BUILDING AND SHARING SPATIAL METAPHORS FOR THE

CATALOGUE OF OREGON MARINE AND COASTAL INFORMATION

by

Colin A. Cooper

A RESEARCH PAPER

submitted to

THE GEOSCIENCES DEPARTMENT

in partial fulfillment of the
requirements for the
degree of

MASTER OF SCIENCE

GEOGRAPHY PROGRAM

June 2005

Committee in Charge:
Dawn Wright, Geosciences, Major Professor
Jim Good, Marine Resource Management, Minor Professor
Jon Kimerling, Geosciences, Committee Member

Acknowledgements

I would like to thank everybody who has helped me along the way to completing my research at Oregon State University. Much thanks to my major professor Dawn Wright for taking me aboard and steering me in all the right directions. She provided me with a research assistantship through NSF ITR/IM/Digital Government grant #0011359, which was the impetus of my research. Her guidance was crucial in opening the door to the innovative field of spatialization. My additional committee members Jon Kimerling and Jim Good have added their own insight and perspective that have guided my research.

Tanya Haddad is another person to whom I am greatly indebted. She has helped me tremendously in the more technical aspects of web development and in dealing with the COMCI database structure. I worked initially with Chris Zanger on setting up the COMCI database and thank him for a smooth transition and willingness to help.

Of course, I would like thank all my friends that have helped along the way: Emily Larkin for battling ArcIMS alongside with me, Ryan Dey for his technical prowess, Adele Johnson for her way with words, and all the rogues of Davey Jones' Locker, especially Pete and Keldah.

Finally, I would like to thank my parents for all the support and encouragement they have shown me throughout my educational career. Above all, I would like to thank Amanda for taking the plunge and coming to Oregon with me, giving me two years of patience and support.

Building and Sharing Spatial Metaphors for the Catalogue of Oregon Marine and Coastal Information

ABSTRACT

Spatialization is an innovative way to expand searching capabilities for a marine/coastal reference database by using a metaphorical map framework to establish a sense of place for non-spatial information. Spatializing the Catalogue of Oregon Marine and Coastal Information (COMCI), a coastal reference database, enables the marine and coastal resource community to quickly access pertinent information in a dynamically changing marine environment that will aid them in making decisions on management, protection, and conservation. Geographic information systems, including ESRI's ArcGIS and ArcIMS, are used in conjunction with an Access database of non-geographic data to create visualizations that facilitate the use of an interactive search interface. Using a self organizing map (SOM) technique to spatialize the coastal database, a metaphorical information space was created and implemented into an interactive graphical display.

INTRODUCTION

Spatialization is a growing field in geographic information science intent on using geographic tools and principles for visualizing non-spatial data (e.g., Fabrikant and Buttenfield, 2001; Skupin et al., 2002; Skupin and Fabrikant, 2003). Constructing visualizations from spatial metaphors for a database allows users to see the entire database as they explore it, offering an effective alternative to searching based only on text keywords. As database visualizations become more effective and

popular, demand will increase for user access to them. Visualizations of databases using a map as a metaphor can be implemented into the World Wide Web by using mapping services already available for standard mapping projects, such as ArcIMS (Arc Internet Map Server), and Macromedia Flash. Web-based geographic information systems (GIS) extend desktop GIS tools that are usually expensive, making the Internet an economic conduit for reaching large audiences (Vassilopoulos and Evelpidou, 2003).

Visualization of a database aids in understanding the information contained within and the relationship between data objects. Information previously hiding in a high dimensional space or in a non-geospatial text format can be found and new knowledge constructed from relationships apparent in spatialization (Rauber, 1999). High volumes of information are transferred into knowledge using a spatial metaphor. Making such visualizations available through the World Wide Web and connecting the visualization directly to the database bridges the gap of transferring newly gained knowledge back into specific information. Information retrieval from graphic depictions of large databases based on the spatial metaphor is increasingly important in modern day data proliferation (Fabrikant, 2000).

SOMs (Self-Organizing Map) have been widely used in mapping non-spatial data due to their inherent 2-D output. A SOM can reduce high dimensional information clusters into 2-D representations ready for map interpretation (Skupin and Hagelman, 2003). Tobler's First Law of Geography, conferring that objects closer to one another are more related than objects further away, is evident in spatial clusters of data objects in a SOM (Skupin and Fabrikant, 2003). Experiments by Montello et al.

(2003) involved user testing of spatializations and validated the approach of basing similarity of data objects in a map metaphor based on distance from each other.

The objective of the present study is to build online interfaces that will allow coastal user groups to search the Catalogue of Oregon Marine and Coastal Information (COMCI) database using interactive maps. The design interface takes into account spatialization schemes allowing for human cognition and perception of spaces important for data exploration (Fabrikant, 2000). The maps include a map metaphor constructed from a SOM visualization and a geographic map with non-spatial components. The maps are appropriate for projecting multiple data items of a similar nature to one location on a map (Guo et al., 2005). Appropriate interfaces are needed to exploit the potential of spatialization routines and have them be used efficiently and effectively (Cartwright et al., 2001).

The visual representations were connected to the COMCI database using Active Server Pages (ASP) web technology, allowing retrieval of reference records. ASP is a dynamic web engine that uses JavaScript or VBScript within an HTML-like file to access databases. ASP web pages have scripts embedded in them that are executed at the server before the page is sent to the client. This allows dynamic interaction between the web maps and the database. ASP will allow portions of the database relevant to the user's interest area (portion of the map) to be pulled instantly for display, creating an efficiency between knowledge acquisition and research advance (Fabrikant and Buttenfield, 2001).

BACKGROUND

The COMCI is a non-spatial database of references intended for coastal user groups. COMCI was initiated as part of a graduate course at Oregon State University (OSU), taught by Jane Lubchenco and Jim Good, on the science and management of coastal and ocean resources. Students undertook a broad literature search about Oregon oceanography, ecology, and resource management, compiling into a database references to journal articles, conference proceedings, books, legal documents, internal state agency reports on habitat maps and economic statistics, and other related documents. Seeing the tremendous potential for such a resource, the database was further developed by a broader collaboration among the Partnership for Interdisciplinary Studies of the Coastal Oceans (PISCO), the Oregon Sea Grant, the OSU Departments of Zoology and Geosciences, the Northwest Alliance for Computational Science and Engineering (NACSE), and the Oregon Coastal Atlas project. At this stage the database was in text-only, but still a powerful resource for making information about Oregon's marine environment accessible, particularly with regard to adverse impacts on natural ecosystems and science-based management of natural resources. Ultimately, the goal of COMCI is to provide policymakers and resource managers with information needed to evaluate and reassess coastal and ocean management strategies. The provision of map metaphor for COMCI, and its placement within the framework of the Oregon Coastal Atlas web portal for coastal resource managers (http://www.coastalatlas.net), is the final stage of its evolution. The Oregon Coastal Atlas is an online infrastructure for data sharing, spatial analysis, resource

decision-making, and ocean policy-making (Wright et al., 2004, Haddad et al., in press).

Part of creating a successful policy for managing ocean and coastal resources involves use of the best available science. COMCI not only offers access to the best available science, but also incorporates information on coastal zone management in general and includes links to organizations involved in management. Coastal groups using COMCI can include a wide range of professionals, from GIS analysts to a concerned citizen, but experiments have indicated that regardless of GIS experience, map metaphor browsing can achieve similar results and that interaction with the map is an effective method of exploration (Fabrikant, 2001).

In creating map metaphors for the COMCI database, basing proximity on document similarity allows a coastal user group to see groups of similar records with differing variables. A complete map metaphor of the database allows all the combinations of document groupings to be seen at once, effectively visualizing a multitude of database summaries. Creating visual information spaces using spatial metaphors will allow exploration of large databases for information retrieval and knowledge construction, as well as database summaries (Fabrikant and Buttenfield, 2001).

Self-Organizing Map

High-dimensional data sets can be presented in two-dimensional visualizations using simple space concepts constructed from Kohonen's "Self-Organizing Map algorithm (Kohonen, 2001)." These SOMs, also known as Kohonen networks, use

learned vector quantization that populates space with data clusters using competitive learning (Douglass, 2001). The SOM can further be visualized using the U-matrix method that uses a graphical display of a two-dimensional hexagonal grid space. Each hexagon that comprises part of the grid can be either a node hexagon (containing data items) or a distance hexagon (measure of dissimilarity) (Guo, et al., 2005). Kohonen describes the SOM "as a nonlinear, ordered, smooth mapping of high dimensional input data manifolds onto the elements of a regular, low-dimensional array (Kohonen, 2001)."

SOMs let high dimensional data sets form patterns that will self organize into a predefined output space, in this particular case, a two-dimensional lattice of hexagonal nodes. Transferring the input space of data patterns to the hexagonal grid using the SOM training method preserves topological relationships between initial input patterns and their display in the output space (Skupin, 2002; Bacao et. al., 2005). SOMs are based on the idea that systems such as a data set will naturally evolve (Lucas, 2005) to a preferred position which can be initiated and trained using learned vector quantization.

Learning vector quantization is a competitive learning method that creates stress among data set patterns, causing data objects to move towards an attractor. Each node in the output space has a reference vector that corresponds with the inputted data set. Vectors store the connection weights used in a training process to select a best matching unit (an output node) to map the data pattern onto by "calculating the distance between [the selected input pattern] and every unit in the network. (Bacao et. al., 2005)." Each neighboring node from the winning unit will be activated and

adapted from the input vector (Kohonen, 2001). Successful training of the SOM will result in an output space of populated nodes topologically similar to the initial input space of the data patterns (Bacao et al., 2005). This SOM method has a proclivity to form the data into clusters. Each of these clusters will be comprised of similar data objects.

The SOM needs to be connected back to the original data space so it can be used for interpreting the data set and the patterns it may contain. For visually depicting SOM output spaces, the typical hexagonal two-dimensional array of nodes is preferred for its unbiased directions (compared to a rectangle) (Kohonen, 2001). Furthermore, the U-matrix method is oftentimes utilized to aid in depicting and interpreting the resulting SOM. Representation of data items (COMCI records) in a node will take the form of a circle whose area is proportional to the number of items "clustered" into the particular node (Guo et al., 2005). The U–matrix method uses shades of grey to illustrate average distances in the input space as they relate to neighboring nodes in the output space, thus creating visual clusters. Lighter shades portray smaller distances between nodes and indicate a cluster of similar patterns (Kohonen, 2001; Bacao, 2005). Conversely, larger distances indicate separate clusters with fewer patterns and are represented by darker shades of grey.

The COMCI database used GeoVISTA Studio for implementing SOM construction and labeling to create a visual representation. GeoVista Studio is open source geo-visualization software available from Pennsylvania State University's GeoVista Project at http://www.geovista.psu.edu. The SOM was constructed using a predefined hexagonal grid and the U-matrix method for visualizing the average

distances between neighboring SOM reference vectors. In addition, a SOM coloring component was used to assign similar colors to nearby SOM cells.

The emphasis of this research was to transform a standard output SOM to a visually pleasing interface for exploring the COMCI database. This experiment focused on creating a new search interface from a SOM more than creating the SOM itself. Where the SOM goes after initial creation is dependant on the creator's intent. SOMs have laid the foundation for various graphic depictions\metaphors ranging from sedimentary landscapes to urban developments.

METHODS

The core of COMCI is a semi-structured Microsoft Access database with a built in form for updating source data. Relationships were built into the database, tagging various descriptors to a citation, such as location, subject, and theme.

A web-based search interface using ASP allows users to search COMCI by keyword, author, location, topic group and major theme. There are six major topic groups contained in COMCI: coastal zone management, marine fisheries marine habitat, marine species, near shore and open ocean activities, and oceanography. Since most of the records of COMCI could be described as relating to a certain geographic scale and scope, site locations were added to each record. Major regions ranged from International to the state of Oregon. Though a database is focused on the coast of Oregon, several references focus on larger scales such as the entire Pacific coast and national or international arenas. These references contain information that can be applied to the state of Oregon (e.g. a book on Coastal Law) or include Oregon

in their study area. There even exist records with no reference to Oregon that are

dubbed "general" because they might not relate to any specific area, but provide useful

scientific information (e.g. an encyclopedia on fish). Within Oregon, smaller scale

coastal locations were assigned based from coastal settings used in the Oregon Coastal

Atlas. These settings include various estuaries, sandy shores, rocky shores, ocean

areas, and watersheds of Oregon. Records that did not relate specifically to any

geographic scope were assigned "general." Each record could be assigned up to 3

locations.

ASP pages were built for communication between the COMCI database and a

web server, allowing client-side access to COMCI via the Internet, for the query of

locations assigned to individual COMCI records.

Building an ArcIMS Site

ArcIMS was chosen to create an interactive and dynamic map that could assist

in searching and accessing COMCI records. ArcIMS was initially chosen due to its

availability and out-of-the-box functionality. Prior students working on the COMCI

database have steered their work toward ArcIMS and have set up an Apache web

server to host ArcIMS web mapping services. Shapefiles were created for the

locations assigned to COMCI records ranging from the Pacific Northwest to Oregon's

coastal settings. The Oregon Coastal Atlas provided shapefiles that delineated all the

coastal settings in Oregon that their web portal uses to organize and serve data. Each

shapefile was attributed with a web address to an ASP page that searches the COMCI

database for records with that particular location. A map service was created from the

shapefiles and hosted on the ArcIMS server. The map consisted of six data layers from which the user can search on, rocky shores, sandy shores, estuaries, ocean areas, watersheds, and regions that included British Columbia, Washington, Oregon, California, and the Pacific Northwest.

A user-friendly web-site of the ArcIMS service was created using JavaScript and HTML. User-friendly navigation buttons were created to assist the user in searching the map for COMCI records. They included graphic icons along with titles to aid users unfamiliar with generic GIS functions. A table of contents is located to the right of the map area and displays the layers allowing the user to select an active layer for searching.

A "Find References" tool was created using the hot-linking capability of ArcIMS to query the COMCI database instantly using ASP. This tool allows users to click on any area of the map and retrieve a web page of COMCI records specific to that area.

A help page was created for the ArcIMS site using HTML and JavaScript. Here the user can obtain detailed information on how to use the various map components. Each button is described for the user detailing its function and use. Toggling between layers and the legend is also explained. There is a section regarding the finding reference button, describing its purpose along with an example and tips on how to use it. Finally, there is a browser informational check to see if the user's browser is capable of running the ArcIMS site, which needs to support JavaScript and allow pop-ups.

Constructing a Self Organizing Map

While the ArcIMS interface aids in search and retrieval methods of database records, it falls short in encompassing the entire database. The interactive map fails to portray the records that do not specifically address geographic areas or are too large in geographic scale. Using spatialization techniques, all the records can be included and displayed using a map metaphor. This will allow users an innovative new way to access information and gain new knowledge by tapping into human's inherent ability for spatial reasoning (Fabrikant, 2000).

To visualize the entire COMCI database, including records with no spatial reference, a shift is made from map to map metaphor. The map metaphor gives meaning to physical distance between data objects (Jiang and Ormeling, 1997). The SOM method is used to create a 2-D space of the database records. The resulting SOM visualization will provide the basis for an interactive map that will allow users to search for records using ASP server technology. The SOM visualization used GeoVISTA Studio for construction and labeling.

The first step in constructing a SOM is to prepare the database for implementation of SOM techniques. Three variables were chosen for this experiment: major subject groups, major themes, and primary geographic scope. The records in each text field had to be converted to a number for SOM techniques. The major subject groups were numbered 1-6 and the major themes numbered from 1-100. The values for geographic scope represent increasing scale\generality and are shown in

Table 1. There were 168 different localized coastal settings in Oregon based from the

Oregon Coastal Atlas.

Table 1. Number values assigned to the text fields for implementation

of SOM techniques.

Location	Value
General	600
International	525
National	500
Pacific Coast	475
Alaska	450
British Columbia	425
Pacific Northwest	400
California	375
Washington	350
Oregon	250
Oregon's Coastal Settings	1-168

To aid in comprehending and labeling of the SOM visualization, a shapefile as

created in ArcGIS with vector polygons forming a grid. Each rectangle corresponds to

a record in the database from 1-720. A table from the COMCI database with the

converted text fields into numbers was exported and merged with the shapefile's

database file. This database file was then converted to a comma delimited file using

Excel. The shapefile and its associated comma delimited file were loaded into

GeoVista Studio's data-mining design.

The GeoVista Studio's data mining design supports SOM components (Figure

1) in order to cluster the data records based on attributes selected to create a 2-D visual

representation of the database. The shapefile and comma delimited file were loaded

into the design. The design contains a geographic mapping component which is used

in this experiment as a means of discerning SOM map distribution patterns.
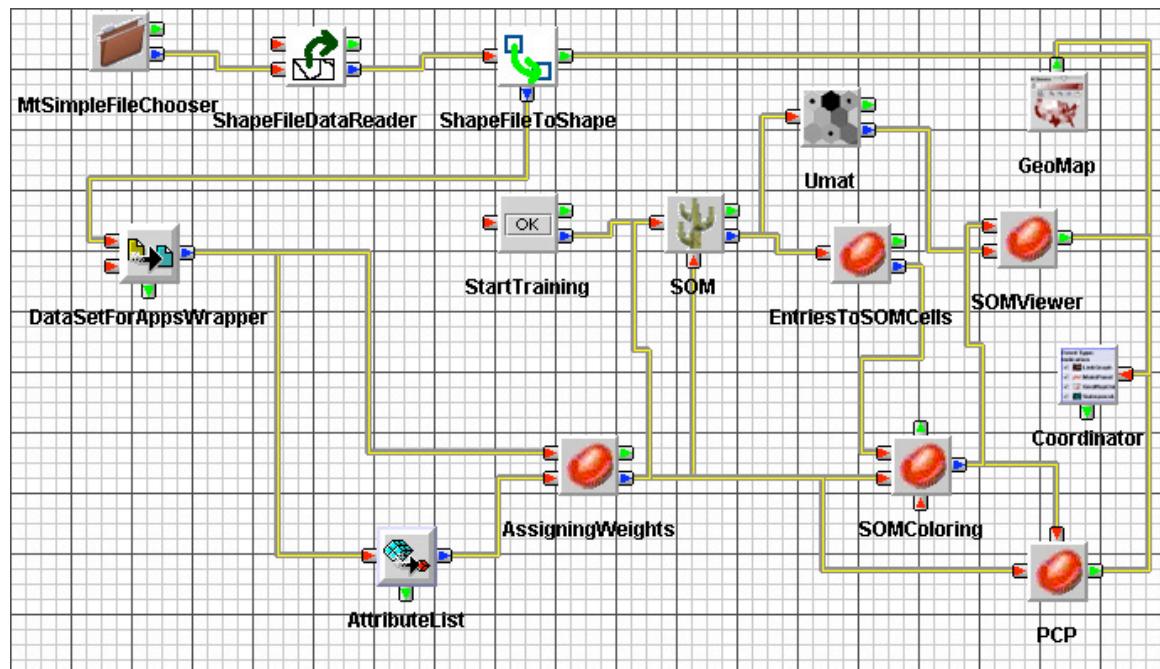
Figure 1. Components of GeoVista's data-mining design for constructing a SOM.

