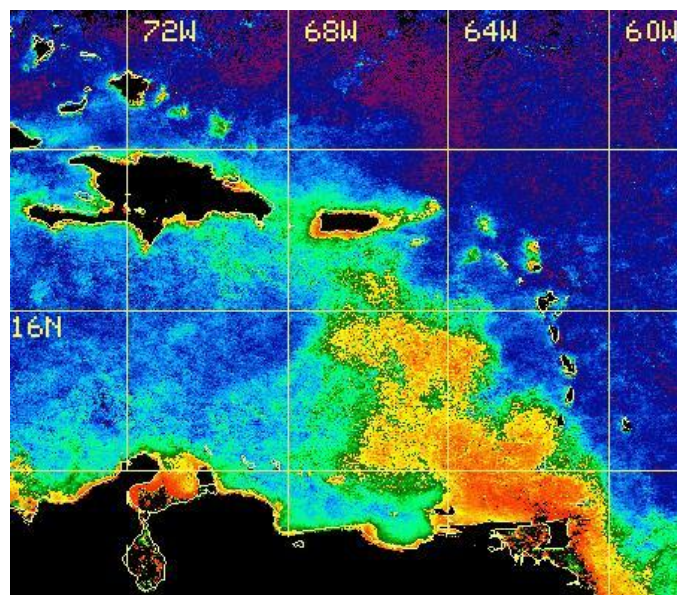




CIF
CLIMATE INVESTMENT FUNDS

**Eastern Caribbean Open-Source Geospatial
Data Sharing and Management
Workshop**

PROCEEDINGS



Part of the:

**Regional Disaster Vulnerability Reduction Program (RDVRP)
&
Pilot Program for Climate Resilience (PPCR)**

**Ministry of Works
Physical Planning Unit
St. George's, Grenada
October 6-7, 2011**

A. Introduction:

This initial workshop agenda in Grenada aims to create a forum for practitioners to address the technical challenges of both national and regional geospatial data management. By using GeoNode as a data management tool, participants will explore geospatial information systems (GIS) requirements to foster national and regional sharing and collaboration in the Eastern Caribbean. This workshop agenda (see Annex 1) focuses on GeoNode users and geospatial practitioners will also support the creation of an online community of practice (CooP) to facilitate discussion on issues raised, proposed solutions, and steps to address broader policy requirements. It is expected that a follow-up workshop will focus on macro-level policies related to data-sharing.

1. Background

The availability of geospatial climatological and hydrological data is critical to improve evidence-based decision-making to increase climate resilience and reduce risks related to adverse effects of climate change in the Eastern Caribbean. Current impediments to data-sharing include proprietary data policies, technological limitations, lack of meta-data policies and capacity. These impediments minimize the accessibility of hydrological and climatological data in the Eastern Caribbean and in many cases cause high transaction costs. By improving access to climatological and hydrological data through implementing and maintaining GIS infrastructure, practitioners can use geospatial data to provide input for hydrological and climatological risk analyses to enhance national climate adaptation and disaster risk management strategies by advising decision-makers on land-planning, policies, legislation and early warning systems (EWS) to mitigate climate-related disasters and prevent economic losses. Engineers also employ geospatial data in designing public works and by identifying strategic climate resilient infrastructure to protect public goods and economic assets (e.g., sea walls, water defense systems, airports, roads).

By managing hydrological and climatological data using open-source data-sharing platforms such as GeoNode¹, geospatial data can be shared and used to collaborate between ministries (e.g., Environment, Physical Development, Land Planning, and Agriculture), national and regional weather agencies, and disaster management agencies. This open source data management platform provides a central depository for the collaborative use of practitioners, namely the GeoNode users, who utilize geospatial data to perform analyses and advise policy-makers. In the Eastern Caribbean, five GeoNodes are expected to be installed and become active from September to November 2011, including Grenada (GRE), St. Lucia (SLU), Saint Vincent and the Grenadines (SVG), the Caribbean Catastrophe Risk Insurance Facility (CCRIF)² offices in Barbados, and Trinidad and Tobago.

