

# The Oregon Coastal Atlas: A Pacific Northwest NSDI Contribution

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The Oregon Coastal Atlas ([www.coastalatlus.net](http://www.coastalatlus.net)), a collaboration of the Oregon Ocean Coastal Management Program, Oregon State University and Ecotrust, is an interactive map, data, and metadata portal for coastal managers, scientists, and the general public. The portal enables users to search and find data, but also to understand its original context, and put it to use via online tools in order to solve a spatial problem. The presentation and conference paper will focus on the design aspects of the portal, the platform and browser independence of our prototype, and the contributions made to the U.S. Coastal National Spatial Data Infrastructure.

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## Introduction

The Oregon Coastal Atlas (OCA), a collaboration of the Oregon Ocean-Coastal Management Program, Oregon State University and Ecotrust, is an interactive map, data, and metadata portal for coastal resources managers and scientists, with additional outreach sections for the general public. The portal enables users obtain data, but also to understand its original context, and to use it for solving a spatial problem via online tools. The design of the atlas draws from the reality that resource decision-making applications require much more than simple access to data. Resource managers commonly make decisions that involve modeling risk, assessing cumulative impacts and weighing proposed alterations to ecosystem

functions and values. These decisions involve pulling together knowledge from disparate disciplines such as biology, geology, oceanography, hydrology, chemistry and engineering. Practitioners within each one of these disciplines are often vested in the technologies that dominate the market within their particular field. This presents significant data integration difficulties for investigators involved in management decisions that are as inherently interdisciplinary as those in the coastal zone. The goal of our effort is to address these problems by incorporating a variety of geospatial data and analysis tools within a common framework.

Certainly an important aspect of the OCA is how it contributes to the broader network of coastal resource managers across the nation. The national spatial data infrastructure (NSDI; and within that the [Coastal NSDI](#) to meet the needs of the coastal and marine communities), with its timely focus on rethinking the methods of spatial data delivery to users, represents a welcome change from the centralist period in geographic information management when federal agencies dominated decisions and data resources (Wright et al., 2000). Empowerment and efficiency at regional scales all the way up to the NSDI results from local groups taking up the challenge of data dissemination. For the state of Oregon, an initial partnership of Oregon State University (OSU) with the Pacific Northwest Coastal Ecosystems Regional Study (PNCERS, funded by the Coastal Ocean Program of NOAA and the Oregon Coastal Management Program of Oregon's Department of Land Conservation and Development), the Tillamook Coastal Watershed Resource Center (TCWRC, formerly one of 28 National Estuary Projects established nationwide by the EPA), Ecotrust (one of the largest non-profit environmental conservation organizations in the Pacific Northwest and a leader in public access GIS), and the State Service Center for Geographic Information Systems led to the development in 1997 of the [Oregon Coast Geospatial Clearinghouse](#) (OCGC) (Figure 1). The OCGC still functions as an NSDI node but now functions in the background to the OCA, incorporating metadata records for the hundreds of data sets that are part of that new effort, and broadening the reach of the OCA in the process.

**OREGON COAST**  
Geospatial Clearinghouse

an NSDI node

...now a component of the new  
**OREGON COASTAL ATLAS**  
(press release)

**Metadata**

The Oregon Coast Geospatial Clearinghouse makes metadata from the Oregon Coastal Atlas available worldwide via distributed nodes of the National Spatial Data Infrastructure (NSDI).

**People**

Meet the people and organizations who have contributed to the Oregon Coast Geospatial Clearinghouse, and are helping to build the new Oregon Coastal Atlas!

**Metadata Demystified**

Have you ever wondered what metadata are? Click here learn more about metadata, its purpose, and its importance in the world of geospatial data and distributed computing.

**About the Clearinghouse**

Click here to get background on the Oregon Coast Geospatial Clearinghouse. You will learn a little about the history and purpose of this NSDI node.