This shapefile mapping component is coupled with a Parallel Coordinate Plot (PCP).

Each string in the PCP corresponds to a unique SOM cell. The attributes of major

group, theme, and geographic scope are selected for input in the SOM, but first pass

through an assigning weights component. The theme, group, and geographic scope

attributes were assigned weights of 3, 1, and 2 respectively. Theme was assigned the

highest weight to support higher levels of detail in the subsequent SOM map

metaphor. Group was assigned the lowest weight due to its generality and it is

expected that the six major groups will form six major regions on the SOM map. The

data were adjusted to the weights and passed to the SOM construction components.

The mapping output space is a hexagonal grid consisting of a 25 by 25 array of empty

cells. The SOM was trained and used a SOMColoring component and the Umat

component (constructs a U-matrix) to visualize the population of space. A SOM map

was generated with colored circles of varying sizes populating the information space

of a hexagonal grid. Circle size is proportional to document density. Coloring is a

scale of document similarity. Most importantly, the SOM expresses document

similarity by spatial proximity (Skupin, 2002).

SOM Labeling and Map Creation

Turning a 2-D SOM image of colored circles into an interactive map that

queries the database involves interpretation and discernment. A SOM visualization by

itself is meaningless until the features that comprise the image are interpreted and

identified (Rauber, 1999). The shapefile was created to aid this task by linking it to the

PCP visualization and SOM visualization. The SOM visualization could be read by

highlighting strings in the PCP component and examining through the geographic

mapping component which records belonged to each SOM circle.

In general, once the SOM visualization is interpreted through this process,

cartographic techniques can be applied. Cartographic principles help solve issues such

as graphic complexity, feature labeling, and overall map design (Skupin, 2000).

Major boundaries were delineated over the SOM map, finding six major regions corresponding to the six major groups. The SOM circles and boundaries were digitized into shapefiles and attributed for ArcIMS implementation, but Macromedia Flash was chosen to create the map to allow for more illustrative map elements. Layers were digitized in Flash and interactive symbols created. When trying to preserve high dimensional spatial relations, scale becomes an important factor (Wise, 1999). There were two main levels of detail for the Flash map, the main subject areas and smaller scaled theme areas.

Once every COMCI reference is given its own space, it can be hot-linked to an ASP page for that record. The SOM visualization was used as a base map for an online search interface that presented the COMCI database as a fishing environment where one could use a fishing pole to pull records from the database. This fishing metaphor relates to the existence of COMCI (fisheries is a major section of COMCI) and connects with the familiarity of a coastal user with the concept of fishing. Using graphical elements that have meaning for the user can aid in comprehending icon-based maps (Guo et al., 2005).

Each of the delineated major regions, coastal zone management, marine fisheries, marine habitats, marine species, oceanography, and near shore and open ocean activities were digitized in Flash and converted to individual "symbols" (type button) to allow streaming rollover functionality. Using action script in Flash, the mouse cursor was converted into a fishing pole. Every record in the database was given a space in the fishing environment based on the clustering results of implemented SOM. Each record space was converted into a button "symbol" that

contained rollover functionality for labeling and hot-linking. Using the fishing pole

mouse cursor, the user can browse through the database bringing up various labeled

themes by rolling over records (created buttons). Upon clicking the mouse cursor on a

specific record, a short .wav file simulate the sound of a bobber hitting the water and a

new browser window will open up with details of the "fished" record on a standard

COMCI detailed results page. Finally, the Flash map based from the SOM

visualization is put on a web server to provide users the ability to explore the COMCI

database and retrieve records.

RESULTS

Using ASP for connecting the web applications to the COMCI database

appears to be a fast and efficient method of querying and retrieval. The server

technology allows new data entry into COMCI without the need to modify ASP pages

or the ArcIMS web interface. The ArcIMS website allows COMCI users to gather

records based on spatial location. Figure 2 displays a COMCI user ready to retrieve

records for the Columbia River Estuary.
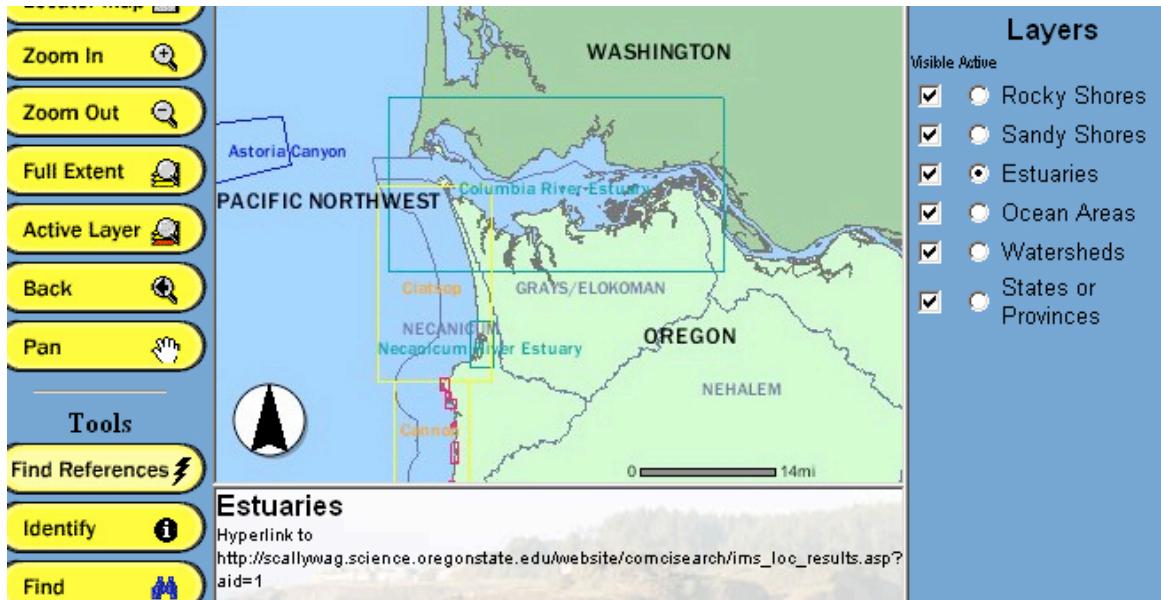
Figure 2. The ArcIMS web interface for searching COMCI.

The Finding References tool is the main retrieval method of searching the COMCI database. Each record in the database has been assigned to geographical areas to which it pertains. Every feature has a link in its information table that connects it to the COMCI database (Figure 2). Any record could have up to three locations assigned to it using three fields (site1, site2, and site3) in the database. Every record is assigned a site1 value whereas site2 and site3 are lower priorities and do not need to be filled in. The Finding References tool retrieves and lists records for a location based on this priority. Thus a record that focuses on Oregon's coastal programs but also mentions Washington would be assigned 'Oregon' as site1 and 'Washington' as site2. When retrieving records for Washington, records with 'Washington' in the site1 field will be listed before records that list 'Washington' in site2. Using an interactive map interface allows the user to focus in on his/her interest area, while at the same time being able to see what areas are in the proximity and the

scope of the area itself. Using sites from the Oregon Coastal Atlas gives a connection

to what spatial data is available for the same area from where the user is obtaining

non-spatial information. Using the Finding References tool will pop up a standard

ASP results page displaying all the records for the selected area (Figure 3). From this

page, the user can link to a detailed page of individual records (Figure 4).

OREGON COASTAL ATLAS

| HOME | MAPS | TOOLS | LEARN | SEARCH | Site Index: |

To join our news list please send a blank email to: CoastalAtlas_News-subscribe@yahoogroups.com

Catalogue of Oregon Marine & Coastal Information

You asked for Lower Columbia River and COMCI found 16 hits

	Title
1	National Ocean Service - Coast Survey - U.S.-West Coast Series, "OR-WA/Port of Portland"
2	Hydrographic Surveys - Channel Line Surveys - Columbia River
3	Columbia River
4	The Columbia River Estuary and Adjacent Ocean Waters
5	The Columbia River effluent and its distribution at sea.
6	Distribution and diet of sea-run cutthrout trout captured in and adjacent to the Columbia River plume, May-July 1980.
7	Optical and particulate properties at oceanic fronts.
8	West Coast ocean features: Sea surface temperature, SST anomaly (May 1985).
9	Graphic respresentation of the salinity distribution near the Columbia
10	Distribution of dissolved manganese and flluorescent dissolved organic matter in the Columbia River estuary and plume as determined by in situ measurement.
11	The Columbia Rive plume Study: Subtidal variability in the velocity and salinity fields
12	Historical changes in the Columbia River Estuary
13	Variability of the Columbia River plume observed in visible and infrared satellite imagery.
14	Coastal Engineering Conference #4
15	A Guide to Birds and other Wildlife on the Columbia River Estuary
16	Yaquina Head to Columbia River

COMCI is an effort of the PISCO project and Oregon Sea Grant

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

The Coastal Atlas is a Project of the Oregon Ocean-Coastal Management Program, Copyright © 2000

Figure 3. COMCI results page retrieved from the ArcIMS service.

Figure 4. Detail page of selecting item 6 from the results page in Figure 3.

SOM visualization

Inputting the shapefile and its associated comma delimited file of COMCI records into GeoVista Studio's data mining design enabled features to be selected for SOM visualization. Selecting the three fields and weighting them before SOM construction resulted in a 2-D representation shown in Figure 5.
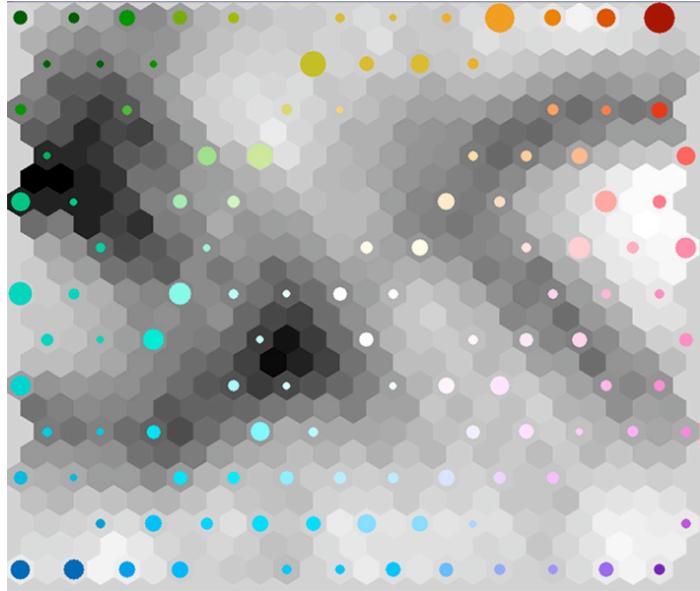
Figure 5. SOM visualization of the COMCI database
based on subject group, theme, and scope.

The SOM visualization resulted in populating 117 SOM nodes with data objects, i.e.

the circles. To determine what the SOM circles represented, manual interaction

between the PCP component and the mapped shapefile was conducted. The largest

cluster of COMCI records is the upper right red circle. This circle represents records

dealing with coastal zone management in Oregon and its interpretation can be seen in

Figure 6.
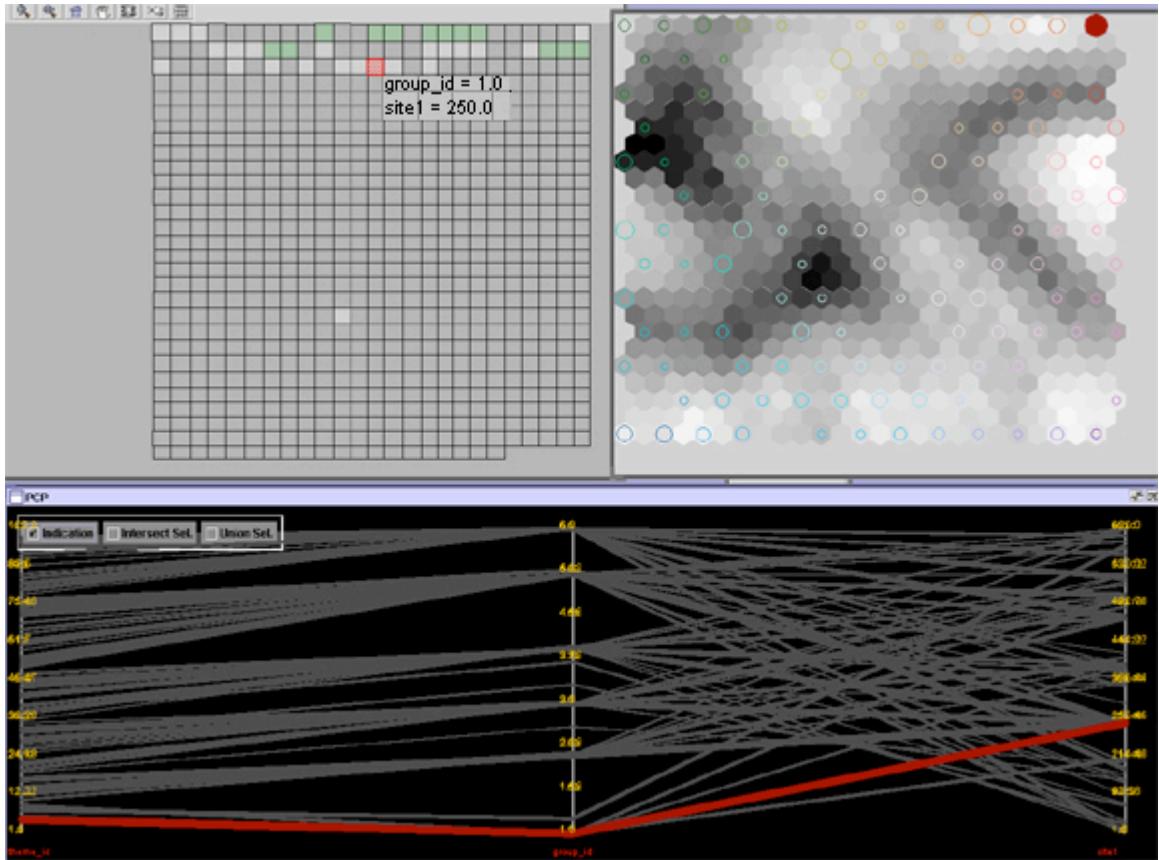
Figure 6. Interpreting the SOM visualization through PCP analysis.

After all the circles were categorized, boundaries were delineated between groups

based on differing subject groups between circles and the size of the circle. Six major

areas representing the subject groups were formed across the SOM visualization. The

largest area was the subject near shore and open ocean activities and can be seen in

Figure 7.
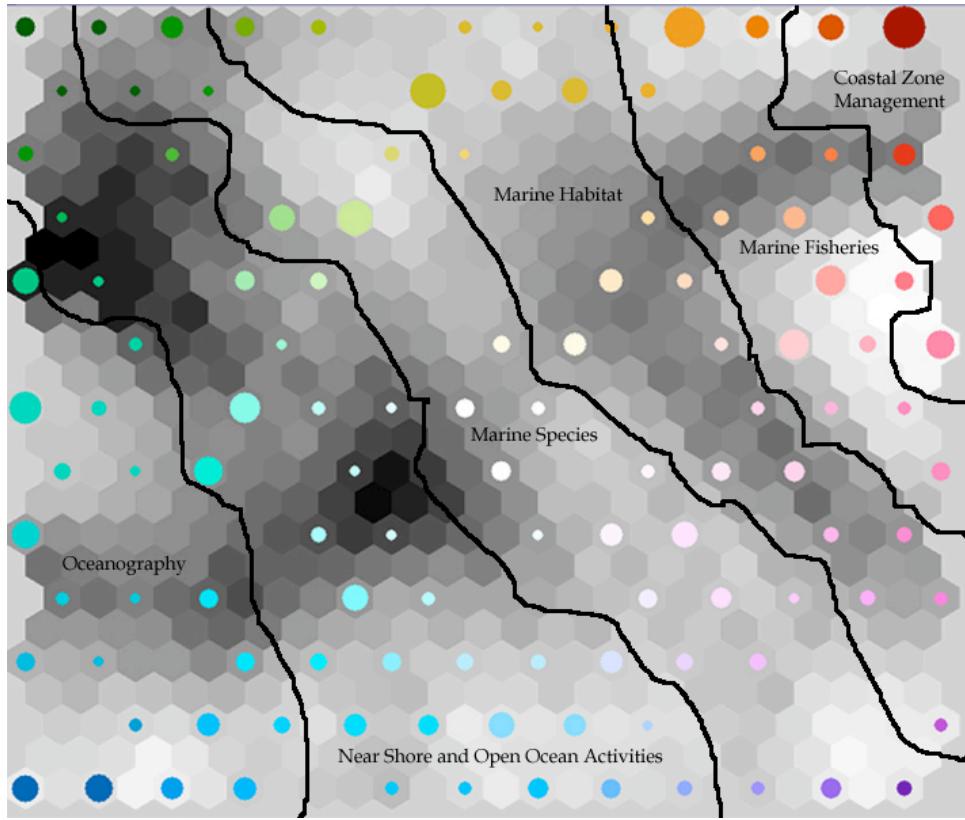
Figure 7. Six major subject areas of the SOM map.