2. Objectives

- Harmonize regional data management (meta data policies and formatting)
- Discuss current tools, technology, hardware/software, and training requirements
- Articulate capacity building and training needs (human resources & education)
- Provide support and training to GeoNode users and GIS practitioners
- Improve national and regional coordination to implement data management policies in the OECS

3. Expected Outputs

- Review of metadata policy guidelines for GeoNode users
- Next steps and roadmap for OECS data-management policy framework (timeline, tasks, agencies)
- Identify partnerships with key regional agencies
- Identify national GeoNode capacity and interest to further open-source integration
- Create a Community of Practice (CooP) to discuss solutions and activities to pursue regional roadmap

¹ The GeoNode is an open source, web-based geospatial data sharing platform that aims to surpass existing spatial data infrastructure solutions by integrating robust social and cartographic tools. It is designed to facilitate proper data and metadata management for geospatial professionals and lower barriers to entry for non-technical end users to interact with and understand geographic information.

² The CCRIF is the world's first risk pooling facility, designed to limit the financial impact of catastrophic hurricanes and earthquakes to Caribbean governments by quickly providing short term liquidity when a policy is triggered.

B. Opening Ceremony:

The workshop began at approximately 8.48 a.m. on October 6th, 2011 with an opening prayer led by Mr. Jason Lyons of the National Disaster Management Agency (NaDMA), Grenada. This was followed by the singing of the National Anthem of Grenada sang by the Participants. A total of 46 persons participated in the workshop, including government representatives from 7 countries in the Eastern Caribbean, Jamaica, and 7 regional bodies such as the Caribbean Disaster Emergency Management Agency (CDEMA), the Caribbean Development Bank, and the Caribbean Catastrophe Risk Insurance Facility (CCRIF), Organization of Eastern Caribbean States Secretariat, United Nations Development Programme (UNDP). The government representatives came from various ministries and faculties, namely GIS practitioners and IT Specialists from Ministries of Physical Development, Agriculture, Works and national disaster management agencies. (See Annex 2)

1. Welcome Address was provided by Mr. Fabian Purcell, Director of the Physical Planning Unit, Ministry of Works, Physical Development, and Public Utilities of Grenada. In his address stressed the importance of geospatial, climatological and hydrological data to improve evidence based decision making to minimize and reduce risk. He highlighted the objectives of the workshop, and further added that by improving access to climatological and hydrological data through implementing and maintaining GIS infrastructure, practitioners can use geospatial data to provide:

- Input for hydrological and climatological risk analysis to enhance national climate adaptation program;
- Advise on disaster risk management strategies;
- Guide decision making on land planning, policies and legislation;
- Inform early warning systems to mitigate climate related disasters and prevent economic losses.

2. Keynote Address was given by Mr. Cecil Harris, Chief Technical Officer, Ministry of Works, Physical Development, and Public Utilities of Grenada. Mr. Harris highlighted some of the key challenges to physical development and land-planning due to limited data accessibility, which is needed for technical infrastructure designs. “There are many direct benefits of GIS data availability for the Ministry of Works, especially to improve engineering designs.” He added that the application of GIS technology goes beyond environmental management, as it improves evidenced based decision making and improves collaboration between Ministries to avoid duplication of activities and projects. Mr. Harris commented on the harmonized regional approach of the work and expressed that it takes a grass root approach to improve GIS data management and sharing.

3. Opening Remarks were made by Mr. Niels Holm-Nielsen, Disaster Risk Management Coordinator, Latin America and the Caribbean of The World Bank Group. He focused on the regional agenda of disaster risk reduction and mitigation and regional efforts to support the challenges to sharing data and increasing access. He also share the support of the World Bank and other regional agencies present which have long-supported the data management agenda. He added the importance of the workshop as part of the broader regional process that is connected to Caribbean Regional Pilot Program for Climate Resilience (PPCR) and the Regional Disaster Vulnerability Reduction Program (RDVRP). Mr. Holm-Nielsen also described the [regional opportunities to improve national GIS data management systems to increase evidence-based decision making in the Caribbean](#).

