



**Caribbean Regional Association  
Progress Report  
Reporting Period June-December 31, 2007**

***NOAA Grant # NA05NOS4731126***

***1) Project Summary:***

The overall goal of the CaRA project is to develop the framework for a regional association to establish and sustain an integrated ocean and coastal observing system serving the Caribbean Exclusive Economic Zone of the United States of America. The observing system will endeavor to meet the informational needs of local, regional and federal decision makers, resource managers, entrepreneurs, educators, scientists and general citizenry. The regional association will vigorously promote the establishment of observing system components and projects, ensure that regional observing activities are coordinated with the U.S. Integrated Ocean Observing System and consistent with national guidelines and standards, provide for operational oversight of system activities as required, take all necessary steps to ensure the usefulness and sustainability of the system, and represent the interests of the system participants through their inclusion in the development of a formal governance structure and operating plan. The most important milestones: formalization of the regional association and implementation of pilot projects have now been achieved.

***2) Progress and Accomplishments***

***CaRA Organizational Structure***

**Inaugural Meeting**

CaRA celebrated its inaugural meeting at the Caribe Hilton Hotel in San Juan Puerto Rico on Dec 4, 2007, followed immediately by the 1<sup>st</sup> General Assembly. Eighty four persons attended the General Assembly, including eight representatives from the US Virgin Islands. The number of organizations represented were approximately balanced between government supported offices and private enterprises. The Assembly was initiated with addresses



by dignitaries including the Secretary of the Department of Natural Resources and the Environment representing the Government of Puerto Rico, the Administrator of the island of St. Thomas, representing the Government of the US Virgin Islands, the Chancellor of the University of Puerto Rico at Mayaguez and the President of the University of the Virgin Islands. Accession to the Memorandum of Agreement (MOA) of the respective governments and institutions as Charter CaRA members was confirmed through their signature during a brief signature ceremony.



*CaRA Accession Signature Ceremony:* Left to right: Hon. Javier Vélez Arocho, Secretary PR DNRE, Dr. Jorge Iván Veléz Arocho, Chancellor UPRM, Hon. Barbara Petersen, Administrator St. Thomas Island Government of the US Virgin Islands, Dr. Jorge E. Corredor, CaRA Co-PI, Dr. LaVerne E. Ragster - President, University of the Virgin Islands, Prof. Roy A. Watlington, CaRA Co-PI, Prof. Julio M. Morell CaRA PI.

Following the signature ceremony, representatives of the Federal Government, including the NOAA IOOS Office, NOAA's Coastal Services Center and OCEAN.US, addressed the General Assembly explaining the history goals and prospects for



implementation of the IOOS initiative. Likewise, the CaRA Principal Investigator provided a report of activities leading up to the event. A brief history of the Global Ocean Observing – GOOS initiative and later developments was provided by Dr. Melbourne Briscoe. Following these interventions, participants were asked to confirm their accession to the CaRA MOA as charter CaRA members through their signature of the document either as representatives of their respective institutions/organizations, or in their personal capacity. In all, 44 institutions and 12 private individuals acceded to the CaRA MOA. Appendices here attached include the Agenda for the General Assembly and a list of CaRA charter signatories. Meeting presentations at the may be viewed through the CaRA web page.

### **First General Assembly**

CaRA's first General Assembly, attended by signatories of the MOA and observers was held immediately following the Inaugural Session. Agenda and Minutes of the Assembly are presented as an Appendix.

### **First Meeting of the CaRA Stakeholders Council**

The First Meeting of the CaRA Stakeholders Council was held immediately following the First General Assembly. Agenda and Minutes of the meeting are provided as an Appendix.

