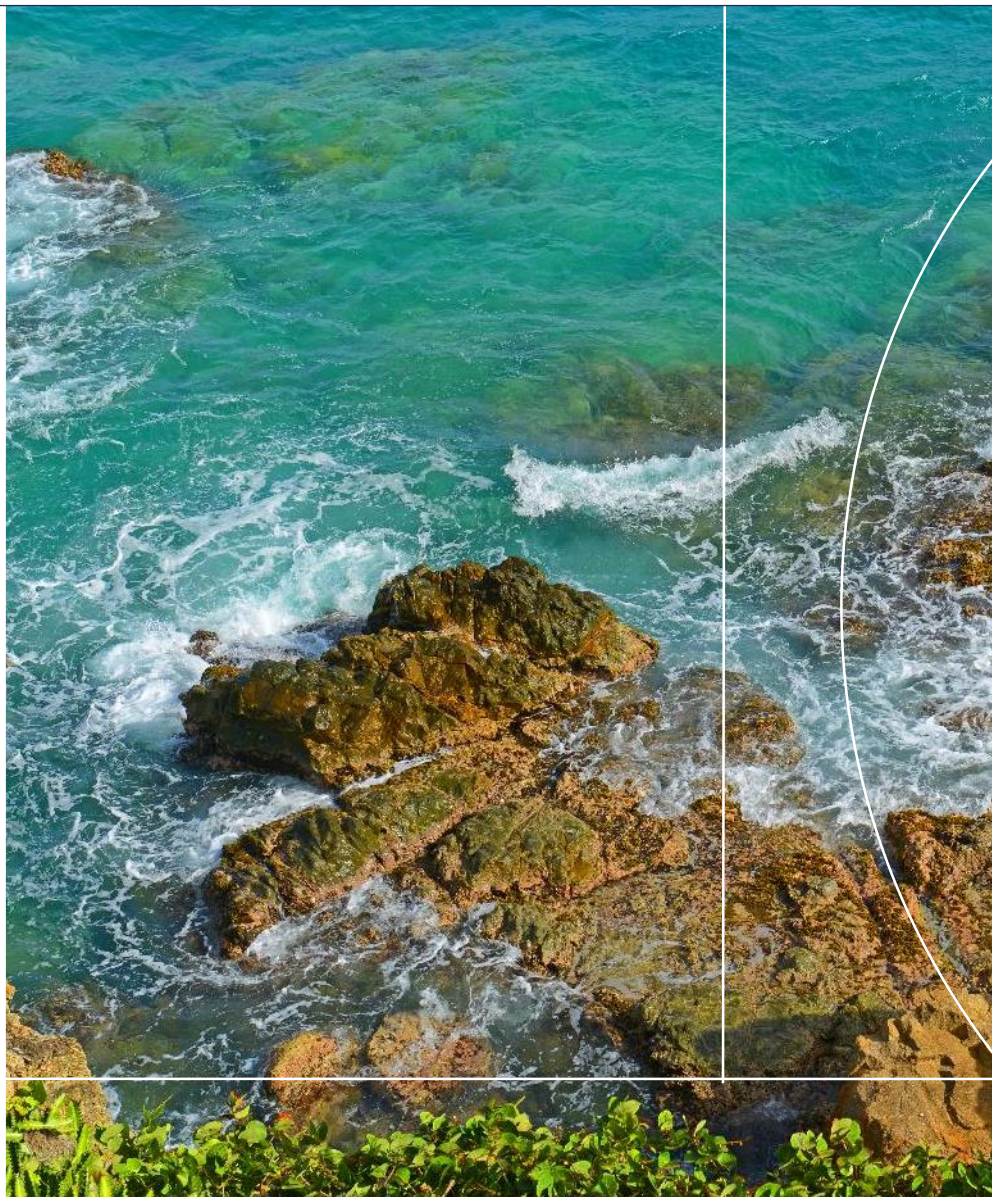




Research Theme 3:

Emerging Areas *Shoreline Response*

Meet The Team



Greg Guannel, Ph.D.