4. Vote of Thanks was given by Mrs. Margaret Belfon, Project Coordinating Unit, Ministry of Finance of Grenada. She particularly thanked the foreign participants who have taken the time to attend this workshop. She also thanked the staff of the World Bank who worked tirelessly to ensure that this workshop came into fruition.

C. Technical Presentations & Jamaican Case-Study:

The invited speakers gave a series of technical presentations from various regional development agencies, University of West Indies (UWI) - Geomatics Department, [Open DRI](#)³, country representatives from the

³ The Open Data for Resilience Initiative aims to reduce the impact of disasters by empowering decisions-makers with better information and the tools to support their decisions.

Organization of Eastern Caribbean States (OCES), and Jamaica. Each speaker was asked to present a status report of GIS infrastructure, hydrological and climatological data accessibility and use, and also discuss current challenges and opportunities for their country and/or region. The facilitator for the workshop, Professor Jacob Opadeyi, created a foundation for the workshop in his presentation on data management infrastructure in the Eastern Caribbean.

1. Data Management Infrastructure in the Eastern Caribbean was discussed by Dr. Jacob Opadeyi, Professor of Geomatics and Land Management at the University of the West Indies. Dr. Opadeyi opened the technical presentations by providing an overview of data management technical and policy challenges in the Caribbean. This set the tone for other presentation in the quest for [a common solution for enhancing data management and confronting these challenges in the Eastern Caribbean](#).

2. Caribbean Institute for Meteorology and Hydrology (CIMH) was represented by Shawn Boyce, Project Manager and Lead Scientist of CIMH who focused on data collection and management issues in the Caribbean. These include, but not limited to: (i) network design, (ii) maintenance, (iii) data transmission, (iv) quality control, and (v) database management. The Caribbean Water Information System (CWIS) and the DEWETRA disaster management platform were also introduced, which currently being implemented and supported by the CIMH.

3. Caribbean Catastrophe Risk Insurance Facility (CCRIF), was presented by Grahame, Niles, Geographic Information System (GIS) Analyst from CCRIF, who gave participants an overview of the world's first risk pooling facility, which was created to limit the financial impact of catastrophic hurricanes and earthquakes to Caribbean governments. Mr. Niles addressed its deep reliance on access to publicly available real-time and historical data sets from sources such as TRMM, USGS, NHC, etc., as well as datasets privately maintained by CCRIF member territories used to support its modelling, event reporting, and analytical functions.

With respect to data access and quality challenges, reference was made to some of the prohibitive trends that threaten regional data sharing initiatives. Examples given were the existence of overly complicated data acquisition protocols, poor and inadequate maintenance of meta-data standards and the prevalence of poorly maintained data sets in general. The presentation further expressed the view that easier data access channels and improvements in regional data standards could translate into improvements for CCRIF's catastrophe modelling, real-time event forecasting, and event-analysis reporting services distributed to member states and the wider-disaster community.

4. Jamaica Case-Study was highlighted by Terri-Anne Campbell, National GIS Analyst, Forestry Department, Jamaica who discussed "[The Institutionalization of Metadata in Jamaica](#)". The presentation demonstrated the gains that have been made in the institutionalization of metadata policy in Jamaica and the importance of strong political support. The participants were very impressed with the high level of data sharing arrangements in Jamaica and expressed the desire to learn from Jamaica to develop national GIS infrastructure and institutional arrangements. Practical steps on how their experience could be shared with other Caribbean States were discussed among the participants

Questions/Comments/Suggestions:

- How do you make a person enter metadata in case where you do not know where the data exists?
- Who is responsible for policing metadata standards?
- LICJ is in the Office of the Prime Minister and there is great political support of the process
- Outside of training officers, are there online resources or any website available for persons who are new to the information?
- How many countries have access to data apart from Jamaica? Specifically in the Caribbean.

