



**TRANSITIONING TO FOSS
IN THE
OREGON COASTAL ATLAS**

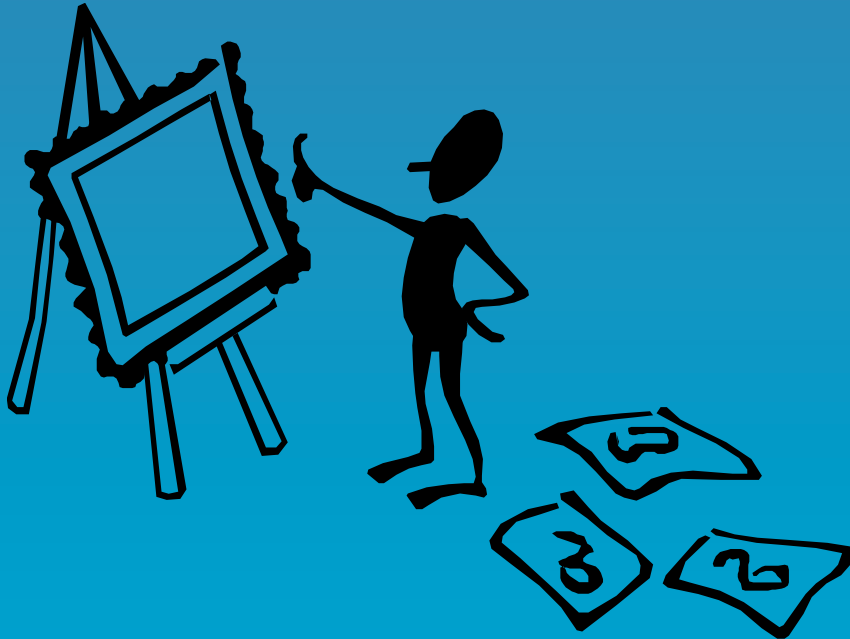
**Tanya Haddad
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Background

- Coastal Atlas Project launched 2001
- Initial version was active 2002 to 2007
- Saw considerable growth over that period
- Many significant changes occurred in both the tech and user communities
- Certain early design decisions became no longer relevant
- New techniques and FOSS provided opportunities for improvement

Quick Tour

- What do people do with the Atlas?



- Search
- Learn
- Tools
- Map

www.coastalatlases.net

Oregon Coastal Atlas

Monday, 23 February 2009 15:05:53

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Welcome to Oregon's Coastal Atlas

We hope you enjoy your visit to our website! The Oregon Coastal Atlas is a multi-group project that has the ambitious goal of being a useful resource for the various audiences that make up the management constituency of the Oregon Coastal Zone. The project is a depot for traditional and digital information which can be used to inform decision-making relating to the Oregon Coastal Zone. We provide background information for different coastal systems, access to interactive mapping, online geospatial analysis tools, and direct download access to various planning and natural resource data sets relating to coastal zone management.

Maps & Tools

Maps



The Coastal Atlas includes an Internet Map Server which can be used by visitors to view a variety of standard, preformatted and commonly requested base and overlay data served in the Atlas archives. Those who do not have access to a desktop GIS may use this tool to create simple personalized maps using data relevant to the coast. Maps can be given personalized titles and output to PDF format for use in printed reports, email, etc.

Learn & Search

Learn



This section contains simple introductory information for a range of coastal geographic settings (Estuaries, Sandy Shores, Rocky Shores, Ocean Areas), coastal topics (Access, Hazards, History, Processes) and Atlas related technologies (hardware descriptions, software listings, and metadata). Any inquiry into coastal settings or topics will provide both broad background materials as well as summaries and links to more specific data.

Tools



Tools help users accomplish common tasks. In the case of the Coastal Atlas tools list we've assembled links to a variety of tools created by NOAA, FEMA and others designed to help different types of coastal users answer questions that are common in coastal areas. In addition, we make available a series of Oregon topic-specific coastal tools constructed by Atlas partners through various grant opportunities.