The SOM visualization was used to create an information space in a Flash web-based application. Labels and graphics were added to the map in Flash, making it a searchable interface for the COMCI database. Behaviors were added to the Flash map that allowed ASP hyper-linking to retrieve individual records. Rollovers were also used as a means to facilitate browsing and enhance map communication. A "fishing for records" metaphor was used to create an interactive environment for searching the database based on the created SOM (Figure 8). The Flash environment enables aesthetic map elements to be designed in a highly interactive and graphical atmosphere, important to increasing the map interface's usability (Skupin, 2000).
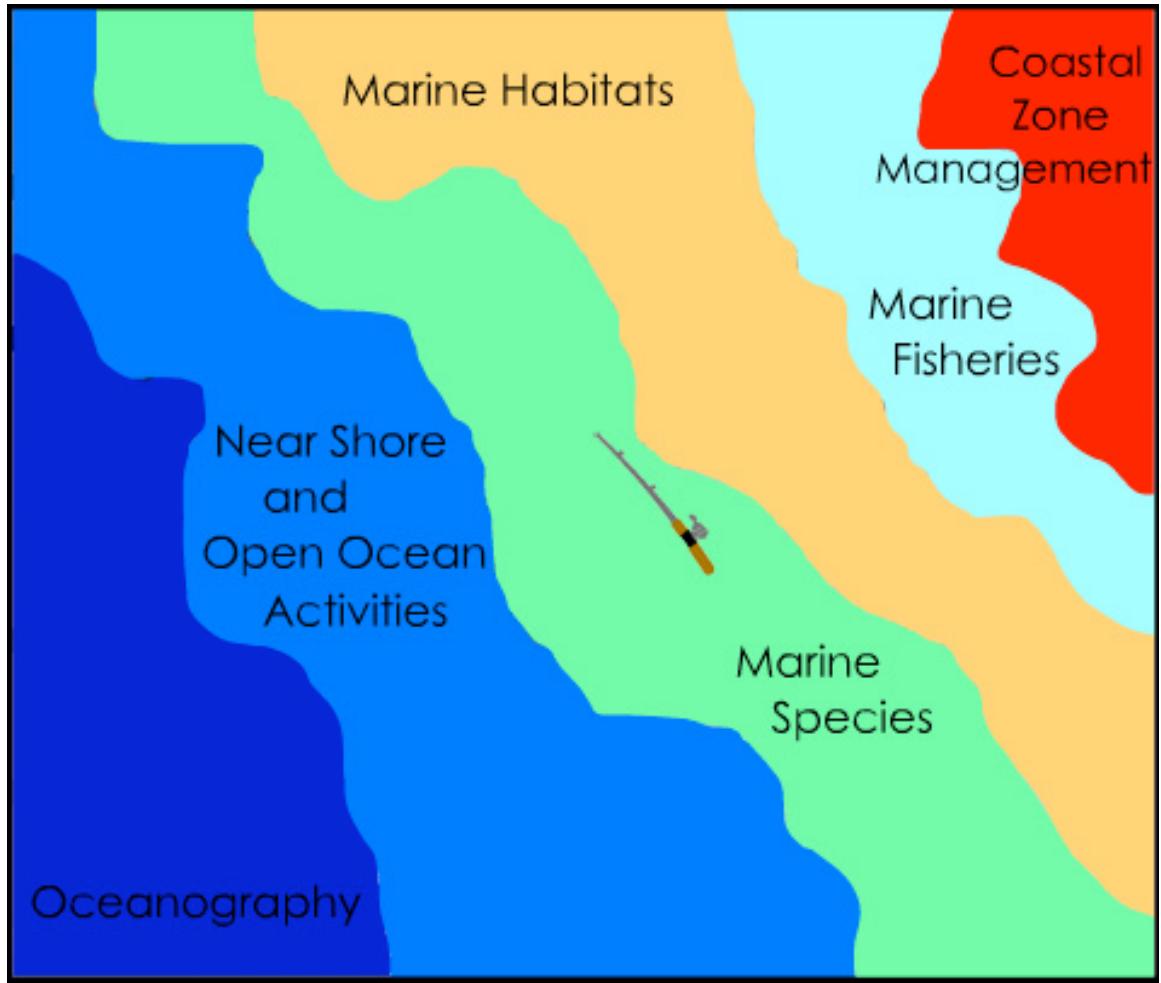
Figure 8. The COMCI database displayed as a Flash map based on a SOM.

The resulting SOM map used for the Flash visualization created clusters of data that formed in major subject groups. In each major region (Figure 8) the scope of the clustered records increase in scale, progressing from the upper left to lower right. Thus records specific records relating to Oregon's coastal settings can be found near the tops of each region, while international and general records are found near the bottom. A texture pattern increases in size along this gradient to represent this in the Flash map (Figure 9 upcoming).

DISCUSSION

There is a myriad of spatialization methods one can use for creating information spaces of databases ranging from multidimensional scaling, spring models, pathfinder network scaling, tree maps, and SOMs (Skupin and Fabrikant, 2003). The selected method depends on the user's intent and purpose of the database. Data sets can be viewed in multiple ways, each leading to new perspectives or insights to the data (Kraak, 2003). ASP proved to be an efficient retrieval mechanism for database records from online interactive maps. COMCI is a text-based database with inherently few numbered attributes. Linking to ASP pages outside of a map service allows records to be displayed fully, escaping the confines of standard shapefiles' database file. A group of records can be retrieved at one time with the ability to display detailed textual information of each individual record. Traditional map services such as ArcIMS, Flash, and Internet Map Server prove to be efficient means of disseminating the end product of map metaphors via the World Wide Web. The SOM map is easily transferred into one of these web services.

The SOM method was selected for spatializing the COMCI database because its inherent 2-D grid-like structure can be transferred directly into a geographic visualization (Skupin and Hagelman, 2003). The SOM map was constructed in GeoVista studio because of the program's accessibility and operability. Interpreting the SOM visualization required tedious manual interaction which was achieved due to COMCI's relatively small amount of records. Mechanisms for deciphering a SOM representation need to be developed using automated techniques, especially in regards

to large volume databases. Duplicating this experiment would not be easy with large databases.

Using the Flash environment to create a searchable interface allows for illustrative displays and accommodates natural interaction as a priority, which can lead to a more user-accecpted product (Cartwright et al, 2001). SOMs offer a new medium for displaying and searching data. They arrange data sets in a logical fashion on a two dimensional plane whose spatial metaphorical representation can be used as a base for depicting data sets in innovative displays. Imagination is the limit for what metaphors that can be built from SOM data structuring. Graphical displays such as the fishing for records display can keep Tobler's Law intact regarding space and similarity from the SOM structure and incorporate characteristics of the user group into the display (such as tailoring the COMCI database toward coastal and marine mindset by using the fishing concept).

The importance of database planning surfaced during the spatialization of the COMCI database. This can take the form of building behind the scenes data structures in the database formatted solely for spatialization routines. Setting the database up for spatialization helped create more text based search filters using ASP. The SOM map constructed for COMCI did not take into account data summaries for each reference\record, save for collecting information on the geographic scope of the reference. Interpreting the SOM map requires cartographic and geographic intuition but, the user needs to realize they are searching an artificial space created by a spatial metaphor. Map metaphors are not absolute in their positioning and the user must be aware of the map layout's dependency on the spatialization routine used. How the

SOM was trained will determine how and where data object clusters are formed, making it difficult to determine the importance of a relationship or pattern (Guo, 2003).

CONCLUSION

The map metaphor constructed from a SOM visualization for the COMCI database was successfully implemented into a web mapping service. New exploratory capabilities were achieved enabling fuller use of the database for coastal user groups. Visual maps and representations of databases allow the user to see the entire database at once. A map display of a database inherently visualizes database summaries including summaries not thought of yet by the user. Standard word searches and database summaries are geared toward the user knowing for what they are looking. Visualizing databases based on spatial metaphors take a step forward and allow the user to browse the entire database for previously unseen relationships. The visualization can uncover these new relationships to the user, aiding knowledge construction. The spatialization schemes used and the search interfaces built for COMCI are not meant to replace standard word searches, rather to enable the user to view the database from a new perspective. Building graphical search interfaces like the COMCI fishing map can serve to draw interest to the database. Graphical metaphors can play on the user's interests to draw them into the database.

To further study this research, the searching techniques and design interfaces developed here should be tested for its usefulness and effectiveness. The originators of COMCI, the students and researchers of PISCO, should test out the effectiveness of

the map metaphor and whether it really can be used for practical resource management

and decision-making. The project is available to the general public to use at

http://scallywag.science.oregonstate.edu/website/comcisearch/comci.asp.

Serving spatial visualizations over the World Wide Web by way of map

services increases access to advanced exploratory techniques like SOM maps.

Connecting the graphical representation of databases to the actual database using

server technologies such as ASP allows users to go beyond the surface and dig (or

fish!) into the database.

LITERATURE CITED

Bacao, F., Lobo, V., and Painho, M. (2005). The Self-Organizing Map, the Geo-SOM, and Relevant Variants for Geosciences. *Computers & Geosciences*, vol. 31: 155-163.

Cartwright, W., Crampton, J., Gartner, G., Miller, S., Mitchell, K., Siekierska, E., and Wood, J. (2001). Geospatial Information Visualization User Interface Issues. *Cartography and Geographic Information Science*, vol. 28, no. 1: 45-60.

De Jongh, C. and Omerling, F. (2003). Mapping Non-Spatial Phenomena. *Proceedings of the Seminars on Developing the ICA-CET Internet Cartography Course*.

Douglass, J. (2001). Self-Organizing Maps: A Tourist's Guide to Neural Network (re)Presentation(s). http://www.english.ucsb.edu/grad/student-pages/jdouglass/coursework/hyperliterature/soms/ [05/05]

Fabrikant, S. I. (2000). Spatialized Browsing in Large Data Archives. *Transactions in GIS,* vol. 4, no. 1: 65-78.

Fabrikant, S.I. (2001). Evaluating the Usability of the Scale Metaphor for Querying Semantic Information Spaces. In: Montello, D. R., (Ed.), *Spatial Information Theory: Foundations of Geographic Information Science (COSIT 2001),* Lecture Notes in Computer Science 2205, Berlin, Springer-Verlag: 156-172.

Fabrikant, S.I. and Buttenfield, B.P. (2001). Formalizing Semantic Spaces for Information Access. *Annals of the Association of American Geographers*, vol. 91, no. 2: 263-280.

Guo, D. (2003). Coordinating Computational and Visual Approaches for Interactive Feature Selection and Multivariate Clustering. *Information Visualization*, vol. 2, no. 4: 232-246.

Guo, D., M. Gahegan, A.M. MacEachren, and B. Zhou (2005). Multivariate Analysis and Geovisualization with an Integrated Geographic Knowledge Discovery Approach. *Cartography and Geographic Information Science*, 32(2), pp. 113-132.

Haddad, T., Wright, D., Dailey. M., Klarin, P., Marra, J., Dana, R., and Revell, D. (in press). The tools of the Oregon Coastal Atlas. In: Wright, D. J. and Scholz, A. J., (Eds.), *Place Matters: Geospatial Tools for Marine Science, Conservation, and Management*, Corvallis, OR, Oregon State University Press.

Jiang B. and Ormeling F.J. (1997). Cybermap: the Map for Cyberspace, *The Cartographic Journal*, vol. 34, no. 2, 111-116.

Kohonen, T. (2001). *Self-Organizing Maps*, Springer, Berlin; New York.

Kraak, M. (2003). Geovisualization Illustrated. *ISPRS Journal of Photogrammetry and Remote Sensing*, vol. 57, no. 5-6: 390-399.

Lucas, C. (2005). Self-Organizing Systems (SOS) FAQ. http://www.calresco.org/sos/sosfaq.htm [05/05]

Montello, D. R., Fabrikant, S. I., Ruocco, M., Middleton, R. S. (2003). Testing the First Law of Cognitive Geography on Point-Display Spatializations. In: *Spatial Information Theory: Foundations of Geographic Information Science (COSIT 2003),* Lecture Notes in Computer Science 2825. Kuhn, W., Worboys, M., & Timpf, S. (Eds.) Springer Verlag, Berlin, Germany: 316-331.

Rauber, A. (1999). LabelSOM: On the Labeling of Self-Organizing Maps. *Proceedings of the International Joint Conference on Neural Networks*.

Skupin, A. (2000). From Metaphor to Method: Cartographic Perspectives on Information Visualization, *Proceedings, IEEE Symposium on Information Visualization (InfoVis)* 2000, Oct. 9-10, Salt Lake City, Utah.

Skupin, A. (2002). A Cartographic Approach to Visualizing Conference Abstracts. *IEEE Computer Graphics and Applications*. vol. 22, no. 1: 50-58.

Skupin, A., and Fabrikant, S. (2003) Spatialization Methods: A Cartographic Research

Agenda for Non-Geographic Information Visualization. *Cartography and Geographic Information Science*. 30 (2) 99-119.

Skupin, A., and Hagelman, R. (2003) Attribute Space Visualization of Demographic Change. *Proceedings of the Eleventh ACM International Symposium on Advances in Geographic Information Systems, New Orleans, Louisiana, November 7-8*. New York: ACM Press. 56-62.

Vassilopoulos, A., Evelpidou, N. (2003). Internet GIS Development for Educational Purposes. *Cartograph*y, vol. 32, no. 1, 53-58.

Wise, T.A. (1999) The Ecological Approach to Text Visualization. *Journal of the American Society of Information Science,* vol. 50, no. 13: 1224-1233.

Wright, D., Haddad, T., Klarin, P., Dana, R., and Dailey, M., (2004) Infrastructure for data sharing, spatial analysis, resource decision-making, and societal impact: The Oregon Coastal Atlas, *Proceedings of The National Conference on Digital Government Research*, Seattle, WA, 131-132.

Appendix A   **Server Architecture for COMCI web pages**

Client — HTML Viewers

Services — Apache Web Server — ArcIMS connectors — ArcIMS Application Server — ArcIMS Spatial Server — Sun ONE Active Server Pages

