spatial Analyst)

Impervious Surface Analysis Tool
Calculates the percentage of impervious surfaces for a selected geographic area (extension to ArcGIS with Spatial Analyst)

Sea Level Affecting Marshes Model
Simulates potential impacts of long-term sea level rise on wetlands and shorelines

Digital Shoreline Analysis System
Computes rate-of-change statistics from multiple historic shoreline positions

eCoastal Tools
Provides data management and analysis solutions for coastal engineering projects

Hazard Assessment Tool
Offers guidance on developing a website that addresses hazard-related data specific for your region

Benthic Terrain Modeler
Derives benthic terrain classifications from input bathymetry

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Informational Tools

Provide guidance or 'how to' techniques.

Storm Mapping Tutorial
Leads users through the process of using weather data in a GIS

Storm Data Resource Guide

Tools

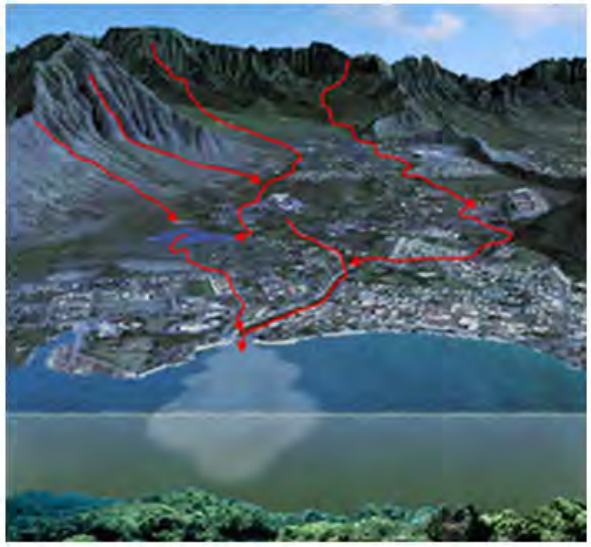
Nonpoint-Source Pollution and Erosion Comparison Tool

Provided by the NOAA Coastal Services Center

Use the Nonpoint-Source Pollution and Erosion Comparison Tool (N-SPECT) to investigate potential water quality impacts from development, other land uses, and climate change. N-SPECT was designed to be broadly applicable, but the tool operates most accurately in medium-to-large watersheds having moderate topographic relief.

New publication describes regional pollutant coefficient development

N-SPECT version 1.5.0 is now available



Features

Provides projections and maps of surface water runoff volumes, pollutant loads, pollutant concentrations, and total sediment loads

Helps users see areas that might benefit from changes to proposed development strategies

Processes digital elevation data quickly and easily

Provides a means to analyze "what if" land use change scenarios

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

- Assessing GIS for Your Organization
- Coastal Applications Using ArcGIS
- GIS for Managers
- Introduction to ArcGIS
- Remote Sensing for Spatial Analysts