Edwin Cruz-Rivera, Ph.D. (Morgan State)



Nikita Beck, Research Tech.



Joe Dwyer (Lynker)



Deborah Fernandes,
Ph.D. Student



Zoe Price, M.S. Student



Bret Webb, Ph.D. (USA)



Brenique Dawson,
Undergrad Student



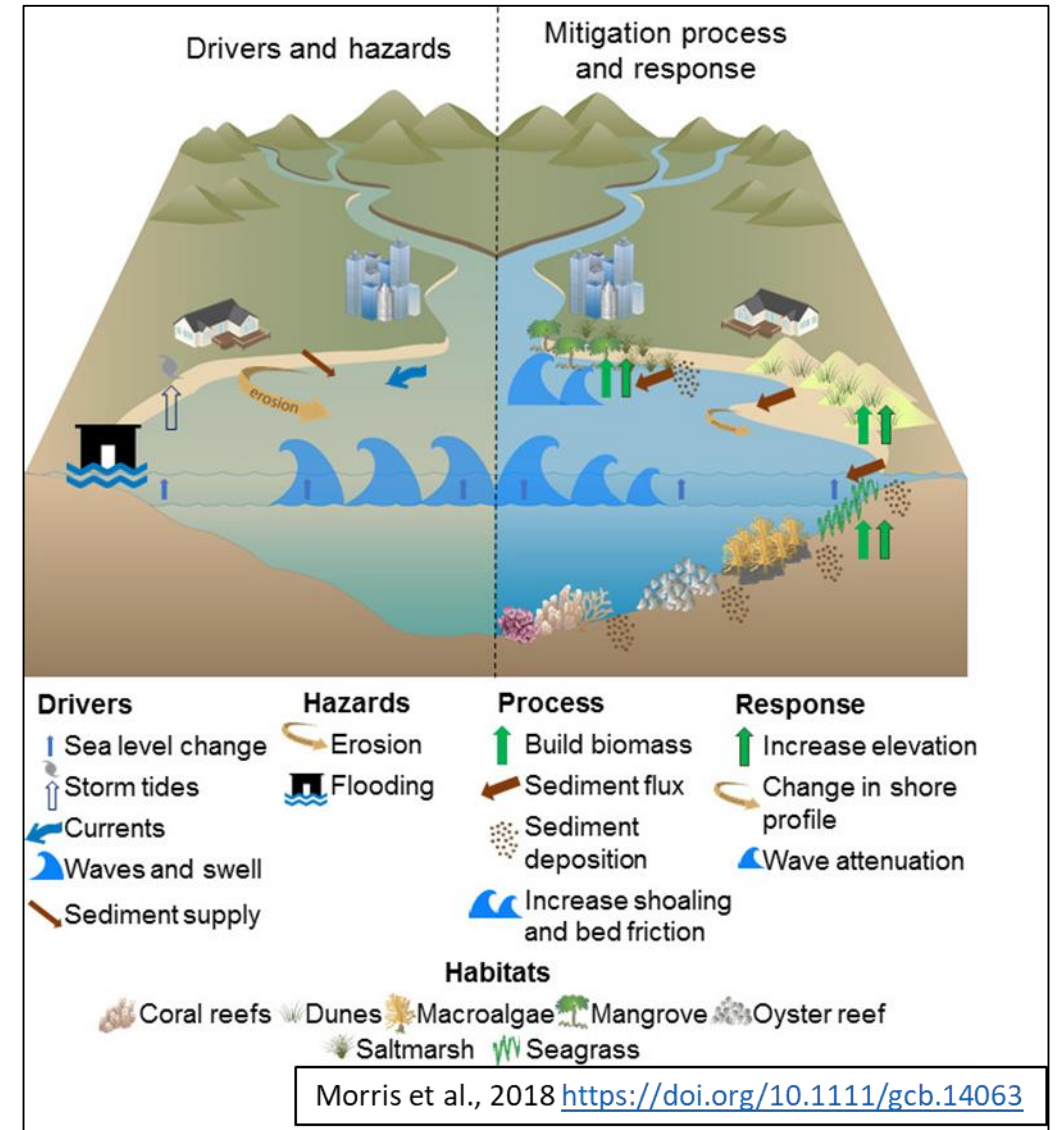
Tamia Grant,
Undergrad Student



Joleen Buchanan,
Undergrad Student

Introduction

- Coastal hazards and their impacts are intensifying because of coastal development patterns, land use practices and climate change
- Natural habitats are seen as potential tool to help reduce impacts
- Seagrass (and other habitats) might play important role in sequestering sediment and moderating impacts of hazards



Research Goals And Objectives

Research Goal: Quantify the role of seagrass type in short and long-term beach evolution.

Year 1	Identify and recruit graduate student Identify study sites Acquire field survey equipment	Student identified (foreign) and hired. Delay getting the student in the US.	Field equipment acquired and field methods developed. Coastal characterization starts.
