

Climate-Health Linkages

:

A Collaborative Response to Public Health Challenges Linked to Climate Change Impacts in the VI and the Caribbean

Funded by:

NIH National Institute for Minority Health and Health Disparities

Duration September 2009– September 2011

Presenter:

LaVerne E. Ragster, Ph.D.

Eastern Caribbean Center

University of the Virgin Islands

Climate-Health Linkages

Partners:

- ❖ University of the Virgin Islands Caribbean Exploratory Research Center
- ❖ Medical University of South Carolina, Public Information and Community Outreach Center
- ❖ Virgin Islands Department of Health

PD/PI : Dr. Gloria Callwood (UVI)

Co-PIs: L. Ragster(UVI), Sabra Slaughter (MUSC),
David Rivers (MUSC)

Climate-Health Linkages

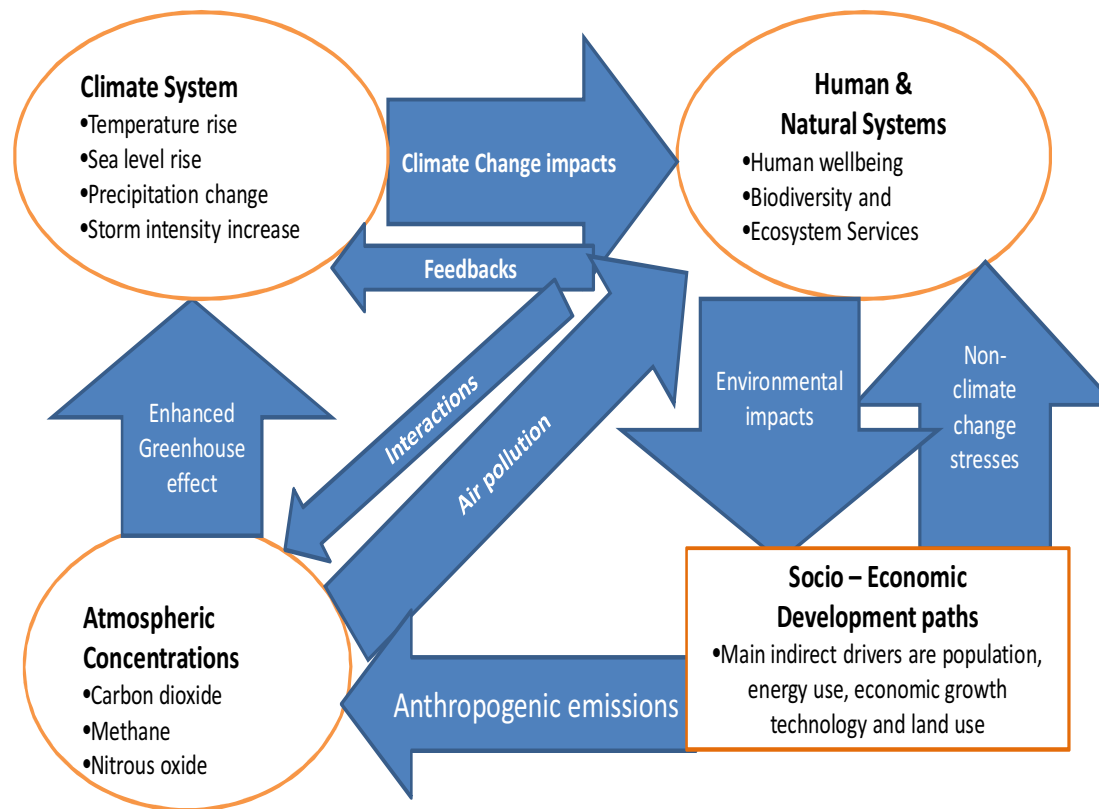
The specific aims of the project:

- 1) Research and develop information supporting communications and strategies to address links between climate change and increasing public health challenges, specifically dengue and ciguatera
- 2) Develop an effective educational outreach program focused on the prevention and mitigation of health problems associated with dengue and ciguatera.

