IOOS REGIONAL DATA INTEGRATION FRAMEWORK IMPLEMENTATION WORKSHOP

March 10 – 11, 2009
NOAA IOOS Program Office
Silver Spring, MD

WORKSHOP REPORT

April 07, 2009

IOOS
INTEGRATED OCEAN OBSERVING SYSTEM

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IOOS REGIONAL DATA INTEGRATION FRAMEWORK IMPLEMENTATION WORKSHOP

MARCH 10 & 11, 2009

WORKSHOP REPORT

1.0 GOALS and OBJECTIVES

The Integrated Ocean Observing System (IOOS) Regional Data Integration Framework (DIF) Implementation Workshop was organized with the goal of improving the overall production and execution of IOOS data management across the eleven IOOS Regions. To accomplish the goal of DIF implementation, a set of objectives were developed in the workshop planning process:

1. Develop a plan of action to complete implementation of the National Oceanic and Atmospheric (NOAA) IOOS DIF in at least five of the eleven IOOS Regions by October 1, 2009.
2. Initiate the characterization and assessment of existing data management capacity within and across IOOS Regions.
3. Identify specific actions to ensure improved coordination and harmonization among the IOOS Regions with respect to Governance/Business Architecture, DIF Deployment and Registries/Catalogs.

2.0 PLANNING PROCESS

[Also see appendix 5.1 – agenda]

In November 2008, the NOAA IOOS Program (Charly Alexander, Rebecca Shuford, and Rob Ragsdale) coordinated the first in a series of monthly conference calls between the eleven IOOS Regional Data Management And Communication (DMAC) leads. These 11 IOOS Regional DMAC leads comprised the Regional DIF Implementation Team, hereafter know as the RDI Team. The RDI Team was formed to determine strategically how to establish data interoperability, through implementation of the DIF, within the eleven IOOS Regions. Their first task was to develop an agenda and implement a Regional DIF Implementation Workshop.

In January 2009, a steering team was formed to expedite development of the workshop agenda. The steering team, a subset of the RDI Team, consisted of Regional leads Sam Walker (SECOORA), Rob Cermak (AOOS) Matt Howard (GCOOS); John Ulmer and Daniel Martin (NOAA CSC); and NOAA IOOS Program staff Charly Alexander and Rob Ragsdale. The agenda was developed in an iterative process over a six-week period and finalized on March 6, 2009.

In parallel to the development of the agenda was an attempt to characterize the observation and data elements that presently exist in the regiona. The set of materials developed from the information provided from all the Regional leads guided the DIF Deployment session of the workshop.

In conjunction with the Regional DIF Implementation Workshop, NOAA hosted IOOS Industry Day (March 12, 2009) to provide the private sector and Non-Governmental Organizations (NGOs) a status report on the development of the IOOS DMAC Subsystem. The status report was given via a series of briefings by NOAA and its Federal IOOS Partners (Navy,

EPA, USACE and USGS). Many of the IOOS Regional DMAC leads participating in the Regional DIF Implementation Workshop attended this event.

3.0 RESULTS – Action Plan

A. Regional Implementation of IOOS DIF (Data Integration Framework)

The table below represents the actions identified in the Regional Workshop, but in a revised form. The actions cast in the workshop have been augmented and prioritized by the members of the workshop steering team over the course of several discussions. The revised list is organized into four sections with identified action items and assigned task leads for each item. This list is still draft as of April 07, 2009 as it has not been reviewed by the RDI Team.

Note: the Workshop Summary Report satisfies action item B.4 in the table below.

1. Define baseline capability/configuration	**Task Leads**
1.1. Establish criteria for implementation status. Initial list proposed by Jeff DLB would include: - SOS server installed and meets OGC specs - Output format is same as NDBC/CO-OPS (GML or eventual KML) - at least one of the seven DIF core variables is presented - ability to get data from as single stations at a time (bonus points for "collections" of stations) - same level of SensorML metadata as NDBC and CO-OPS	- Jeff DLB - Others?
1.2. Finalize/certify "versions" for recommended software specifications (e.g. netCDF, WCS, etc.) - SOS; DAP or WCS, WMS	- Jeff DLB - Rich Signell - Luis Bermudez
1.3. Finalize/agree on the "flavor" of SOS implementation and/or move to a standard output such as KML. Options, as proposed by Jeff DLB include: (a) We mutually agree to support KML/KMZ as a common format and to define the precise nature of that KML together; (b) IOOS Program requires the regions to offer DIF GML (c) IOOS Program allows the regions to support either GML or SWEC (d) IOOS Program requires the regions to use SWE Common and asks NDBC and CO-OPS to abandon GML *If we move to a KML encoding strategy for SOS output (i.e. Get Observations) tasks will include:* *- execute KML in server implementations (NDBC, OOSTethys, and THREDDS (?)* *- XSLT to transform SOS Table of Contents (Get Capabilities) to KML*	- Jeff DLB - Darrell Duncan - Others???

2. Provide or develop software and documentation	Task Leads
2.1. Develop "cookbooks" or user implementation guides - Make NDBC/SAIC implementation available, and assist in configuring for various systems and databases - Upgrade OOSTethys implementations to support GML or KML	- Carmel Ortiz - Luis Bermudez - Sam Walker and Jeremy Cothran - Eric Bridger - Rob Cermak - NDBC - CeNCOOS - GCOOS
2.2. Develop a testing harness or methodology	- John Ulmer - Jeff DLB
2.3. Establish a shared code repository	- Rob Ragsdale - Lisa Hazard
3. Metadata and Semantics	**Task Leads**
3.1. Standardize names used for core variables - Adopt CF names and MMI URLs for base quantities - List composite quantities in IOOS phenomenon dictionary - Submit to DMAC standards process **3.2. Adopt IOOS URN convention for sensor/station IDs** **3.3. Define minimum level of metadata about sensors, stations, datasets and services**	- Jeff DLB - ???

B. Planning/Coordination

	Task Leads
1. Complete regional characterization materials. Specifically, create a summary table/matrix illustrating potential operational capability across all IOOS Regions for the seven core variables and associated services	- Rob Cermak - Sam Walker - Carroll Hood - Tom Kuba - Rob Cermak
2. Establish/agree upon the tools, processes, schedule for continued dialog and communication with Regional DMAC leads	- Rob Ragsdale - Lisa Hazard - Others???
3. **Develop a detailed plan of action/milestones (POAM) to achieve app. 50% Regional DIF implementation by 10/1/2009 and 100% implementation by 10/1/2010** Initial schedule proposed by Jeff: - April 30th: complete evaluation of KML - June 30th: complete definition of KML encoding with help from Google (Pete Giencke) and from participants in OGC Ocean Interoperability Experiment - August 30th: Programmers add KML support to their SOS implementations (NDBC code and other code at OOSTethys) - September 30th: Regions complete installation of one of the software packages at their sites and mutually agree they are interoperable - October 31st: IOOS Program finishes interoperability	- Sam Walker - Carroll Hood - Tom Kuba - Rob Cermak

	Task Leads
testing of NDBC, CO-OPS and regional SOS implementations, and ensures they have been included in at least an informal registry	
4. Complete a final report summarizing the Regional DIF Implementation Workshop	- Sam Walker - Rob Ragsdale - Charly Alexander - Others???

C. Registries/Catalog

	Task Leads
1. **Determine how to possibly leverage the current IOOS Obs Registry in the short term to achieve key "dots on the map"** Objectives (would include automated "update" function for questions about current and previous assets can be described). Options include: - NASA Echo - Google - GCMD - CSW - Obs Registry - OSMC - ebRIM - OOSTethys	- Matt Howard - John Ulmer - Others???
2. Try to select a preferred service "registry" for RAs (e.g. IOOS Obs Registry, OpenIOOS, Google Earth, OSMC) at least for Sept. 2009 status report - registry needs/API - minimum CSW interface to support interaction with other efforts - automated machine access/maintenance - discover (access, description, visualization)	- Matt Howard - John Ulmer - Others???

D. Other Issues/Topics

	Task Leads
1. Data Providence: Explore how to resolve the presentation/ description of a core variable collected in a region but served by a different IOOS DIF service provider (e.g. NDBC, etc.)	- ???
2. Develop documentation/links to the customer context in the Regions per the use of/application of DIF core variables	- ???
3. Explore developing standards based approaches: **a. T**o organizing/formatting mobile data streams **b. Explore development of unstructured gridded model data output**	- Eoin Howlett (3a) - Rich Signell (3b)
4. Document more fully QA/QC issues, particularly in coordination with on-going activities (e.g. QARTOD)	- ???

	Task Leads
5. Beyond DIF core variables: begin framing a more expanded view of next steps. This includes: - archives - which variables/data types are next - data storage facilities (i.e. DACs, etc.)	- ???
6. Enumerate platforms (e.g. Unix, Linux, PC, etc.), languages (e.g. Python, Perl, etc.), and databases available in the present implementations, and in use or planned at the regional level.	- ???

4.0 SUMMARY

The workshop was structured around three agenda topics: Governance/Business Architecture, DIF Deployment and Reconciliation and Challenges. The agenda was supplemented with annotation developed by the topic leads for each section. Rapporteur support was provided by Natalie Green (LMI).

On Day one, The NOAA IOOS Program provided opening briefs on the status of the Data Integration Framework, National Data Management and Communications and Model Interoperability. These briefs were followed by facilitated discussion on Governance/Business Architecture and DIF Deployment. Day two began with a briefing on Registries and Catalogs followed by a briefing and discussion on Challenges and Reconciliations of priority challenges to DIF Implementation. The workshop concluded with development of the action item list and closing remarks.

DAY ONE

4.1 INTRODUCTION

Introductory remarks were provided by Charly Alexander, Operations Division Chief, NOAA IOOS Program and Zdenka Willis, Director, NOAA IOOS Program.

4.2 DIF, DMAC and Modeling: Status Briefs (Charly Alexander, Jeff de La Beaujardiere and Rich Signell)

The NOAA IOOS Program provided status briefs on three ongoing efforts: NOAA IOOS DIF, National DMAC and Model Interoperability. The briefs can be found in Appendix 5.2 of this report and on the IOOS Regional DIF Implementation WebEx Website (URL: http://regionalDIF.webexone.com).

4.3 GOVERNANCE/ BUSINESS ARCHITECTURE (Sam Walker/ John Ulmer)

The objectives of the Governance/ Business Architecture discussion was to identify and discuss the main impacts (both positive and negative) of DIF implementation, prepare participants for afternoon discussion of design elements, and begin identifying the key challenges to and avenues for implementation. The topics proposed for discussion in this section were:

1) Design roles and responsibilities
2) Minimum requirements for data providers
3) Communication/process/monitoring

4) Inventory of data providers and/or registry of SOS service providers

This was the first section following the DIF/National DMAC review and represented an opportunity to begin discussion on the major impacts of DIF Implementation, its affect on already established RA/regional "business" strategies, and how to establish a process for maintain a long-term viability of the Regional DIF Working Group. There were lengthy discussions in this session. Captured below are the principle questions/issues raised and identified challenges.

- What level of data is being implemented and what data sets?
- Should standards be implemented on second and third party data?
- Approach to developing a toolkit and how to communicate it to the larger IOOS community.
- How are the IOOS core variables defined?
- Challenges: identifying software to advance across regions, implementing SOS Webservices, Glider data, metadata, document regional "institutional knowledge".

4.4 DIF DEPLOYMENT
[Also see appendix 5.3 – characterization handouts]

The DIF implementation goal is to complete initial development of the DIF in 2010, providing seven IOOS variables from multiple observing system data sources in consistent formats expected to achieve improvements in a select set of NOAA decision-support tools. A proposed list of topics for this discussion were:

1) Status of the Regions
2) Technical Issues
3) Non-Technical Issues

The status of regions discussion was guided by a set of materials (Appendix 5.3) that characterize the current RA development with respect to datasets by IOOS core variable and data transport services. The goal of the technical and non-technical (social) issues' discussion was to raise and discuss issues relating to DIF implementation. Two key realities exist (and may remain) that will help to drive/shape the discussion:

1) A range of DMAC capabilities, capacities, and approaches exist across the (RAs)
   - What does this mean in terms of synchronized implementation?
   - What does it mean in terms of each region to maintain DIF deployment over time?
   - What does this mean in terms of intra- and inter-regional communication and support over time?
   - Example: Centralized vs. distributed implementation in each region
     - Alaska (AOOS): one centralized DMAC hub
     - Southeast (SECOORA): three distributed DMAC hubs
     - Gulf (GCOOS): de-centralized DMAC approach
     - Caribbean (CaRA): planning stages

2) Regions/RAs must stay focused on regional/local users, data providers, and needs.
   - Given this condition, how can we establish some initial (but reliable) examples of interoperability among the regions (and the national backbone)?

- This also needs to be considered at the sub-regional level with respect to how sub-regional data providers (and users) are engaged and what level of effort (if any) they are willing to add/contribute in order to benefit from DIF.
  - Can DIF be pushed down to some of the raw data providers, or will it be more regionalized?
- This, again, raises the issue of the range of RA capacities/capabilities/resources. An underlying objective for successful implementation should be moving data providers towards a higher capacity role over time. This is a delicate balance between making potential data providers aware of the opportunities presented by DIF adoption and ensuring that they do not feel obligated.

3) Issues addressed over the course of this session:
   - Reconciliation of data dictionaries used by different regions
     - A suggestion was made to submit a proposal to the DMAC ST to map the seven core variable names against existing CF conventions.
   - Selection process of seven IOOS core variables.
     - Clarification was provided: the seven core variables (originally five) and four decision support tools were selected to validate the premise that interoperable data has value [to the decision support tools].
   - What threshold level RAs need to reach to satisfy the core variable requirement?
   - Metadata
     - Should the RA stipulate that metadata must be provided by the data provider?
     - What is the minimum required number of attributes to be included in a metadata record?
   - How can third-party data be used by regional data providers and how is that data delivered to regional Websites?
     - If you add value to data, does it then become your product?
     - Is citation required for value added products?

DAY TWO

4.5 REGISTRIES and CATALOGS (Matt Howard and John Ulmer) [Also see appendix 5.4 – registries/catalogs brief and handout]

This session opened with a PowerPoint briefing by Matt Howard and John Ulmer targeting exploration of production and management strategies. The goal was to guide the discussion in the context of the IOOS DMAC Plan. The objectives for reaching this goal were to achieve a collective agreement on terminology, such as the differences between catalogs, registries, clearinghouses, repositories, archives and their contents (e.g. lists of observing systems, lists of data service access points, lists of metadata). An agreement should be reached that fits the regions' needs and requirements for these core elements and exchange knowledge about these candidate technologies and approaches to acquiring these elements for the regions' collective use.

Three proposed topics identified for discussion:

- **User needs and Requirements:**
  - What information do we need to put in the various lists?
  - Where will the lists reside?

    - What search capabilities (e.g. semantic mediation) will the system need to support?
    - How will it the systems be maintained and updated?
    - Who will be responsible for maintaining and updating the information?
- **Survey of existing options:**
    - What approach should we take: build, buy, adopt and adapt?
    - Do existing services, e.g. GCMD, GeoSpatial Onestop, the IOOS Observation Registry, NOESIS, etc. meet our needs?
    - What solutions and activities are available in other communities?
    - What are the trade-offs between broadly applicable standards-based solutions (e.g. OGC/ebRIM) and narrower community centric approaches.
    - What can we reasonably expect and accept given our resources and time constraints?
- **Online Browse:**
    - Should the service discussed above support online browse or should this be left to the user?
    - Google Earth/Ocean with its time sliders is an easy cross-platform way to visualize time-space overages. What other visualization applications need to be supported (ESRI, OSMC, etc.)?

There was also valuable discussion on the visualization aspect of the IOOS Observation Registry V2.5.

- The IOOS Observation Registry Website contains a map with "dots" displayed to represent observations.
- The Webpage is refreshed daily, but not all regions currently update daily the data harvested by this site. Therefore, many of the dots may be "historical" data points– the status of an observation can be determined by searching the status field in the Observation Registry database. There was concern about all "dots", on the IOOS Observation Registry display, being "equal" when in fact they are not "equal".
- The visualization element provides great value in understanding assets and provides the power to "show" IOOS. There is a need to have one single map that displays IOOS observations.

Metadata comments from this discussion:

- The IOOS Observation Registry represents the easiest avenue to a functional catalog that can serve the regional enterprise in the near-term.
- The greatest strength of the IOOS Observation Registry Program is the high levels of active data provider participation.
- Providers are currently listing most of what is needed to produce a machine-readable catalog. What is missing is a list of data service access points and types.
- Development of a mechanism for augmenting the IOOS Observation Registry record to include and specify these access points could be developed. This is a low-cost incremental approach and one reason to have the production of the XML files the data providers currently produce automated.

4.6 CHALLENGES/RECONCILIATIONS (Sam Walker) [Also see appendix 5.5 – challenges & reconciliation brief]

This session was driven by the priority regional need/capacity challenges (both technical and operational) to DIF implementation identified by the workshop participants. The RDI steering team gathered after the end of day one to review the workshop notes and to list actions items for DIF deployment to be completed by FY 09, and augmented a proposed list of discussion topics (see appendix 5.5) with priority challenges raised in the workshop. This list was used to facilitate a discussion on how best to reconcile these challenges. After some very good discussion, strategies for reconciling these challenges were enumerated by the workshop participants.

Strategies developed to reconcile priority challenges:

- DIF first implementation specifications
  - Include SOS different kinds of metadata – evaluate in 2010
    - Defining requirement in 2010?
      - Have not defined requirements for evaluation – could include suitability of protocols.
- Minimum requirements to emulate NDBC/COOPS implementation at end of FY 08 – work is still evolving – how much of current enhancements should be part or regions in FY09.
- What level do regions need to reach by FY09 end?
- Agree that five regions and NDBC will reach same point at end of FY09.
- Each region should focus on collaborative themes – area of expertise.
- Define SOS requirements based on compatibility of different types.
- Is one core DIF variable being served through five different regions or one DIF variable delivered through three different services?
- Start with list of recommendation for DIF of data types and services
- 5 RAs with SOS Webservices, 5 RAs with OPeNDAP (including WCS), 5 RAs with WMS

4.7 WRAP-UP and CLOSING

In the final session of the workshop, a draft list of achievable action items was started by the group and initial assignments made, though there was not enough time remaining to complete the exercise. Since the workshop, the initial list of actions has been augmented with additional tasks and prioritized based on review of the workshop notes and discussion between the NOAA IOOS Program Staff and the Regional DIF Implementation Steering Team. The revised list is located in the front of this document (see section 3.0).

The workshop concluded with comments on the proceedings. For most, expectations were exceeded. The attendees felt there was top level discussion with the right balance of technical and programmatic topics covered. The regional leads left with a better understanding of efforts in other regions. There were comments made by several regional leads expressing desire to have more direction by the NOAA IOOS Program - to be more direct and less facilitative.

Appendix 5.1 – IOOS Regional DIF Implementation Workshop Agenda

Regional Data Integration Framework Implementation Workshop
March 10 – 11, 2009

NOAA IOOS Program
1100 Wayne Ave., Suite 1225
Conference Room 1280
Silver Spring, MD 20910

Workshop Agenda

Workshop Host: NOAA IOOS Program; *Rapporteur*: Natalie Green

Workshop Goal/Objectives:

Goal:

Improve the overall production and execution of IOOS data management across the 11 IOOS Regions

Objective:

1. Develop a plan of action to complete implementation of the NOAA IOOS DIF (Data Integration Framework) in at least five of the 11 IOOS Regions by October 1, 2009
2. Initiate the characterization and assessment of existing data management capacity within and across IOOS Regions
3. Identify specific actions to ensure improved coordination and harmonization among the IOOS Regions with respect to Governance, Business Architecture, and Registries/Catalogs

Day One (Tuesday, 10 March 2009):

8:00 Morning Social – Coffee

8:15 Welcome/Introduction (NOAA IOOS Program)

8:45 Review of Data Integration Framework (DIF) and National DMAC (Facilitator: Charles Alexander)

- DIF status briefing (Jeff de La Beaujardiere)
- IOOS model data interoperability and relevance to DMAC (Rich Signell)
- Overview of National DMAC and status on present activities (Charles Alexander)

10:30 Break

10:45 Governance/Business Architecture (Facilitators: Sam Walker/John Ulmer)

- Identification of key challenges to and avenues for implementation
- Impacts of DIF Implementation

12:00 Lunch (eat-in)

1:00 Governance/Business Architecture – *continued* (Facilitators: Sam Walker/John Ulmer)

1:45 DIF Deployment (Facilitator: Rob Cermak and John Ulmer)

- Status of RA implementation
- Review DIF Implementation approach/ goal(s)

Break (TBD)

- Discussion of technical/non-technical implementation issues

4:45 Summary and Concluding Remarks (Facilitator: Charles Alexander)

5:00 Adjourn

6:00 **Social/ Dinner**

Day Two (Wednesday, 11 March 2009):

8:00 Morning Social – Coffee

8:30 Opening Remarks (Charles Alexander)

8:45 Registries and Catalogs (Facilitators: Matt Howard and John Ulmer)
- Explore best approaches to registry implementation
- Approaches for discovery, catalogue, and online Browse?
- What are the existing resources/constraints?

10:30 Break

10:45 Challenges/Reconciliation (Facilitator: Sam Walker)
- Identify and agree on key challenges to address

11:30 Lunch (eat-out)

1:00 Reconciliation/Challenges – *continued* (Facilitator: Sam Walker)
- Identify mitigating actions for key challenges

3:00 Break

3:15 Next Steps (Facilitator: Charles Alexander)
- Develop Action Plan
  - Define list of action items, set priorities, and make assignments for:
    - Governance (e.g., long-term DMAC WG communications)
    - Deployment (e.g., "cookbook" for implementation/deployment)
    - Registries (e.g. Short and long term plans)
    - Additional priority topics (TBD)
- "Parking lot" issues discussion

4:45 Concluding Remarks (Facilitator: Charles Alexander)

5:00 Adjourn

On-Line Documentation for NOAA-IOOS DIF Workshop:
http://regionaldif.webexone.com

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IOOS Data Management and Communications Briefing
Thursday, March 12, 2009

NOAA Auditorium
1301 East-west Highway
Silver Spring, MD 20910

Industry Day Agenda

9:00 am **1. Welcome & Introduction**
- Greetings/orientation (Charles Alexander)
- Purpose/format of meeting (Linda Brainard)

9:20 **2. IOOS Program Briefs**

9:20 - ***US IOOS – general goals/objectives*** (Jack Dunnigan)
- NOAA IOOS Program
  - General Overview (Zdenka Willis)
  - Data Integration Framework (Jeff de la Beaujardiere)
  - IOOS DMAC: Progress and Planning (Charles Alexander)

10:30 - ***Federal IOOS Partners***
- US Navy (John Lever)
- US Army Corps of Engineers (Jeff Lillycrop)
- US Geological Survey (John Haines)
- US Environmental Protection Agency (Brian Melzian)

11:30 **3. Questions & Closing Presentation/Remarks**
- Technical or program questions on IOOS DMAC
- Process-related questions on acquisition planning, schedule

12:00 pm **Adjourn**
- Meet and greet opportunity in auditorium lobby through 1pm

NOAA
- Jack Dunnigan – National Ocean Service Assistant Administrator and Chairman of the Interagency Working Group on Ocean Observations (IWGOO)
- Linda Brainard – Director, External Clients Acquisition Division, Acquisition and Grants Office
- Zdenka Willis – Director, NOAA IOOS Program
- Charles Alexander – Operations Division Chief, NOAA IOOS Program
- Dr. Jeff de la Beaujardiere – Senior Systems Architect, NOAA IOOS Program

Federal IOOS Partners
- John Lever – Deputy Director, Information Architecture, COMNAVMETOCCOM, U.S. Navy
- Jeff Lillycrop – Technical Director, Engineer Research Development Center, Coastal Hydraulics Lab, U.S. Army Corps of Engineers
- Dr. John Haines – Coastal and Ocean Program Coordinator, U.S. Geological Survey
- Dr. Brian Melzian – National Health and Environmental Effects Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency

DIF Implementation Workshop Agenda Annotation
10-11 March 2009
Silver Spring, MD

Agenda Element: Review of Data Integration Framework (DIF) and National DMAC
Tuesday, 10 March; 1.75 Hours - *(Facilitators: Charles Alexander, Jeff de La Beaujardiere, and Rich Signell)*

Goal: Bring RAs up-to-date on status of Data Integration Framework (DIF) and present DIF implementations (*Charles Alexander)*.

- Brief on status of present activities
  - Provide update on customer projects and data provider implementations (Regional activities implementations/projects will be focus of "Deployment" discussion)
  - Discuss next steps for DIF: beyond current status

Goal: Provide overview on National DMAC and present activities *(Jeff de La Beaujardiere)*

- Brief on DIF to DMAC activities (i.e., DIF-to-DMAC WG)
  - National DMAC strategy/ approach
- Suggested topics for discussion:
  - What will be the regional impact/ regional role in process?
  - Where does SURA/Scoop collaboration fit?
  - DMAC HLRD and CONPS in terms of next steps.

Goal: Provide overview of IOOS model data interoperability and relevance to DMAC *(Rich Signell)*.

- Brief on IOOS model data interoperability
  - THREDDS server installations and capabilities
  - Working group update

DIF Implementation Workshop Agenda Annotation
10-11 March 2009
Silver Spring, MD

Agenda Element: Governance/Business Architecture
Tuesday, 10 March; 2.0 Hours - *(Facilitators: Sam Walker and John Ulmer)*

General Description: After the background portion of the agenda, this is the first substantive section of the workshop and represents an opportunity to:

1. Begin discussing the major impacts to our RAs and regions of DIF implementation;
2. Maintain a recognition that implementation may affect the various RA/regional "business" strategies;
3. Recognize that there is no single implementation solution; and
4. Establish a process for long-term viability of the Regional DIF Working Group.

Objectives: Identify and discuss the main impacts (both positive and negative) of DIF implementation, prepare participants for afternoon discussion of Design elements, and begin identifying the key challenges to and avenues for implementation.

***Proposed* Discussion Topics:**

- **Design Roles and Responsibilities**
  - NOAA-IOOS has provided one schema and one service interface (to-date)
    - Recognition that DIF is not the only part of DMAC
    - How do we accommodate future additions?
  - Working Group needs to establish formal communication processes/tools
  - Relevant to both governance and marketing efforts at time of implementation

- **Minimum Requirements for Data Providers** (i.e., those "operating DIF services")
  - Service Level Agreements - SLAs (for data and metadata) with goal of being authoritative data sources?
  - Hardware, software, personnel, funding, etc.
  - Impacts RA prioritization due to funding requirements of implementation

- **Communication/Process/Monitoring** (i.e., Operational Aspects)
  - Examples: What will happen when a service goes down, or a data provider falls in/out of the mix? Who is notified of a communication failure? Should we mimic NSDI protocols?
  - Communication tools between RAs, RAs and local data providers, RAs and national backbone entities
  - Addresses some key impacts to governance with respect to communications

- **Inventory of Data Providers and/or Registry of SOS Service Providers**
  - Located where? Management responsibility? Objectives?
  - Discuss registry/inventory options
  - Relevance to "business" approach with respect to delivering products/services

Two key realities exist (and may remain) that will help drive/shape this discussion:

1) A range of DMAC capabilities, capacities, and approaches exist across the (RAs).

What does this mean in terms of synchronized implementation? What does it mean in terms of each region to maintain DIF deployment over time? What does this mean in terms of intra- and inter-regional communication and support over time?

Example: Centralized vs. distributed implementation in each region
- Alaska (AOOS): one centralized DMAC hub
- Southeast (SECOORA): three distributed DMAC hubs
- Gulf (GCOOS): de-centralized DMAC approach
- Caribbean (CaRA): planning stages

2) Regions/RAs must stay focused on regional/local users, data providers, and needs.

Given this condition, how can we establish some initial (but reliable) examples of interoperability among the regions (and the national backbone)? This also needs to be considered at the sub-regional level with respect to how sub-regional data providers (and users) are engaged and what level of effort (if any) they are willing to add/contribute in order to benefit from DIF. Can DIF be pushed down to some of the raw data providers, or will it be more regionalized? This, again, raises the issue of the range of Ra capacities/capabilities/resources. An underlying objective for successful implementation should be moving data providers towards a higher capacity role over time. This is a delicate balance between making potential data providers aware of the opportunities presented by DIF adoption and ensuring that they do not feel obligated.

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Agenda Element: DIF Deployment
Tuesday, 10 March; 3.0 Hours - *(Facilitator: Rob Cermak)*

***Proposed* Discussion Topics:**

- Status of the Regions
- DIF Implementation Goal(s)
- Technical Issues?
- Non-Technical Issues?

DIF Implementation Goals:

References:

- http://ioos.noaa.gov/dif/
- http://ioos.noaa.gov/dif/overview.html

"NOAA will complete initial development of the DIF in **2010**, providing seven IOOS variables from multiple observing system data sources in consistent formats expected to achieve improvements in a select set of NOAA's decision-support tools."

Initial integration efforts on seven IOOS variables describing ocean and coastal conditions:

- Sea Surface Temperature;
- Salinity;
- Water/Sea level;
- Currents;
- Ocean color;
- Surface Waves; and
- Surface Winds

Delivery of these variables may use one or more of the following Core DIF Standards:

"These are some of the basic standards and specifications adopted by the NOAA IOOS Data Integration Framework."

- OGC Sensor Observation Service (SOS) specification NOAA IOOS uses this service type to provide access to in-situ oceanographic data in an XML encoding defined by the GML application schema referenced above.
- OGC Web Coverage Service (WCS) specification NOAA IOOS uses this service type to provide access to gridded remotely sensed data in binary formats such as NetCDF and GeoTIFF.
- OPeNDAP information This service type is used by NOAA IOOS to provide access to gridded remotely sensed data in binary formats such as NetCDF and GeoTIFF.
- OGC Web Map Service (WMS) specification This service type will be used to provide georeferenced images of data.

Status of the Regions:

Goal: Bring everyone up to speed on current RA development with respect to datasets by IOOS Core Variable and data transport services.

Quick summary of what was submitted via the Partner Implementation worksheets. Highlight current overlap with the DIF in any capacity. Other implementation details such as operating system, programming, hardware and staffing may be important.

Technical Issues for DIF Implementation?

Goal: Raise and discuss technical issues relating to DIF implementation.

- Preload with a "Top 10" via the DIF Working Group
- Are RA's expecting out of the box solutions with operating instructions?
- Does the RA have resources for spinning up services and maintenance, etc?
- What expertise is missing?
- What resources are missing?
    - Ex: We support programming in X language, do we have a cookbook?

Non-Technical Issues for DIF Implementation?

Goal: Raise and discuss non-technical (social) issues relating to DIF implementation.

Themes requested for extraction beyond general detail above:

- Some RAs have invested resources on OOSTethys, it isn't part of the DIF recommendations, why change?
- Query folks on their perception of their RA's commitment to DMAC. In other words, do they have long-term plans for support, are they moving towards DMAC as an internal operation (vs. sub-contracted), and are folks targeting non-NOAA funding for DMAC activities.
- IOOS Core Variables: Can this list be optimized?
    - Acoustic data
    - Marine Biology (abundance, species)

DIF Implementation Workshop Agenda Annotation
10-11 March 2009
Silver Spring, MD

Agenda Element: Registries and Catalogs
Wednesday, 11 March; 1.75 Hours - *(Facilitators: Matt Howard and John Ulmer)*

Purpose: To explore strategies for producing and managing catalogs and registries.

Background: Data discovery, catalog, and online browse are related core elements of the U.S. IOOS DMAC Plan. Both humans and machines need to discover what data exists, where and how to access it, and to judge if it is suitable for their needs. This agenda topic will explore the community's approach to building and maintaining machine accessible catalogs/registries for data and metadata to support discovery, browse and access.

Objectives: We will achieve a collective agreement on terminology, such as the differences between catalogs, registries, clearinghouses, repositories, archives and their contents (e.g. lists of observing systems, lists of data service access points, lists of metadata). We should reach an agreement on our needs and requirements for these core elements and share what we know on candidate technologies and approaches to acquiring these elements for our collective use.

***Proposed* Discussion Topics:**

User needs and Requirements: What information do we need to put in the various lists? Where will the lists reside? What search capabilities (e.g. semantic mediation) will the system need to support? How will it the systems be maintained and updated? Who will be responsible for maintaining and updating the information?

Survey of existing options: What approach should we take: build, buy, adopt and adapt? Do existing services, e.g. GCMD, GeoSpatial Onestop, the IOOS Observation Registry, NOESIS, etc. meet our needs? What solutions and activities are available in other communities? What are the trade-offs between broadly applicable standards-based solutions (e.g. OGC/ebRIM) and narrower community centric approaches. What can we reasonably expect and accept given our resources and time constraints?

Online Browse: Should the service discussed above support online browse or should this be left to the user? Google Earth/Ocean with its time sliders is an easy cross-platform way to visualize time-space overages. What other visualization applications need to be supported (ESRI, OSMC, etc.)?

DIF Implementation Workshop Agenda Annotation
10-11 March 2009
Silver Spring, MD

Agenda Element: Challenges/Reconciliation
Wednesday, 11 March; 2.75 Hours - *(Facilitator: Sam Walker)*

General Description: This is the final section of the workshop agenda and, as such, represents both a summary and starting point for next steps. The participants (with Industry Day guests?) will agree on a list of core topics for discussion and attempt to reconcile the wide range of RA (and national) needs/capacities with the key objectives for implementation (as identified under the Minimum Requirements for DIF Providers).

Objective: List key challenges (both technical and operational) to DIF Implementation (or other operational DMAC issues?) and identify mitigating actions.

***Proposed* Discussion Topics:**

- Outline for DIF deployment guide (i.e., cookbook)
- Common code repository
- Time line for deployment
- Reconciling the range of RA capabilities/capacities
- Identify and agree upon mechanisms to maintain momentum
- Identify and agree upon mechanisms to maintain Regional DMAC communication (even beyond DIF implementations)
- Extracting metrics from this process (and otherwise documenting the efforts)
- Evaluate how we can use the DIF implementation process as a template for future IOOS operations.
- Inventories and Registries (who maintains/updates? who monitors/manages?)
- Identify methods and opportunities for RAs to chare capacity outside their region
- Identify challenges that we were unable to reconcile or discuss and decide on a plan of action to address over time
- Finalize actionable items and assign responsibilities (as appropriate)

NOTE: Obviously, most of the discussion topics will develop during the workshop. These examples are provided to prompt thought and keep participants aware of our primary objectives at the end of the workshop. Steering Team will take responsibility for tracking these during Day 1 and Day 2 (AM) and summarize in advance of this final part of the agenda.

