Grenada National Water Information System Workshop
June 24-25, 2008
St-George's University, Grenada

Report jointly prepared by the following persons listed in alphabetical order:

Dr. Lystra Fletcher-Paul, Land and Water Office, FAO-UN
Jim Joseph, Consultant and Senior Programmer/Analyst, Government of St-Lucia
Bano Mehdi, Research Associate, BCWRM, McGill University
Kailas Narayan, Chief Hydrologist, CIMH
Judy Padmore, Technical Officer, CIMH
Catherine Senecal, Professional Associate, BCWRM, McGill University
Trevor Thompson, Land Use Officer, Ministry of Agriculture

Executive Summary

The Grenada National Water Information System Workshop was held at St George's University in Grenada on June 23 and 24, 2008. It was hosted during the 4th Caribbean Environmental Forum. Background information to the CARIWIN project was provided and the context was set for the pertinence of a National Water Information System (NWIS) for Grenada. The workshop was an opportunity for data collectors, data users and stakeholders to meet and engage in the early phases of development of the Grenada NWIS. An information gathering exercise was conducted with the participants to permit the system programmer to begin structuring the database. The next steps in the NWIS process were identified.

Presentations were made by the following professionals from the water resources management field: Dr. Lystra Fletcher-Paul, Land and Water Office, FAO-UN; Jim Joseph, Consultant and Senior Programmer/Analyst, Government of St-Lucia; Bano Mehdi, Research Associate, BCWRM, McGill University; Kailas Narayan, Chief Hydrologist, CIMH; Catherine Senecal, Professional Associate, BCWRM, McGill University; Trevor Thompson, Land Use Officer, Ministry of Agriculture.

The data providers groups (Ministry of Agriculture and the Meteorological Office at Point Salines International Airport) and the data users groups (Caribbean Youth Environmental Network and St George's University) completed the questionnaire provided, which will allow the database developer to begin structuring the NWIS database.

The next steps that should be taken in the successful development of the NWIS following this workshop were identified as follows:

1. Completion of the questionnaires from absent data collectors and data users
2. Compilation of all of the data by the consultants
3. Assessment of the Agency in which the NWIS will be housed
4. Discussion of a National Committee of data providers
5. Determination of the data administrator
6. Determine when the programmers should be brought back
7. Presentation of Shape files and other Raster images to consultants for commencement of database development

It was agreed that two focus groups should be formed to support the Ministry of Agriculture in moving forward with the NWIS. These would be comprised of key persons from various institutions and brought together by email communication. These groups are the NWIS Data Collection (NWIS-DC) and the NWIS Institutional Framework (NWIS-IF).

Acknowledgements

The Grenada National Water Information System Workshop was possible thanks to the generous financial support from the Food and Agriculture Organization of the United Nations and from the Canadian International Development Agency.

Recognition and gratitude are due to the Grenada Ministry of Agriculture for their technical cooperation, logistical support, and their motivated spirit.

The dedication of each collaborator is recognized as well as the specialized contributions that each one brought to the event: Dr. Lystra Fletcher-Paul, Land and Water Office, FAO-UN; Jim Joseph, Consultant and Senior Programmer/Analyst, Government of St-Lucia; Bano Mehdi, Research Associate, BCWRM, McGill University; Kailas Narayan, Chief Hydrologist, CIMH; Judy Padmore, Technical Officer, CIMH; Catherine Senecal, Professional Associate, BCWRM, McGill University; Trevor Thompson, Land Use Officer, Ministry of Agriculture.

The workshop's success is also due in part to efforts from Apurva Gollamudi, for putting together the agenda, and from the database development consultant Dejan Lekic, for putting together the data assessment questionnaire.

The workshop benefited greatly from outstanding support and assistance from the Organizing Committee of the Caribbean Environmental Forum (CEF), the Caribbean Environmental Health Institute staff, and in particular Dr. Chris Cox.

Many thanks to Dean Chandra Madramootoo, for his guidance and overall support through the CARIWIN project.

List of Acronyms

BCWRM	Brace Centre for Water Resources Management
CARICOM	Caribbean Community
CARIWIN	Caribbean Water Initiative
CDPMN	Caribbean Drought and Precipitation Monitoring Network
CEF	Caribbean Environmental Forum
CIDA	Canadian International Development Agency
CIMH	Caribbean Institute for Meteorology and Hydrology
FAO	Food and Agriculture Organization of the United Nations
GIS	Geographic Information System
IWRM	Integrated Water Resource Management
NWIS	National Water Information System
NWIS-DC	Focus Group on Grenada NWIS Data Collection
NWIS-IF	Focus Group on Grenada NWIS Institutional Framework

Introduction

The inaugural meeting of lead-implementers for the development of a National Water Information System (NWIS) for the country of Grenada resulted in some initial advances and tremendous momentum in mapping out the steps for successful implementation. The workshop was an activity hosted by the CARIWIN project in collaboration with the FAO. The CARIWIN Project Coordinator, Catherine Senecal, chaired the workshop.