Topical

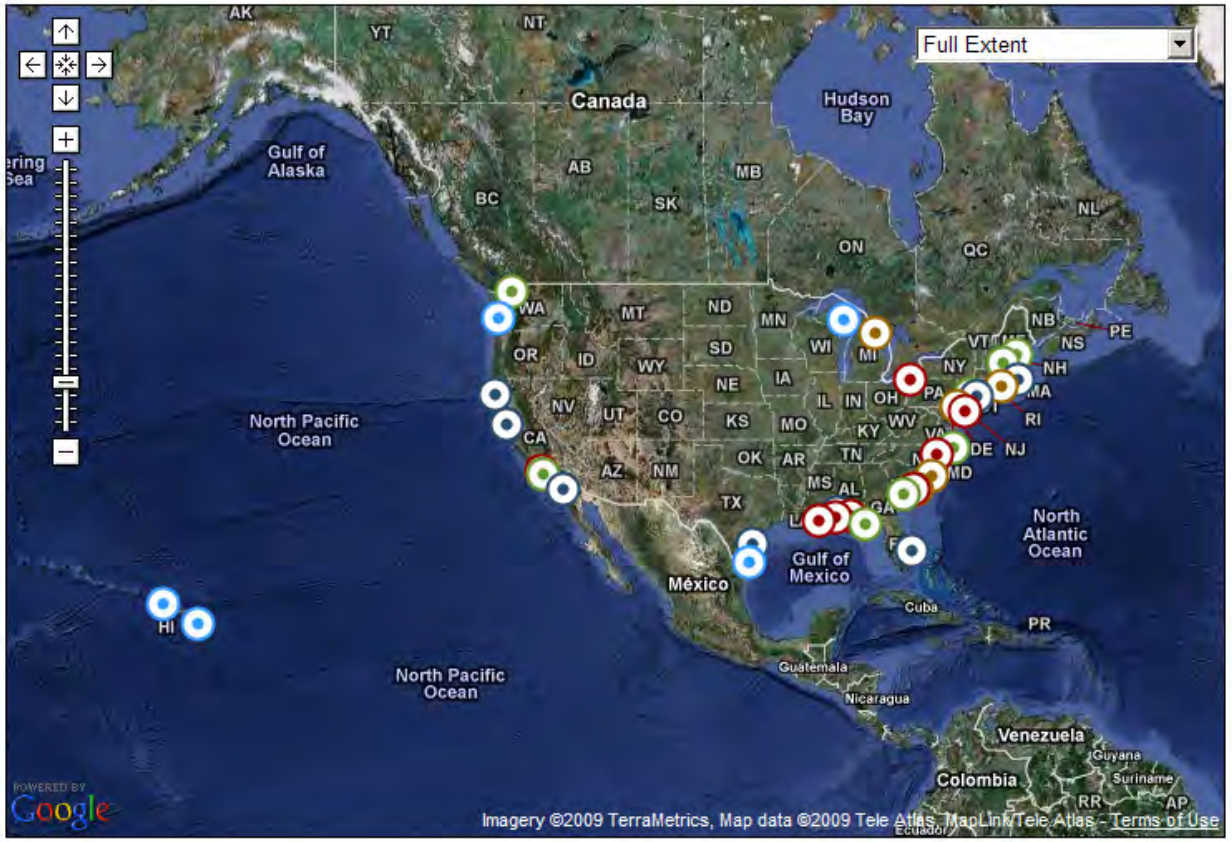
- Conservation Data Documentation
- Coastal Inundation Mapping Course
- GIS Tools for Strategic Conservation Planning

Digital Coast In Action

See how data and tools are used to address coastal management issues. Click on a symbol on the map to learn more.

Use the drop down to zoom to a state. Click on the buttons to turn on and off the different issues on the map below.

Land Use | Coastal Conservation | Hazards | Water Quality | Marine Planning



Digital Coast In Action

Land Use

Land Cover Monitoring Enhances Planning Efforts in South Carolina

From 1972 to 2000, the suburb of Mount Pleasant in Greater Charleston experienced a 250 percent increase in development and a 160 percent increase in grasslands (the latter is commonly associated with parks, lawns, and golf courses). More than half the affected area was previously forested—and this drastic land cover change has increased Mount Pleasant's vulnerability to sediment and pollution runoff, as well as to diminished wildlife habitat and water quality. Much development abuts the marsh edge, leaving little buffer for neighborhoods in the event of hurricanes or other natural disasters. Moreover, development continues at a brisk pace.

▶ Related Data

▼ Related Tools

- Nonpoint-Source Pollution and Erosion Comparison Tool
- Impervious Surface Analysis Tool
- Habitat Priority Planner