Regional Data Integration Framework Implementation Workshop
March 10 – 11, 2009

NOAA IOOS Program
1100 Wayne Ave., Suite 1225
Conference Room 1280
Silver Spring, MD 20910

Workshop Participant List

Regional DMAC Representatives:

1. Sam Walker	SECOORA
2. Matt Howard	GCOOS
3. Rob Cermak	AOOS
4. Steve Uczekaj	NANOOS
5. Steven Le	CeNCOOS
6. Lisa Hazard	SCCOOS
7. Stuart Eddy	GLOS
8. Eoin Howlett	MACOORA
9. Jim Potemra	PacIOOS
10. Damian Ruiz	CaRA
11. Eric Bridger	NERACOOS

Other Regional Participants:

1. Carroll Hood	SECOORA
2. Tom Kuba	SECOORA
3. John Kerfoot	MACOORA
4. John Colton	CSIRO
5. Josie Quintrell	NFRA
6. Mark Cameron	CSIRO
7. Guan Wang	GLOS
8. Paul Reuter	SCCOOS
9. Rick Blair	NANOOS

NOAA IOOS:

1. Zdenka Willis
2. Jeff de La Beaujardiere
3. Marcia Weaks
4. Charles Alexander
5. Rob Ragsdale
6. Natalie Green (*rapporteur*)

Other Guests:

1. Rich Signell	USGS/IOOS
2. Luis Bermudez	SURA
3. John Ulmer	Coastal Services Center
4. Jim Boyd	Coastal Services Center
5. Darrell Duncan	National Data Buoy Center

Appendix 5.2 – DIF, DMAC and Modeling: Status Briefs

INTEGRATED OCEAN OBSERVING SYSTEM

IOOS Data Integration Framework

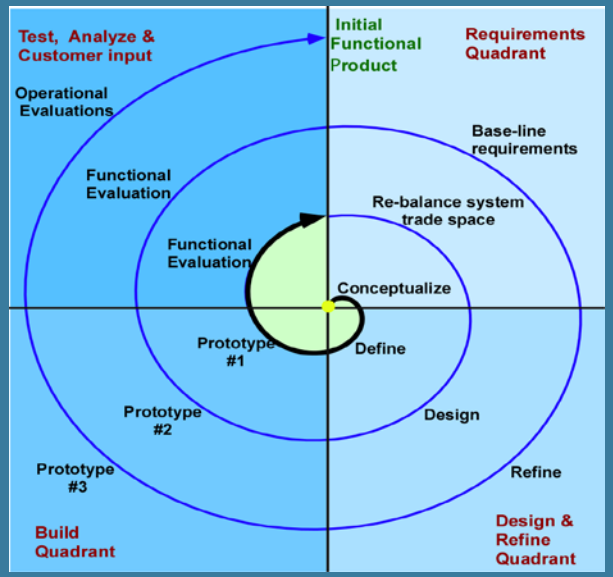
Jeff de La Beaujardière, PhD
NOAA IOOS Program Office
Senior Systems Architect

IOOS

Data Integration Framework (DIF)

- Began as pilot project (2007-2010)
  - First spiral of IOOS development
- Limited scope for reduced risk
  - Implement at 3 provider and 4 customer sites
  - Start with 7 core variables
    - Currents, Temperature, Salinity, Water Level, Winds, Waves, Ocean Color (chlorophyll)
- Systems engineering documents

  Available at http://ioos.noaa.gov/dif/
  - Concept of Operations
  - Functional Requirements
  - Design



(Graphic by i3 Aerospace Technologies Pty Ltd – used with permission)

Primary DIF Partners

- 3 NOAA data providers
- 4 NOAA customers
- 11 IOOS Regional Associations
- Integrated Products Team of representatives from all NOAA lines offices
- Industry
  - Contractor support at IOOS, NOAA, RAs
  - OGC members
  - Emerging partnerships:
    - Google as customer of IOOS data for Google Oceans
    - Amazon Web Services (NSF OOI collaboration)

NOAA DIF Data Providers

National Weather Service (NWS)
National Data Buoy Center (NDBC)

- NWS Buoys
- IOOS Regional observations
- Tropical Atmosphere Ocean (TAO) Buoys
- Deep-Ocean Assessment and Reporting of Tsunamis (DART)
- Surface Currents from High-Frequency Radar (HFR)

National Ocean Service (NOS)
Center for Operational Oceanographic Products and Services (CO-OPS)

- National Water Level Observation Network (NWLON)
- Physical Oceanographic Real-Time System (PORTS)

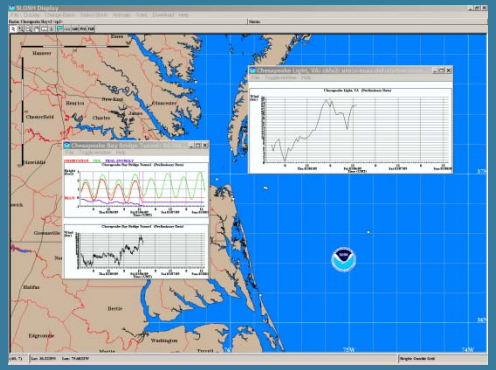
National Environmental Satellite, Data, and Information Service (NESDIS)
CoastWatch

- Satellite Ocean Color (Aqua MODIS, SeaWiFS)

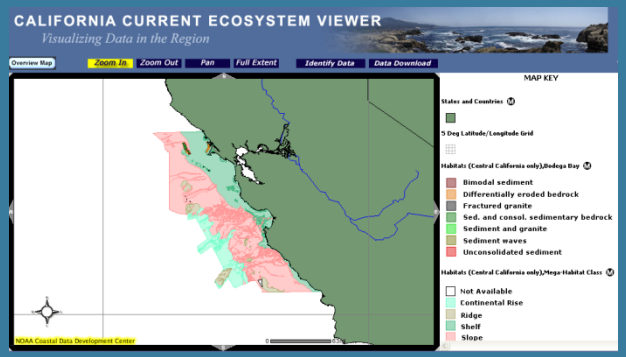
IOOS

NOAA DIF Customer Projects

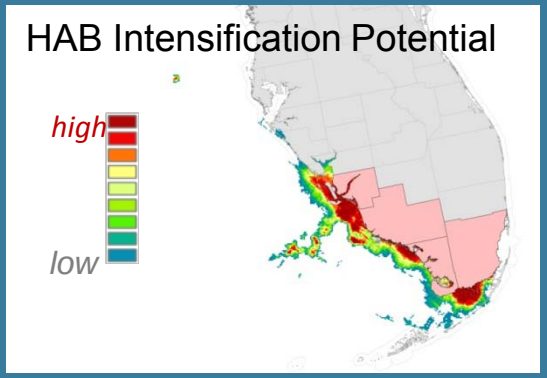
Coastal Inundation: Sea, Lake and Overland Surge from Hurricanes (SLOSH) model



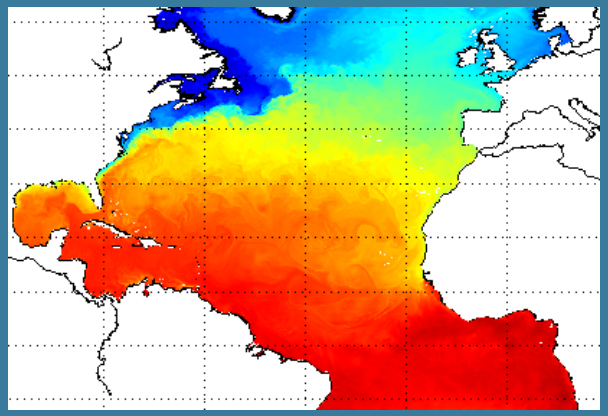
Integrated Ecosystem Assessments: Environmental Research Division Data Access Protocol (ERDDAP) application



Harmful Algal Blooms: HAB Forecast System (HAB-FS)



Hurricane Intensity: Real-Time Ocean Forecast System (RTOFS-Atlantic)



Core Principles

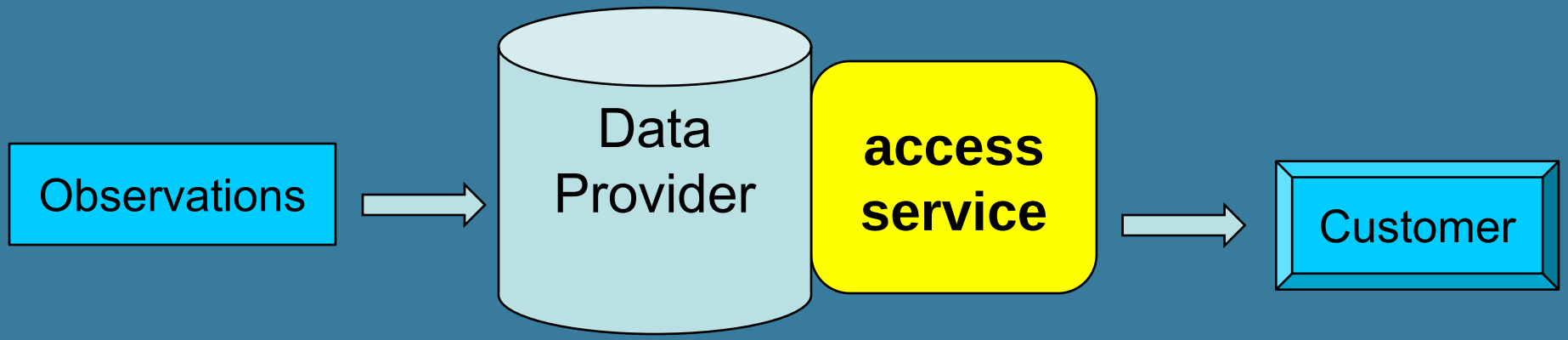
- Adopt open standards & practices

- Avoid proprietary protocols or technologies

- Avoid customer-specific stovepipes
  - Services generally applicable to other potential users

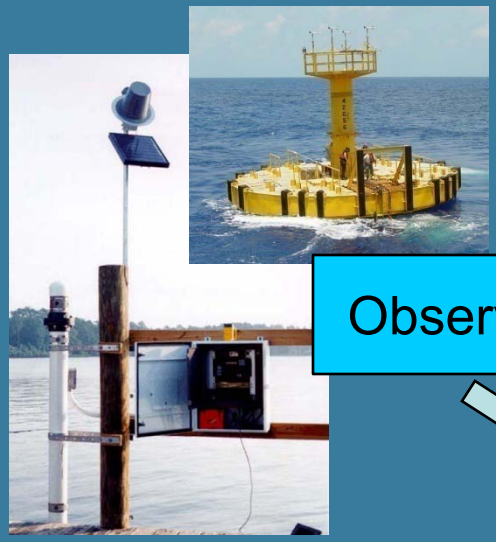
Status of Data Management Effort

- Standardized access services implemented at data providers
- Customers starting to ingest data from these services



In situ Observations

Sensor Systems



Observations

Quality Control

Metadata

Data Provider

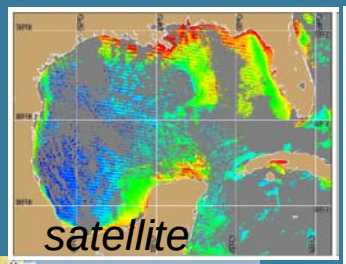
SOS (Sensor Observation Service)

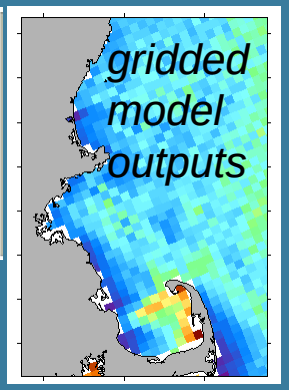
Table of Contents

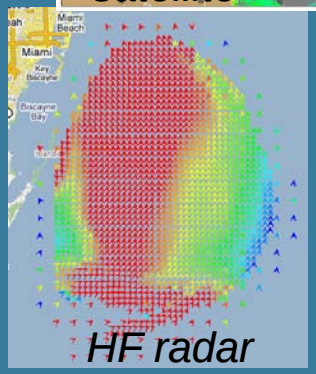
Data Values

Metadata

Gridded Data and Model Outputs







Quality Control

Metadata

Data Provider

OpenDAP

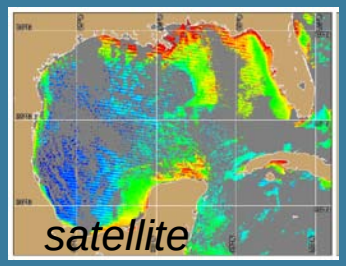
WCS (Web Coverage Service)

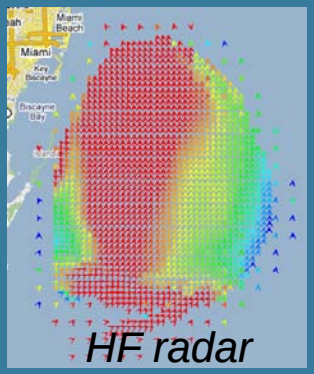
Table of Contents

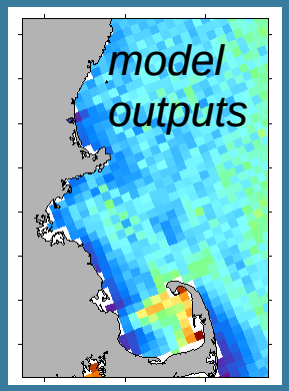
Data Values

Metadata

Maps of Data







In situ observations

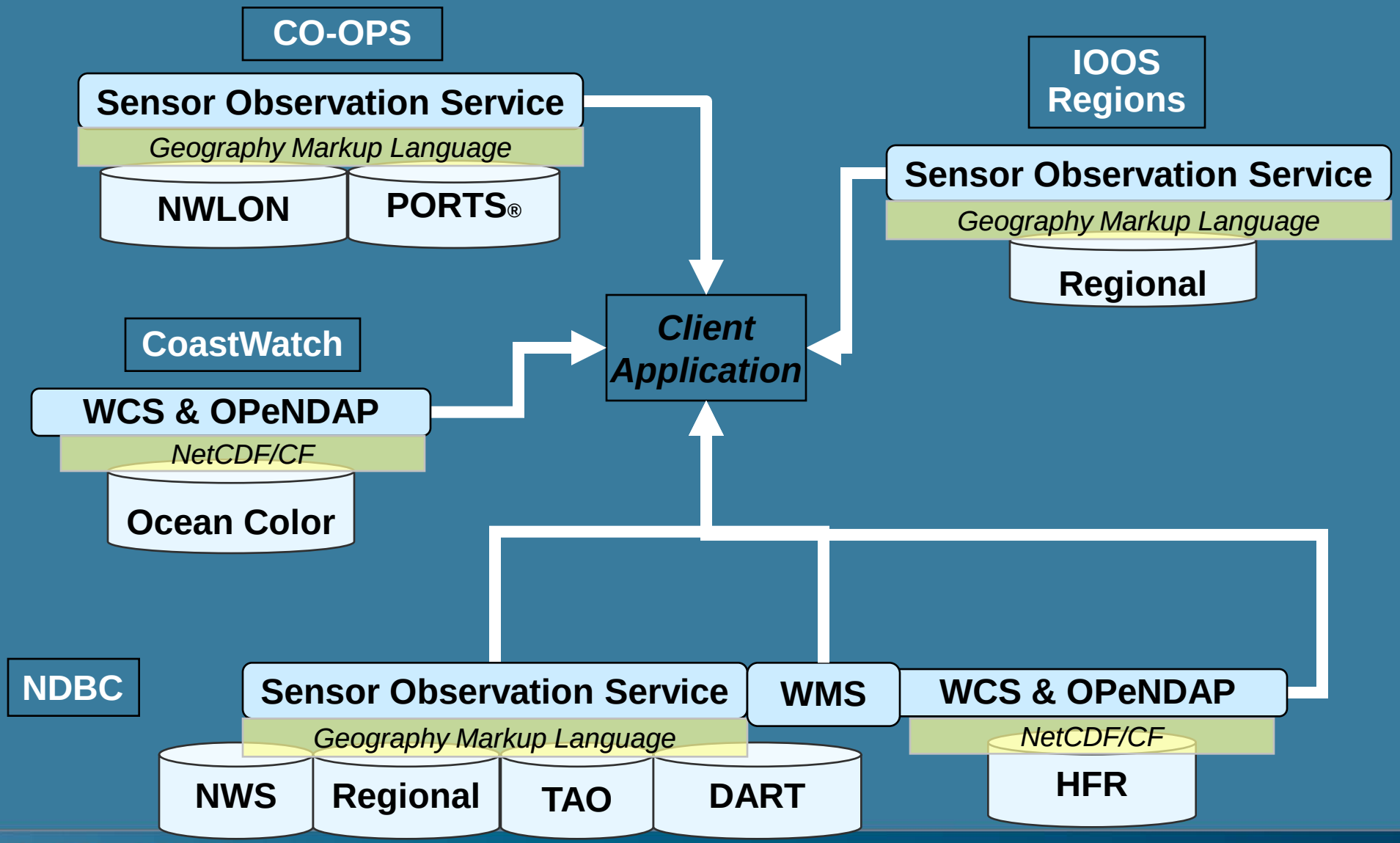
Data Provider

WMS (Web Map Service)

Table of Contents

Georeferenced Images

Data Provider Status



DIF Summary

- Implemented standards-based services at operational NOAA data providers

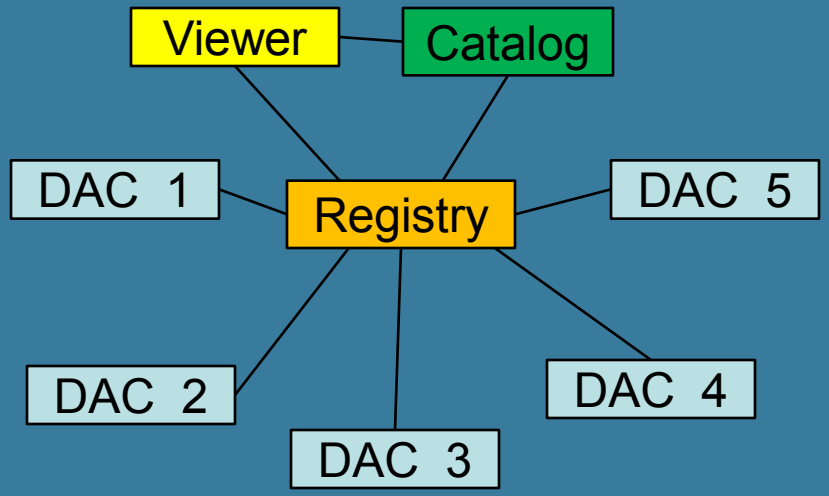
Available from http://ioos.noaa.gov/dif/

- Serving real data to critical NOAA customers
- Will evaluate utility to customers in 2010
- Applying lessons learned to larger IOOS effort

The Bigger Picture: Moving to National IOOS Data Management Capability

Federated, Service-Oriented Architecture

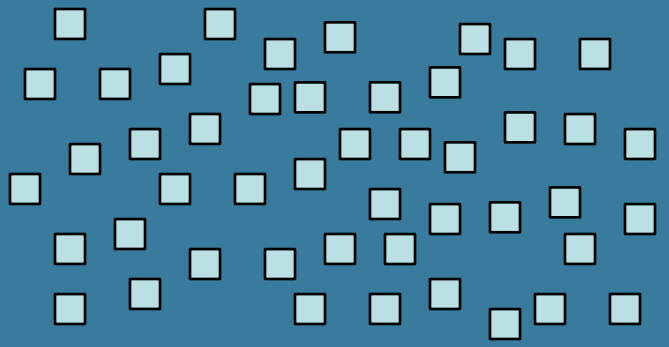
✓ Federated
- Several Data Assembly Centers
  - Each supports particular Organization, Region, Theme,...
  - Standardized service interfaces
- Shared components
  - Registry, Catalog, Viewer, …



✗ *Monolithic*
- *All data in single warehouse*
- *All services provided by warehouse*

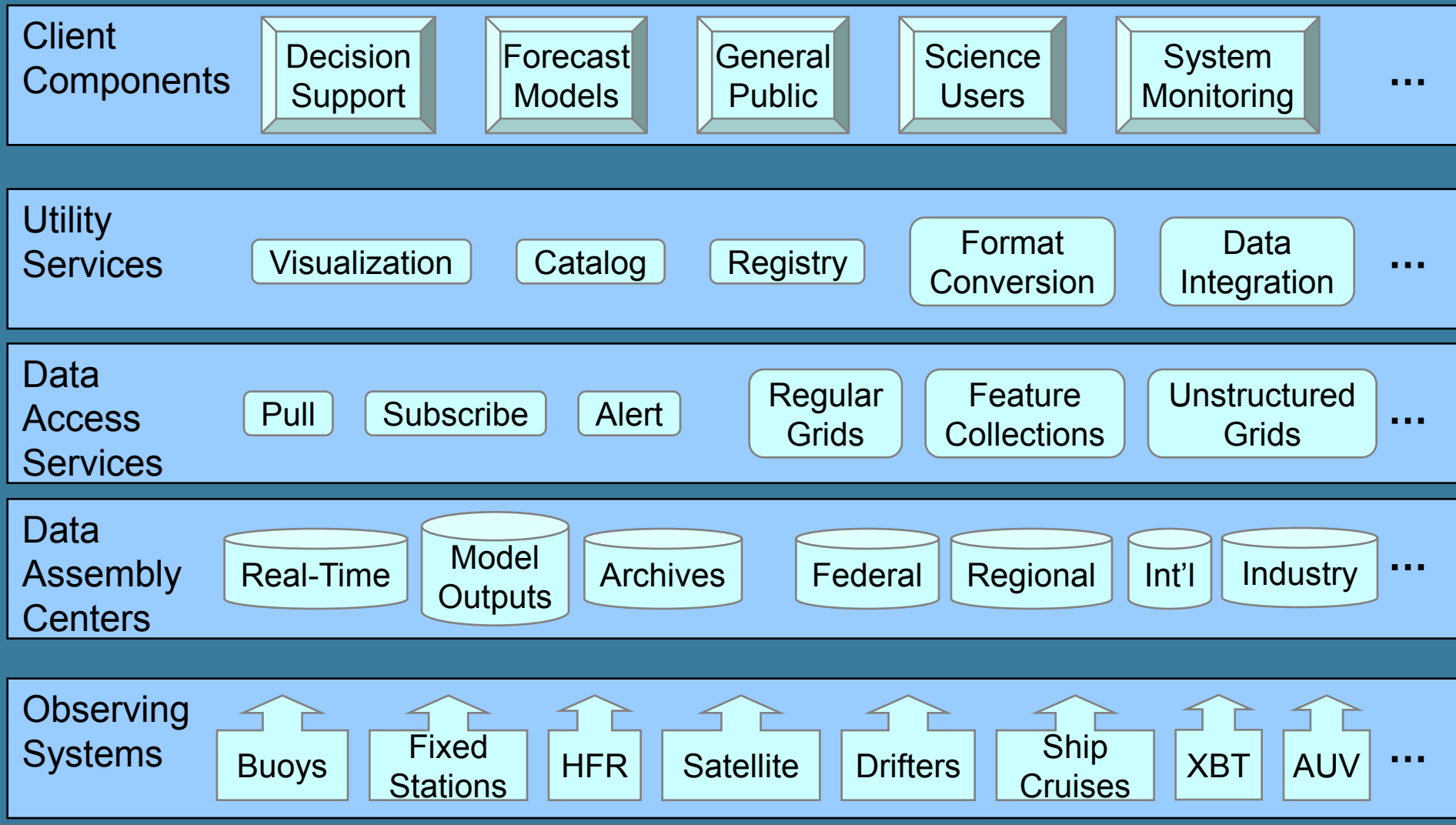
Midway between these extremes

✗ *Fully distributed*
- *Every data provider adopts the same services*

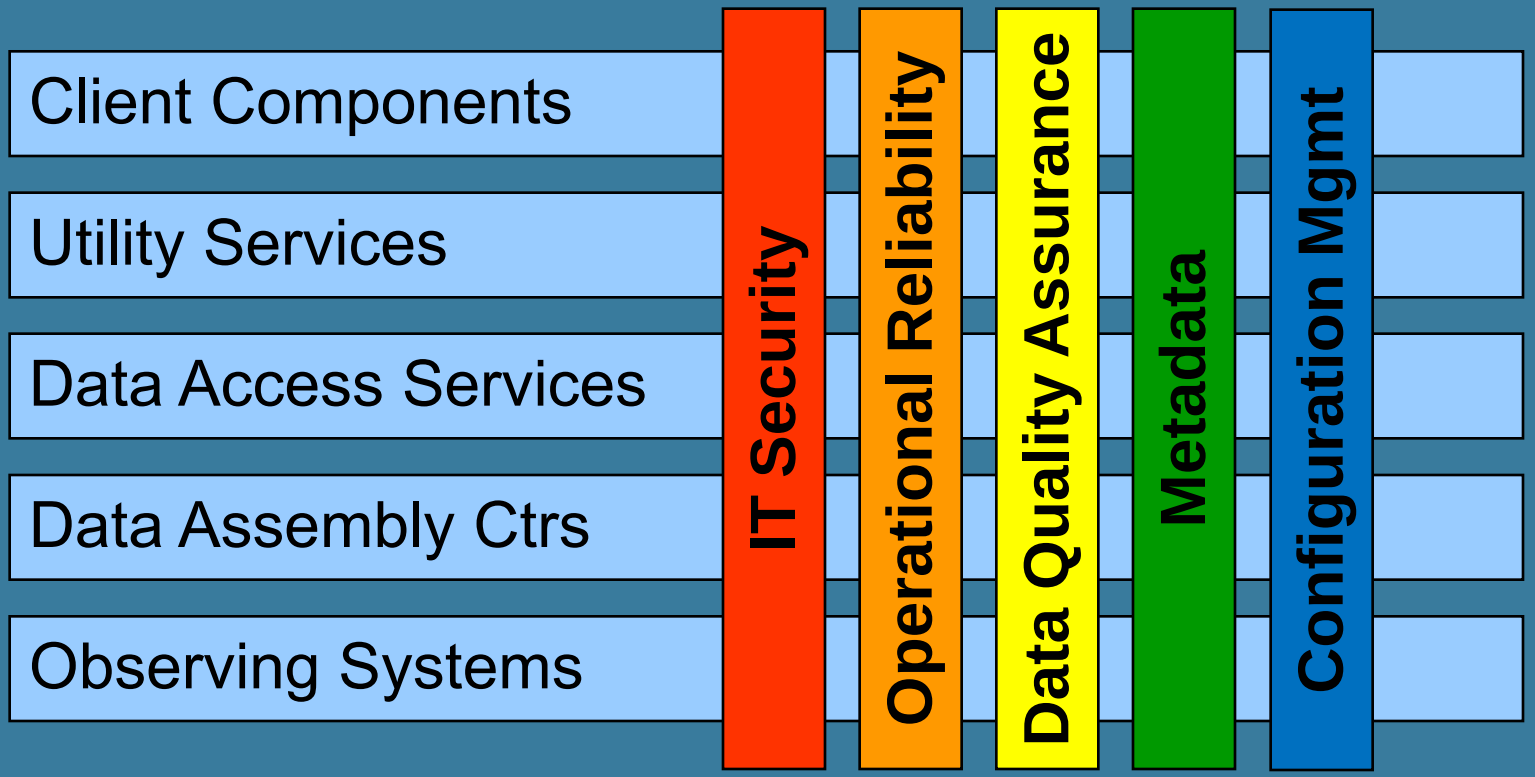


Component Types Needed for IOOS

Computational Viewpoint from Reference Model for Open Distributed Processing (RM-ODP)

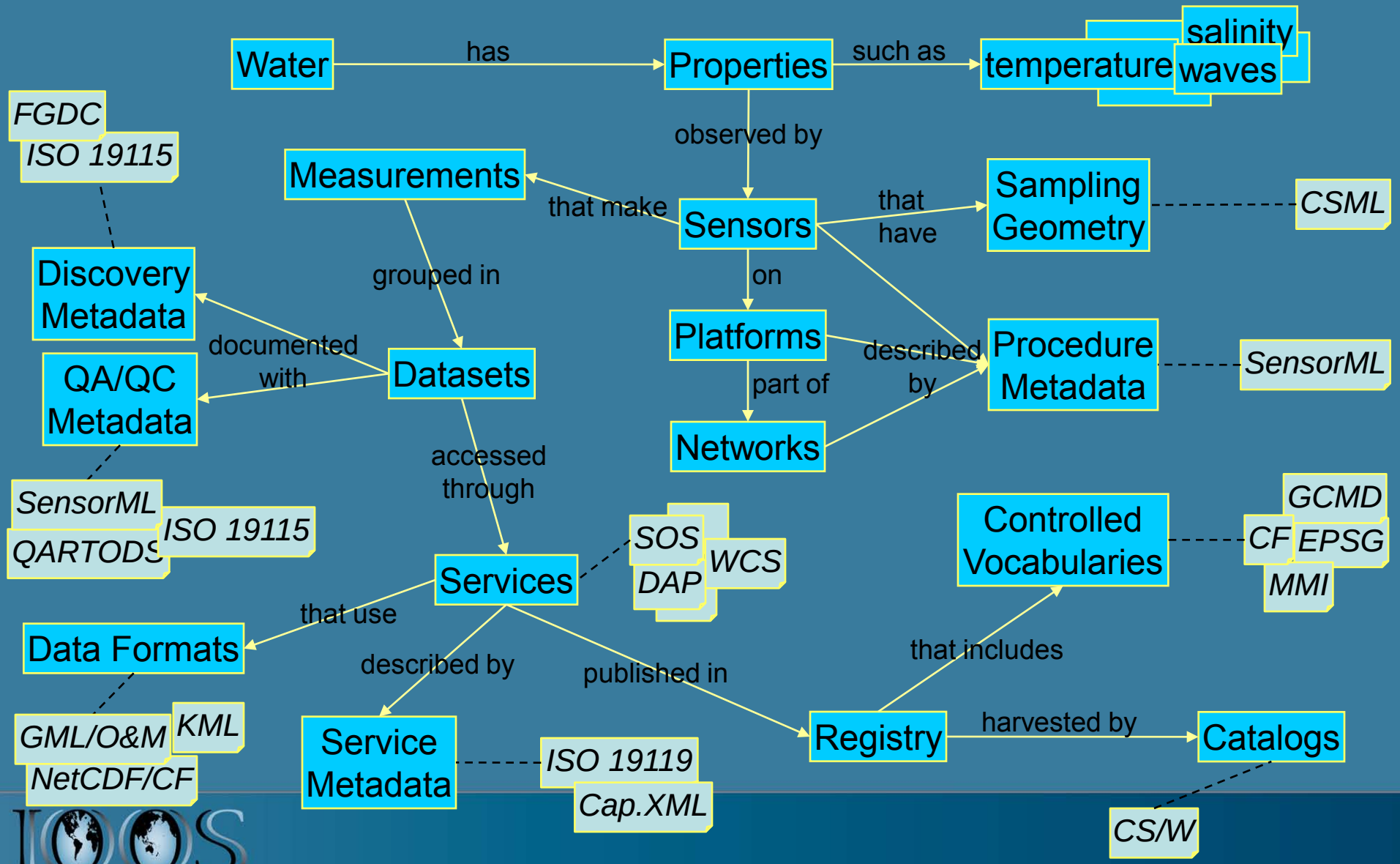


Crosscutting Concerns

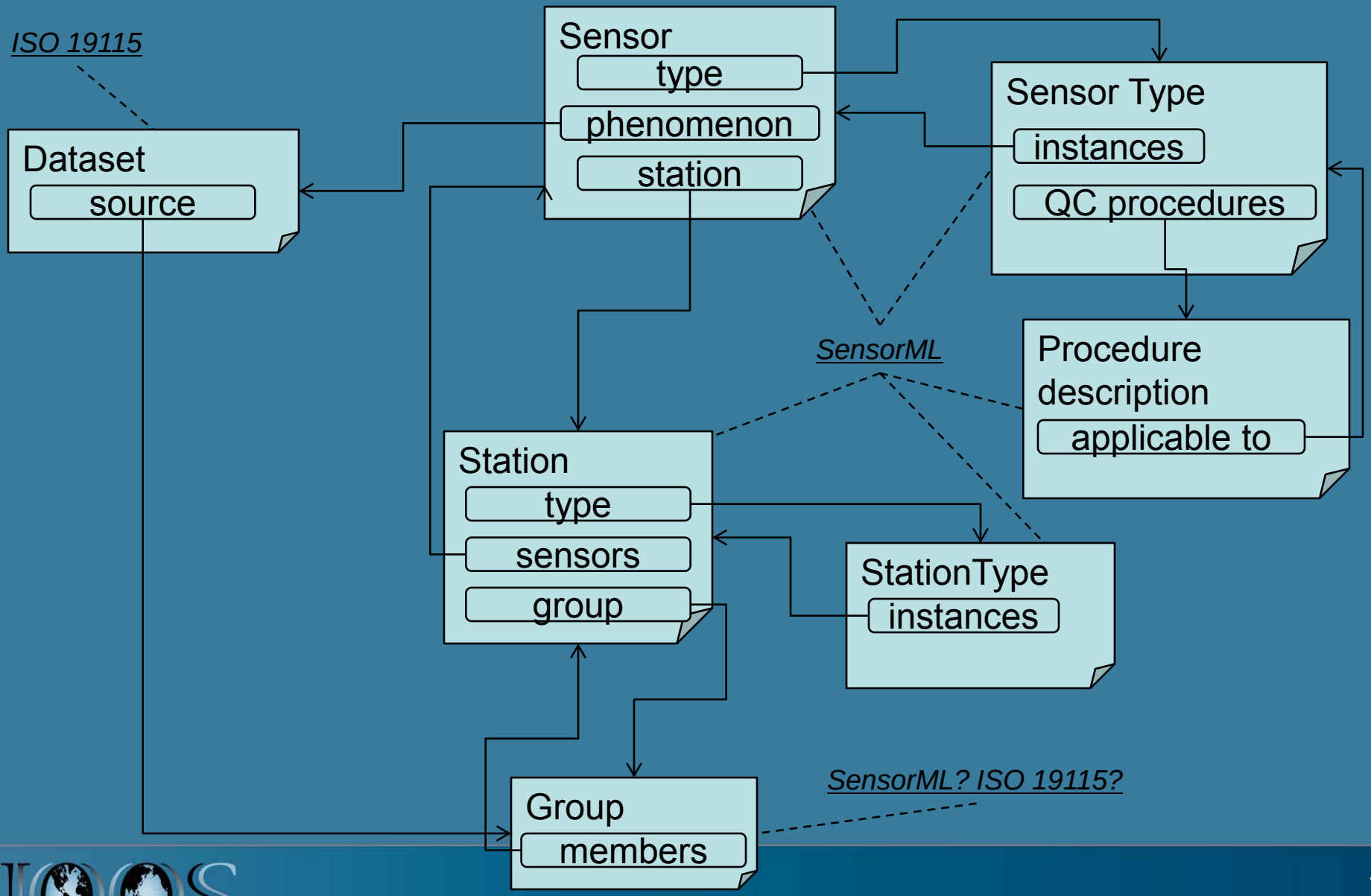


IOOS Data and Metadata

Information Viewpoint from Reference Model for Open Distributed Processing (RM-ODP)



Metadata Model *(Draft)*



IOOS Data and Metadata Types

Information Viewpoint from Reference Model for Open Distributed Processing (RM-ODP)

Service Metadata	(OWS Capabilities XML, ISO 19119)
Discovery Metadata	(FGDC, ISO 19115/19139)
Controlled Vocabularies	(CF, MMI, OGC, GCMD)
QA/QC Metadata	(SensorML - QARTODS)
Sensor/Platform Metadata	(SensorML)
Data Encoding Conventions	(XML/GML/KML, O&M, SWE, CSML, NetCDF/CF)
Collection Types	(Time Series, Multi-Station Obs)
Sampling Feature Types	(Point, Profile, Trajectory, Reg Grid, Unstructured Grid)
Ocean Properties	(Temperature, Salinity, Currents, Waves, Chlorophyll, …

Conclusion

- The standardized data access services used in DIF could be applied to national IOOS
- Existing open standards may need additional specificity for ocean realm
- Many additional areas to consider:
  - Registry, Catalog, Metadata, Semantics, …

