

Caribbean: Planning for Adaptation to Global Climate Change (CPACC)

www.cpacc.org

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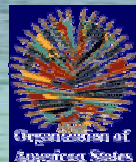
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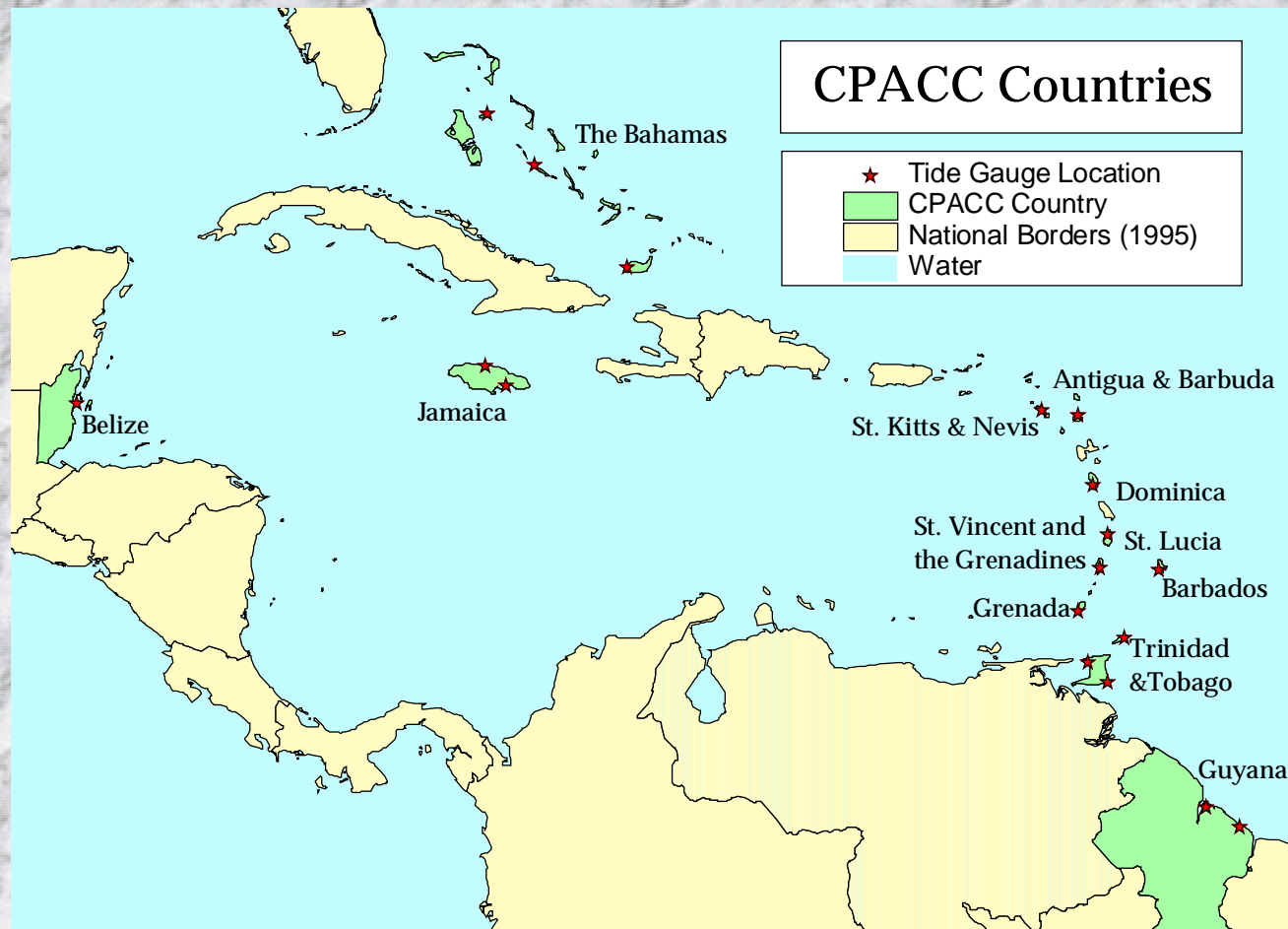
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Component #1

**Design &
Establishment of
Regional Sea-
Level/Climate
Monitoring
Network**



Component #1 Goal - Design & Establishment of Regional Sea-Level/Climate Monitoring Network



Component #1 Tasks

- **Establish a Regional Network Coordinators Office at CIMH in Barbados (1997)**
- **Conduct a Component #1 Workshop in Barbados (1997)**
- **Reconnaissance of all Monitoring Sites (1997)**
- **Procure Monitoring Equipment (1997)**
- **Install Monitoring Equipment, Including Local Technical Training & GPS Survey (1998)**
- **Provide Data Dissemination System (2000)**
- **Establish “Maintenance & Replacement” Trust Fund (1999)**