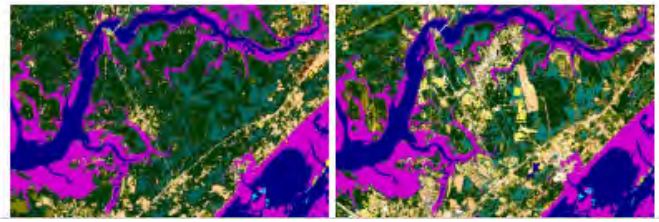
The Process

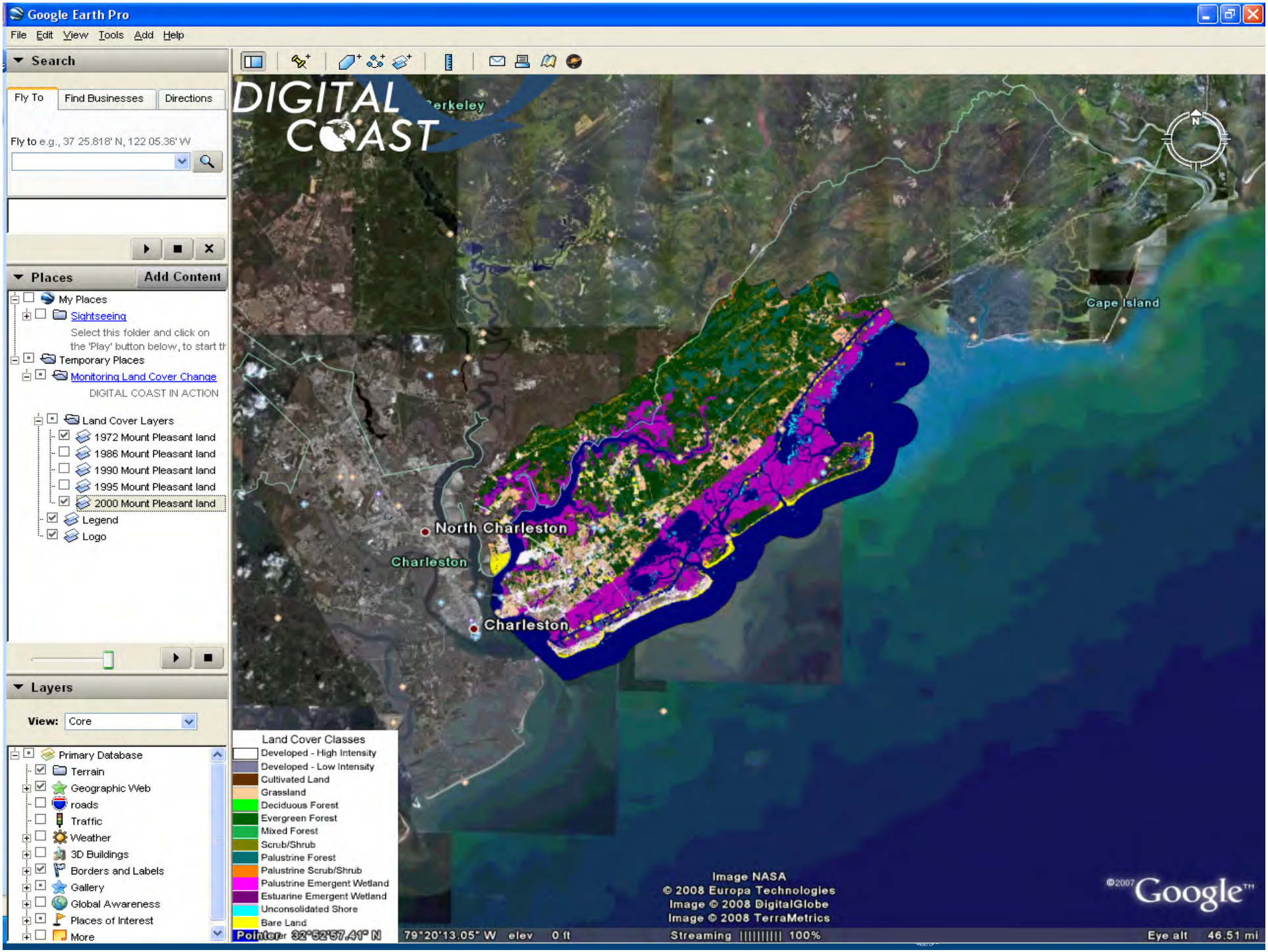
Land regulation agencies and state and local planners are using three geospatial technology tools to evaluate past management policies, assess current landscape conditions, and guide future development in Mount Pleasant.

The Nonpoint-Source Pollution and Erosion Comparison Tool (N-SPECT) is a geographic information system (GIS) extension that is enabling users to create different land cover change scenarios for Mount Pleasant in order to view potential changes in surface water runoff, nonpoint source pollution, and erosion.

The Impervious Surface Analysis Tool (ISAT), available as a GIS extension, is helping officials calculate Mount Pleasant's area of impervious surface and relate this to impacts on local water quality.

The Habitat Priority Planner (HPP), a GIS-based tool, is allowing officials to inventory Mount Pleasant in the following ways: assess habitats and habitat conditions; identify and rank potential restoration and conservation sites; analyze "what if" scenarios; and create maps, reports, and data tables.