Backup Slides

Recommended Web Services and Data Encodings

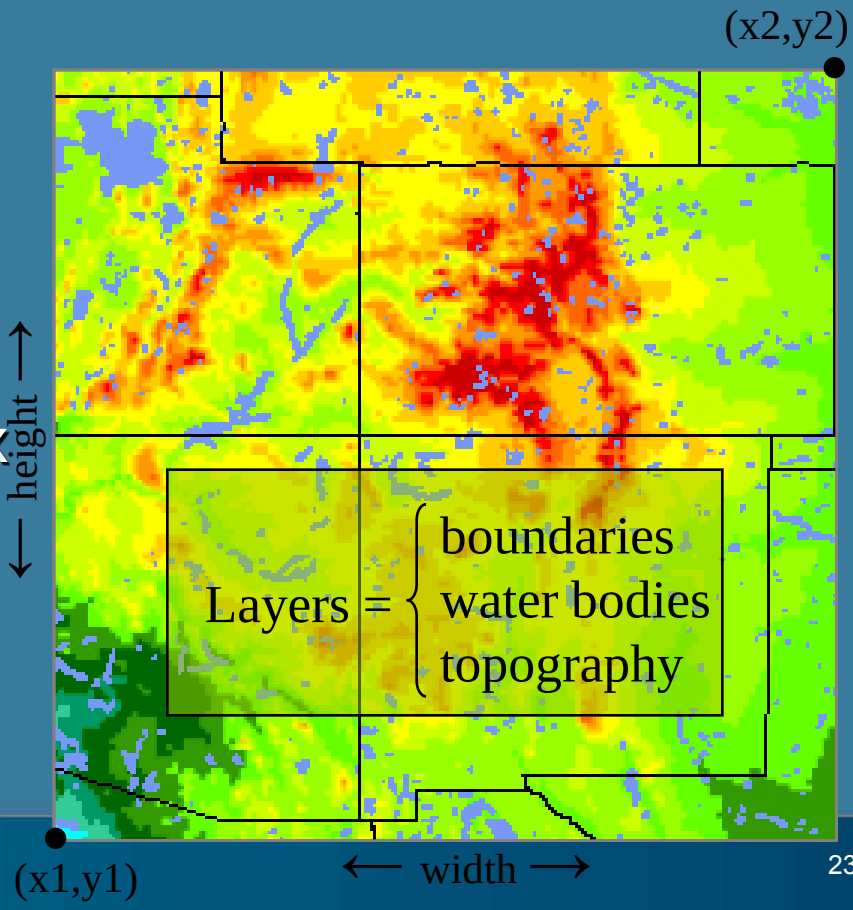
Data Type	Web Service	Encoding
In-situ data (buoys, piers, towed sensors)	OGC Sensor Observation Service (SOS)	XML based on OGC Observations and Measurements (O&M)
Gridded data (model outputs, satellite)	OpenDAP and/or OGC Web Coverage Service (WCS)	NetCDF using Climate and Forecast (CF) conventions
Images of data	OGC Web Map Service (WMS)	GeoTIFF, PNG etc. -possibly with standardized styles

*[*OGC = Open Geospatial Consortium]*

WMS for Images of Data

OGC Web Map Service

- "Map" = georeferenced picture of data
- GetCapabilities operation: "table of contents" in standardized format
- GetMap operation:
  image of data customized according to:
  - Variable(s) of interest
  - User-specified bounding box
  - User-specified time
  - Image size
  - File format (e.g., PNG, GetTIFF, JPEG, GIF)



OPeNDAP for Gridded Data

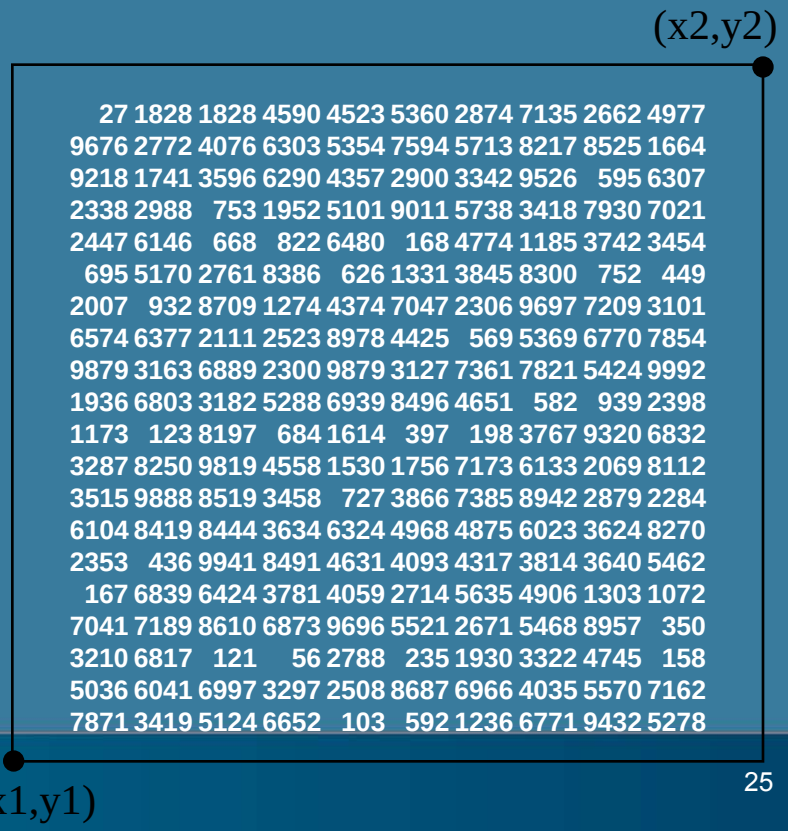
Open-source Project for a Network Data Access Protocol

- Services requested from an OPeNDAP server are specified in a suffix appended to the URL. Depending on the suffix supplied, the server will return one of these response types:
- Data Attribute (.das suffix)
  - Text file describing the attributes of data quantities in dataset.
- Data Descriptor (.dds)
  - Text file describing the structure of the variables in the dataset.
- OPeNDAP Data (.dods)
  - Actual data as binary MIME-typed file.
  - Constraints can be appended to select a subset of the data.
- ASCII Data (.asc, .ascii)
  - ASCII representation of the requested data.
- WWW Interface (.html)
  - HTML form that can be used to construct a data URL.
- Information (.info)
  - HTML information about the server and dataset.

WCS for Gridded Data

OGC Web Coverage Service

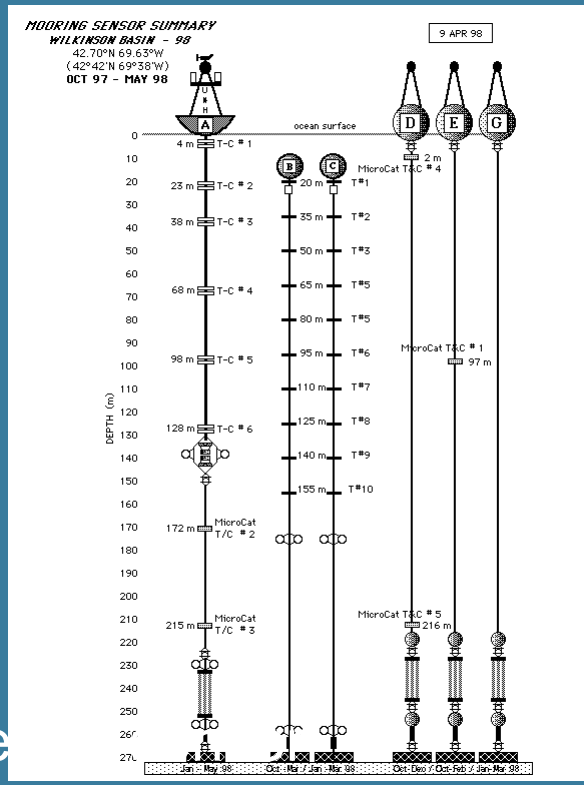
- Coverage ~ array of gridded data values
  - *(simplified viewpoint for this discussion – coverage can be more complex)*
- GetCapabilities operation: “table of contents”
- GetCoverage operation: data file containing header and array(s) of numbers customized for:
  - Variable of interest
  - User-specified bounding box
  - User-specified time
  - File format (e.g, NetCDF, HDF, floating-point TIFF)
- DescribeCoverage operation: metadata about a specific dataset



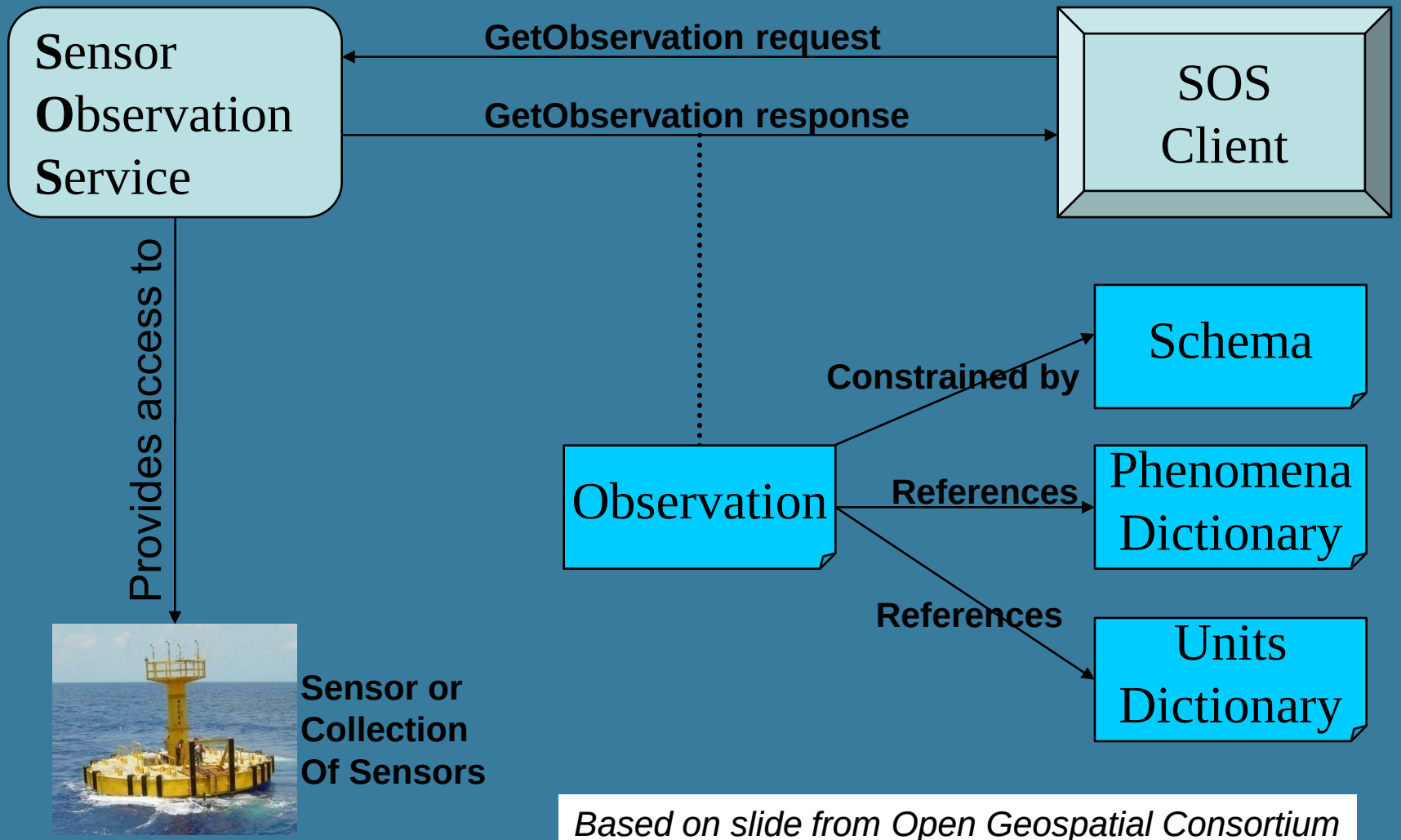
SOS for In-Situ Data

OGC Sensor Observation Service

- Sampling feature = discrete location(s) of measurements
  - *Point, Vertical or Horizontal Profile, Trajectory (e.g., ship track)*
  - *…and Time Series or Collections thereof*
- GetCapabilities operation: “table of contents”
- GetObservation operation: XML data file containing observation values for desired:
  - Variable(s) of interest
  - Bounding box
    - Or perhaps named geographic feature of interest
    - Or perhaps a single sensor
  - Time
- DescribeSensor operation:
  XML providing detailed information about a spe
  (or platform or group of sensors)



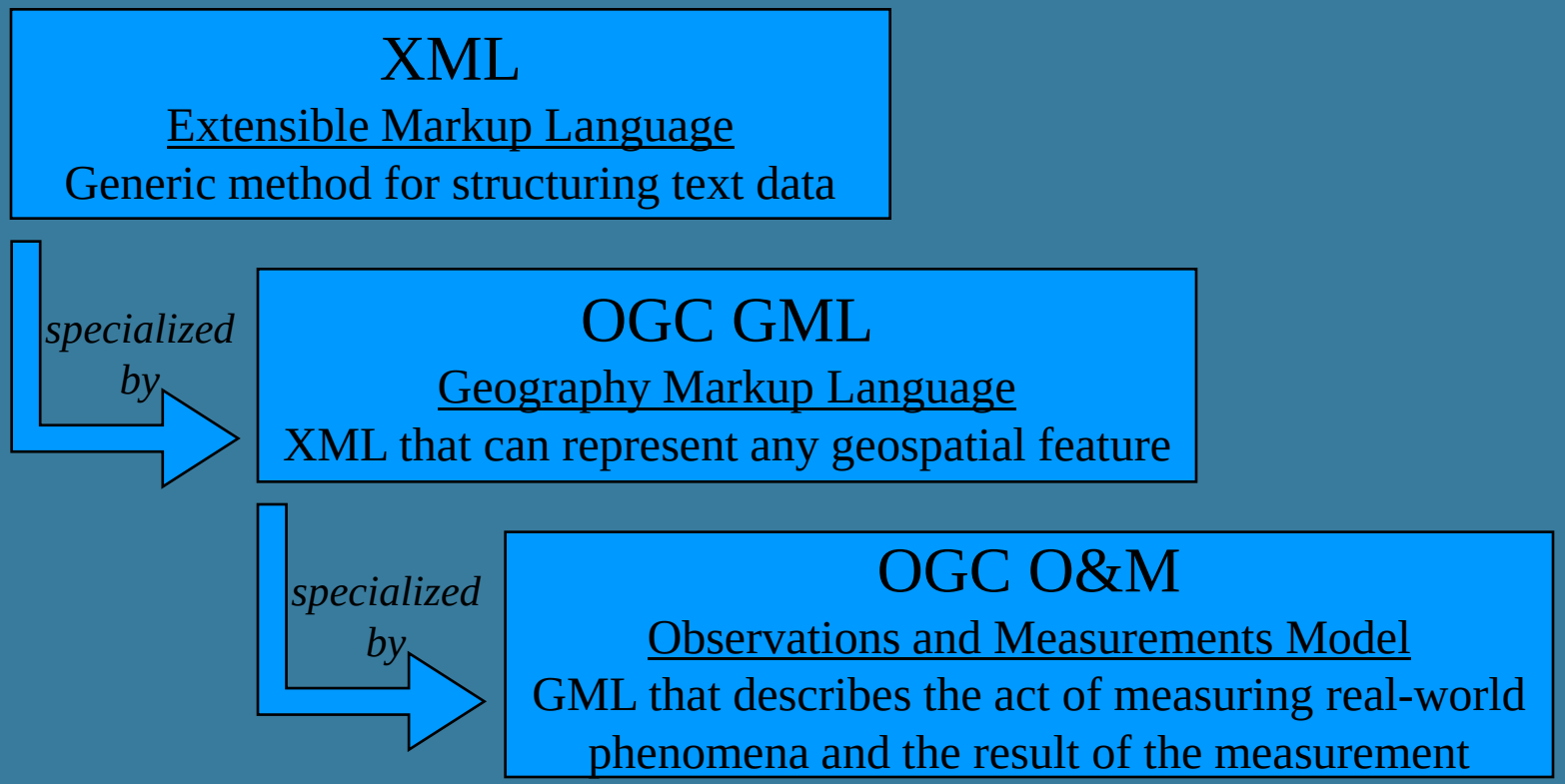
SOS Concept



Based on slide from Open Geospatial Consortium

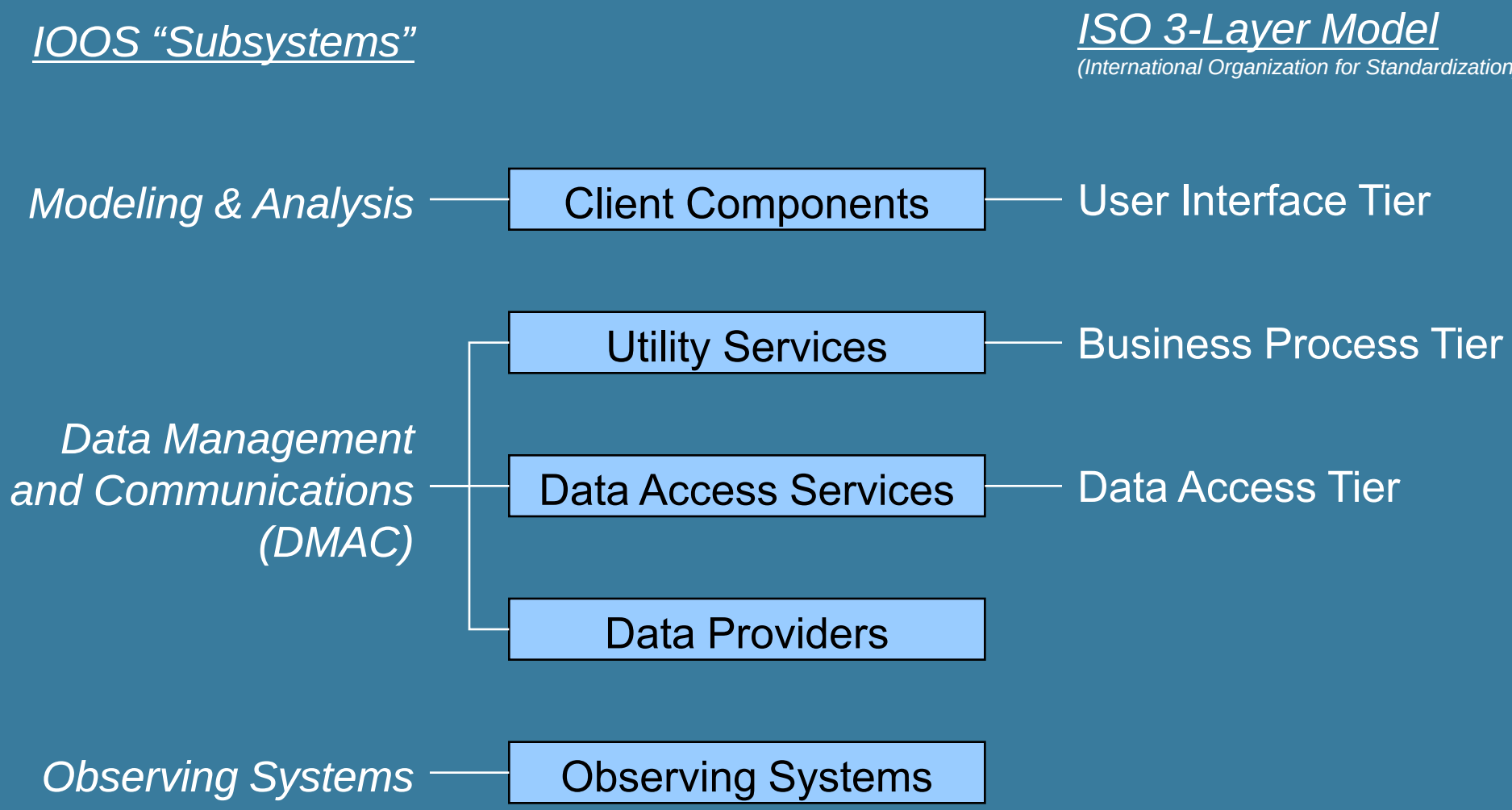
SOS GetObservation Response

XML Encoding of In-Situ Data



IOOS Architectural Layers

and Relationship to IOOS "Subsystems" and ISO Model



FY2009-2010 Activities

- Testing/evaluation/refinement of existing work
- Software tools for data users and providers
  - Software reference implementations
  - Support for Google Ocean
  - Templates to convert data for Excel, GIS, etc
- Metadata for sensors and data
  - SOS DescribeSensor + SensorML implementation
  - Detailed QA/QC metadata
- Implementation by IOOS Regional Associations
- Service Registry & Data Catalog
- Access to Forecast Model Outputs
- Additional customers, variables & providers

(Tentative, partial list; dependent on funding & requirements)

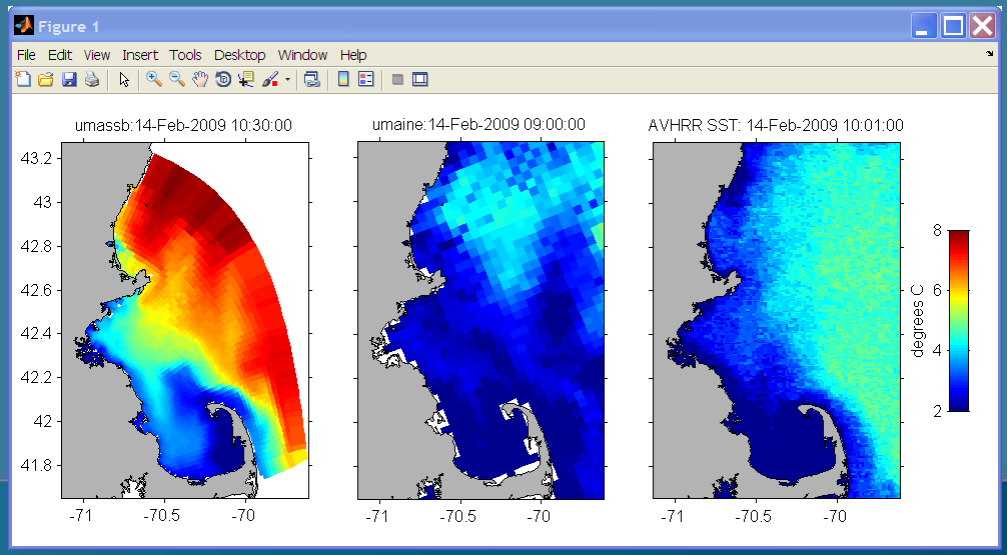
INTEGRATED OCEAN OBSERVING SYSTEM

NOAA IOOS Program

Model Data Interoperability for IOOS Status

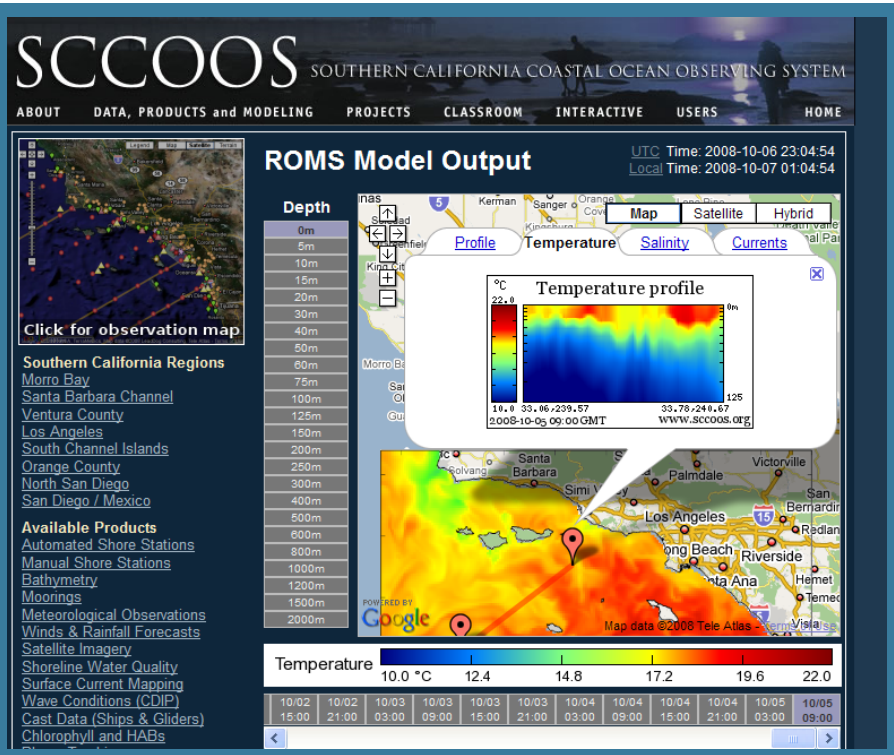
Dr. Rich Signell
USGS Woods Hole/NOAA Silver Spring

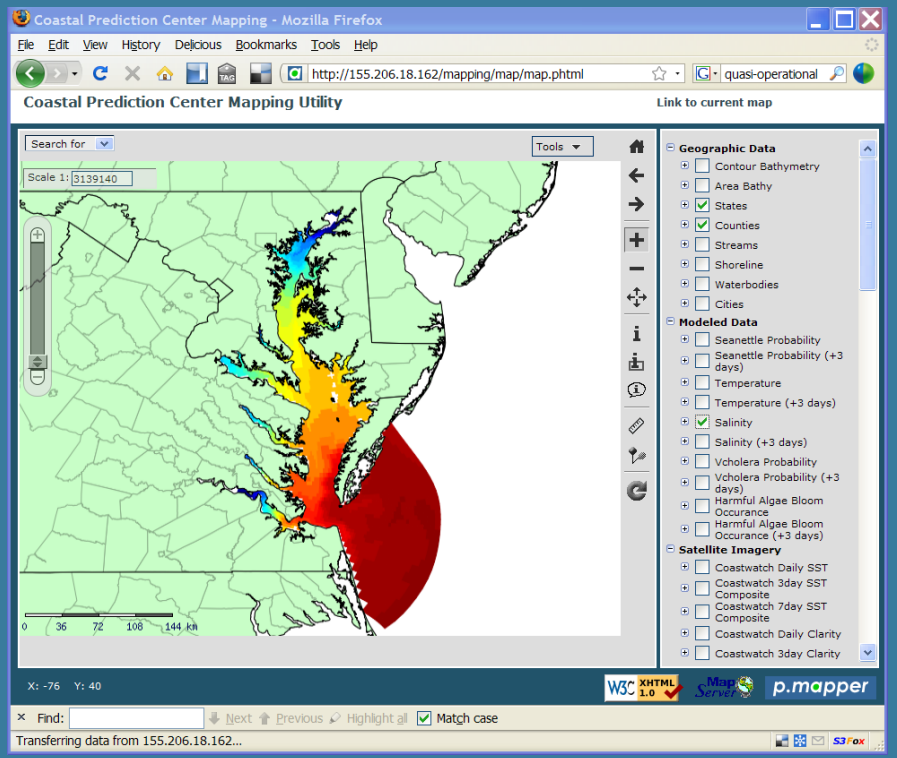
Regional DIF Meeting: Mar 10, 2009



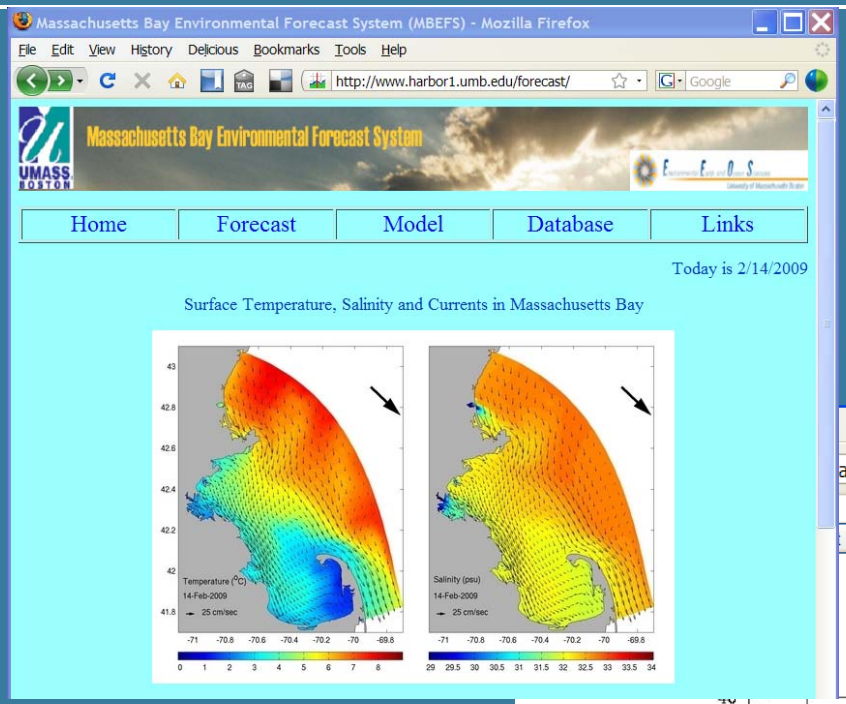
IOOS

The Problem: Stovepiped Model Access

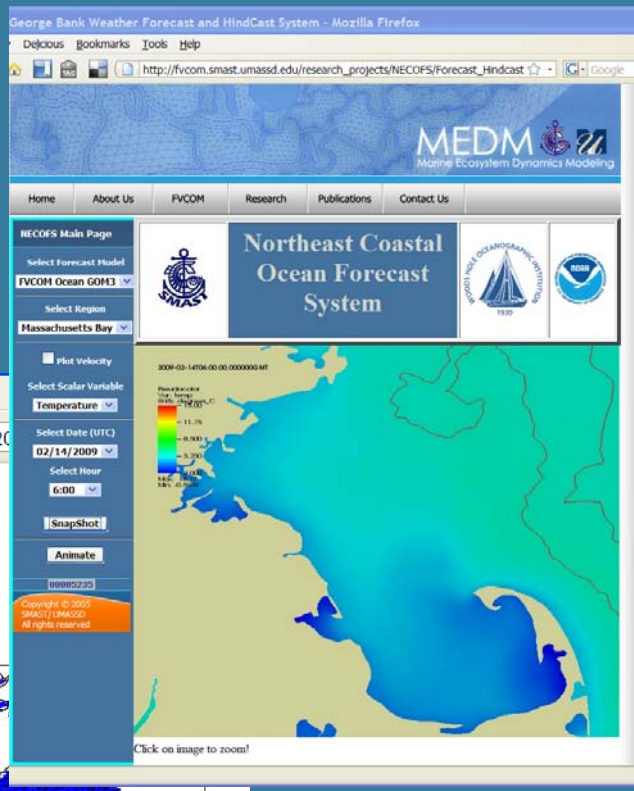


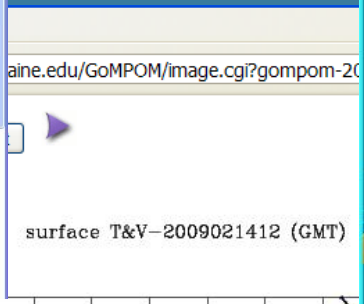


Result: Inability to compare and assess model results & underutilization of model products



UMASSD
FVCOM





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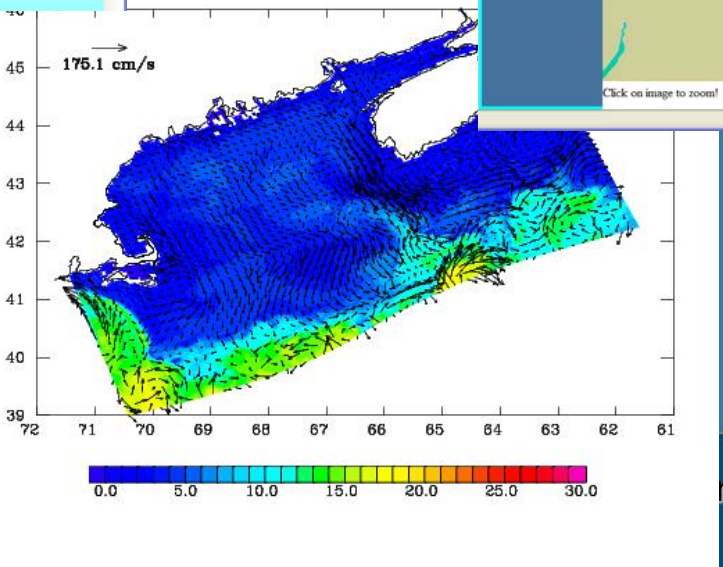
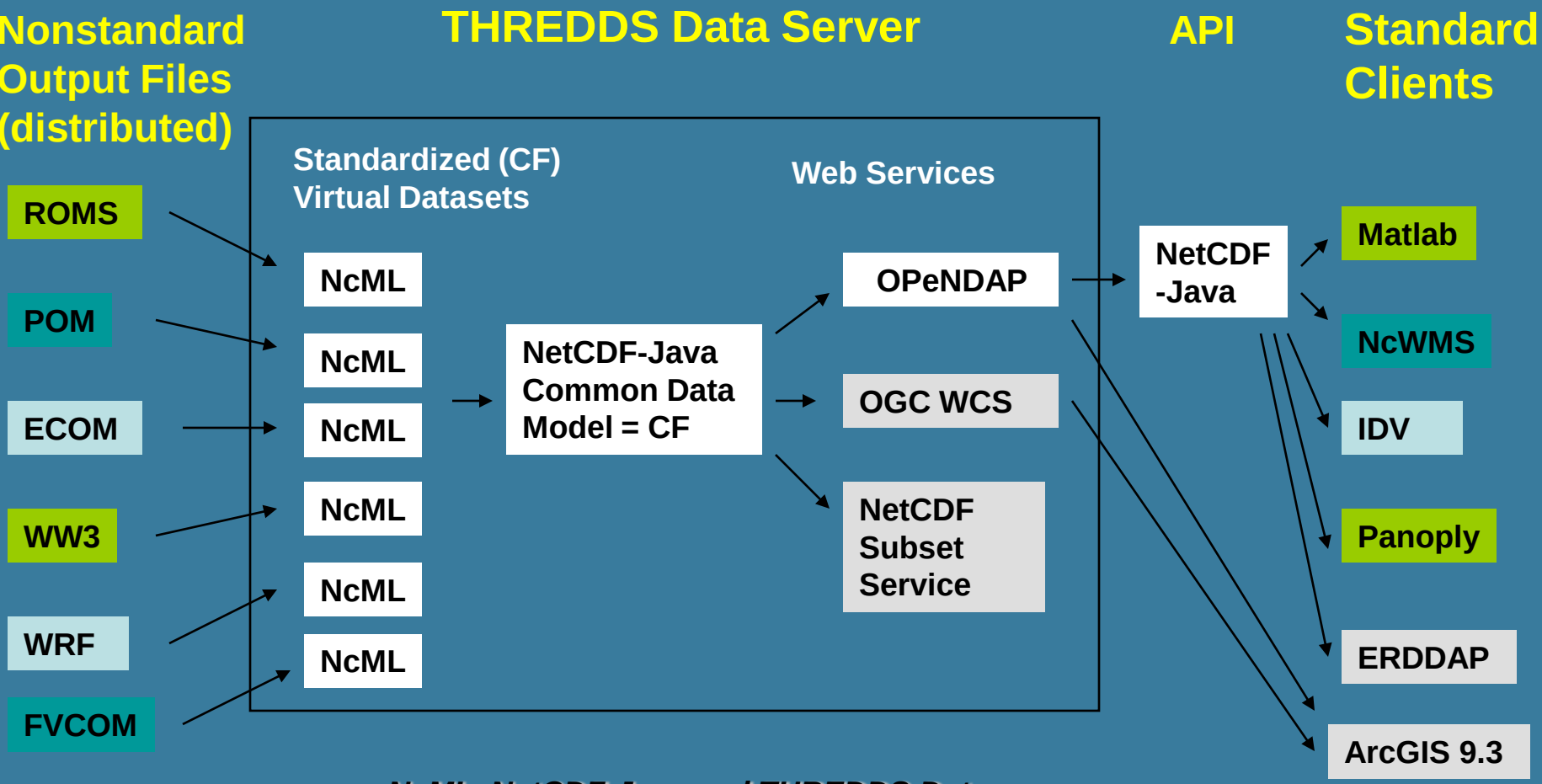
ECOM

