



GULF OF MEXICO COASTAL OCEAN OBSERVING SYSTEM

Continued Development of the Gulf of Mexico Coastal Ocean Observing System

NA11NOS0120024

(TAMRF Account #503581)

**Program Performance Report
December 31, 2015 - May 31, 2016**

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1.0 Project Summary

The Gulf of Mexico Coastal Ocean Observing System (GCOOS) was formed in 2000 as one of the regional coastal ocean observing systems under the U.S. Integrated Ocean Observing System (IOOS). The GCOOS Regional Association (GCOOS-RA) is developing as a sustained ocean observing system that provides data, information, and products on marine and estuarine systems to a wide range of users. The GCOOS-RA was established under the terms of a Memorandum of Agreement (MOA) in January 2005. The organizational structure was in place by April 2006. On 24 February 2012, the GCOOS-RA Corporation was formed in Texas with the terms of the MOA incorporated (note: the fiscal structure and scope of work for the project reported on here have not been changed from the Texas A&M Research Foundation branch of the Texas A&M University Office of Sponsored Research Services).

The overarching *goal* of our project is to build a robust, user-driven, sustained, operational GCOOS that integrates data from diverse providers; assures consistency, quality, and accuracy of the data; creates new data products needed by users; and provides data, products, and services to IOOS, decision-makers, a wide range of stakeholders, and the public in a timely and efficient manner. The specific goals of this project are to maintain existing GCOOS capabilities and, as funding allows, augment the existing observations to fill gaps and provide enhanced products and services. Physical oceanographic, marine meteorological, biogeochemical, and bathymetric data are major components of the system. The goals will be achieved through accomplishment of six *objectives*:

Objective 1 is to maintain and strengthen the GCOOS-RA by continuing the activities of the board, councils, committees, task teams, and office staff to manage development of GCOOS and to work with regional stakeholder groups to identify their needs to guide the GCOOS priorities.

Objective 2 is to continue to build the observing system through integration of existing observations made by different entities, provision of operation and maintenance support for existing non-federal systems, and the addition of new observations to fill gaps. No funding was available from the project in FY11 through FY15 to add new observational stations.

Objective 3 is to improve the Data Management and Communications (DMAC) system by enhancing and expanding the capabilities of the GCOOS Data and Products Portal; adding new data providers for Gulf open ocean, coastal, and estuarine regions and making their data interoperable; building capabilities to access legacy data; and strengthening the regional involvement with the evolution of and compliance with the DMAC plans of IOOS.

Objective 4 is to support regional modeling capacity through providing *in situ* and remotely-sensed data to meet the needs of the modeling community in machine-to-machine formats, establishing a regional modeling task team for the Gulf of Mexico, and pursuing ecosystem modeling pilot projects to support marine resource decision-makers.

Objective 5 is to enhance the integrated outreach and education activities of the GCOOS-RA, through the activities of the GCOOS Outreach and Education Manager and Outreach and Education Council (OEC), that improve information exchange between user groups and data

providers, promote ocean and climate literacy, and develop materials for the public, such as interactive ocean-themed activities and exhibits.

Objective 6 is to obtain the U.S. IOOS certification.

2.0 Progress and Accomplishments

The work foci during this reporting period were to maintain and enhance the GCOOS-RA structure and the GCOOS Data and Products Portal, and to maintain the data streams of the 14 established local data nodes funded under this project. The planned work was largely completed, except that funding was not adequate to cover new observing assets, some data management enhancements, and some related tasks. The work accomplished is described below.

Comparison of actual accomplishments with the goals and objectives for the period: The specific goals were five-fold.

