

# The GEF-IWCAM Project and Earth Observation Systems

GEOSS in the Americas Forum 2009  
20 November 2009  
Washington, D.C.



# GEF-IWCAM Background

- Funding: Global Environment Facility (GEF)
- Project Cost: US\$112M (includes co-financing)
- GEF Funding US\$14M
- Implementing Agencies: UNEP & UNDP
- Executing Agencies: CEHI, UNEP CAR/RCU, and UNOPS
- Project Coordination Unit: based at CEHI, St. Lucia

[www.iwcam.org](http://www.iwcam.org)

# GEF-IWCAM Participating Countries

- Antigua/Barbuda
- Bahamas
- Barbados
- Cuba
- Dominica
- Dominican Republic
- Grenada
- Haiti
- Jamaica
- St. Lucia
- St. Kitts/Nevis
- St. Vincent & the Grenadines
- Trinidad & Tobago



[www.iwcam.org](http://www.iwcam.org)

# GEF-IWCAM Project Objective

*To assist Caribbean Small Island Developing States to adopt an integrated approach to watershed and coastal area management.*



[www.iwcam.org](http://www.iwcam.org)



# GEF-IWCAM Components

- 1. Demonstration, Capture and Transfer of Best Practices**
- 2. Development of IWCAM Process, Stress Reduction and Environmental Status Indicators Framework**
- 3. Policy, Legislative and Institutional Reform for IWCAM**
- 4. Regional and National Capacity Building and Sustainability for IWCAM**
- 5. Project Management and Coordination**



[www.iwcam.org](http://www.iwcam.org)

# GEF-IWCAM Project Component 2

- Review existing national and regional level indicator frameworks
- Development of template / framework for national level Indicators
- Establish Regional centre for storage of Indicator information and for Indicator training
- Pilot IWCAM process, stress reduction and environmental status indicators (1 country)



[www.iwcam.org](http://www.iwcam.org)

# IWCAM Indicators Capacity Assessment



## IWCAM INDICATORS MECHANISM AND CAPACITY ASSESSMENT

### PART ONE



Prepared by

Sherry Heileman & Leslie Walling, Consultants

for the

GEF Project on "Integrating Watershed & Coastal Areas  
Management in Caribbean Small Island Developing States  
(GEF-IWCAM)"



May 2008

Available at  
[www.iwcam.org](http://www.iwcam.org)

[www.iwcam.org](http://www.iwcam.org)



# IWCAM Indicators Capacity Assessment



- Existing capacities
- Systemic capacities
- Institutional capacities
- Human resources
- Data and information
- Technology
- Financial resources

[www.iwcam.org](http://www.iwcam.org)

# IWCAM Indicators Template



## IWCAM INDICATORS MECHANISM AND CAPACITY ASSESSMENT

### PART TWO



Prepared by  
Environm Prepared by

Sherry Heileman & Leslie Walling  
Consultants

for the

GEF Project on "Integrating Watershed & Coastal Areas  
Management in Caribbean Small Island Developing States (GEF-  
IWCAM)"



[www.iwcam.org](http://www.iwcam.org)

Available at  
[www.iwcam.org](http://www.iwcam.org)



# Indicators Template - some findings



- Issues facing Caribbean SIDS are very diverse
- No standard list of indicators that applies to all countries
- Each country should select a set of indicators for use in their respective IWCAM programmes
- **Participating countries** do not have monitoring programmes and indicators mechanisms specifically linked to an IWCAM framework.

[www.iwcam.org](http://www.iwcam.org)

# Some recommendations of the Indicators Assessment

- Countries should identify a suite of basic, priority IWCAM indicators that address national needs and priorities.
- National and regional data and information management systems should be strengthened.



[www.iwcam.org](http://www.iwcam.org)

# IWCAM Pilot Activity - Barbados

- A set of core indicators is to be selected and tested in pilot studies in one of the PCs with more advanced indicators initiatives and capacity (i.e. Barbados), and lessons disseminated to other PCs.

## Barbados



[www.iwcam.org](http://www.iwcam.org)

# Barbados Indicators Pilot Activity

## Objectives:

- assist the government of Barbados to improve the monitoring system of its land and water resources
- To strengthen the capacity of the technical staff of the Water Resources Management Unit of the Ministry of Agriculture, in data collection and management.
- To strengthen the link between management of land and water resources.



[www.iwcam.org](http://www.iwcam.org)

# Barbados Indicators Pilot Activity

## Expected output:

- A fully functioning database of data and information on key terrestrial and hydrological variables e.g. stream flows, water quality indicators, rainfall and other agro-meteorological data, soil types, land development, and ecosystem health. This data would cover the land, water and near-shore environment.