UMAINE
POM

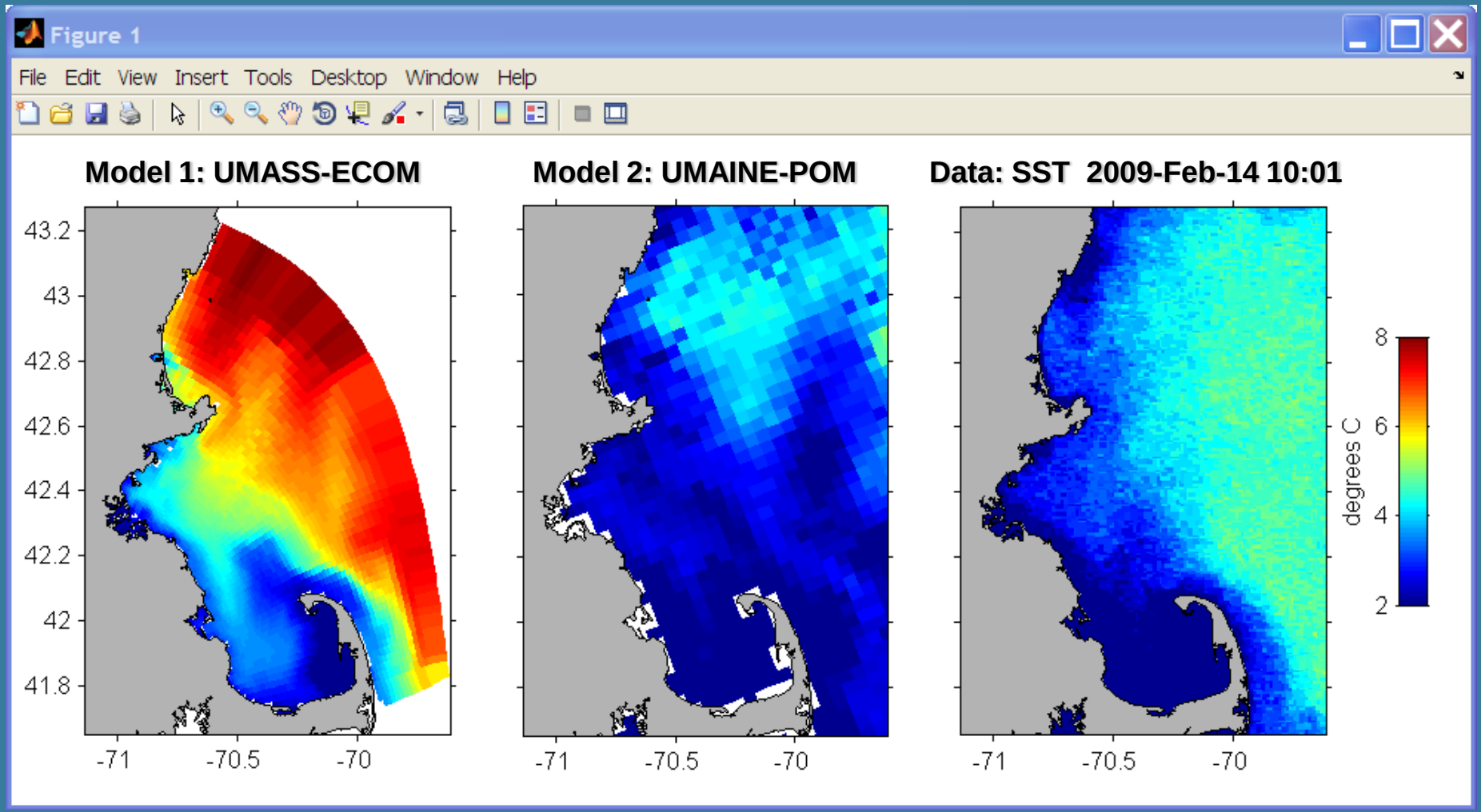


Gulf of Maine Data System Design



NcML, NetCDF-Java and THREDDS Data Server built and supported by Unidata under NSF-support

Application 1: Comparing Models with Data



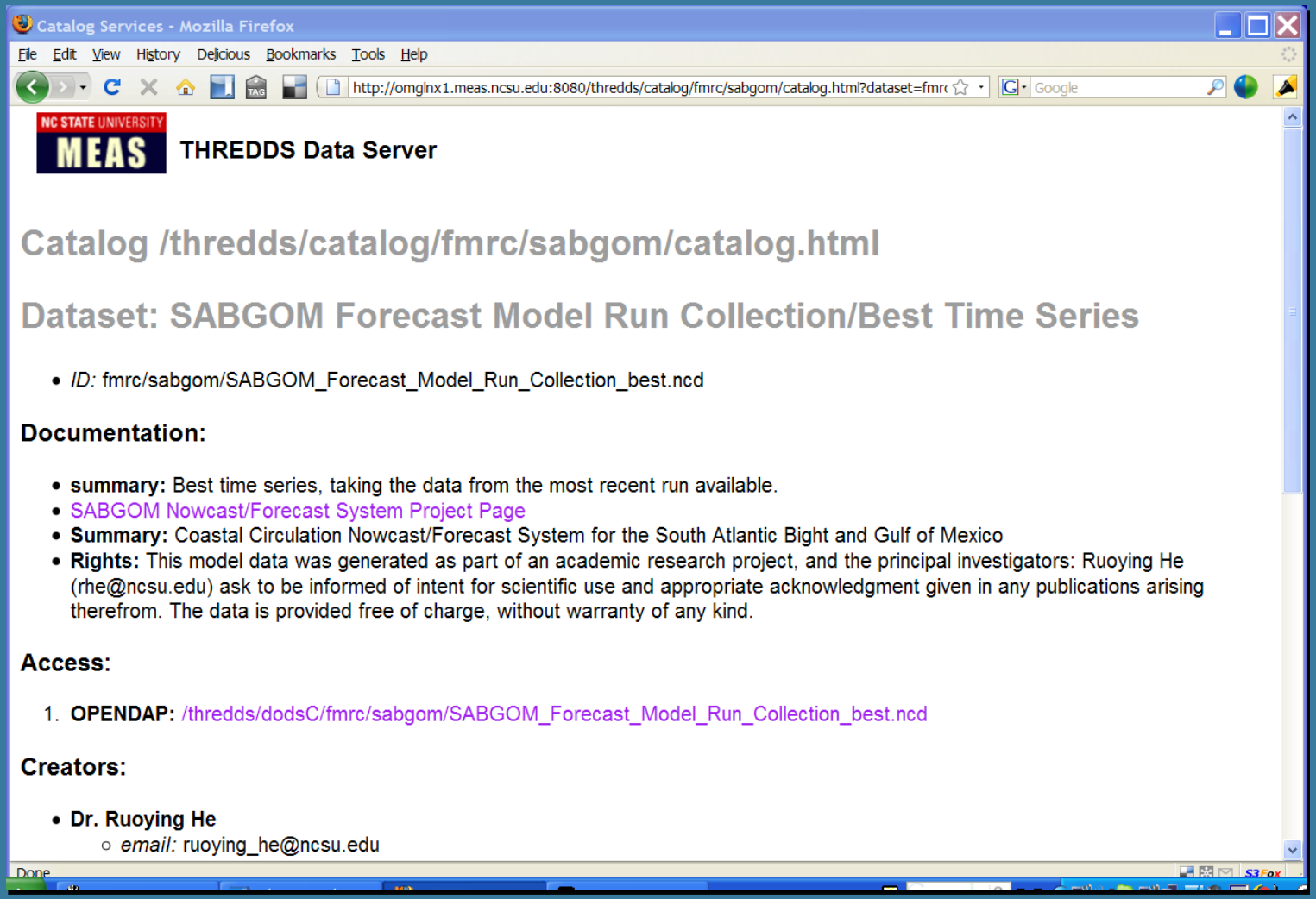
12 Month Work Plan (Nov 08-Sep 09)

- Work with Federal Backbone providers to provide aggregated CF-compliant native grid data
- Establish aggregated standard model data delivery in each IOOS regions
- Identify resources for development of standards-based library for unstructured grid and development of standards-based tools

IOOS Regions THREDDS Catalog

SECOORA SABGOM Catalog


Catalog /thredds/catalog/fmrc/sabgom/catalog.xml - Mozilla Firefox
File Edit View History Delicious Bookmarks Tools Help
http://omglnx1.meas.ncsu.edu:8080/thredds/catalog/fmrc/sabgom/catalog.html
Google
Catalog /thredds/catalog/fmrc/sabgom/catalog.xml
Dataset
Size
Last Mod
SABGOM Forecast Model Run Collection
Forecast Model Run Collection (2D time coordinates)
Best Time Series
Forecast Model Run/
Constant Forecast Offset/
Constant Forecast Date/
Initial Install at NCSU MEAS
THREDDS Data Server [Version 4.0.04 - 20090219.0134] Documentation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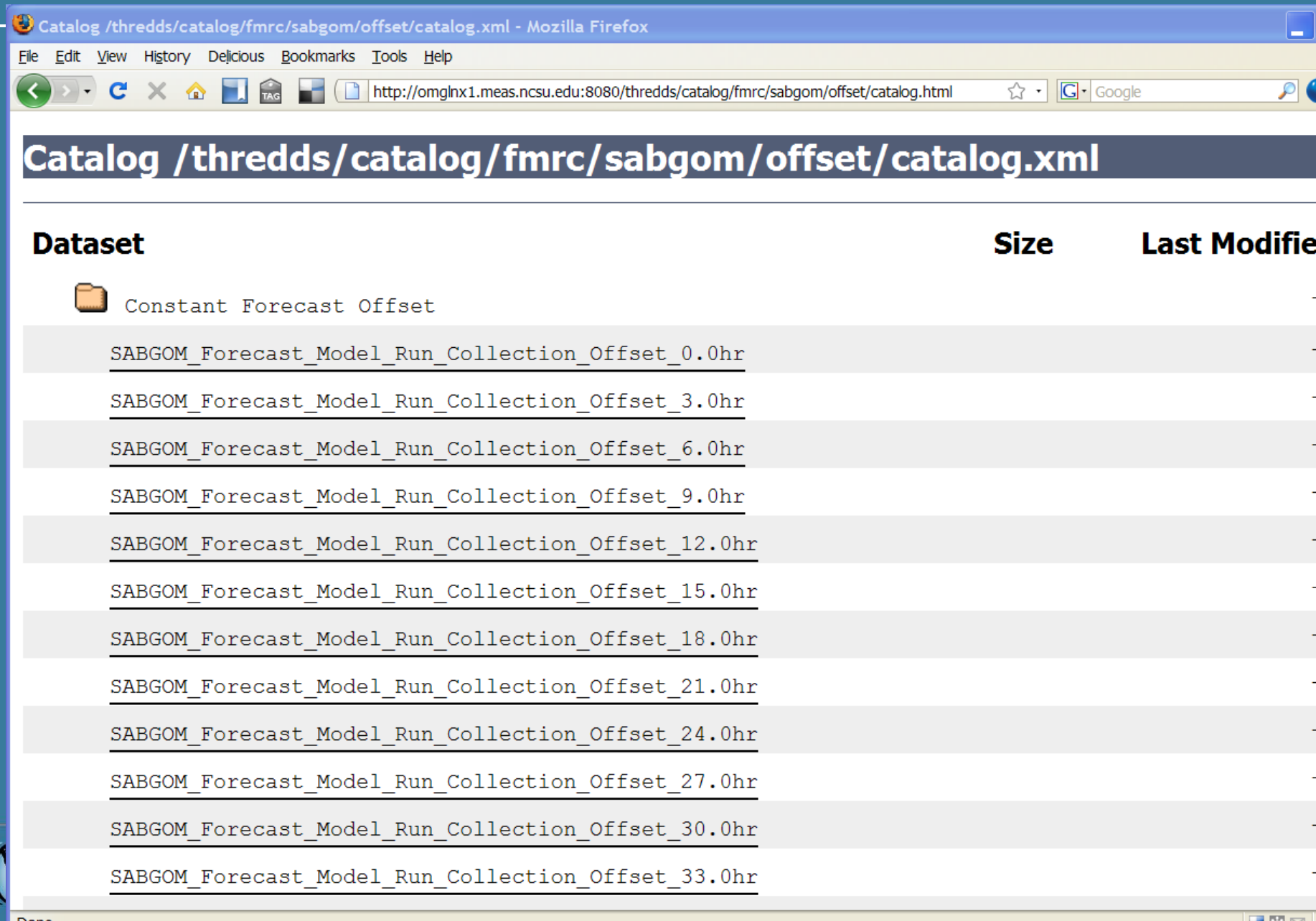
File Edit View History Delicious Bookmarks Tools Help
http://omglnx1.meas.ncsu.edu:8080/thredds/catalog/fmrc/sabgom/catalog.html?dataset=fmr
Google
NC STATE UNIVERSITY
MEAS
THREDDS Data Server
Catalog /thredds/catalog/fmrc/sabgom/catalog.html
Dataset: SABGOM Forecast Model Run Collection/Best Time Series
ID: fmrc/sabgom/SABGOM_Forecast_Model_Run_Collection_best.ncd
Documentation:
summary: Best time series, taking the data from the most recent run available.
SABGOM Nowcast/Forecast System Project Page
Summary: Coastal Circulation Nowcast/Forecast System for the South Atlantic Bight and Gulf of Mexico
Rights: This model data was generated as part of an academic research project, and the principal investigators: Ruoying He (rhe@ncsu.edu) ask to be informed of intent for scientific use and appropriate acknowledgment given in any publications arising therefrom. The data is provided free of charge, without warranty of any kind.
Access:
1. OPENDAP: /thredds/dodsC/fmrc/sabgom/SABGOM_Forecast_Model_Run_Collection_best.ncd
Creators:
Dr. Ruoying He
email: ruoying_he@ncsu.edu
Done


Catalog /thredds/catalog/fmrc/sabgom/offset/catalog.xml - Mozilla Firefox
File Edit View History Delicious Bookmarks Tools Help
http://omglnx1.meas.ncsu.edu:8080/thredds/catalog/fmrc/sabgom/offset/catalog.html
Google
Catalog /thredds/catalog/fmrc/sabgom/offset/catalog.xml
Dataset
Size
Last Modifie
Constant Forecast Offset
SABGOM_Forecast_Model_Run_Collection_Offset_0.0hr
SABGOM_Forecast_Model_Run_Collection_Offset_3.0hr
SABGOM_Forecast_Model_Run_Collection_Offset_6.0hr
SABGOM_Forecast_Model_Run_Collection_Offset_9.0hr
SABGOM_Forecast_Model_Run_Collection_Offset_12.0hr
SABGOM_Forecast_Model_Run_Collection_Offset_15.0hr
SABGOM_Forecast_Model_Run_Collection_Offset_18.0hr
SABGOM_Forecast_Model_Run_Collection_Offset_21.0hr
SABGOM_Forecast_Model_Run_Collection_Offset_24.0hr
SABGOM_Forecast_Model_Run_Collection_Offset_27.0hr
SABGOM_Forecast_Model_Run_Collection_Offset_30.0hr
SABGOM_Forecast_Model_Run_Collection_Offset_33.0hr

http://omglnx1.meas.ncsu.edu:8080/ncWMS/godiva2.html#

- NCSU/MEAS ncWMS Server
  - GOMTOX: 2004 Tide-Averaged
  - GOMTOX: 2005 Tide-Averaged
  - GOMTOX: 2006 Tide-Averaged
  - GOMTOX: 2007 Tide-Averaged
  - GOMTOX: 2008 Tide-Averaged
  - SABGOM Forecast
    - vertically integrated v-momentum component
    - potential temperature
    - salinity
    - bathymetry at RHO-points
    - Coriolis parameter at RHO-points
    - curvilinear coordinate metric in XI
    - curvilinear coordinate metric in ETA
    - angle between XI-axis and EAST
    - mask on RHO-points
    - free-surface
    - v-momentum component
    - vertically integrated u-momentum component
    - mask on psi-points
    - mask on V-points
    - mask on U-points

User guide

Reading e-Science Centre

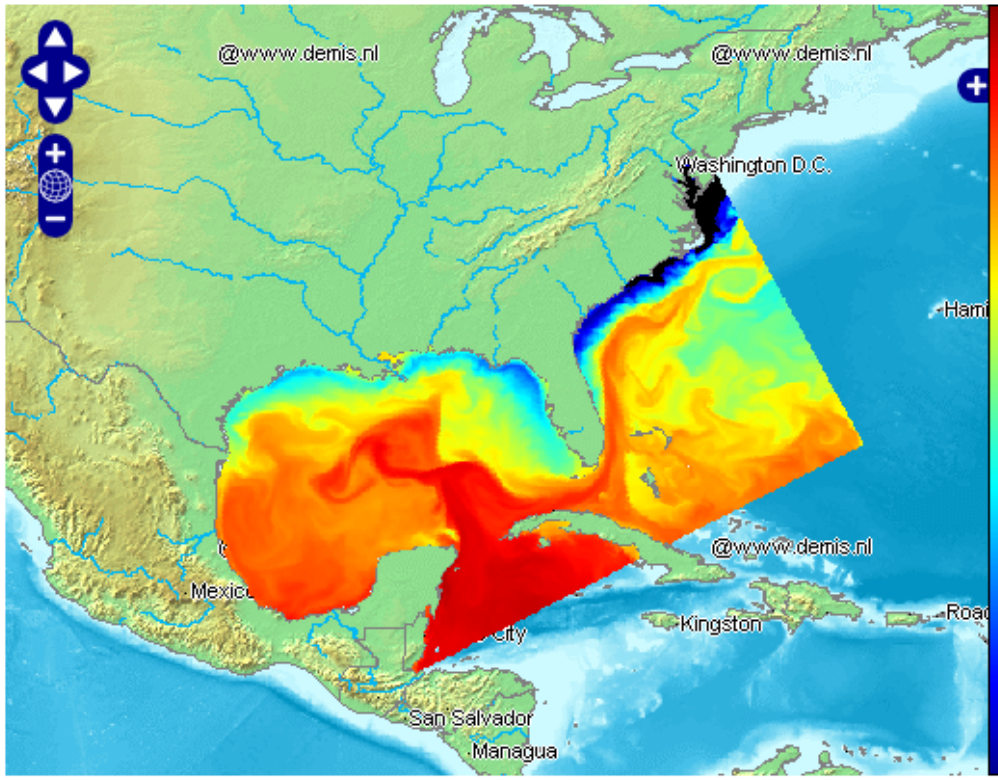
Layer: NCSU/MEAS ncWMS Server > SABGOM Forecast > potential temperature
Units: Celsius
Depth (): 0.013888888888888888
Date/time: 08 Mar 2009 06:00:00 UTC first frame last frame

March, 2009

«	‹	Today			›	»
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Select date

Fit layer to window



26.94
21.96
linear
auto
lock
16.98
12

link to test image Open in Google Earth

Overlay opacity: 100%

Powered by OpenLayers and OGC standards

Permalink | email

Forecast Model Run Collection

```
<datasetFmrc name="SABGOM Forecast Model Run Collection" path="fmrc/sabgom">
  <serviceName>dapService</serviceName>
  <netcdf xmlns="http://www.unidata.ucar.edu/namespaces/netcdf/ncml-2.2">
    <aggregation dimName="runtime" type="forecastModelRunCollection" recheckEvery="10min">
      <scan location="/home/khyun/sabgom/2009/his/" suffix=".nc" dateFormatMark="his_#yyyyMMdd"
        olderThan="5 min"/>
    </aggregation>
  </netcdf>
</datasetFmrc>
```

Status

- Formed a IOOS Model Data Interoperability Google Group (27 Members) http://groups.google.com/group/ioos_model_data_interop
- Three new regional THREDDS Data Server installations
- We have a draft unstructured grid standard <http://groups.google.com/group/ugrid-interoperability>
- Need help on metadata
- Need more THREDDS Data Servers w/ FMRCs

INTEGRATED OCEAN OBSERVING SYSTEM

IOOS®
National Data Management and Communications (DMAC): Progress and Planning

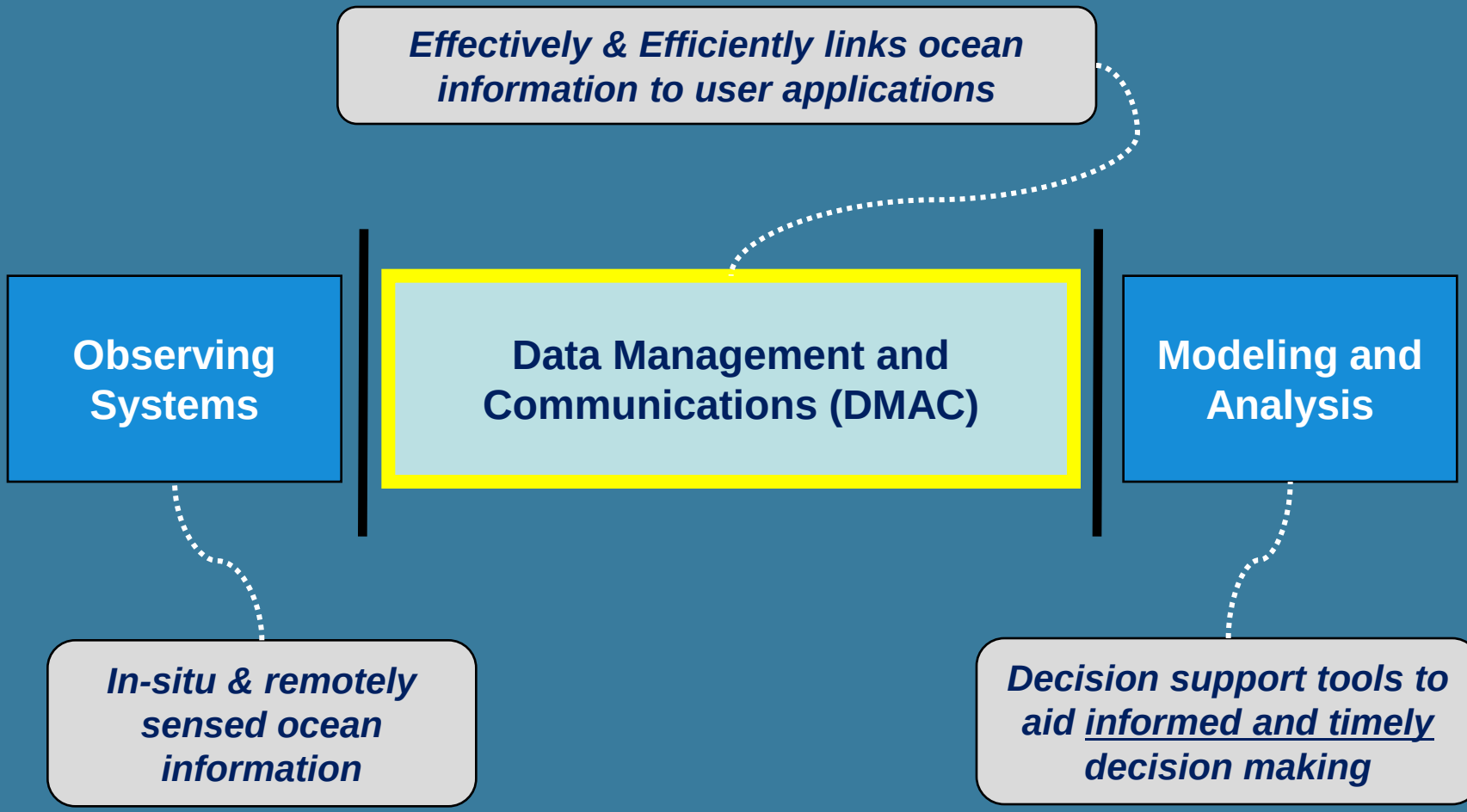
Charles Alexander
Operations Division Chief, NOAA IOOS Program

IOOS

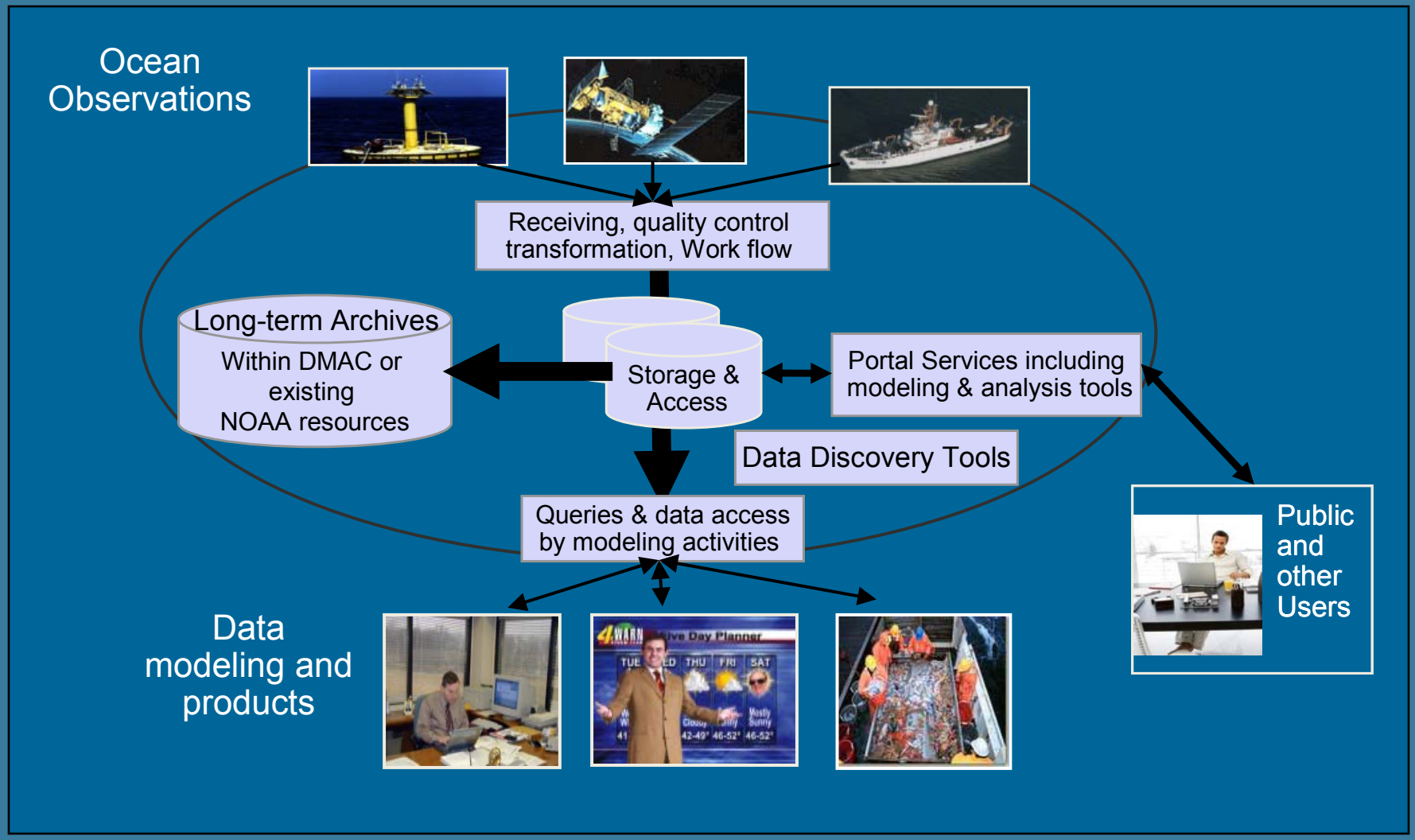
Outline

- High-level DMAC definition/overview
- History and challenges
- National DMAC accomplishments & next steps
- Regional DMAC context
- Summary
- Links to resources

Background: U.S. IOOS® Subsystems



DMAC Overview



A brief history of IOOS® DMAC

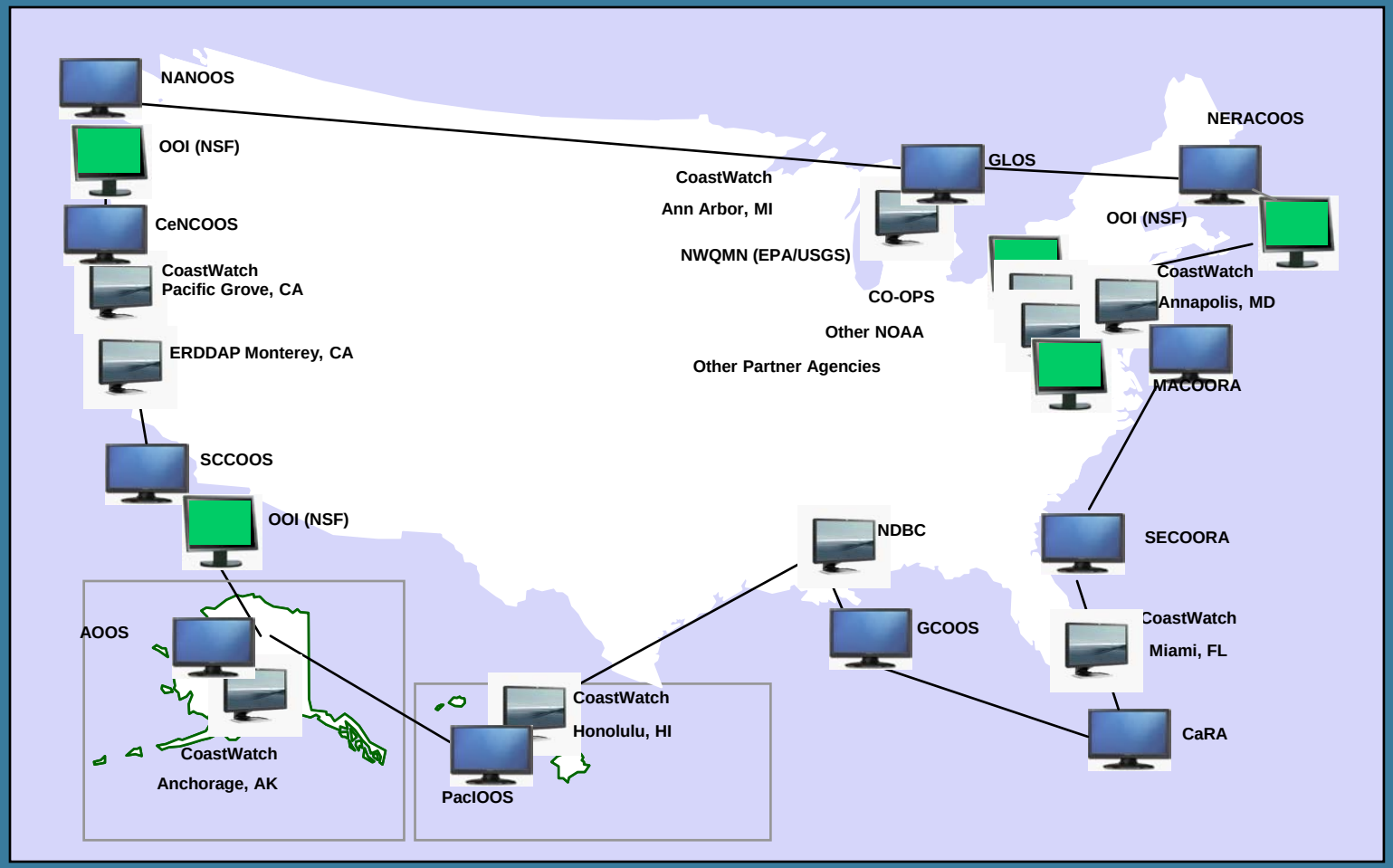
- 2002 - Ocean.US forms DMAC Steering Team
- 2004 - First IOOS Development Plan highlights importance of DMAC
- 2005 - DMAC ST publishes DMAC “plan”
- 2003-2005 - NOAA/Navy IOOS Interoperability Demo (with Boeing and Northrup Grumman)
- 2006 - IOOS Conceptual Designs (Raytheon & Lockheed)
- 2007 - DMAC ST standards process

Many DMAC Challenges Ahead

- Data management largely handled at individual system level
- Interoperability standards not clearly defined/published
- Need for common DMAC “services”
- Easily locating/accessing IOOS data and products
- Data and product quality standards
- Data security/information assurance
- Integrated archives for long-term ocean data sets

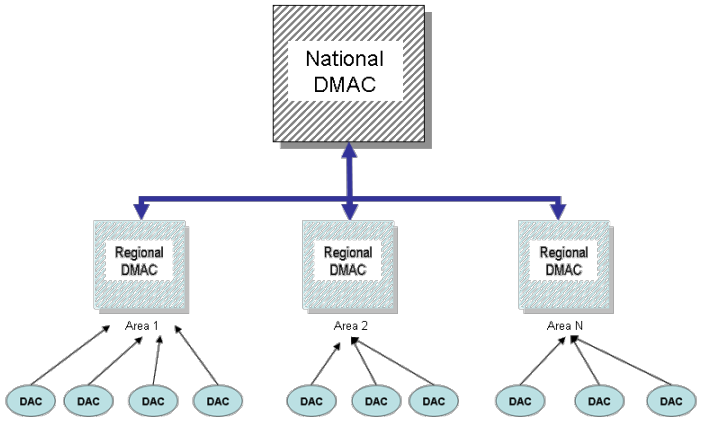
NATIONAL DMAC

National DMAC View

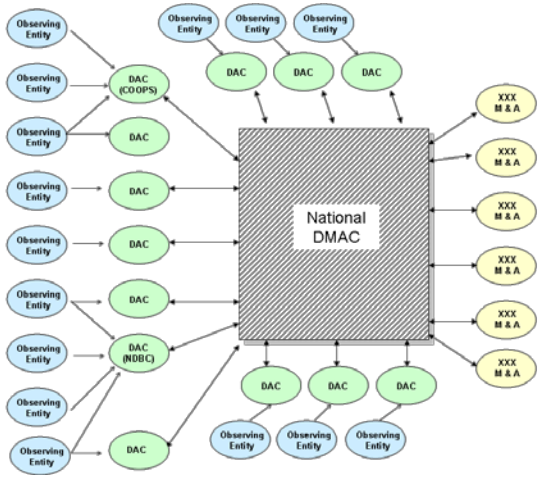


Options for High-Level Architecture

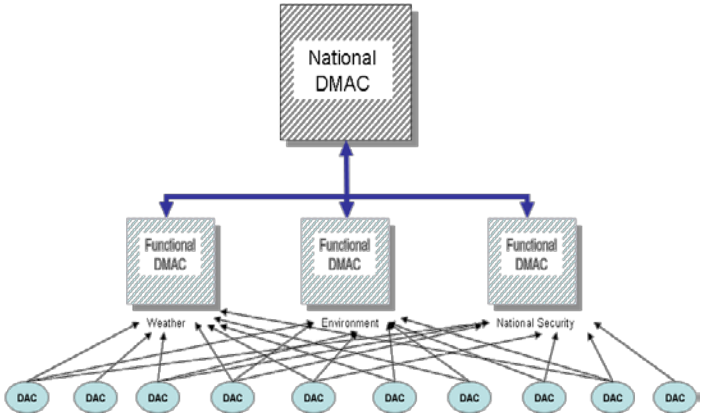
National DMAC supported by regional DMACs