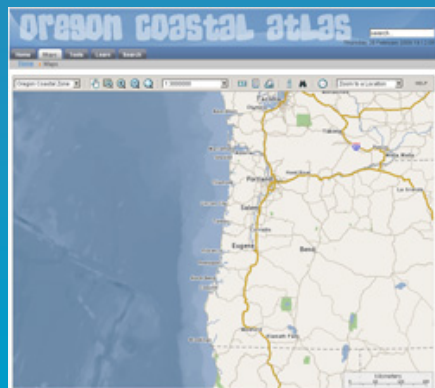
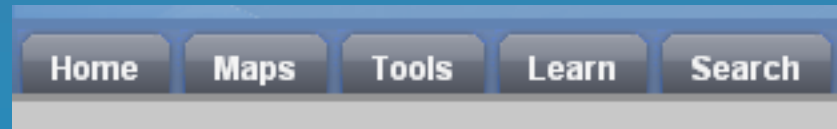
Search



The heart of the Coastal Atlas is an archive of geospatial data collected over the years by various program partners of the Oregon Ocean-Coastal Management Program. Rather than allow such data to gather dust on shelves and in storage boxes, we've made a concerted effort to look in our attic for digital data that can be brought into the future via the new Atlas Archive. The intent was to create a one-stop shop for finding the fruits of past data collection efforts.

Behind the Main Menu

Joomla! CMS: PHP, MySQL



MapServer
KaMap
OpenLayers



MySQL
MapServer
PostGIS
OpenLayers
ArcIMS
etc.



PHP
MySQL
MapServer



PHP
MySQL
Protégé
GeoNetwork

OCA v. 1.0 Tech History

- Developed primarily in ASP on IIS sever
- Essentially a home grown CMS
- Multiple backend databases depending on content area or sub-project
- Minnesota MapServer utilized both for static maps (via CGI) and in a MapScript based interface (similar to GMAP demo)
- Various linked tools based in other software (e.g. ArcIMS)

OCA v. 2.0 Tech Goals

- Switch to Apache web server and PHP
- Use a real Content Management System
- Simplify back end database management
- Continue to use UMN MapServer, with improved user interface and PDF output
- Update older tools to work with new approach
- Expand use of web services and take advantage of standards

Joomla! CMS

- One of many PHP + MySQL based CMS
- See <http://www.opensourcecms.com>
- Active user community
- Lots of user contributed extensions
- Simple management of User permissions
- Easy to use administrative backend
- One click content Publish or un-publish
- Extensible easy to manage templates

Joomla! CMS

<http://www.joomla.org>



Template

HTML



PHP

SQL



MySQL

PHP

Extensions

PHP

Lots of good features in the basic package, and you can always add more

Web Content vs. Geospatial Data

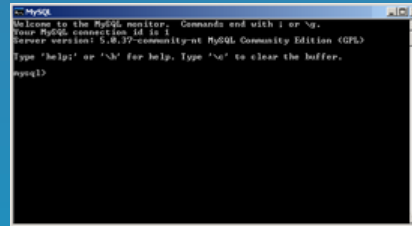
- Coastal Web Atlases contain both geospatial data and also web content that is spatially relevant but which would never be managed in a GIS
- Being able to manage & serve both kinds of content in a similar way can be handy
- The web is suited to a “database + scripting language” approach
- PHP glues all the bits together

MySQL Database

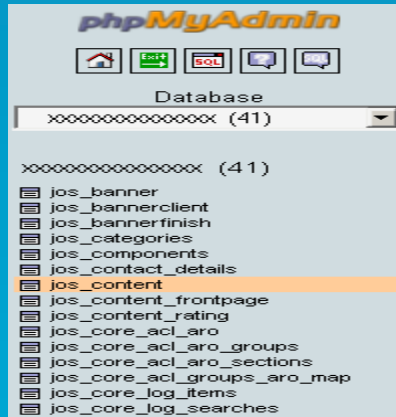
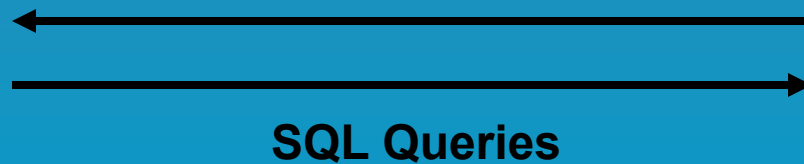
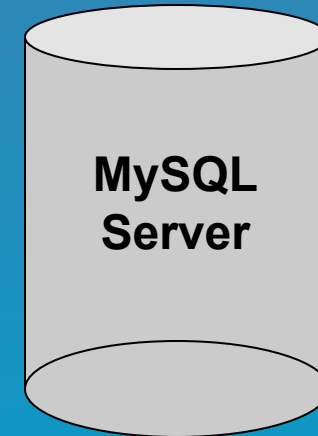
- Used by Joomla! to organize content
- Pairs well with PHP
- Easy to administer via the web using PhpMyAdmin
- Simple imports from MS Access using freeware tool from Bullzip.com
- A supported backend for many other projects (e.g. GeoNetwork)