Climate-Health Linkages

CONCEPTUAL FRAMEWORK FOR THE COMPLEX
FEEDBACKS BETWEEN

THE CLIMATE SYSTEM AND HUMANS



Climate-Health Linkages

Assumptions:

- A. Climate change and variability in Caribbean
- B. Movement of people will continue – tourism
- C. Health disparities will be a challenge
- D. VI and PR remain a hotspot for Dengue Fever and Ciguatera

Climate–Health Linkages

Health disparities in USVI

(More severe, cause more death or shortened life compared to Caucasian Americans)

Heart Disease, High blood pressure, Obesity and Stroke

Cancer and Diabetes

Higher rates of HIV/AIDS

Climate-Health Linkages

Linkages between climate change and human health

Direct – based mostly on exposure to weather extremes (extreme temperatures, floods, droughts, decreased air-quality)

Indirect– infectious diseases (person to person or by vector)

Vector can be biological or non-biological physical vehicle

Climate–Health Linkages

Dengue Fever

- ❖ Virus infection through mosquito vector (*Aedes aegypti*)
- ❖ 4 serotypes, no cross immunity from each serotype
- ❖ Found across the tropics, millions infected
- ❖ Dengue epidemics associated with El Nino years (warmer)
- ❖ Higher temperatures increase transmission to new hosts (increased feeding and accelerated larval stage)

Climate–Health Linkages

Dengue Fever in USVI

- ❖ 3 major Dengue outbreaks in 25 years (1988–89, 1995–97, 2004–05) from Serotypes 1, 2, and 4
 - Dengue Hemorrhagic Fever (DHF) – possibly fatal if not treated
 - Dengue Shock Syndrome (DSS) – most serious
- ❖ 2005 Outbreak – 30% of cases DHF ;2 persons died from DSS
- ❖ Dengue Fever now a reportable illness; serum samples tested in PR for virus by CDC
- ❖ VIDOH has prevention and response plan– assumes mosquito control will not reduce vector population below threshold needed to avoid epidemic transmissions

Climate–Health Linkages

Ciguatera

Global, tropical potentially deadly health condition caused by ingesting fish that contain ciguatoxins.

Toxin produced by dinoflagellate (*Gambierdiscus toxicus*)

No immunity, wide range of reactions and symptoms

10 to 27/1000 people die in PR and VI

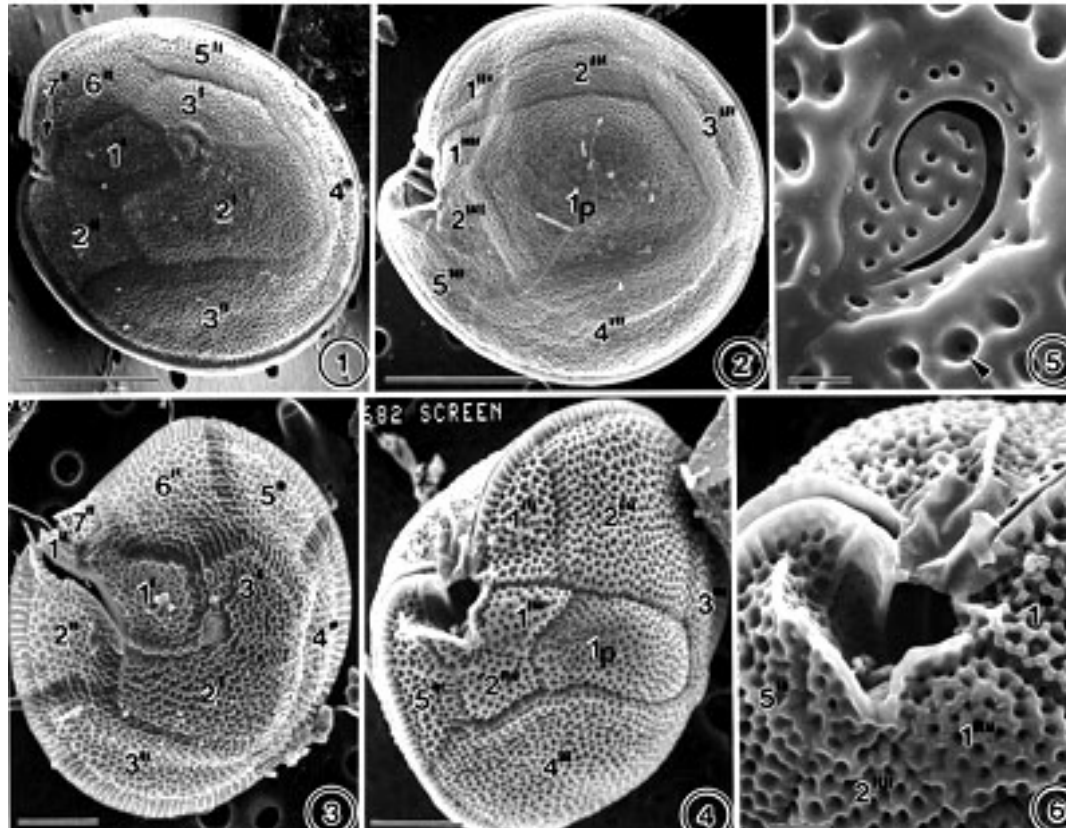
High incidence in Pacific, Indian Oceans and Caribbean Sea