Monitoring Site Reconnaissance



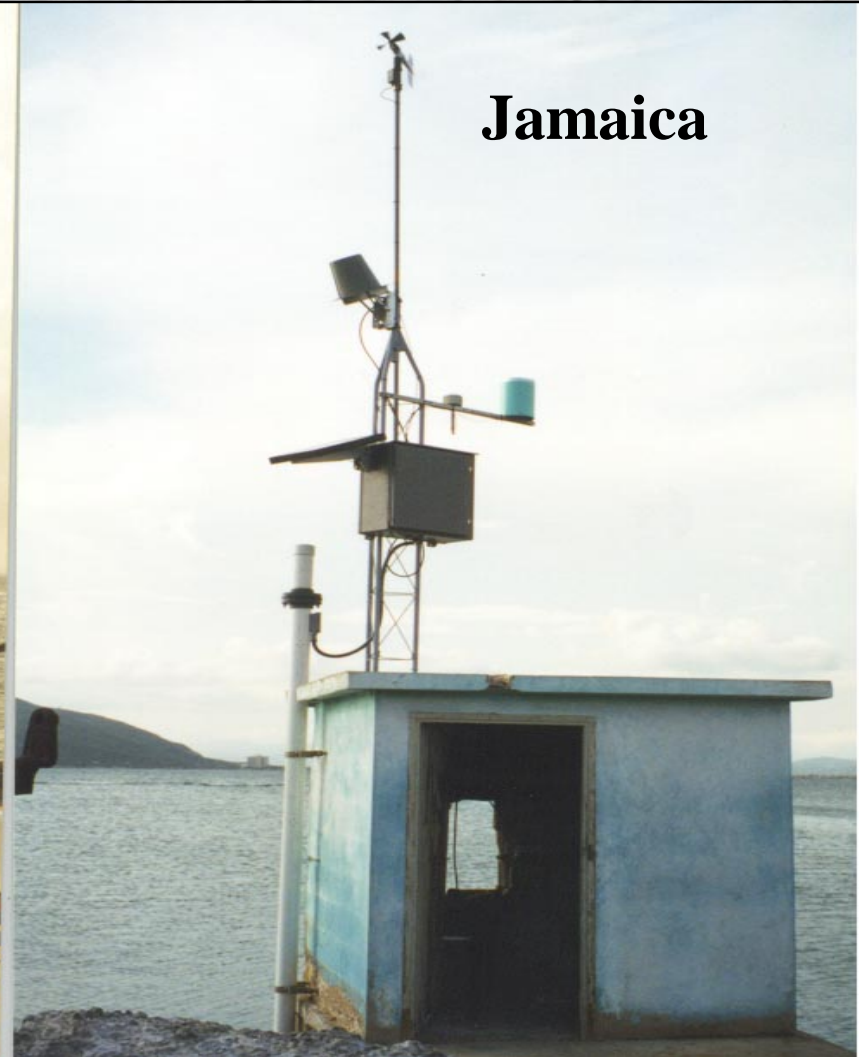
Component #1 Monitoring Sites

Two Typical CPACC Sites Installed in 1998

St. Vincent



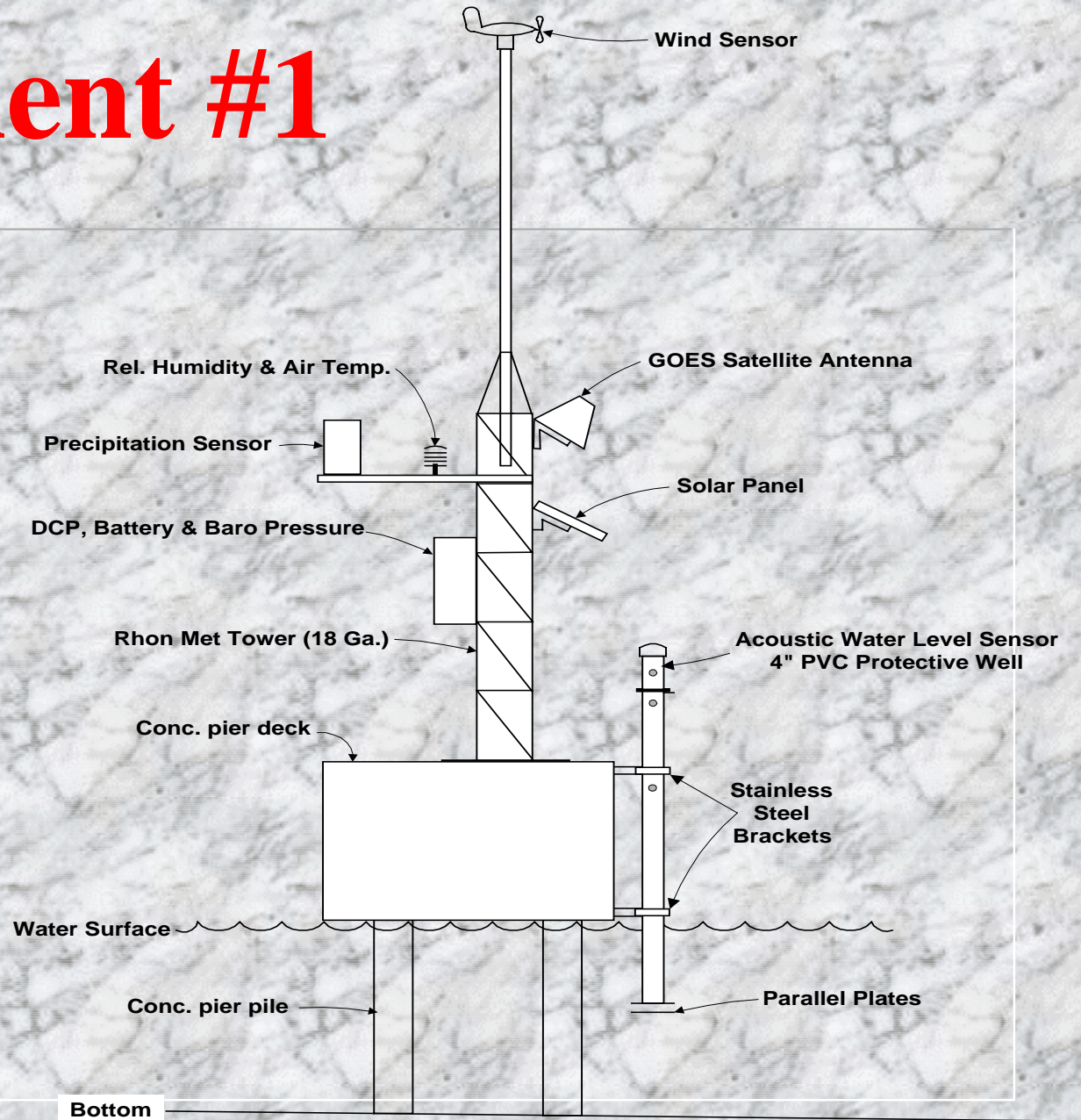
Jamaica



Component #1

Typical Monitoring Site Drawing

(Proposed in each
country during
reconnaissance)