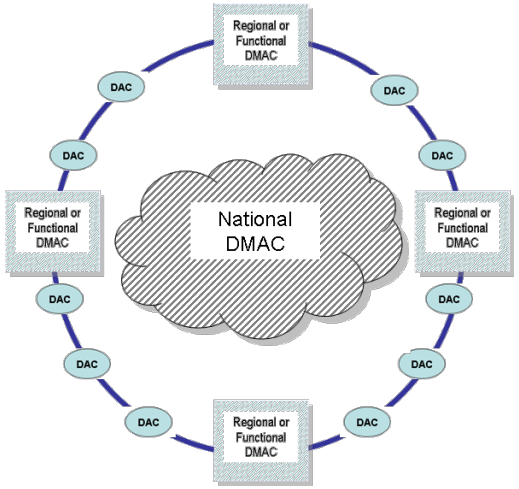
National DMAC supported by 13 regional data assembly centers



National DMAC supported by functional DMACs



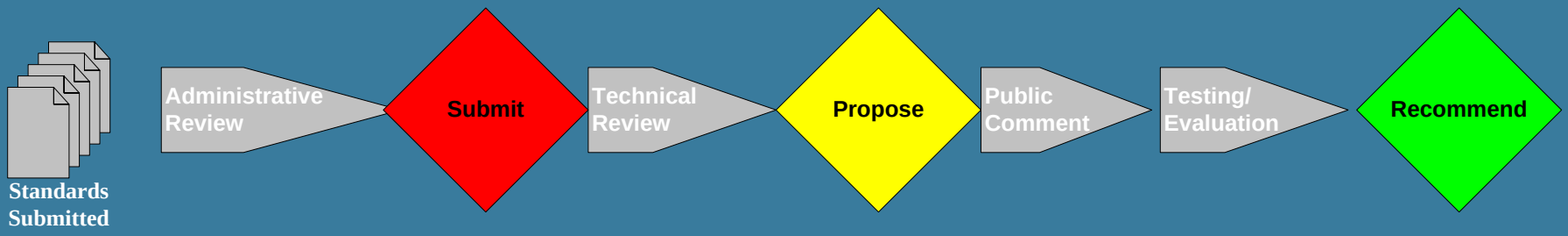
National DMAC a distributed system of regional or functional DMACs



National DMAC Accomplishments

- Advancing the National IOOS DMAC Standards Process
- Acquisition planning approach
- Associated planning documents
  - *High Level Functional Requirements*
  - *Concept of Operations*
- Briefs to/feedback from NOAA leadership
- IOOS business case

IOOS® DMAC Standards Process



- Web-based, collaborative tools, 2 cycles/year
- Review process for adopting/adapting existing standards for IOOS realm

Current Status: 12 standards submitted to date

- 3 are at Recommended level
- 4 are at Proposed level
- 4 are tabled awaiting updates
- 1 is tabled awaiting more discussion

High Level Requirements - ConOps

Document	High Level Functional Requirements (HLFR)	Concept of Operations (ConOps)
Description	• Distillation of existing documents that address IOOS and its subsystems • Operational concepts per Ocean.US and industry • Addresses design principles including usage and outputs	Describes • DMAC's purpose • Business need • Functional capabilities • Roles and responsibilities • Business impacts (e.g., change management issues)
Scope	• IOOS-wide focus • Points out unresolved issues, such as regional roles and responsibilities • Not limited to DMAC subsystem	• Addresses how DMAC will perform functions and services • Does not address technology or architecture

National DMAC – Next Steps (2009)

- IOOS DMAC Briefs to industry (today)
- Request for Information (RFI)
- Other market research (e.g. vendor meetings)
- Analysis of Acquisition Alternatives

Anticipated "Request for Information"

Categories of possible questions:

- Interoperability Technologies
- System Performance Metrics
- Architecture
- Governance
- Configuration Management
- Deployment Strategies
- Acquisition Alternatives

Nominal Acquisition Alternatives

Range of possible alternatives:

- Govt. design & build (Govt. hosted)
- Govt. design & industry build (Govt. hosted)
- Industry design & Govt. build (Govt. hosted)
- Industry design & build (Govt. hosted)
- Outsource – industry design & build (industry hosted)
- Outsource – Govt. design & industry build (industry hosted)

11 Regional Associations

Regional Data Assembly Center Elements

Identify ***Instrument/Platform***

Identify the data provider

Determine number/resolution required

Which ***Variables*** will be measured

How often will the data be collected

How will the ***Metadata*** be captured

How will the data be received

How will the data be distributed

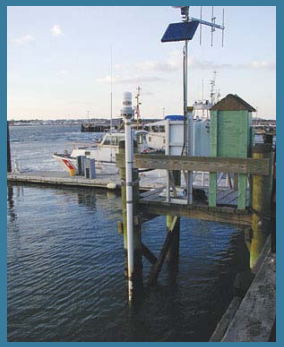
What format will the data be transmitted

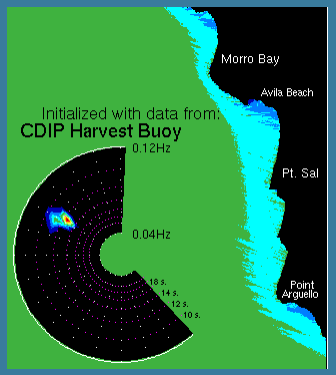
What ***Services*** are required

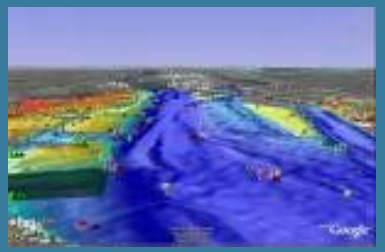
What information will be archived and where

Regional Observations

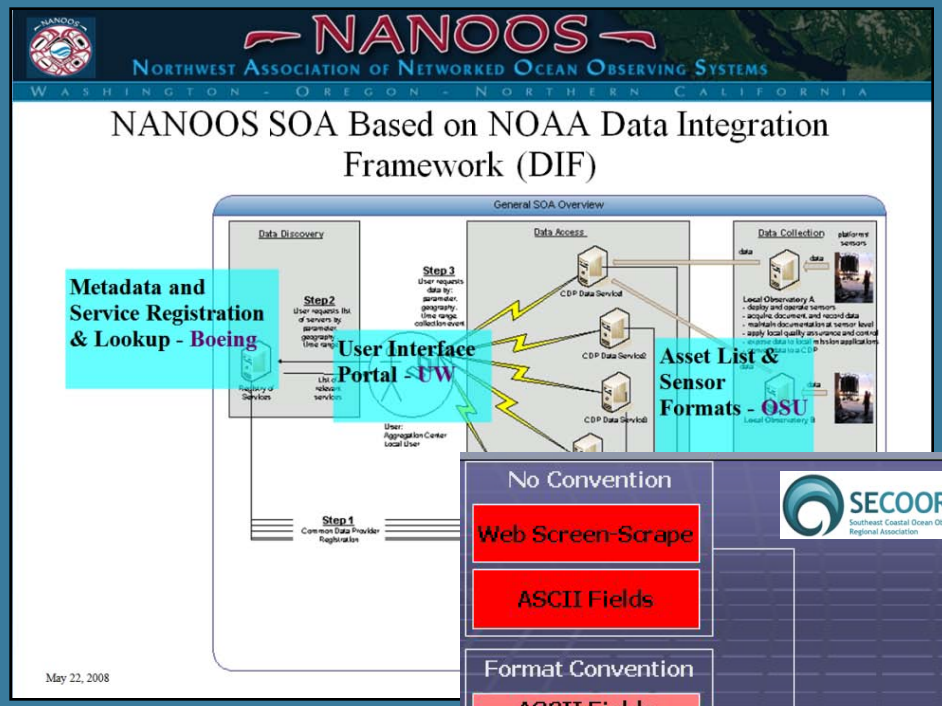
- **Fixed Platforms**
  Buoys, ADCP, Tide Gages, Weather Stations
- **Moving Platforms**
  Floats, Drifters, Gliders, Ships
- **Images / 2D GIS**
  LIDAR, Webcams, Marine Ecosystems
- **Remote Sensing**
  Satellite - Cloud, Temperature, Altimetry, Winds
- **Models**
  Atmospheric, Ocean, Wave
- **Raster / Vector**
  Bathymetry
- **Other**
  Acoustic, Climate, Local Knowledge

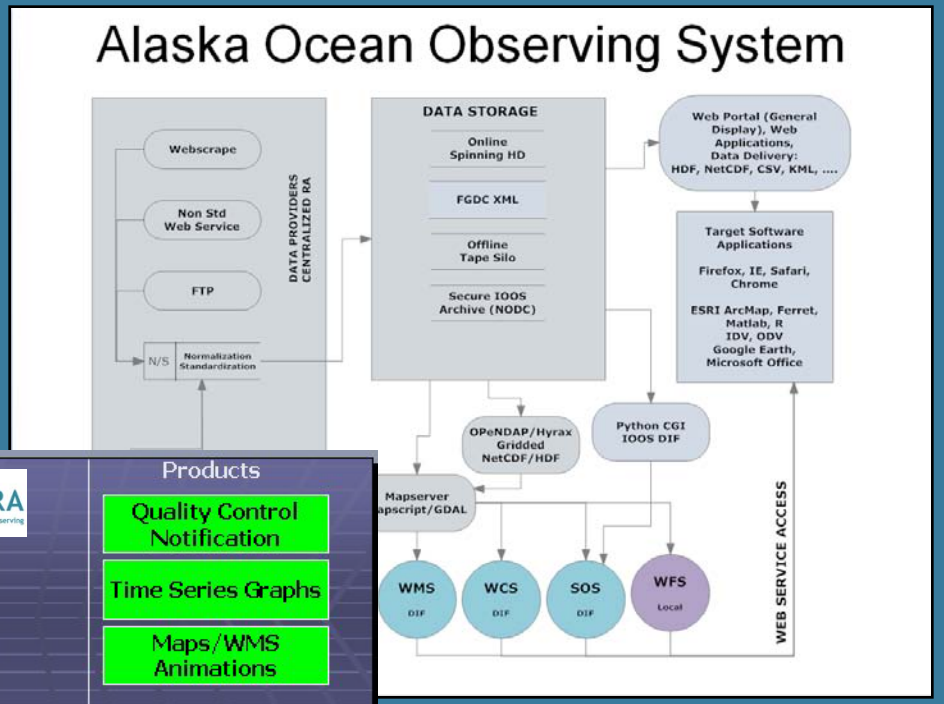


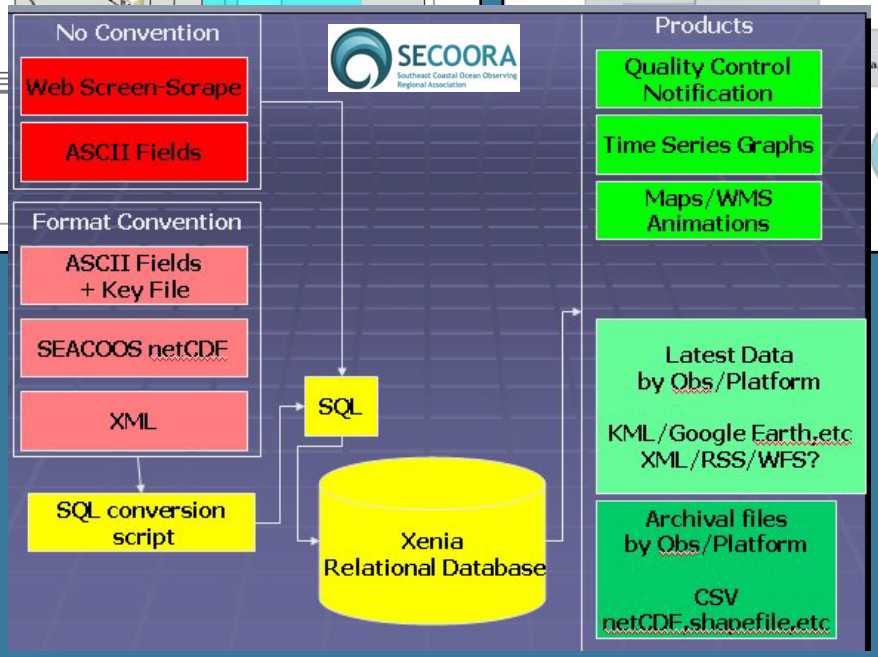




Emerging Regional Architecture

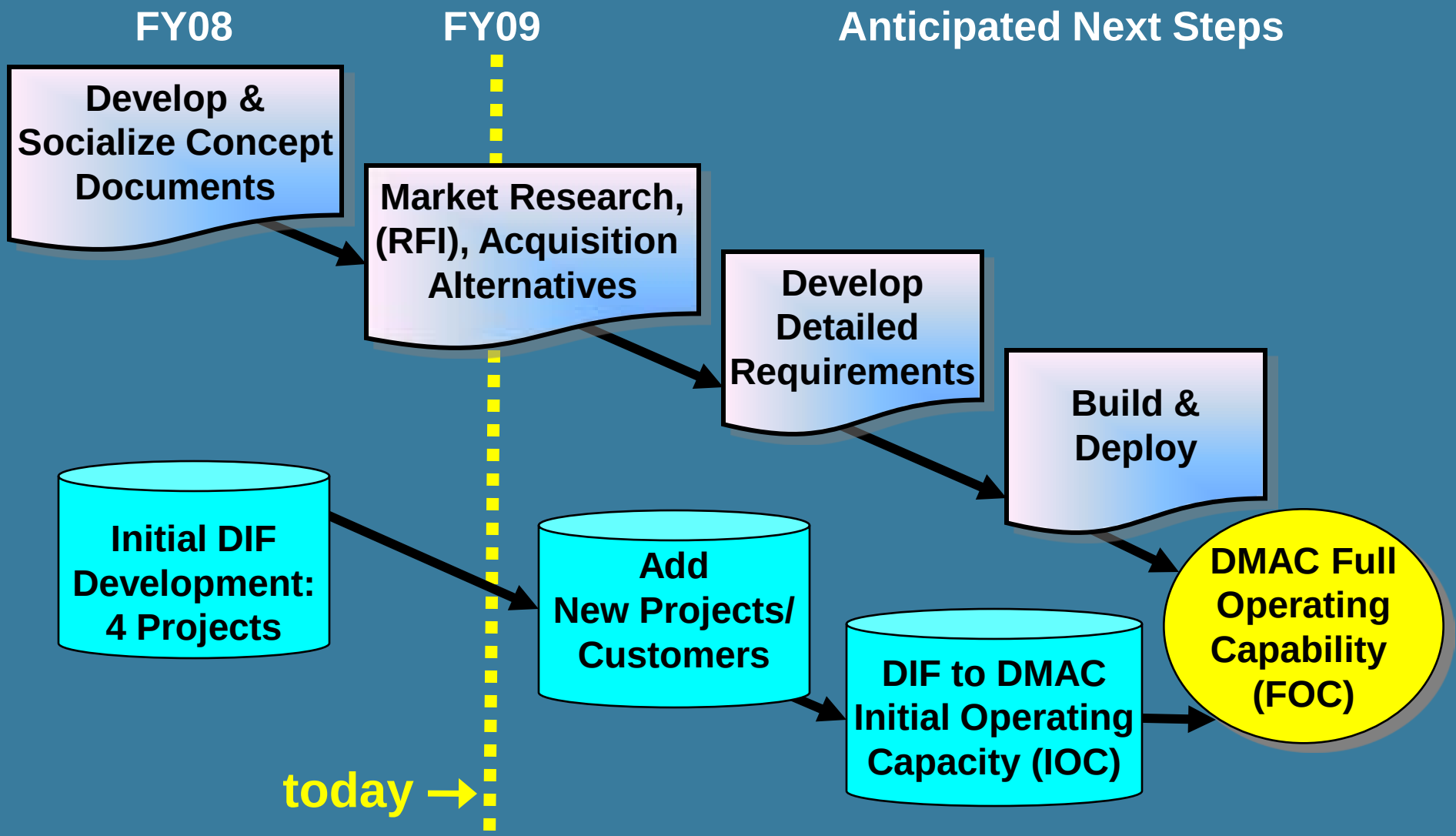






IOOS DMAC PATH FORWARD

Summary – IOOS DMAC Path Forward



Linking to Resources

- http://ioos.noaa.gov/
  - High Level Requirements/ConOps
  - DIF Planning documents
  - DIF encodings
- http://ioosdmac.fedworx.org
  - DMAC Steering Team standards process
- http://www.ocean.us/ & http://dmac.ocean.us/
  - IOOS conceptual designs
  - numerous IOOS and IOOS DMAC planning documents

Appendix 5.3 – DIF Deployment Section Handouts

DIF IMPLEMENTATION STATUS

This document presents DIF implementation status (reality check) beyond minimal capacity (MC).

		Data Integration Framework Protocol			
REGIONAL DIF PARTNER	**Number of Variables****	**WMS**	**SOS**	**OPeNDAP**	**WCS**
AOOS	7	MC	In Progress	MC	MC
CarICOOS	7	Planned	Planned	Planned	Planned
CeNCOOS	7	Planned	In Progress	Planned	Planned
GCOOS	7	MC	MC	MC	Planned
GLOS	6	MC	MC	MC	MC
MACOORA	7	Planned	Planned	MC	Planned
NANOOS	7	MC	MC	MC	In Progress
NERACOOS	7	MC	MC	MC	MC
PacIOOS	7	MC	In Progress	MC	MC
SCCOOS	7	MC	MC	MC	MC
SECOORA	7	MC	Testing	MC	Planned
AVG State		2.5	2.5	2.6	2

**** Seven variables requested "In 2010".**

STATUS VALUE	**Description**
Operational(7)	Is in use by customer base
Certified(6)	Passed internal QA/QC/QOS checks and is certified for release into customer base
Approved(5)	Passed testing of DIF compliance
Testing(4)	Testing of the service for DIF compliance
MC (3)	Service of some flavor is available; compliance is untested; includes categories of testing and partial implementation of initial services; minimal capacity exists enough for testing; alpha/beta states
In Progress (2)	Development of this service in in progres; also includes Under Construction
Planned (1)	Service is being planned for implementation; assumes no coding or infrastructure allocated

DIF Deployment

Questions – No particular order

What additional end-to-end cookbooks or materials are needed beyond those listed at http://ioos.noaa.gov/dif/?

Platforms
Programming languages
Instructions

How is your RA handling data flow in general through your RA to the IOOS backbone?

Centralized: your local data providers are providing data to you and the RA is aggregating before passing up the chain.

Distributed: the RA and as many local data providers are adopting IOOS standards so in a centralized implementation each RA and local data provider is providing data to the IOOS backbone in a distributed fashion.

Please explain any hybrid situations.

Catalog vs. Registry

Comment: Need to determine a clear definition for Catalog vs. Registry. We think "Catalog" as a listing (which could include a service), while we think of a "Registry" of services.

Which sections of the FGDC metadata standard do you most use?

Of the model and satellite data used in the RA, what are typical resolutions? How many grid points? What is the resultant size of files? Do you use compression (storage vs. performance)?

What are the current number of platforms currently offline? How many additional sensors are planned for the RA? Have the RAs determined what should be a optimum number of sensors?

Similar to the broader discussion of another question (Centralize vs. Distributed). Looking for specific information that you might be providing as a 2nd or 3rd party provider. IE: providing local assets with NDBC info? Are some providers giving to both NOAA and RA's? Should RA claim 3rd party data?

Are there any particular archiving that you do with any of your RA data flows? What's the best way to organize the data? Experiences with databases with respect to archiving? Formats? Directory structures? Do you package your datasets and send them off to a national archive? Which archive(s)? What is the general standard procedure do you follow? Is this automated? If someone is interested in your automated procedure, what is the best way to get information about it?

What information are you collection with your datasets? (sensor metadata, project metadata, calibration records, paper, digital etc...) What schema, standards and/or software tools are using to compile this information together and tie it together with your datasets at the RA.

What metadata standard people are following (if any)? How detailed is the metadata (e.g. - event based metadata with changing coefficients for new calibrations, sensor S/N's)? What schema's are people using? FGDC, GCMD, ISO19195 Are you using a particular profile or the whole standard?

Variable Variables and Catalog of Catalogs

IOOS Variables; should we use CF Standard Names for variables? Arguments for GetObservation in SOS?
http://cf-pcmdi.llnl.gov/documents/cf-standard-names/standard-name-table/11/standard-name-table

IOOS Core Variables from pg 25 of the First U.S. Integrated Ocean Observing System (IOOS) Development Plan (Ocean.US Report No. 9):
http://www.ocean.us/system/files/IOOSDevPlan_low-res.pdf

Sea surface winds, Stream flow, Temperature, Salinity, Coastal Sea Level-Topography, Waves, Currents, Dissolved Inorganic Nutrients, Chlorophyll, Habitat & Bathymetry, Plankton Abundance, Abundance & distribution of LMRs & protected species, Population Statistics, Fish Catch

IOOS Core Variables:
http://www.csc.noaa.gov/cir/files/Core.Variables.from.IOOSPlan_FIN_low-res%2033.pdf (possibly derived from the list above)

1. Salinity, 2. Temperature, 3. Bathymetry, 4. Sea Level, 5. Surface Waves, 6. Surface Currents, 7. Ice distribution, 8. Contaminants, 9. Dissolved Nutrients, 10. Fish species, 11. Fish abundance, 12. Zooplankton species, 13. Optical properties, 14. Heat flux, 15. Ocean color(Footnote b), 16. Bottom character, 17. Pathogens, 18. Dissolved O2, 19. Phytoplankton species, 20. Zooplankton abundance

Footnote b: The term “ocean color” as used here means those measurements of the ocean’s visible and near-visible spectral optical characteristics from which a variety of variables can be estimated, including chlorophyll-a concentrations, turbidity, and dissolved organic matter.

Selections for the DIF:
* Seawater Temperature;
* Salinity;
* Water/Sea level;
* Currents;
* Ocean color;
* Waves; and
* Winds

How many RAs follow a standard data dictionary used by underlying data providers? Start with these and mangle and map up to IOOS Core Variables and then back down through DIF services? Conflict resolution with THREDDS/TDS standards?

IOOS Registry Data

Element	IOOS Observation Registry Catalog	AirPressure	AirTemperature	Bathymetry	BenthicBiomass	Chlorophyll (OceanColor)	Clouds	Conductivity	Currents	Dewpoint	DissolvedNutrients	DissolvedOxygen	HF Radar	Pathogens	Phytoplankton	Precipatation	Reflectance	RelativeHumidity	Salinity	Sea Ice	SedimentGrain	SedimentOrganic	Streamflow	SolarRadiation	True Color	Turbidty	Visibility	WaterLevel	WaterTemperature	Waves	Winds	Zooplankton
Region	website																															
AOOS	ak.aoos.org	x	x	f					x							x		x	x					x					x		x	x
CaRA																																
CeNCOOS	www.mbari.org	x	x			x					x	x							x					x					x		x	
	www.cencoos.org																															
	www.oceanobs.org/map																															
	www.piscoweb.org																		x													
	www.cicore.org			#		x												x								#	x	x				
	www.cencalcurrents.org								x																							
GCOOS	www.lighthouse.tamucc.edu	x	x									x						x	x					x				x	x	x	x	
	tabs.gerg.tamu.edu								x																					x	x	
	cast-net.disl.org											o							o					o				o		o	o	
	comps.marine.usf.edu		x						x										x									x	x		x	
	wavcis.csi.lsu.edu	#	#						#									#	#									#	#	#	#	
GLOS	waterbase.uwm.edu	o				o						o																	o	o	o	
	glos.us	#	#				#		#	#						#		#									#	#	#	#	
	www.glin.net/envt	#	#																	#								#	#		#	
MACOORA	cmn.dl.stevens-tech.edu	x	x															x										x		x	x	
	hudson.dl.stevens-tech.edu								x										x									x	x		x	
	marine.rutgers.edu					o			x										o										o			
	cbos.org	#	#						#										#								#	#	#	#	#	
	www.macoora.org	#	#			#			#									#	#								#	#	#	#	#	
NANOOS	www.nanoos.org																															
	www.stccmop.org/CORIE							x											x									x	x			
	orca.ocean.washington.edu	#	#			o		o				o							o										#		#	
	agate.coas.oregonstate.edu																															
	www.nanoos-shellfish.org					#						#							#										#			
NERACOOS	www.gomoos.org	x	x			x			x		x	x							x								x		x	x	x	
	mvcodata.whoi.edu	#	#						#							#			#					#				#	#	#	#	
	lisicos.uconn.edu	#	#						#			#						#	#					#					#	#	#	
	www.coos.unh.edu					o					o							o	o					o					o		o	
PacIOOS	www.soest.hawaii.edu	#	#			#			#		#								#									#	#	#	#	
SCCOOS	www.sccoos.org	x	x	#		x			x			x				#			x									#	x	x	x	
SECOORA	carolinasrcoos.org	x	x			x						x							x							#			x	x	x	
	secoora.org	x	x						x				#						x									x	x	x	x	
	carocoops.org	x	x			x			x									x	x					x			x		x		x	
National																																
CoastWatch	coastwatch.noaa					A											A								A	A			A		A	
NDBC	www.ndbc.noaa.gov	A	A						A										A				A			A	A	A	A	A	
CO-OPS	tidesandcurrents.noaa.gov	A	A						A																		A	A		A	
OSMC	osmc.noaa.gov	A	A				A									A			A									A	A	A	
UCSD	cdip.ucsd.edu																											A	A			
SURA	www.openioos.org	A	A			A			A								A		A							A	A	A	A	A	
CORDC	cordc.ucsd.edu								A				A																			
USGS	waterdata.usgs.gov	A	A			A						A				A			A				A			A			A		A	

IOOS Operational Status
Green-Operational
Blue-Construction
Red-Planned

IOOS Core Variables

IOOS Expanded Variables

IOOS Registry Variables

IOOS Registy Inventory
x captured
not captured
o off-line
f future/planned
A captured (National)

Instrument/Platform	Realtime, Delayed Mode, Archived, Historical, Retrospective?	IOOS Core variables measured	NON-IOOS variables measured	Format RCVD	How data are RCVD (by DM group)	Format Stored (by DM group)	Metadata	How Data are distributed (by DM group)	DIF Services	Non-DIF Services	Archival
1. Fixed platform A(t)											
(a) CTD	Archive, Delayed Mode	temp, salt, dissolved O2	PAR (optical properties?)	ascii, NetCDF, database	CGI pull, email, ftp, DB dump to NetCDF	NetCDF, database index, archive native form	FGDC XML, some stored in NetCDF file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP, WFS	planned NODC
(b) Weather Station	Archive, Near Realtime	temp, winds, heat flux	pressure, precipitation	ascii, coded ascii	CGI pull, GTS/LDM	NetCDF by hour	n/a; considering SensorML	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP, WFS	NCDC?
(c) Ocean Buoy	Archive, Near Realtime	temp, ocean color	conductivity, pressure	ascii	CGI pull	ascii	n/a; no standard established yet	not assimilated into DM system yet		HTTP	planned NODC
(d) ADCP	Archive, Delayed Mode	temp, salt, currents					n/a; no standard established yet				planned NODC
(e) Webcam images	Archive, Near Realtime		image	jpg	pull/wget	native, database index	to be developed	CGI, On-Line Browse apps (web portal)		CGI, HTTP, WFS	n/a
2. Moving platform A(x,y,z,t)											
(a) ARGO floats	USGODAE: Delayed Mode, Archived	temp, salt, dissolved O2		NetCDF	pull/wget	native, database index	general FGDC XML for dataset; remaining contained within NetCDF file	CGI	WMS, Hyrax(OPeNDAP)	WFS, SOS (OOSTethys)	AOOS; none required
3. Other											
(a) Local Traditional Knowledge (LTK)	Historical, Archived, Delayed Mode		descriptions, traditions	text	anticipated future dataset		n/a				n/a
(b) Acoustics (whale, seal sounds)	Archived		audio	wav, binary	anticipated future dataset		n/a				planned NODC
4. Images/2D GIS A(x,y)											
(a) Large Marine Ecosystems (GIS)	Static (2006)		boundaries	shp	www.lme.noaa.gov	native	FGDC (html) needs converted to XML; NOAA		WMS	WFS	none required
(b) Undersea Feature Names	Static		features	excel	http grab	not assimilated into DM system yet	n/a			[WFS]	none required
5. Remote sensing A(x,y,t)											
(a) AMSR/E Sea Ice Concentration (12.5 km)	Daily Delayed Mode, Archived	ice		hdf	ftp	NetCDF	FGDC XML, some stored in NetCDF file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	not required
(b) Nimbus-7 SMMR & DMSP SMM/I	Delayed Mode, Archived	ice		unknown	ftp	NetCDF	FGDC XML, some stored in NetCDF file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	not required
(c) AVHRR Sea Surface Temperature	Near Realtime, Archived	temp		hdf	scp	hdf	FGDC XML, some stored in hdf file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	final product; local archive only; raw is archived at NASA/NESDIS
(d) MODIS Sea Surface Temperature	Near Realtime, Archived	temp		hdf	scp	hdf	FGDC XML, some stored in hdf file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	final product; local archive only; raw is archived at NASA/NESDIS
(e) AVHRR Visible	Near Realtime, Archived		visible	hdf	scp	hdf	FGDC XML, some stored in hdf file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	final product; local archive only; raw is archived at NASA/NESDIS
(f) GOES-10 Infrared (IR)	Delayed Mode, Archived		infrared (clouds)	TIFF	http grab	NetCDF	FGDC XML, some stored in NetCDF file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	final product; local archive only; raw is archived at NASA/NESDIS
(g) MODIS Chlorophyll-a	Near Realtime, Archived	ocean color		hdf	scp	hdf	FGDC XML, some stored in hdf file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	final product; local archive only; raw is archived at NASA/NESDIS
(h) SeaWiFS Chlorophyll-a	Delayed Mode, Archived (Restricted Use)	ocean color		hdf	unknown	hdf	FGDC XML, some stored in hdf file	not distributed; restricted; working access system			local archive only
6. Models A(x,y,[z],t)											
(a) WRF 4km Prince William Sound	Near Realtime, Archived	temp, winds, heat flux	pressure, precipitation	NetCDF(WRF)	FTP	Packed NetCDF + GDAL attributes	FGDC XML, some stored in NetCDF file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	local archive; raw/product
(b) SWAN Wave Forecast PWS	Near Realtime, Archived	waves, sea level				Packed NetCDF + GDAL attributes	FGDC XML, some stored in NetCDF file		WMS, Hyrax(OPeNDAP)	CGI, HTTP	local archive; raw/product
(c) ROMS Ocean Circulation	not yet available	temp, salt, currents			anticpated future dataset; likely NetCDF	Packed NetCDF + GDAL attributes	FGDC XML, some stored in NetCDF file				unknown; maybe a size limitation
(c) WRF 18km Statewide Alaska	Near Realtime, Archived	temp, winds, heat flux	pressure, precipitation	NetCDF/grib(WRF/WRFpost)	direct access at source	Packed NetCDF + GDAL attributes	FGDC XML, some stored in NetCDF file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	local archive of product only
(d) WRF 6km Statewide Alaska	Near Realtime, Archived	temp, winds, heat flux	pressure, precipitation	NetCDF/grib(WRF/WRFpost)	direct access at source	Packed NetCDF + GDAL attributes	FGDC XML, some stored in NetCDF file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	local archive of product only
(e) FNMOC SST for GHRSST	USGODAE: Delayed Mode, Archived	temp		grib	http grab from USGODAE	Packed NetCDF + GDAL attributes	FGDC XML, some stored in NetCDF file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	local archive of product only
(e) FNMOC Ice Analysis for GHRSST	USGODAE: Delayed Mode, Archived	ice		grib	http grab from USGODAE	Packed NetCDF + GDAL attributes	FGDC XML, some stored in NetCDF file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	local archive of product only
7. Raster A(x,y,[z])											
(a) AOOS Digital Elevation Model (1 km) (Coastal AK and surrounding waters)	Static (2008; periodic updates)	bathy		NetCDF(GMT)	ftp/http, developed in-house	NetCDF + GDAL attributes added	FGDC XML, some stored in NetCDF file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	local; NODC?
(b) ETOPO 2, 5 (Global)	Static	bathy		binary	http grab	NetCDF + GDAL attributes added	FGDC XML, some stored in NetCDF file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	none required
(c) IBCAO (1 minute) (Arctic)	Static	bathy		NetCDF(GMT)	http grab	NetCDF + GDAL attributes added	FGDC XML, some stored in NetCDF file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	none required
(d) GINA Topo/Bathy (Global)	Static	bathy		NetCDF(GMT)	http grab	NetCDF + GDAL attributes added	FGDC XML, some stored in NetCDF file	CGI, On-Line Browse apps (web portal)	WMS, Hyrax(OPeNDAP)	CGI, HTTP	none required

Instructions/Discussion by Column: (A dataflow description end-to-end)		
Instrument/Platform		Instruments organized by general platform and types. General representation of the data A() and indicate dimensions that vary in the dataset (x/y = spatial; t = time; z = height/depth)
IOOS Core variables measured		What IOOS Core Variable is measured, if it is not covered, use next column (see IOOSCV worksheet)
Non-IOOS		Variable measured that is not an IOOS Core Variable or has a close analog
Format RCVD		Format in which data arrives
How data rcvd?		Short discription on how data is brought to the DM group
Format Stored?		Format stored at the DM group. Specify 'native' if you do not transform the data for storage. Format may include database.
How data distributed?		Short description of how data is distributed by the DM group: HTTP, web services, etc. (See NOAADIF tab)
DIF Services?		Briefly identify possibly DIF compatible services (See NOAADIF tab)
Non-DIF Services?		Identify any non-DIF services (See NOAADIF tab)

Instrument/Platform	IOOS Core variables measured	NON-IOOS variables measured	Format RCVD	How data are RCVD (by DM group)	Format Stored (by DM group)	How Data are distributed (by DM group)	DIF Services	Non-DIF Services
1. Fixed platform A(t)								
tide gauge	sea level		png, ascii	http	native	Online apps, web portal mages		HTTP
DART buoys	sea level		gif, ascii	http	native	Online apps, web portal mages		HTTP
Wave buoys	wind speed, wind direction, waves, sea level	water temp, salinity	ascii	http	csv/ascii	Online apps: png, google maps		HTTP, CGI
Wind stations	wind speed/direction	atmospheric pressure, temp	ascii	http	csv/ascii	Online apps, web portal mages		HTTP, CGI
2. Moving platform A(x,y,z,t)								
gliders	temperature, currents, salinity		product expected in near future	product expected in near future	product expected in near future	product expected in near future		
3. Other								
Caribbean Time Series Station A(z,t), not real-time	temperature, salinity	chlorophyll	SBE25 Data file	observed	ascii	CTD wizard / png		HTTP, CGI
4. Images/2D GIS A(x,y)								
5. Remote sensing A(x,y,t)								
HF Radar	surface currents, waves		product expected in near future	product expected in near future	product expected in near future	product expected in near future		??
Satellite imagery	ocean color, SST, sea level, winds	chlorophyll	animated gif, jpeg, png	http	native	Online apps: animated gif, jpeg		HTTP
6. Models A(x,y,z,t)								
WRF for Puerto Rico / USVI	sea surface winds		netcdf	developed in house	native	Online apps: web portal mages, netcdf		HTTP
WW3 / SWAN	waves		animated gif, grib files	ftp from MBM	native	Online apps, web portal mages		HTTP
IASNFS (from NRL)	currents, temp, salt		animated gif	wget	not stored	Online apps, web portal mages		HTTP
GFS	sea surface winds		animated gif, grib files	ftp, http	native	Online apps, web portal mages		HTTP
7. Raster A(x,y[z])								
Instructions/Discussion by Column: (A dataflow description end-to-end)								
Instrument/Platform	Instruments by gen platform and types. General repr. of the data A() and indicate dimensions that vary in the dataset (x/y = spatial; t = time; z = height/depth)							
IOOS Core variables measured	What IOOS Core Variable is measured, if it is not covered, use next column (see IOOSCV worksheet)							
Non-IOOS	Variable measured that is not an IOOS Core Variable or has a close analog							
Format RCVD	Format in which data arrives							
How data rcvd?	Short discription on how data is brought to the DM group							
Format Stored?	Format stored at the DM group. Specify 'native' if you do not transform the data for storage. Format may include database.							
How data distributed?	Short description of how data is distributed by the DM group: HTTP, web services, etc. (See NOAADIF tab)							
DIF Services?	Briefly identify possibly DIF compatible services (See NOAADIF tab)							
Non-DIF Services?	Identify any non-DIF services (See NOAADIF tab)							**CarICOOS**