The objectives set out at the beginning of the session were fourfold:

1. Provide background information on the CARIWIN project and context for the Grenada Water Information System.
2. Provide an opportunity for data collectors, data users and stakeholders to meet and engage in the development of the Grenada WIS
3. Conduct an information gathering exercise to permit the system programmer to begin structuring the database
4. Identify next steps in the WIS process

All four stated objectives were met and the details are described in the full report of the proceedings herein.

The list of participants who attended the workshop on June 24, 2008 is as follows:

Ministry of Agriculture, Land Use Division
- Imron George
- Ann Francis
- Micheal Mason
- Darius Thomas
- Trevor Thompson

Meteorological Office at Grantley Adams Airport (GAA)
- David Robertson
- Jason Rosco Slocombe

Caribbean Youth Environmental Network (CYEN)
- Ashell Victor
- Nekira Robinson
- Nicole Andrews
- Cheryl Noel
- Kevon Samuel

Caribbean Environmental Health Institute (CEHI)
- Dr. Christopher Cox

University of the West Indies
- Dr. Adrian Cashman

St George's University
- Brian Neff

The Grenada NWIS Workshop was held in parallel with the 4th Caribbean Environmental Forum (CEF).

Opening Remarks

Trevor Thompson welcomed all collaborators. He noted that the working relationship among the Ministry of Agriculture in Grenada, the FAO and Mc Gill University dated back to 2000. At that time, Dr Chandra Madramoottoo conducted a hydrological study of selected sites for irrigation development and expansion as part of an FAO project. It became evident from the study that there was a scarcity of good quality data on water and other climatic parameters. Consequently, the idea for a project on data collection for Grenada and the entire region was born.

Thompson expressed particular delight that the FAO is a partner in this process, just as they have partnered with the Grenada Ministry of Agriculture in other water related activities that bring tremendous benefits to the people of Grenada.

Presently, with FAO funding, Grenada has completed a National Water Policy that seeks to address many of the issues relating to IWRM and Water management in general; a Water Sector Review that identifies the major issues relating to water in Grenada - data scarcity was a major issue; a National Implementation Plan that guides us on what must be done, how it should be done and when it should be done; and most recently, a water Legislative Review and draft legislation relating to the National Water Policy.

Thompson quoted page 5 of the National Water Policy, BASIS FOR ACTION:

> "Government position is that water resources management cannot be viewed in isolation from the wider national context such as land use, land use change, watershed management and economic and social development.
>
> Further, Government has noted the paucity of reliable information on water use and availability, the lack of capacity within water resource management institutions and poor regulatory control and enforcement as well as the need to improve water and wastewater services.
>
> In this regard, Government envisions that:
> •By 2008 the necessary legislation establishing responsibility for integrated water resources management and, separately, for water and wastewater services will have been enacted;
> •By 2008, institutional arrangements will have been established to regulate, respectively, the management of water resources and the management and operation of water supply and sanitation services in an effective and integrated manner including appropriate mechanisms for stakeholder participation;

> •By 2009, comprehensive policies, strategies and plans for Integrated Water Resources
> Management will have been adopted and implemented;
> •By 2009, a National Water Information System will have been established and implemented."

The CARWIN Grenada NWIS Workshop is directly related to the policy's goals and it has direct bearing on whether the policy will accomplish its intended purpose.

He indicated that during the previous week CARIWIN held a training and equipment installation workshop that will help to address the problems identified in Grenada. Over 15 persons had the benefit of being trained and helping to install the equipment that will collect stream flow and rainfall data. In the future, water quality parameters will be added. The data will feed into the National Water Information System (NWIS).

CARIWIN has great potential for all of the pilot countries and other regional countries. It is up to Grenada to capture the vision of the project, to involve a broad cross-section of stakeholders, and particularly to involve the youth to ensure that the vision is fulfilled. The recent training session and workshop were opportunities taken to empower a cadre of young people from CYEN, the Caribbean Youth Environmental Network, in the belief that the youths must be empowered to carry on with the positive work that has begun.