Component #1 - Installation

Installation Activities

Equipment Delivery Logistics

Installation Tool Logistics

Coordination of Activities

Local Technician Training

Install Components

Test System Operation

Maintenance procedures



Component #1 - Training

June 97 Workshop

Reconnaissance

Instrumentation

Onsite Training

Hands-on Installation

Q & A

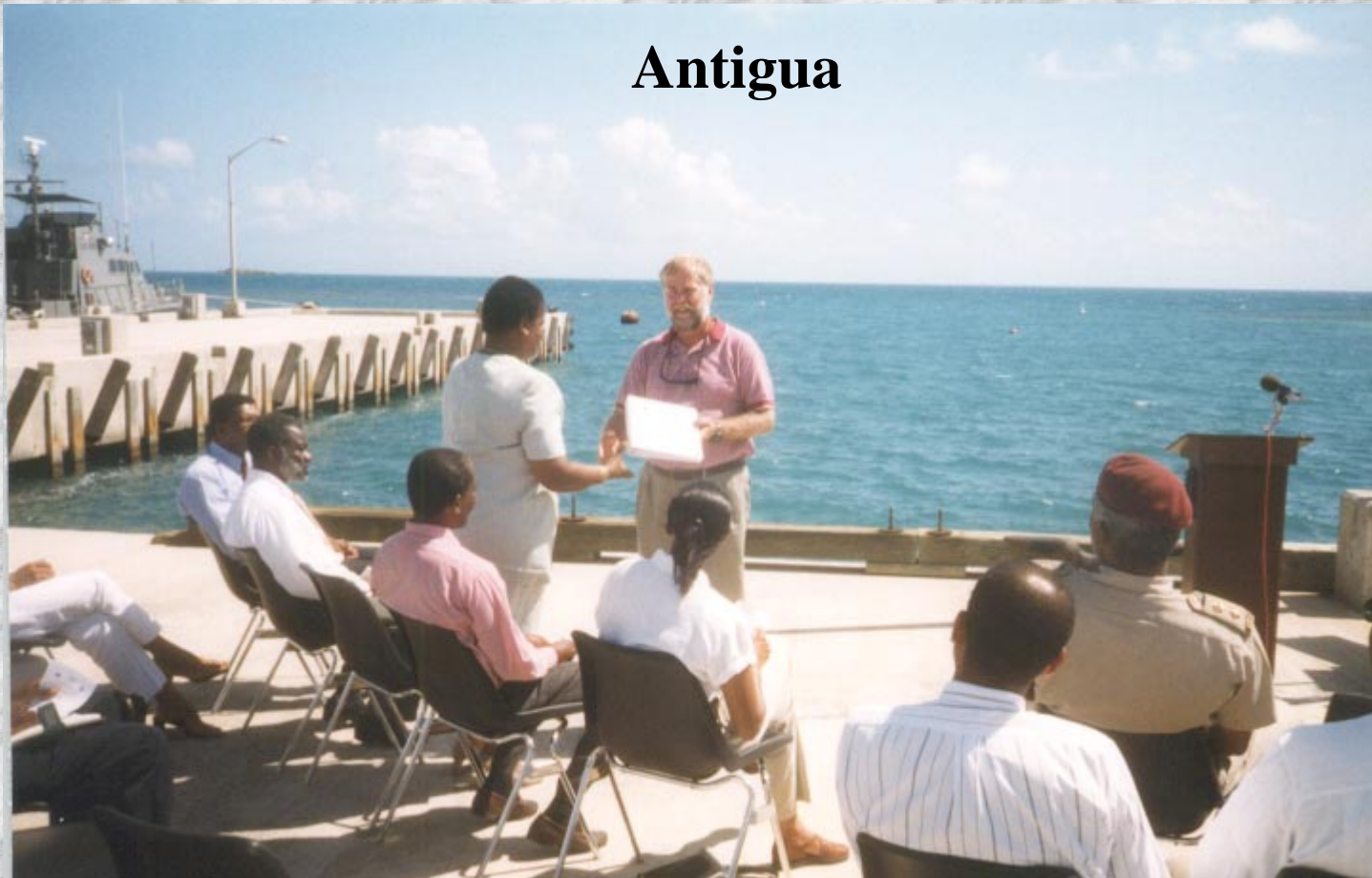
Follow-up



Component #1

Handing Over Ceremony

Antigua



Component #1 - Documentation

Monitoring Station Reports

Physical Description

Names & Numbers

Model, Serial No & Set-ups

Survey Results

Bench Mark Drawing

Bench Mark Descriptions

Datum Computations

Sensor Measurement Drawing

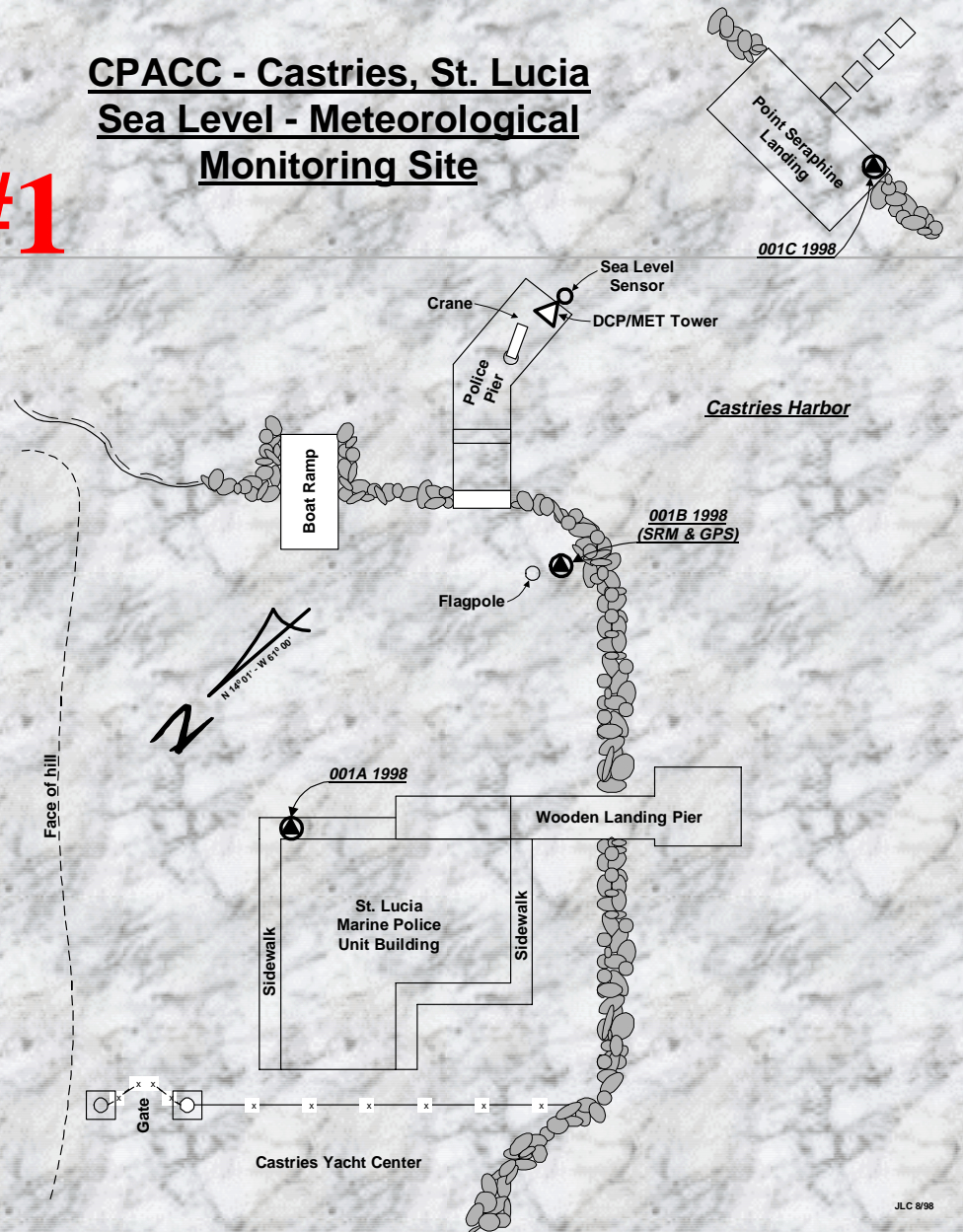
GPS Survey Data

**Documentation
maintained by the
Regional Data Center
and presented on the
webpage**

Component #1 Typical Benchmark Drawing

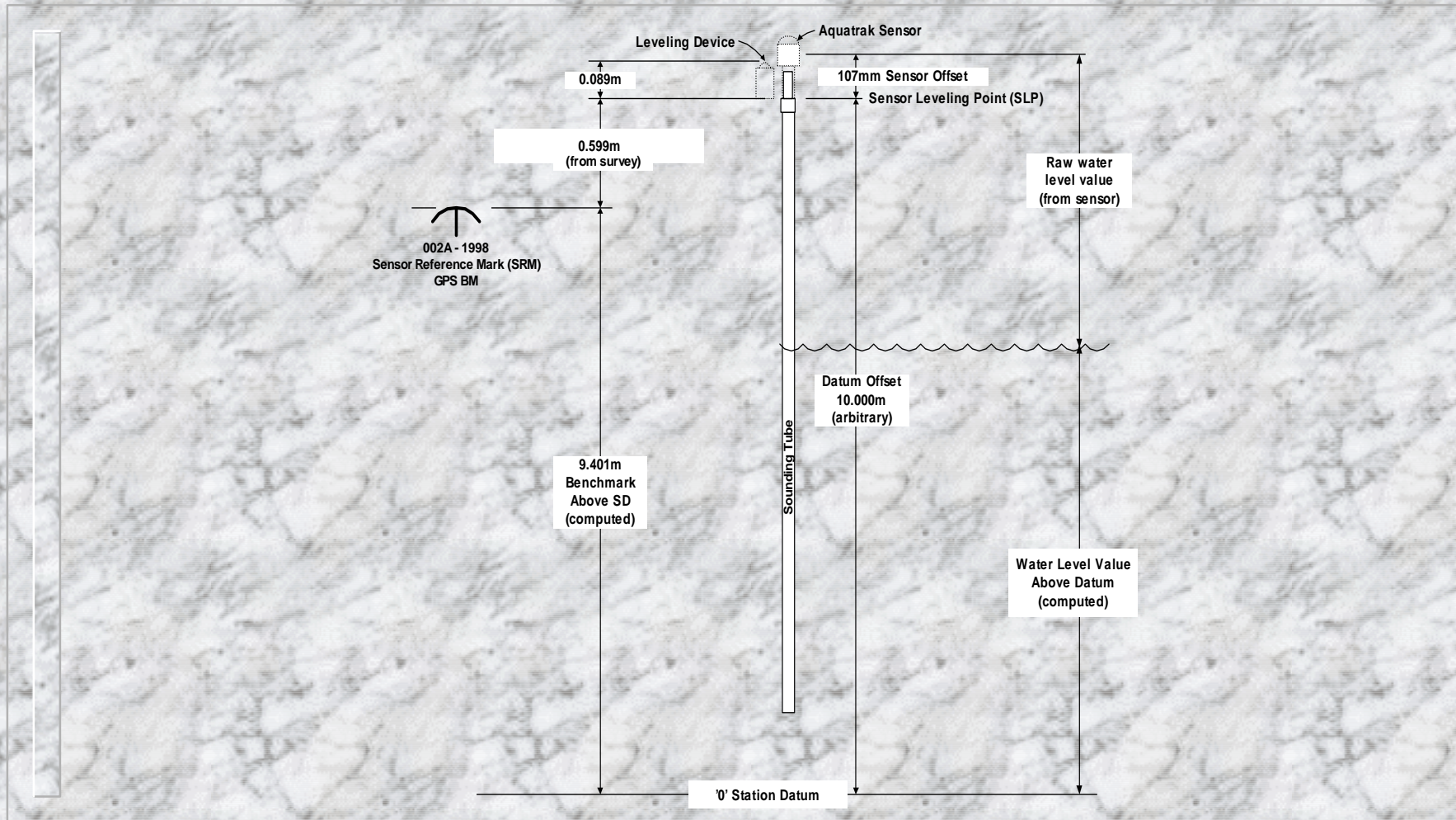
(available on the website)

CPACC - Castries, St. Lucia Sea Level - Meteorological Monitoring Site



Component #1 Datum Relationships

(Available on the website for each station)



Component #1 - GPS Survey

Surveyed Nearest “Tidal” BM

Continuous 5 Day Occupation

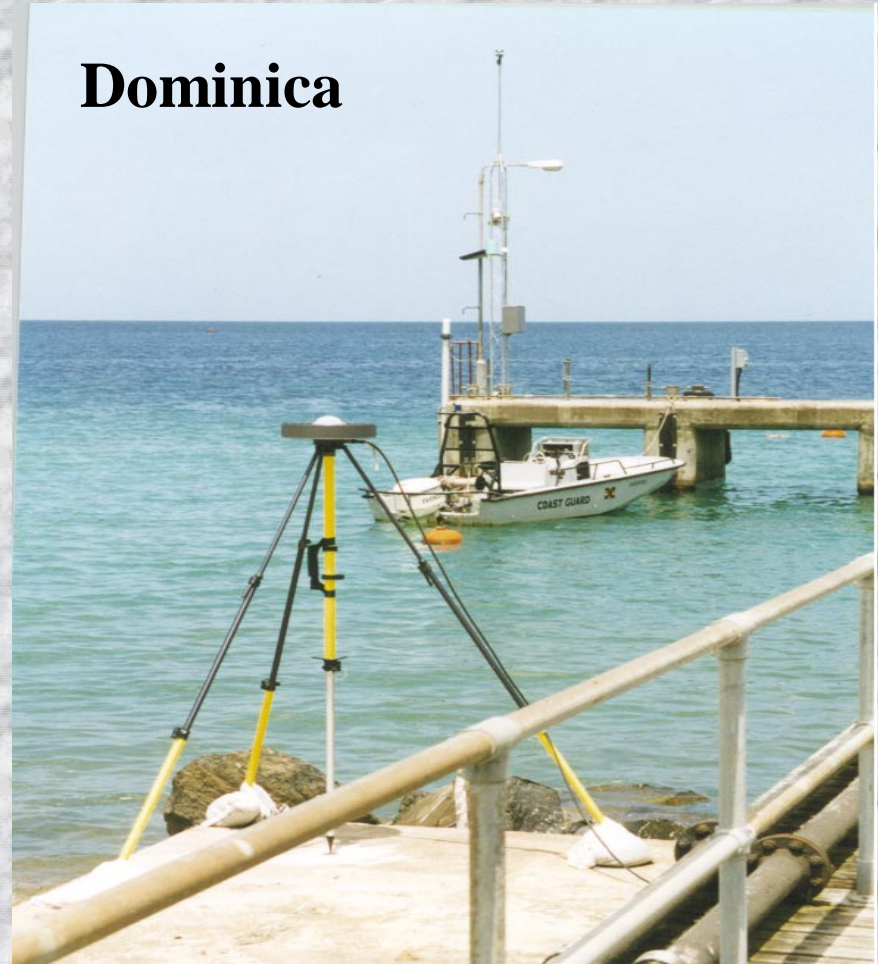
Data logged every 30 seconds

**Data processed by NOAA/NGS
(WGS84)**

**Data results available online from
Regional Data processing Center**

**GPS - CORS sites established in;
Jamaica & Barbados**

Dominica



Component #1

Regional Network Coordinator

Ronald Leslie – CPACC Technical Officer – CIMH, Barbados

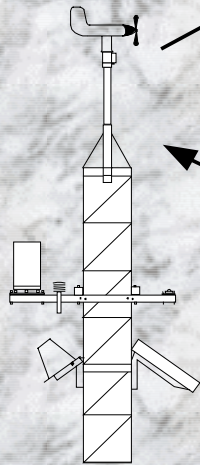
■ Technical Officer Responsibilities

- Maintain database for monitoring equipment
- Interface via e-mail with local technicians
- Maintain regional maintenance /repair for equip.
- Maintain regional sensor calibration center
- Equipment logistics & rotation scheduling
- Maintain “Problem Log” database