Oregon State University - Davey Jones Locker

**Links**

Search the NSDI Clearinghouse

Last updated: May 2, 2003

**Figure 1.** The Oregon Coast Geospatial Clearinghouse at [buccaneer.geo.orst.edu](http://buccaneer.geo.orst.edu), an NSDI node at Oregon State University. The web site provides general information about the node, a tutorial about metadata and clearinghouses, sample metadata records, and links to the OCA or to the National Geospatial Data Clearinghouse gateway in order to search for and download all of the metadata records available.

## Metadata Within the OCA

Metadata creation and access for the OCA has followed a very standard approach as facilitated by the Federal Geographic Data Committee (FGDC). FGDC-compliant metadata for all OCA data sets and remotely-sensed images has been created with the Metadata Collector Tool for ArcView 3.x developed by the NOAA Coastal Services Center ([www.csc.noaa.gov/metadata/text/metatools.html](http://www.csc.noaa.gov/metadata/text/metatools.html)). The tool can create metadata for any data type supported by ArcView, including ArcInfo coverages, ArcView shapefiles, and any supported raster image formats. FGDC parsing software (mp) was then used to ensure correct format before final indexing and loading into the clearinghouse, and to create both HTML and SGML

versions of the metadata. Next, the metadata were indexed for clearinghouse searches using specialized software provided by the FGDC (Isite v. 2.07i for clearinghouse node services) running on a Sun Blade 100. Isite software creates a server process that can respond to queries against full-text, spatial terms, temporal terms, and text fields within metadata documents. All metadata records (we currently have over 700 of them) are accessible via a search on the OCA (Figure 2; the server for which resides at the Oregon Ocean-Coastal Management Program in Portland, OR), which has mirror copies of all the metadata records, as well as the actual data sets (Figure 2). Both the OCGC and the OCA web sites include helpful online tutorials about metadata and clearinghouses.

## OREGON COASTAL ATLAS

Wednesday June 18, 2003

The screenshot shows the Oregon Coastal Atlas website interface. At the top, there is a navigation bar with tabs for HOME, MAPS, TOOLS, LEARN, and SEARCH. A search box labeled 'Site Index:' is on the right. Below the navigation bar is a banner for the 'OREGON COAST Geospatial Clearinghouse' with the text 'an NSDI node' and a globe icon. The main content area is titled 'About Metadata' and contains introductory text with links to the original clearinghouse and NOAA's 'The Wonderful World of Coastal Metadata'. Below this, there are two columns of text: 'What is Metadata?' and 'Why is Metadata a Vital Component of a Data Set?' on the left, and 'Contents of an FGDC Metadata Record:' with a numbered list of three items on the right.

HOME MAPS TOOLS LEARN SEARCH Site Index: [dropdown arrow]

To join our news list please send a blank email to: [CoastalAtlas\\_News\\_subscribe@yahoo.com](mailto:CoastalAtlas_News_subscribe@yahoo.com)

# OREGON COAST

Geospatial Clearinghouse

an NSDI node

## About Metadata

Have you ever wondered what metadata is? In this section of the coastal atlas, we have links to help you find out what metadata is, its purpose, and its importance in the world of distributed computing. Please visit the original [Oregon Coast Geospatial Clearinghouse](#) and the "[The Wonderful World of Coastal Metadata](#)" by NOAA's Coastal Services Center to learn more about Metadata and for links to many different and valuable [Metadata tools](#)

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**What is Metadata?**  
Metadata is a component of data which describes the data. It is "data about data." Metadata describes the content, quality, condition, and other characteristics of data. Metadata describes the who, what, when, where, why, and how about a data set. Without proper documentation a data set is incomplete.

**Why is Metadata a Vital Component of a Data Set?**  
Metadata is critical to preserving the usefulness of data over time. For instance, metadata captures important information on how the data were collected and/or processed so that future users of that data understand these details. Another vital function metadata serves is as a record in search systems so that users can locate data sets of interest.

**Contents of an FGDC Metadata Record:**

- 1. Identification Information**  
Basic Information About the dataset
- 2. Data Quality Information**  
A general assessment of the quality of the data set.
- 3. Spatial Data Organization**  
The mechanism used to represent spatial information in the dataset

**Figure 2.** Portion of the "Learn" section of the [Oregon Coastal Atlas](#) that informs users about metadata and leads them further to the Oregon Coast Geospatial Clearinghouse, an NSDI node. Note the navigation tabs at top, leading users to the major "Search", "Learn", "Tools" and "Map" sections of the web site.