- ✚ First was to maintain the functionalities of the GCOOS-RA governance and stakeholder engagement structure. This was accomplished through continued support of GCOOS Office Staff and travel support to GCOOS-RA partners to work with the many stakeholder sectors that are engaged with the GCOOS. Examples are:
 - ❖ Staff continued work to upgrade the GCOOS business website (gcoos.org). We posted ~1 new banner story per week to keep the site fresh. These include information on the GCOOS Board of Directors, staff, partners, and stakeholders.
 - ❖ The GCOOS-RA Facebook page was maintained with 4-5 posts/week.
 - ❖ We continue to publish 1-2 press releases per month on key issues pertaining to the 5 Gulf of Mexico States. The GCOOS press room provides archived media releases. Members of the press can also sign up for media releases and/or our newsletter (http://gcoos.org/?page_id=8298).
 - ❖ GCOOS News was published monthly (6 issues) to inform interested stakeholders of GCOOS and IOOS activities. More than 1,000 people receive our newsletter.
 - ❖ Kirkpatrick presented at the Florida Center of Excellence meeting in St Petersburg, FL January, 2016.
 - ❖ Kirkpatrick met with key legislators' in Washington DC educating regarding GCOOS/IOOS in January, 2016.
 - ❖ Kirkpatrick and Kobara participated in a PI meeting at Texas A&M University for the addition of a flow cytobot at the Texas Coast, Lisa Campbell, TAMU, lead PI.
 - ❖ Howard is on the Technical Advisory Committee for the Flow-Cytobot Project. Howard contributed to the PI Meeting Summary Report in January 2016.
 - ❖ Howard and Nowlin attended the face-to-face meeting of the Texas One Gulf Center of Excellence on 19 January 2016 in College Station, TX.
 - ❖ Howard, Kirkpatrick, Gayanilo, and Simoniello were invited to be members of the Texas OneGulf Network of Experts (TONE).
 - ❖ Howard attended the fourth and final face-to-face meeting of the NAS writing team in Santa Barbara, CA on 21-22 January 2016. After one more round of edits the document will go out for review. Howard wrote the Data Management section of the report and contributed to the executive summary.

- ❖ Kirkpatrick and Simoniello participated in a planning meeting for an observing exhibit in the library at New College, FL.
- ❖ Howard attended the 2016 Oil Spill and Ecosystem Science Conference in Tampa, FL 1-4 February 2016. He co-chaired the Data Management session and gave a talk entitled “Uniform data Access Through Distributed ERDDAP/TDS” with co-author Steve Baum.
- ❖ Kirkpatrick presented, by invitation, to the GoMRI Observing subcommittee in conjunction with the Oil Spill conference in Tampa, FL.
- ❖ Kirkpatrick co-hosted, with NAS Gulf Research Program, Chris Elfring, a breakfast meeting to discuss offshore, at depth observing needs in conjunction with the Oil Spill Conference in Tampa, FL.
- ❖ Kirkpatrick met with local potential donor in Sarasota, FL.
- ❖ Howard attended Ocean Sciences 2016 21-26 Feb 2016 in New Orleans, LA and presented an invited poster titled “The Gulf of Mexico Coastal Ocean Observing System: A Decade of Data Aggregation and Services” with co-authors Gayanilo, Kobara, Currier and Stössel. He presented a second poster titled “The Gulf of Mexico Coastal Ocean Observing System: Building an MBON for the Florida Keys” with co-authors Currier and Stössel.
- ❖ Kirkpatrick, Howard, Currier and Simoniello all made presentations at the Ocean Sciences meeting in New Orleans, LA, February, 2016.
- ❖ Simoniello drafted a proposal titled Gulf of Mexico Coastal Acidification Network (GCAN) in Feb 2016 to support NOAA OAP Regional capacity efforts.
- ❖ Kirkpatrick attended the IOOS RA Directors meeting in Washington DC in March 2016 and co-presented the Harmful Algal Bloom needs of the Ecological Forecasting Roadmap.
- ❖ Kirkpatrick, Graves, and Spranger met with legislative staff on IOOS/GCOOS issue.
- ❖ Kirkpatrick guest lectured at New College GIS class, Sarasota, FL in March, 2016.
- ❖ Kirkpatrick participated on several Precision Navigation calls with NOAA, March 2016.
- ❖ Kirkpatrick participated in a HAB forum at the Gulf States Marine Fisheries Commission meeting in San Antonio, TX 15-17 March 2016.
- ❖ Watson, Kirkpatrick and Slimak submitted a commentary piece to the MTS Journal for publication. The title is: “Opportunity Lost? Ocean Observing in the Gulf of Mexico”
- ❖ Kirkpatrick and Currier were part of a proposal submitted by New College, FL to the RESTORE Council.
- ❖ Howard attended Texas OneGulf Teleconference 25 March 2016 on first round of competitive grant awards.
- ❖ Simoniello taught 22 lessons to elementary and middle school students.
- ❖ Simoniello continues to participate on the NOAA Gulf of Mexico Regional Team, steering committee of the GOMA Education and Engagement PIT and Public Relations Team, member of the GOMA Data and Monitoring Team, steering committee of the City of St. Petersburg Program for Public Information, IOOS Association Education and Outreach Committee, Bay Point Elementary Student Advisory Council, Canterbury School Marine

Science Advisory Committee, Gulf Climate Community of Practice, NOAA Climate Stewards Education program and NOAA Weather Ready Nation Ambassador program.

