

Gulf of Maine Ocean Data Partnership

Hosted by Gulf of Maine Ocean Observing System (GoMOOS)

2006 Work Plan

December 2005

Member Organizations:

Bedford Institute of Oceanography
Centre for Marine Biodiversity
Coastal Ocean Observation and Analysis – UNH
Gulf of Maine Area Census of Marine Life
Gulf of Maine Council on the Marine Environment
Gulf of Maine Ocean Observing System
Gulf of Maine Research Institute
Huntsman Marine Science Centre
Maine Department of Marine Resources
Massachusetts Coastal Zone Management
New Hampshire Department of Environmental Services
NOAA – Coastal Services Center
NOAA – Northeast Fisheries Science Center
St. Andrews Biological Station
Stellwagen Bank National Marine Sanctuary
Tufts University School of Veterinary Medicine/SEANet
USGS – Woods Hole Science Center
US Fish and Wildlife Gulf of Maine Program
University of Connecticut National Underwater Research Program
Wells National Estuarine Research Reserve
Woods Hole Oceanographic Institution
EPA/ORD/NHEERL/Atlantic Ecology Division (Associate)

Staff Support: Sylvia Most

Executive Summary

In 2006, the Partnership will continue working in 4 topic areas: authority, discovery, access, interoperability.

- Authority will become more important as interoperability capabilities begin to be developed. Partners are asked to insure authority for the data sets they will serve.
- Discovery was the main focus in 2005 (Lou Van Guelpen's project and the FGDC metadata workshop). In 2006 we expect Partners to take individual responsibility for completing this effort, with the Partnership providing guidance as needed (Lou will continue his role, at least to some degree, under a contract with GoMOOS).
- Access will be a major focus in 2006. The survey done this past year does provide information on how ready/capable the different Partners are to undertake this step. Similarly to how we began the metadata registration effort, we may design a project working with a few Partners who are ready and willing to commit some of their own resources (mainly the time of an IT person) to move forward in this area.
- Interoperability was beyond the Partnership's priorities in 2005 and will become a focus in 2006. Interoperability has the potential to help Partners to do their jobs better, so designing useful demonstration projects will be the first priority. Identifying what would be useful is a major intent of the breakout session at the Annual Meeting. The various projects GoMOOS has ongoing will be a big help/leverage in this effort.

Other specific items on the 'to do' list:

- Complete a partnership guide for new and existing partners.
- Publish an Partnership Annual Update for 2005 Activities via email and the website.
- Form a Partnership Editorial Board for ongoing review of metadata related to the Gulf of Maine.

Goals and Objectives

The December 2005 Gulf of Maine Ocean Data Partnership (Partnership) technical guidance document addresses the areas of:

1. Authority
2. Discovery
3. Access
4. Interoperability

In 2005, progress was made in implementing discovery capabilities for many partners, and extensive preparatory work led to the technical guidance in the other areas. Progress in 2006 will be made with participation of the existing (or an expanded or revised) Technical Committee working with GoMOOS staff and other participants, as funding and

other resources permit. Also, as described below, there may be ways to economize by leveraging related activities.

Authority

Little progress was made in year one, in part because this was not a priority. However, as Partners begin enabling data access in 2006, issues of authority and attribution will become important.

- **Deliverables:** Best practices and metadata recommendations associated with Discovery and Access implementations described below.
- **Partner Responsibilities:** Partners should insure their authority for the data sets they will serve, in accord with the guidance provided by the Technical Committee. If any issues arise with meeting the identified criteria, the Partners are encouraged to contact the Partnership for guidance.
- **Contacts:** GoMOOS will provide staff support for the Technical Committee to coordinate the activity, as well as advise technical implementation as appropriate. Partners will be able to communicate with each other via a dedicated listserv and wiki.