CIMH

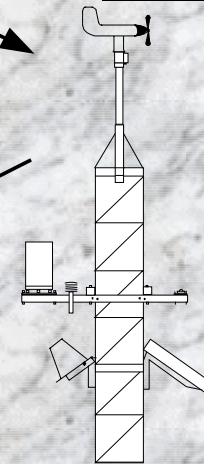
Regional Calibration & Repair

Caribbean Institute
of Meteorology &
Hydrology



Calibrated Sensors shipped from CIMH to
National Meteorological Office

Participating
National Meteorological
Office

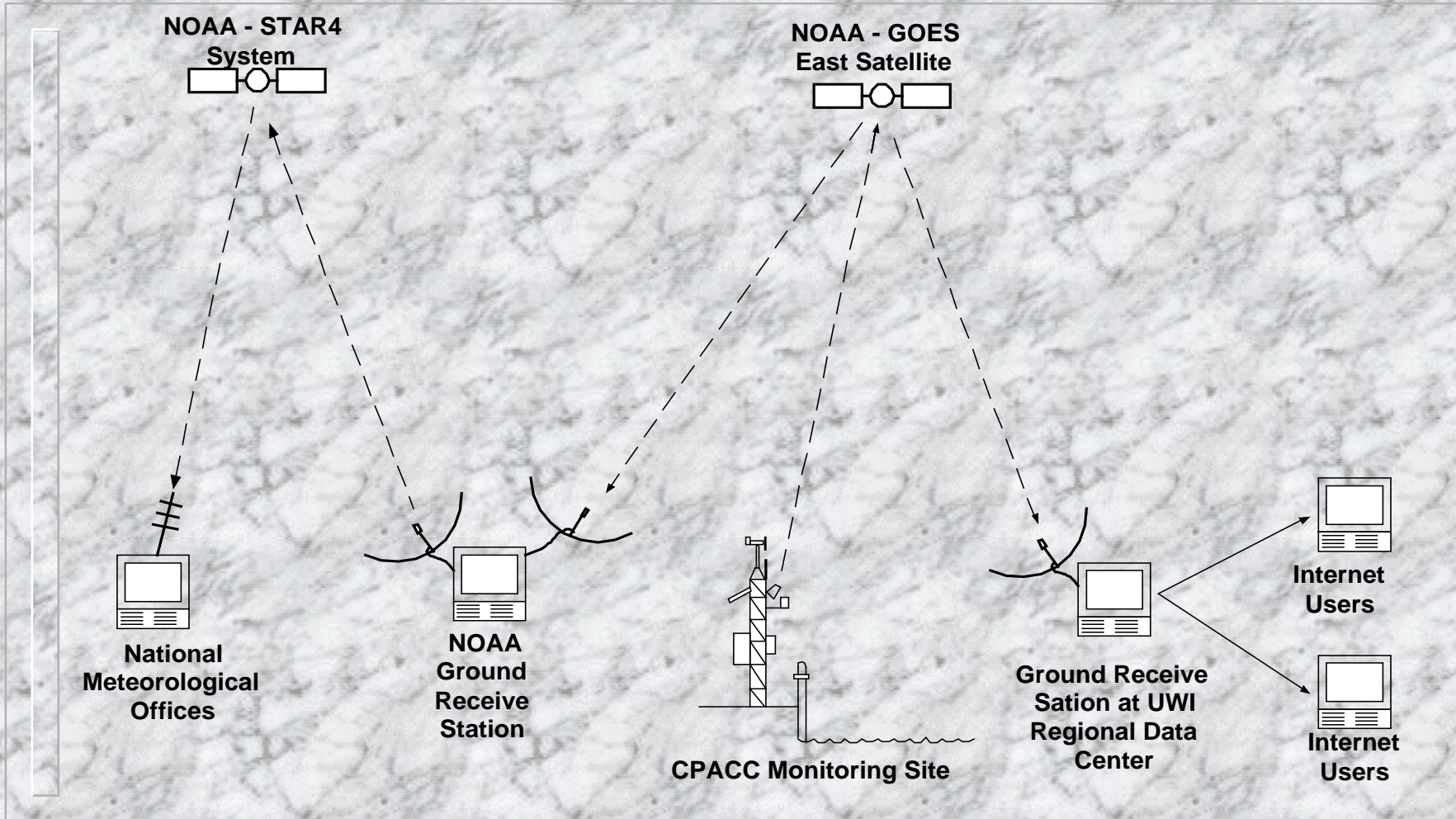


Sensors shipped from National Meteorological
Office back to CIMH for Recalibration/Repair

Trust Fund (\$50K)

- Covers the Repair/Replacement of Monitoring Equipment & Shipping
- Funds Maintained in Interest Bearing Account by CIMH
- Use of fund begins after the end of CPACC (2002)

Data Delivery



CPACC – Component #1

Data Flow

■ Monitoring Sites (18)

- raw data automatically transmitted to GOES satellite every 3hrs.

■ CPACC Regional Receive Station, UWI Trinidad

- raw data received & decoded from all 18 field monitoring sites
- data QA/QC'ed & archived (indexed by site, date & data type)
- data & summaries available on internet website

■ NESDIS Wollops Is., VA

- raw data received & stored for 3 days – available to all account holders

■ NOAA/NWS Star4

- raw data received & reformatted for satellite retransmission every 3hrs.
- raw data automatically received by Caribbean Meteorological Offices

■ NOAA - Univ. of Hawaii

- raw data received & stored

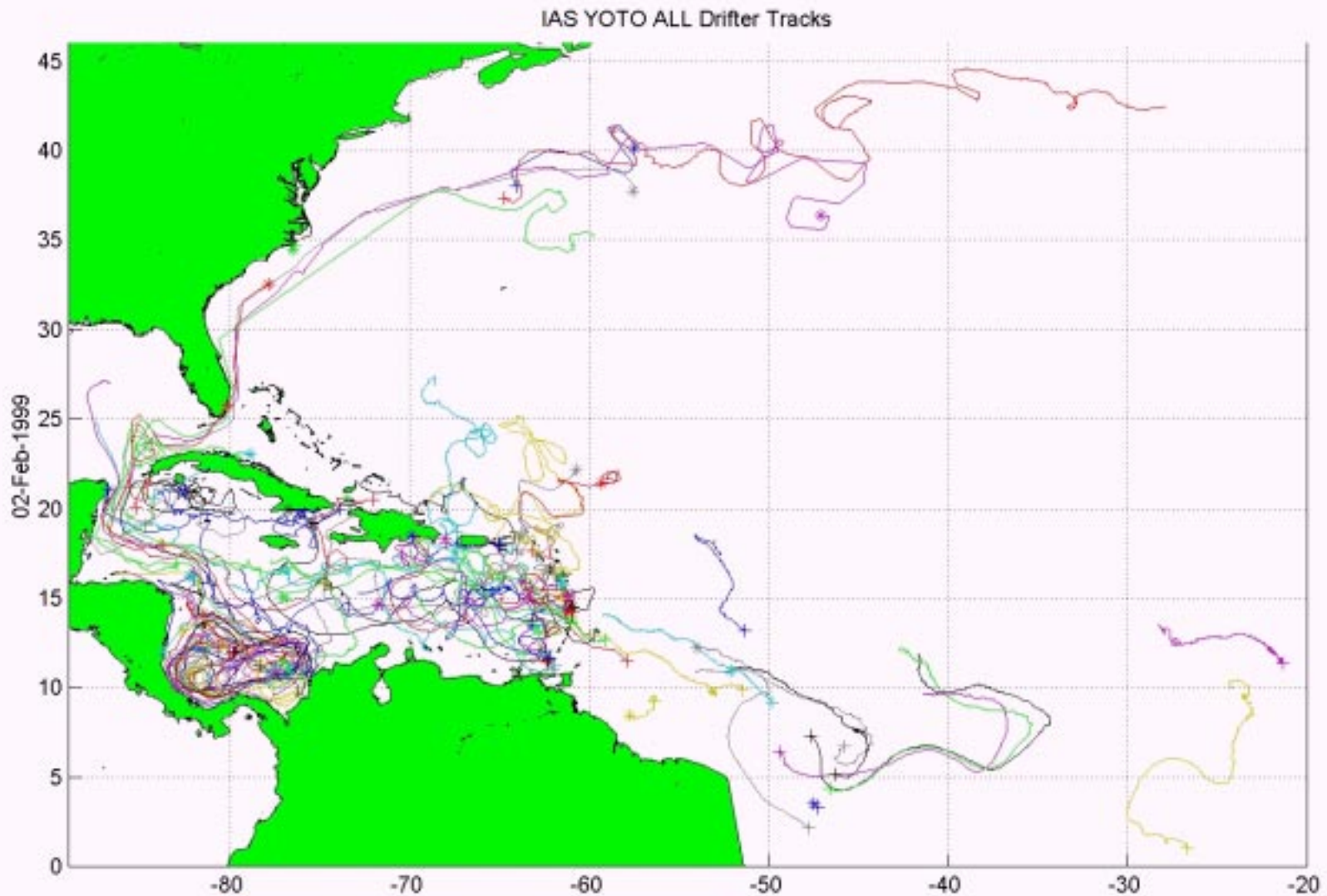
Regional Data Center UWI –St. Augustine, Trinidad