Year 2	Deploy Equipment and Data Acquisition	Delayed. Paperwork between USA and UVI in process.	Equipment tested and used to characterize coastal environment. UVI student hired. Coastal observations start.
Year 3	Linking Seagrass Hydrodynamics with Beach Response	Delayed. Paperwork between UVI and USA finalized.	Further characterization of coastal environment and processes. UVI student hired. M.S. Student identified. Observations continue.

Research Goals And Objectives

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Year 3	Linking Seagrass Hydrodynamics with Beach Response	Delayed. Paperwork between UVI and USA finalized.	Further characterization of coastal environment and processes. UVI student hired. M.S. Student identified. Observations continue.
Year 4	Continuation of Y3	Site visit and equipment deployment in Dec. 2023	Continuation of observations and begin wave modeling

Research, Outcomes & Accomplishments

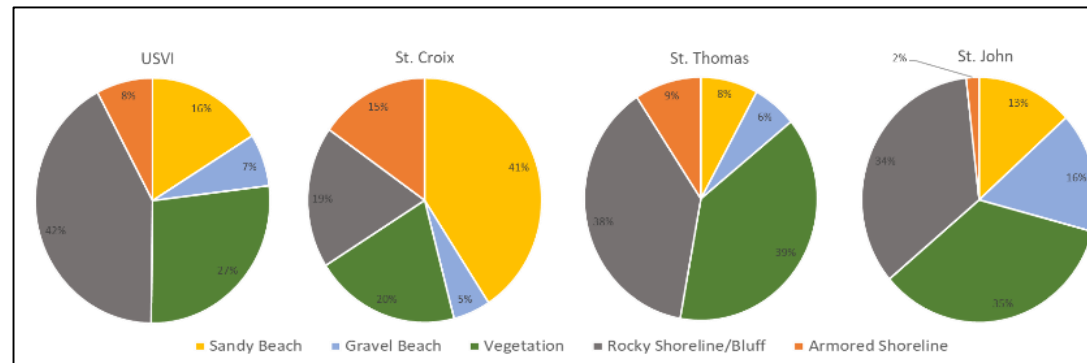
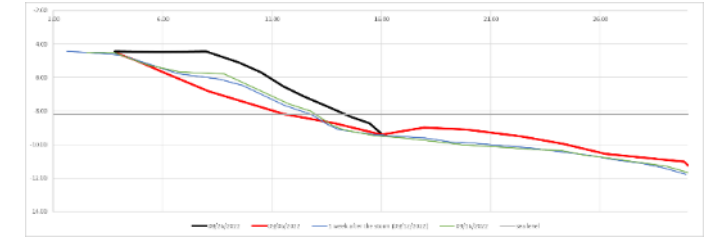
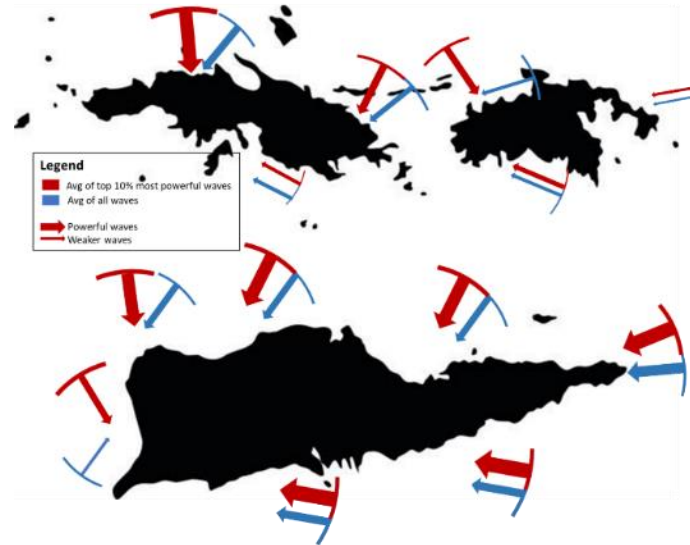
Wave climate and climate hazards mapped and quantified