Discovery

Substantial progress was made in 2005, thanks to support from the Census of Marine Life and the work of Lou Van Guelpen. Many Partner data collections have become discoverable through national portals such as the Global Change Master Directory (GCMD), GeoConnections and Geospatial One Stop, but more work needs to be done. The Metadata workshop organized by GoMOOS with support from the Federal Geographic Data Committee (FGDC) should facilitate more widespread adoption of the Partnership's technical recommendations.

- **Deliverables:** Keyword discoverability of the Partner data collections via the several national and international catalogs; possible expansion upon lessons learned and issues encountered in the 2005 Tech guidance; Development of the GCMD GoMODP portal and having all datasets incorporated/linked regardless of where they were originally developed (need to assess feasibility of this objective)
- **Partner Responsibilities:** Partners should continue to register their data sets, in accord with the guidance from the Technical Committee. For partners with extensive holdings, it may be desirable to create summary records rather than one for each data holding. Partners should notify Melanie Meaux of the Global Change Master Directory (mmeaux@nasa.gov) to include their metadata records in the GCMD portal for the Partnership.
- **Contacts:** Lou Van Guelpen is under contract to GoMOOS to continue helping partners to register their data with the clearinghouse catalog sites.

Note: work is underway to make the clearinghouses interoperable with one another. This means that any one Partner will only have to register their metadata at one clearinghouse portal to become discoverable through all of portals. GeoConnections and the Global Change Master Directory (GCMD) have already achieved this level of interoperable discovery. FGDC is developing the capability for Geospatial One Stop.

Access

The technologies that allow interoperable data access are evolving rapidly. It is becoming increasingly clear that web services provide the foundation for most forms of access. In this case, a “web service” means an XML technology that implements specifications recommended by the World Wide Web Consortium (www.w3c.org). These include specifications such as the Simple Object Access Protocol (SOAP) as well as the web service specifications developed by the Open Geospatial Consortium (OGC). In the last year, the concrete guidance from the OceanUS Data Management and Communications (DMAC) Steering Team has become much more supportive of this approach. Moreover, web-service interfaces are common to all but one of the data access technologies recommended by the Partnership’s Technical Committee, and all are likely to have web-service interfaces in the future. GoMOOS predicts that all data-access technologies of the future will migrate to a foundation based on XML and W3C-compliant web services.

One advantage of using web services is that they have already been implemented with a wide variety of software tools that run on every type of computer that resides on the Internet. The other advantage is that the web-service specifications data access can grow incrementally and provide substantial access control by the data provider. Web service implementations can be very limited and simple or very complex and broad in scope. The Partnership should build incrementally from a set of very specific initial goals that are simple and limited in scope.

As resources allow, the Partnership will work with a group of Partners involved in the Interoperability demonstration projects (see Interoperability) to insure the necessary data sets are accessible by an appropriate protocol.

- **Deliverables:** Partners should be working toward standard vocabularies. This involves utilizing existing lists or developing a crosswalk to a partner’s proprietary list. Partners who are capable should implement a suggested access protocol for their data.
- **Partner Responsibilities:** Partners must become increasingly knowledgeable about what vocabularies and access protocols will work for their organization and what constraints exist. Where possible, Partners should strive to implement one of the data sharing protocols recommended by the Technical Committee.
- **Contacts:** Partners may obtain guidance and support from GoMOOS as resources are available.

Interoperability

The 2006 the Partnership will work toward the long-term goal of interoperability in small steps that can build incrementally upon one another. Each step should be associated with an end-to-end demonstration that provides visible evidence of progress toward the long-term goal. However, near-term objectives should remain limited in scope in order to accommodate Partners' limited resources for involvement.

The first step should involve a small group of technical individuals who can define a demonstration project achievable in a 3-6 month time frame. To proceed quickly, the demonstration should build from existing capacity in place with the Partners (such as the EPA Environmental Exchange Network), and consider leveraging the three related activities listed below.