Shelley-Ann Jules, Regional Data Center Manager

Responsibilities

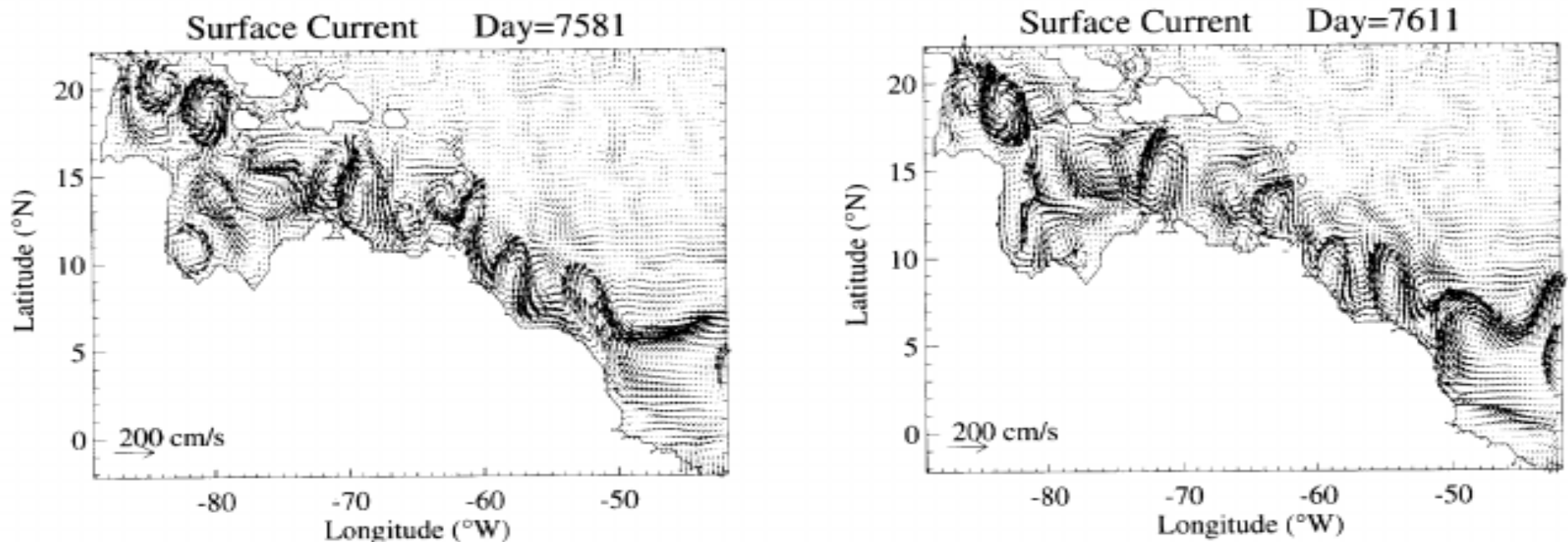
- Manage Satellite down-Link**
- QA/QC Data**
- Interact with Regional Network Coordinator in Barbados**
- Provide user liaison**
- Maintain CPACC Regional Data Center Website**

CPACC Data interaction with other projects



**Caribbean Sea Circulation Research
using observed data from drifter buoys**

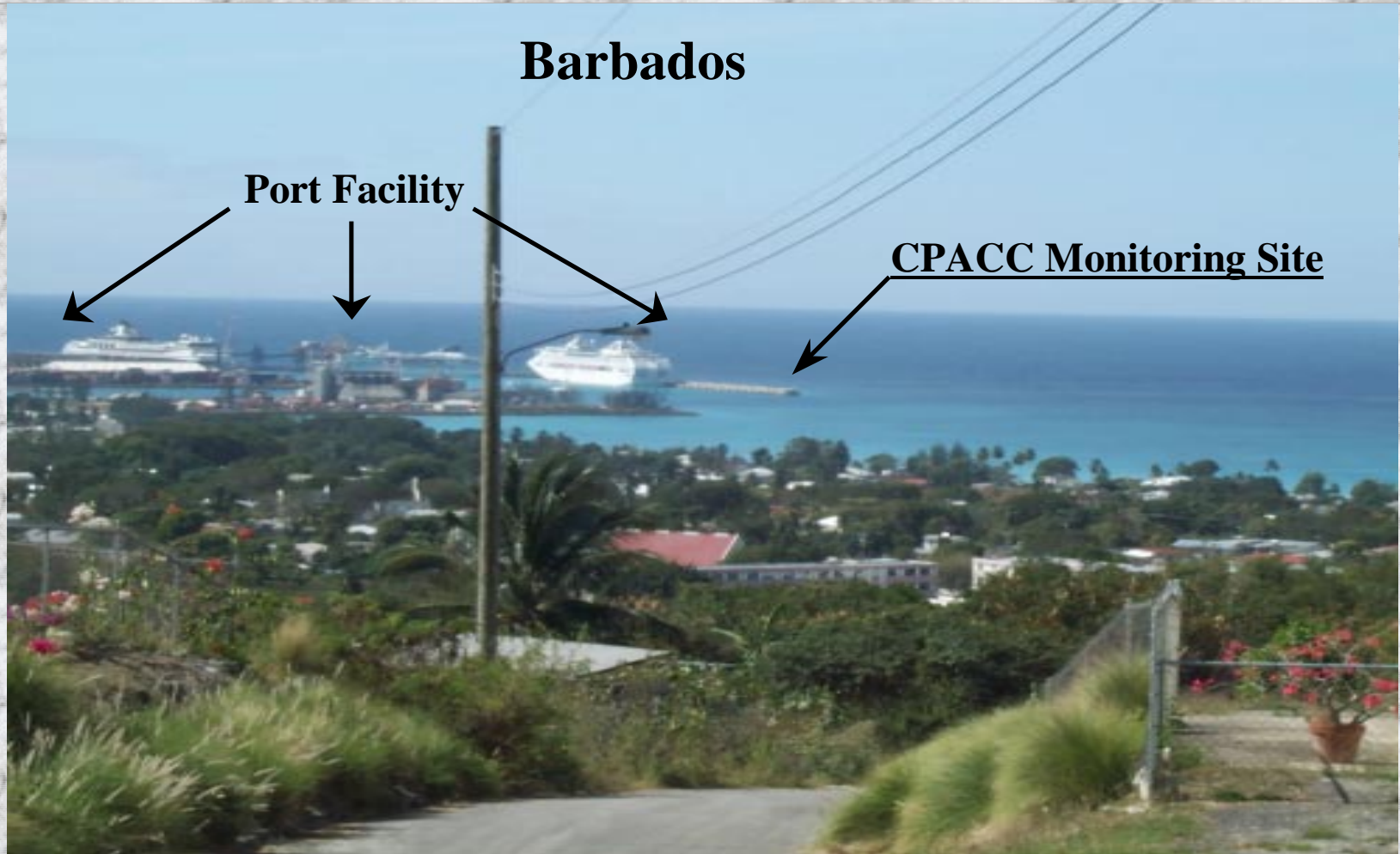
CPACC Data is used by researchers in conjunction with other observed data to verify & adjust simulated circulation models



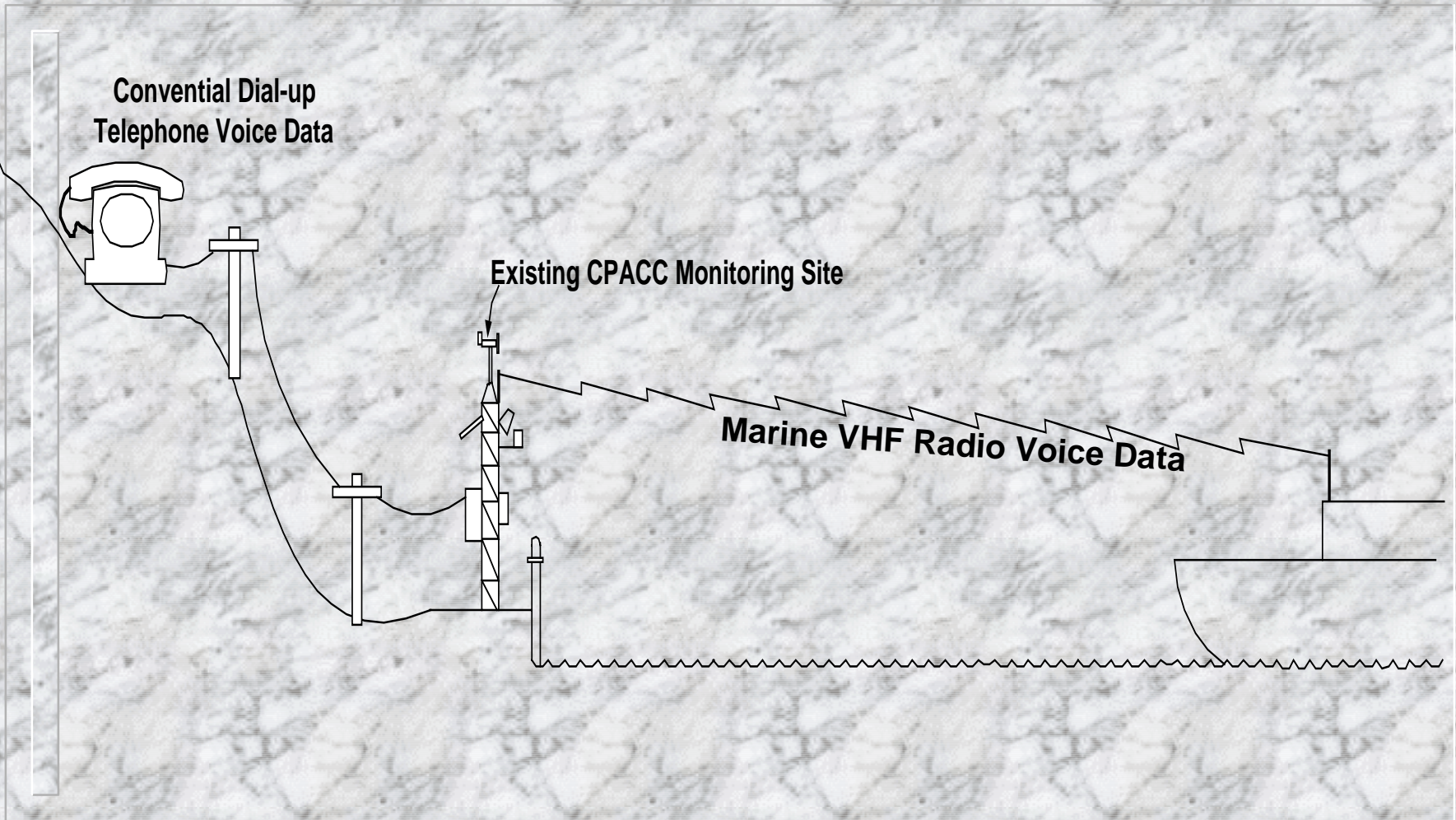
Y. Chao and J. Carton
WOCE 1998 report

Figure 7 — Snapshots of OGCM-simulated surface current over a 90-day period.