On behalf of the MOA, Thompson welcomed all and hoped that the workshop's presentations and discussions would be fruitful and beneficial.

CARIWIN overview

Catherine Senecal highlighted that the Caribbean Water Initiative (CARIWIN) is a project jointly led by McGill University and the Caribbean Institute for Meteorology and Hydrology (CIMH), with a focus on institutional strengthening and national and regional capacity building in Integrated Water Resources Management (IWRM). The Global Water Partnership defines IWRM as "a process that promotes the coordinated management of water, land and related resources, in order to maximize equitable economic and social development without compromising the sustainability of vital ecosystems." This workshop was identified as a part of that process and one step toward the coordinated management of resources in Grenada.

The CARIWIN project, with a $1 million Canadian Dollar grant from the Canadian International Development Agency (CIDA), has a life of six years, from 2006 until 2012. The project maintains a website hosted at www.mcgill.ca/cariwin. CARICOM Country Partners in CARIWIN are Grenada, Guyana, and Jamaica. Institutional partners include UWI, CEHI, FAO among others. The long-term goal of CARIWIN is to increase the capacity of Caribbean countries to deliver equitable and sustainable IWRM. The two-pronged methodology to achieve this was described as 1) strengthening the CIMH to

provide training and capacity development in aspects of IWRM at the regional scale and 2) piloting IWRM capacity building initiatives at the national, local government, and community levels. Several examples of completed and planned CARIWIN activities were listed and described to provide concrete examples of CARIWIN action in order to set the context for the Grenada NWIS.

The development of the Grenada NWIS contributes to the expected CARIWIN output of "national water sector data systems made compatible with IWRM principles". This output in turn strengthens the "CIMH national outreach program which provides water specialists and decision-makers with tools for developing IWRM policies." The challenge for Grenada and the need for a WIS were well stated in the FAO Technical Cooperation Programme project document entitled "Assistance to establish a National Agricultural Water Information System for St Lucia":

> "Currently water management data [in Grenada] are collected by a multiplicity of agencies and the data are stored in various formats without a standard mode of dissemination. This arrangement encourages a compartmentalized and isolated approach to the management of the water resource."

She added that this workshop aims to initiate the process toward coordinated management of the resource. The role of CARIWIN is to facilitate the development of the NWIS. All the data collectors and data users of Grenada should, therefore, seize this opportunity.

Role of CIMH in centralized data management

Kailas Narayan and Judy Padmore related that the CIMH was established in 1967 by a UNDP project for the training of meteorologists from CARICOM. Management of the institute was subsequently handed over to its 16 CARICOM countries. In 1982, based on the determination of needs of CARICOM countries, training in hydrology was added through another UNDP project. CIMH trains technicians at two levels: eight-month technical course and the eighteen-month certificate program.

In terms of data storage, the first attempt to assemble regional data in hydrology was for a publication of data from the Caribbean Development Bank (CDB). A recurring problem of data collection in the region, which hampers its centralized collection, is the high occurrence of equipment washout, due to storms and floods. Through a British Development Division project, five countries, one of which was Grenada, received the Hydata software. This software proved to be problematic as it was cumbersome. The system still exists at CIMH, however it is not reliable.

In its mandate, CIMH has an arrangement that all member countries are to supply them with data for storage, with individual countries able to apply restrictions to access. This arrangement was mainly intended as a back-up system. Countries must come to the realization that data are valuable, and that the value is even higher than the cost. CIMH

also provides the service of data processing for countries that do not have a service or the resources to process their own data.

He ended by stating that CARIWIN is installing equipment to generate data in Grenada. The major recommendation for the success of this water information system is that one agency be named responsible for the equipment, for collecting the data and for processing the data. This will require continued maintenance of the equipment after the life of the project.

Caribbean Drought and Precipitation Monitoring Network (CDPMN)

Bano Mehdi presented the vision for the CDPMN. Initially, it will focus on the three CARIWIN partner countries, but much of the CARIWIN benefits are expected to spread to other CARICOM countries and the CDPMN is expected to expand too. It is intended that once the Grenada NWIS is launched, Grenada would be able to contribute data to the CDPMN and benefit from it as well.

The Caribbean has had several recent experiences with drought and flood events and these hydrological extremes are affecting Caribbean prosperity. The global trend to mitigate these risks is to ensure IWRM. To do so, monitoring and data collection are essential to determine trends and see where the region is heading with respect to climate extremes. In the future, these extreme events are expected to increase due to the increasing variability of 3 main phenomena: El Niño Southern Oscillation (ENSO), increasing sea surface temperatures, and the North Atlantic Oscillation (NAO).