5. Tools for Improved Data Management and Risk Assessment was discussed by Robert Soden, Open Data for Resilience Initiative (OpenDRI), Global Facility for Disaster Risk Reduction (GFDRR) Labs. Mr. Soden talked about the importance of having access to data and information to inform good decisions and build resilient

societies. He also mentioned www.HaitiData.org, a data-sharing platform that was created to help reconstruction efforts after the Haiti earthquake in January 2010.

6. GeoNode Basics were presented by Ariel Nuñez, Technical Lead, Global Facility for Disaster Risk Reduction (GFDRR) Labs. Mr. Nuñez discussed the GeoNode, which is a geospatial data sharing platform that supports the OpenDRI deployments around the world. With emphasis on how the data is made available to policy-makers and the public can help make better decisions. He showed the case-study of the work done in Indonesia, on a suite of tools called Risk in a Box (RiaB). RiaB allows the categorization of hazard, exposure and impact layers, and allows end users to discover impact selecting different pluggable vulnerability functions for hazards like earthquake, floods and volcanic ash in Indonesia. This project generated many inquiries from the participants, both during the session and in the one-on-one conversations, most of the questions were related to how it could be used for existing initiatives, including the Caribbean Risk Atlas.

Mr. Ariel Gomez and Mr. Robert Soden of the Global Facility for Disaster Risk Reduction (GFDRR) Labs introduced to the participants the basic concepts of GeoNode. There were discussions on the requirements for hardware and software for GeoNode. Capacity and training needs will also be discussed in order to support implementation and use of GeoNode. GeoNode as a data sharing tools to support climate resilience was clearly demonstrated to the participants

Questions/Comments/Suggestions:

- Given the bandwidth, is there any bandwidth that countries can use to upload or download data quickly?
- Is there any plan to expand data in GeoNode?
- Risk in a box: how important is it? Is it tailored for a particular structure?
- How soon can we get a working model?
- What will be the minimum bandwidth requirement?
- How does it compare with other Software?

7. General Comments & Suggestions

The following emanated out of a general discussion by participants:

- a) Bring in all users.
- b) Countries that don't have metadata should create metadata before installing GeoNode.
- c) A strategy can be mapped out to get GeoNode installed in each country.
- d) Training for developers of GeoNode: One trainer in each country and two persons to be trained.
- e) There is a need to know what each of the country has and what is needed.
- f) The issue of application is not the objective of this workshop but there is a need for a regional platform.
- g) There is a need for financial sustainability.
- h) The process should be done as a region and there is a need to identify the number of person with IT and GIS skills in each country.
- i) Clarity was sought on whether or not countries will adopt what exists or whether they will develop their own metadata policies.
- j) There is a need to identify specific training that will be focus on.
- k) Development of a guideline will push the initiative forward.
- l) St. Lucia in particular highlighted some of the difficulties where the existing files cannot be put into GeoNode.
- m) Some of the common challenges were highlighted where more than one map projection system may exist.
- n) There is a need to focus on networking where one can see what is taking place elsewhere.
- o) It was noted that a mandate was needed from the region with respect to a regional data management, which may bring in changes that needs to be put in place.
- p) It was noted that a lot of the existing disaster offices lack capacity for GIS and data management.
- q) There is a need for collaboration where one country can provide assistance to the others.
- r) Participants were encouraged to join the GeoNode mailing list by emailing geonode@librelist.com.

- s) Each person will be able to create an account and a profile will be created of participants where they can communicate with each other. The site announced will also be use to advice person of further training.
- t) Participants were encouraged to post all information they may have.
- u) It was noted that “once there is communication amongst countries, we can grow together as a region”.

D. Country Presentations:

1. Grenada - Country Presentation, presented by Mr. Michael Mason, Land Use Office, Ministry of Agriculture, participants learned that many deficiencies were being recognized in a lot of area. This is limiting the degree to how well data is being used and applied by different practitioners. One of the key challenges that Mr. Mason mentioned was the lack of capacity and human resources, noting that only one-person was responsible for maintaining the data-base.