Warmer ocean temperatures may provide better growth conditions for *G. toxicus*

Climate-Health Linkages

Ciguatera

Gambierdiscus belizeanus Faust sp. nov.



Climate-Health Linkages

Ciguatera

- ▶ Ciguatoxins bioaccumulate: fat soluble

Photo: Mindy Richlen

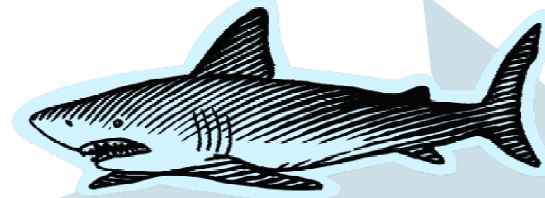


Google images

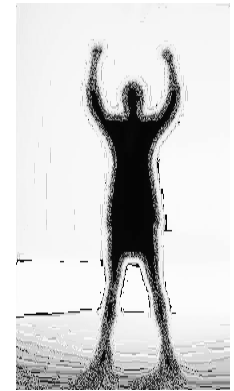


Herbivores: Fish inadvertently ingest *Gambierdiscus* while grazing on algae

Gambierdiscus



Piscivores: Piscivores consuming herbivorous fish, who ingest *Gambierdiscus*, bioaccumulate enough toxin to cause CFP.



Slide by Chris Loeffler

Climate-Health Linkages

Project Activities

Institute I – Workshop – Technical professionals

Objectives – Awareness and recommendations for interventions

Institute II – Focus Groups and Town Hall – Representatives of community groups and General community

Objectives – Awareness and recommendations for interventions

Institute III – Technical assistance workshop – Community groups

Objectives – Grant writing and project assistance

Climate–Health Linkages

Project Recommendations

- ❖ Include face to face education and action plan sessions.
- ❖ Develop message for a range of audiences in collaboration with their respective associations or groups.
- ❖ Identify and adapt best practice models for citizen participation.
- ❖ Reflect knowledge of cultural beliefs or behaviors.
- ❖ Educate to change behavior of community.
- ❖ Consumer & civic groups combine public education & participation.
- ❖ Partner with government to spread the word using government–approved messages or scripts.
- ❖ VI Department of Health – revise or create protocols and enforce reporting.
- ❖ Encourage fishers to propose pro–active campaign
- ❖ Know the importance of seeking medical care; report the kind of fish eaten and where the fish was caught or purchased

Climate-Health Linkages

Project Products and Outputs

Background Paper – "Climate-Health Linkages under Conditions of Climate Variability and Change in the Caribbean"

Website: <http://www.myhealthwhatsclimategottodowithit.com>

Live Television Program – "Climate and Health: New Challenges for the Virgin Islands"

