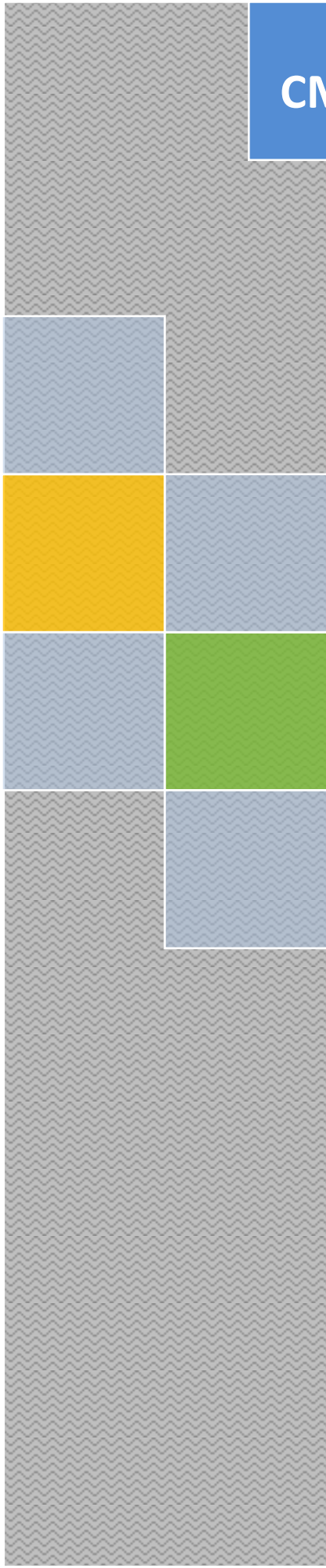




CMA

Report on the First National Stakeholder Meeting on the Development of a National Marine Atlas for Barbados

March 2nd, 2011

Blue Horizon Hotel, Rockley, Barbados



Background on the Development of a National Marine Atlas for Barbados

In 2007, data management experts from several Caribbean countries convened a meeting in Barbados in collaboration with the Intergovernmental Oceanographic Data and Information Exchange (IODE) to chart the way forward for a regional-scale marine data and information platform in the form of an online atlas of coastal and marine spatial data. When completed, this Caribbean Marine Atlas (CMA) will function similar to Google Earth, with users being able to view, query and freely download marine spatial data covering a variety of thematic areas (all with a regional focus), and also be able to access auxiliary information related to the topics addressed by those datasets. The improved access to quality spatial information is expected to improve regional and to some extent local environmental planning and decision-making throughout the wider Caribbean.

Early in the process of developing the CMA it became apparent that, for the most part, environmental management and research organizations required marine data that was more local in nature and typically within the coastal and/or nearshore marine zones. As a result, it was decided that participating countries would develop national coastal atlases (using the same or similar technology as the CMA) in order to better facilitate the needs of local stakeholders. The meeting described in this report is the first step in the development of the Barbadian initiative, which will involve the collaboration of several government agencies, educational institutions and private data holders to both collect, properly catalogue and make available local coastal and marine data.

Aim/Vision of the National Atlas Project

- To develop an effective, highly used and easy to access online atlas for marine spatial data and related information for Barbados.

Desired Outcomes

- The creation of a **national marine atlas committee** to:
 - Oversee data collection efforts for the national atlas project
 - Determine the functionality requirements of the atlas
 - Contribute to the development of the atlas application
- The creation of an **effective, low-cost mechanism for the sharing, use and management of coastal and marine data** between the host institution of the project and all data providers/stakeholders
- The development of a **network of marine data stakeholders** who will use the atlas and provide input to its structure/functionality
- The development and maintenance of a **web-based atlas of marine data and information** similar to the CMA, initially in collaboration with the IODE but potentially hosted locally
- **Improved decision-making** and research prioritization due to the **enhanced accessibility to critical datasets, analysis products and related information**; as well as the ability to more effectively perform gap analysis
- **Improved intra-departmental/agency communication** and the better allocation of financial and human resources

Report on the First National Stakeholder Workshop on the Development of a National Marine Atlas for Barbados

Welcome – Dr. Lorna Inniss

Dr. Lorna Inniss, Deputy Director of the Coastal Zone Management Unit and national focal point for the Intergovernmental Oceanographic Commission (IOC) thanked the participants for attending the stakeholder meeting, and noted that the project that they would hopefully be participating in was an important one. Dr. Inniss briefly explained some of the capacity-building work that had been done in the region under the IODE-funded Caribbean Marine Atlas project, and its linkages with the strategic goals and activities of IOCARIBE, the IOC coordinating unit for the Wider Caribbean Region. She then described the national benefits of involvement in the CMA project, in terms of the further capacity building it will provide designated country representatives in areas such as data and metadata management, GIS, web-atlas design, and data product and service delivery; all skills sorely needed if Caribbean countries desire to take full advantage of the environmental data they collect to drive sound, science-based decision making in the fields of coastal and marine area management.