- ❖ Simoniello provided support for FIOs public outreach event launching Journey to Planet Earth Dispatches from the Gulf film, Feb. 29, 2016, Mahaffey Theater, St. Pete, FL
- ❖ GCOOS was named Bay Point Elementary Business Partner of the Year 2015-2016 and was a top 3 finalist in the 2016 Pinellas Education Foundation Business Partner of the Year.
- ❖ Simoniello was invited to submit a summary statement for inclusion in the Whitehouse Fact Sheet: Working Together to Build a Sustainable Water Future. March 2016
- ❖ Simoniello is on the Steering Committee of the GOMA Education and Engagement PIT and was an active writer for AP III and is developing protocols for how GOMA EE Gulf Star funds will be allocated.
- ❖ Simoniello submitted an abstract to Chair a NOAA Climate Stewards session at the June 2016 NMEA conference. The abstract has been accepted.
- ❖ Simoniello served as a proposal reviewer for the NOAA Gulf of Mexico Bay Watershed Education and Training (B-WET) program and manuscript reviewer for the MTS journal.
- ❖ Kirkpatrick, as co-chair, attended an in person meeting of the IOOC glider task team in Washington, DC April 7, 2016.
- ❖ Currier participated in a scientific advisory board meeting for the Withlacoochee Gulf Preserve on April 7th.
- ❖ Howard reviewed the NSF program “Rolling Deck to Repository” (R2R) at Scripps Institute of Oceanography 5-7 April 2016. R2R provided datasets to the GCOOS MBON project. Howard provided guidance to R2R for producing NCEI standard NetCDF files.
- ❖ Howard attended the CARICOOS General Assembly meeting in San Juan, Puerto Rico on 27-28 April, 2016 representing GCOOS-RA.
- ❖ Kirkpatrick participated in monthly phone calls as a steering committee member for the GoMex Hypoxia workshop, planned for Sept, 2016.
- ❖ Currier and Kirkpatrick participated in the NASA ROSES PI meeting in Sarasota, FL from 1-4 May 2016. The meeting resulted in an initial plan for the development of the cell phone/microscope platform to bring the detection of Red Tide down to the beach level.
- ❖ Howard attended the CASE/EJIP Meeting in Houston, TX on 2-May to report progress on the Model Data Viewer.
- ❖ Howard attended the MBON DMAC Meeting in Silver Spring, MD on 3-May-2016 to discuss coordination of DMAC among MBON and other BON efforts Kirkpatrick attended the Ecological Forecast Roadmap Annual meeting in College Park, MD, April 26-18.
- ❖ Kirkpatrick participated on several phone calls with NOAA’s precision navigation team.
- ❖ Kirkpatrick attended the JOCI Gulf Roundtable in New Orleans, LA on May 5, 2016.
- ❖ Kirkpatrick participated in several phone calls with NOAA partners planning a Northern Gulf of Mexico Operation Forecast System (NGOFS) workshop.

