C-READ (Caribbean - Regional Environmental and Atmospheric Data) Management System

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Introduction and Overview

Bridgetown, Barbados, Oct 1, 2015

Facilitated by: David Oswald, DE Design + Environment Inc.

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Objectives of workshop:

- Get overview of how C-READ was developed and its basis
- Go over the overall architecture and components of the system
- Learn how each component functions
- Explore some examples
- Discuss potential next steps and steps of implementation

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Schedule:

Time	Content
9:00 to 10:00 AM	Welcome and Introductions
9:10 to 9:30 AM	System Overview
9:30 to 10:00 AM	Module 1: System Overview
10:00 to 11:00 AM	Module 2: C-READ Catalogue (CKAN)
11:00 to 12:00	Module 3: C-READ GeoNode
12:00 to 1:00 PM	Lunch
1:00 to 2:00 PM	Module 4: QGIS
2:00 to 3:00 PM	Module 5: Applications – Use Cases and Questions

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C – Caribbean

R – Regional

E – Environmental

A – Atmospheric

D – Database

… Management System

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Genesis of Project:

- Projects identified climate resilience identified as a regional priority (eg. PPCR, CPACC, ACC/MACC)
- Monitoring identified as a priority
- Needed a: (a) comprehensive review of monitoring instrumentation
  (b) clear understanding of what data products required
  (c) database management system to support decision making

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Initiation of Project:

- Six partner countries: Jamaica, Belize, Dominica, St. Lucia, Barbados, Guyana
- DE hired to conduct gap analysis, do conceptual design, and operational plan
- DE brought on Mona Geoinformatics Institute as regional partner

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Steps:

- Phase 1 – Gap Analysis and Regional Plan of Action
- Phase 2 – Conceptual Design of System
- Phase 3 – Sustainability and Operational Plan

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Gap Analysis:

- Objective was to assess monitoring instrumentation across and data gathering across the six partner countries
- Steps: (a) Establish current status
  (b) Determine the ideal situation
  (c) Outline Gaps
- Conducted a stakeholder workshop in Kingston, Jamaica with representatives from government, academia, NGOs, and private sector

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Needs Assessment:

- Created an e-survey based on input from workshop
- Deployed e-survey across the region with over 100 groups contacted
- Analyzed results and created gap matrices for each partner country

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Workshop:

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E-Survey:

- Conducted for:

  (a) IT issues (eg. amount of trained personnel)

  (b) Management issues (eg. priority environmental issues)

  (c) Scientific and technical issues (eg. details of environmental monitoring stations)

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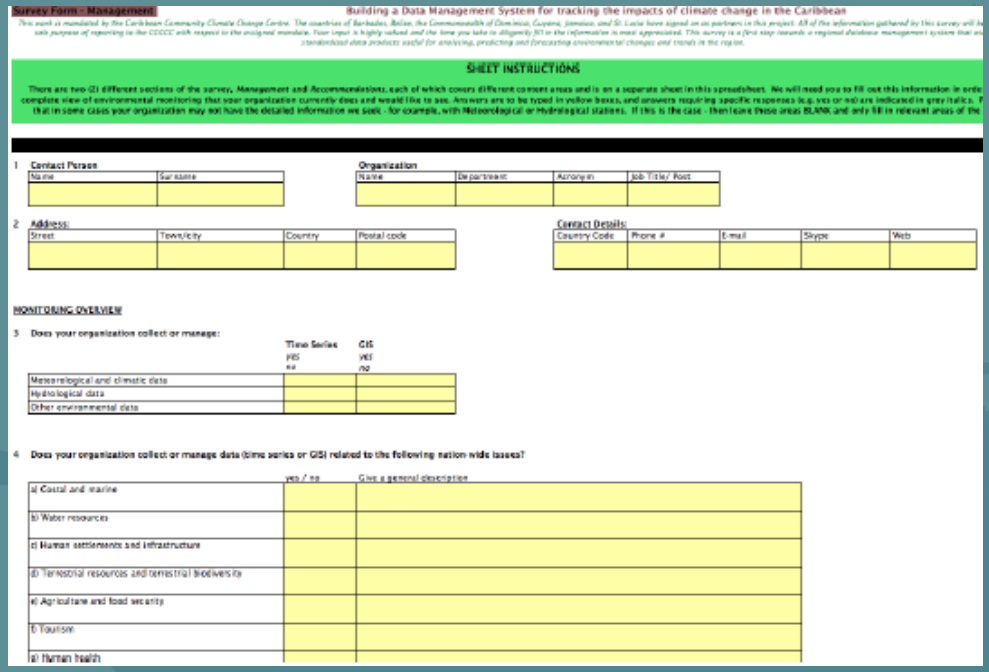
E-Survey:



Survey Form - Management

Building a Data Management System for tracking the impacts of climate change in the Caribbean

SHEET INSTRUCTIONS

1 Contact Person

Name	Surname

Organization

Name	Department	Acronym	Job Title/ Post

2 Address:

Street	Town/city	Country	Postal code

Contact Details:

Country Code	Phone #	E-mail	Skype	Web

MONITORING OVERVIEW

3 Does your organization collect or manage:

	Time Series (YES / no)	GIS (YES / no)
Meteorological and climatic data		
Hydrological data		
Other environmental data		

4 Does your organization collect or manage data (time series or GIS) related to the following nation-wide issues?

	yes / no	Give a general description
a) Coastal and marine		
b) Water resources		
c) Human settlements and infrastructure		
d) Terrestrial resources and terrestrial biodiversity		
e) Agriculture and food security		
f) Tourism		
g) Human health		

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Gap Analysis Results:

- Each country had different capacity in terms of monitoring instrumentation
- This cross section of capability was reviewed to find the most suitable ‘ideal state’
- Categorical hierarchy was created based on the feedback from e-surveys
- Gaps for each country were reported within the categorical hierarchy

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Categorical Hierarchy:

- Meteorological and Hydrological Data
- Hazards and Risks
- Geographical and Biophysical Environment
- Coastal Zone and Ocean
- Land Cover and Land Use
- Agriculture and Food Security
- Water Availability and Use
- Energy: Use, Generation, and Availability
- Socio-Economic Status
- Critical and Emergency Infrastructure

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Categories and Issues:

- Each category has specific ***Issues*** for which data was gathered

Eg. Meteorological and Hydrological Monitoring

Issue 1: Precipitation and General Meteorological Monitoring

Issue 2: Modeling and Forecasting

Issue 3: Hydrological Monitoring

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Gaps Identified:

- Results for each country analyzed and GAPS assessed for each issue

Gaps in Data Gathering, Management, and Sharing

Table 8: Summary of Gaps Identified in Data Gathering in Jamaica

Issue	Current State	Desired Future State	Gap	Responsible Factors for Gap	Proposed Remedial Actions
Category 1: Meteorological and Hydrological Data and Projections					
Precipitation and general meteorological monitoring	Of the survey respondents that replied, there are currently 8 different organizations that gather time series and 2 that gather GIS meteorological data. The Jamaican Met Service manages a total of close to 200 rain gauges, 4-6 climate stations, 4 intensity loggers and 51 AWS. The NWC has 3 weather stations and WINDALCO has one manual station.	Minimum of electronic management and transfer of data from all functioning AWS and rain gauges to a centralized repository. There should be adequate coverage of the landscape (according to experts input) and proper maintenance and upkeep to ensure continuity in the supply of data. Processed averages should be easily accessible on line.	Survey respondents indicate that most organizations store their precipitation data electronically (spreadsheets) but transmission processes vary between paper and electronic. Key stakeholders indicated that there is a lack of coverage and consistency for precipitation and other meteorological data.	There are a number of rain gauges and met stations currently in place, but the issues with sparse data appears to be due to difficulties with maintenance, data gathering, and transmission. The AWS's were installed by four different companies through four different projects as indicated in Dr. Depradine's[1] report. The result is inconsistent recording. Data transmission may also be a system fault since although essentially all data is gathered electronically it is sometimes transferred on paper.	The current network of meteorological monitoring should first be closely evaluated for the consistency in data supply, the format of the data, methods of data transfer, and maintenance protocols. Based on this evaluation, and an expert assessment of the quantity of stations, an operational plan can be generated and also a possible increase in AWS, if warranted. Given that meteorological monitoring is undertaken by multiple organizations, collaboration and standardization of processes is extremely important here.

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General Findings - Gaps:

- There was a significant range in monitoring capacity amongst the partner countries
- Climate change and variability was consistently noted as a concern
- The amount of monitoring instrumentation was sufficient in many cases but the problem was human resource capacity for maintenance and data gathering. So more stations does not necessarily equate to better monitoring.

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General Findings - Gaps:

- Food security
- Data sharing
- Disaster risk (flood, drought, storm, …)
- Formats for collected data varied widely - paper, spreadsheet, database. Indicated a need for consistent data formats

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System Design:

- Used Categorical Hierarchy as basis
- Established system functions based on those categories
- Data architecture review
- Use case scenarios generated
- Sample user interfaces designed

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Operational and Sustainability Plan:

- Human resource and technological resources assessed
- Maintenance procedures proposed
- Management structure proposed

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Detailed Design:

- Design documents were delivered to 5C
- Consortium of GeoSolutions and Corvallis hired to do software development

Thank You

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