2. Antigua and Barbuda – Country Presentation was given by Mr. Kareem Mack, Building Inspector, Development Control Authority of Antigua. He shared that the situation, as it relates to data management and data sharing, is in its early stages and is in need of a great deal of assistance. Metadata policies need to be developed, and equipment and infrastructure need to be upgraded in order to centrally store and share GIS data. Mr. Mack added that mindset of change needs to encourage to enable proper data management and sharing and to eliminate the hording and duplication of data by the different agencies who also gather same or similar GIS data.

3. Saint Lucia – Country Presentation was provided by Mr. Marcarthian Alexander, Information Technology Officer, Ministry of Physical Development and the Environment and Mr. Jim Joseph, Geodata Coordinator, Ministry of Physical Development and the Environment. They presented the current situation, challenges and opportunities facing GIS data management and sharing in Saint Lucia, and discussed their personal experience in implementing a national GeoNode, and what compatibility and sustainability issues they encountered.

4. St. Vincent’s and the Grenadines (SVG) – Country Presentation, given by Ms. Dornet Hull, GIS Officer, Physical Planning Unit, and Mr. Dougal Allen, Jr. Clerk/Administrative Cadet, Information Technology Services Division, described the role of the *GIS Unit* in SVG. This GIS Unit is the newest section of the Physical Planning Unit (PPU). It was officially formulated in 2008 on the culmination of the National Land Information Project (NALIMP), which was funded by the EU. From the inception, the GIS Unit is designed to work along with all sections of the PPU as a supportive role to enhance the work of the Office of the Town Planner and is used as a tool to assist in evidence-based decisions. Additionally, the Unit provides advisory, training and mapping services to other Ministries and Institutions. At present, the Unit has five members of Staff – of which two are being formally trained in GIS technology, seven computers, two printers, three GPS Units, and uses ESRI Arc View as software, with two extensions recently bought under a UNDP Project.

Although documented through the NALIMP Protocols, Procedures and Support Mechanisms Manual, currently, there is no official policy document on data-sharing and metadata. However there exists informal sharing amongst Ministry and Institutions, which collect and use spatial data. This sharing is based on personal relationships developed over time. “Challenges that must be addressed to assist in the advancement of the GIS Unit are: a) financing maintenance of client software and hardware, b) insufficient knowledge of completed and on-going projects, c) insufficient technical trained staff, reliable internet service providers, networking and training continue to be challenges that must be addressed to assist in the advancement of the GIS Unit.”

5. St. Kitts and Nevis – Country Presentation was provided by Mr. Eduardo Mattenet, Sr. GIS Office, Physical Planning Unit, Ministry of Sustainable Development. Mr. Mattenet gave an in depth view of progress over the past 10 years of standardizing and updating existing datasets. He gave [an example of exchanging data with regional agencies, such as The Nature Conservancy \(TNC\), and the importance of implementing and demanding national data standards](#), in spite of lagging bureaucratic approval processes.

- What is the procedure for accessing the maps in terms of who is to be contacted?

- Who is responsible for GIS development presented?

E. GeoNode Computer Training for GIS Analysts & IT Specialists:

In the morning of day-2, participants attended a two-part technical hands-on training session on GeoNode at the ICT Centre, GIDC Building in St. George's.

1. The first part was focused on a user-oriented tutorial and was designed to demonstrate the applications and use of GeoNode. Participants were taught how to view maps, create maps, add new data, and how to get information in and out of GeoNode. Each user was able to upload spatial data layers, and styled them using the web tools. They were also trained in creating maps. As a Saint Lucian delegate and a GeoData Coordinator, Jim Joseph stepped up to help lead an additional training in the second room to focus on GeoNode data-layering.

2. The second part of the GeoNode training was more technical and originally intended for participants with an IT background and the responsibility for GeoNode installation and administration. However due to increased interest in the GeoNode, an overwhelming majority participated in this session. It involved the installation and configuration of a GeoNode platform, including an overview of Open Source communities, getting help, customizing GeoNode appearance, and printing and customized printed maps.