- **Deliverables:** Project Specification documents that detail the desired outcomes for demonstration activities. Those outcomes should be determined by the approach outlined below.
- **Partner Responsibilities:** A demonstration of limited scope should be achievable in 3-6 months provided Partners dedicate 1-2 weeks of technical support in that period. These technical staff should become involved in project specification as well as implementation. Initial technical-implementation teams should be kept small and involve a subset of the overall Partnership, with all Partners encouraged to participate in the planning and listserv activities.
- **Contacts:** These activities will be led by GoMOOS staff and contractors. A GoMOOS staff member will serve as primary point of contact, and GoMOOS technical staff members will be brought on as needed to help with implementation.

Approach

The work plan for 2006 should involve one or more pilot projects. Implementation should involve the Technical Committee and one or more teams of Partners interested in developing simple data-access capabilities that build from existing demos and their existing capacity. Partners willing to participate in the first 3-6 month activity should identify technical individuals on their staff who can contribute time to become part of an active working group.

The work group(s) should start by developing a clear specification of one or more end-to-end demonstrations of data access and interoperability. Ideally, the Partners will also be involved in the process of defining the end-goals of the pilot projects. The technical personnel should understand or be able to address implementation issues associated with the underlying technology for data access at their home institution, including security (e.g., firewalls).

Pilot projects can build from the "interoperability" demonstration web sites described in the next section, including www.OpenIOOS.org or www.GoMMaP.org. Both sites are

capable of using the range of access methods that appear in the Guidance document. They are hosted by GoMOOS and can be readily modified to accommodate the needs of the Partnership.

Related Activities & Initiatives

The Partnership can leverage any of several ongoing activities taking place on a national scale. The following three seem particularly appropriate:

1. OpenIOOS Interoperability Test Bed (<http://www.openioos.org>): The broad goals of this OpenIOOS activity are virtually identical to those of the Partnership, except that the OpenIOOS activity includes partners from around the country. GoMOOS hosts the OpenIOOS.org web site, which is a community resource that has been directed largely through the Southeastern Coastal Ocean Observing Program (SCOOP) program at the Southeast Universities Research Association (SURA) (<http://www.sura.org>) with funding and participation from the Office of Naval Research and the NOAA Coastal Services Center (CSC). In particular, the CSC has promised to provide substantial additional support for several related activities over the course of the next year.
2. The Marine Metadata Initiative (MMI) has developed an interoperability demonstration activity (<http://www.marinemetadata.org/tethys/>) with an associated software implementation. The MMI demo, called Tethys, is designed to help data providers in the oceanographic community get up to speed with the types of metadata issues that have impact on all aspects of data discovery, access and interoperability. In this sense, the Tethys goals extend well beyond the discovery goals of the Partnership. John Graybeal and Luis Bermudez from the Monterey Bay Research Institute (MBARI) lead the MMI. Philip Bogden serves on the MMI Executive Committee and is co-principal investigator on a recent proposal to the National Science Foundation (NSF) for continued MMI funding.
3. The SURA Coastal Ocean Observing and Prediction (SCOOP) Program is a major initiative of the Southeastern Universities Research Association (SURA). The SCOOP Program is implementing a community-based information technology infrastructure (i.e., a service-oriented architecture) to advance the science of environmental prediction and hazard planning for our nation's coasts. SCOOP goals extend beyond those of the Partnership to address issues related to real-time environmental prediction, but many of the technologies are identical to those recommended by the Partnership. Moreover, the SCOOP program will continue to support community involvement in these activities. For example, SCOOP hosted the OOS Tech 2005 workshop in October, and follow-on activity is being actively planned. It includes partners from around the country who will be implementing data access capabilities that will be showcased on www.OpenIOOS.org. See <http://twiki.sura.org/> for details.

These activities can serve as information resources. In addition, GoMOOS will support Partnership involvement, as appropriate. Given limited resources, these activities could be instrumental in helping the Partnership achieve its goals in the areas of authority, discovery, access and interoperability.

Additional Activities

During 2006 additional activities by the Partnership will include:

1. Complete partnership guide for new and existing partners.
2. Publish a Partnership Annual Update for 2005 Activities via email and the website.
3. Form a Partnership Editorial Board for ongoing review of metadata related to the Gulf of Maine.

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