MySQL Database

<http://www.mysql.com>



Command Line



A screenshot of the MySQL command-line interface showing the structure of a table. The table has columns: id, title, title_alias, introtext, and fulltext. The table contains four rows of data.

	id	title	title_alias	introtext	fulltext							
<input type="checkbox"/>	1	Estuaries	Estuaries	<p>{jumi [estuary_images.ph }	2	Sandy Shores	Sandy Shores	<p>	3	Rocky Shores	Rocky Shores	<p><div ...
<input type="checkbox"/>	4	Ocean Areas	Ocean Areas	<p>								

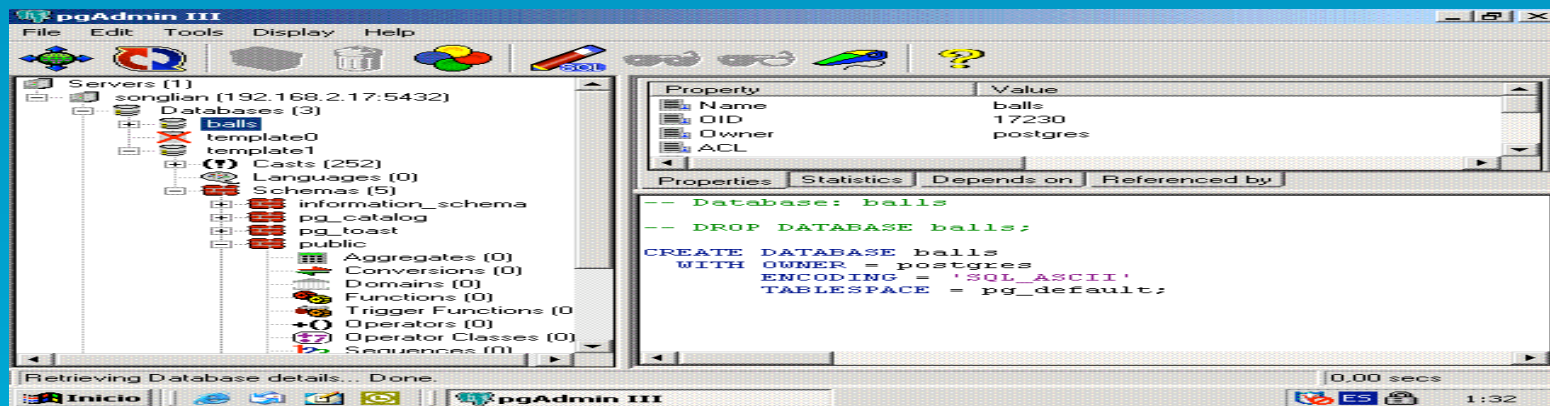
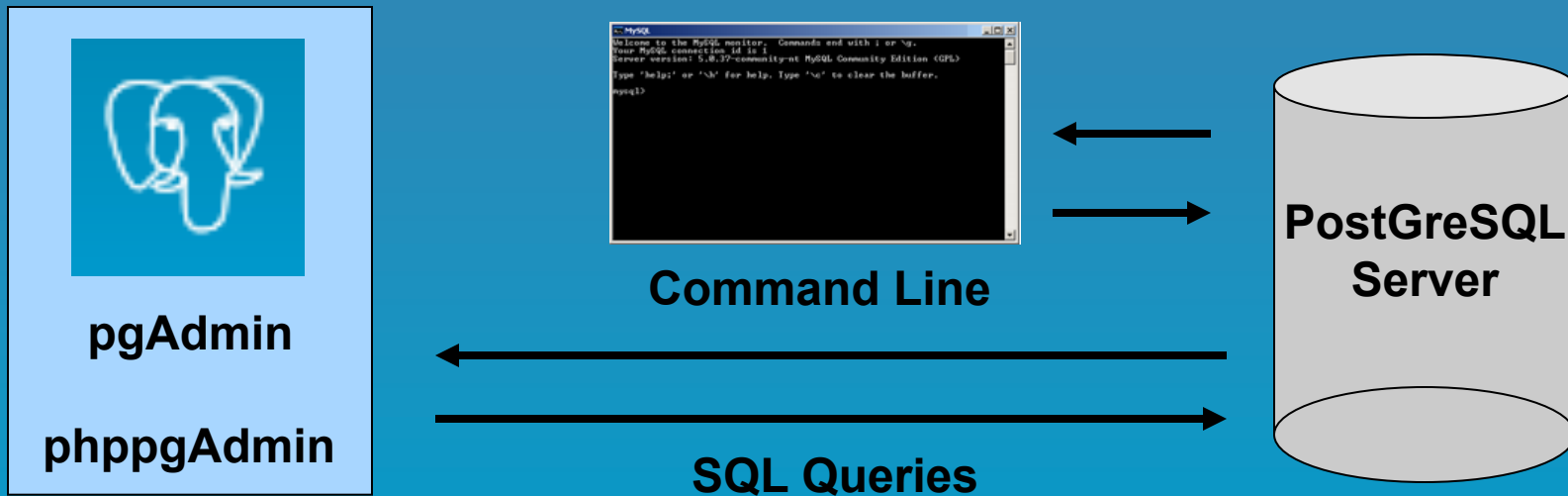
 <? echo $myBeachInfo['NAME']; ?>
