

The National Water Information System: potential at the local level

By

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CARIWIN Water Community Strategy Seminar

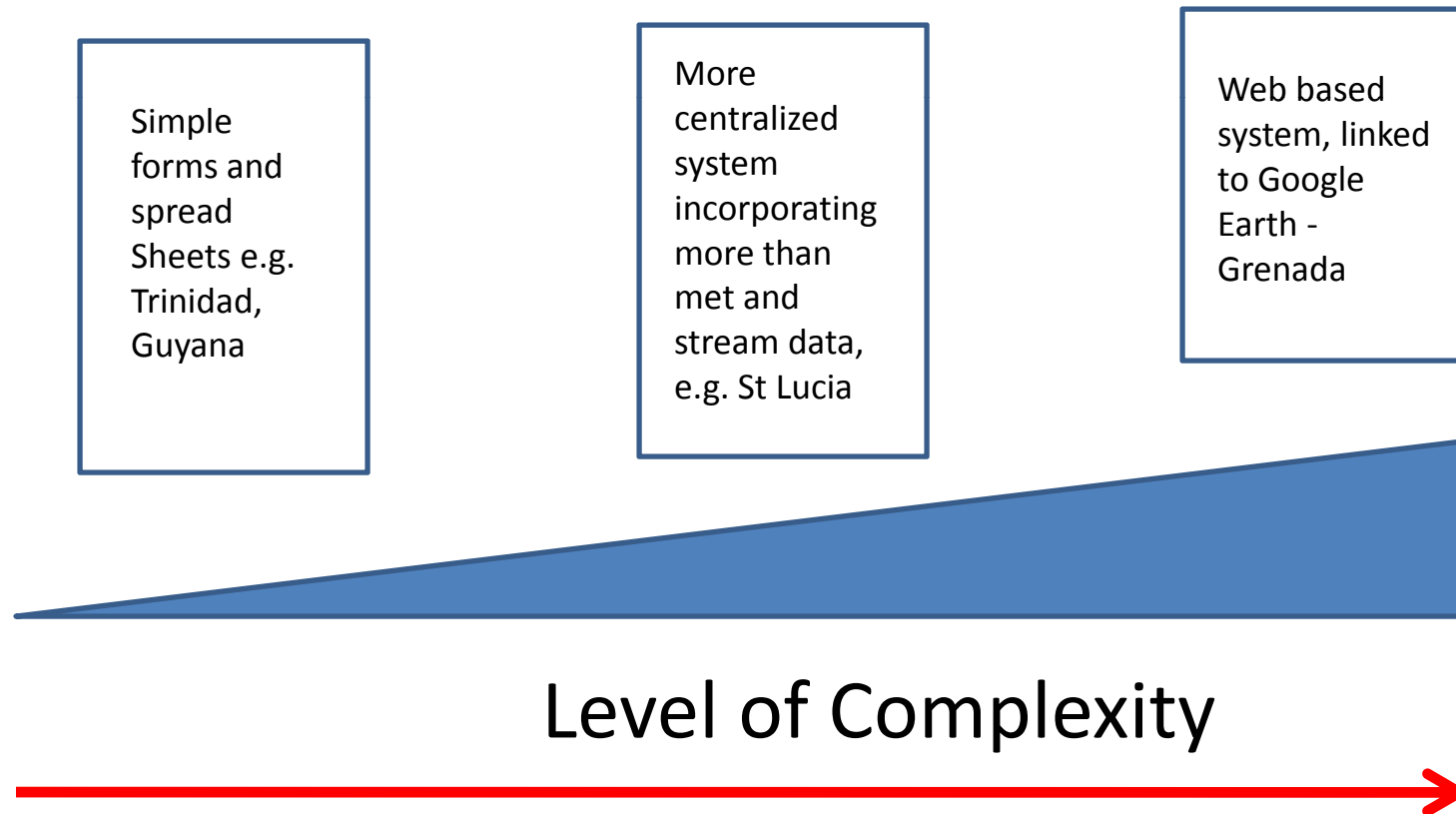
OUTLINE

- Introduction
- What is the NWIS
- Update on Grenada NWIS
- The Guyana situation – local level
- Issues to be considered
- Conclusions and recommendations
- The way forward...