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Search
Fly To
Find Businesses
Directions
Fly to e.g., 37 25.818' N, 122 05.36' W
Places
Add Content
My Places
Sightseeing
Select this folder and click on the 'Play' button below, to start th
Temporary Places
Monitoring Land Cover Change
DIGITAL COAST IN ACTION
Land Cover Layers
1972 Mount Pleasant land
1986 Mount Pleasant land
1990 Mount Pleasant land
1995 Mount Pleasant land
2000 Mount Pleasant land
Legend
Logo
Layers
View: Core
Primary Database
Terrain
Geographic Web
roads
Traffic
Weather
3D Buildings
Borders and Labels
Gallery
Global Awareness
Places of Interest
More
DIGITAL COAST
Cape Island
North Charleston
Charleston
Charleston
Land Cover Classes
Developed - High Intensity
Developed - Low Intensity
Cultivated Land
Grassland
Deciduous Forest
Evergreen Forest
Mixed Forest
Scrub/Shrub
Palustrine Forest
Palustrine Scrub/Shrub
Palustrine Emergent Wetland
Estuarine Emergent Wetland
Unconsolidated Shore
Bare Land
Image NASA
© 2008 Europa Technologies
Image © 2008 DigitalGlobe
Image © 2008 TerraMetrics
©2007 Google™
Pointer 32°52'57.41" N 79°20'13.05" W elev 0 ft
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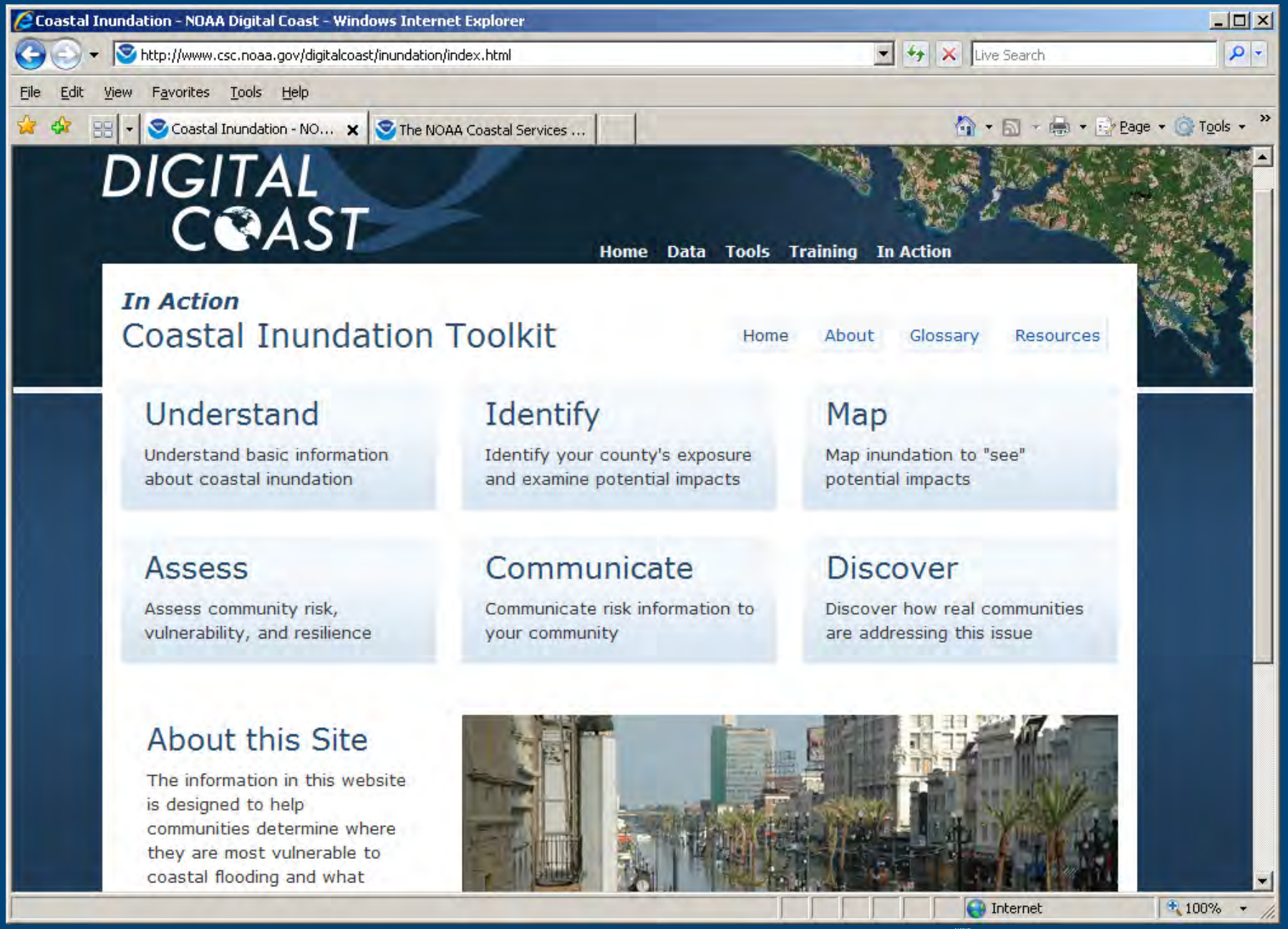

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References

Digital Coast

www.csc.noaa.gov/digitalcoast

Multipurpose Marine Cadastre

www.csc.noaa.gov/digitalcoast/tools/mmc/

NOAA Coastal Services Center

www.csc.noaa.gov

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