The existence of drought and flood warning systems in other parts of the world have greatly helped to secure the fate, land and assets of thousands of people.

Historically (since 1950) the trend has been towards an increase in precipitation events above the 95^{th} percentile decrease, as well as a decrease in the number of consecutive dry days. For the future, temperatures are expected to increase by as much as 2.5^{o}C for the Caribbean, however for precipitation predictions, there is much uncertainty. Most climate models predict a decrease in the precipitation amount (by about 5-20%) for the Caribbean, but a few do predict an increase (less than 6 out of 21 models predict an increase). It is expected that extreme precipitation will increase due to climate change. Having monitoring systems and early warning systems may, therefore, become increasingly important in the future.

The concept of the CDPMN was born out of the need to mitigate and respond to the creeping phenomenon of drought, as well as to cope with the other extreme; flooding. The precipitation situation needs to be closely monitored and many of the indicators and indices used for drought are also used to recognize above normal precipitation.

The drought, and general precipitation, status of a country will be monitored with a number of indices. Currently, the CIMH uses the Standardized Precipitation Index (SPI), Palmer Drought Severity Index (PDSI), Crop Moisture Index (CMI) and deciles to monitor the precipitation status. These and other indices can be used for the agriculture sector, for example for predicting the onset of drought and other extreme events.

One way to deal with the impacts of climate and uncertainty is to establish monitoring systems and early warning systems for extreme events. CARWIN will work with selected rural communities and local government to strengthen existing community water groups, and the CDPMN will provide the opportunity to propose new community water strategies which will consider drought (and flood) coping mechanisms.

The CDPMN also proposes to gather the data, monitor the trends, and convene the stakeholders and researchers to determine indices for extreme precipitation and to furthermore develop adaptation strategies.

Forecasting and predicting are part of the existing needs for decision makers, and the collection of data will play a crucial role in addressing this need. CARIWIN is expanding the data collection infrastructure in all 3 partner countries by adding rain gauges, and stream level recorders at each of the 3 pilot sites.

The CDPMN will be web-based and therefore improve the timeliness of delivery of the information. The CIMH will be the host organization, responsible for relaying the information to the countries. National workshops through CDPMN will provide the opportunity to engage stakeholders. The aim is to have the CDPMN operational by 2010.

National Water Information Systems

Dr. Lystra Fletcher-Paul emphasized that a NWIS in Grenada should seek to relieve the current problem of compartmentalized data with no central point of storage, access and retrieval. It should be reliable and up-to-date, secure in format and easily accessed.

An example was given of the already functional system in Jamaica. The Jamaican NWIS is powered by WebMap. All data are geo-referenced and can be entered in their original format. Data beyond strictly hydrological data are also input into the system so that Geographic Information System (GIS) maps with roads, soil types, topography etc. can overlay with water information. Also, other forms of geo-referenced information can be entered in the form of documents such as reports, information about water users groups, information on legislation, etc. The advantages of WebMap are that:

- it is based on opensource software, i.e. there are no fees or licences to be paid;
- it is user-friendly;
- extraction can be done in several formats;
- there is one software for all agencies;
- the application is hosted on the internet;

- information is accessible in real-time.

Lessons learnt from implementation of NWIS in Jamaica and St-Lucia are:

- the system is only as good as the primary data, so there is a need to focus on data collection
- the agency responsible for the NWIS must be mandated by law to collect the data/information
- a data policy needs to be established with relevant protocols for data exchange
- staff must be adequately trained
- knowing the demand for data and information creates an incentive to collect it
- the system is best managed by strong data administrator with passion and drive
- the system needs continual review and update

In conclusion, important factors in success include quality assurance, sustainability and government commitment.

Developing a NWIS for Grenada

Jim Joseph outlined the common objections of data mangers to what seems like "just another" database. These included that it seems like more work; a possible duplication of efforts; it will likely require more resources; it will mean a new technology to learn; it will likely be obsolete in the near future. These misguided impressions were quickly dispelled with the explanation of how WebMap is structured and how it can overcome barriers to having a central repository and distribution mechanism for a country's data combined with a powerful tool for decision-making.