 <? echo $myBeachInfo['STORY']; ?>
```

# PostgreSQL Database

- Another database ??
- Also suitable for storing web content
- PostGIS extension enables storage of vector GIS data
- Allows for powerful combinations of dynamic web content and geospatial analyses
- Wicked cool

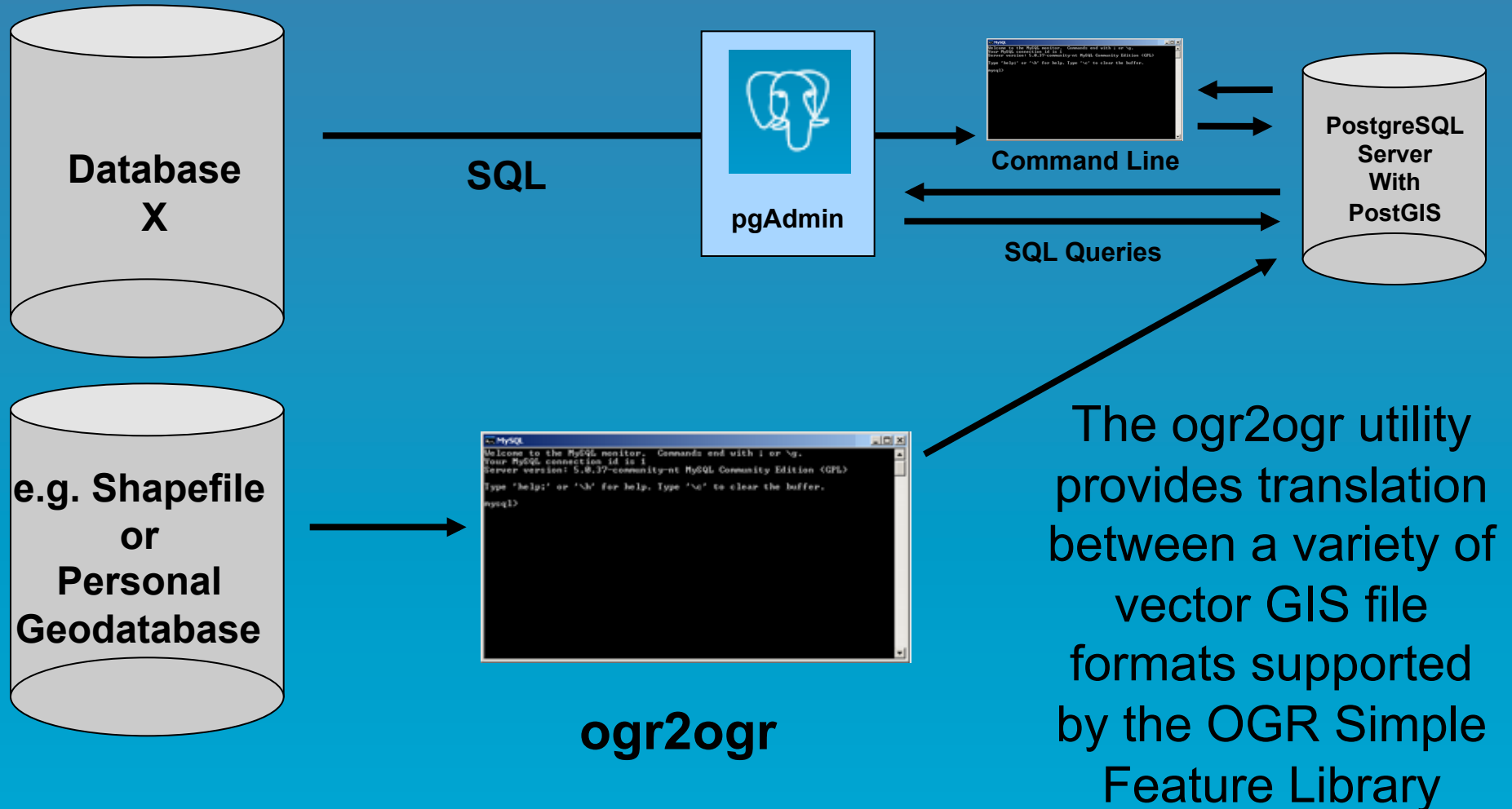
# PostgreSQL Database

<http://www.postgresql.org/>





# Moving Content into PostgreSQL



[http://www.gdal.org/ogr/ogr\\_formats.html](http://www.gdal.org/ogr/ogr_formats.html)

# PostgreSQL → Web

- Q: Your content is in, how do you get it out?
- A: Same old SQL, geospatial flair e.g.:

```
select st_area(PARKS.the_geom) from PARKS where NAME='Fort Stevens'
```

Combine this with PHP to embed the results in a web page:

```
<? $myParkArea = pg_query(xxxx); ?>
```

```
<? echo $myParkArea; ?>
```

<http://postgis.refractory.net/documentation/manual-1.3/ch06.html#id2745626>

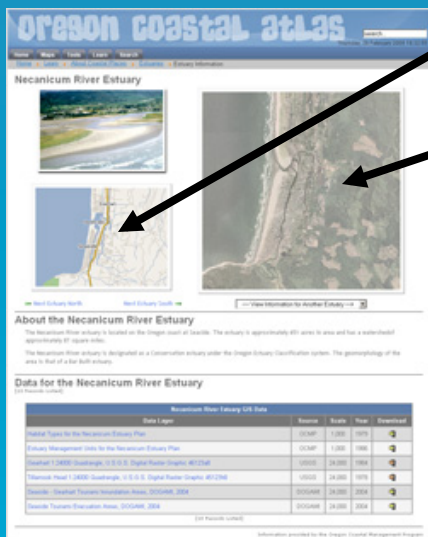
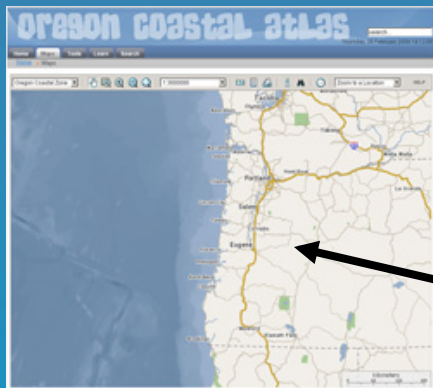


# Map Interfaces

- Wanted to stay with Mapserver – lots of choice
- MapServer CGI
- MapScript
- HTML + MapScript e.g. GMAP
- HTML + JavaScript e.g. dBox
- AJAX e.g. KaMap, OpenLayers
- Java or Python e.g. Mapfish
- Direct requests or use a cache ?
- See <http://www.maptools.org>

# MapServer

<http://www.mapserver.org>



**Necanicum River Estuary**

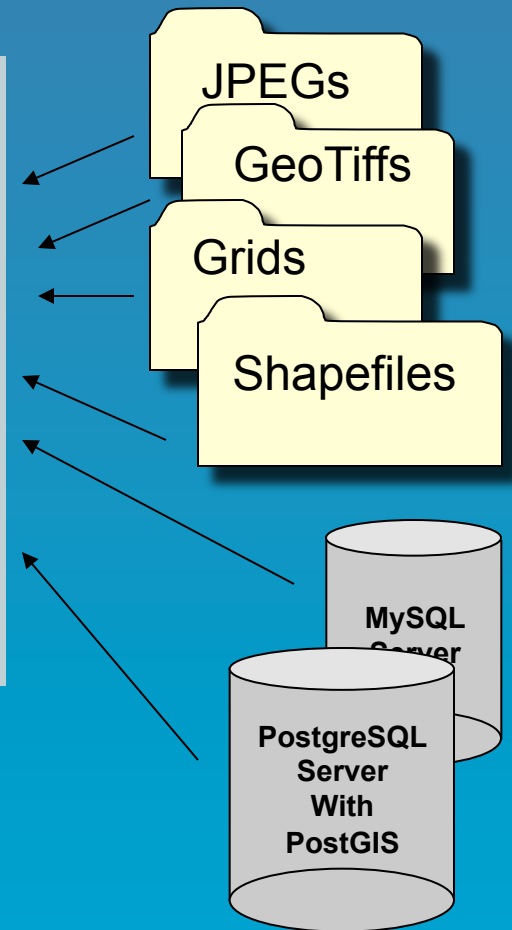
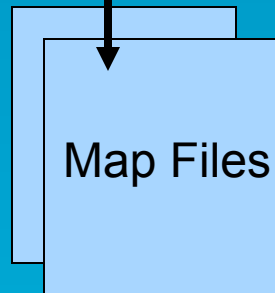
**About the Necanicum River Estuary**

The Necanicum River estuary is located on the Oregon coast at Seaside. The estuary is approximately 60 acres in area and has a watershed approximately 40 square miles.

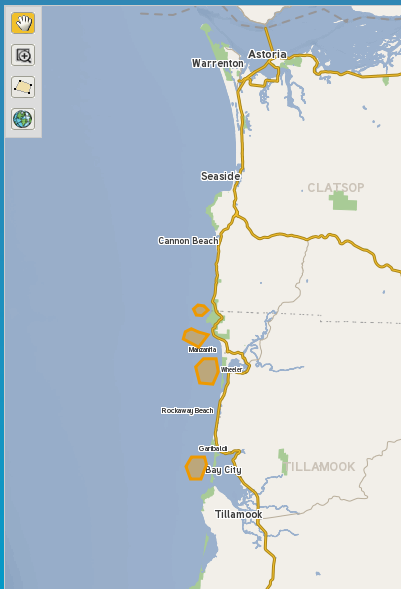
The Necanicum River estuary is designated as a Conservation estuary under the Oregon Estuary Classification system. The geomorphology of the area is that of a bar salt estuary.