The speaker concluded her remarks by encouraging the participants to become actively involved in the national marine atlas development process. She stressed that by making coastal and marine data from various agencies and institutions more accessible to all stakeholders, the effectiveness of coastal area management in the island would improve dramatically.

The attendees were then asked to introduce themselves (for the full list, see appendix 1), and the meeting was formally opened (for agenda, see appendix 2).

The Caribbean Marine Atlas (CMA) Project – Ramon Roach

Mr. Roach, CMA Coordinator, then proceeded to give a presentation on the development of the regional marine atlas and the activities that have taken place as part of the project. He began by relating the importance of access to data at every stage of the integrated coastal area management policy cycle (planning, implementation, monitoring, evaluation), and for decision-making in specific activities such as disaster management. In addition, he explained that the improvement of data sharing mechanisms between government departments, researchers and the general public not only promotes more effective coastal area management, but also encourages public participation in the decision-making process. Mr. Roach then discussed the inception of the CMA, with the African Marine Atlas as the template, and noted the ways an online atlas of marine datasets fulfilled the criteria outlined above, and as such had the potential to improve decision-making with respect to coastal area management. He then recounted the workshop held in Barbados in October of 2007 on the development of the CMA project, which was attended by representatives from seven Caribbean countries. The 2007 workshop had the following objectives:

- To inform the participating countries of the potential benefits of a Caribbean Marine Atlas

- To identify current national coastal zone management arrangements, data availability and data and information management needs
- To identify national and regional coastal and marine issues that could be the focus of the Caribbean Marine Atlas
- To identify the national resource requirements of the participating countries to enable full participation in a Caribbean Marine Atlas Pilot Project
- To prepare a draft work plan of a Caribbean Marine Atlas Pilot Project, for submission to, and approval by the respective national governments

In terms of the national coastal and marine issues discussed by the participants (**Figure 1**), it was readily apparent that the majority of issues were common among nations, and as such were *de facto* regional priority issues to be included in the thematic structure of the CMA.

			Barbados	Cuba	Grenada	Jamaica	St. Lucia	Trinidad & Tobago	Turks & Caicos	weight
High Priority Medium Priority Low Priority	Habitat degradation/loss	Coral reefs	R	R	N	N	N	R	R	21
		Mangroves	R	N	N	N	N	N	N	16
		Seagrass	1N	2N	1L	1N	1N	1L	3L	18
		Beaches	1R	1R	1N	1N	1N	2N	2R	19
		Forests	2N	2L	1N	1N	2N	2N	2R	16
	Unsustainable exploitation of natural resources	Overfishing	1R	2N	1N	1N	1N,R	1R	1R	20
		Sandmining	2N		1N	2N	1N	2L	2N	14
	Pollution	Destructive fishing				2N,L	2L		1N	7
		Sediments (turbidity)	1R	3L	1L	1N	1N	2L	2N	17
		Sewage pollution (coliform)	1R	3L	1L	1N	1N	1N	1R	19
		Agrochemicals	1R	3L	2N	1N	1N	3L	2R	15
		Oil	2N	3L	3L	2N	3R	2L	2N	11
		Heavy metals	2L	3L	3L	3L	3R	2N	2R	10
		Nitrates/nitrites	1R	2L	1L	1N	1N	1L	2N	19
		Solid waste	1R	3L	2L	1N	1N	1N	1R	18
		BOD/COD	1L	3L	1L	1N	1N	2N	2R	17
		Runoff (storm, grey water)			1N	1N	1N	1N	2N	14
	Natural hazards	Hurricanes	1R	1R	1R	1R	1N	2R	1R	20
		Tsunamis	2R	3N	1R	1R	3R	3R	1R	14
		Sea level rise	1R	1L	1R	1R	1N	2R	1R	20
		Volcano			1R					3
		Flooding	2N	1N		1L	1L	2L	2N	15
		Earthquakes					1L	3N		5

Figure 1: National coastal and marine priority issues by country. Chart constructed during the CMA development workshop in Barbados.

In summary, the regional priority issues identified during the workshop were:

- **Marine habitats (Coral Reefs, Seagrass, Mangroves)**
- **Overexploitation of coastal resources**

- **Natural hazards**
- **Beaches**
- **Land-based sources of pollution**

In addition, the participants also identified data management related issues (quality control, absent metadata, lack of trained personnel) and data access issues (inter-departmental sharing) as impediments to truly effective integrated coastal zone management. They also identified the training activities necessary for regional marine data managers to actively contribute to the CMA.