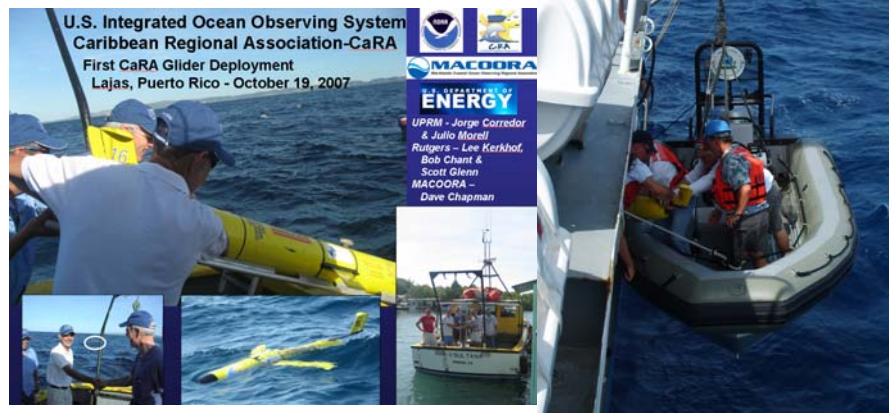
### ***Planning and Implementation***

- **Development of the business plan**

A draft of the Business Plan, has been develop with the assistance of A. Molinares (CaRA consultant) was also presented at the Steering Committee Meeting. Committee members and stakeholders are requested to comment through CaRA's web page. The Business Plan Draft is available for comments at [www.cara.uprm.edu](http://www.cara.uprm.edu) and will be submitted to the CaRA Stakeholders Council for revision and approval.



- Pilot projects:
  - *JOBANERR Climatology*: CaRA continues to support Jobos Bay National Estuarine Research Reserve by deriving products from their historic and real time data streams on water quality for the reserve area. A climatology-plotting product that will serve to determine baseline conditions for real time stations is currently being developed. Also CaRA has provided financial assistance for acquisition of hardware needed to add real time data transmission capability to an additional monitoring station. Once the station data is on-line, data from the two ecosystems “end members” (coral reef, inshore mangrove lagoon) may be monitored using the plotting product described above.
  - *WRF Wind*: The WRF high definition model is now quasi-operational and model output is being regularly uploaded to the web (<http://caricoos.org/wrf.php>) and submitted to NWS San Juan office for use in its Graphical Forecast System. Graphical products are being currently developed.
  - *Webb Technologies SLOCUM Glider Demonstration Project and CODAR emplacement*:



Slocum Glider Launching aboard UPRM R/V SULTANA (left) and recovery aboard EPA OSV BOLD (right).

During the period Oct 15-20 2007, CaRA hosted visits from personnel of the Rutgers University Coastal Ocean Observing



Laboratory with the dual purpose of carrying out a glider demonstration mission and of surveying possible sites for CODAR emplacement in conjunction with the Department of Homeland Security CSR proposal. A Rutgers glider (RU16) was shipped to Puerto Rico arriving Oct. 12. On 18 Oct. Scott Glenn, Bob Chant and Lee Kerkhof of Rutgers arrived together with Dave Chapman, MACOORA President. On October 19 RU16 was launched ceremonially from the UPRM R/V SULTANA by Dave Chapman representing MACOORA and Julio Morell and Jorge Corredor representing CaRA for a 16 day mission to the Mona Passage. After a successful mission during which RU 16 successfully documented propagation of a 50 m internal wave along the Mona Passage, the glider was recovered in the Passage making use of the Ocean Survey Vessel BOLD, generously provided by the Environmental Protection Agency.

Following deployment of the glider, Chant, Glenn, Kerkhof, Corredor and Morell surveyed several sites along the west coast of Puerto Rico for suitability for CODAR emplacement.