Data Management — Local spatial data layers and Microsoft Access Data Base
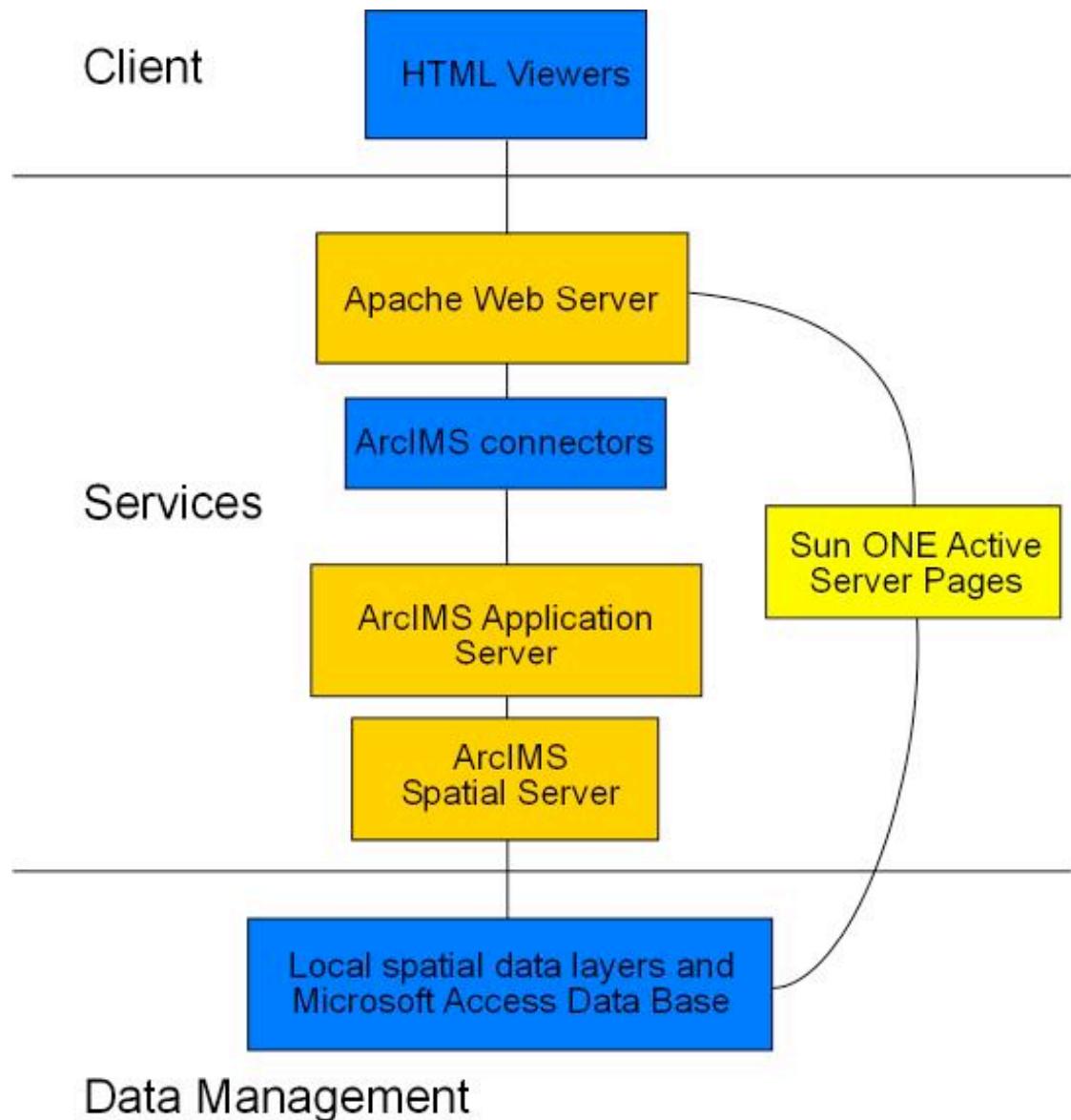
Appendix B   AXL file for COMCI mapping service

```xml
<?xml version="1.0" encoding="UTF-8"?>

<ARCXML version="1.1">
 <CONFIG>
  <ENVIRONMENT>
   <LOCALE country="US" language="en" variant="" />
   <UIFONT color="0,0,0" name="SansSerif" size="12" style="regular" />
   <SCREEN dpi="96" />
  </ENVIRONMENT>
  <MAP>
   <PROPERTIES>
        <ENVELOPE minx="-2208737.75" miny="-977806.55532862"
maxx="2576285.1074682884" maxy="4298546.0" name="Initial_Extent" />
        <MAPUNITS units="feet" />
        <LEGEND title="Legend" font="Arial" autoextend="true" columns="1" width="170"
height="400" backgroundcolor="102,153,204" >
     <LAYERS>
      <LAYER id="0"/>
      <LAYER id="6"/>
     </LAYERS>
     </LEGEND>
   </PROPERTIES>
   <WORKSPACES>
        <SHAPEWORKSPACE name="shp_ws-42" directory="D:\spatial_data" />
        <SHAPEWORKSPACE name="shp_ws-44" directory="D:\spatial_data\atlas_sites" />
   </WORKSPACES>
   <LAYER type="featureclass" name="Base map" visible="true" id="0">
        <DATASET name="basemap" type="polygon" workspace="shp_ws-42" />
        <VALUEMAPRENDERER lookupfield="KEY">
         <EXACT value="BC" label="BC">
          <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0"
boundarycolor="102,102,102" filltransparency="1.0" fillcolor="204,153,102"
boundarycaptype="round" />
           </EXACT>
           <EXACT value="CA" label="CA">
          <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0"
boundarycolor="102,102,102" filltransparency="1.0" fillcolor="153,204,153"
boundarycaptype="round" />
           </EXACT>
           <EXACT value="CAN" label="CAN">
          <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0"
boundarycolor="102,102,102" filltransparency="1.0" fillcolor="204,153,102"
boundarycaptype="round" />
           </EXACT>
           <EXACT value="ID" label="ID">
          <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0"
boundarycolor="102,102,102" filltransparency="1.0" fillcolor="153,204,153"
boundarycaptype="round" />
           </EXACT>
           <EXACT value="NEV" label="NEV">
          <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0"
boundarycolor="102,102,102" filltransparency="1.0" fillcolor="153,204,153"
boundarycaptype="round" />
```

```
          </EXACT>
          <EXACT value="OR" label="OR">
           <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0"
boundarycolor="102,102,102" filltransparency="1.0" fillcolor="204,255,204"
boundarycaptype="round" />
          </EXACT>
          <EXACT value="WA" label="WA">
           <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0"
boundarycolor="102,102,102" filltransparency="1.0" fillcolor="153,204,153"
boundarycaptype="round" />
          </EXACT>
          <EXACT value="WAT" label="WAT">
           <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0"
boundarycolor="102,102,102" filltransparency="1.0" fillcolor="153,204,255"
boundarycaptype="round" />
          </EXACT>
         </VALUEMAPRENDERER>
     </LAYER>
     <LAYER type="featureclass" name="States or Provinces" visible="true" id="6">
          <DATASET name="regblocks" type="polygon" workspace="shp_ws-42" />
          <GROUPRENDERER>
           <SIMPLERENDERER>
            <SIMPLEPOLYGONSYMBOL boundarytransparency="0.0" filltransparency="0.0"
boundarycaptype="round" />
           </SIMPLERENDERER>
           <SIMPLELABELRENDERER field="NAME">
            <TEXTSYMBOL antialiasing="true" font="Franklin Gothic Medium" fontstyle="regular"
fontsize="13" />
           </SIMPLELABELRENDERER>
          </GROUPRENDERER>
     </LAYER>
     <LAYER type="featureclass" name="Watersheds" visible="true" id="2">
          <DATASET name="atlas_watersheds" type="polygon" workspace="shp_ws-44" />
          <GROUPRENDERER>
           <SIMPLERENDERER>
            <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0" filltransparency="0.0"
boundarycaptype="round" boundarycolor="102,102,153" />
           </SIMPLERENDERER>
           <SCALEDEPENDENTRENDERER lower="1:1" upper="1:3850001">
            <SIMPLELABELRENDERER field="SUBBASIN_N">
             <TEXTSYMBOL antialiasing="true" font="Franklin Gothic Medium" fontstyle="regular"
fontsize="10" fontcolor="102,102,153" />
            </SIMPLELABELRENDERER>
           </SCALEDEPENDENTRENDERER>
          </GROUPRENDERER>
     </LAYER>
     <LAYER type="featureclass" name="Ocean Areas" visible="true" id="1">
          <DATASET name="atlas_ocean_areas" type="polygon" workspace="shp_ws-44" />
          <GROUPRENDERER>
           <SIMPLERENDERER>
            <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0" filltransparency="0.0"
boundarycaptype="round" boundarycolor="0,0,204" />
           </SIMPLERENDERER>
           <SCALEDEPENDENTRENDERER lower="1:1" upper="1:3850001">
            <SIMPLELABELRENDERER field="NAME">
```

```
            <TEXTSYMBOL antialiasing="true" font="Franklin Gothic Medium" fontstyle="regular"
fontsize="10" fontcolor="0,0,204" />
          </SIMPLELABELRENDERER>
        </SCALEDEPENDENTRENDERER>
      </GROUPRENDERER>
   </LAYER>
   <LAYER type="featureclass" name="Estuaries" visible="true" id="3">
       <DATASET name="atlas_estuaries" type="polygon" workspace="shp_ws-44" />
       <GROUPRENDERER>
        <SCALEDEPENDENTRENDERER lower="1:1" upper="1:5000001">
          <SIMPLERENDERER>
          <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0" filltransparency="0.0"
boundarycaptype="round" boundarycolor="0,153,153" />
          </SIMPLERENDERER>
        </SCALEDEPENDENTRENDERER>
         <SCALEDEPENDENTRENDERER lower="1:1" upper="1:2500001">
          <SIMPLELABELRENDERER field="NAME">
           <TEXTSYMBOL antialiasing="true" font="Franklin Gothic Medium" fontstyle="regular"
fontsize="10" fontcolor="0,153,153" />
          </SIMPLELABELRENDERER>
        </SCALEDEPENDENTRENDERER>
      </GROUPRENDERER>
   </LAYER>
   <LAYER type="featureclass" name="Sandy Shores" visible="true" id="4">
       <DATASET name="atlas_sandy_shores" type="polygon" workspace="shp_ws-44" />
       <GROUPRENDERER>
        <SCALEDEPENDENTRENDERER lower="1:1" upper="1:5000001">
         <SIMPLERENDERER>
          <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0" filltransparency="0.0"
boundarycaptype="round" boundarycolor="255,255,0" />
          </SIMPLERENDERER>
        </SCALEDEPENDENTRENDERER>
         <SCALEDEPENDENTRENDERER lower="1:1" upper="1:3000001">
          <SIMPLELABELRENDERER field="NAME">
           <TEXTSYMBOL antialiasing="true" font="Franklin Gothic Medium" fontstyle="regular"
fontsize="10" fontcolor="255,153,0" />
          </SIMPLELABELRENDERER>
        </SCALEDEPENDENTRENDERER>
      </GROUPRENDERER>
   </LAYER>
   <LAYER type="featureclass" name="Rocky Shores" visible="true" id="5">
       <DATASET name="atlas_rocky_shores" type="polygon" workspace="shp_ws-44" />
       <GROUPRENDERER>
       <SCALEDEPENDENTRENDERER lower="1:1" upper="1:1800000">
        <SIMPLERENDERER>
          <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0" filltransparency="0.0"
boundarycaptype="round" boundarycolor="255,0,102" />
         </SIMPLERENDERER>
        </SCALEDEPENDENTRENDERER>
         <SCALEDEPENDENTRENDERER lower="1:1" upper="1:480001">
          <SIMPLELABELRENDERER field="NAME">
           <TEXTSYMBOL antialiasing="true" font="Franklin Gothic Medium" fontstyle="regular"
fontsize="10" fontcolor="255,0,102" />
          </SIMPLELABELRENDERER>
        </SCALEDEPENDENTRENDERER>
      </GROUPRENDERER>
```

```
    </LAYER>
    <LAYER type="featureclass" name="outline" visible="true" id="7">
        <DATASET name="outline" type="polygon" workspace="shp_ws-42" />
        <SIMPLERENDERER>
         <SIMPLEPOLYGONSYMBOL boundarytransparency="1.0" filltransparency="0.0"
boundarywidth="2" boundarycaptype="round" />
        </SIMPLERENDERER>
    </LAYER>
   </MAP>
  </CONFIG>
</ARCXML>
```