Mr. Roach then briefly described the training workshops conducted for the purpose of developing the CMA, following the recommendations of the 2007 meeting. In February of 2008, data managers representing eight Caribbean countries took part in the Ocean Data Management course at the IOC Project Office for IODE in Oostende, Belgium. The course used the Ocean Teacher training system (<http://www.oceanteacher.org>), and introduced the regional managers to some of the more technical aspects of accessing and processing marine spatial data. In April of 2008, the regional data managers also received training for the development of the CMA at the Data Mining workshop held in Trinidad and Tobago at the University of the West Indies, St. Augustine. This workshop focused on the collection and processing of the datasets which would be included in the atlas under the following themes and sub-categories:

- **Geosphere**
 - Natural hazards
 - Soil types
 - Land use
- **Hydrosphere**
 - Bathymetry
 - Physical oceanography
 - Chemical oceanography
- **Biosphere**
 - Habitats
 - Marine flora and fauna
 - Protected areas
- **Atmosphere**
 - Climate
 - Weather
- **Human Environment**
 - Settlements
 - Infrastructure
 - Tourism

The course also outlined the importance of metadata and provided guidelines for its creation. And finally in June of 2008, a course was held at the IOC Project Office for IODE in Oostende which introduced the regional managers to the MapServer platform, which at the time was intended to be the server software and programming interface used in the CMA. Participants received training in online map publication and web map application design, and developed basic applications using the MapScript programming language and the data emanating from the data mining workshop in April.

Mr. Roach then explained that since the most recent event, work on the CMA has still been proceeding. The funding proposal for the project was approved in 2009 and work on the CMA prototype had been ongoing as well. He then summarized the results of the project thus far as:

- The establishment of a **regional Marine Data Manager Network**
 - Eleven regional data managers received training during pilot phase;
 - Regional network has improved communication among Caribbean marine/coastal management agencies;
 - Regional network expanded to include GIS experts;
- The development of a **CMA prototype**
 - The prototype atlas went through 3 revisions;
 - Published online in July 2010 www.caribbeanmarineatlas.net

The Regional Coordinator then described some of the functionality of the prototype including layer control, zooming and panning as well as the loading of web map service layers from third party servers such as NASA's Blue Marble satellite imagery data set.

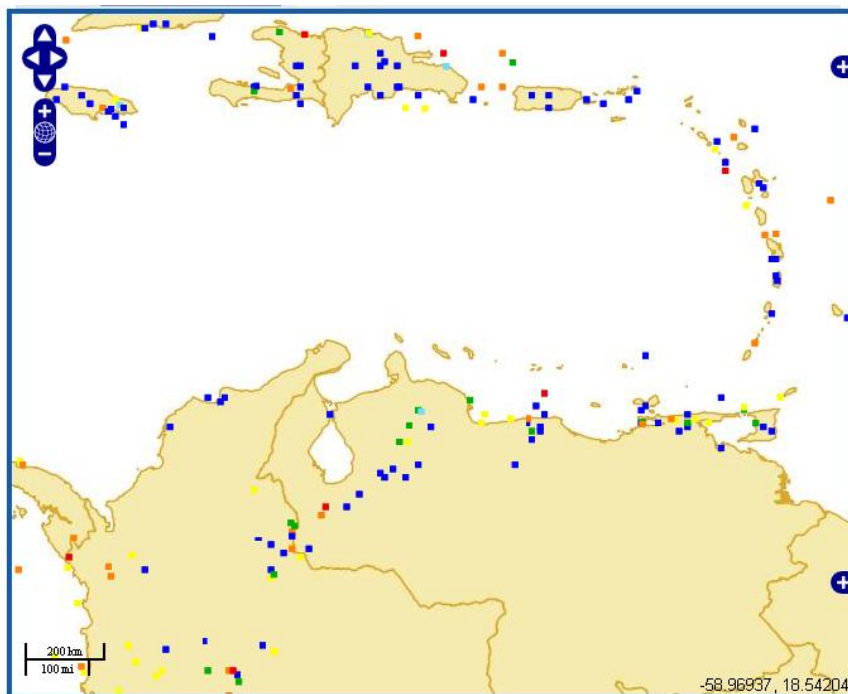


Figure 2: Sample image from the CMA prototype showing historical seismic events categorized by severity.

Mr. Roach continued, noting that the second phase of the CMA project would involve the further development of the prototype as well as the development and publication of the national atlases for the participating countries (with functionality similar to that of the regional CMA), explaining that the current workshop would function as the strategic planning meeting for the effort. He then concluded his presentation by describing the major advantages of coastal web atlases, and highlighting the necessity of them being placed within a larger spatial data management framework.