Questions/Comments/Suggestions:

- Capacity building needs have to be assessed.
- What training do we need?
- Who can provide these trainings?
- How should the training be coordinated:
 - Nationally?
 - Regionally?
 - Web based?
- What resources are needed?

F. Capacity Building Needs – Discussion & Recommendations:

In response to the question: “How do we as a region develop a regional technical approach to data collection and management? The participants provided the following responses:

1. Haydon Hopkin, Ministry of Health, Grenada

Metadata is important and should be taken seriously. Therefore no GIS data should be referred to as official or accurate without proper metadata. Each country in the region must be engaged in a process of education. As it relates to metadata all persons using / creating GIS data must be involved. All guidelines or policies currently existing in member countries should be reviewed and examined by a body which would settle on a regional policy which is in keeping with international standards.

2. Royan Curwen, Ministry of Works, Grenada

Metadata is very important and as a computer programmer, I think that software development and end user data input is vital and should be taken into consideration of comfort and efficiency. Software should also be made attractive while still holds all elements to input and store / backup data securely.

3. Graham Niles – CaribRM / CCRIF

- Jamaica is clearly a lead in the region in terms of best practices in data management and metadata. Jamaica can be the hub for skills transfer in these areas. This however must be endorsed / enforced at the regional and political levels and also at the level of government ministries.

- A regional body of representatives for data management and sharing is needed which will essentially be responsible for promoting best practices, securing funding and managing data sharing initiatives at a regional level. This should be a formally registered entity.
- Standardize the method of metadata collection that all users will be doing the same thing.
- The need to have clear “policy” that deals with all spatial data.
- Collect ideas for developing metadata policies.

4. Seon Levius – CDEMA

- We should utilize the regional machinery to coordinate formation and implementation of metadata policies.
- To establish a working group or Steering Committee that is representative of all stakeholders to guide the coordinators efforts.

5. Jason Lyons, NaDMA

- Stimulation of political will is important in achieving the goal of pushing the agenda of geospatial standardization and competition; a suggestion would be to conduct presentations with politician and “top end” decision makers; illustrating to them the benefits and products of GIS and GIS investment. I believe once they are convinced they will become aids in the furtherance of this initiative.
- Targeting the youth is extremely important towards the sustainability of such an initiative. Schools, colleges and university should be targeted including students in research, development and practice.
- Geo spatial data warehousing and sharing needs to have some one or some group championing the initiative. A person, group or organization should be selected or volunteer as the champion.

6. Lindsay George, Krystallion Inc, Dominica

- Create a national team with data collection stakeholders and make a metadata policy to be adopted across member states.
- This national team driven initiative should get its cue from a regional team perspective except the regional team should focus on regional buy in from a political point of view.

7. Marcathian Alexander, Information Technology Officer, St. Lucia

- Develop baseline guidelines, indicating or suggesting minimum standards and practices for geo data producing organisations or states.
- For new sets, the metadata should be created at the same time the data set is created and it should be maintained throughout the life of the data set.
- For existing data sets without metadata; attempts to add accurate metadata should be made prior to next use or distribution of the data set. The metadata should then be updated throughout the life of the data set.

8. Kareem Mack – Antigua and Barbuda

- The policy should look at the free sharing of data but put restrictions on sensitive data availability.
- The policy should address penalties of releasing sensitive data that has been justified under this sharing policy.
- Data custodian should be responsible for creating and maintaining metadata for their data sets.
- All natural resources data sets collected and maintained should have their respective metadata.
- Sell the idea to Governments, since with their support other companies within the country will follow suit.
- Leverage on the successes of Jamaica, to provide an example of the benefits of metadata.
- Introduce courses on data management to both under graduate and post graduate students.

9. Venance Msacky, Lands and Survey, Grenada

- Prevent errors and make enterprise systems easier to maintain.
- GeoNode saves executives time and there is no longer the need to limit approval for the right information service or data owner.
- Clear metadata can also require the need to reconcile data from conflicting and redundant systems. However it is therefore critical to train personnel for the proper management of the system.