# General Functionality of the OCA

As mentioned above, the OCGC functions in the background to the OCA, where users should actually start their search for data. The OCA consists of four main functional areas: "Search", "Learn", "Tools", and "Map" (Figure 2). The intention is for users to be able to look for and find data pertaining to a particular enquiry, to understand the original context of the data, and to be able to put selected data to use via online tools in order to help solve a question. Major content is always made accessible through multiple paths to accommodate different types of audiences/searchers. All functions occur via a unified and highly cross-linked interface that helps provide an intuitive workflow and seamless user experience.

Under "Search", the ability to find data is enabled both via traditional query forms (e.g. for keyword, scale, source, etc.) and by "area of interest" selection via a map interface. Both geospatial data (e.g. Arcview shapefiles) and non-geospatial information (e.g. bibliography entries, online documents) can be returned from a single search. All GIS data returned is documented to the FGDC metadata standard and all metadata records co-reside in an NSDI searchable node making them retrievable to any user with an NSDI client.

The "Learn" section provides access to background information on both "Coastal Systems" such as estuaries, sandy shores, rocky shores, and ocean areas, and "Coastal Topics" such as hazards, public access, fisheries, processes, etc. The format allows for descriptive narrative, static images, and animations, and cross-links whenever possible with relevant datasets available in the archives. Similarly, the "Tools" section of the web site will provide specific interactive tools for utilizing archive data to solve directed topic-based questions (e.g. will a certain property be inundated in a 20-year storm during an El Nino year?). Each tool will be cross-linked with a topic-based help tutorial that will also be accessible from the "Learn" section.

Features available under the "Map" section include those typical of many web-mapping applications: Pan, Zoom In, Zoom Out, and Query are all available in a compact and simplified layout with pop-up advice as to appropriate uses. Users can browse preformatted datasets in the form of raster backdrops with vector overlays, for the entire Oregon coastal zone including the territorial sea. In addition, archive datasets identified by users may be interactively added to the base map to provide maps of personalized interest. Users may also dynamically switch between HTML and Java Applet-based interfaces to accommodate the widest audience of browsers and platforms. Once a custom map has been created, output to a printer-friendly format (e.g. PDF) is possible.

## Conclusion

The goal of the OCA is to address the needs of the coastal resource manager or coastal planner within the state of Oregon. End-user training and direct technical assistance are being incorporated into the development of the atlas, (via "mailto" links that reach project partners, with responses within 24 hours, as well as self-help pages), as are back-end system maintenance tools to ensure system longevity. In this way we seek to improve universal participation in coastal decision-making among communities by extending infrastructure to public offices that would otherwise face difficulties accessing these services and resources. But our connection to the NSDI via the OCGC broadens our reach to the national scale. We cannot hope to support public offices in other states of course, but the design and architecture of the atlas, as well as the provision of metadata and data, may be of help to other state ocean/coastal management programs. We are currently seeking FGDC funding to support our next planned activity in support of the NSDI: the addition of a searchable OpenGIS Consortium Web Map and Web Feature Service to the OCGC, as well as to servers running the main OCA site (with MapServer 3.6) and auxiliary servers at Ecotrust and Oregon State University running ArcIMS 4. Beyond that we hope to participate in Geospatial One-Stop via a liaison with the National Map, or by virtue of our NSF funding as part of the Digital Government initiative.

## **Acknowledgments**

We are indebted to our terrific team of student workers for programming support, the writing of metadata records, and general research and database assistance. These include undergraduate intern Mike Tavakoli-Shiraji, graduate students Ken Crouse, Chris Zanger, and Danielle Pattison, and metadata maniacs Amythyst O'Brien, Christina Ryan, Anthea Fallen-Bailey, Jenny Allen, Jessica Adine, and Ryan Field. Thanks also to John Marra of the NOAA Pacific Services Center and David Revell of Oregon Surfrider for valuable research collaborations and tool-building during the early phases of this project. We very much appreciate the guidance and support of Bob Bailey of the Oregon Ocean-Coastal Management Program. The Oregon Coastal Atlas is currently funded by National Science Foundation (NSF) grant EIA-001359, as well as by supplemental grants from the NOAA Coastal Services Center and the Federal Geographic Data Committee.