### ***Stakeholder Engagement***

- **Signatories of CaRA's MOA:**

University Puerto Rico at Mayaguez, represented by the Chancellor Jorge Iván Vélez-Arocho

University of the Virgin Islands, represented by the President LaVerne E. Ragster

Government of the USVI, represented by the Hon. Barbara Petersen

Puerto Rico Department of Natural Resources and Environment represented by the Hon. Javier Vélez-Arocho

### **Institution/Organization**

Jobos Bay National Estuarine Research Reserve DNER-NOAA, represented by Angel Dieppa



PR Department of Natural Resources and the Environment, Coastal Zone Management Program represented by Ernesto Díaz-Velásquez

La Regata, Puerto Rico's Boating Newspaper, represented by Benito Pinto-Rodríguez

P.R. Sportfishermans Association, represented by Angel M. Canabal

UPRM Center for Hemispherical Cooperation in Research and Education in Engineering and Applied Science, represented by Fernández Gilbes

PR Environmental Quality Board, represented by Carlos W. Lopez

Ocean Geeks LLC, represented by Melbourne Briscoe

Vicente & Associates Inc., represented by Vance P. Vicente

Puerto Rico Seismic Network, represented by Christa von Hillebrandt

Interdisciplinary Center for Coastal Studies, represented by Carlos J. Carrero-Morales

The Dive Shop-Mayaguez, represented by Edwin Vélez

PR Coastal Hazard Center, represented by Aurelio Mercado

Puerto Rico Sea Grant College Program, represented by Ruperto Chaparro

Caribbean Fishery Management Council, represented by Eugenio Piñeiro-Soler and Graciela García-Moliner

Marina Costa Azul, represented by Alberto Arroyo Irizarry and Noraida Padovani

San Juan Bay Estuary Partnership, represented by Jorge Bauzá





The West Indian Company Limited St. Thomas, represented by Mark Sabino

U.S. Virgin Islands Department of Tourism, represented by Brad Nugent

U.S Virgin Islands Department of Planning and Natural Resources, represented by Alicia Barnes

Smith's Ferry Services, LTD, represented by Marjorie E. Smith

Caribe Aquatic Adventure, represented by Demetrio A. Vega

Ventolera Hi-Wind Center & Surf Shop Corporation, represented by Eddy Rodríguez-Ramos

Paradise Scuba & Snorkel Center, represented by Orlando Espinosa

Soler Travel Agency, represented by Ivan Soler

Bluewater Management, represented by Emilio I. Soler-Santos

USCG Auxiliary Flot-1-12, represented by Alma I. Solá-Rivera

USCG Auxiliary Flot-1-8, represented by Andrés Acosta

Cooperativa de Ecoturismo y Recreación del Oeste, Inc., represented by Luis Vivaldi-Olivar

Puerto Rico Hotel & Tourism Association, represented by Ada Torres-Ramírez

Island Venture Water Excursions Inc, represented by Rafael Vega and Radamés Rosado

National Response Corporation, represented by David Avilés

Rutgers University Coastal Ocean Observation Lab., represented by Scott Glenn



Bio-optical Oceanography Laboratory at UPRM, represented by Roy A. Armstrong

Parguera Fishing Charters, represented by Mickey Amador

P.R. Highway and Transportation Authority of the P.R. Department of Transportation and Public Works, represented by Irma M. García-González

NOAA Center for Atmospheric Sciences (NCAS) at UPRM, represented by Yasmin Detrés

