

Long-range DMAC Plan for the GCOOS-RA Version 2.2; April 17, 2014

The highest current priorities leading to a full GCOOS DMAC system are: (1) build decision support tools; (2) entrain new data providers and users, including sporadically-sampled, historical and ecosystem data; (3) hire subject matter expert for in situ observing systems; (4) interface with modeling subsystem; (5) increase support to 100% for Information Architect; and (6) hire a subject matter expert for Social Networking Software.

This plan first states general *goals* for improving the GCOOS-RA DMAC. Included are examples of *issues* underlying the need for improvements.

The remainder of the plan consists of *milestones* or actions needed to reach these goals. It is expected that the DMAC element will successfully complete these actions within the year indicated for each milestone.

Goals [Areas for improvement]

After each goal the principal issues for that area are given.

1. Enhanced data aggregation in previously targeted parameters.
 - Issue.* We have not advanced the Integrated Water Quality Network (IWQN) activity much beyond identifying potential data providers.
 - Issue.* We are not acquiring and serving surface wave data.
 - Issue.* We are not acquiring HF Radar data.
 - Issue.* Our historical collection only goes through approximately the year 2000.
 - Issue.* We are not acquiring the coastal NWS or offshore industry meteorology.
2. Support additional disciplines of study and thematic areas.
 - 2.1 Add data relevant to ecosystem sciences, HABS, hypoxia, ocean acidification, etc.
 - 2.2 Add data of various types, e.g., monitoring (sporadically-collected) data and near shore historical data.
 - 2.3 Provide for a Citizen Scientist capability to address a growing area of data collection by coastal schools and volunteer organizations. It will enhance ocean literacy as well as lead to much goodwill for GCOOS-RA at low cost.
 - Issue.* Our current holdings are limited to physical oceanographic, marine meteorological and some biogeochemical data.
 - Issue.* Our current holdings are essentially limited to data collected in near-real time and historical data offshore of the 5-m isobath.
 - Issue.* Citizen Scientist groups should have a better experience if they have their own areas within our web pages.
3. Facilitate data use
 - 3.1 Improve catalog services for historical data.
 - 3.2 Improve online browse services for near real-time and historical data.
 - 3.3 Provide tutorial materials illustrating common workflow solutions (i.e., tools and techniques for using data).
 - Issue.* It is difficult to know what data we have in our historical archives or how to access them.
 - Issue.* It is difficult to know the temporal extent of our near real-time data.
 - Issue.* IOOS services (OPeNDAP, TDS, ERRDAP, SOS) may be obscure to users outside of the technical ocean data user community. Some written guidance on the use of these services should be provided.

4. Produce products meeting stakeholder needs.
 [Note: Products should not be targeted to compete with commercial enterprises.]
Issue. The number and types of data-based products need to be increased and the quality improved.
Issue. We have no rigorous process for selecting which products to develop.
Issue. We have no review process to assess the value of our products to stakeholders.
5. Manage IOOS DMAC requirements while meeting and maintaining GCOOS DMAC needs.
 - 5.1 Improve SOS Services.
 - 5.2 Implement QARTOD (i.e., QA/QC) requirements.
 - 5.3 Implement appropriate archiving at NODC.
 - 5.4 Maintain the GCOOS Data and Products Portal in a user-friendly, updated manner.
Issue. IOOS Program Office occasionally requests changes that require significant revision or enhancement of existing GCOOS DMAC services, system architecture and/or software. The data portal needs continual maintenance and regular updates to remain accurate, functional and up-to-date. At issue is balancing internal and external schedules.

Milestones [Timeframes for needed actions]

Goal 1 “Enhanced Data Aggregation” (Lead Responsible Party: Data Manager)

- 2014 Identify and acquire 75% of the state and federally-collected data supporting the development of the Hypoxia–Nutrient Portal. This will also benefit the IWQN work. Migrate historical data (NEGOM, LATEX, etc.) into new NODC feature-type formats. Add and offer 95% of the NODC-held historical data from 2001-2006 to our system.
- 2015 Add the remaining 25% of the data to the Hypoxia–Nutrient Portal. Add and offer 95% of the NODC historical data from 2007-2012 to our system. Add 95% of the remaining parameters beyond Hypoxia-Nutrient Portal to satisfy IWQN development.
- 2016 Add 95% of the NODC historical data from 2013-present into our system. Decide which wave data parameters from NDBC and CDIP are useful and acquire. Add private sector near real-time meteorology (e.g., offshore oil platforms, Volunteer Observing Ships-Sea Keepers-type instrumented ships programs) to the Data Portal. Identify NWS coastal stations (e.g., 1st order airports, state meso-nets, etc.) and incorporate into the near real-time Data Portal system. Incorporate near real-time data feeds from the HF Radar DAC into the GCOOS Data Portal.