Use of CPACC Data to support the local Maritime Community

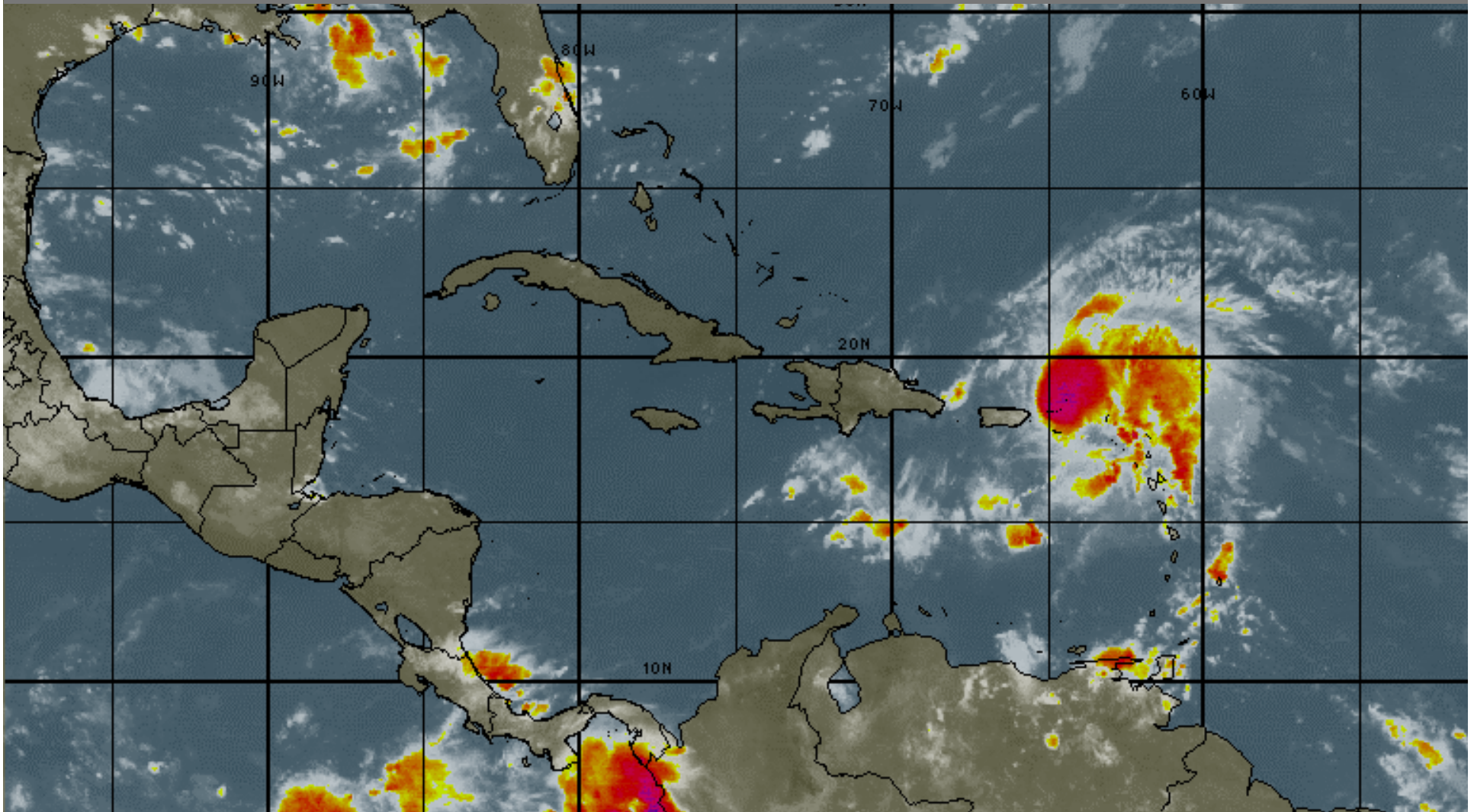


CPACC Data Delivered Locally by Voice



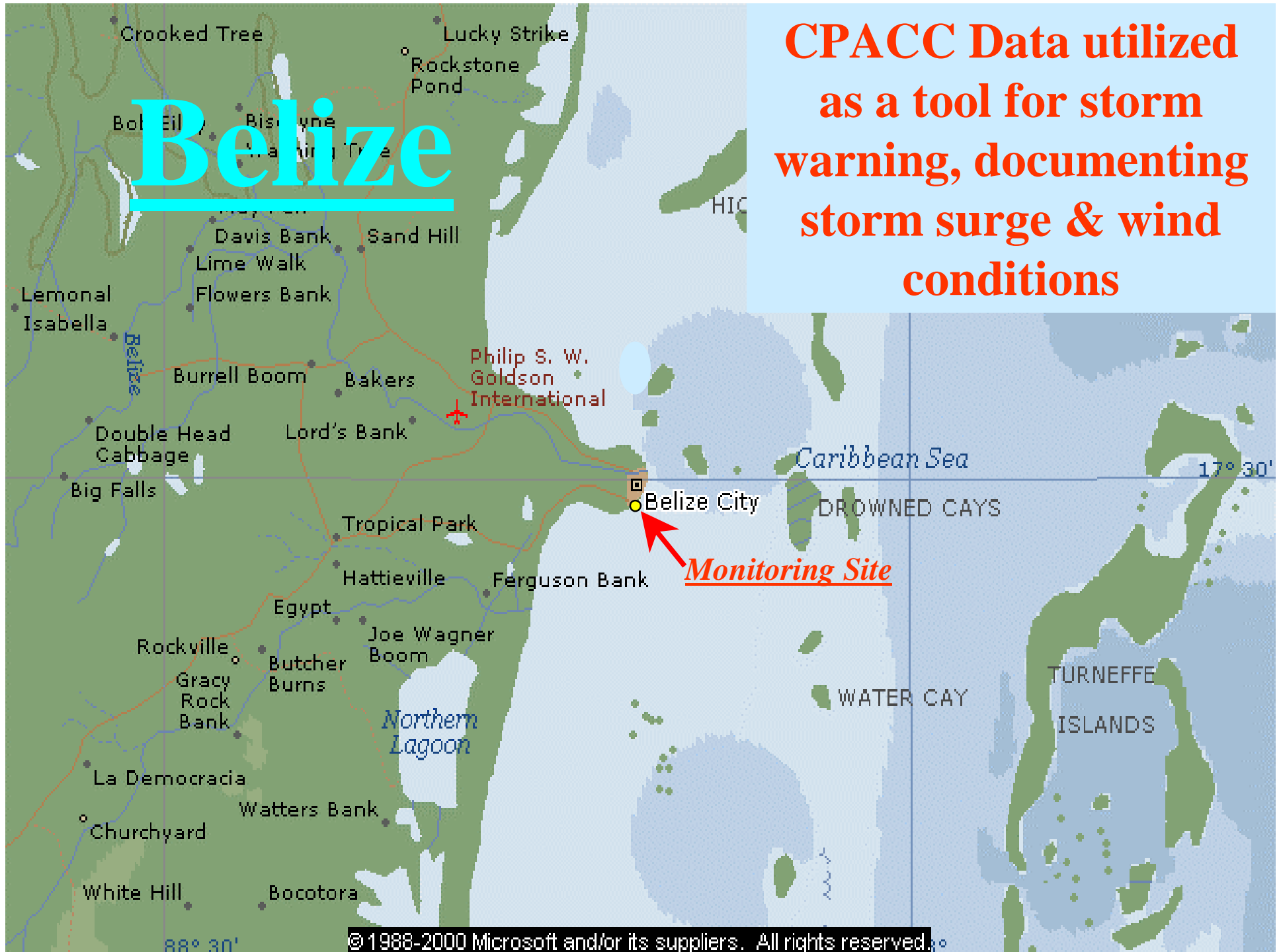
CPACC data used by agencies responsible for providing information ?