Further benefits identified included:

- all objects in the database are geo-referenced so that choosing a specific site or moving the cursor over the map will reveal all of the information available for each location
- the system is installed on a server and access for users is via the internet
- no client installation is necessary as each agency/user enters the NWIS through website with username and password
- procedures for data collection and data entry which are presently in place at agencies need not be modified as the system accepts various formats of primary data
- logs from website hits reflect what data is most requested
- it is possible to restrict data access or charge access fees
- the database inventory allows users to see all objects in the database
- user interface is very user-friendly

Break-out session

The Break-out session divided the participants into three main groups lead by the Ministry of Agriculture, The Meteorological Office at Point Salines International Airport and the Caribbean Youth Environmental Network (CYEN). The expected outcomes of each group's work were itemized as follows:

1. A consolidated response to the programmer's questionnaire per agency;
2. Comments on missing or additional information beyond what was asked for in the questionnaire which the groups feel essential for the WIS development;
3. Prioritization of each agency's perceived needs for the successful implementation of the WIS.

The completed questionnaires were submitted and a nominated rapporteur from each group summarized their collective findings and delivered a verbal report to the larger group.

Ministry of Agriculture:

It was recommended that the NWIS receive compensation for data distributed to private companies. The special needs of the Ministry were identified as equipment and training/capacity building. Special requests include the ability to distribute non-traditional data such as reports, studies, policies, legislation, etc. Currently the Ministry has a lot of information collected both manually and electronically. This is mostly stored in Excel files. GIS shape layers are also available of the country/watersheds.

Prioritized needs to implement NWIS are:

1. upgrade and reactivate data collection system/equipment
2. training of staff in proper data collection procedures – quality assurance/control
3. purchase of additional equipment
4. training in use of equipment
5. hire additional staff

Meteorological Office :

Prioritized needs to implement NWIS are:

1. central office to coordinate data
2. training in computer literacy
3. additional staff
4. training in meteorology, hydrology and data analysis
5. computers with faster processing speed

CYEN:

As a user group they indicated no special needs. It was noted that they are very computer literate group. They asked to be involved in these types of discussions again in the future to remain involved.

Next steps for the NWIS development

Dr. Lystra Fletcher-Paul outlined the next steps that should be taken in the successful development of the NWIS.

1. Completion of the questionnaires from absent data collectors and data users (NAWASA, NADMA, Farming Communities…)
2. Compilation of all of the data by the consultants (Jim Joseph and Dejan Lekic)
3. Assessment of the Agency in which the NWIS will be housed (e.g. Ministry of Agriculture, Land Use Division or the soon to be formed Water Resources Unit) to determine needs for integrating the system into its operations (does it have a dedicated computer, web address, IP, data administrator, etc.?)
4. Discussion of a National Committee of data providers (to address issues related to type of data, frequency, format, etc.)
5. Determination of the data administrator. (existing or new position requiring a Terms Of Reference?)
6. Determine when the programmers (Jim Joseph and Dejan Lekic) should be brought back
7. Presentation of Shape files and other Raster images to consultants for commencement of database development

Closing comments

Thompson thanked all for their input and noted that this workshop stimulated the appetite of CYEN to get involved. It was agreed to extend the workshop with an additional session on the following day.

Workshop continued on June 25, 2008

Since there was keen interest in seeing a real-time demonstration of an operational WIS using WebMap, an additional opportunity to present the system was created. With the assistance of the CEF organizers, a presentation by Jim Joseph was added to the CEF agenda of Session 4 of the Parallel sessions. The presentation included a live (online) demonstration of the Water Information System (WebMap) implemented for and being used by the Government of Jamaica's Water Resources Unit. The theme of that session was Integrated Water Resources Management Concepts and Practices. This part of the session was considered to be a continuation of the Grenada NWIS Workshop. Additional participants in attendance on this second day who were also contributing to the information gathering exercise were as follows:

National Water and Sewerage Authority
Christopher Grenage

Grantley Chedick
Cosmos Charles
Harold Merryman

Video clips of the presentations made by Dr. Lystra Fletcher-Paul and by Jim Joseph can be viewed at www.mcgill.ca/cariwin/activities/2008

Follow-up discussions

The leaders of the workshop discussed the progress made during the two days of events and agreed that the formation of two focus groups would greatly enhance the successful implementation of the NWIS from this embryonic phase. These groups are the NWIS Data Collection (NWIS-DC) and the NWIS Institutional Framework (NWIS-IF).

It was proposed that the NWIS-IF should include Dr. Lystra Fletcher-Paul, Trevor Thompson, Dr. Adrian Cashman, consultant Terrence Smith, Dr. Chandra Madramootoo and Catherine Senecal. The initial mandate of this group would be to:

- Guide the compilation of "Data Collectors" and "Data Users" lists for the purpose of including all relevant institutions/organizations/individuals in the Grenada WIS development exercise.
- Guide appropriate protocol for obtaining necessary political and legislative support for Grenada WIS.