- ❖ Kirkpatrick presented at the Southern Association of Marine Labs (SAML) meeting in Port Aransas, TX May 12, 2016.
 - ❖ Currier, Kirkpatrick and Simoniello met with Mike Allan, Director of the newly established Nature Coast Biological Station on May 16th in St. Petersburg, FL.
 - ❖ Howard replaced retiring Dr. Worth D. Nowlin as the GCOOS representative to the Restore Act, Texas OneGulf Center of Excellence.
 - ❖ Howard attended the SECOORA Board of Directors meeting in Raleigh, NC on 18-19 May, 2016.
 - ❖ Howard participated in conferences call with National Academies of Sciences, Engineering, and Medicine on the progress of the report for Restoration monitoring in the Gulf of Mexico.
 - ❖ Kirkpatrick and Howard participated in a conference call on 24-May-2016 related to GCOOS' role in the WHOI Imaging Flow Cytobot project.
 - ❖ Howard submitted input to the MBON annual progress report 25-May-2016.
 - ❖ Howard and Gayanilo attended a meeting with Derrick Snowden and other NOAA staff on 31-May in Silver Spring to discuss work supporting the Marine Mammal Health MAP website.
- ✚ Second was to maintain the capabilities of the DMAC sub-system and the GCOOS Data and Products Portal. This was accomplished largely through the support provided to the GCOOS data management team that allowed them to maintain and enhance the GCOOS Data and Products Portal and to participate in DMAC work of the U.S. IOOS Office.
- ❖ The Data Portal staff works with our sub-regional data providers to keep their systems compatible and interoperable with the GCOOS Data Portal. This involves a fair amount of person-to-person interactions to resolve issues.
 - ❖ Gayanilo deployed a Web Accessible Folder at <http://data.gcoos.org/waf.php> thereby publishing our near real-time data for general use and for automated harvesting and archival by NCEI. The data are available in Comma Separated Value (CSV) text files and in NCEI-compliant NetCDF files. The codes used to produce the NetCDF files are available at <https://github.com/GOOS/csv2nc> for use by others. Our SOS system continues to be fully operational (20-by-20) as reported in the IOOS catalog of system services located at <http://catalog.ioos.us/services/filter/GCOOS/SOS>.
 - ❖ MBON: We assembled datasets identified to be of value to MBONs for the Florida Keys and Flower Garden Banks National Marine Sanctuaries. Some oceanographic and nutrient datasets were transformed into NetCDF files in accordance with standards and conventions contained in the National Centers of Environmental Information (NCEI) NetCDF Feature Templates. Reef Fish Visual Census datasets were transformed into NetCDF files in accordance with OBIS-USA standards and conventions. See: <http://gcoos4.tamu.edu:8080/erddap/info/index.html>.
 - ❖ QARTOD: Howard is a member of the Board of Advisors for the U.S. IOOS QARTOD Project and has participated in conference calls and with Currier provided written reviews of

interim documents. We are working on application of QARTOD recommendations to data in our data portal in preparation for certification.

- ❖ Carrier added NOAA's NEFSC drifters to the GANDALF deployed page. The request came to Howard from Jim Manning at the Northeast Fisheries Science Center.
- ❖ Carrier brought up the GCOOS Model Data Viewer on a Digital Ocean droplet cloud server. The MDV was configured to display HR Radar observations and the NAVO NCOM model. Work is in progress to integrate Pat Hogan's GOMEX-PPP model ensemble into the MDV.
- ❖ Our River Discharge page was refreshed. It offers the full record of river discharge for 61 northern Gulf rivers. <http://gcoos.tamu.edu/products/index.php/wq/river-discharge-data/>
- ❖ The main GCOOS website <http://gcoos.org> was migrated to a new hardware platform.
- ❖ We replaced two failing computer servers with new ones. One is dedicated to hosting ESRI ArcGIS Server-based products, the other to ERDDAP/TDS-based services.
- ❖ The Citizen Scientist website was migrated to the cloud at <http://gulfcitizenscience.org>
- ❖ Multiple bathymetric data were collected and organized in GIS format for NOAA RESTORE Act Science Program. Some of them are currently available through GCOOS3 server (<http://gcoos3.tamu.edu/arcgis/rest/services/Bathymetry>).
- ❖ GCOOS-RA reported 322 glider days in 2015 per the IOOS Office request to respond to the 2015 IOOS Glider Days Survey.
- ❖ The glider products pages are continually improved and new deployments added as they occur (See http://gcoos.org/products/maps/gulf_glidern/).
- ❖ Carrier provided GANDALF support for a 17 day Slocum glider mission for Beckler/Mote Marine Laboratory from 2016-04-07 to 2016-04-24.

✚ The third specific goal was to maintain the capabilities of the Outreach and Education (O/E) sub-system. This was accomplished through the support provided to the GCOOS O/E Manager, Dr. Chris Simoniello. Her work efforts this reporting period include:

- ❖ The GCOOS OEC worked with National Wildlife Federation's Ranger Rick magazine editor to create a publication on Citizen Science in the Gulf that was published in the June/July 2016 issue.
- ❖ Simoniello was named a NOAA Climate Steward Education Project partner and will be conducting classroom and field-based activities for GK-12 students during the 2016-17 school year.
- ❖ Simoniello is in discussions with a Charlotte Harbor citizen monitoring group to incorporate new data into the GCOOS Gulf Citizen Science portal.
- ❖ GCOOS continues to expand activities in support of our NOAA Weather Ready Nation Ambassador program commitment. Simoniello is linking WRN goals with her NOAA Climate Steward Education project "Climate and Weather Ready Bay Point Nation," specifically mitigation and adaption related to SLR and weather-driven flooding.
- ❖ Planning and logistics are in development for the November 2016 GCOOS OEC meeting to be held in conjunction with the GCOOS Products and Services Advisory Council meeting.