NOAA-National Weather Service at San Juan, represented by Scott Stripling

Scuba Dogs Society, represented by Alberto Marti

Surfrider Foundation, represented by Leon Richter

Efrain Visuals represented by Efrain Figueroa

Discovery Bay Resort & Marina, represented by Tommy Cordero

## **Self**

Miriam González Hernández

Kurt Grove

Ileana M. Colón Carlo

Roy A. Watlington

Ivette E. Laborde

Yenán Fernández Pérez

John A. Uphoff Figueroa

Luis D. Aponte Bermúdez

Efrain Figueroa

Jose López

Victor A. Huérfano

María Fernández Arribas





- **New Partnerships:**

- Partnering the University of Puerto Rico, Mayaguez Campus, to develop the Alliance for Coastal Modeling and Prediction.
- CaRA hosted a visit on the part of Prof. David Hill of Pennsylvania State University to develop the Coastal circulation and tide modeling with the ADCIRC modeling system. David Hill implemented ADCIRC in Glacier Bay, Alaska.
- NWS – Scott Stripling, NWS meteorologist and CaRA intern Juan Gonzalez are developing the WRF wind product. Gonzalez visited the NWS offices in San Juan during June 20-22 for this purpose.
- CaRA intern André Amador is developing climatologies for data products from the Jobos Bay National Estuarine Research Reserve instrument network. Dr. Ru Morrison of University of New Hampshire has generously provided CaRA with MatLab code he has developed for climatological products
- CaRA hosted a visit on the part of Brian O Blanton of Renaissance Institute to develop storm surge modeling with the ADCIRC modeling system. Blanton is part of the modeling group that conducted flood insurance studies for Louisiana, using ADCIRC.
- CaRA hosted a visit on the part of Laurent Cherubin of University of Miami to develop general circulation modeling in the PR-USVI region using HyCOM and ROMS. Cherubin is part of the UVI EPSCOR ocean modeling group. He implemented a model sub grid for the west coast of Puerto Rico.
- CaRA hosted the visit on the part of Neal Pettigrew of University of Maine Physical Oceanography to develop the design and construction of coastal observing buoy systems. Pettigrew is Chief Scientist of GoMOOS and owner of Ocean Science and Technology, LLC.



- CaRA hosted the visit on the part of Joaquín Triñanes of the NOAA CoastWatch, Caribbean Gulf of Mexico Node to develop remote sensing products for water quality (coastal management) determinations and tropical coastal ecosystem research.

- **Web page development:**

- CariCOOS web page, providing links to most regional ocean data streams, products and forecasts in now available online at: <http://caricoos.org>
- Both Spanish and English versions of CaRA's web page can be accessed at: <http://cara.uprm.edu>

- **Education connections and products:**

During the Inaugural session and General Assembly on December, CaRA received publicity by the following newspapers in Puerto Rico: El Vocero and The San Juan Star. An article describing CaRA-CariCOOS goals, activities has been scheduled for publication in La Regata, a regional nautical newspaper

- ***Other Activities:***

- June 18 Gulf of Mexico Observing System (GMOOS) Regional Association Education and Outreach Council Annual Meeting, Spanish Fort, Alabama. Dr. J.M. López represented CaRA at the meeting.
- June 19. Gulf of Mexico Alliance Environmental Education and Outreach Network Annual Meeting Dr. J.M. López represented CaRA at the meeting.
- June 23. Article on CaRA progress and goals authored by Corredor and Morell appeared in the Science section of the leading newspaper in Puerto Rico, El Nuevo Día.
- August 29. A meeting with the Tourism sector was held. The initiative was presented to the Planning Director Mr. Juan Carlos Vega.



- Sept 11. The Puerto Rico Seismic Network held the Workshop for Tsunami Operators Ships and Port Facilities. A Power Point presentation of CaRA was discussed with the invitees, those who where also prospects stakeholders for our RA.
- Sept 24. A second meeting was held with the Tourism sector. Directors of agencies let us know their intention to support CaRA and to future collaborations.
- Oct 2. Inaugural activity for the CaRA-UPRM Alliance for Coastal Modeling and Prediction was held on Mayaguez Resort. A selected group of local experts on modeling were invited to participate.
- Oct 22. 2nd IOOS Regional Coordination Workshop at St Petersburg was represented by the PI's Julio Morell, Jorge Corredor and CaRA's modeling coordinator Jorge Capella
- Nov 10. A presentation to the PR Sport Fisherman Association was presented by Jorge Capella with the purpose of engage stakeholders to CaRA.
- Nov 20. Meeting with the PR Environmental Quality Board to follow up their participation to CaRA inaugural meeting and First General Assembly
- Nov 26. Meeting with Secretary of Natural Resources Hon. Javier Vélez Arocho to coordinate his participation, in representation of the Government of the Commonwealth of Puerto Rico, to finalize details for the Inaugural Meeting and 1<sup>st</sup> General Assembly.
- Dec 4. CaRA celebrated its inaugural meeting at the Caribe Hilton Hotel in San Juan Puerto Rico on Dec 4, 2007.