Instrument/Platform	IOOS Core variables measured	NON-IOOS variables measured	Format RCVD	How data are RCVD (by DM group)	Format Stored (by DM group)	How Data are distributed (by DM group)	DIF Services	Non-DIF Services
1. Fixed platform A(t)								
(a) CTD (moorings/shore stations)	water temp, salinity, dissolved oxygen	conductivity, water depth, turbidity, chlorophyll	ASCII, NetCDF, database	ftp pull/ CGI, online database	NetCDF	OpenDAP/DODS, LAS	OpenDAP (Hyrax)	LAS, http
(b) Weather Station	sea surface winds	pressure, precipitation, humidity, precipitation, air temp, PAR	ASCII	CGI, online database	NetCDF	OpenDAP/DODS, LAS	OpenDAP (Hyrax)	LAS, http
(c) Directional Buoy	water temp, surface waves							
(d) ADCP (moorings)	currents		ASCII	CGI, online database	NetCDF	OpenDAP/DODS, LAS	OpenDAP (Hyrax)	LAS, http
(e) YSI (moorrings/ shore stations)	dissolved oxygen, salinity	conductivity, chlorophyll fluorescence, turbidity, air temp, pH	ASCII	CGI, online database	NetCDF	OpenDAP/DODS, LAS	OpenDAP (Hyrax)	LAS, http
(f) Backscatterometer (moorings)	optical properties	turbidity	ASCII	CGI, online database	NetCDF	OpenDAP/DODS, LAS	OpenDAP (Hyrax)	LAS, http
(g) Echosounder (moorings)	fish abundance, zooplanktion abundance	phytoplankton abundance	ASCII	CGI, online database	NetCDF	OpenDAP/DODS, LAS	OpenDAP (Hyrax)	LAS, http
(h) Fluorometer (moorings)		chlorophyll fluorescence	ASCII	CGI, online database	NetCDF	OpenDAP/DODS, LAS	OpenDAP (Hyrax)	LAS, http
2. Moving platform A(x,y,z,t)								
(a) Glider	water temp, salinity	chlorophyll fluorescence	ASCII	telemetry	native	online browsing		http
(b) Ship Survey	water temp, salinity, fish abundance, zooplanktion abundance, dissolved nutrients	conductivity, water depth, chlorophyll fluorescence, PAR, turbidity			native	online browsing		http
3. Other								
4. Images/2D GIS A(x,y)								
Ocean Observing in Marine Protected Areas	most variables (locations of sampling)	many variables (locations of sampling)	excel files	excel files	ArcGIS	PDF file		http
5. Remote sensing A(x,y,t)								
(a) HF radar	surface currents		CODAR LLUV ascii format	ftp pull	NetCDF, Arc, ascii	OPeNDAP, ERDDAP	OPeNDAP	
(b) HF radar	surface waves (not standard product)		CODAR spectral data					
(c) POES/METOP AVHRR HRPT	water temp		HDF-4 (coastwatch)	ftp push from NESDIS	netCDF	wcs,wms,opendap,erddap,CWBrowser		
(d) GOES SST	water temp		Flat Binary	ftp pull from NESDIS	netCDF	wcs,wms,opendap,erddap,CWBrowser		
(e) AVHRR GAC SST	water temp		Unformatted binary	ftp pull from NESDIS	netCDF	wcs,wms,opendap,erddap,CWBrowser		
(f) AMSRE SST	water temp		netCDF	ftp pull from Remote Sensing Systems, Inc.	netCDF	wcs,wms,opendap,erddap,CWBrowser		
(g) MODIS Aqua GAC	water temp	chlorophyll fluorescence	HDF-4 (seadas)	ftp pull from NASA GSFC	netCDF	wcs,wms,opendap,erddap,CWBrowser		
(h) MODIS Aqua Direct Broadcast		chlorophyll fluorescence	HDF-4 (seadas)	ftp pull from oregon State university	netCDF	wcs,wms,opendap,erddap,CWBrowser		
(i) Blended SST	water temp		made in house	made in house	netCDF	wcs,wms,opendap,erddap,CWBrowser		
(j) GHRSST OI SST	water temp		netCDF	ftp pull from NASA JPL (product generated by Remote Sensing Systems, Inc.)	native	wcs,wms,opendap,erddap,		
(k) SeaWiFS HRPT		chlorophyll fluorescence	HDF-4 (seadas)	push from NESDIS	netCDF	wcs,wms,opendap,erddap,CWBrowser		
(l) QuikSCAT 25 km/12.5 km	sea surface winds		HDF-4 /Unformatted binary	pull from NESDIS/ pull from NASA JPL	netCDF	wcs,wms,opendap,erddap,CWBrowser		
(m) Jason -1 altimeter	sea level		HDF-4	pull form NASA JPL	netCDF	wcs,wms,opendap,erddap,CWBrowser		
(n) Jason -2 altimeter	sea level, surface waves, sea surface winds		netCDF	pul from NESDIS	netCDF	wcs,wms,opendap,erddap,CWBrowser		
(p) MERIS	ocean color	chlorophyll fluorescence	Proprietary ESA format	pull from European Space Agency	netCDF, HDF-5	wcs,wms,opendap,erddap,CWBrowser		
6. Models A(x,y,z,t)								
Real-time winds	sea surface winds							
COAMPS	sea surface winds	pressure, precipitation, humidity, precipitation, air temp, PAR						
ROMS	water temp, salinity, surface currents	chlorophyll fluorescence						
NCOM	water temp, salinity, surface currents	chlorophyll fluorescence						
7. Raster A(x,y[z])								
Instructions/Discussion by Column: (A dataflow description end-to-end)								
Instrument/Platform	Instruments organized by general platform and types. General representation of the data A() and indicate dimensions that vary in the dataset (x/y = spatial; t = time; z = height/depth)							
IOOS Core variables measured	What IOOS Core Variable is measured, if it is not covered, use next column (see IOOSCV worksheet)							
Non-IOOS	Variable measured that is not an IOOS Core Variable or has a close analog							
Format RCVD	Format in which data arrives							
How data rcvd?	Short discription on how data is brought to the DM group							
Format Stored?	Format stored at the DM group. Specify 'native' if you do not transform the data for storage. Format may include database.							
How data distributed?	Short description of how data is distributed by the DM group: HTTP, web services, etc. (See NOAADIF tab)							
DIF Services?	Briefly identify possibly DIF compatible services (See NOAADIF tab)							
Non-DIF Services?	Identify any non-DIF services (See NOAADIF tab)							**CeNCOOS**

Instrument/Platform	IOOS Core variables measured	NON-IOOS variables measured	Format RCVD	How data are RCVD (by DM group)	Format Stored (by DM group)	How Data are distributed (by DM group)	DIF Services	Non-DIF Services
1. Fixed platform A(t)								
(a) CTD	temp, salinity, chlorophyll	turbidity	ascii	ftp, SOS	Data base	CSV-ASCII, XML-ASCII	SOS NDBC DIF & OOSTethys types	web browse
(b) Currents	speed, direction		ascii, binary	ftp, SOS	Data base	CSV-ASCII, XML-ASCII	SOS NDBC DIF & OOSTethys types	web browse
(c) Marine Meteorlogy	winds	air pressure, rel humidity	ascii	ftp, SOS	Data base	CSV-ASCII, XML-ASCII	SOS NDBC DIF & OOSTethys types	web browse
(d) Tide Gage	water level		ascii	webscrape, SOS	Data base	CSV-ASCII, XML-ASCII	SOS NDBC DIF & OOSTethys types	web browse
(e) plankton-identification		Karenia Brevis	ascii	SOS	Data base	CSV-ASCII, XML-ASCII	SOS NDBC DIF & OOSTethys types	web browse
2. Moving platform A(x,y,z,t)								
(a) Mobile drilling Platforms	currents		ascii, binary	ftp, OPeNDAP	not stored locally yet	CSV-ASCII, XML-ASCII	SOS NDBC DIF & OOSTethys types	web browse
3. Other								
4. Images/2D GIS A(x,y)								
5. Remote sensing A(x,y,t)								
Satellite Images	temperature, color, chlorophyll		HDF	ftp, OPeNDAP, THREDDS-WCS (planned)	not stored locally	not yet. Get from our two Satellite groups	Threeds-WCS (planned)	web browse
HF Radar	currents		ascii	ftp, SOS (planned)	not stored locally yet	CSV-ASCII, XML-ASCII	SOS NDBC DIF & OOSTethys types	web browse
6. Models A(x,y,z,t)								
Various	currents		ascii	ftp, WMS	not stored locally	ASCII, GNOME-ready files (NetCDF)	WMS	web browser
7. Raster A(x,y[z])								
none								

Instructions/Discussion by Column: (A dataflow description end-to-end)	
Instrument/Platform	Instruments organized by general platform and types. General representation of the data A() and indicate dims that vary in the dataset (x/y = spatial; t = time; z = height/depth)
IOOS Core variables measured	What IOOS Core Variable is measured, if it is not covered, use next column (see IOOSCV worksheet)
Non-IOOS	Variable measured that is not an IOOS Core Variable or has a close analog
Format RCVD	Format in which data arrives
How data rcvd?	Short discription on how data is brought to the DM group
Format Stored?	Format stored at the DM group. Specify 'native' if you do not transform the data for storage. Format may include database.
How data distributed?	Short description of how data is distributed by the DM group: HTTP, web services, etc. (See NOAADIF tab)
DIF Services?	Briefly identify possibly DIF compatible services (See NOAADIF tab)
Non-DIF Services?	Identify any non-DIF services (See NOAADIF tab) **GCOOS**

Instrument/Platform	Realtime, Delayed Mode, Archived, Historical, Retrospective?	IOOS Core variables measured	NON-IOOS variables measured	Format RCVD	How data are RCVD (by DM group)	Format Stored (by DM group)	Metadata	How Data are distributed (by DM group)	DIF Services	Non-DIF Services	Archival
1. Fixed platform A(t)											
Lake Buoy	Realtime, Delayed, Archived	temp, currents, winds, dissolved O2	humidity, pressure, PH, chlorophyll	ascii, NetCDF, database	FTP pull	NetCDF, database	NetCDF	Internet, mobile, email, ftp	wms-t, wcs, sos, THREDDS	wfs	
Webcam	Near-realtime										
2. Moving platform A(x,y,z,t)											
n/a											
3. Other											
n/a											
4. Images/2D GIS A(x,y)											
Bathymetry	Archived, Historic			shp file		shp file, database		gis.glin.net	wms	wfs	
LIDAR	Archived, Historic			xyz		dem, geotif, png		gis.glin.net	wms	wfs	
ecologic features	Archived, Historic			shp file		shp file, database, kml		gis.glin.net	wms	wfs	
5. Remote sensing A(x,y,t)											
AVHRR SST	Near realtime, Archived	temp	hdf	hdf		geotif		internet, THREDDS	wms		
MODIS	Near realtime, Archived			geotif		geotif		internet	wms		
6. Models A(x,y,z,t)											
GLOFS/GLCFS	Near realtime, Archived	temp, currents, winds, water level		netcdf	ftp pull	netcdf, geotif, database, shp file	netcdf, geotif	internet, THREDDS	wms-t	wfs	
HECWFS	Near realtime, Archived	currents, water level		netcdf	FTP pull	netcdf, geotif, database, shp file, kml	netcdf, geotif	internet, THREDDS	wms-t		
GLSEA	Near realtime, Archived	temp	ice	netcdf	ftp pull	geotif,png,netcdf	netcdf, geotif	internet, THREDDS	wms-t		
WaveWatchIII	Near realtime, Archived	wave		grib2	FTP pull	geotif, png	geotif, grib2	internet	wms-t		
7. Raster A(x,y[z])											
DEM											
Instructions/Discussion by Column: (A dataflow description end-to-end)											
Instrument/Platform		Instruments organized by general platform and types. General representation of the data A() and indicate dimensions that vary in the dataset (x/y = spatial; t = time; z = height/depth)									
IOOS Core variables measured		What IOOS Core Variable is measured, if it is not covered, use next column (see IOOSCV worksheet)									
Non-IOOS		Variable measured that is not an IOOS Core Variable or has a close analog									
Format RCVD		Format in which data arrives									
How data rcvd?		Short discription on how data is brought to the DM group									
Format Stored?		Format stored at the DM group. Specify 'native' if you do not transform the data for storage. Format may include database.									
Metadata		Any specific metadata captured, schema, etc?									
How data distributed?		Short description of how data is distributed by the DM group: HTTP, web services, etc. (See NOAADIF tab)									
DIF Services?		Briefly identify possibly DIF compatible services (See NOAADIF tab)									
Non-DIF Services?		Identify any non-DIF services (See NOAADIF tab)									
Archival		Does the dataflow go into an archive to meet the IOOS standard of data archive: at least two copies of unique datasets? Do you use a national archive?									**GLOS**

Instrument/Platform	IOOS Core variables measured	NON-IOOS variables measured	Format RCVD	How data are RCVD (by DM group)	Format Stored (by DM group)	How Data are distributed (by DM group)	DIF Services	Non-DIF Services
1. Fixed platform A(t)								
(a) Moorings	temp, salt, waves, wind	Baro Press, Air Temp, chlorophyll, DO, Rel Humid, Turbidity	ascii	pull through HTTP	netCDF	not distributed yet		HTTP
(b) tide gauge	sea level		ascii	pull through HTTP	ascii	not distributed yet		HTTP
(c) wave buoy	waves		ascii	pull through HTTP	not stored locally	not distributed yet		HTTP
(d) met stations	winds	Baro Press, Air Temp, Rel Humid	ascii					
(e) ADCP	currents							
2. Moving platform A(x,y,z,t)								
(a) drifter	sst	position data	ascii	pull through HTTP	not stored locally	not distributed yet		
(b) glider	temp, salt	density, speed of sound, conductivity	KMZ	KMZ	not stored locally	not distributed yet		HTTP, Google Earth
3. Images/2D GIS A(x,y)								
(a) Satellite Imagery	Ocean Color, SST		JPG	pull through HTTP	not stored locally	not distributed yet		HTTP
4. Remote sensing A(x,y,t)								
(a) HR Radar	currents, waves		netCDF	OPeNDAP	netCDF	OPeNDAP	OPeNDAP	
(b) satellite measurements	sst, cloud mask		netCDF	OPeNDAP	netCDF	OPeNDAP	OPeNDAP	
5. Models A(x,y,z,t)								
(a) CODAR STPS	currents		netCDF	OPeNDAP	netCDF	OPeNDAP	OPeNDAP	
(b) NAM - regional reanalysis	winds		netCDF	OPeNDAP	netCDF	OPeNDAP	OPeNDAP	
(c) RU-WRF Operational Model Forecast	currents, temp, salt, sea level		netCDF		not stored locally			HTTP
(d) LIS Shallow Water Model Tide Forecasts			ASCII, comma delimited, with column headers	pull through HTTP	not stored locally			HTTP

Instructions/Discussion by Column: (A dataflow description end-to-end)								
Instrument/Platform	Instruments organized by general platform and types. General representation of the data A() and indicate dimensions that vary in the dataset (x/y = spatial; t = time; z = height/depth)							
IOOS Core variables measured	What IOOS Core Variable is measured, if it is not covered, use next column (see IOOSCV worksheet)							
Non-IOOS	Variable measured that is not an IOOS Core Variable or has a close analog							
Format RCVD	Format in which data arrives							
How data rcvd?	Short discription on how data is brought to the DM group							
Format Stored?	Format stored at the DM group. Specify 'native' if you do not transform the data for storage. Format may include database.							
How data distributed?	Short description of how data is distributed by the DM group: HTTP, web services, etc. (See NOAADIF tab)							
DIF Services?	Briefly identify possibly DIF compatible services (See NOAADIF tab)							
Non-DIF Services?	Identify any non-DIF services (See NOAADIF tab)							**MACOORA**

Instrument/Platform	IOOS Core variables measured	NON-IOOS variables measured	Format RCVD	How data are RCVD (by DM group)	Format Stored (by DM group)	How Data are distributed (by DM group)	DIF Services	Non-DIF Services
1. Fixed platform A(t)								
a) Ocean buoy	temperature, salinity, currents, color	turbidity, pressure, conductivity, chl	ASCII	database transfer	database	HTTP/ Web Services	SOS	CGI/Restful
b) Tide gage	sea level		ASCII	database transfer	database	HTTP/ Web Services	SOS	CGI/Restful
d) Weather station		air temperature, wind direction, solar radiation	ASCII	script pull	database	HTTP/ Web Services	SOS	CGI/Restful
e) Estuary piling mounted instruments	temperature, salinity, dissolved O2	turbidity, pressure, chl,nutrients,	ASCII	database transfer	database	HTTP/ Web Services	SOS	CGI/Restful
f) Vertically profiling station	salinity, temperature,	turbidity, chl, pressure,nutrients	ASCII	database transfer	database	HTTP/ Web Services		CGI/Restful
2. Moving platform A(x,y,z,t)								
a) Vessel	salinity, temperature, nutrients, dissolved O2	wind speed, wind direction, wind velocity, air pressure, air temperature, nitrate, turbidity	ASCII	database transfer / ASCII / files	database	HTTP/ Web Services		CGI/Restful
b) Drifter	salinity, temperature		ASCII	transfer over ARGOS	database	HTTP/ Web Services		CGI/Restful
c) AUV	salinity, temperature, currents	chl	ASCII	ftp	database	HTTP		CGI
d) Gliders	salinity, temperature	chl, turbidity, DO	ASCII	IRIDIUM	database	HTTP		CGI
e) CODAR	surface currents		ASCII			HTTP		
3. Other								
Shoreline Beach Monitoring Fix stations		Time series and Profiles	ascii		xml files	AS Requested/Images		
Bathemetry		X,Y,Z	ASCII					
4. Images/2D GIS A(x,y)								
Shoreline position	X,Y,Z		ASCII, Shape Files					
5. Remote sensing A(x,y,t)								
CoastWatch West Coast Regional Node	SST, CHL, QSCAT Winds		.MAT	script pull	not stored	images		
XBAND Radar		Wave Direction, Frequency						
6. Models A(x,y,z,t)								
a) SELFE Columbia River	salinity, temperature, currents, sea level		binary	locally generated	binary files	images		
b) SELFE OR-WA costal Ocean	salinity, temperature, currents, sea level		binary	locally generated	binary files	images		
c) ROMS OR coastal ocean	salinity, temperature, currents		binary	locally generated	binary files	images	opendap	
d) POM WA Puget Sound	salinity, temperature, currents, sea level	wind stress	netcdf	locally generated	netcdf	images, KML, OpenDAP	OpenDAP	
7. Raster A(x,y[z])								
Instructions/Discussion by Column: (A dataflow description end-to-end)								
Instrument/Platform	Instruments organized by general platform and types. General representation of the data A() and indicate dimensions that vary in the dataset (x/y = spatial; t = time; z = height/depth)							
IOOS Core variables measured	What IOOS Core Variable is measured, if it is not covered, use next column (see IOOSCV worksheet)							
Non-IOOS	Variable measured that is not an IOOS Core Variable or has a close analog							
Format RCVD	Format in which data arrives							
How data rcvd?	Short description on how data is brought to the DM group							
Format Stored?	Format stored at the DM group. Specify 'native' if you do not transform the data for storage. Format may include database.							
How data distributed?	Short description of how data is distributed by the DM group: HTTP, web services, etc. (See NOAADIF tab)							
DIF Services?	Briefly identify possibly DIF compatible services (See NOAADIF tab)							
Non-DIF Services?	Identify any non-DIF services (See NOAADIF tab)							**NANOOS**

Instrument/Platform	Realtime, Delayed Mode, Archived, Historical, Retrospective?	IOOS Core variables measured	NON-IOOS variables measured	Format RCVD	How data are RCVD (by DM group)	Format Stored (by DM group)	Metadata	How Data are distributed (by DM group)	DIF Services	Non-DIF Services	Archival
1. Fixed platform A(t)											
(a) GoMOOS moorings	reatime and archived	temp,salt,currents	Chl, light	ascii	netCDF	netCDF	GCMD xml?	raw data from web, MapServer on-line browse	OpeNDAP	HTTP	local archive
(b) tide gauge	realtime and archived	sea level		NOS stations	web page listing	none		raw data from web, MapServer on-line browse	OpeNDAP	HTTP	remote archive
(d) NOAA buoys	realtime and archived	waves,wind,sst		NOAA Buoys	DODS	not stored locally		raw data from web, MapServer on-line browse	THREDDS	HTTP	remote archive
2. Moving platform A(x,y,z,t)											
(a) drifter	archived (~months delay)	currents		ascii	SOAP get from GLOBALSTAR	Multiple ORACLE tables		MapServer query and OPeNDAP server non-realtime	OpeNDAP	HTTP,CGI	local archive
(b) NOAA R/V	archived (~months delay)	temp, salt,pres		ascii	In-house Seabird processing	Multiple ORACLE tables		Both raw data & webserved plots non-realtime	OpeNDAP	HTTP,CGI	local archive
3. Other											
4. Images/2D GIS A(x,y)											
5. Remote sensing A(x,y,t)											
HR Radar	images realtime, data?	currents, waves?		netCDF	unknown	unknown		not distributed yet	not distributed yet		
AVHRR Sea Surface Temperature	images realtime, data?	temp		hdf??	unknown	hdf?		web portal images	on request	CGI, HTTP	local archive
MODIS Sea Surface Temperature	images realtime, data?	temp		hdf?	unknown	hdf??		web portal images	on request	CGI, HTTP	local archive
MODIS true color	images realtime, data?	ocean color		hdf??	unknown	hdf?		web portal images	on request		local archive
MODIS Chlorophyll-a	images realtime, data?	ocean color		hdf?	unknown	hdf?		web portal images	on request	CGI, HTTP	local archive
SeaWiFS Chlorophyll-a	images realtime, data?	ocean color		hdf?	unknown	hdf?		web portal images	on request		local archive
NASA QuikSCAT	images realtime, data?	wind		hdf?	unknown	hdf?		web portal images	on request		local archive
6. Models A(x,y,z,t)											
POM (Umaine)	realtime and archived	currents, temp, salt, sea level		netCDF	netCDF	netCDF		MATLAB figures on-line	THREDDS/OPeNDAP		
FVCOM (UmassD)	images realtime, data?	currents, temp, salt, sea level		netCDF	netCDF	netCDF		MATLAB figures on-line	unknown		
ECOM (UmassB)	realtime	currents, temp, salt, sea level		netCDF	netCDF	netCDF		MATLAB figures on-line	THREDDS "latest" & specific times		
ROMS (WHOI)	under development	currents, temp, salt, sea level	HAB parameters	netCDF	netCDF	netCDF		not distributed yet	unknown		
WRF (UNH)	under development?	wind	weather	netCDF	netCDF	netCDF		sample only	THREDDS example file only		
WW3 (NOAA)	under development?	wave hindcast		netCDF	netCDF	netCDF		THREDDS	THREDDS		
WW3 (BIO)	under development?	wave forecast		netCDF	netCDF	netCDF		THREDDS	THREDDS		
7. Raster A(x,y[z])											
Instructions/Discussion by Column: (A dataflow description end-to-end)											
Instrument/Platform		Instruments organized by general platform and types. General representation of the data A() and indicate dimensions that vary in the dataset (x/y = spatial; t = time; z = height/depth)									
IOOS Core variables measured		What IOOS Core Variable is measured, if it is not covered, use next column (see IOOSCV worksheet)									
Non-IOOS		Variable measured that is not an IOOS Core Variable or has a close analog									
Format RCVD		Format in which data arrives									
How data rcvd?		Short discription on how data is brought to the DM group									
Format Stored?		Format stored at the DM group. Specify 'native' if you do not transform the data for storage. Format may include database.									
How data distributed?		Short description of how data is distributed by the DM group: HTTP, web services, etc. (See NOAADIF tab)									
DIF Services?		Briefly identify possibly DIF compatible services (See NOAADIF tab)									
Non-DIF Services?		Identify any non-DIF services (See NOAADIF tab)									**NERACOOS**

Instrument/Platform	Realtime, Delayed Mode, Archived, Historical,	IOOS Core variables measured	NON-IOOS variables measured	Format RCVD	How data are RCVD (by DM group)	Format Stored (by DM group)	Metadata	How Data are distributed (by DM group)	DIF Services	Non-DIF Services	Archival
1. Fixed platform A(t)											
(a) CTD	RT, DM	temp, salt	Chl, turbidity, CO2	ascii	data turbine and as email attachments	netCDF	ascii, non-standard	automated Matlab figures on web, raw data via web	THREDDS, LAS	HTTP	NODC
(b) tide gauge	RT, DM, AR, HS	sea level		ascii/netCDF	GTS and ftp from UHSLC	ascii	ascii, non-standard	raw data from web, LAS for on-line browse	LAS(OPeNDAP)	LAS	loca/GLOSS/UHSLC
(c) wave buoy	DM, AR, HS	waves		ascii	ftp from CDIP	not stored locally	done by CDIP?	data from CDIP	link to Scripps		NDBC?
2. Moving platform A(x,y,z,t)											
(a) drifter	DM, AR, HS	currents, temp		ascii	ftp from AOML	not stored locally	done by AOML?	data from AOML			AOML
(b) glider	RT	currents, temp, salt		netCDF	Iridium from glider to shore, ftp to DM group	netCDF	contained in netcdf (not using full tech file)	served via THREDDS	THREDDS		local
(c) seasoar	AR, HS	temp, salt		ascii	ftp	not stored locally	unknown	not distributed yet			none
(d) argo float	RT, DM, AR, HS	currents, temp, salt		netCDF	GTS or direct ftp from GDACs	argo netCDF	argo standard (netcdf)	served via Dchart and LAS	LAS(OPeNDAP)	LAS, Dchart	JCOMM/Argo DACS
3. Other											
(a) audio streams	RT		marine mammals	binary	stored locally on PC, not sure what to do with these		unknown	not distributed yet			local
(b) video streams	AR, HS	bottom character	reef images	binary	stored locally on PC, not sure what to do with these		unknown	not distributed yet			local
4. Images/2D GIS A(x,y)											
(a) LiDAR	DM, AR	bathy	elevation/coastline	binary	stored locally, PI restricting distrib at this point		nonthing implemented yet	not distributed yet			local
(b) visable image	AR, HS	waves		raster	ftp		nonthing implemented yet	ftp from school web server			local
5. Remote sensing A(x,y,t)											
(a) HR Radar	DM	currents, waves		netCDF	ftp/cp		contained in netcdf	not distributed yet			nonthing yet
(b) satellite measurements	DM, AR, HS	temp, sea level, ocean color		HDF, flat binary	ftp/cp		done elsewhere	GDS and LAS	GDS, LAS(OPeNDAP)	LAS	other DACs
6. Models A(x,y,z,t)											
(a) HYCOM for Pacific	RT, AR	currents, temp, salt, sea level		flat binary	cp	flat binary	contained in netcdf	GDS, THREDDS; LAS and Dchart	GDS, THREDDS, LAS(OPeNDAP)	LAS, Dchart	local (no limit set yet)
(b) ROMS for Hawaii	RT, AR	currents, temp, salt, sea level		netCDF	cp	netCDF	contained in netcdf	GDS, THREDDS; LAS and Dchart	GDS, THREDDS, LAS(OPeNDAP)		local (no limit set yet)
(c) WRF for Hawaii	RT, AR	winds		grib	cp	netCDF	contained in netcdf	GDS, THREDDS; LAS and Dchart	GDS, THREDDS, LAS(OPeNDAP)		local (no limit set yet)
(d) SWAN/WWIII	RT, AR	waves		binary (?)	cp	not yet stored	contained in netcdf	GDS, THREDDS; LAS and Dchart	GDS, THREDDS, LAS(OPeNDAP)	LAS, Dchart	none (only last 7 days)
7. Raster A(x,y,[z])											
Instructions/Discussion by Column: (A dataflow description end-to-end)											
Instrument/Platform		Instruments organized by general platform and types. General representation of the data A() and indicate dimensions that vary in the dataset (x/y = spatial; t = time; z = height/depth)									
IOOS Core variables measured		What IOOS Core Variable is measured, if it is not covered, use next column (see IOOSCV worksheet)									
Non-IOOS		Variable measured that is not an IOOS Core Variable or has a close analog									
Format RCVD		Format in which data arrives									
How data rcvd?		Short discription on how data is brought to the DM group									
Format Stored?		Format stored at the DM group. Specify 'native' if you do not transform the data for storage. Format may include database.									
How data distributed?		Short description of how data is distributed by the DM group: HTTP, web services, etc. (See NOAADIF tab)									
DIF Services?		Briefly identify possibly DIF compatible services (See NOAADIF tab)									
Non-DIF Services?		Identify any non-DIF services (See NOAADIF tab)									**PacIOOS**

Dataflows

SCCOOS

Instrument/Platform	Realtime, Delayed Mode, Archived, Historical, Retrospective?	IOOS Core variables measured	NON-IOOS variables measured	Format RCVD	How data are RCVD (by DM group)	Format Stored (by DM group)	Metadata	How Data are distributed (by DM group)	DIF Services	Non-DIF Services	Format Distributed (by DM group)	Archival
1. Fixed Platform A(t)												
Automated Shore Stations	real-time	temp, salt, sea level (pressure)	chlorophyll	ascii (Edgar?)	server side pull/tcp	MySQL database	fgdc - yes	CGI, On-Line Browse apps (web portal)		CGI web service, HTTP, RSS	time series plot, ascii, google map location	yes
Bight Water Quality Stations *(various platforms - parameters depend on platform location/station configuration)*	delayed mode	water temperature, salinity, oxygen, contaminants (e. coli enterococcus, fecal coliforms, total coliforms)	chlorophyll, descent rate, ph, beam c	ascii (xls)	email server side pull/ftp	MySQL database	fgdc - yes (for overall program only)	CGI, On-Line Browse apps (web portal)		CGI web service, HTTP	time series plot, ascii, google map location	yes
CDIP Buoys *(various platforms - parameters depend on platform location/station configuration)*	near real-time	waves, sea surface temperature	air temperature	ascii (xml)	iridium	ascii, xml, netCDF, MySQL database	fgdc - yes	CGI, On-Line Browse apps (web portal)	WMS, SOS, HTTP, CGI, WFS, LAS	CGI web service, HTTP	time series plot, ascii, google map location	yes
County Shoreline Water Quality Stations *(hand sampled - parameters depend on sampling configuration)*	delayed mode	contaminants (e. coli, enterococcus, fecal coliforms, total coliforms)		ascii (xls) (hand sampled)	email	MySQL database	fgdc - yes (for overall program only)	CGI, On-Line Browse apps (web portal)		CGI web service, HTTP	time series plot, ascii, google map location	yes
Manual Shore Stations	delayed mode	temp, salt		ascii (xls) (hand sampled)	server side pull/ftp	MySQL database	fgdc - yes	CGI, On-Line Browse apps (web portal)		CGI web service, HTTP	time series plot, ascii, google map location	yes
Meteorology Stations *(various platforms - parameters depend on platform location/station configuration)*	near real-time	air temperature, sea surface temperature, waves	accumulated precipitation, altimeter, barometric pressure, dew point temperature, elevation, precipitation rate, relative humidity, solar radiation, visibility, wind direction at gust, wind direction, wind gust, wind speed, sea level pressure	ascii binary	server side pull/tcp/curl server side push/orb	MySQL database Antelope Datascope tar.gz ascii	fgdc - yes (for overall program only)	On-Line Browse apps (web portal)		HTTP	time series plot, ascii, google map location	no
Scripps Pier Harmful Algal Bloom Program	delayed mode	sea surface temperature, salt, phytoplankton species	ammonia, chlorophyll, phaeophytin, nitrate, phosphate, silicate	ascii (xls) online form	email HTTP	ascii, MySQL Database	unk	CGI, On-Line Browse apps (web portal)		CGI web service, HTTP	time series plot, ascii, google map location	yes
City of San Diego Water Quality Casts	delayed mode	water temperature, salt, optical properties (transmissivity), O2, contaminants (e. coli, enterococcus, fecal coliforms, total coliforms)	chlorophyll, ph	ascii (csv)	email	ascii, MySQL database	fgdc - yes (for overall program only)	CGI, On-Line Browse apps (web portal)		CGI web service, HTTP	time series plot, ascii, google map location	yes
Webcam images	near real-time		image	jpg	server side pull/curl	native, database index Antelope Datascope	no	CGI, On-Line Browse apps (web portal)		CGI web service, HTTP	.jpg	no
2. Moving platform A(x,y,z,t)												
AIS (Automatic Identification System)	near real-time		ship positions	ascii	incoming receiver/tcp	encoded ascii	no	On-Line Browse apps (web portal)		HTTP	ascii, google map location	no
Spray Gliders - distributed by provider	delayed mode	temp, salt, optical properties	backscatter, water velocity	binary	iridium(??)	native, database index	yes	CGI, On-Line Browse apps (web portal)		CGI web service, HTTP	time series plot, contour plot	yes
Spray Gliders - distributed through SCCOOS	delayed mode	temp, salt, optical properties	backscatter, water velocity	ascii	server side pull/ftp	ascii, MySQL Database	no	On-Line Browse apps (web portal)		HTTP	time series profile	yes
												SCCOOS

Dataflows

SCCOOS

Instrument/Platform	Realtime, Delayed Mode, Archived, Historical, Retrospective?	IOOS Core variables measured	NON-IOOS variables measured	Format RCVD	How data are RCVD (by DM group)	Format Stored (by DM group)	Metadata	How Data are distributed (by DM group)	DIF Services	Non-DIF Services	Format Distributed (by DM group)	Archival
3. Other												
Bathymetry	static		bathymetry	.sd files	non real-time	ascii	no	On-Line Browse apps (web portal)		HTTP	.sd, .kmz, ascii	yes
4. Images/2D GIS A(x,y)												
5. Remote sensing A(x,y,t)												
GOES (Geostationary Operational Environmental Satellite)	near real-time		water vapor, visible, infrared	image (.jpg)	server side pull/online http	image (.jpg)	fgdc - yes (for overall program only)	On-Line Browse apps (web portal)		HTTP	image file (.jpg)	yes
HF Radar Radial Vectors	near real-time		radial currents	ascii	ssh - object ring buffer	ascii, matlab	yes	On-Line Browse apps (web portal)				yes
HF Radar Total Vector Currents	near real-time	surface currents		computed	computed	ascii, matlab, NetCDF	yes	On-Line Browse apps (web portal), ftp		FTP, HTTP	NetCDF	yes
MODIS (Moderate Resolution Imaging Spectroradiometer)	delayed mode	sea surface temperature	chlorophyll, normalized water-leaving radiance	NetCDF	server side pull/ online ftp	TDF	fgdc - yes (for overall program only)	On-Line Browse apps (web portal)		HTTP	image file (.gif)	no (3 wk cache)
OCM (Ocean Colour Monitor)	delayed mode		chlorophyll, total suspended matter, true color	TDF	incoming ftp	TDF	fgdc - yes (for overall program only)	On-Line Browse apps (web portal)		HTTP	image file (.gif)	yes
OI SST (Optimally Interpolated Sea Surface Temperature)	delayed mode	sea surface temperature		NetCDF	server side pull/ online http	TDF	fgdc - yes (for overall program	On-Line Browse apps (web portal)		HTTP	image file (.gif)	no
6. Models A(x,y,[z],t)												
COAMPS (Coupled Ocean/Atmosphere Mesoscale Prediction System)	near real-time (3hr lag)		winds, rainfall	ascii	incoming ftp	ascii	fgdc - yes (for overall program only)	On-Line Browse apps (web portal)		HTTP	interactive map, time series plot at each vector solution	yes
ROMS (Regional Ocean Modeling System)	near real-time (3hr lag)	temperature, salt, sea surface height, ocean currents		NetCDF	server side pull/online http	NetCDF, ascii	fgdc - yes (for overall program only)	On-Line Browse apps (web portal)		HTTP	contour plot, time series plot, google map, NetCDF	nowcasts - yes forecasts - no
Plume Tracking Model	near real-time		simulated partical trajectories	(computed) image, ascii	server side push/scp	not saved (computed)	no	On-Line Browse apps (web portal)		HTTP	spatial plot, time series contour plot	no
7. Raster A(x,y,[z])												
												SCCOOS