Hurricane "Debbie" August 22, 2000 @15:30 GMT



Belize

**CPACC Data utilized
as a tool for storm
warning, documenting
storm surge & wind
conditions**



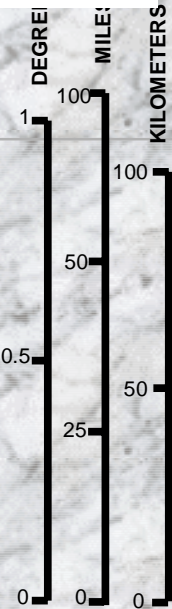
CPACC Data as a tool for storm model verification

Waves - Belize

100-Year Return Time

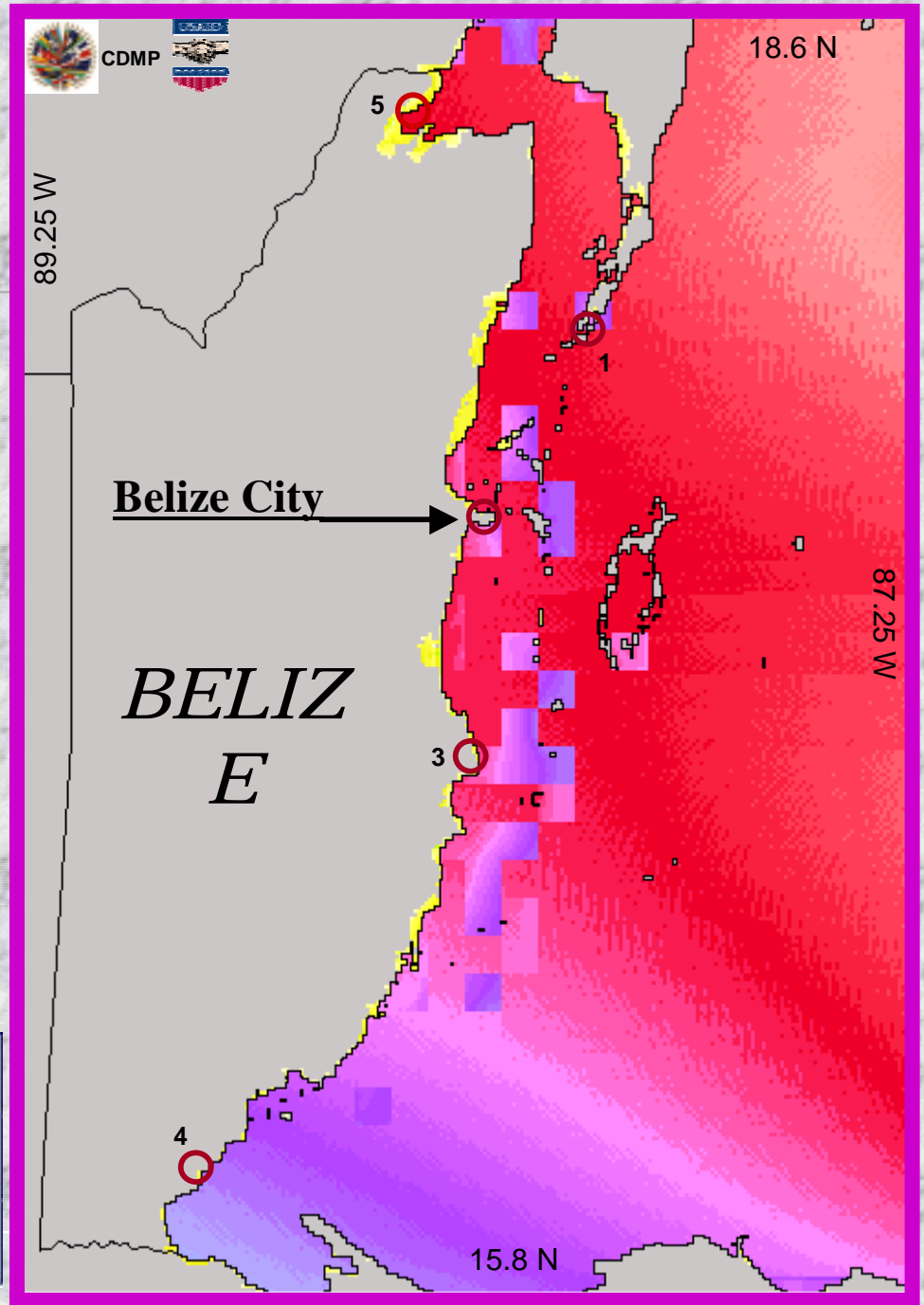
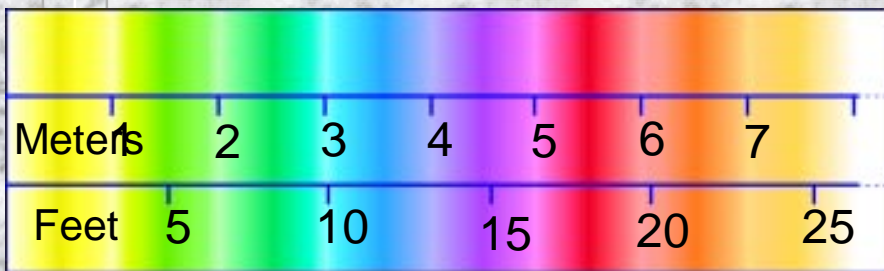
- 1. San Pedro: 5.6 m*
- 2. Belize City: 4.8 m*
- 3. Dangriga: 5.2 m*
- 4. Punta Gorda: 4.2 m
- 5. Corozal: 5.5 m*

* Possibly invalid: input data lacks detail.



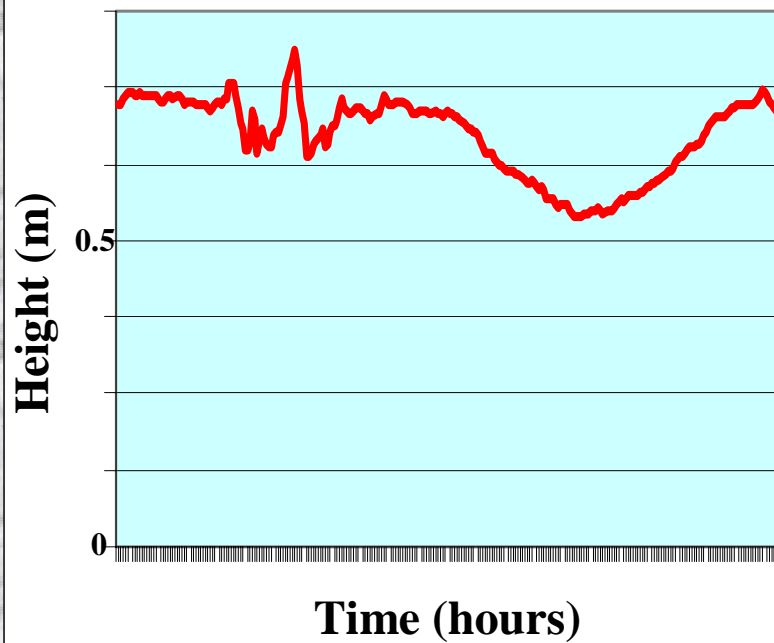
SELECT	10yr	25yr	50yr	100yr
Wind				
Wave				
Surge				