**Data for the Necanicum River Estuary**

| Date / Layer                                                          | Source | Scale  | Year | Download |
|-----------------------------------------------------------------------|--------|--------|------|----------|
| Mapnik Tiles for the Necanicum Estuary Plan                           | OCMAP  | 1:250  | 2015 | 📄        |
| Estuary Management Units for the Necanicum Estuary Plan               | OCMAP  | 1:250  | 2006 | 📄        |
| Seaside 1:25000 Geotiffs - U.S. G.S. Digital Vector Graphics: 4012348 | USGS   | 24,000 | 1994 | 📄        |
| Seaside 1:25000 Geotiffs - U.S. G.S. Digital Vector Graphics: 4012348 | USGS   | 24,000 | 1975 | 📄        |
| Seaside - Seaside Tourism Information Area: 2004M_2004                | 2004M  | 24,000 | 2004 | 📄        |
| Seaside Tourism Information Area: 2004M_2004                          | 2004M  | 24,000 | 2004 | 📄        |

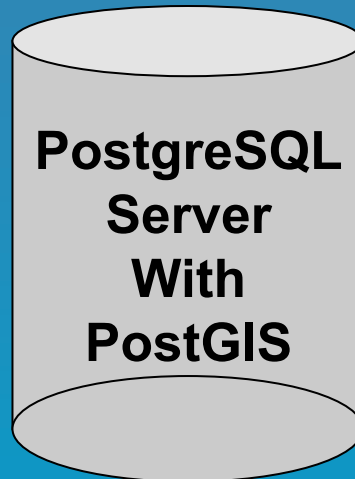


# Maps Plus



OpenLayers API  
Featureserver  
MapServer  
KaCache

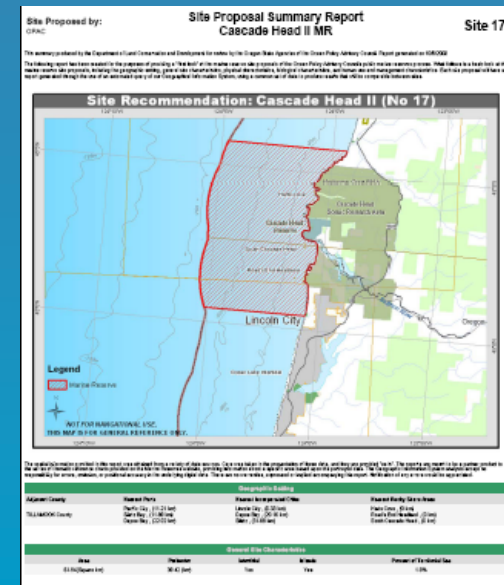
GeoJSON



SQL



PHP



Template  
PHP  
SQL

When combining several  
FOSS parts some interesting  
possibilities emerge

# Search

- Some users only want data (& metadata)
- Requires a catalog application to manage spatially referenced (documented) resources