Appendix C   JavaScript file for COMCI mapping service

```
// ArcIMSparam.js
// javascript file with parameters specific to calling page

//**************************************************************************
//*                    parameters File for HTML Template              *
//**************************************************************************

// get machine name
var hostName = document.location.host;
// common portion of url
var esriBlurb = "/servlet/com.esri.esrimap.Esrimap?ServiceName="
// make URL for getting mapservice catalog
var catURL = "http://" + hostName + esriBlurb + "catalog";
// make prefix for URL
var serverURL  = "http://" + hostName + esriBlurb;




//*******************************************************************
//*                    parameters set by Designer                        *
//*******************************************************************
var imsURL =
'http://scallywag.science.oregonstate.edu/servlet/com.esri.esrimap.Esrimap?ServiceName=comci';
var imsOVURL =
'http://scallywag.science.oregonstate.edu/servlet/com.esri.esrimap.Esrimap?ServiceName=comciovmap'
;
var imsQueryURL = '';
var imsGeocodeURL = '';

//initial map extent
var startLeft = -2208737.75;
var startRight = 2576285.0;
var startTop = 4298546.0;
var startBottom = -978724.5;
//maximum map extent
var limitLeft = -2208737.75;
var limitRight = 2576285.0;
var limitTop = 4298546.0;
var limitBottom = -978724.5;

var usePan=true;
var usePanNorth=false;
var usePanWest=false;
var usePanEast=false;
var usePanSouth=false;
var useZoomIn=true;
var useZoomOut=true;
var useFullExtent=true;
var useZoomActive=true;
var useZoomLast=true;
var useIdentify=true;
var useMeasure=true;
```

```
var useSetUnits=false;
var useSelect=true;
var useQuery=false;
var useFind=true;
var useGeocode=false;
var useStoredQuery=false;
var useClearSelect=true;
var usePrint=true;
var useGeoNetwork=false;
var useBuffer=false;
var useExtract=false;

var MapUnits = "Degrees";
var ScaleBarUnits = "Miles";



// End of Designer set parameters

var useHyperLink=true;
var useHyperLinkAny=false;
var useIdentifyAll=false;
var useBufferShape=false;
var hasToolBarOnLayer=false;
        // useHyperLink takes priority - both cannot be true
if (useHyperLink) useHyperLinkAny=false;
        // useIdentify takes priority - both cannot be true
if (useIdentify) useIdentifyAll=false;
        // allow debugging
var setDebug=true;


/**********************************
* Basic Map parameters
**********************************/

// variables for setting component colors
var mapBackColor = "255,255,255";
var ovBoxColor = "255,255,0";
var ovBoxSize = 3;
var zoomBoxColor = "#ff0000";

// variables for using individual components
var hasOVMap = true;
var hasTOC = true;
var useModeFrame = true;

// variables for map pixel offset from upper left corner of frame
        // horizontal offset
var hspc = 0;
        // vertical offset
var vspc = 0;

//panning factor for arrow buttons
var panFactor = 85/100;
//zoom factors for v.3
```

```
var zoomFactor = 2

// margin factor for zooming in on selected lines and polygons - based on feature width and height. . .
margin will be selectMargin * width or height
var selectMargin = 25/100;
// margin margin factor for zooming in on selected points - based on full extent. . . margin will be
selectPointMargin * fullWidth or fullHeight
var selectPointMargin = 25/1000

// show the scale factor
var showScalePercent=true;
// display coords in status line
var showXYs=true;

// Have ArcXML responses URL encoded? Will not work with multi-byte characters
var doURLencode = false;

// automatically adjust for ArcMapServer, if necessary
        // North Arrow size is smaller from ArcMapServer
var autoAdjustForArcMapServer = true;

//variables for MapDrawing
        // North Arrow
var drawNorthArrow = true;
var NorthArrowType = "4";
var NorthArrowSize = "20";
var NorthArrowCoords = "30 35";
var NorthArrowAngle = "0";
        // Scale Bar
var drawScaleBar = true;
        // MapUnits=DEGREES,FEET,METERS
        // can MapUnits be changed by user?
var setMapUnits=false;
        // ScaleBarUnits=KILOMETERS,METERS,MILES,FEET
var ScaleBarBackground = "false";
var ScaleBarBackColor = "0,0,0";
var ScaleBarFontColor = "0,0,0";
var ScaleBarColor = "128,128,128";
var ScaleBarFont = "";
var ScaleBarStyle = "Regular";
var ScaleBarRound = "1";
var ScaleBarSize = "9";
var ScaleBarWidth = "5";
var ScaleBarPrecision = 2;
var numDecimals = ScaleBarPrecision;
        // Scale Bar 2
var drawScaleBar2 = false;
var ScaleBar2Units = "KILOMETERS";
var ScaleBar2Background = "false";
var ScaleBar2BackColor = "0,0,0";
var ScaleBar2FontColor = "0,0,0";
var ScaleBar2Color = "128,128,128";
var ScaleBar2Font = "";
var ScaleBar2Style = "Regular";
var ScaleBar2Round = "1";
var ScaleBar2Size = "9";
```

```
var ScaleBar2Width = "5";
var ScaleBar2Precision = 2;

        // Copyright blurb
var drawCopyright = false;
var CopyrightFont = "";
var CopyrightStyle = "Regular";
var CopyrightSize = "8";
var CopyrightCoords = "3 3";
var CopyrightColor = "0,0,0";
var CopyrightBackground = "True";
var CopyrightBGColor = "255,255,255";
var CopyrightGlow = "False";
var CopyrightGlowColor = "255,255,255";
var CopyrightShadow = "False";
var CopyrightShadowColor = "32,32,32";
var CopyrightText = "Map created with ArcIMS - Copyright (C) 1992-2002 ESRI Inc.";

        // place bar behind Copyright text and scalebars
var drawBottomBar = false;
var bottomBarColor = "255,255,255";
var bottomBarOutline = "0,0,0";
var bottomBarHeight = "18";

        // Mode on Map
var drawModeOnMap = false;
var modeRefreshMap = false;
var modeMapColor = "255,255,255";
var modeMapGlow = "128,0,255";

var ovImageVar;
var ovBorderWidth = 1;
var ovExtentBoxSize = 2;

// map image background transparent? - requires gif or png8 types
var mapTransparent=false;

// setup test for Nav 4.0
var isIE = false;
var isNav = (navigator.appName.indexOf("Netscape")>=0);
var isNav4 = false;
var isIE4 = false;
var is5up = false;
//alert(navigator.appVersion);
if (isNav) {

        if (parseFloat(navigator.appVersion)<5) {
                isNav4=true;
                //alert("Netscape 4.x or older");
        } else {
                is5up = true;
        }
} else {
        isIE4=true;
        isIE=true;
```

```
        if ((navigator.appVersion.indexOf("MSIE 5")>0) || (navigator.appVersion.indexOf("MSIE
6")>0)) {
                isIE4 = false;
                is5up = true;
                //alert("IE5");
        }
}

/************************************
* Extended Map parameters
************************************/

// variables for ovmap offset
var ovHspc = 0;
var ovVspc = 0;

// color for Main Map zoombox in html hex RGB format
//var zoomBoxColor = "#ff0000";

// index of initial active layer. . . if more than or equal to layer count top layer used
var ActiveLayerIndex=6

// variables for using individual components
var useTextFrame=true;
// use external window for dialogs
var useExternalWindow=false;

// colors for tables
var textFrameBackColor="Silver";
var tableBackColor="#FFFFCC";
var textFrameTextColor="Black";
var textFrameLinkColor="Blue";
var textFrameFormColor="Black";

// LayerList visible at service load
var showTOC=true;
// set layer visibility according to LayerList or by custom programming
var toggleVisible = true;
// set layer visibility of OVMap according to LayerList or by custom programming
        // imsURL must equal imsOVMap - depends on one LayerList
var toggleOVVisible = false;
// will the LayerList show all layers, not just those available at current scale
var listAllLayers = false;

// toggle the check of non-listing of layers in LayerList and Legend
// if true, noListLayer array must have an element defined for each layer
var hideLayersFromList=true;
// layers that will be listed in the LayerList or Legend
        // Note: This does not affect map display
var noListLayer = new Array();
noListLayer[0] = true; // this one will not be listed
noListLayer[1] = false;
noListLayer[2] = false;
noListLayer[3] = false;
noListLayer[4] = false;
noListLayer[5] = false;
```

```
noListLayer[6] = false;
noListLayer[7] = true;
          // Mode on floating layer
var drawFloatingMode = false;
var modeLayerOn = false;
var modeLayerColor = "Black";
var modeLayerShadowColor = "White";
var modeLayerFont = "Arial";
var modeLayerSize = "4";


          // does the overview map a layer on top of map?...
var ovMapIsLayer=true;

var webParams = "";
if (parent.MapFrame!=null) {
          webParams = parent.document.location.search;
} else {
          webParams = document.location.search;
}

/**************************************
* Interactive Map parameters
**************************************/

// Click points - Measure/Shape Select/Shape Buffer
var clickMarkerColor="255,0,0";
var clickMarkerType="Circle";
var clickMarkerSize="6";



/**************************************
* Identify/Select/Query/Buffer parameters
**************************************/

// search tolerance in pixels around click
var pixelTolerance=2;
// color of selected features in decimal RGB format
var selectColor="255,255,0";
// color of highlighted feature in decimal RGB format
var highlightColor="255,0,0";
// level of transparency of selected and highlighted color
var transparentLevel = "0.5";
          // zoom to selected feature if only one is returned?
var zoomToSingleSelect = false;
          // use only unique values in sample field value lists
var onlyUniqueSamples = true;
          // are string queries case insensitive?
                    // false by default to match Java Viewer and ArcExplorer
var queryCaseInsensitive=false;

// fields to be returned in identify/selection/query request. . . #ALL#=all fields
var selectFields= "#ALL#";
//var selectFields= "#ID# #SHAPE#";
// swap out the list of returned fields?
//If true, a list must be defined in selFieldList[n] for each layer to update selectFields
var swapSelectFields=true;
```

```
// array for each layer's returned fields if swapSelectFields=true
var selFieldList = new Array();
// sample set for world - if not #ALL#, id and shape fields required. Separate with a space
selFieldList[0]="#SHAPE# #ID#";
selFieldList[1]="#SHAPE# #ID# NAME LOCATION";
selFieldList[2]="#SHAPE# #ID# NAME LOCATION";
selFieldList[3]="#SHAPE# #ID# NAME LOCATION";
selFieldList[4]="#SHAPE# #ID# NAME LOCATION";
selFieldList[5]="#SHAPE# #ID# SUBBASIN_N LOCATION";
selFieldList[6]="#SHAPE# #ID# NAME LOCATION";
selFieldList[7]="#SHAPE# #ID#";


// use the field alias in the data display?
//If true, a list must be defined in fieldAliasList[n] for each layer defining aliases for those fields
needing them
var useFieldAlias=true;
// array for aliases for each layer's returned fields if useFieldAlias=true
var fieldAliasList  = new Array();
// sample set for world - fieldname:alias pairs separated by a bar (|)... if no aliases, use empty string ("")
fieldAliasList[0]="";
fieldAliasList[1]="";
fieldAliasList[2]="";
fieldAliasList[3]="";
fieldAliasList[4]="";
fieldAliasList[5]="SUBBASIN_N:NAME";
fieldAliasList[6]="";


// Hide the ID field display? The ID Field must be included in field list, but we don't have to show it.
var hideIDFieldData = true;
// Hide the shape field display? The Shape Field must be included in field list, but we don't have to
show it.
var hideShapeFieldData = true;


// parameters for setting up hyperlinks in data display
var hyperLinkLayers = new Array(); // layers to have hyperlink
var hyperLinkFields = new Array(); // field in those layers to be used for hyperlink
var hyperLinkPrefix = new Array();  // prefix (if any) to place before field value to make hyperlink url
var hyperLinkSuffix = new Array();  // suffix (if any) to place after field value to make hyperlink url
///*
hyperLinkLayers[0] = "Estuaries";
hyperLinkFields[0] = "LOCATION";
hyperLinkPrefix[0] = "";
hyperLinkSuffix[0] = "";
hyperLinkLayers[1] = "Watersheds";
hyperLinkFields[1] = "LOCATION";
hyperLinkPrefix[1] = "";
hyperLinkSuffix[1] = "";
hyperLinkLayers[2] = "Ocean Areas";
hyperLinkFields[2] = "LOCATION";
hyperLinkPrefix[2] = "";
hyperLinkSuffix[2] = "";
hyperLinkLayers[3] = "Sandy Shores";
hyperLinkFields[3] = "LOCATION";
```

```
hyperLinkPrefix[3] = "";
hyperLinkSuffix[3] = "";
hyperLinkLayers[4] = "Rocky Shores";
hyperLinkFields[4] = "LOCATION";
hyperLinkPrefix[4] = "";
hyperLinkSuffix[4] = "";
hyperLinkLayers[5] = "States or Provinces";
hyperLinkFields[5] = "LOCATION";
hyperLinkPrefix[5] = "";
hyperLinkSuffix[5] = "";
//*/
/*
hyperLinkLayers[0] = "Winners";
hyperLinkFields[0] = "MISC.SAG.ID";
hyperLinkPrefix[0] = "http://gis.esri.com/uc2001/sag/display/index.cfm?id=";
hyperLinkSuffix[0] = "";
*/


// will the returned data be displayed in text frame?
var showSelectedData=true;
// will the returned features be drawn?
var showSelectedFeatures=true;
// maximum number of features returned from query
var maxFeaturesReturned=25;
// for ID All - List all visible layers in response - default is false
        // if false only visible layers with idenitified features written to table
        // if true the names of all visible layers will be diplayed even if no features returned
var listAllLayersInIDAll = false;


// number of data samples retrieved for query form
var numberDataSamples = 50;




/***********************************
* Legend parameters - aimsLegend.js
***********************************/

// legend map size
var legWidth=170;
var legHeight=300;
var legFont="Franklin Gothic Medium";
var legTitle="Atlas Areas";

/***********************************
* Options parameters - aimsOptions.js
***********************************/

// allowing user to set options
var allowOptions=false;

/***********************************
* ClassRender parameters - aimsClassRender.js
***********************************/
```

```
// parameters for custom class rendering... overrides default renderer
var ClassRenderLayer = new Array();  // layers to have custom renderers
var ClassRenderString = new Array(); // initial custom renderer XML string for the layers
ClassRenderLayer[0] = "Cities";
ClassRenderString[0] = "";
/*
ClassRenderString[0] ='<VALUEMAPRENDERER lookupfield="population">\n<RANGE
LOWER="0" UPPER="1000000">\n<SIMPLEMARKERSYMBOL color="255,0,255" type="circle"
size="4" />\n</RANGE>';
ClassRenderString[0] = ClassRenderString[0] + '<RANGE LOWER="1000000"
UPPER="2500000">\n<SIMPLEMARKERSYMBOL color="255,0,255" type="circle" size="6"
/>\n</RANGE>';
ClassRenderString[0] = ClassRenderString[0] + '<RANGE LOWER="2500000"
UPPER="5000000">\n<SIMPLEMARKERSYMBOL color="255,0,255" type="circle" size="9"
/>\n</RANGE>';
ClassRenderString[0] = ClassRenderString[0] + '<RANGE LOWER="5000000"
UPPER="10000000">\n<SIMPLEMARKERSYMBOL color="255,0,255" type="circle" size="12"
/>\n</RANGE>';
ClassRenderString[0] = ClassRenderString[0] + '<RANGE LOWER="10000000"
UPPER="30000000">\n<SIMPLEMARKERSYMBOL color="255,0,255" type="circle" size="16"
/>\n</RANGE>\n</VALUEMAPRENDERER>';
*/

/************************************
* Geocode parameters - aimsGeocode.js
************************************/

// maximum geocode candidates returned - default = 20
var maxGeocodeCandidates=20;
// minimal acceptable geocode score for candidate
var minGeocodeScore=50;
var geocodePointColor = "255,0,0";
var geocodePointSize = "15";
var geocodeLabelSize = "12";
var geocodePointType = "star";
var currentGeocodePointIndex = 0;

// custom functions needed for Reverse Geocoding - RouteServer extension required
var useReverseGeocode = false;
var useRoute=false;

// the starting point. . . it all starts here on loading
function checkParams() {
        appDir = getPath(document.location.pathname);
        // global for overview map. . . change if not on same frame as Map
        ovImageVar = document.ovImage;
        debugOn = 0;
        if (parent.TextFrame==null) {
                useTextFrame = true;
                useExternalWindow=true;
        }
        if (!hasLayer("measureBox")) useMeasure=false;
        if ((!useMeasure) && (!drawScaleBar)) useSetUnits=false;
        if (ovImageVar==null) hasOVMap = false;
        if (parent.TOCFrame==null) hasTOC = false;
```

```
if (parent.ModeFrame==null) useModeFrame = false;


if (isIE)  {
        if (hasLayer("theTop")) document.all.theTop.style.cursor = "crosshair";
        if (hasOVMap) ovImageVar.style.cursor = "hand";
}

if (hasOVMap) {
        // size of ov map image
        i2Width = parseInt(ovImageVar.width);
        i2Height = parseInt(ovImageVar.height);
        forceNewOVMap = false;
        // position of ov map
        //ovMapLeft = iWidth - (i2Width + 6);
        //ovMapTop = 2;
}
if (webParams!="") {
        //alert(webParams);
        getCommandLineParams(webParams);
}
// if starting extents zero'd then flag to get start from mapservice
if ((startLeft!=0) && (startRight!=0)) getStartingExtent=false;
// if limit extents zero'd then flag to get max from mapservice
if ((limitLeft!=0) && (limitRight!=0)) {
        getLimitExtent=false;
        enforceFullExtent=true;
}
if (ovBoxColor=="") ovBoxColor = "255,0,0";
//ovBoxColor = convertHexToDec(ovBoxColor);
checkCoords();
if (aimsNavigationPresent) {
        // Set up event capture for mouse movement
        if (isNav4) {
                document.captureEvents(Event.MOUSEMOVE);
                document.captureEvents(Event.MOUSEDOWN);
                document.captureEvents(Event.MOUSEUP);
                //document.captureEvents(Event.MOUSEOUT);
        }
        document.onmousemove = getMouse;
        //document.onmousedown = chkMouseDown;
        document.onmousedown = mapTool;
        document.onmouseup = chkMouseUp;
        //document.onmouseout = chkMouseOut;
} else {
        usePan=false;
        usePanNorth=false;
        usePanWest=false;
        usePanEast=false;
        usePanSouth=false;
        useMeasure=false;
        useZoomIn=false;
        useZoomOut=false
        //useFullExtent=false;
        useZoomActive=false;
        //useZoomLast=false;
```

```
		}
		if (!aimsBufferPresent) {
			useBuffer=false;
		}
		if (!aimsQueryPresent) {
			aimsBufferPresent=false;
			useQuery=false;
			useFind=false;
			useBuffer=false;
			useStoredQuery=false;
		}
		if (!aimsSelectPresent) {
			aimsQueryPresent=false;
			aimsBufferPresent=false;
			useSelect=false;
			useQuery=false;
			useFind=false;
			useBuffer=false;
			useStoredQuery=false;
			useClearSelect=false;
		}
		if (!aimsIdentifyPresent) {
			aimsSelectPresent=false;
			aimsQueryPresent=false;
			aimsBufferPresent=false;
			canQuery=false;
			useIdentify=false;
			useSelect=false;
			useQuery=false;
			useFind=false;
			useBuffer=false;
			useStoredQuery=false;
			useHyperLink=false;
			useHyperLinkAny=false;
			useIdentifyAll=false;
		}
		if (!aimsGeocodePresent) {
			useGeocode=false;
			useReverseGeocode=false;
		}
		if (!aimsPrintPresent) {
			usePrint=false;
		}
		if (!aimsOptionsPresent) {
			allowOptions=false;
		}
		if ((aimsXMLPresent) && (aimsMapPresent)) {
			if (aimsClickPresent) clickFunction("zoomin");
			if (parent.ToolFrame!=null) parent.ToolFrame.document.location="toolbar.htm";
			startMap();
		} else {
			alert(msgList[0]);
		}
	}
```