#### **4) Leadership Personnel:**

##### ***CaRA PR Personnel***

In Year 3, the following persons comprised the CaRA-PR team:

1. Julio M Morell, P. I.
2. Jorge Corredor, Co-P.I.
3. Jacqueline Rodríguez, Administrative Assistant
4. Francis Torres, Legal counsel
5. Alexis Molinares, Consultant
6. Jorge Capella, Modelling Coordinator
7. Juan Gonzalez- CaRA Student Intern
8. Efraín Figueroa, Consultant



### ***CaRA VI Personnel***

In Years 3, the following persons comprised the CaRA-VI team:

1. Roy A. Watlington, Co-P.I. and Sub-regional Coordinator of CaRA;
2. Kemit Amon Lewis (Sea Grant/Virgin Islands Marine Advisor) CaRA Core Advisor,
3. Nasseer Idrisi (Biological oceanographer and modeler) CaRA Core Advisor
4. Mark Sabino (Dockmaster) CaRA Core Advisor
5. Tyler Smith, (Biological oceanographer and manager of the Virgin Islands Coral Reef Monitoring project) CaRA Core Advisor.
6. Jacqueline Heyliger (VITEMA Deputy Director) natural hazard advisor

### **5) Budget Analysis**

A detailed analysis of funds received, funds spent and funds obligated shows that budgeted funds have proved adequate for the task of developing the RA. As previously reported, significant savings were achieved by modifying our approach to interaction with stakeholders; rather relying exclusively on large meetings as originally planned, we have opted also for a one to one format which has allowed more effective communication. These savings have been utilized for additional student intern support and support for pilot projects.

The most recent Financial Status Report submitted by our Research and Development Office covers the period from Oct 1 2006 to March 31 2007. An additional report is expected for June 30<sup>th</sup> of the current year. This former report however does not include substantial expenses incurred including sub-contracts to UVI, to the Legal Counsel and to the Consultant-Facilitator. Likewise, the report does not cover salaries drawn by PI, CoPI and other advisors.

We anticipate full use of remaining funds within the period of the grant.



## Appendix 1: Inaugural Session and General Assembly Agenda

### **CaRA INAUGURAL SESSION and GENERAL ASSEMBLY**

**December 4, 2007, Caribe Hilton Hotel, San Juan, PR**

#### **AGENDA**

##### **AM - CaRA INAUGURAL SESSION**

- 8:00 – 8: 40    Breakfast and Registration
- 8:40 – 8:50    Welcoming words and presentation of agenda – Alexis Molinares
- 8:50 – 9:15    Report from the CaRA Project investigators: "Past, Present and Future of the CaRA/CarlCOOS Initiative" -Prof Julio M. Morell, CaRA Principal Investigator
- 9:15 - 9:20    Presentation of Speakers and Principal Signatories- Alexis Molinares
- 9:20 -10:30    Invited Speakers
- Dr. Jorge Iván Vélez- Arocho – Chancellor UPRM
- Dr. LaVerne E. Ragster - President, University of the Virgin Islands
- Hon. Javier Vélez- Arocho – Secretary – PR Department of Natural Resources and the Environment
- Hon. Barbara Petersen – Administrator St. Thomas Island Government of the US Virgin Islands
- 10:30 -11:00    Coffee Break
- 11:00 – 11:30    Invited Speakers
- Mary Altalo – Director, Ocean.US, the National Office for Integrated and Sustained Ocean Observations

*"Coordination of ICOOS Activities within the Federal Government "*



Mary Culver – NOAA Coastal Services Center

*“NOAA Coastal Services Center: Fostering the Regional Component of IOOS”*

Gabrielle Canonico – Regional Coordinator, NOAA’s Integrated Ocean Observing System Program

