IOOS Catalog

Presented by Luke Campbell and Micah Wengren
Micah Wengren

- Coming to IOOS from NOS’ Office of Coast Survey Development Laboratory (NOAA nautical charting)
- Supported NOAA Data Catalog (data.noaa.gov) implementation
- FOSS4G GIS/Geodata management background
- Early NOAA work on weather/ocean observation and forecast portal, nowCOAST(nowcoast.noaa.gov)
Background

Previous catalog:

- NGDC Geoportal
- Github and Emails
- System Monitoring
- catalog.ioos.us
1. Data Provider sent an email or created an issue on github for a new data source.
2. Anna would get notified.
3. Rob or Anna would review the source for simple issues.
4. Anna would create a harvest job for NGDC's harvesters to synchronize source.
5. NGDC Geoportal would get updated.
Defining Goals for the Future
Defining Goals for Future

Identifying what didn't work for us:

**Synchronization:**
- Partners and RA's spent too much energy and resources attempting to synchronize datasets with the IOOS Catalog
- Data is fluid but the catalog is mostly static
Defining Goals for Future

Our Goals:

- Smooth Synchronization
- Low Effort Maintenance
- High Visibility
- Tools
Where we are
What is it?

Feature Overview

- Complete catalog system with easy to use web interface and a powerful API
- Strong integration with third-party CMS's like Drupal and WordPress
- Data visualization and analytics
- Workflow support lets departments or groups manage their own data publishing
- Fine-grained access control
- Integrated data storage and full data API
- Federated structure: easily set up new instances with common search
Why do we use it?

• Python based web development project
• Highly Extensible
• Wide community support
• Very active project
Why do we use it?

- PyC SW
- Spatial Awareness
- API
How it works

IOOS Service Registry and Catalog

- OPeNDAP
- WMS
- CSW
- SOS

1. Harvesters
2. Central WAF
3. CKAN
   - CKAN Spatial Plugin
   - PyCSW
4. CKAN Web Interface
5. Service Monitoring Database
6. IOOS Service Monitor
7. IOOS Service Monitor Web Interface

- Database
- Process or Function
- User Interface
- Data Source

Web Registration Interface
Harvest Configuration
IOOS Registry
Central WAF
IOOS Catalog
IOOS Catalog

IOOS Service Registry and Catalog
IOOS Catalog

• Stores ISO records
• Allows for searching of metadata
• Exposes CSW
• Web Interface for users to find data within IOOS
IOOS Service Monitor

IOOS Service Registry and Catalog

OPeNDAP → WAF
WMS → CSW
SOS → RA Hosted

Harvesters → Central WAF
Central WAF

CKAN Database → CKAN
CKAN Web Interface

IOOS Service Monitor → IOOS Registry
Web Registration Interface → Harvest Configuration

IOOS Catalog
Database

Process or Function
User Interface
Data Source
How it works

IOOS Service Monitor

• Internal Tool  
• Checks service availability and uptime  
• Future: metadata compliance checking
Central WAF

IOOS Service Registry and Catalog

- CPeNDAP
- WMS
- SOS
- WAF
- CSW
- Harvester
- Central WAF
- CKAN
- CKAN Spatial Plugin
- PyCSW
- CKAN Web Interface
- Service Monitoring Database
- IOOS Service Monitor
- IOOS Service Monitor Web Interface
- IOOS Catalog
- Database
- Process or Function
- User Interface
- Data Source
Central WAF

• Stores ALL ISO records for IOOS
• Synchronized through harvesters
• Configurable
• Future: Hierarchical
How it works

IOOS Registry

IOOS Service Registry and Catalog

- **OPeNDAP**
- **WMS**
- **SOS**

- **WAF**
- **CSW**

**Harvesters**

- **Central WAF**

**CKAN**

- **CKAN Database**
- **CKAN Spatial Plugin**

- **PyCSW**

**IOOS Catalog**

- **Service Monitoring Database**

- **IOOS Service Monitor**

- **IOOS Service Monitor Web Interface**

**Database**

**Process or Function**

**User Interface**

**Data Source**

Web Registration Interface

Harvest Configuration

IOOS Registry

IOOS Service Monitor

EYES ON THE OCEAN
How it works

IOOS Registry (Future)

• Web interface for data providers to set up harvesting
• Receive notifications for errors and harvesting issues
• Metadata Checker
How it works

RA Hosted

IOOS Service Registry and Catalog

- OPeNDAP
- WMS
- CSW
- SOS

- Harvester
- Central WAF
- CKAN
- CKAN Web Interface
- CKAN Spatial Plugin
- PyCSW
- CSW Database
- Database

- Web Registration Interface
- Harvest Configuration
- IOOS Registry
- Service Monitoring Database
- IOOS Service Monitor
- IOOS Service Monitor Web Interface

- IOOS Catalog

Process or Function
User Interface
Data Source
How it works

RA and Partner Hosted

WAF

• Expose datasets and services through a WAF
• Simple to create, simple to manage, simple to harvest
• CSW for the more advanced solutions
How it works

Harvesting Process Now:

• Manual curation of ISO records in central WAF at http://data.ioos.us/waf/
• CKAN harvesting of all records in WAF
• Changes to WAF are done by hand
Where we're heading

The short term
Where we're heading

• Providers Responsibilities
  • Create and publish a WAF
  • Hosting a CSW

• IOOS Catalog Responsibilities
  • Automated Harvesting from RA provided WAFs
  • Better metadata controls
    • Improving CKAN-Spatial for our ISO records
Where we're heading

• Pursue parallel development with NOAA Catalog, open source on github

• Better representation of our data within CKAN
## Where we're heading

- **Service Monitoring from CKAN sources**

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To the future and beyond

Longer term solutions
Registry tools

• Web tool for managing registered endpoints
• Harvest notifications
• Automated compliance checking
To the future and beyond

Catalog Integrations
To the future and beyond

The Big Picture

Discovery

Sharing

Analysis

Visualization

Research

Storytelling

Science

Communication
Walkthrough and Questions