Appendix D   COMCI Main Page

The following is the HTML\ASP code found in
http://scallywag.science.oregonstate.edu/website/comcisearch/comci.asp

```
<%@LANGUAGE="VBSCRIPT"%>
<!--#include file="Connections/comci_db.asp" -->
<%
Dim sites
Dim sites_numRows

Set sites = Server.CreateObject("ADODB.Recordset")
sites.ActiveConnection = MM_comci_db_STRING
sites.Source = "SELECT Atlas_ID, SiteName FROM atlas_sites ORDER BY SiteName ASC"
sites.CursorType = 0
sites.CursorLocation = 2
sites.LockType = 1
sites.Open()

sites_numRows = 0
%>
<%
Dim people
Dim people_numRows

Set people = Server.CreateObject("ADODB.Recordset")
people.ActiveConnection = MM_comci_db_STRING
people.Source = "SELECT * FROM AUTH_DIST ORDER BY PERSONLASTNAME ASC"
people.CursorType = 0
people.CursorLocation = 2
people.LockType = 1
people.Open()

people_numRows = 0
%>
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<html><!-- #BeginTemplate "/Templates/atlas_template.dwt" --><!-- DW6 -->
<head>
<META http-equiv="Content-Style-Type" content="text/css">
<meta name="Keywords" content="Oregon Coastal Atlas, ocean areas, estuarys, sandy shores, rocky
shores, protect, economy, fishing, marine resources, recreation, pollution, education, science, weather">
<meta name="Description" content="">
<STYLE TYPE="text/css">
.Verdann10 { font-family: Verdana, Arial, Helvetica, sans-serif; font-size: 10pt; font-style: normal ;
font-weight: normal}
.Verdann9 { font-family: Verdana, Arial, Helvetica, sans-serif; font-size: 8pt; font-style: normal }
a {  }
.Verdann8 { font-family: Verdana, Arial, Helvetica, sans-serif; font-size: 7pt; font-style: normal ; text-
decoration: none; color: #000000; font-weight: normal}
.Verdann9WhiLink { font-family: Verdana, Arial, Helvetica, sans-serif; font-size: 9pt; font-style:
normal ; color: #FFFFFF; text-decoration: none; font-weight: bold}
.Verdann9GreeLinkCopy { font-family: Verdana, Arial, Helvetica, sans-serif; font-size: 9pt; font-style:
normal ; color: #669966; text-decoration: underline; font-weight: normal}
```

```
.Verdann11 { font-family: Verdana, Arial, Helvetica, sans-serif; font-size: 11pt; font-style: normal }
.Verdann10GreeLinkBold { font-family: Verdana, Arial, Helvetica, sans-serif; font-size: 10pt; font-
style: normal ; color: #669966; text-decoration: underline; font-weight: bold}
.Verdann10Bold { font-family: Verdana, Arial, Helvetica, sans-serif; font-size: 10pt; font-style: normal
; font-weight: bold; text-decoration: none; color: #000000}
.osu {  font-family: Verdana, Arial, Helvetica, sans-serif; font-size: 12px; font-weight: bold; color:
#FF9900; text-decoration: underline}
.ecotrust {  font-family: Verdana, Arial, Helvetica, sans-serif; font-size: 12px; font-weight: bold; color:
#009933; text-decoration: underline}
.ocmp {  font-family: Verdana, Arial, Helvetica, sans-serif; font-size: 12px; font-weight: bold; color:
#3366CC; text-decoration: underline}
</STYLE>
<!-- #BeginEditable "doctitle" -->
<title>Oregon Coastal Atlas - COMCI Search</title>
<!-- Dynamic Dependent List box Code for *** VBScript *** Server Model //-->
<script language="JavaScript">
<!--

var arrDynaList = new Array();
var arrDL1 = new Array();

arrDL1[1] = "select_setting";          // Name of parent list box
arrDL1[2] = "form1";             // Name of form containing parent list box
arrDL1[3] = "setting_name";          // Name of child list box
arrDL1[4] = "form1";             // Name of form containing child list box
arrDL1[5] = arrDynaList;


 arrDynaList[0] = "1"
 arrDynaList[1] = "Lower Columbia River"
 arrDynaList[2] = "cole"

 arrDynaList[3] = "1"
 arrDynaList[4] = "Necanicum River"
 arrDynaList[5] = "nece"

 arrDynaList[6] = "1"
 arrDynaList[7] = "Nehalem River"
 arrDynaList[8] = "nehe"

 arrDynaList[9] = "1"
 arrDynaList[10] = "Tillamook Bay"
 arrDynaList[11] = "tile"

 arrDynaList[12] = "1"
 arrDynaList[13] = "Netarts Bay"
 arrDynaList[14] = "nete"

 arrDynaList[15] = "1"
 arrDynaList[16] = "Sand Lake"
 arrDynaList[17] = "slke"

 arrDynaList[18] = "1"
 arrDynaList[19] = "Nestucca Bay"
 arrDynaList[20] = "nese"
```

```
arrDynaList[21] = "1"
arrDynaList[22] = "Salmon River"
arrDynaList[23] = "sale"

arrDynaList[24] = "1"
arrDynaList[25] = "Siletz Bay"
arrDynaList[26] = "sile"

arrDynaList[27] = "1"
arrDynaList[28] = "Yaquina Bay"
arrDynaList[29] = "yaqe"

arrDynaList[30] = "1"
arrDynaList[31] = "Alsea Bay"
arrDynaList[32] = "alse"

arrDynaList[33] = "1"
arrDynaList[34] = "Siuslaw River"
arrDynaList[35] = "siue"

arrDynaList[36] = "1"
arrDynaList[37] = "Umpqua River"
arrDynaList[38] = "umpe"

arrDynaList[39] = "1"
arrDynaList[40] = "Coos Bay"
arrDynaList[41] = "cooe"

arrDynaList[42] = "1"
arrDynaList[43] = "Coquille River"
arrDynaList[44] = "coqe"

arrDynaList[45] = "1"
arrDynaList[46] = "Sixes River"
arrDynaList[47] = "sixe"

arrDynaList[48] = "1"
arrDynaList[49] = "Elk River"
arrDynaList[50] = "elke"

arrDynaList[51] = "1"
arrDynaList[52] = "Rogue River"
arrDynaList[53] = "roge"

arrDynaList[54] = "1"
arrDynaList[55] = "Pistol River"
arrDynaList[56] = "pise"

arrDynaList[57] = "1"
arrDynaList[58] = "Chetco River"
arrDynaList[59] = "chte"

arrDynaList[60] = "1"
arrDynaList[61] = "Winchuck River"
arrDynaList[62] = "wine"
```

```
arrDynaList[63] = "1"
arrDynaList[64] = "Depoe Bay"
arrDynaList[65] = "depe"

arrDynaList[66] = "2"
arrDynaList[67] = "Clatsop"
arrDynaList[68] = "clas"

arrDynaList[69] = "2"
arrDynaList[70] = "Cannon"
arrDynaList[71] = "cans"

arrDynaList[72] = "2"
arrDynaList[73] = "Rockaway"
arrDynaList[74] = "rocs"

arrDynaList[75] = "2"
arrDynaList[76] = "Netarts"
arrDynaList[77] = "nets"

arrDynaList[78] = "2"
arrDynaList[79] = "Sand Lake S"
arrDynaList[80] = "sans"

arrDynaList[81] = "2"
arrDynaList[82] = "Neskowin"
arrDynaList[83] = "nsos"

arrDynaList[84] = "2"
arrDynaList[85] = "Lincoln"
arrDynaList[86] = "lins"

arrDynaList[87] = "2"
arrDynaList[88] = "Beverly"
arrDynaList[89] = "bevs"

arrDynaList[90] = "2"
arrDynaList[91] = "Newport"
arrDynaList[92] = "news"

arrDynaList[93] = "2"
arrDynaList[94] = "Heceta"
arrDynaList[95] = "hecs"

arrDynaList[96] = "2"
arrDynaList[97] = "Coos"
arrDynaList[98] = "coos"

arrDynaList[99] = "2"
arrDynaList[100] = "Bandon"
arrDynaList[101] = "bans"

arrDynaList[102] = "2"
arrDynaList[103] = "Elks"
arrDynaList[104] = "elks"
```

```
arrDynaList[105] = "2"
arrDynaList[106] = "Humbug"
arrDynaList[107] = "hums"

arrDynaList[108] = "2"
arrDynaList[109] = "Nesika"
arrDynaList[110] = "nsis"

arrDynaList[111] = "2"
arrDynaList[112] = "Rogue"
arrDynaList[113] = "rogs"

arrDynaList[114] = "2"
arrDynaList[115] = "Pistol"
arrDynaList[116] = "piss"

arrDynaList[117] = "2"
arrDynaList[118] = "Ferello"
arrDynaList[119] = "fers"

arrDynaList[120] = "3"
arrDynaList[121] = "Tillamook Head"
arrDynaList[122] = "tilr"

arrDynaList[123] = "3"
arrDynaList[124] = "Indian Beach"

arrDynaList[125] = "inbr"

arrDynaList[126] = "3"
arrDynaList[127] = "Ecola Point"
arrDynaList[128] = "ecor"

arrDynaList[129] = "3"
arrDynaList[130] = "Neahkahnie Haystack Rock"
arrDynaList[131] = "hrnr"

arrDynaList[132] = "3"
arrDynaList[133] = "Arcadia Beach"
arrDynaList[134] = "arcr"

arrDynaList[135] = "3"
arrDynaList[136] = "Arch Cape"
arrDynaList[137] = "acpr"

arrDynaList[138] = "3"
arrDynaList[139] = "Cape Falcon"
arrDynaList[140] = "falr"

arrDynaList[141] = "3"
arrDynaList[142] = "Smuggler's Cove"
arrDynaList[143] = "smcr"

arrDynaList[144] = "3"
arrDynaList[145] = "Pillar and Pyramid Rock"
arrDynaList[146] = "pprr"
```

```
arrDynaList[147] = "3"
arrDynaList[148] = "Cape Meares"
arrDynaList[149] = "cpmr"

arrDynaList[150] = "3"
arrDynaList[151] = "Three Arch Rocks"
arrDynaList[152] = "tarr"

arrDynaList[153] = "3"
arrDynaList[154] = "Maxwell Point"
arrDynaList[155] = "mxpr"

arrDynaList[156] = "3"
arrDynaList[157] = "South Intertidal"
arrDynaList[158] = "soir"

arrDynaList[159] = "3"
arrDynaList[160] = "South Cliff Face"
arrDynaList[161] = "sclr"

arrDynaList[162] = "3"
arrDynaList[163] = "Cape Kiwanda Head"
arrDynaList[164] = "ckhr"

arrDynaList[165] = "3"
arrDynaList[166] = "Kiwanda Haystack Rock"
arrDynaList[167] = "hrkr"

arrDynaList[168] = "3"
arrDynaList[169] = "Harts Cove"
arrDynaList[170] = "htcr"

arrDynaList[171] = "3"
arrDynaList[172] = "South Cascade Head"
arrDynaList[173] = "schr"

arrDynaList[174] = "3"
arrDynaList[175] = "Road's End Headland"
arrDynaList[176] = "rehr"

arrDynaList[177] = "3"
arrDynaList[178] = "Ocean Lake Intertidal"
arrDynaList[179] = "olir"

arrDynaList[180] = "3"
arrDynaList[181] = "Fogarty Creek"
arrDynaList[182] = "fgcr"

arrDynaList[183] = "3"
arrDynaList[184] = "Boiler Bay"
arrDynaList[185] = "boir"

arrDynaList[186] = "3"
arrDynaList[187] = "Pirate Cove"
arrDynaList[188] = "prcr"
```

```
arrDynaList[189] = "3"
arrDynaList[190] = "North Depoe Bay"
arrDynaList[191] = "ndbr"

arrDynaList[192] = "3"
arrDynaList[193] = "Whale Cove"
arrDynaList[194] = "wcvr"

arrDynaList[195] = "3"
arrDynaList[196] = "Rocky Creek St. Wayside"
arrDynaList[197] = "rcwr"

arrDynaList[198] = "3"
arrDynaList[199] = "Otter Rock / Gull Rock"
arrDynaList[200] = "ogrr"

arrDynaList[201] = "3"
arrDynaList[202] = "Otter Crest"
arrDynaList[203] = "otcr"

arrDynaList[204] = "3"
arrDynaList[205] = "Yaquina Head Marine Gardens"
arrDynaList[206] = "yaqr"

arrDynaList[207] = "3"
arrDynaList[208] = "South Yaquina Head"
arrDynaList[209] = "syhr"

arrDynaList[210] = "3"
arrDynaList[211] = "BLM Tide Pool"
arrDynaList[212] = "btpr"

arrDynaList[213] = "3"
arrDynaList[214] = "Jump Off Joe Platforms"
arrDynaList[215] = "jojr"

arrDynaList[216] = "3"
arrDynaList[217] = "Seal Rock"
arrDynaList[218] = "srkr"

arrDynaList[219] = "3"
arrDynaList[220] = "Smelt Sands"
arrDynaList[221] = "smsr"

arrDynaList[222] = "3"
arrDynaList[223] = "Yachats State Park"
arrDynaList[224] = "yspr"

arrDynaList[225] = "3"
arrDynaList[226] = "Yachats Ocean Rd. St. Wayside"
arrDynaList[227] = "yowr"

arrDynaList[228] = "3"
arrDynaList[229] = "Cape Perpetua Park"
arrDynaList[230] = "perr"
```

```
arrDynaList[231] = "3"
arrDynaList[232] = "Neptune State Park"
arrDynaList[233] = "nspr"

arrDynaList[234] = "3"
arrDynaList[235] = "Strawberry Hill"
arrDynaList[236] = "strr"

arrDynaList[237] = "3"
arrDynaList[238] = "Bob Creek"
arrDynaList[239] = "bocr"

arrDynaList[240] = "3"
arrDynaList[241] = "Stonefield Beach State Park"
arrDynaList[242] = "sbsr"

arrDynaList[243] = "3"
arrDynaList[244] = "Devil's Elbow State Park"
arrDynaList[245] = "dver"

arrDynaList[246] = "3"
arrDynaList[247] = "Sealion Point"
arrDynaList[248] = "slpr"

arrDynaList[249] = "3"
arrDynaList[250] = "Gregory Point/Squaw Island"
arrDynaList[251] = "grpr"

arrDynaList[252] = "3"
arrDynaList[253] = "Sunset Bay"
arrDynaList[254] = "sunr"

arrDynaList[255] = "3"
arrDynaList[256] = "Shore Acres Park"
arrDynaList[257] = "sapr"

arrDynaList[258] = "3"
arrDynaList[259] = "North Cove Cape Arago"
arrDynaList[260] = "ncar"

arrDynaList[261] = "3"
arrDynaList[262] = "Middle Cove Cape Arago"
arrDynaList[263] = "mcar"

arrDynaList[264] = "3"
arrDynaList[265] = "Five Mile Point"
arrDynaList[266] = "fmpr"

arrDynaList[267] = "3"
arrDynaList[268] = "Coquille Point and Rocks"
arrDynaList[269] = "cqpr"

arrDynaList[270] = "3"
arrDynaList[271] = "Bandon Haystack Rock"
arrDynaList[272] = "hykr"
```

```
arrDynaList[273] = "3"
arrDynaList[274] = "Blacklock Point/Tower Rock"
arrDynaList[275] = "blpr"

arrDynaList[276] = "3"
arrDynaList[277] = "Castle and Gull Rocks"
arrDynaList[278] = "cgrr"

arrDynaList[279] = "3"
arrDynaList[280] = "Cape Blanco"
arrDynaList[281] = "blar"

arrDynaList[282] = "3"
arrDynaList[283] = "Blanco Reef"
arrDynaList[284] = "blrr"

arrDynaList[285] = "3"
arrDynaList[286] = "Orford Reef"
arrDynaList[287] = "ofdr"

arrDynaList[288] = "3"
arrDynaList[289] = "The Heads"
arrDynaList[290] = "thdr"

arrDynaList[291] = "3"
arrDynaList[292] = "Nellie's & Tichenor Cove"
arrDynaList[293] = "ntcr"

arrDynaList[294] = "3"
arrDynaList[295] = "Battle Rock"
arrDynaList[296] = "brkr"

arrDynaList[297] = "3"
arrDynaList[298] = "Rocky & Coal Points"
arrDynaList[299] = "rcpr"

arrDynaList[300] = "3"
arrDynaList[301] = "Redfish & Island Rocks"
arrDynaList[302] = "rfrr"

arrDynaList[303] = "3"
arrDynaList[304] = "Humbug Mountain"
arrDynaList[305] = "humr"

arrDynaList[306] = "3"
arrDynaList[307] = "Lookout Rock"
arrDynaList[308] = "lorr"

arrDynaList[309] = "3"
arrDynaList[310] = "Arizona Beach"
arrDynaList[311] = "arir"

arrDynaList[312] = "3"
arrDynaList[313] = "Sister's Rocks"
arrDynaList[314] = "sisr"
```

```
arrDynaList[315] = "3"
arrDynaList[316] = "Devil's Backbone"
arrDynaList[317] = "dvbr"

arrDynaList[318] = "3"
arrDynaList[319] = "Nesika Head"
arrDynaList[320] = "nkhr"

arrDynaList[321] = "3"
arrDynaList[322] = "Hubbard Mound Rocks"
arrDynaList[323] = "hmrr"

arrDynaList[324] = "3"
arrDynaList[325] = "Otter Point"
arrDynaList[326] = "otpr"

arrDynaList[327] = "3"
arrDynaList[328] = "Rogue Reef"
arrDynaList[329] = "rgrr"

arrDynaList[330] = "3"
arrDynaList[331] = "Cape Sebastian"
arrDynaList[332] = "sebr"

arrDynaList[333] = "3"
arrDynaList[334] = "Meyers Creek Rocks"
arrDynaList[335] = "mcrr"

arrDynaList[336] = "3"
arrDynaList[337] = "Crook Point"
arrDynaList[338] = "cror"

arrDynaList[339] = "3"
arrDynaList[340] = "Mack Reef"
arrDynaList[341] = "marr"

arrDynaList[342] = "3"
arrDynaList[343] = "Mack Arch Cove"
arrDynaList[344] = "macr"

arrDynaList[345] = "3"
arrDynaList[346] = "North Boardman"
arrDynaList[347] = "nbmr"

arrDynaList[348] = "3"
arrDynaList[349] = "Mid Boardman"
arrDynaList[350] = "mbmr"

arrDynaList[351] = "3"
arrDynaList[352] = "Thomas Creek"
arrDynaList[353] = "thcr"

arrDynaList[354] = "3"
arrDynaList[355] = "Indian Sands"
arrDynaList[356] = "insr"
```

```
arrDynaList[357] = "3"
arrDynaList[358] = "Whaleshead Rocks"
arrDynaList[359] = "whrr"

arrDynaList[360] = "3"
arrDynaList[361] = "Cape Ferrelo"
arrDynaList[362] = "cpfr"

arrDynaList[363] = "3"
arrDynaList[364] = "S. Bordman Rocks"
arrDynaList[365] = "sbrr"

arrDynaList[366] = "3"
arrDynaList[367] = "South Boardman Beach"
arrDynaList[368] = "sbbr"

arrDynaList[369] = "3"
arrDynaList[370] = "Goat Island"
arrDynaList[371] = "gtir"

arrDynaList[372] = "3"
arrDynaList[373] = "Harris Beach"
arrDynaList[374] = "hrbr"

arrDynaList[375] = "3"
arrDynaList[376] = "Chetco Point"
arrDynaList[377] = "chpr"

arrDynaList[378] = "3"
arrDynaList[379] = "Harbor Beach"
arrDynaList[380] = "hbbr"

arrDynaList[381] = "3"
arrDynaList[382] = "South Cove Cape Arago"
arrDynaList[383] = "scar"

arrDynaList[384] = "3"
arrDynaList[385] = "Hooskanaden Creek"
arrDynaList[386] = "hoor"

arrDynaList[387] = "3"
arrDynaList[388] = "Twin Rocks"
arrDynaList[389] = "twrr"

arrDynaList[390] = "4"
arrDynaList[391] = "Astoria Canyon"
arrDynaList[392] = "acyo"

arrDynaList[393] = "4"
arrDynaList[394] = "Astoria Fan"
arrDynaList[395] = "afno"

arrDynaList[396] = "4"
arrDynaList[397] = "Astoria Sea Channel"
arrDynaList[398] = "asco"
```

```
arrDynaList[399] = "4"
arrDynaList[400] = "Blanco Fracture Zone"
arrDynaList[401] = "bfzo"

arrDynaList[402] = "4"
arrDynaList[403] = "Blanco Saddle"
arrDynaList[404] = "bsdo"

arrDynaList[405] = "4"
arrDynaList[406] = "Cascade Bench"
arrDynaList[407] = "cbno"

arrDynaList[408] = "4"
arrDynaList[409] = "Cascadia Basin"
arrDynaList[410] = "cbso"

arrDynaList[411] = "4"
arrDynaList[412] = "Stonewall Bank"
arrDynaList[413] = "swbo"

arrDynaList[414] = "4"
arrDynaList[415] = "Coquille Bank"
arrDynaList[416] = "cqbo"

arrDynaList[417] = "4"
arrDynaList[418] = "Daisy Bank"
arrDynaList[419] = "dsbo"

arrDynaList[420] = "4"
arrDynaList[421] = "Daisy Bank Fault"
arrDynaList[422] = "dbfo"

arrDynaList[423] = "4"
arrDynaList[424] = "Gorda Ridge"
arrDynaList[425] = "gdro"

arrDynaList[426] = "4"
arrDynaList[427] = "Heceta Bank"
arrDynaList[428] = "hcbo"

arrDynaList[429] = "4"
arrDynaList[430] = "Heceta Escarpment"
arrDynaList[431] = "hceo"

arrDynaList[432] = "4"
arrDynaList[433] = "Heceta Valley"
arrDynaList[434] = "hcvo"

arrDynaList[435] = "4"
arrDynaList[436] = "Juan de Fuca Plate"
arrDynaList[437] = "jfpo"

arrDynaList[438] = "4"
arrDynaList[439] = "Juan de Fuca Ridge"
arrDynaList[440] = "jfro"
```

```
arrDynaList[441] = "4"
arrDynaList[442] = "Klamath Bench"
arrDynaList[443] = "klbo"

arrDynaList[444] = "4"
arrDynaList[445] = "Nehalem Bank"
arrDynaList[446] = "nhbo"

arrDynaList[447] = "4"
arrDynaList[448] = "Newport Valley"
arrDynaList[449] = "npvo"

arrDynaList[450] = "4"
arrDynaList[451] = "Perpetua Bank"
arrDynaList[452] = "pbko"

arrDynaList[453] = "4"
arrDynaList[454] = "Rogue Canyon"
arrDynaList[455] = "rgco"

arrDynaList[456] = "4"
arrDynaList[457] = "Siltcoos Bank"
arrDynaList[458] = "scbo"

arrDynaList[459] = "4"
arrDynaList[460] = "Stonewall Bank"
arrDynaList[461] = "stbo"

arrDynaList[462] = "5"
arrDynaList[463] = "Grays/Elokoman"
arrDynaList[464] = "graw"

arrDynaList[465] = "5"
arrDynaList[466] = "Nehalem"
arrDynaList[467] = "nehw"

arrDynaList[468] = "5"
arrDynaList[469] = "Necanicum"