- Develop a well-defined information management programme to encourage ongoing communication and coordination at national and regional levels to leverage effects, exchange information or common needs and services and promote training of information and solutions.
- Develop a programmed communications plan to create a website to promote activities.
- Establish a central reporting for metadata information support; use forums to exchange ideas and solutions.
- Update all data output for easier identification to reduce the risk of redundant data collection.

G. Final Comments & Recommendations

- Having an agreement on standards, advocating for pattern change at the national and regional levels. This would mean stakeholders having a say in decision, there is transparency in new policies and procedures and training and outreach programs are utilized to help with these changes.
- Some examples would be to: Integrate information management practices into business processes, have social networking and forums to better collaborate information sharing. This would help with standard information management and business practices throughout the region, workers would recognize the value of common standards and practices.
- Stimulation of political will is important in achieving the goal of pushing the agenda of geospatial standardization and competition; a suggestion would be to conduct presentations with politician and “top end” decision makers, illustrating to them the benefits and products of GIS and GIS investment. I believe once they are convinced they will become aids in the furtherance of this initiative.
- Targeting youth is extremely important towards sustainability of such an initiative. Schools, colleges and universities should be targeted including students in research development and practice.
- Geospatial data warehousing and sharing needs to have someone or some Group championing the initiative. A person, group or organization should be selected or volunteer as the champion.

H. Next Steps:

The following were unanimously agreed by the participants as the next step activities that should undertake in support of data management in the Caribbean:

- Metadata training and the development of data policy and data standards for the Caribbean
- Meta data transformation
- Resource Capacity assessment for each country
- GeoNode installation / test / evaluation
- Policy type workshop on data management in General
- Policy type workshop /on data management in general
- Need for Python training

1. Conclusion:

In conclusion, it is suggested that regional authorities adopt improved and more uniform data management strategies through formal education and also via the development and enforcement of regional data sharing and management policies. Participants also supported and encouraged the use of open-source geospatial tools like GeoNode due of its open design, which innately encourages constant enhancement and redistribution of regional datasets. GeoNode is a good vehicle for regional data sharing which can aid to build consensus on implementing better data standards and uniformity in regional data management practices. The sharing and implementation of coordinated data management systems will provide critical inputs for evidence-based decision making and national economic planning.

Annex 1

Opening Ceremony Agenda

Opening Prayer

National Anthem

Welcome Remarks: Mr. Fabian Purcell, Head, Physical Planning Unit

Workshop Overview: Mr. Jacob Opadeyi, World Bank/PPCR Consultant

Opening Remarks: The Permanent Secretary, Ministry of Works, Physical Development and Public Utilities
Mr. Niels Holm-Nielsen, Regional Disaster Risk Management Coordinator, Latin American & Caribbean, The World Bank

Vote of Thanks: Mrs. Margaret Belfon, Project Coordinator, Project Coordination Unit, Ministry of Finance