*“NOAA’s Integrated Ocean Observing System Program”*

11:30- 12:00 Submission of Accession documents by signatory charter members

12:00 – 1:30 Lunch

#### **PM CaRA GENERAL ASSEMBLY**

1:30- 1:35 Opening of General Assembly- Alexis Molinares

1:35 -1:50 Memorandum of Agreement – Francis Torres

1:50 – 2:30 Questions and Answers

2:30 – 2:40 Report by Membership and Nominations Committee - Prof Roy Watlington

2:40- 3:00 Nominations and election of Stakeholder Council – Alexis Molinares

3:00 - 3:20 Coffee Break

3:20- 5:00 Council Meeting – Dr. Jorge Corredor



## Appendix 2: Stakeholder Council Meeting Agenda

### **Stakeholder Council Meeting**

**Dec 4 2007**

#### **AGENDA**

1. Discussion of member duties
2. Report of the CaRA PI's on Business plan
3. Deliberations on Executive Committee
4. Nominations for Standing Committees
5. Venues and date selection for 2<sup>nd</sup> General Assembly
6. Venues and date selection for 2<sup>nd</sup> Stakeholder Council meeting





### Appendix 3: First General Assembly Minutes

**First GENERAL ASSEMBLY  
Hotel Caribe Hilton  
Dec 4 2007  
Minutes**

Mr. Alexis Molinares, CaRA Facilitator opened the General Assembly presenting the agenda (see attached copy of agenda). Francis Torres, CaRA Legal Counsel, discussed the various possible governance options providing examples from other sister RA's and criteria used during the development of the CaRA project to arrive at the Memorandum of Agreement (MOA) model proposed. Subsequently he discussed highlights of the MOA as signed.

Prof. Roy Watlington, CaRA Co-Principal Investigator, presented the report of the Membership and Nominations Committee. He stressed that in its deliberations the Committee strove to achieve a balance between the various societal sectors and between data providers and data users (see attached copy of the Committee Report).

Alexis Molinares presided over the process of nominations and election to the Stakeholder Council. Ernesto Diaz, seconded by Scott Glenn, moved for acceptance of the slate presented by the nominations committee. There being no opposition, the Council composition was accepted as proposed.

The Assembly adjourned.



## Appendix 4: Stakeholder Council Minutes

### **Caribbean Regional Association Stakeholder Council Meeting Dec 4 2007 Minutes**

#### **1. Discussion of member duties:**

CaRA's Legal counsel, Francis Torres of Torres & García, PSC, made a brief presentation regarding duties of the Stakeholder Council members as per the wording of the CaRA MOA.

#### **2. Report of the CaRA Principal Investigators on Business plan**

Jorge Corredor, Chairman of the Stakeholder Council gave a report entitled "Elements for the CaRA business plan". In the presentation (available on the CaRA web site) he discussed the plan for using "fiscal agents" and discussed activities and initiatives undertaken by the CaRA project Principal Investigators in the formative period prior to the formal establishment of the association including proposals submitted.

#### **3. Deliberations on Executive Committee**

Certain Council members questioned the necessity of an Executive Committee at this time. It was consequently agreed to address this matter informally through email exchanges during the inter-sessional period and to make a formal decision during the following Council meeting.

#### **4. Nominations for Standing Committees**



A List of standing committees as set forth in the MOA including preliminary lists of possible members was distributed. It was agreed as above, to refine these lists during the inter-sessional period and to bring further nominees to the table during the following meeting.

#### **5. Venues and date selection for 2<sup>nd</sup> General Assembly**

The Council agreed to delay selection of venue and date for the 2<sup>nd</sup> General Assembly until the 2<sup>nd</sup> meeting of the Stakeholder Council.

#### **6. Venues and date selection for 2<sup>nd</sup> Stakeholder Council meeting**

The Stakeholders Council agreed to hold its 2<sup>nd</sup> meeting during the last week of March. The convenience and appropriateness of celebrating alternate sessions in Puerto Rico and the US Virgin Islands was noted and agreed upon. The Council agreed that, given that the meeting would be during the “high” season for tourist travel to USVI, this might not be practical and economically feasible, but urged the Chair and Executive Director to make all possible efforts to conform to this procedure as a matter of policy.