

# THE REALITY OF OCEAN ACIDIFICATION IN THE CARIBBEAN



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# AS A RESULT:

- Numerous scientific articles on OA
- Introduction of Acidification as a issue negotiated at the UNFCCC Loss and Damage sessions.
- But still somewhat of a “void” where SIDS are concerned...

# BACKGROUND: CARIBBEAN

- Wider
  - Northern
  - Eastern (OECS)
  - Continental (central & south)
  - English Speaking
- 
- Most biologically rich area in the Atlantic, retaining 10% of the world's coral reefs and 12,000 marine species. <sup>(1)</sup>

# CARIBBEAN

Central America and the Caribbean



# QUICK FACTS:

## ■ Governments:

- ❖ 13 sovereign states;
- ❖ 2 overseas departments and
- ❖ 14 dependent territories, (tied to the United kingdom, France, Netherlands and USA)

❖ **Governance becomes an important issue when seeking a cohesive approach to deal with OA.**



# CARIBBEAN SEA...

- Each Island state has an Economic Exclusive Zone of 200 n miles
- a semi-enclosed body of water consisting of several deep basins
- separated by major sills
- The deepest point, 7,100m is the Cayman Trench
- average depth is approximately 2,200 m

# HIGH PRODUCTIVITY IN COASTAL AREAS ALLOW FOR KEY INDUSTRIES

- Caribbean Coral reefs provide services which are linked to economic sectors, specifically Tourism and Fisheries.



- Fisheries:
  - US\$310 million <sup>(2)</sup>
- Tourism:
  - Overall: 25% of Regions GDP <sup>(3)</sup>
  - Dive Tourism: US\$2.1billion (2000) <sup>(4)</sup>

# OA AND THE CARIBBEAN

- OA impacts are cross cutting
- Any effort at management **must be mainstreamed within the economic sectors it will impact.**
- OA has potential to derail a number of response efforts that (especially the OECS has taken), which are central to their efforts for sustainable ocean governance.
- **Must be placed within the context of cohesive scientific monitoring/research and sustainable ocean governance.**