Wave Heights

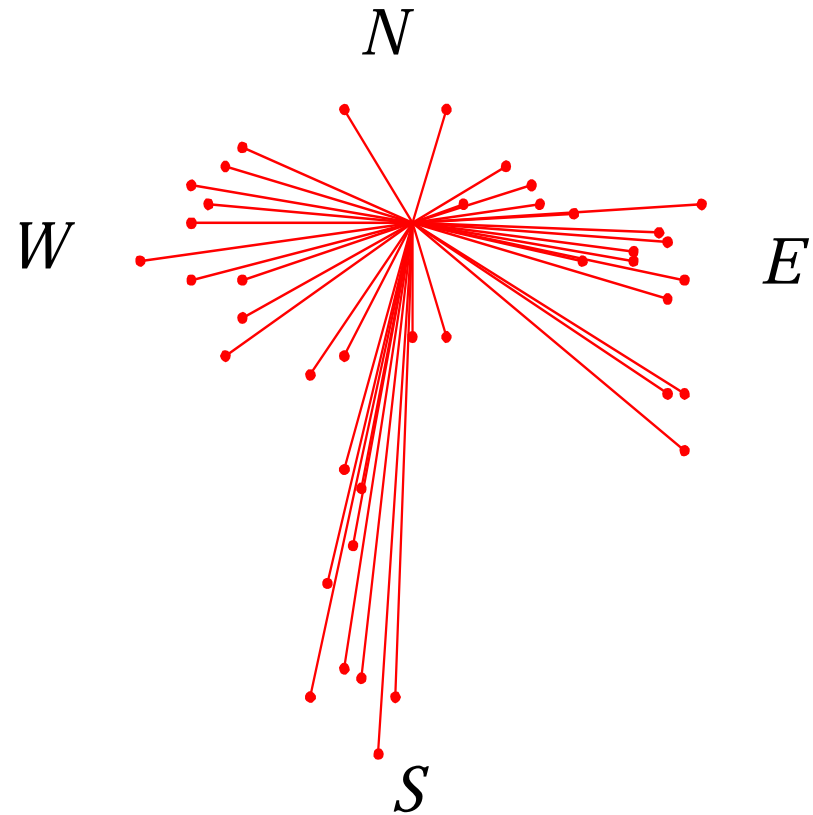


Wind & Tide in Belize Measured by CPACC System During Hurricane "Mitch" 1998

Tide Height

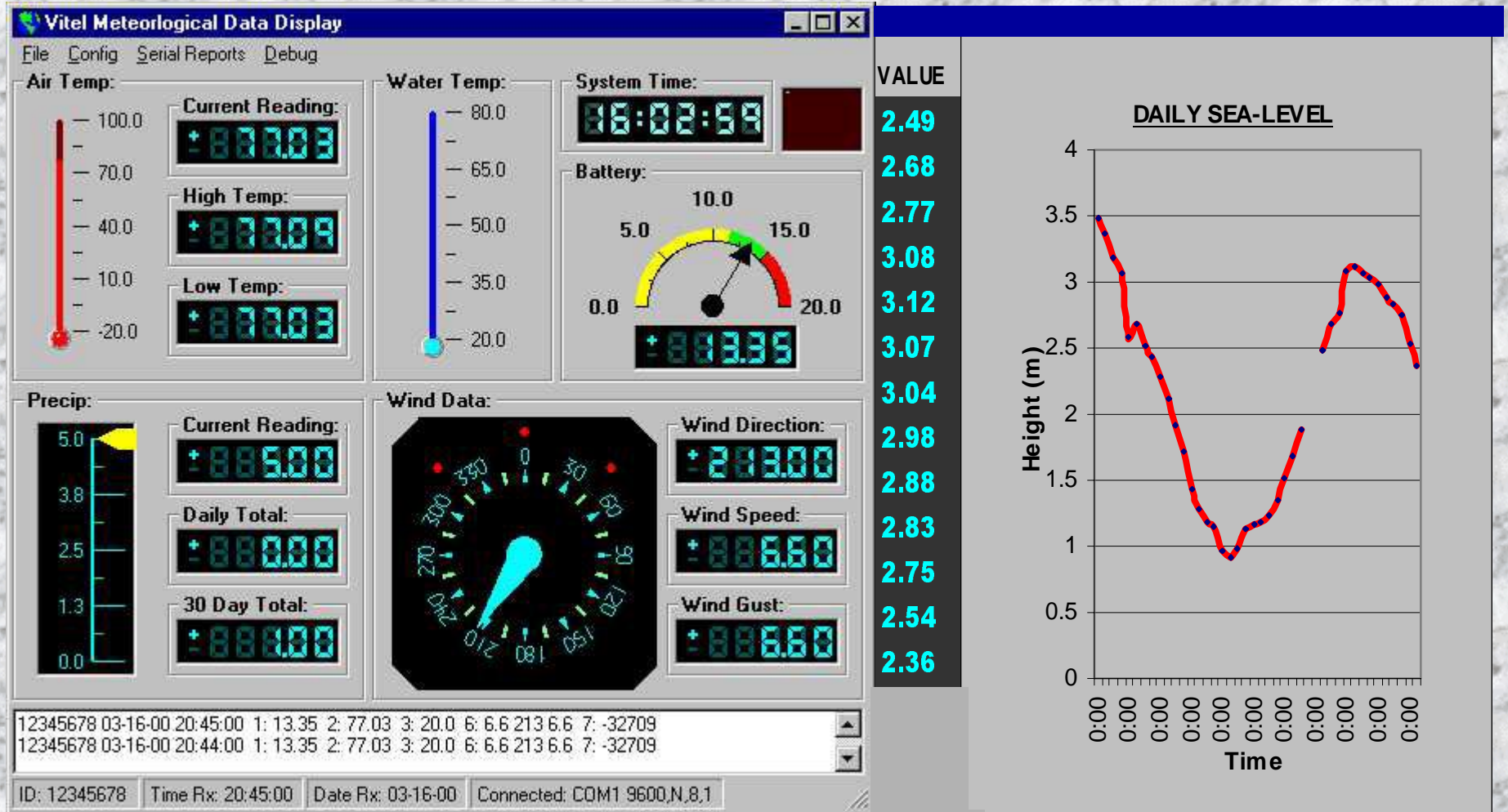


Wind (Gust & Direction)



Local Real-Time Data Monitoring

Using Radio-modems & PC's in Met Offices & Port Authority Offices

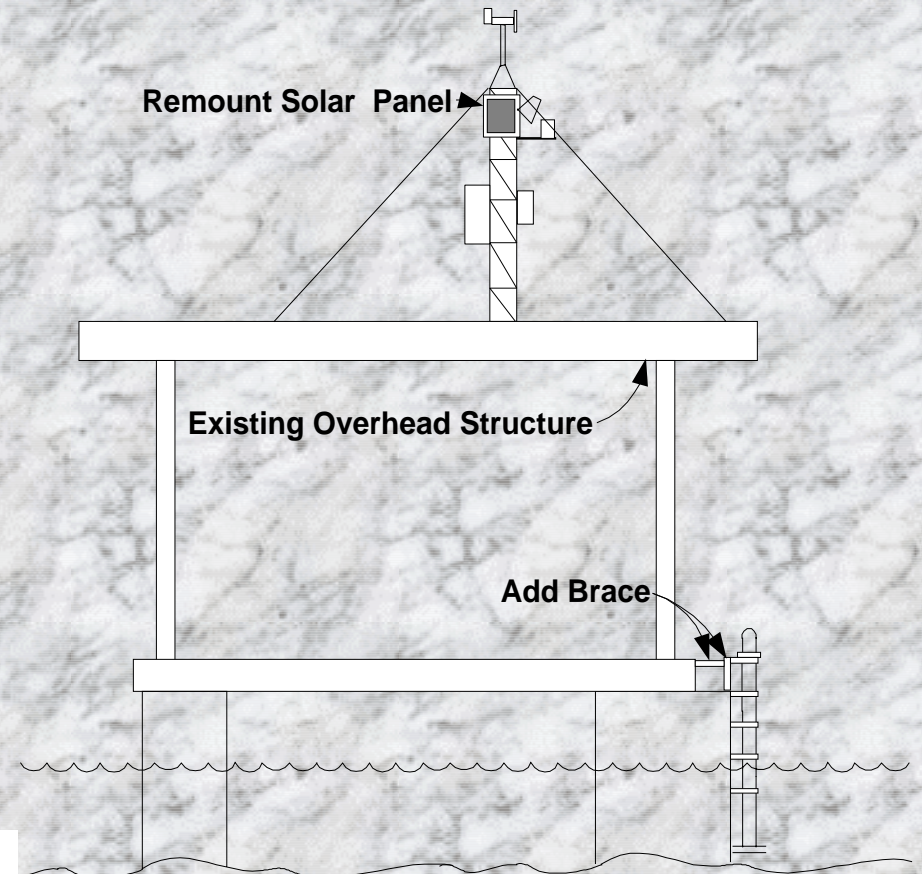


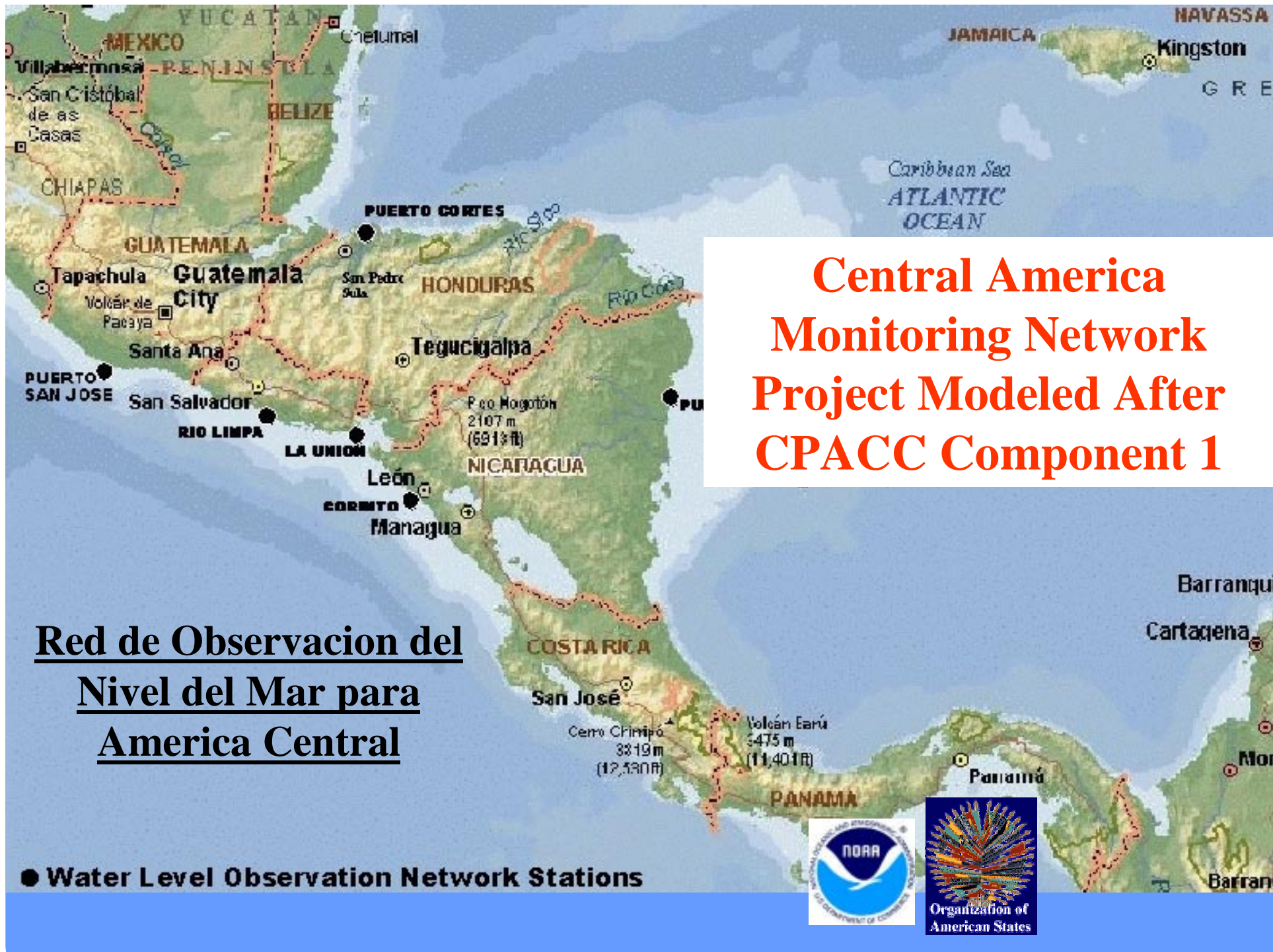
Storm Hardening of Selected CPACC Sites in the “Hurricane Belt”

Existing Monitoring Site



Proposed “Hardening” of the Site





Red de Observacion del Nivel del Mar para America Central (RONMAC)

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