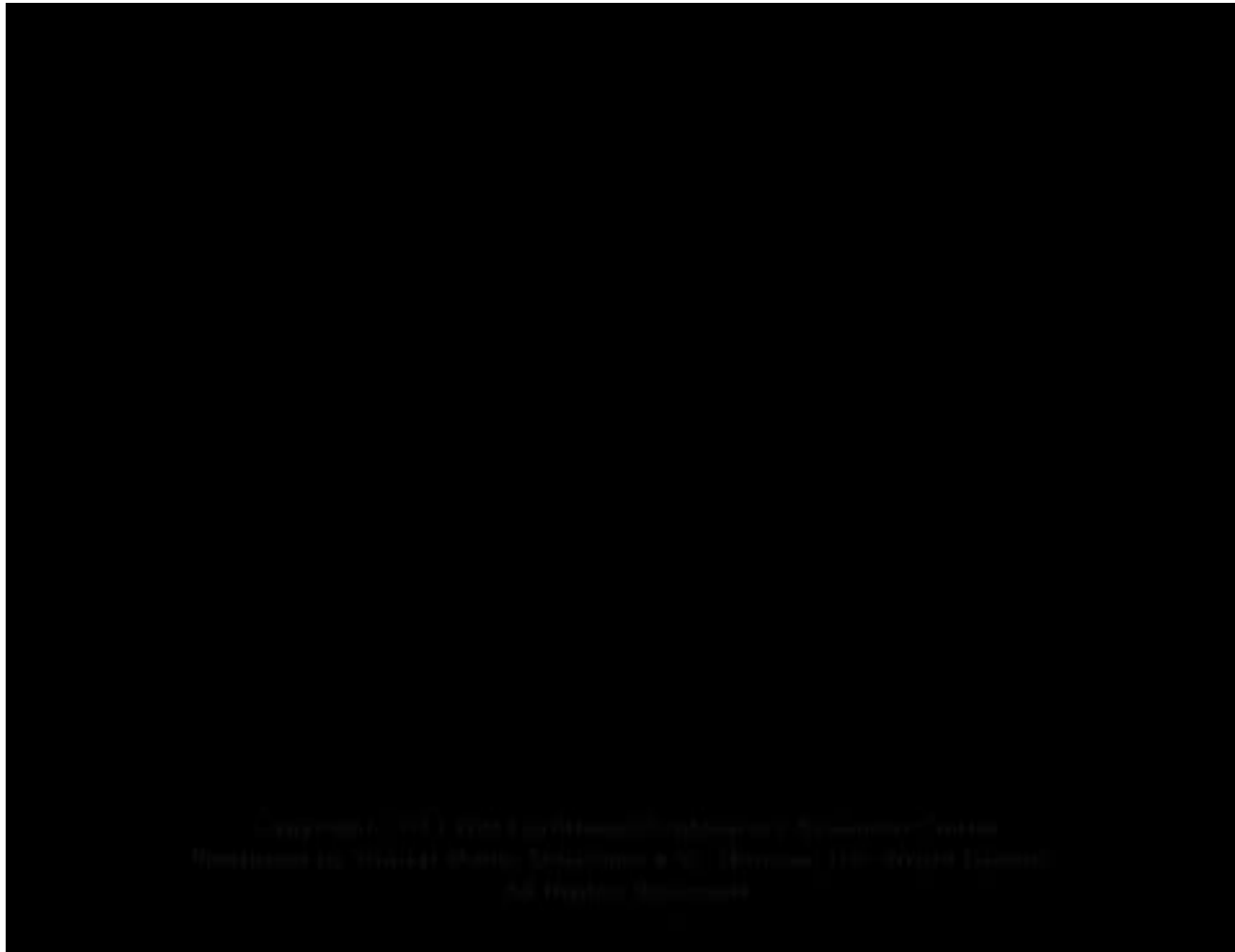
Public Service Announcements (PSA's) – Dengue Fever, Ciguatera and Climate Change

Grant proposals – to work with specific groups on interventions

Climate-Health Linkages



Climate -Health Linkages



Climate -Health Linkages

Copyright 2011 UVI Caribbean Exploratory Research Center
Produced by Digital Media Solutions • St. Thomas, U.S. Virgin Islands
All Rights Reserved

Climate-Health Linkages

Adaptation to Climate Change

“Being prepared to respond to expected impacts by building capacity, being able to cope and recover from impacts, living with climate-induced changes and taking advantage of any benefits they might offer.”

THANK YOU FOR LISTENING.