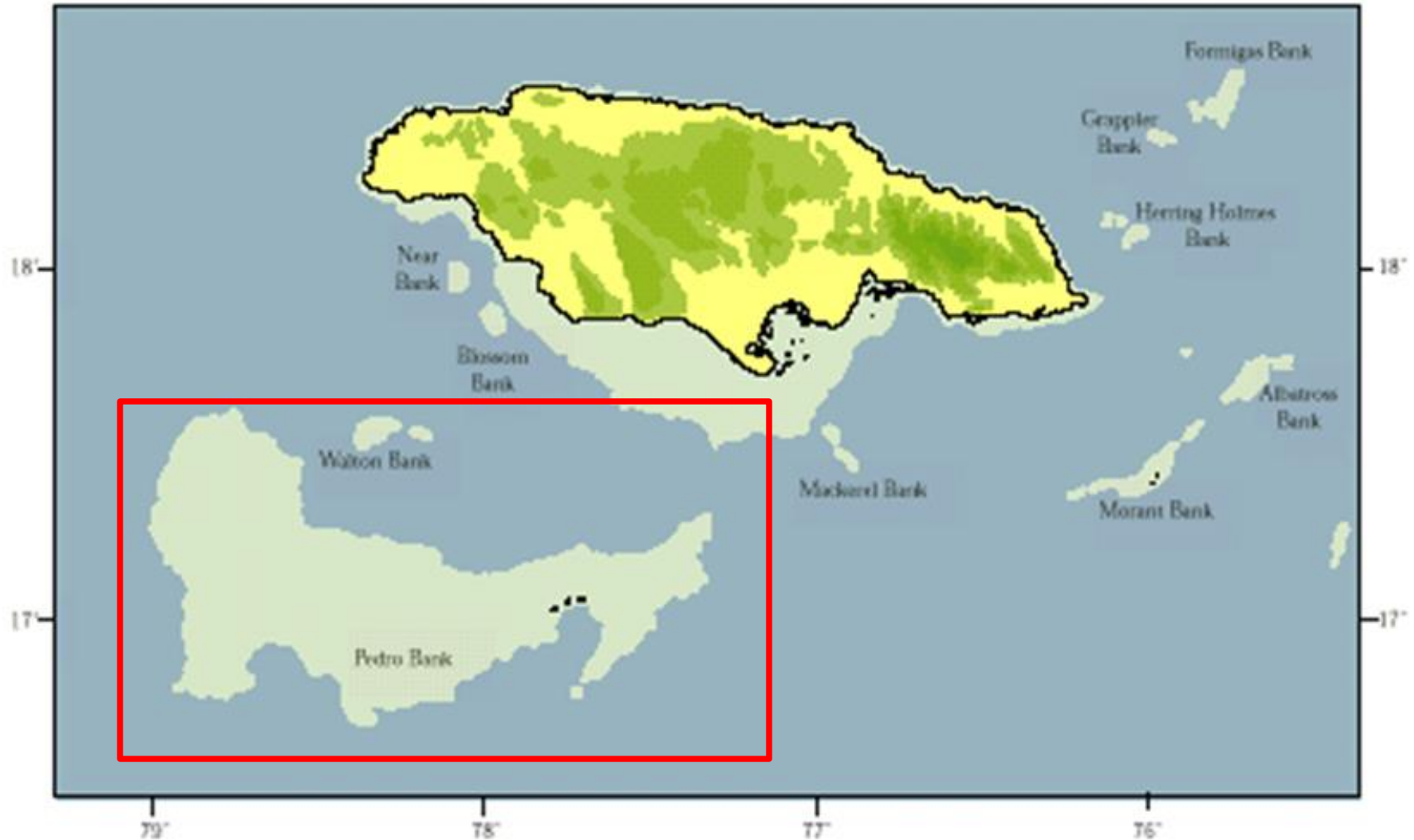


# WITHIN JAMAICA:

- Health of reefs is Critical as Reef-related fisheries support between 15,00-20,000 fishermen, and contribute directly and indirectly to the livelihoods of at least 100,000 Jamaicans (nearly 5% of the population) island-wide.
- Reefs indirectly contribute:
  - Fisheries: 5.6%
  - Tourism: 5.8%



# CASE STUDY: PEDRO BANK, JAMAICA



Pedro Bank is an expansive submerged bank located about 80 km southwest of Jamaica ( Zans 1958; Kramer 2006)

# PEDRO CAYS

**~8 hectares**

**North East Cay 3.7m**



**15 hectares**

**Bird Cay**



**4 hectares**

**Middle Cay- 2m**



# WHY IS PEDRO BANK IMPORTANT?... CONCH!

- Conch:
- Largest conch ground in region
- Largest exporter in Caribbean (EU, USA)
- Nearly 1% of National GDP
- Strictly and effectively managed resource
- Conch Divers (>700)
- >50% of years income in the 6 weeks conch season.
- Provision for secondary and tertiary livelihoods.





# CONCH EXTRACTION





# CULTURAL IMPORTANCE





# + LIVELIHOODS OF PEDRO FISHERS

(ALLEN AND WEBBER, 2013)

PARISH	Additional Livelihoods	
	1	2
St. Elizabeth	Farmer	Make Pots
Manchester	Farmer	Mechanic
Westmoreland	Farmer(Cane)	Cane Cutter
St. James	Buy and Sell	Farm
St. Catherine	Shop Keeper	Mechanic
Clarendon	Shop Keeper/bar	Farm
KSA	Buy and sell	Mechanic
St. Thomas	Farmer	
Portland	Farmer	Painter
St. Mary	Farmer	
St. Ann		

# SOCIO-ECONOMIC IMPACTS...

## 1. Micro-Economic:

- Significant implications for livelihoods and ability to initiate and sustain secondary and tertiary livelihoods.

## 2. Macro-Economic:

- Significant implications for livelihoods for GDP and GOJ especially when attempting to meet IMF goals /deadlines.
- Limited “adaptations” capacity for conch fishers



# IN THE ABSENCE OF OA SCIENCE: FISHER PERCEPTIONS

- Older Fishers have taken note of the changes in size and brittleness of conch shells.
- Need for validation in lab.
- **Limitations**
  - No funding for experimental design
  - No OA data

# WHAT DO WE KNOW....

- The Caribbean is diverse with much more EEZ's than land.
- Significant social and economic dependence on healthy marine ecosystem.
- The Caribbean is 'behind' on a 'cohesive' and 'strategic' OA monitoring programme.
- Conch industry is vulnerable to Ocean Acidification.

# WHAT CAN BE DONE....



# MAINSTREAMING OA IN THE CARIBBEAN

- UTILIZE EXISTING RESOURCES AND STRUCTURES:

- 1) **Science/Research:** Centre for Marine Sciences (CMS), University of the West Indies (UWI)
- 2) **Governance:** Organization of Eastern Caribbean States (OECS)

- Build awareness and capacity through use of creative Networking, building partnerships, South-South co-operation.