Coastal Web Atlases – Ramon Roach

The second presentation by Mr. Roach was originally delivered by Dr. Marcia Berman of the Virginia Institute of Marine Science, College of William and Mary; and a member of the International Coastal Atlas Network (ICAN). Mr. Roach began the presentation by asking “What is a Coastal Web Atlas”, and provided the following answer:



What is a Coastal Web Atlas?

“... a collection of digital maps and datasets with supplementary tables, illustrations, and information that *systematically illustrate* the coast, oftentimes with cartographic and decision support tools, all of which are accessible via the Internet.”

(O’Dea et al., 2007)

ICAN
International Coastal Atlas Network

Mr. Roach noted that the definition made it clear that Coastal Web Atlases (CWAs) were not just about geographic data, but also about the information (pictures, documents, illustrations, graphs) underlying a certain dataset or data theme (contextual information). The definition also underscores the provision of tools and functionality to interrogate the geographic data and information via a web interface. The speaker then proceeded to describe examples from several CWAs across the globe, including:

- Oregon State University coastal atlas: www.coastalatlas.net
- Washington coastal atlas: http://www.ecy.wa.gov/programs/sea/sma/atlas_home.html
- Virginia Coastal GEMS: <http://www.deq.state.va.us/coastal/coastalgems.html>
- Maryland Coastal Atlas: <http://dnr.maryland.gov/ccp/coastalatlas/>

- The coastal atlas of Belgium: <http://www.kustatlas.be>
- The Marine Irish Digital Atlas (MIDA): <http://mida.ucc.ie>

Through the examples, Mr. Roach was able to demonstrate the power of online mapping and information delivery systems to provide high quality data and contextual information to a wide audience, including decision-makers. This functionality and more will be included in the marine atlas for Barbados and the CMA. In summary, well-designed CWAs have the potential to provide:

- An enhanced capacity to make decisions
- Access to tools and products to manipulate and interpret data
- Improved access to geospatial data
- Rapid access to this and other kinds of data
- Increased efficiency in data transfers

And as such, these atlases can be of great benefit to:

- Local and regional land use planners
- Natural resource management specialist
- Regulators/marine enforcement officers
- Transportation planners
- Industry: Tourism, exploration, aquaculture

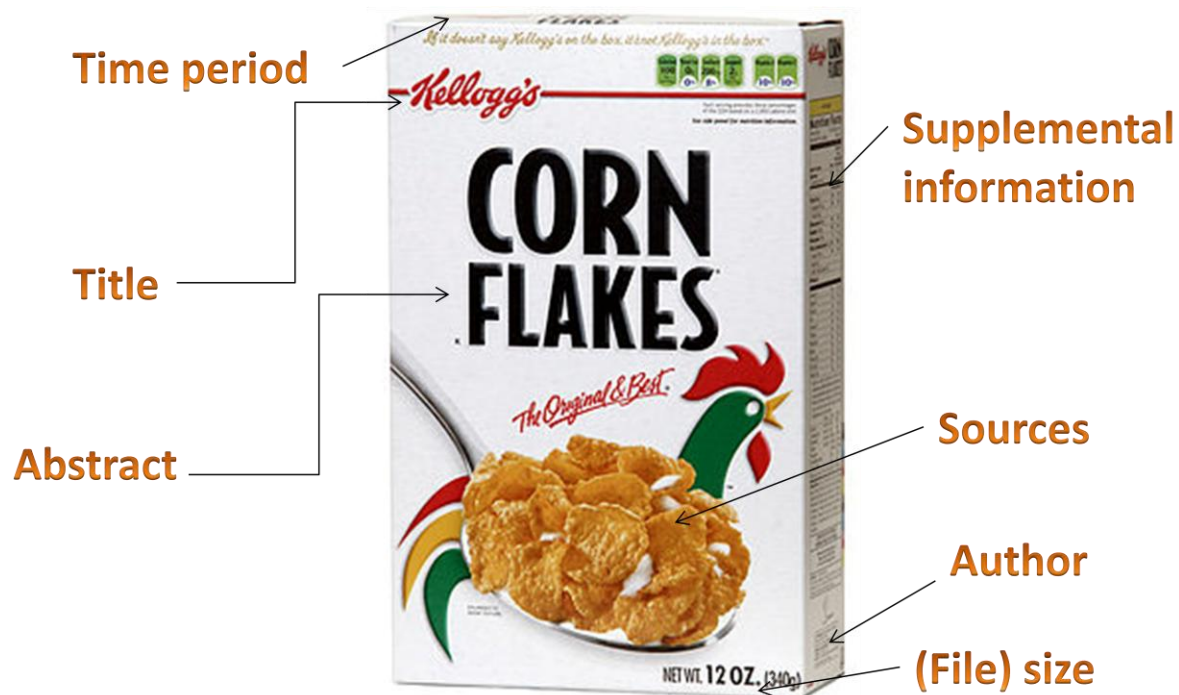


Mr. Roach went on to note that these atlases were relatively easy to implement (requiring more time and planning than money), but heavily dependent on the buy-in from stakeholder agencies/ organizations and the willingness of these stakeholders to share and contribute data freely. It also requires that the benefits of the systems are continuously communicated to policy makers and where required, the development of policies that encourage the free exchange of digital information.