Water Resources Information Systems

- A National Water Resources Information System (WRIS) is a valuable tool for:
 - organizing water data
 - easier access to the data, and
 - assessing a country's water resources.

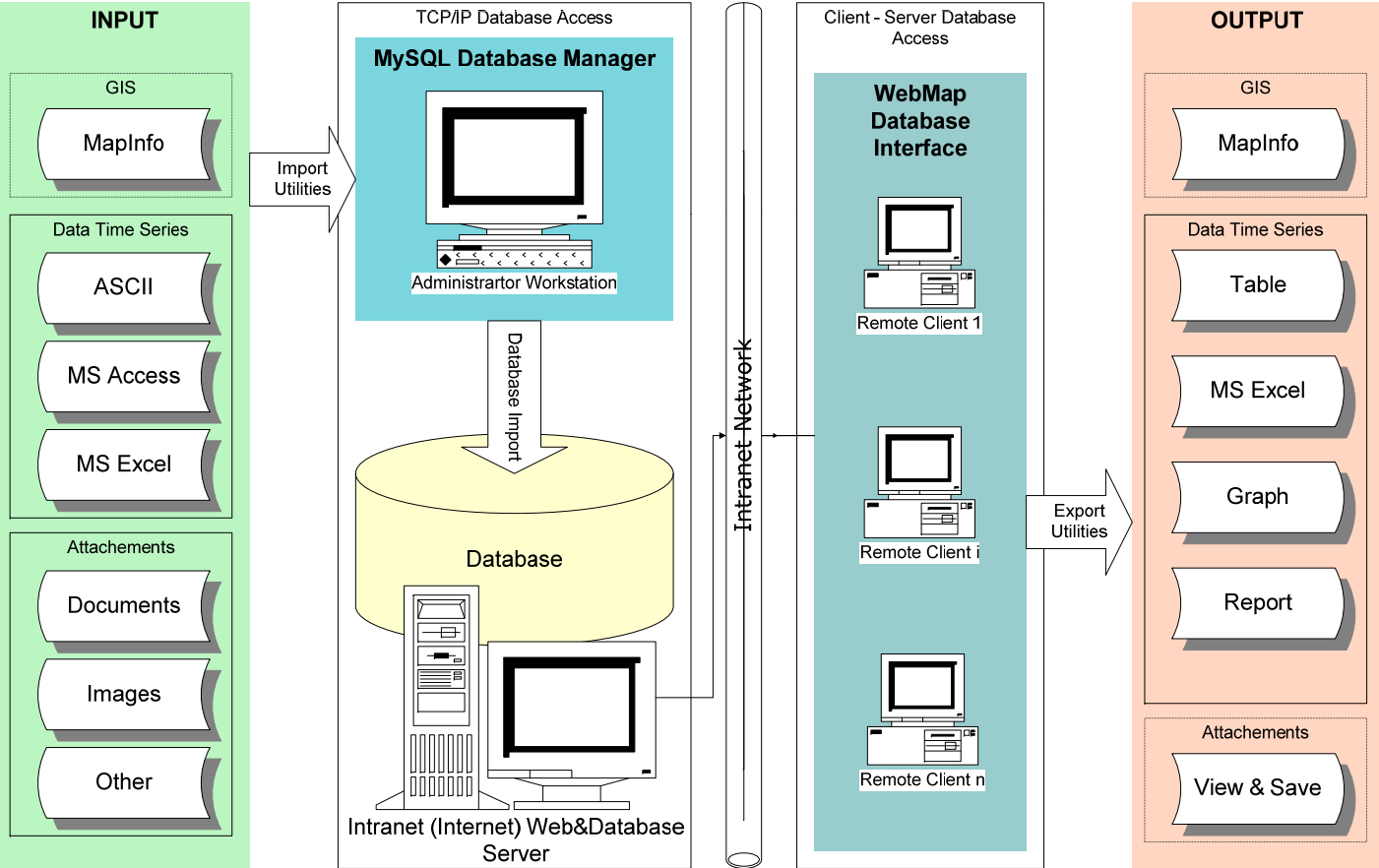
Caribbean NWIS vary in complexity



Grenada NWIS

Server Side

Client Side



Types of data

Table

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.70	0.000	0.000	0.000	0.000	
2	0.000	1.10	0.000	0.000	0.600	1.30	7.00	27.4	0.000	1.30	14.3	16.5	
3	1.50	0.000	0.000	0.000	1.90	0.000	1.70	14.3	0.600	0.100	8.40	2.10	
4	2.50	0.000	0.000	0.000	7.70	0.000	17.5	5.40	0.500	0.500	10.3	6.20	
5	0.000	0.000	0.000	0.000	0.600	0.000	0.000	0.000	0.80	0.000	0.000	28.5	
6	0.000	0.000	0.000	0.000	0.000	7.20	1.00	0.000	1.10	0.000	0.600	14.5	
7	15.4	0.000	0.000	0.000	4.00	0.000	0.000	7.00	2.60	3.50	0.000	4.70	
8	0.300	0.000	0.000	0.000	0.000	1.30	2.20	7.50	0.800	0.000	0.000	1.40	
9	0.000	0.000	1.40	0.000	2.80	0.000	1.00	0.000	10.5	17.5	0.000	4.40	
10	0.000	0.000	0.000	0.000	1.30	3.10	0.600	0.000	1.50	5.30	0.000	2.20	
11	0.000	13.7	0.000	0.000	3.10	0.000	0.000	0.000	0.000	4.40	0.000	0.200	
12	0.000	0.000	0.000	0.000	0.000	0.500	4.00	1.30	11.0	0.500	0.000	3.30	
13	0.000	0.000	1.40	0.100	1.50	0.000	0.000	4.10	15.6	5.10	0.000	3.80	
14	0.000	0.200	6.40	0.000	7.20	13.2	6.50	0.100	9.90	2.80	1.10	0.000	
15	0.000	3.80	2.30	0.000	20.6	0.000	1.10	1.90	13.6	1.30	1.00	15.4	