# EXISTING SCIENCE/RESEARCH STRUCTURE

- UWI/ Centre for Marine Science (CMS)
- Existing Infrastructure – DBML/PRML
- CMS – *Existing, Regional* Repository for Coral Reef Data



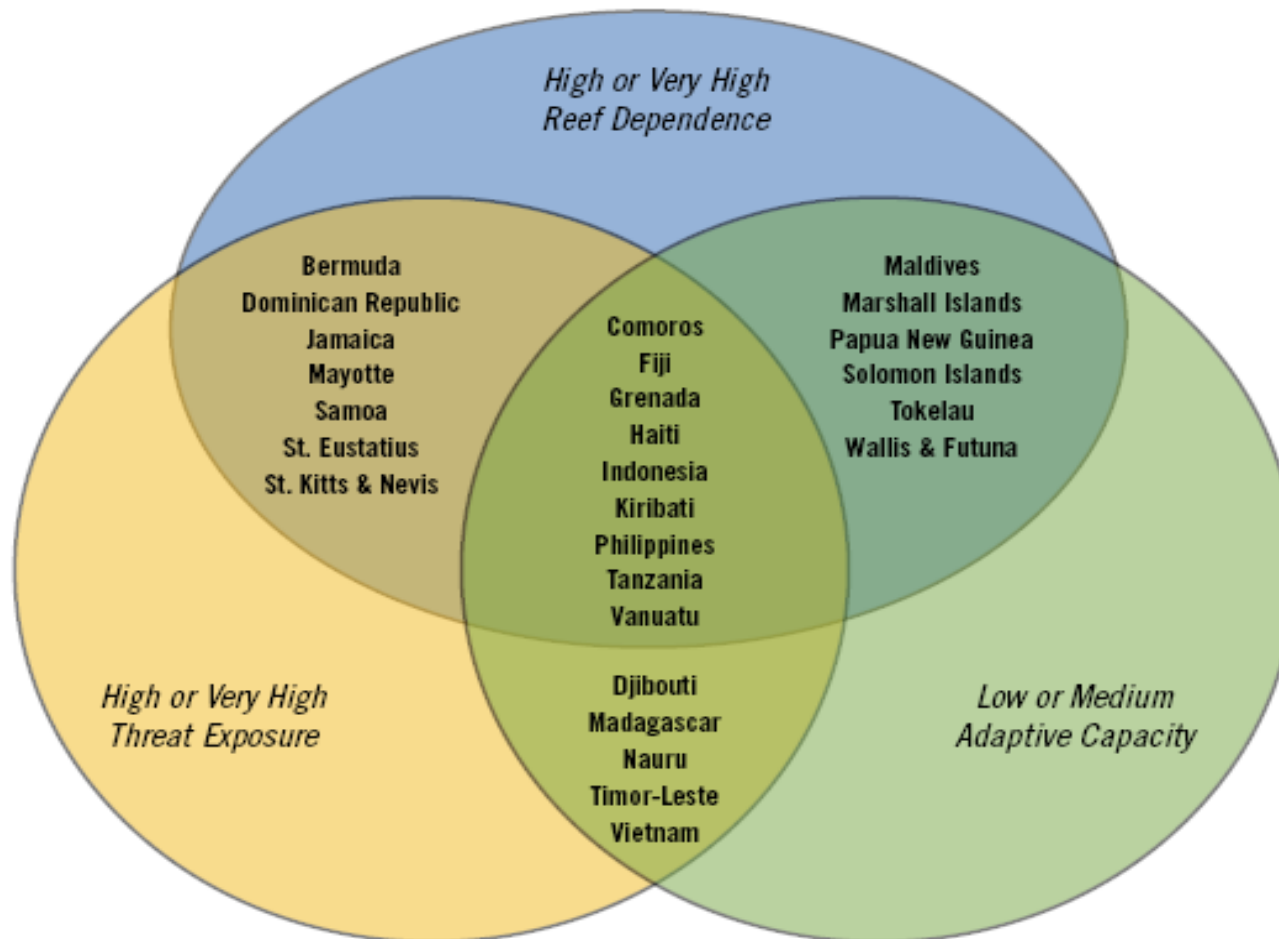
# EXISTING GOVERNANCE STRUCTURE

- Organization of the Eastern Caribbean States (OECS)
- Nine (9) Member states
- OECS has over 404,000 sq km of ocean space
- Through ECROP, all member states work together on a clear marine governance strategy
  - OECS currently planning a Regional Consultation
  - Conduct National Education and Public Awareness within each member state

# WE RECOGNIZE THAT...

- With proper use of existing structures both for research and governance, OA can be better understood, prepared for and 'managed'.
- Pedro Bank is a critical area that is susceptible to OA and will have far reaching social and economic impacts.
  - **Communication is KEY**
  - **Networking is NECESSARY**
  - **Funding is REQUIRED**
  - **Existing and new resources can be used STRATEGICALLY**

# OCEANS APART....COMMON THREAT





A photograph of a beach scene. In the foreground, a large pile of seashells and debris is scattered on the sand. In the middle ground, several small motorboats are beached on the left, and a larger yellow boat is on the right. The ocean is visible in the background under a blue sky with many birds flying. The text "THANK YOU" is overlaid in the upper right, and "Fa'afetai lava" is overlaid in the lower center.

# THANK YOU

## Fa'afetai lava