arrDynaList[470] = "necw"

arrDynaList[471] = "5"
arrDynaList[472] = "Wilson/Trask/Nestucca"
arrDynaList[473] = "wilw"

arrDynaList[474] = "5"
arrDynaList[475] = "Siletz/Yaquina"
arrDynaList[476] = "silw"

arrDynaList[477] = "5"
arrDynaList[478] = "Alsea"
arrDynaList[479] = "alsw"

arrDynaList[480] = "5"
arrDynaList[481] = "Siuslaw"
arrDynaList[482] = "siuw"
```

```
arrDynaList[483] = "5"
arrDynaList[484] = "Siltcoos"
arrDynaList[485] = "scow"

arrDynaList[486] = "5"
arrDynaList[487] = "Coos"
arrDynaList[488] = "coow"

arrDynaList[489] = "5"
arrDynaList[490] = "Umpqua"
arrDynaList[491] = "umpw"

arrDynaList[492] = "5"
arrDynaList[493] = "Coquille"
arrDynaList[494] = "coqw"

arrDynaList[495] = "5"
arrDynaList[496] = "Sixes"
arrDynaList[497] = "sixw"

arrDynaList[498] = "5"
arrDynaList[499] = "Chetco"
arrDynaList[500] = "chew"

arrDynaList[501] = "5"
arrDynaList[502] = "Rogue"
arrDynaList[503] = "rogw"

arrDynaList[504] = "6"
arrDynaList[505] = "International"
arrDynaList[506] = "intg"

arrDynaList[507] = "6"
arrDynaList[508] = "National"
arrDynaList[509] = "natg"

arrDynaList[510] = "6"
arrDynaList[511] = "Pacific Coast"
arrDynaList[512] = "pacg"

arrDynaList[513] = "6"
arrDynaList[514] = "Pacific Northwest"
arrDynaList[515] = "pnwg"

arrDynaList[516] = "6"
arrDynaList[517] = "Alaska"
arrDynaList[518] = "alkg"

arrDynaList[519] = "6"
arrDynaList[520] = "British Columbia"
arrDynaList[521] = "brcg"

arrDynaList[522] = "6"
arrDynaList[523] = "Washington"
arrDynaList[524] = "wasg"
```

```
 arrDynaList[525] = "6"
 arrDynaList[526] = "Oregon"
 arrDynaList[527] = "oreg"

 arrDynaList[528] = "6"
 arrDynaList[529] = "California"
 arrDynaList[530] = "calg"

 arrDynaList[531] = "6"
 arrDynaList[532] = "General"
 arrDynaList[533] = "geng"


//-->
</script>
<!-- End of object/array definitions, beginning of generic functions -->
<script language="JavaScript">
<!--

function setDynaList(arrDL){

 var oList1 = document.forms[arrDL[2]].elements[arrDL[1]];
 var oList2 = document.forms[arrDL[4]].elements[arrDL[3]];
 var arrList = arrDL[5];

 clearDynaList(oList2);

 if (oList1.selectedIndex == -1){
 oList1.selectedIndex = 0;
 }

 populateDynaList(oList2, oList1[oList1.selectedIndex].value, arrList);
 return true;
}

function clearDynaList(oList){

 for (var i = oList.options.length; i >= 0; i--){
 oList.options[i] = null;
 }

 oList.selectedIndex = -1;
}

function populateDynaList(oList, nIndex, aArray){

 for (var i = 0; i < aArray.length; i= i + 3){
 if (aArray[i] == nIndex){
  oList.options[oList.options.length] = new Option(aArray[i + 1], aArray[i + 2]);
 }
 }

 if (oList.options.length == 0){
 oList.options[oList.options.length] = new Option("[none available]",0);
 }
```

```
 oList.selectedIndex = 0;
}

//-->
  </script>




<!-- Dynamic Dependent List box Code for *** VBScript *** Server Model //-->
<script language="JavaScript">
<!--

var arrGroupThemeList = new Array();
var arrFormItems = new Array();

arrFormItems[1] = "gid";              // Name of parent list box
arrFormItems[2] = "gr_theme";               // Name of form containing parent list box
arrFormItems[3] = "tid";          // Name of child list box
arrFormItems[4] = "gr_theme";               // Name of form containing child list box
arrFormItems[5] = arrGroupThemeList;

arrGroupThemeList[0] = "1"
arrGroupThemeList[1] = "Beach Access"
arrGroupThemeList[2] = "1"
arrGroupThemeList[3] = "1"
arrGroupThemeList[4] = "Coastal Communities"
arrGroupThemeList[5] = "2"
arrGroupThemeList[6] = "1"
arrGroupThemeList[7] = "Coastal Law"
arrGroupThemeList[8] = "3"
arrGroupThemeList[9] = "1"
arrGroupThemeList[10] = "Coastal Management"
arrGroupThemeList[11] = "4"
arrGroupThemeList[12] = "1"
arrGroupThemeList[13] = "Coastal Pollution"
arrGroupThemeList[14] = "5"
arrGroupThemeList[15] = "1"
arrGroupThemeList[16] = "Invasive Species"
arrGroupThemeList[17] = "6"
arrGroupThemeList[18] = "1"
arrGroupThemeList[19] = "Land and Water Use"
arrGroupThemeList[20] = "7"
arrGroupThemeList[21] = "1"
arrGroupThemeList[22] = "Land Ownership"
arrGroupThemeList[23] = "8"
arrGroupThemeList[24] = "1"
arrGroupThemeList[25] = "Marine Pollution"
arrGroupThemeList[26] = "9"
arrGroupThemeList[27] = "1"
arrGroupThemeList[28] = "Socioeconomics"
arrGroupThemeList[29] = "10"
arrGroupThemeList[30] = "2"
arrGroupThemeList[31] = "Commercial Fisheries"
arrGroupThemeList[32] = "11"
arrGroupThemeList[33] = "2"
```

```
arrGroupThemeList[34] = "Commercial Invertebrate Fisheries"
arrGroupThemeList[35] = "12"
arrGroupThemeList[36] = "2"
arrGroupThemeList[37] = "Commercial Invertebrates"
arrGroupThemeList[38] = "13"
arrGroupThemeList[39] = "2"
arrGroupThemeList[40] = "Fisheries Management"
arrGroupThemeList[41] = "14"
arrGroupThemeList[42] = "2"
arrGroupThemeList[43] = "Fisheries Research"
arrGroupThemeList[44] = "15"
arrGroupThemeList[45] = "2"
arrGroupThemeList[46] = "Groundfish"
arrGroupThemeList[47] = "16"
arrGroupThemeList[48] = "2"
arrGroupThemeList[49] = "Recreational Fisheries"
arrGroupThemeList[50] = "17"
arrGroupThemeList[51] = "2"
arrGroupThemeList[52] = "Salmon Fisheries"
arrGroupThemeList[53] = "18"
arrGroupThemeList[54] = "2"
arrGroupThemeList[55] = "Seafood Processing"
arrGroupThemeList[56] = "19"
arrGroupThemeList[57] = "3"
arrGroupThemeList[58] = "Bathymetry"
arrGroupThemeList[59] = "20"
arrGroupThemeList[60] = "3"
arrGroupThemeList[61] = "Bottom and Sediment Types"
arrGroupThemeList[62] = "21"
arrGroupThemeList[63] = "3"
arrGroupThemeList[64] = "Bottom Habitat"
arrGroupThemeList[65] = "22"
arrGroupThemeList[66] = "3"
arrGroupThemeList[67] = "Classification Schemes"
arrGroupThemeList[68] = "23"
arrGroupThemeList[69] = "3"
arrGroupThemeList[70] = "Coastal Habitat"
arrGroupThemeList[71] = "24"
arrGroupThemeList[72] = "3"
arrGroupThemeList[73] = "Coastal, Terrestrial Habitats"
arrGroupThemeList[74] = "25"
arrGroupThemeList[75] = "3"
arrGroupThemeList[76] = "Dunes"
arrGroupThemeList[77] = "26"
arrGroupThemeList[78] = "3"
arrGroupThemeList[79] = "Essential Fish Habitat"
arrGroupThemeList[80] = "27"
arrGroupThemeList[81] = "3"
arrGroupThemeList[82] = "Estuaries and Bays"
arrGroupThemeList[83] = "28"
arrGroupThemeList[84] = "3"
arrGroupThemeList[85] = "Estuarine Assessment"
arrGroupThemeList[86] = "29"
arrGroupThemeList[87] = "3"
arrGroupThemeList[88] = "Habitat Assessment"
arrGroupThemeList[89] = "30"
```

```
arrGroupThemeList[90] = "3"
arrGroupThemeList[91] = "Intertidal Habitats"
arrGroupThemeList[92] = "31"
arrGroupThemeList[93] = "3"
arrGroupThemeList[94] = "Maps"
arrGroupThemeList[95] = "32"
arrGroupThemeList[96] = "3"
arrGroupThemeList[97] = "Nautical Charts"
arrGroupThemeList[98] = "33"
arrGroupThemeList[99] = "3"
arrGroupThemeList[100] = "Sediment"
arrGroupThemeList[101] = "34"
arrGroupThemeList[102] = "3"
arrGroupThemeList[103] = "Subtidal Habitats"
arrGroupThemeList[104] = "35"
arrGroupThemeList[105] = "3"
arrGroupThemeList[106] = "Supratidal Habitat"
arrGroupThemeList[107] = "36"
arrGroupThemeList[108] = "3"
arrGroupThemeList[109] = "Terrestrial Habitat"
arrGroupThemeList[110] = "37"
arrGroupThemeList[111] = "4"
arrGroupThemeList[112] = "Birds"
arrGroupThemeList[113] = "38"
arrGroupThemeList[114] = "4"
arrGroupThemeList[115] = "Database"
arrGroupThemeList[116] = "39"
arrGroupThemeList[117] = "4"
arrGroupThemeList[118] = "Fish"
arrGroupThemeList[119] = "40"
arrGroupThemeList[120] = "4"
arrGroupThemeList[121] = "Invertebrates"
arrGroupThemeList[122] = "41"
arrGroupThemeList[123] = "4"
arrGroupThemeList[124] = "Listed species"
arrGroupThemeList[125] = "42"
arrGroupThemeList[126] = "4"
arrGroupThemeList[127] = "Marine Birds"
arrGroupThemeList[128] = "43"
arrGroupThemeList[129] = "4"
arrGroupThemeList[130] = "Marine Fish"
arrGroupThemeList[131] = "44"
arrGroupThemeList[132] = "4"
arrGroupThemeList[133] = "Marine Invertebrates"
arrGroupThemeList[134] = "45"
arrGroupThemeList[135] = "4"
arrGroupThemeList[136] = "Marine Mammals"
arrGroupThemeList[137] = "46"
arrGroupThemeList[138] = "4"
arrGroupThemeList[139] = "Marine Plants"
arrGroupThemeList[140] = "47"
arrGroupThemeList[141] = "4"
arrGroupThemeList[142] = "Plants"
arrGroupThemeList[143] = "48"
arrGroupThemeList[144] = "4"
arrGroupThemeList[145] = "Sea Turtles"
```

```
arrGroupThemeList[146] = "49"
arrGroupThemeList[147] = "4"
arrGroupThemeList[148] = "Species Checklist"
arrGroupThemeList[149] = "50"
arrGroupThemeList[150] = "4"
arrGroupThemeList[151] = "Threatened and Endangered Species"
arrGroupThemeList[152] = "51"
arrGroupThemeList[153] = "5"
arrGroupThemeList[154] = "Algal Harvesting"
arrGroupThemeList[155] = "52"
arrGroupThemeList[156] = "5"
arrGroupThemeList[157] = "Alternative Energy"
arrGroupThemeList[158] = "53"
arrGroupThemeList[159] = "5"
arrGroupThemeList[160] = "Dredging"
arrGroupThemeList[161] = "54"
arrGroupThemeList[162] = "5"
arrGroupThemeList[163] = "Ecological Functioning"
arrGroupThemeList[164] = "55"
arrGroupThemeList[165] = "5"
arrGroupThemeList[166] = "Ecosystem Functioning"
arrGroupThemeList[167] = "56"
arrGroupThemeList[168] = "5"
arrGroupThemeList[169] = "Education"
arrGroupThemeList[170] = "57"
arrGroupThemeList[171] = "5"
arrGroupThemeList[172] = "Freshwater Influences"
arrGroupThemeList[173] = "58"
arrGroupThemeList[174] = "5"
arrGroupThemeList[175] = "Harmful Algal Blooms"
arrGroupThemeList[176] = "59"
arrGroupThemeList[177] = "5"
arrGroupThemeList[178] = "Marine Fisheries"
arrGroupThemeList[179] = "60"
arrGroupThemeList[180] = "5"
arrGroupThemeList[181] = "Marine Pollution"
arrGroupThemeList[182] = "61"
arrGroupThemeList[183] = "5"
arrGroupThemeList[184] = "Marine Species"
arrGroupThemeList[185] = "62"
arrGroupThemeList[186] = "5"
arrGroupThemeList[187] = "Marine Transportation"
arrGroupThemeList[188] = "63"
arrGroupThemeList[189] = "5"
arrGroupThemeList[190] = "Military"
arrGroupThemeList[191] = "64"
arrGroupThemeList[192] = "5"
arrGroupThemeList[193] = "Military Uses"
arrGroupThemeList[194] = "65"
arrGroupThemeList[195] = "5"
arrGroupThemeList[196] = "Mineral Resources"
arrGroupThemeList[197] = "66"
arrGroupThemeList[198] = "5"
arrGroupThemeList[199] = "Nutrients"
arrGroupThemeList[200] = "67"
arrGroupThemeList[201] = "5"
```

```
arrGroupThemeList[202] = "Oceanography"
arrGroupThemeList[203] = "68"
arrGroupThemeList[204] = "5"
arrGroupThemeList[205] = "Oil Spill"
arrGroupThemeList[206] = "69"
arrGroupThemeList[207] = "5"
arrGroupThemeList[208] = "Oil_Gas_Mineral Resources"
arrGroupThemeList[209] = "70"
arrGroupThemeList[210] = "5"
arrGroupThemeList[211] = "Pacific Decadal Oscillation"
arrGroupThemeList[212] = "71"
arrGroupThemeList[213] = "5"
arrGroupThemeList[214] = "Recreation"
arrGroupThemeList[215] = "72"
arrGroupThemeList[216] = "5"
arrGroupThemeList[217] = "Recreational Fisheries"
arrGroupThemeList[218] = "73"
arrGroupThemeList[219] = "5"
arrGroupThemeList[220] = "Research"
arrGroupThemeList[221] = "74"
arrGroupThemeList[222] = "5"
arrGroupThemeList[223] = "Research Data"
arrGroupThemeList[224] = "75"
arrGroupThemeList[225] = "5"
arrGroupThemeList[226] = "Submarine Cables"
arrGroupThemeList[227] = "76"
arrGroupThemeList[228] = "5"
arrGroupThemeList[229] = "Terrestrial Influence"
arrGroupThemeList[230] = "77"
arrGroupThemeList[231] = "5"
arrGroupThemeList[232] = "Tourism"
arrGroupThemeList[233] = "78"
arrGroupThemeList[234] = "6"
arrGroupThemeList[235] = "Biological Oceanography"
arrGroupThemeList[236] = "79"
arrGroupThemeList[237] = "6"
arrGroupThemeList[238] = "Climate"
arrGroupThemeList[239] = "80"
arrGroupThemeList[240] = "6"
arrGroupThemeList[241] = "Climate Changes"
arrGroupThemeList[242] = "81"
arrGroupThemeList[243] = "6"
arrGroupThemeList[244] = "Climate Variability"
arrGroupThemeList[245] = "82"
arrGroupThemeList[246] = "6"
arrGroupThemeList[247] = "Currents"
arrGroupThemeList[248] = "83"
arrGroupThemeList[249] = "6"
arrGroupThemeList[250] = "El Nino and the Pacific Decadal Oscillation"
arrGroupThemeList[251] = "84"
arrGroupThemeList[252] = "6"
arrGroupThemeList[253] = "ENSO"
arrGroupThemeList[254] = "85"
arrGroupThemeList[255] = "6"
arrGroupThemeList[256] = "Geomophology"
arrGroupThemeList[257] = "86"
```

```
arrGroupThemeList[258] = "6"
arrGroupThemeList[259] = "Large-scale Currents"
arrGroupThemeList[260] = "87"
arrGroupThemeList[261] = "6"
arrGroupThemeList[262] = "Larval Fish Assemblage"
arrGroupThemeList[263] = "88"
arrGroupThemeList[264] = "6"
arrGroupThemeList[265] = "Marine Species"
arrGroupThemeList[266] = "89"
arrGroupThemeList[267] = "6"
arrGroupThemeList[268] = "Phytoplankton"
arrGroupThemeList[269] = "90"
arrGroupThemeList[270] = "6"
arrGroupThemeList[271] = "Plankton"
arrGroupThemeList[272] = "91"
arrGroupThemeList[273] = "6"
arrGroupThemeList[274] = "Production"
arrGroupThemeList[275] = "92"
arrGroupThemeList[276] = "6"
arrGroupThemeList[277] = "Productivity and Phytoplankton"
arrGroupThemeList[278] = "93"
arrGroupThemeList[279] = "6"
arrGroupThemeList[280] = "Research"
arrGroupThemeList[281] = "94"
arrGroupThemeList[282] = "6"
arrGroupThemeList[283] = "Research Data"
arrGroupThemeList[284] = "95"
arrGroupThemeList[285] = "6"
arrGroupThemeList[286] = "River Plume"
arrGroupThemeList[287] = "96"
arrGroupThemeList[288] = "6"
arrGroupThemeList[289] = "Sea Surface Temperature"
arrGroupThemeList[290] = "97"
arrGroupThemeList[291] = "6"
arrGroupThemeList[292] = "Terrestrial/Freshwater Inputs"
arrGroupThemeList[293] = "98"
arrGroupThemeList[294] = "6"
arrGroupThemeList[295] = "Upwelling"
arrGroupThemeList[296] = "99"
arrGroupThemeList[297] = "6"
arrGroupThemeList[298] = "Zooplankton"
arrGroupThemeList[299] = "100"



//-->
</script>
<!-- End of object/array definitions, beginning of generic functions -->
<script language="JavaScript">
<!--

function setDynaListGT(arrPassed){

 var gtList1 = document.forms[arrPassed[2]].elements[arrPassed[1]];
 var gtList2 = document.forms[arrPassed[4]].elements[arrPassed[3]];
```

```
  var arr_gt_List = arrPassed[5];

  clearDynaList(gtList2);

  if (gtList1.selectedIndex == -1){
   gtList1.selectedIndex = 0;
  }

  populateDynaList(gtList2, gtList1[gtList1.selectedIndex].value, arr_gt_List);
  return true;
 }

 function clearDynaListGT(gtList){

  for (var counter= gtList.options.length; counter>= 0; counter--){
   gtList.options[counter] = null;
  }

  gtList.selectedIndex = -1;
 }

 function populateDynaListGT(gtList, nIndexgt, aArraygt){

  for (var counter= 0; counter< aArraygt.length; counter= counter+ 3){
   if (aArraygt[counter] == nIndexgt){
    gtList.options[gtList.options.length] = new Option(aArraygt[counter + 1], aArraygt[counter + 2]);
   }
  }

  if (gtList.options.length == 0){
   gtList.options[gtList.options.length] = new Option("[none available]",0);
  }

  gtList.selectedIndex = 0;
 }

//-->
  </script>

<script language="JavaScript" type="text/JavaScript">
<!--
function MM_callJS(jsStr) { //v2.0
  return eval(jsStr)
}
//-->
</script>
<!-- #EndEditable -->
<SCRIPT LANGUAGE=JAVASCRPT TYPE="TEXT/JAVASCRIPT">
<!-- Hide Script from older browsers
    dayName = new Array
("Sunday","Monday","Tuesday","Wednesday","Thursday","Friday","Saturday")
        monName = new Array ("January", "February", "March", "April", "May", "June", "July",
"August", "September", "October", "November", "December")
        now = new Date

// End Hiding Script -->
```

```
</SCRIPT>
</head>
<body bgcolor="#FFFFFF" >
<DIV align=center>
  <table align="center" width="89">
    <tr>
      <td class="Verdann10">
        <table width="100%" border="0">
          <tr>
            <td width="66%" valign="bottom"><b><font face="Verdana, Arial, Helvetica, sans-serif"
size="6" color="#003366">OREGON
              COASTAL ATLAS</font></b> </td>
            <td width="34%" align="right" valign="bottom"> <font size="1" color="#003366">
            <br>
            <SCRIPT LANGUAGE+JAVASCRIPT TYPE="TEXT/JAVASCRIPT">
                            <!-- Hide script from older browsers
                            document.write(dayName[now.getDay()] + " " +
monName[now.getMonth()] + " " + now.getDate() + ", " + now.getYear() )
                            // End hiding script -->
                            </SCRIPT>
            </font> </td>
          </tr>
        </table>
      </td>
    </tr>
    <tr>
      <td class="Verdann10">
        <!-- THE TABLE BELOW CONTAINS THE NAVIGATION TABS AND EXPLORE PULL-
DOWN -->
        <table width="710" cellspacing="0" cellpadding="0" border="0">
          <tr>

        <td><!-- #BeginEditable "home" --><a href="http://www.coastalatlas.net/index.asp"
              onmouseover="document.mtab.src='pix/template/tabs/home_tab_lit2.gif'"
                    onmouseout="document.mtab.src='pix/template/tabs/home_tab_dark.gif'"><img
name="mtab" src="pix/template/tabs/home_tab_dark.gif" width="96" height="30" border="0"
alt=""></a><!-- #EndEditable --></td>
          <td><!-- #BeginEditable "maps" --><a href="http://www.coastalatlas.net/maps/index.php"
                        onmouseover="document.ptab.src='pix/template/tabs/maps_tab_lit2.gif'"