The speaker concluded by informing the participants of the key take-home points of the presentation. Firstly that unlike traditional atlases, CWAs were not static and should evolve as new data, tools, and technologies become available. Next, Mr. Roach stated that there was no one size fits all approach to web atlases and that they vary in content and sophistication based on the needs of general or specific target audiences. And finally and most importantly that they can provide non-GIS users with access to spatial data and information, enabling better decision-making in the field of environmental management.

Web-based metadata management – Ann-Marie Eversley

The next presentation was delivered by Ms. Ann-Marie Eversley of the Environmental Protection Department. She began by explaining that metadata was essentially data about data; information that describes how to identify, locate, interpret and attribute another set of information. To further explain, she used the example of a cereal, with the information on the box being the metadata.



Ms. Eversley then went into greater detail by explaining that metadata resembled journalistic reporting, providing the “who, what, where, when, how, why” of the source data. The speaker then described some of the various formats metadata can come in, such as plain text, Hyper Text Markup Language

(HTML), and Extensible Markup Language (XML). The XML format will be the one used by the CMA and the national atlas program, and is generated automatically by metadata management software. Ms. Eversley then proceeded to describe why metadata was so important. She noted that especially when it comes to spatial data, the absence of metadata can make it difficult to determine how current a dataset is, how to use it or even what feature it actually represents in the real world. Metadata help people who use and manage any type of data to find the data they need and determine how best to use it. She provided the following information as an example:

- *When personnel changes in an organization, undocumented data may lose their value and new employees may have little understanding of the contents and uses of the data*
- *Lack of knowledge about other organizations' data could lead to duplication of effort*
- *The information needed to create metadata is often readily available when the data are collected*
- *A small amount of time invested at the beginning of a project may save money in the future*
- *The initial expense of clearly documenting data outweighs the potential costs of duplicated or redundant data generation*

Thus, metadata enables the effective, long-term management of an organization's information resources. The speaker then went on to discuss the use of metadata standards. She explained that using standards not only promotes consistency in metadata preparation internally, but also makes it easier for data to be shared and distributed between organizations.

Metadata standards

- ❑ Provide a common format for a set of metadata
- ❑ Contain elements to properly describe data
- ❑ Avoid missing essential information
- ❑ Facilitate access and data sharing

She then discussed some of the existing metadata standards such as the International Organization for Standardization (ISO) 19115/19139, Federal Geographic Data Committee (FGDC) and Dublin Core (DC) standards, and indicated that the national atlas project would be adopting the widely-used ISO standard.

For the final part of her presentation, Ms. Eversley introduced the GeoNetwork metadata management platform. She described GeoNetwork as a free, open source, web-based catalog application for the management of spatially referenced resources developed by the FAO. Through its browser interface, GeoNetwork allows users to:

- Search geospatial data across multiple catalogs (i.e. the user's and other GeoNetwork nodes)

- Combine distributed map services (geographic data on other servers) in the embedded map viewer
- Publish geospatial data using the online metadata editing tools and optionally the embedded GeoServer map server
- Manage user and group accounts, configure the server through web based and desktop utilities and schedule metadata harvesting from other catalogs (Administrators)

This last point is of special significance, as it means that nodes belonging to different agencies will automatically update themselves when new metadata records are added to any GeoNetwork nodes they harvest data from; alleviating a substantial amount of data management effort. Ms. Eversley then discussed some of the functionality and application of the software platform, including record editing, templating and publishing.

The screenshot displays the GeoNetwork metadata editing interface. On the left, a sidebar contains three tabs: 'Default view' (selected), 'Advanced view', and 'XML view'. The main area is divided into two sections. The top section, titled 'Identification info', contains fields for 'Title' (Barbados Template), 'Date' (2010-07-29T00:00:00), 'Date type' (Publication), 'Presentation form' (Digital map), and 'Abstract'. The bottom section, titled 'Point of contact', contains fields for 'Individual name' (Ann-Marie EVERSLEY), 'Organisation name' (Environmental Protection Department), 'Position name' (Senior Marine Pollution Officer), 'Role' (Point of contact), 'Voice' (246-310-3620), 'Delivery point' (Environmental Protection Department), 'City' (St. Michael), 'Administrative area' (L.V. Harcourt Lewis Building, Dalkeith), 'Postal code', 'Country' (Barbados), and 'Electronic mail address' (aeversley@epd.gov.bb). A 'Maintenance and update frequency' dropdown is set to 'As needed'. At the top right, there are buttons for 'Reset', 'Save', 'Save and close', 'Check', 'Thumbnails', and 'Cancel'. A 'No preview available' message is displayed in the center of the main area.