- ❖ Simoniello and GCOOS intern Kayla Evans are developing community resilience-related outreach activities for the 2016 St. Pete Science Festival. Adaptation and mitigation related to flooding from SLR and extreme weather is the focus. Festival activities will be conducted with SECOORA's Abbey Wakely and Vembu Subramanian.
- ❖ Simoniello contributed content for the IOOS E/O Committee's joint 2016 NMEA presentation "How to teach your students about ocean information and get them excited about it!" led by Jackie Ball, NERACOOS.
- ❖ Simoniello provided content for Nature Academy's 2016 NMEA presentation "Citizen Science: Using Real-World Data to Enhance STEM Literacy" led by Deb Hilbert.
- ❖ Simoniello provided GCOOS content for the IOOS poster presented at the 2016 AGU meeting by David Anderson et al.
- ❖ The GCOOS OEC, via the RESTORE Texas OneGulf Center of Excellence, is working with TAMU-CC to explore a new product called SituMap as a mapping tool for GCOOS OE activities.
- ❖ The GCOOS OEC was invited by NASA/Institute for Global Environmental Strategies to partner on a project (NSF Rapid Response) exploring the feasibility of crowd sourcing the tracking of the Zika virus into the Gulf of Mexico region.
- ❖ Simoniello and Currier are working with the GCOOS Public Health and Safety Task Team to establish a Gulf-wide beach conditions reporting system. The team is working with EPAs Bill Kramer to determine how to adapt their BEACON site for public audiences.
- ❖ In April 2016, Simoniello hosted Ride the Tide, an evening of hands-on activities in support of Family Science Night for approximately 400 GK-5 students and their families in Pinellas County, FL. Partners included NOAA SERO, USF College of Marine Science, Duke Energy, Weedon Island Preserve Cultural and Natural History Center, FL Sea Grant, Boyd Hill Nature Preserve and Bay Point Middle School Center for Advancement of the Sciences and Technology.
- ❖ In May 2016, Stephanie Watson led partners at USM, LA Sea Grant, MTS and NOAA's NWS and NDBC in a PTA-sponsored Earth and Science Day event at Pontchartrain Elementary School, LA. More than 800 students participated.
- ❖ GCOOS, led by Lei Hu, Dauphin Island Sea Lab, participated at the Bayou La Batre Blessing of the Fleet in Alabama April 31 and May 1. Festival-goers enjoyed the GCOOS Eco Hero game and a series of short films on the coastal environment, habitat restoration, nutrients and water quality, developed by the EPA, the Gulf of Mexico Alliance and GCOOS. They also learned about GCOOS Products and Data portals and the Mobile Bay Real-time Monitoring website.
- ❖ Currier, R. C. Simoniello, B. Kirkpatrick and M.K. Howard. 2016. iTAG: Developing a Cloud Based, Collaborative Animal Tracking Network in the Gulf of Mexico. OCEANS15MTS/IEEE, Washington D.C.
- ❖ Schardt, H. *Follow Those Fish!* National Wildlife Federation Ranger Rick March 2016 (highlighting EPA Gulf Guardian award for Utag for iTAG work)
- ❖ Simoniello, C., Currier, R., Kirkpatrick, B., Barbieri, S., Whoriskey, F. and Kobara, S. 2016. Utag for iTAG: Putting the "U and Me" in the Integrated Tracking of Aquatic Animals in the Gulf of Mexico. Ocean Sciences Meeting, New Orleans, LA (presented by Kirkpatrick).