It was proposed that the NWIS-DC should include Judy Padmore, Adrian Trotman, Trevor Thompson, Jason Rosco Slocombe, Dr. Chandra Madramootoo, Jim Joseph, Apurva Gollamudi and Lauristen Hosten. The initial mandate of this group would be to:

- Guide matters related to data collection at the CARIWIN installed station
- Support consultants Joseph and Lekic in data gathering from "Data Collectors" list
- Support consultants Joseph and Lekic in determining needs from "Data Users" list

Workshop adjourned.

Appendices

Workshop Photos

Workshop Agenda

Grenada Water Information System Questionnaire

Presentation by Senecal – CARIWIN Project Overview (June 2008)

Presentation by Mehdi – Drought and Precipitation Monitoring for Enhanced Integrated Water Resources Management in the Caribbean

Presentation by Fletcher-Paul – National Water Information Systems: Success stories from St. Lucia and Jamaica

Presentation by Joseph – National Water Information System for Grenada

Workshop Photos

Mr. Trevor Thompson and Dr. Lystra Fletcher-Paul

Mr. Kailas Narayan and Ms. Catherine Senecal

Workshop participants

Dr. Chris Cox, Mr. Jim Joseph, and Dr. Lystra Fletcher Paul

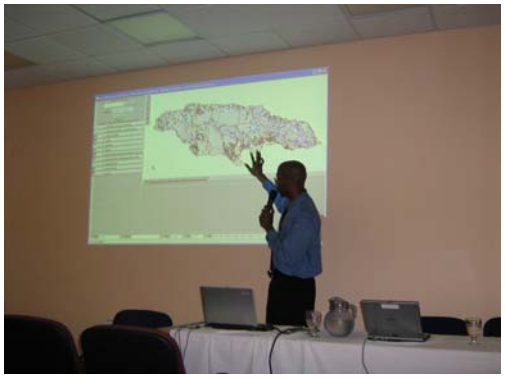
Ministry of Agriculture group during the Break-out session

CYEN group during the Break-out session

Mr. Jim Joseph delivering his presentation

Ms. Bano Mehdi delivering her presentation

Mr. Jim Joseph giving a live on-line demonstration of the Jamaican National Water Information System



Follow-up discussions

Workshop Agenda

Grenada Water Information System (WIS) Workshop
Tuesday, June 24, 2008
St-George's University, Grenada

Chair: Catherine Senecal, CARIWIN Project Coordinator

Workshop objectives:

- Provide background information on the CARIWIN project and context for the Grenada Water Information System
- Provide an opportunity for data generators, data users and stakeholders to meet and engage in the development of the Grenada WIS
- Conduct an information gathering exercise to permit the system programmer to begin structuring the database
- Identify next steps in the WIS development process

Time	Agenda	Lead
13.30 – 13.45	Opening Remarks CARIWIN overview	Trevor Thompson Catherine Senecal
13.45 – 14.00	Role of CIMH in centralized data management	Kailas Narayan / Judy Padmore
14.00 – 14.30	Caribbean Precipitation and Drought Monitoring Network (CPDMN)	Bano Mehdi
14.30 – 15.00	National Water Information Systems: Success stories from St. Lucia and Jamaica	Lystra Fletcher Paul/ Jim Joseph
15.00 – 15.15	Break	-
15.15 – 15.45	Developing a WIS for Grenada	Jim Joseph
15.45 – 16.45	Break-out sessions. Expected outcomes: 1. consolidated response to questionnaire per agency 2. comments on missing or additional info beyond questionnaire 3. prioritize needs for successfully implementing WIS	Bano Mehdi/ Catherine Senecal/ Trevor Thompson/ Lystra Fletcher Paul/ Jim Joseph/ Kailas Narayan/ Judy Padmore
16.45 – 17.00	Next steps Closing comments	Lystra Fletcher Paul Trevor Thompson

Questionnaire Provided by Dejan Lekic

Presentation by Senecal – CARIWIN Project Overview (June 2008)

Presentation by Mehdi – Drought and Precipitation Monitoring for Enhanced Integrated Water Resources Management in the Caribbean

Presentation by Fletcher-Paul – National Water Information Systems: Success stories from St. Lucia and Jamaica

Presentation by Joseph – National Water Information System for Grenada