The speaker concluded her talk by noting some of the major advantages of GeoNetwork, including its lack of a license fee, long-term development support, use of open geospatial standards and the implementation of powerful data management features.

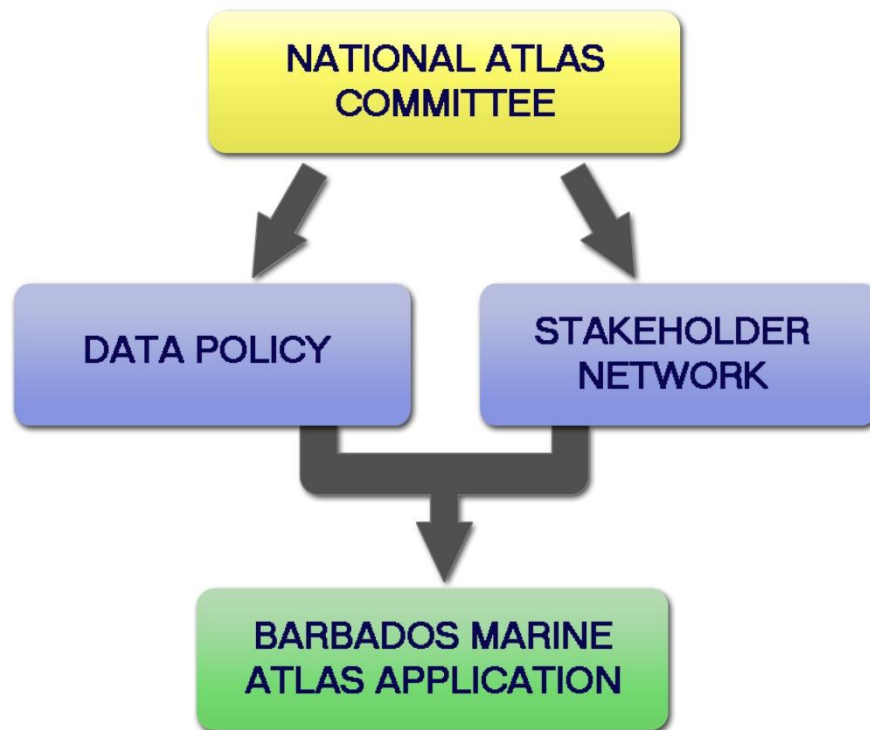
Vision for the National Atlas of Barbados – Ramon Roach

Next, the CMA Coordinator Mr. Roach delivered a brief presentation on the concept of a national marine atlas of Barbados; including the goals, requirements and benefits of this type of data and information management platform. The speaker first relayed the aim of the national atlas project, namely:

To develop an effective, highly used and easy to access online atlas of marine spatial data and related information for Barbados

To achieve the above aim, Mr. Roach indicated that there would be a number of requirements or components which would need to be developed.

The primary component would be the web-based atlas application itself, which would provide the interface for accessing the collected data and information about the coastal/marine resources of Barbados. The speaker indicated that training received via the CMA process would provide the knowledge necessary to design and implement the national atlas using several software platforms (GeoServer, GeoNetwork, Postgres SQL, OpenLayers). Subsequent to this training, the application would be constructed and then populated with the necessary data and information.



Another component would be a national data policy, which would not only define the data sharing agreements between institutions and departments, but also the types of products and services that would be offered by components of a national data management framework, such as the national marine atlas. The policy would also describe what kinds of data would be shared between the various

data providers and what would be available for access by the general public, their use constraints and their update frequency.

An additional component would be the network of data providers which (operating under the data policy) would provide data to the atlas system. Ideally the network would be cross-sectoral, composed of public sector, private sector and academic institutions; providing environmental data as well as socioeconomic data. Mr. Roach noted that by describing their contributions to the system under a data policy would promote sustainability of the entire national data management system in general and the marine atlas in particular, as the requirements would form part of the regular operating procedures of the various agencies.

Finally, to manage the above components there would need to be a management body composed of representatives from key stakeholder agencies. The management committee would be tasked with coordinating data collection, data management and the interaction of the atlas with the various stakeholder groups; as well as charting the strategic direction of the project and using feedback to inform updates in functionality. This committee could also be the focal point for implementing similar projects in other sectors.