- ✚ The fourth specific goal was to continue delivery of observations from the fifteen existing local data node partners funded under this project, into the GCOOS in interoperable and IOOS DMAC-compliant ways. This was accomplished by contributing partial support for operations and maintenance (O&M) and data management activities. Limitations in funding meant that several of the existing systems could not be supported (Dardeau – Mobile Bay Estuary Monitoring stations O&M). A small level of funding was provided to Campbell to assist with data management associated with the TX HAB station O&M; this has enabled an improved data presentation to include times series for four major HAB species <<http://gcoos.org/products/index.php/hab/time-series/>>. Ten of the stations are providers of *in situ* data, for which the data and/or sensor status are available on the Data Portal¹ pages of the GCOOS Data and Products Portal, and three are satellite product providers, for which the data and/or products are available through the Satellites page² and the sea surface height anomaly page³ in the model resources section. The *in situ* data also were delivered to NOAA's National Data Buoy Center.
 - ❖ Supported *In situ* data partners are as reported in the last semi-annual report. The Oil & Gas Industry continues to provide ADCP currents at their deep water platforms and rigs through the NDBC.
 - ❖ *HF Radar* data partner funded through the GCOOS-RA is the Central Gulf of Mexico Ocean Observing System (University of Southern Mississippi). 1) The issues with the developer in Destin, FL have almost been resolved. We will not be required to move the station, but since the station was installed the State of Florida has changed its permitting process. We were required to submit new permitting applications to Henderson Beach State Park, the Office of Park Planning at the Division of Recreation and Parks for the State of Florida Dept. of Environmental Protection, and Board of Trustees of the Internal Improvement Trust Fund of the State of Florida. The former two applications have been approved and the latter is still pending. 2.) The Port of Pascagoula is expanding Singing River Island using the dredge spoils from the ship channel. This is occurring in front of the part of the island where the CODAR antenna are located (and visible in Google Earth imagery). The rock walls that the dredged material is being pumped behind extend 1 km south of the island and exceed the recommended 250 m length from antennae to the waters edge. For some unknown length of time this will be just a shallow muddy piece of land with no suitable spot to put the station. 3.) Finding appropriate vessels for performing CODAR antenna pattern measurements has been getting more challenging, for many reasons including liability concerns. It requires a vessel that is seaworthy enough to handle some surf, shallow water, is trailer- able and can either be launched from the beach or be able to travel for 10's of km along the open coast. a 20' center console would be probably a good fit, as would a wave runner. We may investigate a sit on top sea kayak with an electric trolling motor. One possibility is utilizing drones as the University of California at Santa Barbara has pioneered.
 - ❖ *Satellite Remote Sensing Fields*: Remote sensing partners are the Earth Scan Laboratory (Louisiana State University—sea surface temperature product), Institute for Marine Remote Sensing and Optics Observing Laboratory (University of South Florida—ocean color product), and the Colorado Center for Astrodynamics Research Gulf of Mexico

¹ <http://data.gcoos.org/>

² <http://gcoos.org/products/index.php/satellites/>

³ <http://gcoos.org/products/index.php/model-resources/ssha/>

satellite oceanography forecasts (University of Colorado—sea surface height).

- The fifth priority was to add new non-federal, real-time data providers willing to provide their data and to provide support to help them with meeting IOOS standards. The descopeing of the FY13 project eliminated the funding for this activity.

Accomplishments associated with specific milestones and deliverables: Table 1 provides the status of the specific milestones and deliverables for this reporting period.

Established goals that were not met: Goals for the period have been met except as described above.

Table 1. Milestones and Deliverables for FY16 Project Year

C = Task Completed on Time; O = Ongoing Task

Task	Dec-May	Status or Comment
a) Milestones for Coordinated Regional Management Covering the Gulf of Mexico		
Establish Subcontracts	C	Completed for FY11-FY16years
Election of the Board	C	Completed for 2016
Hold Annual Members (Parties) Meeting	C	Held 29 March – April 1 2016
Hold Board Meetings	C	Held September 17,18, 2015
Hold EOC Meeting	C	Held August 10, 11, 2015
Hold Council, Committee, Task Team Meetings	O	Meetings held by telecon, email or face-to-face
Refine Business Plan	C	Version 2.1 was approved by the Board and is posted
Refine Comprehensive Observing System Plan	O	Version 2.0 of the Build-Out Plan was approved by the Board and posted
Prepare and Refine Comprehensive Products and Services Plan	O	Board created a Products and Services Advisory Council to advise on the plan
Attend IOOS FAC Meetings	C	Jochens was unable to attend Spring meeting due to illness.
Attend IOOS Spring Meeting and Review	C	Kirkpatrick attended the March 2016 meeting
Engage with GOMA, NOAA GoMRCT, Mexico-US GOM Large Marine Ecosystem Project, stakeholders	O	Staff participated in relevant telecons and meetings; Watson and Simoniello continue to engage with NOAA GoMRCT; Staff and Board members participate on GOMA priority teams
Coordinate with SECOORA & Others RAs	O	Board member Mike Spranger and Kirkpatrick, Simoniello, and other GCOOS staff engage
Establish GCOOS-RA as a Non-Profit Corp.	O	Application to IRS for non-profit status was approved 26 November 2013
Obtain & Maintain Certification	O	Initial application started
Semi-Annual Report	C	Report #10 is this document