SECOORA - March 2009	NOTE: We only described current or currently planned DM activities and data flows being coordinated by SECOORA. There are other IOOS-related data synthesis and distribution efforts in the Southeast due to legacy projects and multiple/simultaneous RCOOS projects. We are actively working on integrating all of these DM efforts.									
Instrument/Platform	**IOOS Core variables measured**	**NON-IOOS variables measured**	**Format RCVD**	**How data are RCVD (by DM group)**	**Format Stored (by DM group)**	**Metadata**	**How Data are distributed (by DM group)**	**DIF Services**	**Non-DIF Services**	**Archival**
1. Fixed platform* A(t)										
(a) CTD (moorings/near-shore stations)	water temp, salinity, dissolved oxygen	conductivity, water depth, turbidity, chlorophyll	ASCII, netCDF	HTTP, CGI, online database	NetCDF converted to RDB (Xenia)	Source-generated	WMS, OPeNDAP, On-Line Browse; KML (planned)	WMS, OPeNDAP, SOS	CGI, HTTP, WFS, CSV, SHP	NBDC; Source-archived; (SECOORA shallow archive - short term)
(b) Weather (Met) Stations (moorings/near-shore stations)	surface winds	pressure, precipitation, humidity, air temp, PAR	ASCII, netCDF	HTTP, CGI, online database	NetCDF converted to RDB (Xenia)	Source-generated	WMS, OPeNDAP, On-Line Browse; KML (planned)	WMS, OPeNDAP, SOS	CGI, HTTP, WFS, CSV, SHP	NBDC; Source-archived; (SECOORA shallow archive - short term)
(c) Accelerometers/Gyros (directional wave buoy)	water temp, surface waves (height, period)		ASCII, netCDF	HTTP, CGI, online database	NetCDF converted to RDB (Xenia)	Source-generated	WMS, OPeNDAP, On-Line Browse; KML (planned)	WMS, OPeNDAP, SOS	CGI, HTTP, WFS, CSV, SHP	NBDC; Source-archived; (SECOORA shallow archive - short term)
(d) ADCP (moorings)	surface currents		ASCII, netCDF	HTTP, CGI, online database	NetCDF converted to RDB (Xenia)	Source-generated	WMS, OPeNDAP, On-Line Browse; KML (planned)	WMS, OPeNDAP, SOS	CGI, HTTP, WFS, CSV, SHP	NBDC; Source-archived; (SECOORA shallow archive - short term)
(e) Water Quality Stations (moorings/near-shore stations)	dissolved oxygen, salinity, water temp, nutrients, winds	many variables (at fixed locations of sampling)*	ASCII, netCDF	HTTP, CGI, online database	NetCDF converted to RDB (Xenia)	Source-generated	WMS, OPeNDAP, On-Line Browse; KML (planned)	WMS, OPeNDAP, SOS	CGI, HTTP, WFS, CSV, SHP	NBDC; Source-archived; (SECOORA shallow archive - short term)
* via CORMP, COMPS, CaroCOOPS, SKIO, NCCOOS		* dissolved oxygen; turbidity, pH, chlorophyll, wind speed, wind direction, PAR, relative humidity, barometric pressure, rainfall, ammonium, nitrate, nitrite, ortho-phosphate								
2. Moving platform A(x,y,z,t										
(a) Glider (periodic deployments)	water temp, salinity, bathymetry	chlorophyll fluorescence, water depth	ASCII (planned)	TDB - (telemetry relay and/or manual transfer)	netCDF (planned)	Source-generated	Online browsing for static data formats (planned)	WMS, OPeNDAP	HTTP, CGI, WFS (planned)	Source (and SECOORA shallow archive - planned)
(b) Ship Survey (periodic deployments)	water temp, salinity, fish abundance, zooplankton abundance, dissolved nutrients	conductivity, water depth, chlorophyll fluorescence, PAR, turbidity	ASCII (planned)	TDB - (telemetry relay and/or manual transfer)	netCDF (planned)	Source-generated	Online browsing for static data formats (planned)	WMS	HTTP, CGI, WFS (planned)	Source (and SECOORA shallow archive - planned)
(c) Drifters (NOAA-AOML is primary source)	water temp	current direction/velocity (derived from position)	ASCII	CGI, online database	Xenia RDB	NOAA-AOML generated	Web service and on-line browse (CSV, SHP, KML)	WMS	HTTP, CGI, WFS	NOAA-AOML; SECOORA Xenia RDB
3. Other										
4. Images/2D GIS A(x,y										
Regional NERRS Systemwide Monitoring Data (Met/WQ)	surface winds, water temp, dissolved oxygen, nutrients	many variables (at fixed locations of sampling)*	Excel, PDF, (RDB - planned)	HTTP and web services	RDB (planned)	NERRS-CDMO compliant	PDF file and/or Web Services (planned)	WMS	WFS	Archived at NERRS-CDMO
FWRI MARVIN database (active/archived)	water temp, salinity, dissolved oxygen, nutrients, pathogens (HAB)	species presence/abundance	SHP (Geodatabase)	Manual transfer (web services planned)	SHP	Source-generated	Web Services (planned) and KML	WMS	WFS	FWRI archive and SECOORA shallow archive (planned)
FWRI Biological datasets (active/archived)	water temp, salinity, dissolved oxygen, nutrients, fish species/abundance	species presence/abundance, habitat layers	SHP (Geodatabase)	Manual transfer (web services planned)	SHP	Source-generated	Web Services (planned) and KML	WMS	WFS	FWRI archive and SECOORA shallow archive (planned)
AOML Florida Area Coastal Environment (FACE) project	water temp, salinity, dissolved oxygen, nutrients, contaminants, fish species	variety of other variables and habitat layers	Various DB formats	Manual transfer (web services planned)	SHP, ASCII, (netCDF - planned)	Source-generated	Web Services (planned) and KML	WMS	WFS, HTTP, CGI (planned)	Archived at NOAA-AOML and SECOORA shallow archive (planned)
		* dissolved oxygen; turbidity, pH, chlorophyll, wind speed, wind direction, PAR, relative humidity, barometric pressure, rainfall, ammonium, nitrate, nitrite, ortho-phosphate								

Instrument/Platform	IOOS Core variables measured	NON-IOOS variables measured	Format RCVD	How data are RCVD (by DM group)	Format Stored (by DM group)	Metadata	How Data are distributed (by DM group)	DIF Services	Non-DIF Services	Archival
5. Remote sensing A(x,y,t										
(a) HF radar (WERA and CODAR)*	surface currents	N/A (potential for vessel tracking?)	CODAR ASCII and netCDF	Pull from sources and/or NDBC (OpenDAP)	netCDF, ASCII, SHP	Source-generated	WMS, WFS, OPeNDAP	WMS, OPeNDAP	CGI, HTTP, WFS	NDBC (National HF Radar Network); Source archived
(b) HF radar (WERA and CODAR)*	surface waves (not standard product)	N/A (potential for vessel tracking?)	CODAR spectral data	N/A	N/A	N/A	N/A	N/A	N/A	Source-archived
(c) MODIS RGB (via USF IMaRS)	ocean color (true); optical properties	cloud cover, marine/terrestrial boundary	PNG and HDF (via OpenDAP)	Pull from USF IMaRS	PNG, HDF	Source-generated	OpenDAP, WMS, WFS	WMS, OPeNDAP	WFS (HTTP - planned)	Source-archived; SECOORA shallow archive (planned); raw/final format
(d) MODIS SST (via USF IMaRS)	water temp; optical properties	cloud cover, marine/terrestrial boundary	PNG and HDF (via OpenDAP)	Pull from USF IMaRS	PNG, HDF	Source-generated	OpenDAP, WMS, WFS	WMS, OPeNDAP	WFS (HTTP - planned)	Source-archived; SECOORA shallow archive (planned); raw/final format
(e) MODIS CHL (processed product; via USF IMaRS)	ocean color (processed); optical properties	cloud cover, marine/terrestrial boundary, chlorophyll	PNG and HDF (via OpenDAP)	Pull from USF IMaRS	PNG, HDF	Source-generated	OpenDAP, WMS, WFS	WMS, OPeNDAP	WFS (HTTP - planned)	Source-archived; SECOORA shallow archive (planned); raw/final format
(e) AVHRR GAC SST (via USF IMaRS)	water temp; optical properties	cloud cover, marine/terrestrial boundary	PNG and HDF (via OpenDAP)	Pull from USF IMaRS	PNG, HDF	Source-generated	OpenDAP, WMS, WFS	WMS, OPeNDAP	WFS (HTTP - planned)	Source-archived; SECOORA shallow archive (planned); raw/final format
(f) Interpolated SST (via USF IMaRS)	water temp; optical properties	cloud cover, marine/terrestrial boundary	PNG and HDF (via OpenDAP)	Pull from USF IMaRS	PNG, HDF	Source-generated	OpenDAP, WMS, WFS	WMS, OPeNDAP	WFS (HTTP - planned)	Source-archived; SECOORA shallow archive (planned); raw/final format
(g) QuikSCAT 25 km/12.5 km (via NOAA-AOML)	surface winds; optical properties	cloud cover, marine/terrestrial boundary	CSV	Pull from NOAA-AOML	SHP (converted to SHP)	Source-generated	WMS	WMS	(WFS and HTTP - planned); CGI	Source-archived; SECOORA shallow archive (planned); NASA/NESDIS
* via UMiami, USF, UNC, SKIO										
6. Models A(x,y,z,t										
(a) CH3D (structured grid) - planned (UF)	surface currents, surface temp, surface waves, water level, surface winds		netCDF and/or service (planned)	TBD (ftp or service); via OpenDAP?	netCDF	Source-generated	OpenDAP, WMS, WFS	WMS, OPeNDAP	WFS, HTTP	Source-archived; SECOORA shallow archive (planned)
(b) CEMS (POM) (structured grid) - planned (NCSU)	surface currents, surface temp, surface waves, water level, surface winds		netCDF and/or service (planned)	TBD (ftp or service); via OpenDAP?	netCDF	Source-generated	OpenDAP, WMS, WFS	WMS, OPeNDAP	WFS, HTTP	Source-archived; SECOORA shallow archive (planned)
(c) ADCIRC (unstructured grid) - planned (UNC)	surface currents, surface temp, surface waves, water level, surface winds		netCDF and/or service (planned)	TBD (ftp or service); via OpenDAP?	netCDF	Source-generated	OpenDAP, WMS, WFS	WMS, OPeNDAP	WFS, HTTP	Source-archived; SECOORA shallow archive (planned)
(d) FVCOM (unstructured grid) - planned (USF)	surface currents, surface temp, surface waves, water level, surface winds		netCDF and/or service (planned)	TBD (ftp or service); via OpenDAP?	netCDF	Source-generated	OpenDAP, WMS, WFS	WMS, OPeNDAP	WFS, HTTP	Source-archived; SECOORA shallow archive (planned)
NOTE - There are currently two other RCOOS-funded projects in the Southeast that focus directly on modeling (Sheng (UF) and Luettich (UNC) are the PIs). They distribute their own data outputs, but the SECOORA DMAC group will be helping with this process in 2009. Information shown is the process that will be executed in the future. Our regional plan is to have those model outputs formatted to netCDF conventions and distributed via the SECOORA data portal.										
7. Raster (Base-Layer) A(x,y[z]										
(a) Bathymetry base layer for visualizations (planned)	Bathymetry	Depth below MSL	Cached layer	(Planned) - Google Oceans cached layer	Not stored, relayed via Google service	Source-generated	Via OpenLayers application and/or Google plug-in	WMS	CGI, HTTP, WFS (planned?)	N/A; Sandwell & Smith (source)
(b) Topography base layer for visualizations (planned)	N/A	Height above MSL	Cached layer	(Planned) - Google Earth cached layer	Not stored, relayed via Google service	Source-generated	Via OpenLayers application and/or Google plug-in	WMS	CGI, HTTP, WFS (planned?)	N/A; USGS-EROS Data Center

Instructions/Discussion by Column: (A dataflow description end-to-end)	
Instrument/Platform	Instruments organized by general platform and types. General representation of the data A() and indicate dimensions that vary in the dataset (x/y = spatial; t = time; z = height/depth)
IOOS Core variables measured	What IOOS Core Variable is measured, if it is not covered, use next column (see IOOSCV worksheet)
Non-IOOS	Variable measured that is not an IOOS Core Variable or has a close analog
Format RCVD	Format in which data arrives
How data rcvd?	Short description on how data is brought to the DM group
Format Stored?	Format stored at the DM group. Specify 'native' if you do not transform the data for storage. Format may include database.
How data distributed?	Short description of how data is distributed by the DM group: HTTP, web services, etc. (See NOAADIF tab)
DIF Services?	Briefly identify possibly DIF compatible services (See NOAADIF tab)
Non-DIF Services?	Identify any non-DIF services (See NOAADIF tab

REGIONAL DIF PARTNERS	ASSETS		VARIABLES	
	Platforms	Instruments	DIF Core	Others
AOOS	(augmented NDBC) buoys; ship/research: CTD, Moorings, bottom grabs, trawls; met/water quality stations; various satellite products	temperature, conductivity, chlorophyl, nitrates, currents, phosphates, etc.; remote sensing: ice concentration, SST, chlorophyl	Bathymetry, Temperature, Salinity, Surface Currents, Ocean Color, Waves, Winds	Zooplankton, Phytoplankton, various biologic bits of data
NANOOS	**model, stations, CODAR**	**temperature, water quality, surface currents, salinity**	**Water Level, Waves, Temperature, Wind**	
CenCOOS	Buoys, Moorings, Land based HF Radar stations	Various sensors	Temperature, Salinity, Sea Level, Surface Currents, Ocean Color, Wave, Wind	Bathymetry, Contaminants, Dissolved nutrients, Fish species, Fish abundance, Zooplankton species, Optical properties, Heat Flux, Bottom character, Pathogens, Dissolved O2, Phytonplankton species, Zooplankton abundance
SCCOOS	Meteorological Stations, Shoreline Water Quality Stations, HF Radars, Buoys, Shore Stations, Gliders, Models, Satellites	Various sensors	Temperature, Salinity, Sea Level, Surface Currents, Ocean Color, Wave, Wind	Accumulated Precip - 24h, Air Temperature, Altimeter, ammonia-n, Amonia, Average Wave Period, Avg Chlorophyll, Avg Phaeophytin, Barometric Pressure, cdom, chl-a, chlorophyll, conductivity, Current Profile, density, descent rate, Dewpoint Temperature, dissolved oxygen, E. Coli, Elevation, Enterococcus, Fecal Coliforms, Incident Angle, Nitrite, Normalized Water-Leaving Radiance at 551 nm, oxygen, Peak Wave Period, ph, Phosphate, Precipitation Rate, Pressure, Rain Fall Rate, Relative Humidity, Pressure, Sea Surface Temperature, Sea Temperature, Significant Wave Height, Silicate, Solar Radiation, Total Coliforms, Total Suspended Matter, transmissivity, True Color Satellite, Visibility, Wave Height, Wave Period, Wind Dir At Gust, Wind Direction, Wind Gust, Wind Speed
PacIOOS	in-situ moorings, gliders, atm and ocn models (wave, circ), coastal imaging	numerous	temperature, salinity , sea level, ocean currents, waves, wind (model only)	turbidity, bathy, chl
GLOS	**satellite, model, webcams, buoy, field data**	**various sensors**	**Water Level, Waves, Temperature, Wind**	**Pressure, Dew Point, Cloud Cover**
NERACOOS	buoys; ships; met/water quality stations; Land based HF Radar stations; satellites; drifters	chlorophyl, currents,phytoplankton biomass,sunlight,PAR, remotely sensed SST& chlorophyl	Bathymetry, Temperature, Salinity, Surface Currents, Ocean Color, Waves, Winds, Sea Level	Fish abundance, phytoplankton, PAR,
MACOORA	Moorings, Gliders, Met Stations, HF Radar, Model output, CTD,Satellite	anemometer, water temperature, salinity, current, optical backscatter, CTD, HF Radar, remote sensing, Regional Reanalysis	Temperature, Salinity, Surface Currents, Waves, Winds, Sea Level	Dissolved O2, turbidity, ph, chlorophyll, wind speed, wind gust, air temp, rh, air press, florescence, wave characteristics, wind speed and direction, air temp, barometric pressure, sea level pressure, 10-m wind velocity, downward and net longwave radiation, net shortwave radiation, and precipitation, conductivity, phycoerythrin, cloud cover
SECOORA	Moorings; Gliders; AUVs; MET Stations; WQ Stations; Ships; HF Radar; Model Output; CTD; Satellite (multiple); Buoys (NDBC and others); Drfiters; Towers	CTD; Integrated Sondes; ADCP, anemometers; Remote Sensing (MODIS, AVHRR, QuickScat); HF Radar (WERA and CODAR); ancillary trawls and grapb samples	Salinity, Sea Level, Surface Currents, Ocean Color, Surface Waves, Surface Winds	All NERRS-CDMO variables at regional NERR sites; dissolved oxygen; turbidity, pH, chlorphyll, wind speed, wind direction, PAR, relative humidity, barometric pressure, rainfall, ammonium, nitrate, nitrite, ortho-phosphate; Variety of biological data planned/ongoing; Model output (circulation, waves, inundation)
GCOOS	**HF Radar, remote sensing, AUVs, buoys, drifters, CTD, gauges, mobile drilling platforms, model output**	**Various sensors**	**Temperature, Salinity, Winds, Currents, Ocean Color**	**turbidity, pressure, humidity, plankton**
CarICOOS	**gliders, buoys, tide gauges, HF Radar, satellite, model output, met stations**		**Sea Level, Wind, Waves, Temperature, Salinity, Currents**	**atmospheric pressure, chlorophyll**

REGIONAL DIF PARTNERS	OTHER SERVICES				
	Data Discovery			Archive	Access Interfaces
	Catalog	Registry	Metadata		(e.g Visualization Tool, Online-Browse
AOOS	IOOS Registry, OpenIOOS	IOOS Registry, OpenIOOS	IOOS Registry, OpenIOOS, GOS (Geospatial One Stop), GCMD (Global Change Master Directory/OBIS)	Arctic Region Supercomputer Center (ARSC), National Climatic Data Center (NCDC), National Ocean Data Center (NODC), self (RAID 5/6, CD, DVD, IDE, SATA), AOOS data provider resources	Data Catalog Explorer, Mapserver GIS application, Alaska Marine Information System (all custom)
NANOOS	Nanoos Registry fielded, OGC WCS in work.	Nanoos Registry fielded, OGC WCS in work.	FGDC metadata metadata queries		Browse, search metadata, browse, search assests
CenCOOS	OceanObs.org	OceanObs.org	OceanObs.org		Browse/Search Metadata; Planned: Map Selection, Visual data products
SCCOOS	Tested - Geogpatial one stop	OceanObs.org - not complete	FGDC for some	some	Online - Visualization
PacIOOS	THREDDS catalog interface	none yet	ad hoc	in-house RAID	all premade at this point
GLOS					**Google Maps, OpenLayers, Google Earth plugin and Flash are being evaluated**
NERACOOS	OOS Registry, OpenIOOS,GCMD	OOS Registry, OpenIOOS, GCMD	GCMD,Thredds	NERACOOS data providers	MapServer
MACOORA	THREDDS catalog interface	Some sub-regions have submitted to Obs registry	Thredds	Various - ex. Rutgers - Satellite Data File Serve <10 years old on-line, >10 years old on tape; HF Radar on-line; Glider data on-line; all with daily back-up	THREDDS catalog interface; NetCDF Java Visualization Tools, various map service implementations. Real-time web site coming on-line in 2009.
SECOORA	NOAA IOOS Registry; SURA OpenIOOS	(NOAA IOOS Registry; SURA OpenIOOS); WFS, WMS, WCS, DIF SOS	FGDC and GCMD formats; generally the data provider selects; (we also have on-line asset inventory); more planned (e.g., NCDDC)	Various: local archives by data providers; shallow archive at regional (RA) level is currently being planned; regional DM RAID platforms; NDBC; NCDDC (ongoing collaboration); NOAA NERRS-CDMO	On-line search tools via Plone web site; on-line map interface; on-line catalog pages; also access via many of our data providers (links to separate web sites and services); services (WMS, WCS, WFS, DIF SOS); buoy and radar data also via NDBC; using open source Mapserver/OpenLayers; ObsKML and KML/KMZ; evaluating use of Google Earth/Ocean
GCOOS	**OOS Registry**		**FGDC-compliant formats**	**After QA/QC final data will be transmitted to the appropriate national archives.**	**Web (googlemaps); various interfaces available from data portal**
CarICOOS					**Web(HTTP), CGI**

REGIONAL DIF PARTNERS	WEB SERVICES				ENCODING					COMMENTS
					In-situ Data		Gridded/Image Data (i.e. model output)			
	OGC SOS	OPeNDAP and/or OGC WCS	OGC WMS	Other	DIF 0.6.1	OOSTethys/SWE Common	CF/NetCDF	GeoTIFF	Other	
AOOS	Under construction	OPeNDAP(Hyrax)	Operational (via UNM Mapserver); georeference information placed in NetCDF/HDF files makes this information available for rendering through WMS via the GDAL library.	various REST and cgi applications, OGC WFS	Under construction	raw, flat files, NetCDF, RDBMS	Yes; various model reanalysis and forecast information	Yes	ROMS (unstructured grid), HDF4	AOOS has gridded reanalysis data from serveral sources, WRF atmospheric forecasts, SWAN ocean forecast for Prince William Sound. Regular gridded data is stored in NetCDF files. Satellte data is kept in its native HDF file format. Some satellite data is converted to GeoTiff for current clients.
NANOOS	Live OGC SOS Service. Connected to by OpenIOOS real time data mapping application.	OpenDAP data product for accessing Princeton Oceanographic Model (POM) data	OGC Web Mapping Service (WMS) data product for accessing model data including sea color	NANOOS Discovery Service for programmatic registration and lookup of services and data. NANOOS Data Explorer for graphical searching of services by core type, region and time. NANOOS Flash Map Service for browser-based SOS data retrieaval and plotting.		Submitted the PySOS source code and python toolkit to OOTethys for open source download.	Yes, forecast model data			NANOOS stood up a DMAC initial operating capability (IOC) in October 2008 including a portal interface to a discovery service and data explorer allowing lookup of services and download of observation and model data. The data explorer allows selection of core data type by bounded box region and timeframe.
CenCOOS	Under construction	Planned	Planned		At Aggregated Server Only	Some Data Providers	Planned	Planned		
SCCOOS	Tested for waves	Partial Implementation HF Radar	Tested for waves	ftp	Waiting for final standards	Tested for waves	Planned - HF Radar ROMS Model	see Other	GeoPNG - HF Radar NOAA Charts	
PacIOOS	Under construction	THREDDS, GDS	ncWMS, googlemaps	ftp	Planned	testing	model, glider, mooring data in netCDF	none	WRF (grib)	
GLOS				**Visualization test: googlemaps, openlayers, flash, google earth plugin**						**Inferred from information @ glos.us**
NERACOOS	Some Data Providers	OpeNDAP, WCS, THREDDS	MapServer	?	?	Some Data Providers	Yes; various model reanalysis and forecast information	?	POM, FVCOM, ROMS	NERACOOS entries thus far have been sent to GoMOOS to look over and modify
MACOORA	Planned	OPeNDAP Implemented - Rutgers (subset of parameters)	Site coming on-line with WMS (with time spec) for all operational products.Various test implementations at partner sites.	U.S.Coast Guard - Environmental Data Server, KMZ, ftp, NetCDF data services	Planned	No plans	Yes; various observed and model forecast information			MACOORA has distributed services that feature various implementations and output types
SECOORA	Live OGC SOS service with IOOS DIF encoding	OPeNDAP (live); THREDDS (planned)	Both AVHRR and MODIS imagery (USF-IMaRS) - including discrete and interpolated SST and RGB outputs; Global Drifter feeds from NOAA-AOML; QuickScat imagery feeds from NOAA-AOML	Variety of REST and cgi applications; WFS (air temp., air pressure, salinity, sea bottom temp., sea surface temp., surface currents (radar/in situ), water level, waves, wind); GeoRSS feeds	DIF 0.6.1 (live)	Under construction (have been involved in process for years)	Variety of observed data sets (live); working with modeling groups to integrate analysis and forecast output	Remote sensing data provided in PNG and HDF	Not yet served through data portal (but hosted by other IOOS modeling groups in region) - WRF, ROMS, HYCOM formats; HF Radar (vector radial data) - also sent to NDBC	The SECOORA region has also been employing ObsKML (format is returned by a service); microWFS (for NOAA-CSC); http downloads, ftp downloads; various other file formats (CSV, Shapefile, ObsKML, styled KML, and Postgres/SQLite); remote sensing data provided in PNG and HDF
GCOOS	Live OGC SOS Service Installed at 6 data nodes with 2 more in progress. Also installed at the Regional Data Portal	OPeNDAP at some data nodes - probably stale. THREEDS/GALEON/WCS Planned for two satellite data nodes in 2009	I think we serve some model output via WMS to the Openloos site		The Data Portal uses this and 1 or 2 of the data nodes	6 of the data nodes use OOSTethys encodings	ROMS/POM			
CarICOOS				**HTTP, CGI**			**NetCDF**		**grib, gif**	**Inferred from Dataflows worksheet**

Appendix 5.4 – Registries and Catalog Brief and Handout

Catalogs and Registries

How do we achieve
Wild success
in
six months

Definitions

- Catalog: A systematically ordered list often with additional particulars such as locality, position, date, price or the like.

- Registry: A list of sufficient importance to be exactly and formally recorded and maintained.

- Database: Structured collection of records or data stored in a computer system.

- Directory: A categorized list optimized for lookup, search or browsing.

OGC Distinction

- The terms ‘catalogue’ and ‘registry’ are often used interchangeably, but the following distinction is made in this application profile: a registry is a specialized catalogue that exemplifies a formal registration process such as those described in ISO 19135 or ISO 11179-6. A registry is typically maintained by an authorized registration authority who assumes responsibility for complying with a set of policies and procedures for accessing and managing registry content.

Places Data Resides

- Library: A collection of published information and useful material for common use.

- Archive: Collection of historical records especially selected for long-term preservation due to their enduring research value.

- Repository: A place where things are accumulated in quantity.

- Warehouse: A place for storing things until needed.

- Clearinghouse: A centralized repository for collection, maintenance, and distribution of information providing widespread access beyond organizational boundaries.

- Data Portal: (a kind of web-based portal) presents information from diverse sources in a unified way. Consistent look and feel with access control.

Data Centers

- National Data Centers:
  (facility with computers, telecom, storage, backup,AC/Power,security)
  - National Geophysical Data Center
    - National Snow and Ice Data Center
  - National Oceanographic Data Center
  - National Climatic Data Center
  - National Coastal Data Development Center
  - National Data Buoy Center

Data Assembly Centers

- Data Assembly Center (It's a NOAA thing)
  - Global Drifter DAC
  - WOCE DAC
  - ARGO DAC
  - Global Data DAC
  - Ecosystem DAC
  - CLIVAR Shipboard ADCP DAC
  - NDBC-IOOS DAC

Google

Data Assembly Center

Search

Advanced Search
Preferences

Web

Results **1** - **10** of about **17,300,000** for **Data Assembly Center**.

[The Global Drifter Program - **Data Assembly Center**]
[PDF]; Drifter Training CD (How to deploy and acquire drifter **data**). [PDF]; Drifter Operations **Center**/**Data Assembly Center**, Objectives and Activities poster **...**
www.aoml.noaa.gov/phod/dac/dac**data**.html - 10k - Cached - Similar pages

[The Global Drifter Program]
Nov 8, 2005 **... Data Assembly Center** Processing, Analysis, and Distribution **...** The Drifter Operations **Center** World Wide Drifter Deployments **...**
www.aoml.noaa.gov/phod/dac/ - 7k - Cached - Similar pages
More results from www.aoml.noaa.gov »

[WOCE Float DAC Home Page]
Oct 20, 2004 **...** Welcome to the WOCE Subsurface Float **Data Assembly Center** (WFDAC) home page. **Data** available to the oceanographic community at large are here **...**
wfdac.whoi.edu/ - 6k - Cached - Similar pages

[Career **Center** - Law School - LSDAS & Transcripts]
Jan 3, 2008 **...** Career **Center** Site Law School only **...** LSDAS stands for Law School **Data Assembly** Service. It is a service administered by the Law School **...**
career.berkeley.edu/Law/LawLSDAS.stm - 22k - Cached - Similar pages

[GDAC Home Page]
The Global **Data Assembly Center**: Portal to The GODAE High Resolution **...** International GHRSST **Data** Users Symposium registration deadline is on 31 January **...**
ghrsst.jpl.nasa.gov/ - 41k - Cached - Similar pages

[Buoy Goup Deep Water Archive]
Most of the **data** in this archive are from moorings that were in place for at **...** This website also contains several electonic **data** reports from Buoy Group **...**
kepler.oce.orst.edu/ - 5k - Cached - Similar pages

[WOCE]
The WOCE **Data Assembly Center** collects, checks, archives, and distributes underway surface meteorological **data** from international WOCE research vessel and **...**
coaps.fsu.edu/woce/ - 8k - Cached - Similar pages

[NGI EDAC Introduction]
Welcome to the Northern Gulf Institute. ECOSYSTEM **DATA ASSEMBLY CENTER**. Beginning in July 2006, the National Coastal **Data** Development **Center** (NCDDC), **...**
edac.northerngulfinstitute.org/ - 9k - Cached - Similar pages

[Argo **data** and how to get it]
... corrected and the **data** are passed to Argo's two Global **Data Assembly** Centers **...** Real time and delayed mode **data** flow. The Argo Information **Centre** is a **...**
www-argo.ucsd.edu/FrArgo_**data**_and.html - 2k - Cached - Similar pages

[GODAE: Global Ocean **Data** Assimilation Experiment - Argo]
Fleet Numerical Meteorology and Oceanography **Center** Monterey, CA **...** The USGODAE server is one of two Argo Global **Data Assembly** Centers (GDAC). **...**
www.usgodae.org/argo/argo.html - 12k - Cached - Similar pages

Searches related to: **Data Assembly Center**

law school data assembly **service** assembly data **system**

Distributed Active Archive Centers

- Distributed Active Archive Center (It's a NASA thing)
  - Eight NASA DAACs
  - Biogeochemical Dynamics DAAC
  - Physical Oceanography DAAC

Google

Active Archive Centers

Search | Advanced Search | Preferences

Results **1** - **10** of about **24,800,000** for **Active Archive Centers**.

NASA Distributed Active Archive Centers (DAACs)
Processes, **archives**, documents, and distributes Earth science and socioeconomic data.
nasadaacs.eos.nasa.gov/ - 13k - Cached - Similar pages

ESGS EROS Data center
The Land Processes Distributed **Active Archive Center** (LP DAAC) is one of several discipline-specific data **centers** within the NASA Earth Observing System ...
https://lpdaac.usgs.gov/ - 16k - Cached - Similar pages

LP DAAC :: ASTER and MODIS Land Data Products and Services
LAND PROCESSES DISTRIBUTED **ACTIVE ARCHIVE CENTER**. 47914 252nd Street; Sioux Falls, SD 57198-0001; Voice: 605-594-6116; Toll Free: 866-573-3222 ...
https://lpdaac.usgs.gov/content/view/sitemap/2 - 14k - Cached - Similar pages

NSIDC Distributed Active Archive Center
We are one of eight NASA Distributed **Active Archive Centers** (DAACs). The DAACs process, **archive**, document, and distribute data from NASA's past and current ...
nsidc.org/daac/ - 26k - Cached - Similar pages

Biogeochemical Dynamics Distributed Active Archive Center (DAAC)
The ORNL DAAC offers Earth science data for global change research and Earth systems studies. Sponsored by NASA, the **archive** includes field data, ...
daac.ornl.gov/ - 14k - Cached - Similar pages

Goddard Earth Sciences (GES) Data and Information Services Center ...
nasa gsfc data and information services **center**. ... Near **Archive** Data Mining (NADM) · On-Demand Subsetting · OGC Web Map Service · Data Tools ...
daac.gsfc.nasa.gov/ - 32k - Cached - Similar pages

NASA-JPL Physical Oceanography Distributed Active Archive Center ...
Managing Data to Enable Understanding and Stewardship of the Ocean. The Physical Oceanography Distributed **Active Archive Center** (PO.DAAC) is the NASA data ...
podaac.jpl.nasa.gov/ - 49k - Cached - Similar pages

NASA Langley Atmospheric Science Data Center (Distributed Active ...
The NASA Langley Distributed **Active Archive Center** (DAAC) **archives** and distributes data relating to Radiation Budget, Clouds, Aerosols, and Troposheric ...
eosweb.larc.nasa.gov/ - 18k - Cached - Similar pages

Review of NASA's Distributed Active Archive Centers
Review of NASA's Distributed **Active Archive Centers** ... 8 National Snow and Ice Data **Center** DAAC, 147-164, (skim) · 9 Oak Ridge National Laboratory DAAC ...
www.nap.edu/catalog/6396.html - 30k - Cached - Similar pages

Review of NASA's Distributed Active Archive Centers - Google Books Result
by National Research Council (U.S.). Committee on ... - 1998 - Technology & Engineering - 233 pages
NCC5-202 between the National Academy of Sciences and the National Aeronautics and Space Administration"--T.p. verso.
books.google.com/books?isbn=0309063310...

Sponsored Links

Active Archive
Streamlined Integrated Archiving
Free ESG Archiving Analyst Repo
www.emc.com

IBM Data Archiving Plan
Plan an Archiving Strategy for You
Enterprise Data. Get IBM Whitepa
informationmanagementrequest.co

Searches related to: **Active Archive Centers**

center active **generations**	active **health center**	active **birth center**	active **learning center**
active **vision center**	active **leisure center**	active **call center**	**center** active **seniors**

What to list

- Search Metadata
  - parameter, units
  - location, time
  - status, platform type, operator
  - pointers to additional online info
  - data access points and access protocols

Choices

- OCG?
- THREEDS?
- ObsRegistry?
- Others?
- Nothing?