Next Mr. Roach described some of the challenges of the project, particularly with regard to long term funding. He noted that during the current phase of the CMA project (up to 2013), the training and website hosting for the national atlas would in effect be provided by the IODE. Mr. Roach indicated however that after the CMA project ends, it was unclear how the Barbados atlas project would be funded and which agency would be responsible for the atlas platform. He added that this would be a consideration for the national atlas committee.

To end his presentation, Mr. Roach described the benefits a national atlas system would provide to the stakeholder community. He indicated that the atlas system would be beneficial on two levels. First, the wider stakeholder community (i.e. data providers, environmental resource managers, decision makers and the general public) would have access to the atlas application itself, an archive of national coastal/marine spatial data, data products and services and a robust metadata platform. While data providers who directly contribute to the atlas would have all of the above, plus the hosting and automatic backup of any data they provide, the assurance that their data has been quality controlled in preparation for inclusion in the atlas, input on the functionality of the atlas to better serve their needs, training related to atlas and metadata catalog administration and development, improved ability to identify data gaps, and a simplified data sharing mechanism. Mr. Roach finished by stating that while the system will require a substantial effort during the inception phase, the benefits will undoubtedly make it a worthwhile venture.

Discussion on Aspects of the National Atlas Development Project – Group Work

At this stage of the meeting, the participants were divided into two groups and asked to answer questions relating to the issues they face with respect to coastal zone management, and the types of

data and information they think are of prime importance for inclusion in the national atlas. Their ability and desire to be part of a data sharing system were also queried, as well as any concerns they had with regard to the use and management of shared data. Both groups then delivered PowerPoint presentations of the responses to the plenary. The key points raised by both groups in response to the questions are shown in the following table.

Question	Group 1 (DEM, TCPD, NCC, BWA)	Group 2 (UWI, NCC, Fisheries, BSTP, BMT)
What are the marine/coastal environmental issues that you face?	- Coastal flooding - Coastal planning - Marine resource management - Marine protected area management - Coastal hazards	- Access to resource data in other institutions - Data dissemination - Fisheries management - Data gaps - Access to raw data
How do you envisage a national atlas system helping to manage/mitigate these issues?	- Siting of outfalls, effluent release points - Location of coastal infrastructure, area-specific coastal planning policies - Resource mapping - Marine spatial planning - Hazard mapping, risk assessment	- Reduced need for in-house specialized data management expertise and access to multiple related data sources - Unified platform for the delivery of data and information from various agencies - Long-term data archival - Gap analysis - Data and policy transparency
What topics/themes do you think the atlas should focus on initially?	- Coastal hazards (coastal inundation) - Coastal/marine biodiversity - Coastal erosion - Beach access	- All existing datasets from the various stakeholders should be included to permit gap analysis - Availability level of datasets should be indicated
Are you willing/able to freely share your data with the national atlas partners?	All yes	All yes
Are there issues that need to be addressed in this regard?	- Defined use privileges for any data provided - Restrictions on the level of detail/information available to different categories of user - Ability to easily access databases from multiple providers	- Processed, but not raw data for all datasets - Need assistance to process datasets to acceptable level for inclusion - All stakeholders should contribute their datasets openly and with as few restrictions as possible - Data providers should not be able to extract high-quality data from other sources without contributing their own
Specifically, what datasets do you have available that you could contribute to the national atlas?	- Building footprints, construction locations - Ground and surface water datasets, well locations - Marine protected area data	- Marine park data - Marine resource data - Fisheries data* - Turtle tracking and nesting data* - Various environmental monitoring datasets

* with restrictions

The responses clearly show that the two groups used different approaches to answer the posed questions and as a result delivered two distinct yet equally valid points of view. Group 1 took an operational view of the questions asked, focusing on the types of data and information they required to make management decisions in their respective agencies and organizations according to well-defined mandates. Group 2 on the other hand took more of a policy-centric approach, looking at the underlying causes of the inefficient use of data and information by the various coastal/marine-management stakeholder entities on the island. Both approaches highlighted two major, interconnected issues with regard to data management nationally, i.e. the lack of widespread availability of data and information as a result of access restrictions, and the lack of a cohesive policy on data sharing and integration to enable a national spatial data infrastructure and the substantial improvement in data visibility and access this would provide to all stakeholders.