Task	Dec-May	Status or Comment
b) Milestones for Observing Subsystem		
Submit semi-annual inventory of new and existing regional assets	O	Data Portal monitoring capabilities and updates to the IOOS Data Catalogue; as necessary
Document operational status via diagnostics and data availability statistics	O	Using Google Analytics; exploring other options
Participate in annual IOOS planning for asset maintenance & collaboration opportunities	O	No activity; GCOOS owns no observing assets
Participate in annual gap identification process	O	Build-out Plan updated, Version 2.1 posted
Establish and implement Task Teams	O	Glider Task Team chaired by Chad Lembke at University of South Florida
Set up New Data Providers	O	None
Set up & implement quality indicators	O	In planning
Track status of subcontractors' milestones	O	Kirkpatrick monitors progress; reporting template provided; subcontractors report to Board at meetings in their region
Participate in NOAA planning for Hypoxia Monitoring System	O	Howard, Kirkpatrick and Board members Howden and Rabalais are involved in 2016 planning
Develop Plan for Centralized Replacement Parts		No funding for this
Develop plan for hurricane response		No funding for this
Work to Implement HABIOS Plan	O	Efforts proceeding through GOMA/GCOOS joint planning

3.0 Scope of Work

There are no current or anticipated changes to the scope of work of the descoped plan for FY16. There are no current or anticipated changes to our ability to achieve milestones and deliverables.

We have requested and received a no cost extension to allow us to complete some of the ongoing activities listed above.

4.0 Personnel and Organizational Structure

Changes in key scientific or management personnel: Except as described here, the key scientific and management personnel remain the same as given in Table 2 of the last semi-annual progress report. Other key people include the volunteers who make up the GCOOS Board of Directors, Councils, Committees, and Task Teams (see http://gcoos.tamu.edu/?page_id=2150).

GCOOS-RA Organizational Structure Status: The Board of Directors is taking the necessary steps to change the GCOOS-RA structure to that of a non-profit corporation. Board unanimously elected the corporate officers at its September 2015 meeting: Dave Driver as President, Sara Gravves as First Vice president, Terry McPherson as Second Vice President, Joe Swaykos as Secretary, and Jan van Smirren as Treasurer. These people form the GCOOS-RA Executive Committee of the Board.

RA membership (http://gcoos.tamu.edu/?page_id=2031): The membership of the GCOOS-RA consists of 35 individual members, 4 associate members from Mexico, and 86 voting members that are organizations. Two individuals are also voting members through contribution of \$2000 to the GCOOS-RA Corporation.

GCOOS-RA board of directors (http://gcoos.tamu.edu/?page_id=261): As a result of the election in February/March 2016, the Board membership composition has changed. Results were announced at the March 2016 meeting of the GCOOS-RA Members. Re-elected are: Jan van Smirren, BMI, Stephen Howden, USM, Pat Hogan, NRL, Charlene Bohanon, Galveston Bay. New Board members are Ruth Perry, Shell. Al Hart was thanked for his service on the Board.

GCOOS-RA councils, committees, and task teams (http://gcoos.org/?page_id=2150): No new task teams have been identified. The newest, the Gulf Glider Task Team, is established.

Organization Meetings (http://gcoos.tamu.edu/?page_id=391): The 21st Board of Directors meeting was held in March 20-22, 2016 in New Orleans, LA.

5.0 Budget Analysis

Expenditures for the reporting period are reasonably commensurate with the actual accomplishment of the goals, objectives, and tasks. There are no cost overruns or high unit costs. No property having a useful life of more than one year and an acquisition cost of \$5,000 or more per unit has been charged directly to the award.

A no cost extension was requested and approved to complete the ongoing work listed above.