Day 1: October 6 th , 2011: Technical Consideration for Data Management		
Time	Sessions & Description	Speaker(s)
08:30-09:00	Opening Remarks and Keynote Address	Mr. F. Purcell
09:00-09:30	1) Data Management Infrastructure in the Eastern Caribbean Taking stock of GIS infrastructure for climate and hydrological data analysis and management, including regional challenges and opportunities.	Jacob Opadeyi
09:30-10:00	2) Data Collection and Management in the Caribbean Current status of climatology and hydrological data collection and management in the Caribbean, including challenges and opportunities.	Shawn Boyce, CIMH
10:00-10:45	3) Country Presentations & Taking Stock (1 of 2) Discussion on current infrastructure and national capacity for climatology and hydrological data collection and management. Each country will present for 10 minutes: <ul style="list-style-type: none"> • What is the current status of national metadata policies and data-sharing policies? • What are the hardware/software needs to improve national data-sharing? • What are the challenges and opportunities? 	Country Representatives
10:45-11:00	Morning Break	
11:00-11:45	4) Country Presentations & Taking Stock (2 of 2) Continued discussion on current infrastructure and national capacity for climatology and hydrological data collection and management.	Country Representatives
11:45-12:30	5) Jamaican Case-study Presentation on the national metadata policy, including: description of policy, lessons learnt, current progress, applications, and collaboration.	Terri Ann Campbell
12:30-13:30	Lunch Break	
13:30-14:15	6) Tools for Improved Data Management and Risk Assessment Data sharing and software tools to support climate resilience, including example applications and analytical tools.	Open DRI
14:15-15:00	7) GeoNode Basics Presentation and discussion of requirements for hardware and software to identify pilot countries. Capacity and training needs will also be discussed in order to support implementation and use of GeoNode.	Open DRI
15:15-15:30	Afternoon Break	
15:00-16:00	8) Metadata policy A technical discussion of metadata policies and needs for different types of data. Breakout groups will discuss their assessments of current challenges and present suggestions for national/regional metadata policies.	All participants
16:00-16:45	9) Future Data Management Initial group discussion on "How do we develop a regional technical approach to data collection and management?" Discussion will provide input for <i>data management objectives</i> for follow-up sessions on Day 2: " Next Steps for Data-Management Roadmap "	All participants

Day 2: October 7 th , 2011: Institutional Consideration for Data Management		
Time	Sessions & Description	Speaker(s)
08:10	<i>Transportation to ICT Computer Lab – Meet in front of hotel at 8:10am</i>	-
08:30-10:30	<p>10) GeoNode Training Workshop (Part 1 of 2) Hands-on training of GeoNode users designed to demonstrate applications and use. The first part of the morning tutorial is recommended for anyone who will be a possible user of GeoNode, it is divided into the following main sections:</p> <ol style="list-style-type: none"> 1. Viewing a Map 2. Creating Your Own Map 3. Adding New Data 4. Getting Information In and Out 	Open DRI
10:30-10:45	Morning Break	
10:45-12:30	<p>11) GeoNode Training Workshop (Part 2 of 2) The second part of the workshop should be attended by those who are already administering a GeoNode or will likely do so in the future. Useful and interesting both for GIS Analysts and IT administrators, but probably not for casual users. It will include:</p> <ol style="list-style-type: none"> 1. Installation Instructions 2. Overview of Open Source Communities: Getting Help. 3. Customizing GeoNode appearance 4. Printing and customized printed maps. 	Open DRI
12:30-13:30	Lunch Break	
13:30-14:15	<p>12) Capacity Building Needs: National and region needs, challenges, and opportunities for educational programs and training are discussed. Specific needs will provide input for regional roadmap.</p>	Chaired by Jacob Opadeyi
14:15-14:30	<p>13) Intro to Online Community “eScoop”: Brief introduction to online community to demonstrate the tools, role of participants, and structure of the site. Attendees will briefly discuss opportunities for this online community of practice (CooP) and provide nominations to form a management committee. http://escoop.worldbank.org (registration and login information will be provided via email)</p>	Chaired by Brad Lyon
14:30-15:00	<p>14) Next Steps for Data-Management Roadmap (1 of 2): Discussion on steps to address data harmonization policies to improve national and regional data-sharing and collaboration. Participants will identify specific objectives for roadmap (e.g., regional mechanisms, instrumentation, data management policies, metadata policies, data-sharing policies, etc.) Breakout groups are based on <i>data management objectives</i> [from Day 1].</p>	Chaired by Jacob Opadeyi
15:00-15:20	Afternoon Break	
15:20-14:30	<p>15) Next Steps for Data-Management Roadmap (2 of 2): Breakout groups will discuss, determine and present specific steps, tasks and roles for national users and/or regional agencies to address data harmonization policies. Groups present proposed activities and timeline, and identify spokesperson for CooP.</p>	Chaired by Jacob Opadeyi
14:30-14:45	16) Closing Remarks	
18:00-20:30	Networking & Social Event (To Be Announced)	