[www.iwcam.org](http://www.iwcam.org)

# GIS in GEF-IWCAM Project

**GIS is recognized as an important tool for integrated data analysis and management in IWCAM.**

**Aims:**

- To bring GIS capacity up to a level where GIS can be generated, manipulated and shared within a common framework among Participating Countries (PCs);**
- To build data and information management capacity in PCs, particularly at the level of Demonstration Projects;**
- To link environmental monitoring to the decision-making process;**
- Component of Project Information Management System (PIMS)**

[www.iwcam.org](http://www.iwcam.org)

# GIS Activities in GEF-IWCAM (Regional)

- **Regional Assessment of GIS Capacity, (2007)** stakeholder input and development of a **Road Map** which provides guidance to effective and efficient GIS implementation and identifies key resources required for GIS implementation
- **GIS Training Workshop, Cuba, July 2008** - To introduce GIS concepts relevant to watershed and coastal areas management; to provide training in Pollutant and Erosion Modeling; to further strengthen the regional network of GIS practitioners

[www.iwcam.org](http://www.iwcam.org)

# GIS in GEF-IWCAM: Demo Project - Trinidad & Tobago

**Land-Use Planning and Watershed Restoration as part of a Focused IWCAM Demonstration in the Courland Watershed and Buccoo Reef Area**

**Data: water quality, point & non-point sources of pollution, soil, stream flow, reef**

**Collected by project staff, consultants, community members, students using data collection forms.**

**Stored and backed up by Buccoo Reef Trust (project managers)**

**GIS quite advanced**



[www.iwcam.org](http://www.iwcam.org)

# GIS in GEF-IWCAM: Demo Project - Trinidad & Tobago

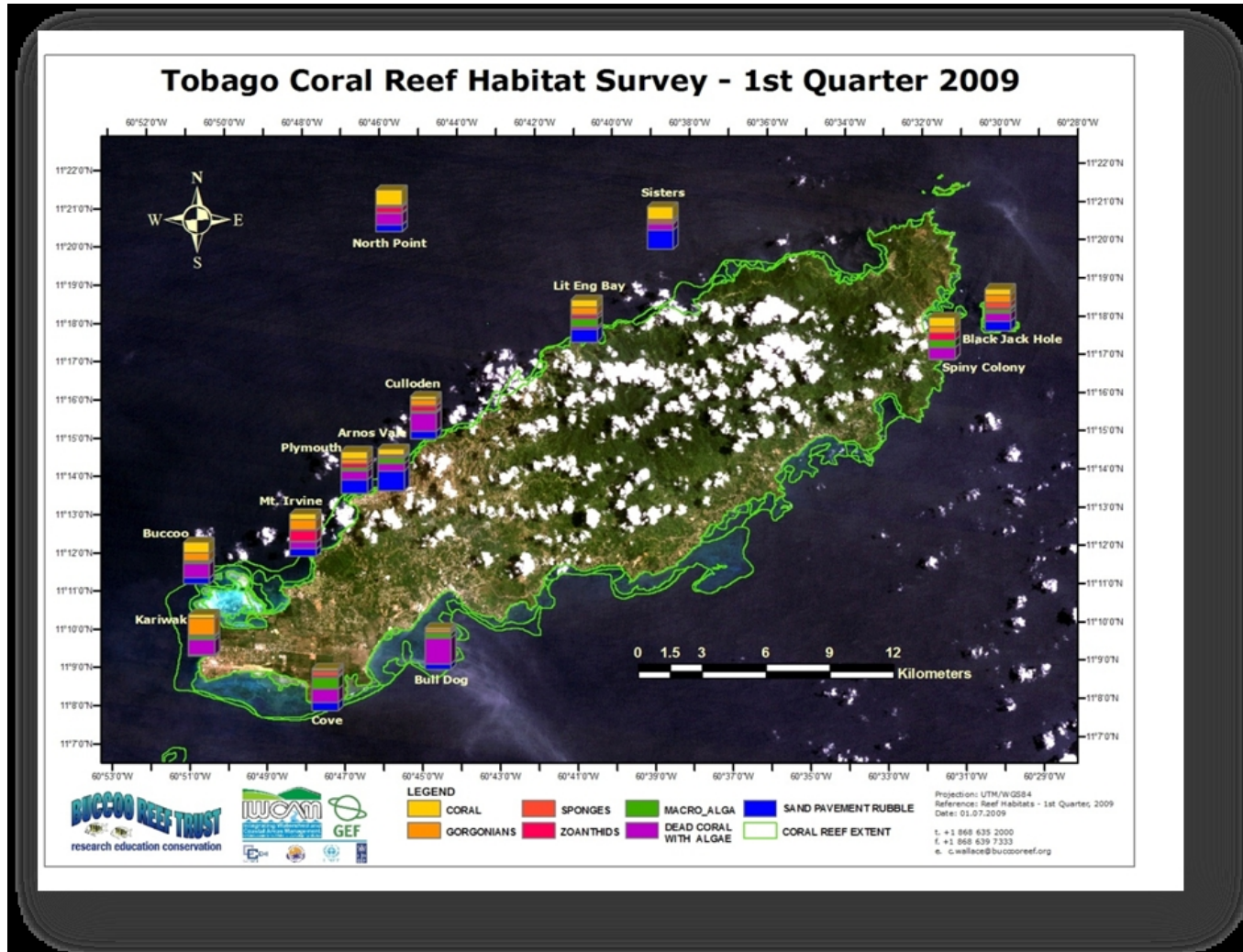
## GIS related activities:

- Purchase of GIS supportive equipment
- Training in GIS methodology
- Water quality survey and monitoring
- Aerial Remote Sensing
- Terrestrial surveys and input into GIS
- Sea beds and marine surveys and input into GIS
- Maps produced – e.g. series of Tobago Coral Reef Habitat Maps (2007 – present)

Made available to government and other stakeholders  
→ revision of land use plan



# Tobago Coral Reef Habitat Maps (2007 - present)



[www.iwcam.org](http://www.iwcam.org)

# GIS in GEF-IWCAM: Demo Project - Cuba

## Application of IWCAM Concepts at Cienfuegos Bay and Watershed

**Data: water quality, soil**

**Collected by CEAC and other institutions and stored in owner institutions as well as in database located at the GIS Laboratory**

**GIS well developed**



[www.iwcam.org](http://www.iwcam.org)

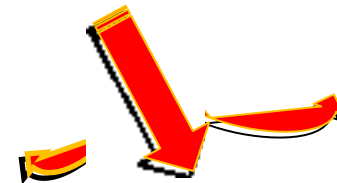
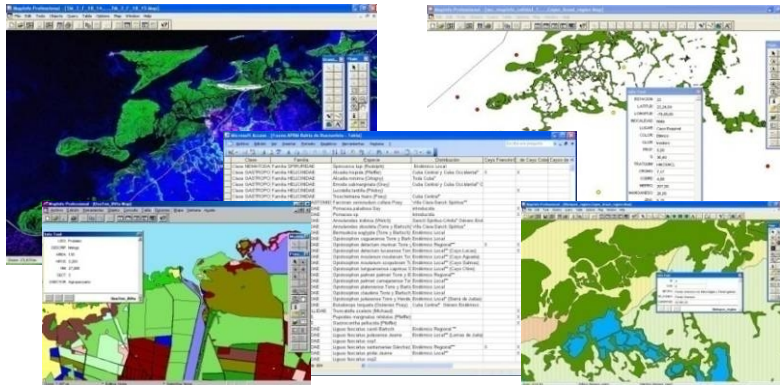
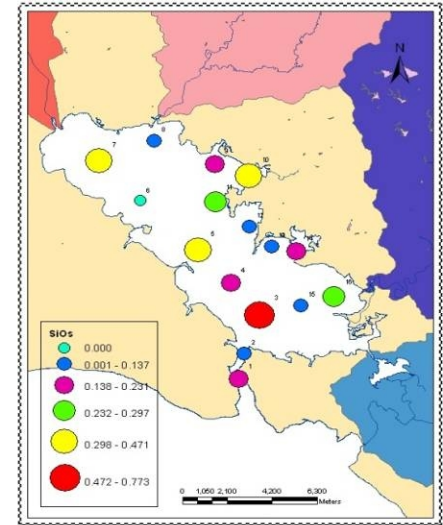
# GIS in GEF-IWCAM: Demo Project - Cuba

## GIS related activities:

- Data collected, analyzed and made available through a functional GIS to a specially created Local Authority and other relevant stakeholders
- Database, the Sistema Integral de Gestion de Informacion Ambiental (SIGA) introduced to stakeholders at First Provincial Environmental Monitoring Programme meeting, January 2009.
- Significant strengthening of wastewater management as the Local Authority and linked institutions have a complete and updated inventory of point sources of pollution as well as an evaluation of contaminant loads.

[www.iwcam.org](http://www.iwcam.org)

# Cuba: Data collected made available through a functional GIS



**CEAC**  
...un puente al desarrollo sostenible.

**PROGRAMA  
ESTATAL  
CALIDAD  
AMBIENTAL DE LA  
BAHÍA DE LA  
CIENFUEGOS**

Reporte - Marzo 2008

[www.iwcam.org](http://www.iwcam.org)

# The Way Forward - most needed

- ↳ Countries need an overall GIS strategy to maximize limited resources; regional development of GIS and RS should be coordinated for the same reason.
- Resources are needed to train GIS personnel and to acquire needed equipment and software throughout the region
- Capacity building in the area of data management (collection, archiving and dissemination) is needed (training, support for data collection and analysis, equipment etc.)
- There is a need for standardization of data and data integration issues
- The urgency of the management issue to be addressed must be the major criteria for deciding which application/s should be used
- A strategy is needed for disseminating the results of analysis using GIS, particularly to decision makers.

[www.iwcam.org](http://www.iwcam.org)

# THANK YOU!



**Vincent Sweeney**  
**Regional Project Coordinator**  
**[Vincent.Sweeney@unep.org](mailto:Vincent.Sweeney@unep.org)**

[www.iwcam.org](http://www.iwcam.org)