- MySQL is a basic solution
- GeoNetwork Open Source is a project specifically designed to enable access to geo-referenced databases, cartographic products and related metadata
- Outputs a Catalog Service for the Web (CSW)
- MySQL backend

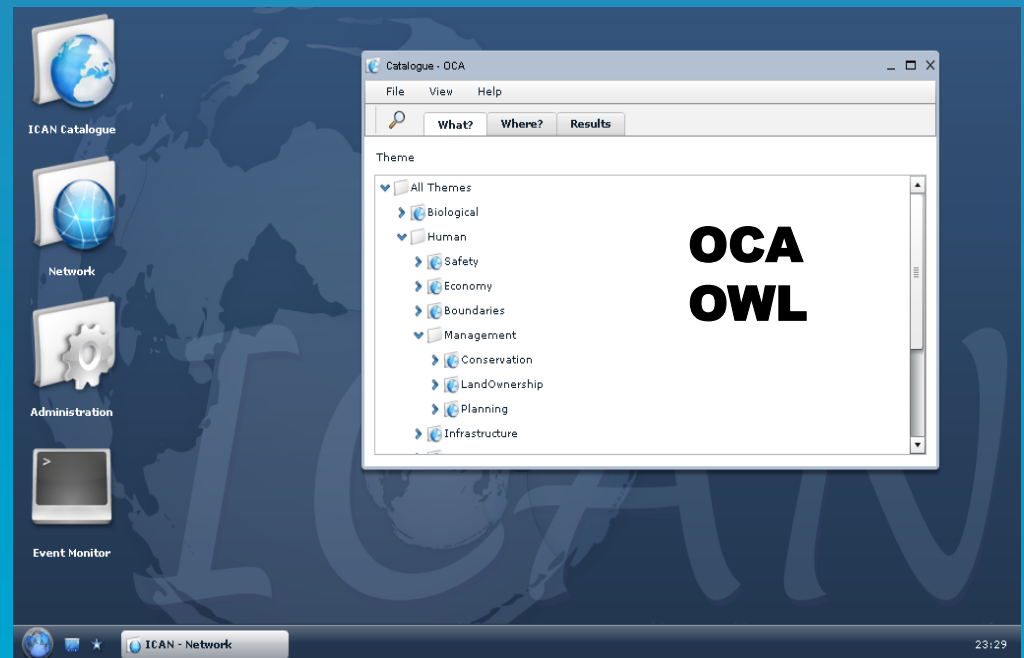
# Sharing the Data Catalog

- CSW can be consumed by several clients
- When combined with an ontology (OWL), can result in powerful new search options



GeoNetwork

CSW



ICAN Prototype



# Links

- <http://www.coastalatlant.net>
- <http://www.joomla.org>
- <http://www.opensourcecms.com>
- <http://www.mysql.com>
- <http://www.postgresql.org>
- <http://www.gdal.org>
- <http://postgis.refractorions.net>
- <http://www.maptools.org>
- <http://www.mapserver.org>
- <http://geonetwork-opensource.org>
- <http://protege.stanford.edu>
- <http://ican.ucc.ie>

A scenic landscape photograph of a coastline. In the foreground, there are dark, silhouetted evergreen trees. The middle ground shows a bay with several rocky islands or sea stacks. In the background, there are layers of mountains under a sky filled with heavy, grey clouds. The overall tone is muted and atmospheric.

**Questions?**

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Photo: Laurel Hillmann, OPRD