## **References and Links**

Isite Metadata Server 2.07 <http://clearinghouse4.fgdc.gov/ftp/>, Accessed 20 June 2003.

NOAA Coastal Services Center, 2003, Coastal NSDI, <http://www.csc.noaa.gov/themes/nsdi/>, Accessed 20 June 2003.

NOAA CSC Metadata Collector Extension for ArcView 3.x <http://www.csc.noaa.gov/metadata/text/download.html>, Accessed 20 June 2003.

Wright, D., Duvall, G., and Ward, B., 2000. Metadata matters: A national geospatial clearinghouse for the Oregon Coast, Proceedings of The Coastal Society 17th International Conference, Portland, Oregon.

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## Get the PPT File

The PowerPoint file from the ESRI Conference presentation, as well as a larger PowerPoint file with more information, will be available for download from [dusk.geo.orst.edu/esri03](http://dusk.geo.orst.edu/esri03).

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HOME

MAPS

TOOLS

LEARN

SEARCH

To join our news list please send a blank email to: [CoastalAtlas\\_News-subscribe@yahoogroups.com](mailto:CoastalAtlas_News-subscribe@yahoogroups.com)



## Welcome to Oregon's Coastal Atlas

The Oregon Coastal Atlas Website is a depot for traditional and digital information which can be used to improve/streamline decision-making relating to the Oregon Coastal Zone. It is a coastal managers web site which provides background information for different coastal systems, access to interactive mapping, online geospatial analysis tools, and direct download access to an array of natural resource data sets relating to coastal zone management.

### Recent Additions to the Atlas:

Date	Change Made
3-14-2003	Added <a href="#">Feedback Poll</a>  for user input on Internet Connection speeds 
3-10-2003	Added <a href="#">Coastal Access</a> data to Maps and <a href="#">Learn</a> pages
2-24-2003	Improved Custom Map Pick-Up (solves Acrobat Plug-in Problems)
1-16-2003	Added Land Cover Background Option
1-16-2003	Fixed PLSS Labels and Improved City and other Labeling
1-14-2003	Fixed Highway bug in Curry and Marion Counties
12-6-2002	Fixed the Custom Map Bug that existed briefly Dec 6th-7th
12-2-2002	Added <a href="#">Links Center</a> and expanded the <a href="#">Background</a> page.
12-1-2002	Password protection removed from all areas not currently under construction.
11-5-2002	General House cleaning and system Maintenance completed.

### Feedback Poll

#### How fast is your Internet Connection?

28.8 Modem  
56.6 Modem  
ISDN  
DSL / Cable  
T-1 / T-2

### Platforms tested:

Please note that the Atlas has been tested with success on the following browsers and platforms. If you experience a problem viewing anything please let us know, and be sure to report the browser and platform you are viewing from.



95, 98, NT, 2k



9.1, OS X

Unix

	5.0, 5.5, 6.0.2	4.5, 5.0, 5.2	
	4.04, 4.5, 4.7, 6.2	4.7, 4.75	4.7, 4.76

 **\*\* A note to Netscape users:** while all elements of the Atlas have been tested and found compatible on the Netscape browsers shown above, it was noted during testing that Netscape 4.x browsers were significantly (up to 3 times) slower to refresh interactive maps than Netscape 6.x and IE browsers. Therefore if you anticipate using the interactive maps heavily, we suggest that your experience will be enhanced if you use a Netscape 6+ or IE browser. This finding was independent of platform.

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any comments or suggestions regarding the coastal atlas can be emailed directly to the project partners at : [coastalatlas@lists.orst.edu](mailto:coastalatlas@lists.orst.edu)

Home | Maps | Tools | Learn | Search | Background | About Us | Support | Links

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