Standards
- OpenGIS® Standards
  - Catalogue Service
  - CityGML
  - Coordinate Transformation
  - Filter Encoding
  - Geographic Objects
  - Geography Markup Language
  - Geospatial eXtensible Access Control Markup Language (GeoXACML)
  - GML in JPEG 2000
  - Grid Coverage Service
  - KML
  - Location Services (OpenLS)
  - Observations and Measurements
  - Sensor Model Language
  - Sensor Observation Service
  - Sensor Planning Service
  - Simple Features
  - Simple Features CORBA
  - Simple Features OLE/COM
  - Simple Features SQL
  - Styled Layer Descriptor
  - Symbology Encoding
  - Transducer Markup Language
  - Web Coverage Service
  - Web Feature Service
  - Web Map Context
  - Web Map Service
  - Web Processing Service
  - Web Service Common
- Specification Profiles
- Abstract Specification
- OpenGIS® Reference Model
- GeoDRM Reference Model
- Best Practices
- Discussion Papers
- Deprecated Documents
- Retired Documents
- Requests (RFP's, RFQ's...)
- White Papers
- Change Requests

HOME » STANDARDS » REQUESTS

OpenGIS® Catalogue Services - ebRIM profile of CSW (ebRIM): Request for Public Comments

Status:

Please note: This Request is closed. The documents listed below have been adopted by the OGC Technical and Planning Committee. These specifications are under control of the specification Revision Working Group and will be released after the edits and revisions. For the most current version please check our **Standards Page**.

Description:

The Open Geospatial Consortium (OGC) is contemplating adoption of a technology called OpenGIS® Catalogue Services - ebRIM profile of CSW (ebRIM). OGC invites public comment on a candidate specification that will soon be presented for approval by OGC members as an OpenGIS(R) Application Profile. The purpose of this Request for Public Comment (RFPC) is to obtain comments on the proposal for technologies and needed interfaces required for OpenGIS® Catalogue Services - ebRIM profile of CSW (ebRIM). Documentation of this draft specification can be downloaded here:

Candidate Submission: Mon, 2005-10-17 09:00
Close request period: Fri, 2005-11-11 09:00
TC and PC vote to issue request: Fri, 2006-01-20 09:00
Begin request period: Sun, 2006-02-19 09:00

1) Downloads:

OpenGIS® Catalogue Services - ebRIM profile of CSW (ebRIM) [Complete Package] (05-025r3) **OpenGIS® Catalogue Services - ebRIM profile of CSW (ebRIM) (05-025r3)** **OpenGIS® Catalogue Services - ebRIM profile of CSW (ebRIM) (05-025r3)**

This document defines an application profile of an OGC Catalogue service; it is primarily based on the HTTP binding (the CSW part) described in Clause 11 of the OGC Catalogue Services Specification, version 2.0 (OGC 04-021r3). The profile constrains the usage of several base specifications and introduces some additional search, retrieval, and transaction capabilities.

2) Submit a comment:

Comments can be submitted to a dedicated email reflector for a thirty day period ending on the "Close request date" listed above, Comments received will be consolidated and reviewed by OGC members for incorporation into the document. Please submit your comments using the following link: **Click here to submit comments** The link provided above should include a standard template in the message body. If the preloaded message body does not work properly using your mail client, please refer to the following template for the message body: Comments Template.

3) Subscribe to the distribution list to monitor progress:

You may wish to be added to the distribution list to receive comments as they are submitted:

Subscribe to Distribution List.

Subscribing to the the list will also allow you to view comments already received, which can be found in the **List Archives**.

Standards
- OpenGIS® Standards
  - Catalogue Service
  - CityGML
  - Coordinate Transformation
  - Filter Encoding
  - Geographic Objects
  - Geography Markup Language
  - Geospatial eXtensible Access Control Markup Language (GeoXACML)
  - GML in JPEG 2000
  - Grid Coverage Service
  - KML
  - Location Services (OpenLS)
  - Observations and Measurements
  - Sensor Model Language
  - Sensor Observation Service
  - Sensor Planning Service
  - Simple Features
  - Simple Features CORBA
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- Specification Profiles
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Catalogue Service

OpenGIS Catalogue Service Implementation Specification

1) Overview

The OpenGIS® Catalogue Services Interface Standard (CAT) supports the ability to publish and search collections of descriptive information (metadata) about geospatial data, services and related resources. Providers of resources use catalogues to register metadata that conform to the provider's choice of an information model; such models include descriptions of spatial references and thematic information. Client applications can then search for geospatial data and services in very efficient ways.
See also the OGC Catalogue 2.0 Accessibility for OWS-3 Discussion Paper [http://www.opengeospatial.org/standards/dp], the OWS-4 CSW ebRIM Modelling Guidelines Interoperability Program Report (IPR) [www.opengeospatial.org/standards/dp] and the OpenGIS® Catalogue Service Interface Standard 2.0.1 - FGDC CSDGM Application Profile for CSW (Best Practice) [http://www.opengeospatial.org/standards/bp].

2) Downloads

Version	Document Title (click to download)	Document #	Type
2.0.2	**OpenGIS Catalogue Service Implementation Specification**	07-006r1	**ISC**
	OGC Cataloguing of ISO Metadata (CIM) using the ebRIM profile of CS-W (0.1.7)	07-038	**DP**
	Revision Notes for Corrigendum for OpenGIS 07-006: Catalogue Services, Version 2.0.2 (1.0)	07-010	**ISC**
	CSW-ebRIM Registry Service - Part 1: ebRIM profile of CSW (1.0.1)	07-110r4	**IS**
	CSW-ebRIM Registry Service – Part 2: Basic extension package (1.0.1)	07-144r4	**IS**
	CSW-ebRIM Registry Service – Part 3: Abstract Test Suite (1.0.1)	08-103r2	**IS**
	CSW-ebRIM Registry Service - Part 1: ebRIM profile of CSW (1.0.0)	07-110r2	**D-IS**
	CSW-ebRIM Registry Service – Part 2: Basic extension package (1.0.0)	07-144r2	**D-IS**
	OpenGIS Catalogue Services Specification 2.0.2 - ISO Metadata Application Profile (1.0.0)	07-045	**SAP**

- Abstract Specification
- OpenGIS® Reference Model
- GeoDRM Reference Model
- Best Practices
- Discussion Papers
- Deprecated Documents
- Retired Documents
- Requests (RFP's, RFQ's...)
- White Papers
- Change Requests

		#	
2.0.2	**OpenGIS Catalogue Service Implementation Specification**	07-006r1	**ISC**
	OGC Cataloguing of ISO Metadata (CIM) using the ebRIM profile of CS-W (0.1.7)	07-038	**DP**
	Revision Notes for Corrigendum for OpenGIS 07-006: Catalogue Services, Version 2.0.2 (1.0)	07-010	**ISC**
	CSW-ebRIM Registry Service - Part 1: ebRIM profile of CSW (1.0.1)	07-110r4	**IS**
	CSW-ebRIM Registry Service – Part 2: Basic extension package (1.0.1)	07-144r4	**IS**
	CSW-ebRIM Registry Service – Part 3: Abstract Test Suite (1.0.1)	08-103r2	**IS**
	CSW-ebRIM Registry Service - Part 1: ebRIM profile of CSW (1.0.0)	07-110r2	**D-IS**
	CSW-ebRIM Registry Service – Part 2: Basic extension package (1.0.0)	07-144r2	**D-IS**
	OpenGIS Catalogue Services Specification 2.0.2 - ISO Metadata Application Profile (1.0.0)	07-045	**SAP**
	EO Products Extension Package for ebRIM (ISO/TS 15000-3) Profile of CSW 2.0 (0.1.9)	06-131r4	**BP**
1.1.1	**Catalog Interface**	02-087r3	**D-IS**
	OGC Catalogue Services - ebRIM (ISO/TS 15000-3) profile of CSW (0.9.1)	04-017r1	**D-DP**
1.0	**Catalog Interface**	99-051	**D-IS**
2.0.1	**OpenGIS Catalogue Service Implementation Specification**	04-021r3	**D-IS**
	EO Application Profile for CSW 2.0 (1.4)	06-079r1	**DP**
	FGDC CSDGM Application Profile for CSW 2.0 (0.0.12)	06-129r1	**BP**
	EO Products Extension Package for ebRIM (ISO/TS 15000-3) Profile of CSW 2.0 (0.0.3)	06-131	**D-DP**
0.9.3	**ISO19115/ISO19119 Application Profile for CSW 2.0 (CAT2 AP ISO19115/19)**	04-038r2	**D-BP**
1.0.0	**OpenGIS Catalogue Services - ebRIM (ISO/TS 15000-3) profile of CSW**	05-025r3	**D-DP**
	Feature Type Catalogue Extension Package for ebRIM (ISO/TS 15000-3) Profile of CSW 2.0 (0.1)	07-172r1	**DP**
0.9.2	**ISO19115/ISO19119 Application Profile for CSW 2.0**	04-038r1	**D-DP**
0.3.0	**Minimal Application Profile for EO Products**	05-057r3	**D-DP**
0.3	**OpenGIS Catalogue Services - Best Practices for for Earth Observation Products**	05-057r4	**D-BP**
0.0.1	**Catalog 2.0 Accessibility for OWS3**	05-084	**DP**
0.0.4	**Catalog 2.0 IPR for ebRIM**	05-109r1	**D-DP**

3) Official Schemas

Catalogue Service for Web (CSW) has schemas at **http://schemas.opengis.net/csw/**

Note: You may also download **All Official OGC Schemas** in a single zip file.

4) Related News

OGC Seeks Participants for Ocean Science Interoperability Experiment Phase II
2009-03-05

Catalog Service for Web E-business Registry Information Model (CSW-ebRIM)

Open Geospatial Consortium Inc.

Date: 2009-02-05

Reference number of this document: OGC 07-110r4

Version: 1.0.1 (Corrigendum 1)

Category: OpenGIS® Extension

Editor(s): R. Martell

CSW-ebRIM Registry Service - Part 1: ebRIM profile of CSW

GIS in Education

GIS and Remote Sensing Education blog

Earth Observation extension for ebRIM needs comments

Posted by GIS talk On Friday, January 30, 2009

The members of the **Open Geospatial Consortium**, Inc. (OGC) have submitted a Request for Comments (RFC) on version 0.2.2 of the **Earth Observation (EO) Products Extension Package for ebRIM** (ISO/TS 15000-3) Profile of CSW 2.0 (OGC document 06-131).

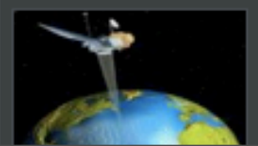
ebRIM is the electronic business Registry Information Model from the OASIS standards organization. CSW ("Catalog Services - Web") is an OGC standard that specifies a catalogue application profile based on ISO19115:2003/ISO19119:2005 metadata with support for XML encoding per ISO/CD TS 19139 and HTTP protocol binding.)

The EO Products Extension Package for ebRIM Profile of CSW 2.0 draft standard is an OGC Best Practice. It specifies an Application Profile of CSW 2.0 that is based on the OpenGIS Geography Markup Language (GML) Encoding Standard Application Schema for EO Products.

The 30 day public comment period begins January 28, and ends February 27. After the OGC's EO Extension Package Standards Working Group has addressed comments received in response to the RFC, the draft standard will be submitted to the OGC Technical Committee and Planning Committee for their review and possible approval as an adopted OGC Standard.

The RFC can be downloaded from the website.

Comments are due by February 27, 2009.



JOIN AND SHARE AREA

Username
Password
Remember me
LOGIN
New User? Register

Background

EO data users require accessing multiple data sources from different providers. It has been evaluated that more than 60% of the efforts of the Value-Adding Services is used for the Earth Observation (EO) data access.
The Heterogeneous Mission Accessibility - Interoperability program started in 2005 in the framework of the GMES Preparatory activities with the purpose of defining the interoperability concept across the ground segments of the European and Canadian missions which will contribute to the GMES initial phase. These missions have developed or are in the process of developing EO satellite that can offer essential capacity to the GMES Space Component according to their own objective and now need to be adapted to these requirements.
In the framework of the HMA-I activities, the Agency has defined in collaboration with these organisations the ground segment architecture and interoperability standards for an across-missions harmonised data access that is general and independent from the set of missions supported and includes:

- Collection and service discovery
- Catalogue search
- Programming and Order
- Mission planning
- Data quality and product formats.

Objectives

The aim of this project is to develop part of these interfaces using the Buddata ebRR and GeoNetwork opensource packages. Moreover the Buddata ebRR will be integrated in the SSE Toolbox (an open source tool developed in another ESA contract).

Galeon 2 Contributions

University of Florence / CNR-IMAA

WCS 1.1 client and server implementation plan:

We already developed a WCS 1.1 client implementation (as part of GI-go ver. 4.0)
We plan to develop a WCS 1.1 server implementation which supports ncML-Gml documents [by the end of July]

Relationship with SWE:

We are working on harmonizing Obs&Mes and Coverage data models [by the end of June]
We joined the Oceans IE as observers

GML dialects:

We plan to develop a WCS 1.1 server implementation which supports ncML-Gml documents [by the end of July]
We are planning to extend the ncML-Gml [by the end of June]

CSW.ebRIM:

We already developed a CS-W.ebRIM client implementation (GI-go ver. 3.10 and above)
We plan to develop a CS-W.ebRIM server implementation for coverage data [by the end of July]

But how current is this?
Action Plan as of Dec 2007

GROUP ON EARTH OBSERVATIONS

GeossPilot2

Search Site

Navigation

Home

Sitemap

Transverse Technologies WG

Access Services Working Group

Clearinghouse, Catalogue, Registry, Metadata Working Group

Portals and Application Clients Working Group

Test Facility Working Group

Workflow and Processing Working Group

SBA WG

Air Quality and Health Working Group

Climate Change and Biodiversity Working Group

Disaster Response Working Group

Renewable Energy Working Group

Recent site activity

UC5: Presentation of reachable Services and Alerts
edited by Nadine Alameh

OGC Compliance Test
edited by Mauro Semerano

Service Status Checker
edited by Mauro Semerano

WFS StyleSheet Wizard
edited by Mauro Semerano

GEOSS Architecture Implementation Pilot, Phase 2 Collaboration Workspace

- This is a day-to-day collaborative development site for the GEOSS AIP Phase 2. For use by participants only.
- All contributions remain the property of the contributor. For results and summaries of work carried out here, see the AIP-2 pages on OGC Network.
- For best practices (hints and tricks) to using this site, see here. If you have questions about setting up your workspace, post them to the discussion page and the group can answer.
- Moving to a testing phase for contributed GEOSS service and client resources, a page for Test Matrix / Test Reports has been set up for reports on testing experiences. Also available now is a service status checker.
- Architectural models and diagrams for AIP-2 are being developed on the Enterprise Modeling page

Scenario Working Groups	Transverse Technology Working Groups
Disaster Response Working Group	Clearinghouse, Catalogue, Registry, Metadata
Climate Change and Biodiversity	Access Services (Products, Sensors, Models)
Renewable Energy Working Group	Workflow and Processing Working Group
Air Quality and Health Working Group	Portals and Application Clients Working Group
	Test Facility Working Group
Scenarios / UseCases Matrix	**Transverse Technology Use Cases**

Launch the Meeting Planner

Central European	5:24:46 AM
UTC	4:24:46 AM
US - Eastern Standard	12:24:46 AM
US - Western Standard	9:24:46 PM
Japan	1:24:46 PM

Enterprise Architecture

52 days until **Transition to Operations**

(1224 hours : 36 minutes : 14 seconds)

AIP-2 Events (US Eastern Daylight Time, 4 hours earlier than UTC)

Today | Wednesday, March 11 | Print

Thursday, March 12
10:00am AIP-2 DM Telecon

Friday, March 13
9:00am Workflow & Processing WG bi-weekly telecon
1:30pm AIP-2 AQ Workgroup Telecon 1:30pm (EST)

Tuesday, March 17
10:00am AIP Plenary Telecon

Events shown in time zone: Eastern Time

This page is a day-to-day collaborative workspace for the "CCRM" Working Group. Summaries and compilations of this work can be found on the OGC Network.

Teleconference Notes. Contributor notes below

News and Events

- Telecon 9 12 FebruaryNotes
  Posted Feb 12, 2009 10:25 AM by AIP-2 GEOSS
- Telecon 8 21 JanuaryNotes
  Posted Jan 21, 2009 7:29 AM by AIP-2 GEOSS
- Telecon 7 7 January 2009Notes
  Posted Jan 21, 2009 7:30 AM by AIP-2 GEOSS
- Telecon 6 17 DecemberNotes
  Posted Dec 17, 2008 12:07 PM by AIP-2 GEOSS
- Telecon 5 10 DecemberNotes
  Posted Dec 17, 2008 12:06 PM by AIP-2 GEOSS

Showing posts **1 - 5** of **9**. View more »

Issues and Discussions

Item	Summary
Metadata For Services	Metadata stds and elements for service description
Component Types and Registration	Component types and process / elements of entry into GEOSS Registry
GEOSS Discovery Use Case(s)	Details of standard use case for discovering registered GEOSS components/services and their contents
Harvest Requirements	Initial discussion of harvesting parameters as possible additions to Service records

Showing **4** items from page CCRM WG Issues and Discussions sorted by edit time. View more »

Work Items

Owner	Description	Resolution	Status
Doug Nebert	Component types and practice for registration and harvesting		New
Ted Habermann	Harmonized metadata for coupled service - datasets		New
Josh Lieberman	Organize CCRM workspace	Initial structure set up	Complete

Showing **3** items from page CCRM WG Work Items sorted by edit time. View more »

Capabilities and Results

Name	Creator/Provider	Description	Status
ESRI Clearinghouse	Marten Hogeweg	Implementation information about the ESRI Clearinghouse component	Available
Compusult Clearinghouse	Robert Thomas	Implementation information about the Compusult Clearinghouse component	Unknown
FGDC Clearinghouse	Archie Warnock	FGDC / GMU Clearinghouse implementation	Development

Showing **3** items from page CCRM WG Results sorted by edit time. View more »

Resources

Name	Type	Description
AIP-1 Clearinghouse WG workspace	Website	OGC Network pages from first pilot

Participants

Name	Role	Organization	Liaison-with
Archie Warnock	Developer	A/WWW Enterprises	

THREEDS Catalog

Dataset Inventory Catalog Specification Version 1.0

last update: Dec 15, 2004
Comments to John Caron or THREDDS mailgroup

A THREDDS catalog is a way to describe an inventory of available datasets. These catalogs provide a simple hierarchical structure for organizing a collection of datasets, a means of accessing each dataset, a human understandable name for each dataset, and a structure on which further descriptive information can be placed.

This document specifies the semantics of a THREDDS catalog, as well as its representation as an XML document.

Contents:

Related resources:

AGU Fall Meeting 2007

IN44A-02

Distributed Multi-interface Catalogue for Geospatial Data

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Several geosciences communities (e.g. atmospheric science, oceanography, hydrology) have developed tailored data and metadata models and service protocol specifications for enabling online data discovery, inventory, evaluation, access and download. These specifications are conceived either profiling geospatial information standards or extending the well-accepted geosciences data models and protocols in order to capture more semantics. These artifacts have generated a set of related catalog -and inventory services- characterizing different communities, initiatives and projects. In fact, these geospatial data catalogs are discovery and access systems that use metadata as the target for query on geospatial information. The indexed and searchable metadata provide a disciplined vocabulary against which intelligent geospatial search can be performed within or among communities. There exists a clear need to conceive and achieve solutions to implement interoperability among geosciences communities, in the context of the more general geospatial information interoperability framework. Such solutions should provide search and access capabilities across catalogs, inventory lists and their registered resources. Thus, the development of catalog clearinghouse solutions is a near-term challenge in support of fully functional and useful infrastructures for spatial data (e.g. INSPIRE, GMES, NSDI, GEOSS). This implies the implementation of components for query distribution and virtual resource aggregation. These solutions must implement distributed discovery functionalities in an heterogeneous environment, requiring metadata profiles harmonization as well as protocol adaptation and mediation. We present a catalog clearinghouse solution for the interoperability of several well-known cataloguing systems (e.g. OGC CSW, THREDDS catalog and data services). The solution implements consistent resource discovery and evaluation over a dynamic federation of several well-known cataloguing and inventory systems. Prominent features include: 1)Support to distributed queries over a hierarchical data model, supporting incremental queries (i.e. query over collections, to be subsequently refined) and opaque/translucent chaining; 2)Support to several client protocols, through a compound front-end interface module. This allows to accommodate a (growing) number of cataloguing standards, or profiles thereof, including the OGC CSW interface, ebRIM Application Profile (for Core ISO Metadata and other data models), and the ISO Application Profile. The presented catalog clearinghouse supports both the opaque and translucent pattern for service chaining. In fact, the clearinghouse catalog may be configured either to completely hide the underlying federated services or to provide clients with services information. In both cases, the clearinghouse solution presents a higher level interface (i.e. OGC CSW) which harmonizes multiple lower level services (e.g. OGC CSW, WMS and WCS, THREDDS, etc.), and handles all control and interaction with them. In the translucent case, client has the option to directly access the lower level services (e.g. to improve performances). In the GEOSS context, the solution has been experimented both as a stand-alone user application and as a service framework. The first scenario allows a user to download a multi-platform client software and query a federation of cataloguing systems, that he can customize at will. The second scenario support server-side deployment and can be flexibly adapted to several use-cases, such as intranet proxy, catalog broker, etc.

Instructions:

IOOS Observation Registry

Monterey Bay Sanctuary Foundation
National Oceanic and Atmospheric Administration
- Coastal Services Center
- Office of National Marine Sanctuaries
May 2008

Introduction

The Obs Registry is a database that tracks the operational status and distribution of in-situ ocean observatories among participants in the integrated ocean observing system (IOOS). The registry's primary purpose is to support strategic planning of observing resources and to facilitate the discovery and utilization of observation data. Its design is based on a network of observatories that share their resources with the public through Web services. Each observatory on the network is regularly polled for its operational status and compiled into a national view at http://obsregistry.org/map.

IOOS Observation Registry V2.5

Latest Registry News:

- **New interactive map that allows users to query the Registry database to produce specific map views. Try it now (January 14, 2008)**
- **Technical Advisory Committee (TAC) meeting held December 6-7, 2007 in Santa Cruz, CA. Download the meeting notes (December 7, 2007)**

The **IOOS Observation Registry** is a project initiated by the IOOS community to inventory non-Federal observing assets in the United States. With low barrier to participation the Registry provides a simple mechanism for regional data collectors to report on their real-time observations, enabling them to share the most recent descriptions of their deployments. With information streams coming in from all areas of the coastal U.S., Great Lakes, and Hawaiian Islands, the Registry provides the IOOS community with a fresh picture of non-Federal observing activities every 24 hours. More...

REGISTRY STATISTICS AS OF 2009-03-09

Providers: 31 **Observations: 3202** **Platforms: 791**

Launch Map

NOAA Coastal Services Center
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National Marine Sanctuaries

IOOS Observation Registry V2.5

Sensor Platforms Map

[Home]
Reporting Date: 03/10/2009

Observations:
All Observations

Regions:
GCOOS (Gulf of Mexico)

Providers:
All Providers

Platform Type

- (•) All Platform Types
- ( ) Select a Platform
- [ ] Non-Federal Stationary
- [ ] Non-Federal Mobile
- [ ] Federal Stationary
- [ ] Federal Mobile
- [ ] Partial Federal Stationary
- [ ] Partial-Federal Mobile

Refresh | Show All

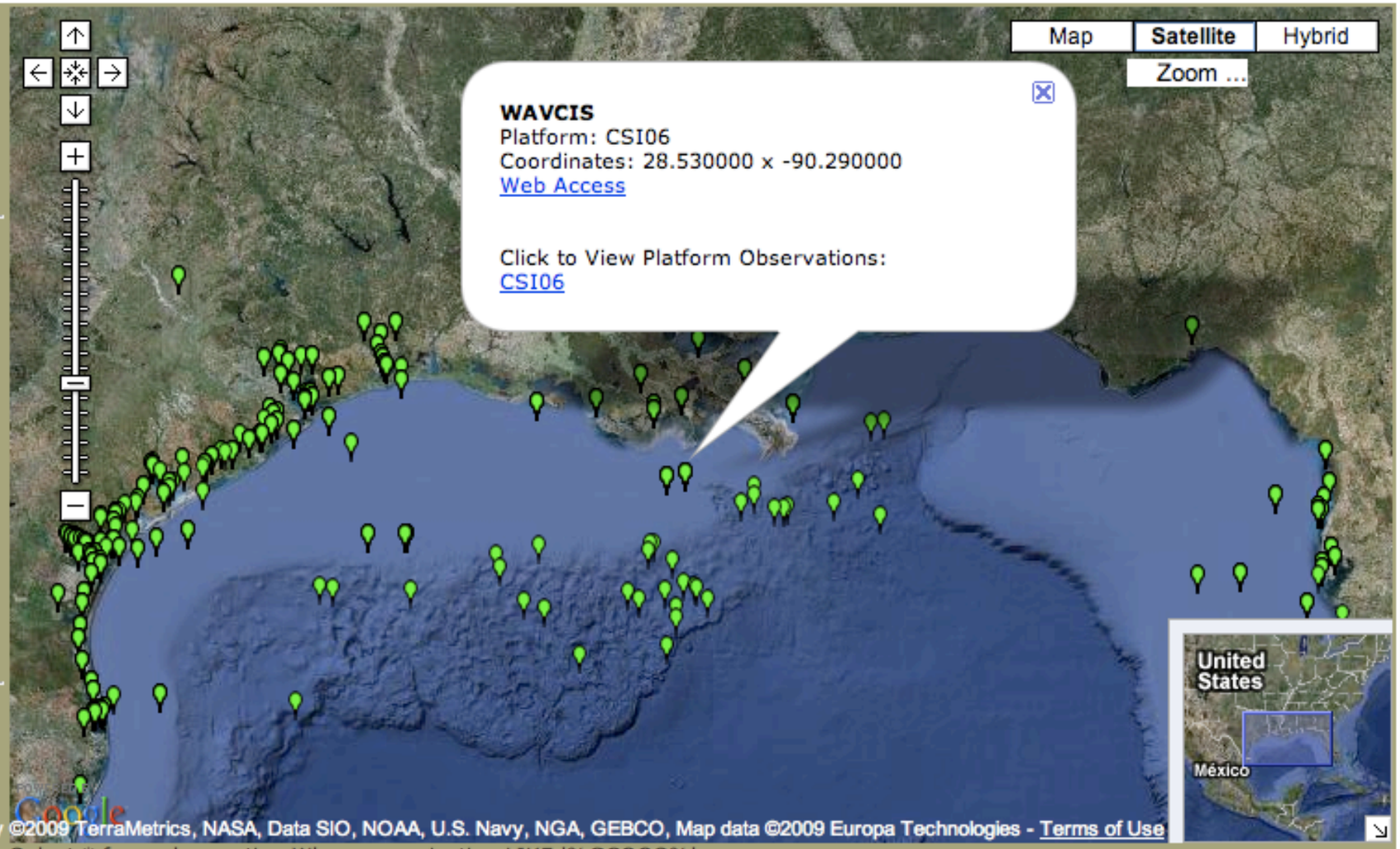
Filter
Region: GCOOS
Types: All Types
Platforms: 245
Observations: 1345

Download Results

[OGC GML]

[Google Earth KML]

Filter platforms on the map by selecting from one or more dropdown items above and clicking 'Refresh'. To show all platforms in the Obs Registry (default view) click 'Show All'



Select * from observation Where organization LIKE '%GCOOS%'

Note: all features of this Google map application may not work with the the Internet Explorer 6 browser. Please use FireFox or Internet Explorer 7.

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National Marine Sanctuaries

ObsRegistry

Summary of Registry Contents

Identifier	WHOI.Salinity.2
Version	1.0
Modified	2007-01-02T12:33:10Z
Observation Name	Salinity
Status	Operating
Platform Name	SBECTD_s
Platform Type	Stationary
Sponsor	Non-Federal
Latitude	41.3366
Longitude	-70.5564
Coverage Footprint*	
Vertical Position	-1.45
Vertical Datum	MSL
Operator	Martha's Vineyard Coastal Observatory (WHOI)
Organization	NERACOOS
Start Date*	2002-04-19T21:20:00Z
End Date*	
Operator URI*	http://www.whoi.edu/mvco/contact.htm
Platform URI*	
Data URI*	http://www.whoi.edu/mvco/data/oceandata.html
Metadata URI*	http://whoi.edu/mvco/md/oceanmetadata.html
Comments*	see additional records for water temp

* optional

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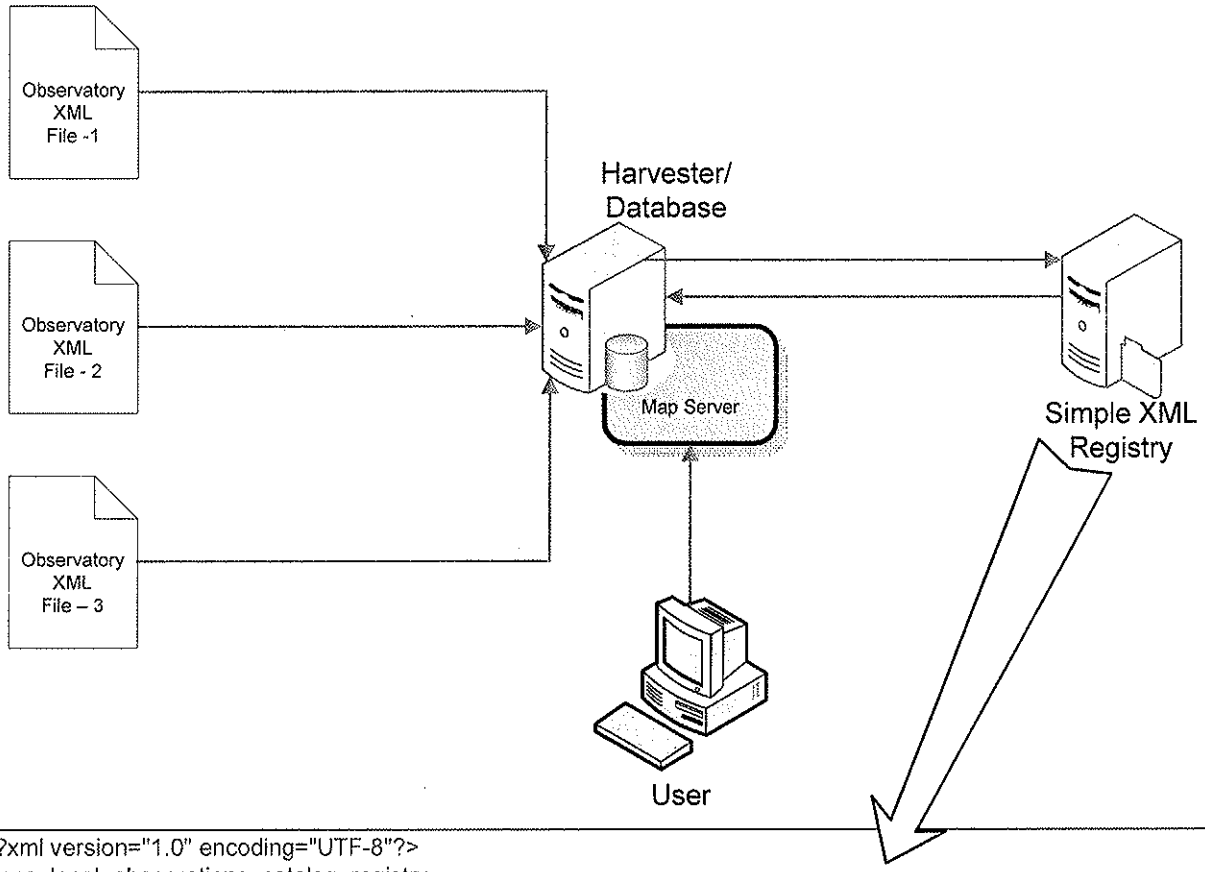
Constraints

- Time and Money
- Data Provider participation
- build, borrow, adapt, hard-wire it?
- Who will maintain? Where will it reside?

Registries and Catalogs Handout

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        <email>cermak[obfuscate email]sfos.uaf.edu</email>
        <file_url>http://ak.aoos.org/data/ioos/sensor_status.xml</file_url>
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    <registrant>
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...

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        <email>drf5n[obfuscate email]maplepark.com</email>
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        <email>john.ulmer[obfuscate email]noaa.gov</email>
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Appendix 5.5 – Challenges and Reconciliation Brief

INTEGRATED OCEAN OBSERVING SYSTEM

IOOS
Regional DIF Implementation: Challenges/Reconciliation

IOOS Regional DIF Implementation Workshop
Silver Spring, MD (10-11 2009)

Context

Assumption 1: IOOS is a Collective Enterprise

Assumption 2: IOOS Interoperability is Valuable

Assumption 3: Focus (for us) is on Data Transport

Assumption 4: Focus on NRT, DIF Core Variables

Assumption 5: We all (still) like each other

Deployment (Action Items)

30 September Goals:

- **Define/Agree on Minimum Specifications for DIF**
- **Identify and/or Establish DIF Service Registry?**
- **Establish Common Code Repository**
- **5 RAs Operating DIF Services for 7(?) DIF CVs**
- **Test (i.e., deploy/demo) and "Certify" (?)**
- **Register Services**
- **…**

Priority Challenges to DIF Implementation

- **DIF Specifications (joint decision)**
- **Reconcile IOOS DIF and OOSTETHYS?**
- **Process Documentation for DIF - cookbook(s)**
- **Common Code Repository Hosting**
- **Registry Details**
- **Resources (expertise, time, funding)**
- **“Selling DIF” (demonstrate practical use cases)**
- **Mechanisms to Maintain RDI WG Effort**
  - Web forum(s); workshops; documentation

Mitigation Strategies

- DIF Specifications (joint decision)
  - …
- Reconcile IOOS DIF and OOSTETHYS?
  - …
- Process Documentation for DIF - cookbook(s)
  - …
- Common Code Repository Specifications
  - …

Mitigation Strategies - Continued

- **Registry Details**
  - **…**
- **Resources (expertise, time, funding)**
  - **…**
- **“Selling DIF” (demonstrate practical use cases)**
  - **…**
- **Mechanisms to Maintain RDI WG Effort**
  - **…**

Regional Parking Lot Issues Discussion Topics

- Archival Processes and Data Lineage
- Metadata (for services only) and QA/QC
- Non-NRT Data and Mobile Platforms
- Visualization Tools; Semantic Resolution
- Automate Status of Observing Assets (to maintain Registry)
- Embargoed and Delayed-Mode Data
- Reporting Metrics and Diagnostics
- Levels of Granularity (e.g., Registry metadata)
- Competing Requirements for Registry
- DMAC Integration with “Products” Efforts
- Logistical Considerations:
  - Volume of data transport; Legacy HW/SW instances; Personnel/expertise

Appendix 5.6 – Workshop Participant Contact Information

REGIONAL DIF IMPLEMENTATION WORKSHOP – PARTICIPANT LIST
MARCH 10-11, 2009

Name	Title	Address	Phone	Email
Charly Alexander	Chief, Operations Division	1100 Wayne Ave, Silver Spring, MD 20910	240-461-8451	Charles.alexander@noaa.gov
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Lisa Hazard	SCCOOS DMAC	UCSD 9500 Oilman Dr	858-822-2873	lhazard@ucsd.edu

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MARCH 10-11, 2009

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Rich Signell	USGS	384 Woods Hole Road Woods Hole, MA 02543-1598	508-457-2229	rsignell@usgs.gov
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REGIONAL DIF IMPLEMENTATION WORKSHOP – PARTICIPANT LIST
MARCH 10-11, 2009

Name	Title	Address	Phone	Email
Sam Walker	Information Management Coordinator	SECOORA	803-807-1189	sam@secoora.org
Guan Wang	Developer	GLOS	734-971-9135	gwang@glc.org