16	0.000	13.6	0.000	0.000	0.000	2.30	1.40	0.000	0.000	6.30	0.000	0.000	
17	0.000	0.000	0.000	0.000	2.70	2.80	1.80	25.6	0.000	2.00	2.00	1.40	
18	0.000	0.300	0.000	0.200	5.30	21.0	0.500	2.40	0.000	0.000	13.8	0.000	
19	1.40	2.10	0.000	0.000	6.40	2.10	9.20	2.10	0.700	2.20	84.4	0.200	
20	3.50	0.600	0.000	0.000	12.0	58.7	2.40	1.20	16.5	0.100	7.40	5.40	
21	1.20	0.000	0.000	1.90	2.30	0.000	0.000	7.00	13.6	3.70	51.4	0.000	
22	3.20	0.000	0.000	4.40	37.0	0.000	0.000	0.300	5.10	1.80	0.900	0.000	
23	0.000	0.000	0.000	0.000	6.30	7.50	3.70	1.80	0.000	0.400	3.80	2.50	
24	0.000	0.000	0.000	0.000	19.0	0.500	0.000	3.50	0.000	16.6	9.10	9.30	
25	2.70	0.000	0.000	0.000	0.000	3.10	9.30	0.400	0.500	26.9	23.3	0.000	
26	0.600	0.000	0.000	0.000	0.000	16.2	2.00	0.000	0.000	10.8	50.8	0.000	
27	0.800	0.000	0.000	0.000	0.000	0.800	0.000	2.80	2.10	0.000	41.7	0.300	
28	0.000	0.000	0.000	0.000	6.40	0.300	4.30	8.500	0.000	0.000	0.000	0.500	
29	0.000	5.20	0.000	1.80	5.80	3.30	2.10	1.70	0.000	0.200	2.20	0.000	
30	0.000	0.000	0.000	2.10	1.50	3.40	32.9	0.000	2.10	0.600	0.600	0.100	
31	0.600	0.000	0.000	0.400	9.20	0.000	0.000	0.000	0.000	0.000	0.000	0.100	
Min.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Avg.	1.99	1.26	0.548	0.270	4.73	5.83	24.6	5.38	4.57	3.72	9.78	41.0	
Max.	15.4	12.7	6.60	4.40	37.0	58.7	17.5	32.9	32.6	26.9	54.4	28.5	
Year Min.	0.000			Year Avg.			3.60			Year Max.			58.7