In contrast to their prior responses, both groups converged on the topic of data sharing from their own collections, noting that they would be willing to contribute data to a national system if certain conditions were met and/or issues resolved. Access to high resolution data was concern for both groups, be it either restricting access to fine detail data to some but not all stakeholders, or the reluctance to share this or other sensitive data with the unified data management system at all. The participants were assured by Mr. Roach that the system would be able to handle many modes of collaboration and data sharing, including group-based access restrictions and viewable but not downloadable datasets. Aside from the above, the attendees did agree that easy access to at least metadata records from across the marine data stakeholder community was a priority for the national system, and could alleviate some of the data access concerns already noted. The availability of expertise for the processing of institutional data prior to inclusion in the national system was also raised as a concern. However, this will likely be addressed by the national coordinating committee as part of its work program.

Finally, both groups were willing to contribute many of their datasets to the unified system (some with conditions). This indicates a high level of support for the project concept, and bodes well for the future development of the national marine atlas system

Next Steps – Ramon Roach

Following the group presentations, Mr. Roach provided the attendees with an outline of the next steps for the national atlas development process. He noted that the first step in the process (the building of linkages with the stakeholder community) had been partially accomplished by the current meeting, but that more stakeholders would have to be brought on board in the near future. The remainder of the tasks identified by the national coordinator are shown below, with the national project culminating in the delivery of the national marine atlas of Barbados to the stakeholder community in October of 2011.

•Building linkages within the marine/coastal data user community through the execution of a national atlas stakeholder event **March 2011**

•Re-establishing a small national atlas coordinating committee made up of key members from the coastal/marine data stakeholder network **April 2011**

•Receiving the training required to develop the atlas using open-source software and technologies **April 2011**

•Determination by the committee of the priority area(s) of focus (coastal planning, habitat mapping, etc) **May 2011**

•The determination of availability of data and information at the national level which is suitable for inclusion in the national atlas based on the identified area(s) of focus **May 2011**

•Development of formal/informal data sharing agreements with the identified data providers **June 2011**

•High level administrative agreement/ permission to include the identified datasets in the national atlas **August 2011**

•Collection/review/processing of the identified datasets for inclusion in the national atlas **August 2011**

Creation and publishing of an online atlas of marine data and related information for Barbados **October 2011**

Mr. Roach then thanked the participants for attending and encouraged them not only to remain committed to the effort, but to also hold the project coordinators accountable to the stated deadlines for future activities and products. The CMA and national atlas coordinator brought the meeting to a close with the promise that the national atlas project will be an integral part of all coastal and marine spatial data management efforts, with long term benefits for Barbados as a whole.

Conclusions

From the initial feedback, the national stakeholder meeting appears to have been quite well received by the participants. As such, the meeting achieved its goals of presenting the concept of a national marine atlas to the marine data stakeholder community, obtaining initial feedback and buy-in from their representatives, and laying the groundwork for a national marine data stakeholder network as a component of the national atlas project and other related initiatives. However while successful, the meeting also crystallized the following issues, some of which will be addressed by the current project and some of which are outside of its scope:

- There is a definite need for the improved management and availability of marine and coastal datasets on the island
- The national atlas project could be the impetus for a substantial enhancement of data sharing between various institutions and agencies, thus promoting improved decision making
- There is considerable disparity among stakeholder institutions on the quantity of data they are willing to share with a national system, and what restrictions should be placed on such data
- The number of stakeholder entities informed about and involved in the project needs to increase
- A national policy on data sharing, access, management and use needs to be developed to streamline and formalize the data exchange/provision process
- The entire marine data stakeholder community needs to standardize their spatial data management procedures to enhance the value of collected data both internally and externally

Appendix 1 – Participants List

Name	Position	Organization	Address	Contact Information
Alex Ifill	Water Quality Technologist	Barbados Water Authority	The Pine, St. Michael	Tel: 425-9110 Email: alex.ifill@bwa.bb
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AGENDA

First National Stakeholder Meeting on the Development of the Barbados Marine Atlas

March 2, 2011
8:30 a.m. – 2:30 p.m.

8:30 a.m. – 9:00 a.m.	Registration	
9:00 a.m. – 10:15 a.m.	Project Background Welcome Introductions The Caribbean Marine Atlas Project	<i>Dr. Lorna Inniss</i> <i>Mr. Ramon Roach</i>
10:15 a.m. – 10:30 a.m.	Break	
10:30 a.m. – 11:15 a.m.	The Barbados Marine Atlas Project Coastal Web Atlases Web-based Metadata Management Vision for the Barbados Marine Atlas	<i>Mr. Ramon Roach</i> <i>Ms. Ann-Marie Eversley</i> <i>Mr. Ramon Roach</i>
11:15 a.m. – 12:30 p.m.	Group Session Discuss aspects of atlas development and prepare presentation for after-lunch session	<i>Participants</i>
12:30 p.m. – 1:30 p.m.	Lunch	
1:30 p.m. – 2:30 p.m.	Conclusion Group presentations Next steps Closure of the meeting	<i>Participants</i> <i>Mr. Ramon Roach</i>