                    onmouseout="document.ptab.src='pix/template/tabs/maps_tab_dark.gif'"><img
src="pix/template/tabs/maps_tab_dark.gif" width="87" height="30" border="0" alt=""
name="ptab"></a><!-- #EndEditable --></td>
          <td><!-- #BeginEditable "tools" --><a href="http://www.coastalatlas.net/tools/index.asp"
              onmouseover="document.ntab.src='pix/template/tabs/tools_tab_lit2.gif'"
                    onmouseout="document.ntab.src='pix/template/tabs/tools_tab_dark.gif'"><img
name="ntab" src="pix/template/tabs/tools_tab_dark.gif" width="87" height="30" border="0"
alt=""></a><!-- #EndEditable --></td>
          <td><!-- #BeginEditable "learn" --><a href="http://www.coastalatlas.net/learn/index.asp"
              onmouseover="document.intab.src='pix/template/tabs/learn_tab_lit2.gif'"
                    onmouseout="document.intab.src='pix/template/tabs/learn_tab_dark.gif'"><img
name="intab" src="pix/template/tabs/learn_tab_dark.gif" width="87" height="30" border="0"
alt=""></a><!-- #EndEditable --></td>

        <td><!-- #BeginEditable "search" --><a href="http://www.coastalatlas.net/search/index.asp"
><img  src="pix/template/tabs/search_tab_big.gif" width="87" height="30" border="0" alt=""></a><!--
#EndEditable --></td>
```

```
		<td background="pix/template/tiles/toptile2.gif" width="100%" align="right"
bgcolor="#104E8B">
		  <table cellpadding=0 cellspacing=0 border=0>
		   <tr>
		    <form method="post" action="">
		     <td><img src="pix/template/tiles/arrow_bg.gif" width="23" height="30"></td>
		     <td valign="middle">
		      <div class="small">
		       <select name="locator" size="1" onChange="x = this.options[this.selectedIndex].value;
if (x != '') {top.location = x;}" class="Verdann8">
			  <option value="">Site Index:
			  <option value="">-
			  <option value="http://www.coastalatlas.net/index.asp">Home
			  <option  value="http://www.coastalatlas.net/maps/index.php">Maps
			  <option  value="http://www.coastalatlas.net/tools/index.asp">Tools
			  <option  value="http://www.coastalatlas.net/tools/index.asp">--
			  For Planners
			  <option  value="http://www.coastalatlas.net/tools/index.asp">--
			  For Scientists
			  <option  value="http://www.coastalatlas.net/tools/index.asp">--
			  For the Public
			  <option  value="http://www.coastalatlas.net/tools/index.asp">--
			  For Contributors
			  <option  value="http://www.coastalatlas.net/learn/index.asp">Learn
			  <option  value="http://www.coastalatlas.net/learn/settings/estuary/index.asp">--
			  About Estuaries
			  <option  value="http://www.coastalatlas.net/learn/settings/sandy/index.asp">--
			  About Sandy Shores
			  <option  value="http://www.coastalatlas.net/learn/settings/rocky/index.asp">--
			  About Rocky Shores
			  <option  value="http://www.coastalatlas.net/learn/settings/ocean/index.asp">--
			  About Ocean Areas
			  <option  value="http://www.coastalatlas.net/search/index.asp">Search
						  <option
value="http://www.coastalatlas.net/search/index.asp">--
			  For Data
			  <!--<option  value="http://www.coastalatlas.net/search/index.htm">--
			  For Metadata
			  <option  value="http://www.coastalatlas.net/search/index.htm">--
			  For Publications
			  <option  value="http://www.coastalatlas.net/search/index.htm">--
			  For Definitions  -->
			  <option  value="">----------------
			  <!--<option  value="http://www.coastalatlas.net/help.asp">Help -->
			  <option  value="http://www.coastalatlas.net/aboutus.asp">About Coastal Atlas
						  <option
value="http://www.coastalatlas.net/background.asp">Coastal Atlas Background
						  <option
value="http://www.coastalatlas.net/links.asp">Link Center
		       </select>
		      </div>
		     </td>
		    </form>
		   </tr>
		  </table>
```

```
    </td>
     <td><img src="pix/template/tiles/topcap.gif" width="11" height="30" border="0" alt=""></td>
    </tr>
   </table>
   <!-- end of navigation -->
   <table width="710" cellspacing="0" cellpadding="0" border="0">
    <tr>
     <td background="pix/template/tiles/backtile.gif" BGCOLOR="#CFCFCF"> <img
src="pix/template/tiles/bcap1.gif" width="4" height="22" border="0" alt=""></td>
     <td background="pix/template/tiles/backtile.gif" width="100%" valign="middle"
BGCOLOR="#CFCFCF">
        <div align="center"><font face="Verdana, Arial, Helvetica, sans-serif" size="1"
color="#666666">To
         join our news list please send a blank email to:</font><font face="Verdana, Arial, Helvetica,
sans-serif" size="1" color="#0066CC">
          <a href="mailto:CoastalAtlas_News-subscribe@yahoogroups.com">CoastalAtlas_News-
subscribe@yahoogroups.com</a></font></div>
     </td>
     <td align=right background="pix/template/tiles/backtile.gif" BGCOLOR="#CFCFCF"><img
src="pix/template/tiles/bcap2.gif" width="4" height="22" border="0" alt=""></td>
    </tr>
   </table>
   <!-- CONTENT GOES IN TABLE BELOW  -->
   <table cellpadding=0 cellspacing=0 border=0 width=710>
    <tr>
     <td bgcolor=#000000 width=2><spacer type=block width=2 height=20></td>
     <td bgcolor=#FFFFFF width=706> <!-- #BeginEditable "editable_body" -->
      <table width="100%" border="0" cellspacing="0" cellpadding="0" align="center"
vspace="0">
        <tr>
         <td><img src="pix/comci_head.JPG" width="706" height="126"></td>
        </tr>
        <tr>
         <td><table width="98%" border="0" align="center">
           <tr>
            <td><p align="center"><font size="5" face="Verdana, Arial, Helvetica, sans-
serif"><strong>Catalogue
                of Oregon Marine &amp; Coastal Information</strong></font></p>


            <!--<FORM> <div align="center">Find records
by spatial location
            <INPUT type="button" value="Launch Map"
onClick="window.open('http://scallywag.science.oregonstate.edu/website/comci','mywindow','width=8
00,height=600,toolbar=yes,location=yes,directories=yes,status=yes,menubar=yes,scrollbars=yes,copyhi
story=yes,resizable=yes')">
            </FORM> -->



            <form
action="http://scallywag.science.oregonstate.edu/website/comci" method="post" name="form2"
target="_self">
             <div align="center">Find records by spatial location
```

```
                    <input name="launch maps" type="submit" id="launch maps" value="Launch
Map">
                  </div>
                </form>
              <table width="90%" border="0" align="center">
               <tr>
                 <td height="195">
<table width="100%" border="0">
                   <tr>
                    <td width="45%" height="173">
                      <table width="100%" height="169" border="0" align="center" cellpadding="4"
bgcolor="#999999">
                       <tr>
                        <td  bgcolor="#CCCCCC"> <form name="key_search" method="get"
action="kw_results.asp">
                          <strong><font size="3" face="Arial, Helvetica, sans-serif"><img
src="pix/icons/tool_gre.gif" width="24" height="24">Search
                          by Keyword :<br>
                          </font></strong> <font size="1" face="Verdana, Arial, Helvetica, sans-
serif">(will
                          search Titles &amp; Summaries for
                          keyword )</font>
                          <hr>
                          <div align="center">
                           <input name="kw" type="text" class="Verdann9"  >
                          </div>
                          <p align="center">
                           <input name="submit" type="submit" class="Verdann9" value="Submit"
>
                          </p>
                        </form></td>
                       </tr>
                      </table></td>
                    <td width="5%"> </td>
                    <td width="45%"> <table width="100%" border="0" align="center"
cellpadding="4" bgcolor="#999999">
                       <tr>
                        <td height="167"  bgcolor="#CCCCCC">
                         <form name="key_search" method="get" action="per_results.asp">
                         <strong><font size="3" face="Arial, Helvetica, sans-serif"><img
src="pix/icons/tool_gre.gif" width="24" height="24">Search
                         by Person :<br>
                         </font></strong> <font size="1" face="Verdana, Arial, Helvetica, sans-
serif">(will
                         search Citations for selected Name)</font>
                         <hr>
                         <div align="center">
                          <select name="pid" id="pid" class="Verdann9">

       <option>Select a Person</option>
                                <%
While (NOT people.EOF)
%>
                                <option
value='<%=(people.Fields.Item("PERSONIDNUM").Value)%>'><%=(people.Fields.Item("PERSONL
ASTNAME").Value)%>
```

```
                            <%
dim first
first =(people.Fields.Item("PERSONFIRSTNAME").Value)
if first <> "" then
Response.Write(", " & people.Fields.Item("PERSONFIRSTNAME").Value)
end if
%>
                                </option>
                                <%
 people.MoveNext()
Wend
If (people.CursorType > 0) Then
 people.MoveFirst
Else
 people.Requery
End If
%>
                                </select>
                                <br>
                                <br>
                                <input name="submit2" type="submit" class="Verdann9"
value="Submit" >
                              </div>
                            </form></td>
                          </tr>
                        </table></td>
                      </tr>
                    </table></td>
                </tr>
                <tr>
                  <td> </td>
                </tr>
                <tr>
                  <td><table width="100%" border="0" align="center" bgcolor="#999999"
cellpadding="6">
                      <tr>
                       <td bgcolor="#CCCCCC"><b><font size="4" face="Verdana, Arial, Helvetica,
sans-serif"><img src="pix/icons/tool_blue.gif" width="24" height="24"><font size="3" face="Arial,
Helvetica, sans-serif">Search
                        by Coastal Setting or Region</font></font></b>
                        <br>
                        <hr> <form name="form1" method="post" action="loc_results.asp">
                         <div align="center">
                          <select class="Verdann9" name="select_setting"
onChange="MM_callJS('setDynaList(arrDL1)')">
                          <option selected>Select a Setting</option>
                          <option value="1">Estuary</option>
                          <option value="2">Sandy Shore</option>
                          <option value="3">Rocky Shore</option>
                          <option value="4">Ocean Area</option>
                          <option value="5">Watersheds</option>
                          <option value="6">Regions</option>
                        </select>
                        <b><font face="Verdana, Arial, Helvetica, sans-serif" size="2">and
                        </font></b>
                        <select name="setting_name" class="Verdann9">
```

```
                                      <option selected>a Site Name</option>
                                      </select>
                                      <input type="submit" name="Submit" value="Submit" class="Verdann9">
                                      <br>
                                    </div>
                                  </form></td>
                              </tr>
                            </table></td>
                    </tr>
                    <tr>
                      <td> </td>
                    </tr>
                    <tr>
                      <td><table width="100%" border="0" align="center" cellpadding="4"
bgcolor="#999999">
                        <tr>
                          <td bgcolor="#CCCCCC"> <form name="gr_theme" method="get"
action="gt_results.asp">
                              <font face="Arial, Helvetica, sans-serif"><strong><font size="3" face="Arial,
Helvetica, sans-serif"><img src="pix/icons/tool_gre.gif" width="24" height="24"></font>Search
                              by Topic Group and Major Themes:</strong></font><br>
                              <font size="1" face="Verdana, Arial, Helvetica, sans-serif">(will
                              return entries which match your selected
                              Major Theme)</font>
                              <hr>
                              <div align="center">
                                <select name="gid" class="Verdann9"
onChange="MM_callJS('setDynaListGT(arrFormItems)')">
                                  <option selected>Select a Topic Group</option>
                                  <option value="1">Coastal Zone Management</option>
                                  <option value="2">Marine Fisheries</option>
                                  <option value="3">Marine Habitats</option>
                                  <option value="4">Marine Species</option>
                                  <option value="5">Nearshore and Open Ocean Activities</option>
                                  <option value="6">Oceanography</option>
                                </select>
                                <strong><font size="2" face="Verdana, Arial, Helvetica, sans-
serif">and</font></strong>
                                <select name="tid" class="Verdann9" id="tid" >
                                  <option selected>a Major Theme</option>
                                  <%
Dim varLoopCounter
For varLoopCounter = 1 TO varMaxLength
%>
                                  <option value = "<%=varMaxWidth%>"><%=varMaxWidth%></option>
                                  <%
Next
%>
                                </select>
                                <input type="submit" class="Verdann9">
                                <br>
                              </div>
                            </form></td>
                        </tr>
                      </table></td>
                    </tr>
```

```
            </table>
  </td>
                </tr>
              </table></td>
          </tr>
        </table>
        <!-- #EndEditable --> <table width="98%" border="0" align="center">
         <tr>
          <td><hr>
            <div align="right"><font size="1" face="Verdana, Arial, Helvetica, sans-serif">COMCI
              is an effort of the <a href="http://www.piscoweb.org/">PISCO</a>
              project and <a href="http://seagrant.oregonstate.edu/">Oregon
              Sea Grant</a></font> </div></td>
         </tr>
        </table>
        <div align="right">
         <!-- END FIRST ROW -->
         <!-- BEGINNING SECOND ROW -->
        </div></td>
      <td bgcolor="#000000" width=2><spacer type=block width=2></td>
     </tr>
    </table>
    <table cellpadding=0 cellspacing=0 border=0 width=710>
     <tr>
      <td background="pix/template/tiles/footertile1.gif" width="10" BGCOLOR="#CFCFCF"><img
src="pix/template/tiles/footer1.gif" width="4" height="22" border="0" alt=""></td>
        <td width="745" background="pix/template/tiles/footertile1.gif" BGCOLOR="#CFCFCF">
         <center>
          <a class="Verdann8" href="http://www.coastalatlas.net/index.asp">Home</a> | <a
class="Verdann8" href="http://www.coastalatlas.net/maps/index.php">Maps</a>
          | <a class="Verdann8" href="http://www.coastalatlas.net/tools/index.asp">Tools</a> | <a
class="Verdann8" href="http://www.coastalatlas.net/learn/index.asp">Learn</a>
          | <a class="Verdann8" href="http://www.coastalatlas.net/search/index.asp">Search</a> |
          <a class="Verdann8" href="http://www.coastalatlas.net/background.asp">Background</a> |
          <a class="Verdann8" href="http://www.coastalatlas.net/aboutus.asp">About Us</a> | <a
class="Verdann8" href="http://www.coastalatlas.net/support.asp">Support</a>
          | <a class="Verdann8" href="http://www.coastalatlas.net/links.asp">Links</a>
         </center>
        </td>
        <td background="pix/template/tiles/footertile1.gif" align=right BGCOLOR="#CFCFCF"><img
src="pix/template/tiles/footer2.gif" width="4" height="22" border="0" alt=""></td>
      </tr>
      <tr>
       <td ><img src="pix/template/tiles/footer3.gif" width="11" height="24" border="0" alt=""></td>
       <td width="710" background="pix/template/tiles/toptile.gif" bgcolor="#104E8B">
        <div class="Verdann9" align="center"> <font color="#CCCCCC">The
          Coastal Atlas is a Project of the Oregon Ocean-Coastal Management
          Program, Copyright © 2000</font> </div>
       </td>
       <td ><img src="pix/template/tiles/footer4.gif" width="11" height="24" border="0" alt=""></td>
      </tr>
     </table>
    </td>
   </tr>
 </table>
</div>
```

```
</body>
<!-- #EndTemplate --></html>
<%
sites.Close()
Set sites = Nothing
%>
<%
people.Close()
Set people = Nothing
%>
```