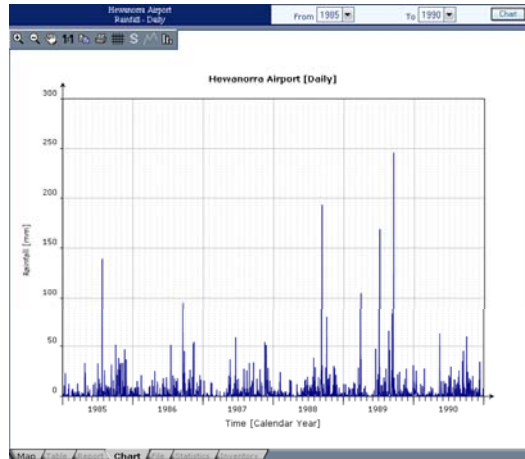
Report

Yearly Report

Object: ClimaticStation: Hewanorra Airport
 Variable: Rainfall [mm]
 Aggreg.: Daily
 Year: 1986

Day	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	5.4	3	0	0.1	0	0	6.5	1.8	0	1.6	0.1	13.9
2	15	0	0	0	3.2	0	5.8	1.7	3.2	0	0	5.1
3	0.4	0	0.8	0.4	0	0	0	4	3.3	0	0.2	1.7
4	2.3	1.6	2.3	0.1	0	0.8	3.6	11.2	0	0	2.4	5.4
5	3.2	0	4.9	0	0.1	12.7	0	0.8	0	0	3.6	4.3
6	0	0	2.6	0	0.7	0.5	0	17.7	0	1	19.4	3.2
7	2.5	0.6	0	0	0	4.1	0	0.4	3.8	6	15.1	2.8
8	1.1	0	0.4	0	7.7	0	0	0.2	6.4	5.3	13.1	0
9	0.7	0.1	1.9	0	14.3	18	7.1	2.7	0	5.5	0.6	10.1
10	8	0.4	0	0.4	10.9	0	0	8.4	0	0	4.3	2.1
11	1.1	0.1	0	0	0	0.3	0	1.3	0	0	14.6	0.2
12	0.3	2.1	2.9	1.6	0	0.7	2.4	3	0.3	0	52.3	1
13	1.7	1.9	0	0	0.8	2.5	0	0.9	0	0	1.5	0
14	1.1	21.3	0.2	0	0	0.7	0.5	0	0.5	0.2	28.3	2.2
15	7	0	0	0	0.3	0.3	1.9	14.8	0	7.5	64.4	9.9

Chart



File

A1	Object: Hewanorra Airport					
A	B	C	D	E	F	
1	Object: Hewanorra Airport	Variable: Rainfall [mm]	Aggregation: Daily	Period: 1985/1994		
2	Date	Value				
3	1.1.1985	0.6				
4	2.1.1985	0.8				
5	3.1.1985	2				
6	4.1.1985	0				
7	5.1.1985	1.4				
8	6.1.1985	2.5				
9	7.1.1985	0				
10	8.1.1985	0				
11	9.1.1985	10.8				

THE SYSTEM

Other features

Object Relationships Browser

Watershed:
St. Urbain complex

Contains:

WaterQuality

ClimaticStation

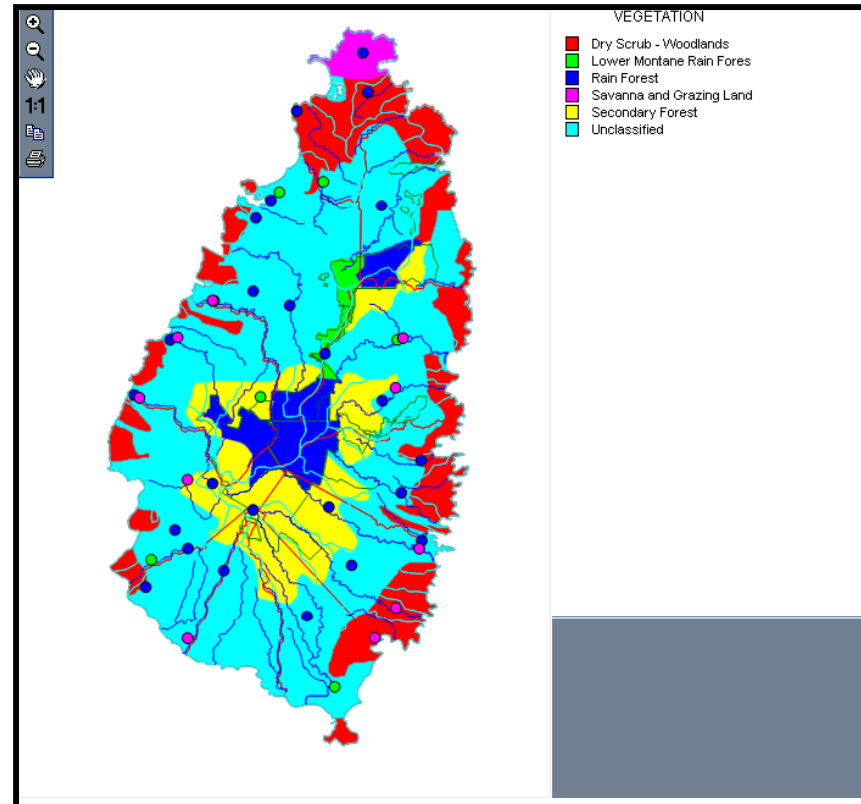
» Hewanorra airport [15-M-1]

RainfallStation

River

Belongs to:

» Country: Saint Lucia



Advantages of the NWIS

- Software is open source
 - Free download from the Internet
 - No renewal of licenses
 - No payment of user fees
 - User friendly so no copious manuals
 - Cost. Inexpensive to setup and operate. 1 Staff.
- One system for all agencies
 - Internet access
 - Real-time data and information access
 - Risk: Hacking, Viruses, etc

Advantages continued

- Data entry in any format
- Data can be extracted in various formats
- Selected variables could be extracted from the existing database of the contributing institution and sent electronically to the Water Resources Agency or by uploading
- Reduced chance of transcribing errors

Update on Grenada NWIS

- Links with Google Earth
- Links with Other Agencies
- Cooperation with Regional Agencies_(Barbados, UWI)
- Increased use by Agencies, Depts, Ministries of NWIS
- Upload data from Automatic Stations
- Data availability to public still in discussion
- Creation of separate access points for Agencies/Users

Grenada Update Challenges

1. Data Collection (getting organizations to provide data, reports in a timely manner) .
2. Capacity Building. Requires time to learn the Software components in order to make improvements to the site (Html, javascript, ajax, PHP, SQL statements.)
3. Lack of feedback from users.

The Guyana Situation – local level

- Coastal
 - Comprises staff gauges installed in canals
 - Readings taken daily by someone from the community
 - Transmitted to Hydromet once per month when a staff member visits the area
- Upstream
 - In freshwater regions of major rivers in conservancy – maintained by conservancy board



The Guyana Situation – local level Application

- Early warning and drought
- Vulnerability to rising water levels in the coastal communities.
- Monitoring
- Increasing awareness of the impact of rainfall on the community
- Weather forecasting



Problems encountered

- Difficulties in maintaining staff gauges and its environs – canals choked with weeds
- Institutional arrangements for payment of gauge readers
- Delays in payment or non payment of readers
- Gauge readers not enthusiastic
- Past records published in annual year books but this has not been done for some time

Issues to be considered

- What is the Objective of the NWIS – forecasting, early warning, water quality?
- Instrumentation for data collection – type, placement, maintenance
- Data collection – staff, incentives
- Data entry – error in transcribing each time data is transferred
- Data analysis, interpretation and dissemination
- Who are the users of the data? For what?

Recommendations

- Guidelines to ensure data accuracy
- Incentives to keep data collectors' level of enthusiasm high
- Institutional arrangements to be streamlined
- Computerizing data entry in the field to reduce changes and errors
- Development of simple tools linked with EWS
- Additional applications e.g. crop production planning

Next steps...

- Areas where FAO can assist
 - Development of guidelines
 - Development of computerized NWIS
 - Development of simple EWS tools (e.g colour coded gauges)
 - Capacity building



Remember...

- Keep it simple!!

Thank you