Goal 2 “New disciplines and themes” (Lead Responsible Party: Data Manager)

Goal 2.1 “New Themes” (Lead Responsible Party: Data Manager)

- 2014 Evaluate the ecosystem section of the Build-out Plan to determine target categories of ecosystem data to be added in 2015 and 2016. (Executive Director)
 Complete posting of CAGES data for the Gulf.
- 2015 Add 50% of ecosystem data identified in 2014.
 Define user needs and requirements for data-based ecosystem products such as plots, graphs, images, maps of environmental properties, special data collections such as climatologies, or best collections of model output. (Executive Director, Data Manager)
- 2016 Add 50% of ecosystem data identified in 2014.
 Initiate the implementation of the data-based ecosystem products defined in 2015. (Data Manager)

Goal 2.2 "Historical and Monitoring (sporadically-collected) Data" (Lead Responsible Party: Data Manager)

- 2014 Begin migration and reformatting of historical data. (Data Manager)
1. NEGOM data should be served first because its baselines are useful for RESTORE activities.
 2. DEEPWATER REANALYSIS project data
 3. LATEX project data
 4. Shipboard AOML
- 2015 Begin collection and service of monitoring (sporadically-collected) data. [This should begin with those data providers identified by the IWQN efforts.] (Data Manager)
Identify additional, non-TAMU historical data for inclusion (Executive Director, Data Manager)
- 2016 Expand the historical and monitoring data to include new data types and collections.

Goal 2.3 "Citizen Scientists" (Lead Responsible Party: O/E Manager)

- 2014 Add a Citizen Scientist capability to the web site as sought by the EOC. Their project pages, upload/download areas, blog/comment sections, data-based products, localized maps, teaching units might best be enjoyed if they were organized underneath their own home page on our websites. Some of these areas (e.g., data upload, blog/comments) might have member-only privileges.[Chris Simoniello is working with the EOC, FL and TX groups, and Shin Kobara to implement.]
- 2015 Add data and story maps from two [2] new volunteer data providers.
Create a process to select (semi-annual) an Eco Hero from a volunteer Citizen Scientist partner.
Add supporting information to the Citizen Scientist pages that enable users to share and compare data across the region.
- 2016 Add data and story maps from at least two [2] volunteer data providers.
Develop a tutorial to facilitate use of the Citizen Scientist web pages (see Goal 3.3 below).
Facilitate an inter-state middle- or high-school science fair project focused on water quality that is a collaboration of Citizen Scientist participants.

Goal 3 "Facilitate Data Use" (Lead Responsible Party: Data Manager)

Goal 3.1 "Catalog for Historical Data"

- 2014 Develop catalog for current historical data holdings linking parameters to datasets.
- 2015 Develop catalog for combined historical data and near real time data. Update.
- 2016 Maintain and update catalog to accommodate new datasets.

Goal 3.2 "Online Browse Capability"

- 2014 Define requirements for online browse of near real-time and historical data – including tabular, graphical, plotting and interactive filtering.
Develop and deploy system with basic capabilities.
- 2015 Enhance online browse capabilities
- 2016 Enhance online browse capabilities

Goal 3.3 “Tutorials”

Tutorials would help new users understand how to interact with the data system using ordinary browsers, tools like Matlab, or programming languages like Python. It would illustrate how to construct a constraint expression to perform subsetting and how to get the response in the form and format most useful to the user.

- 2014 Identify and define 3 priority tutorials and workflow examples for stakeholders (Input from Executive Director, Communications Manager, O/E Manager)
Design and implement at least 2 of the identified priorities.
- 2015 Identify and define 3 additional priority tutorials and workflow examples (Input from Executive Director, Communications Manager, O/E Manager)
Design and implement at least 2 of the identified priorities.
- 2016 Identify and define 3 additional priority tutorials and workflow examples (Input from Executive Director, Communications Manager, O/E Manager)
Design and implement at least 2 of the identified priorities.

Goal 4 “Produce Products” (Lead Responsible Parties: Executive Director & Data Manager)

- 2014 The Board will task the EOC and the PSAC to review the stakeholder workshop reports to recommend priority products, including viewable data fields that *can be produced with extant data*. Each Council will be asked to recommend at least five (5) products *per year*. (Executive Director)
Implement for service via the portal a minimum of three recommended products. (Data Manager)
Develop method and metrics to assess usefulness and satisfaction of products.
Using petroleum industry data collected in the north-central Gulf, prepare for several (≥ 2) selected depths weekly maps of interpolated currents. Seek input from the petroleum industry as to the usefulness of the products according to the metrics developed to assess usefulness of products.
- 2015 Review and, if necessary, revise prioritized list of products (EOC and PSAC)
Develop and deploy top 3-5 priority products.
Assess and report usefulness of products and satisfaction levels.
- 2016 Review and if necessary revise prioritized list of products (EOC and PSAC)
Develop and deploy top 3-5 (some simple, some more involved) priority products.
Assess and report usefulness of products and satisfaction levels.

Goal 5 “IOOS DMAC” (Lead Responsible Parties: Executive Director and Data Manager)

- 2014 Keep the Executive Director apprised of IOOS DMAC activities and progress.
Continue to work with the developers of IOOS's 52°N SOS to deploy their SOS version in GCOOS.
Work with IOOS DMAC to assess the performance of the SOS.
Accommodate and adapt the SOS as necessary.
Begin to implement the QARTOD recommendations for near real-time data.
- 2015 Keep the Executive Director apprised of IOOS DMAC activities and progress.
Continue and complete QARTOD recommendations for near real-time data.
Develop an archiving agreement with near real-time data providers.
Reconcile historical data holdings against NODC holdings.
Package and transmit near real-time data in holdings to NODC.
- 2016 Keep the Executive Director apprised of IOOS DMAC activities and progress.
Update submissions of near real-time data to NODC.