Coastal environment of the VI mapped and characterized

Active monitoring of nearshore wave field and beach response

Testing remote sensing techniques to improve observations

2 peer-reviewed publications
(<https://doi.org/10.3389/fbuil.2022.923965>,
https://doi.org/10.1142/9789811275135_0196)



Publications are Targeted to Practitioners

Coastal Sediments 2023, pp. 2126-2137 (2023)

HOW RELIABLE IS EMERGENT VEGETATION FOR ENGINEERING WITH NATURE?

KAYLA OSTROW, DANIEL T. COX, GREG GUANNEL, ESTEBAN L. BIONDI, and TORI TOMICZEK

<https://doi.org/10.1142/9789811275135>

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PDF/EPUB

Abstract:

To increase the use of natural and natural-based features consistent with conventional coastal engineering design. Using

U.S. Virgin Islands Coastal Vulnerability Index



February 2023



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n methodologies
methodology for
engineered design. Using

ORIGINAL RESEARCH article

Front. Built Environ., 31 August 2022
Sec. Coastal and Offshore Engineering

Volume 8 - 2022 | <https://doi.org/10.3389/fbuil.2022.923965>

This article is part of the Research Topic
Natural and Nature-Based Features for Flood Risk
Management

[View all 17 Articles >](#)

State of the practice and engineering framework for using emergent vegetation in coastal infrastructure



Kayla Ostrow^{1*}



Greg Guannel²



Esteban L. Biondi³



Daniel T. Cox¹



Tori Tomiczek⁴

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² Caribbean Green Technology Center, University of the Virgin Islands, St. Thomas, United States Virgin Islands

³ Applied Technology and Management/Geosyntec Consultants, Inc, West Palm Beach, FL, United States

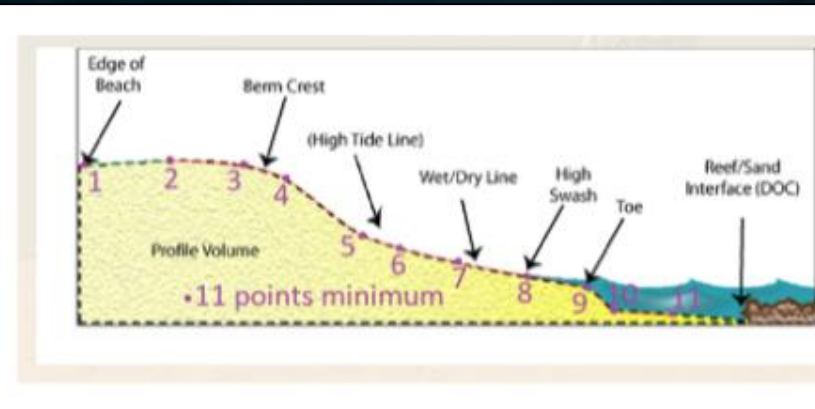
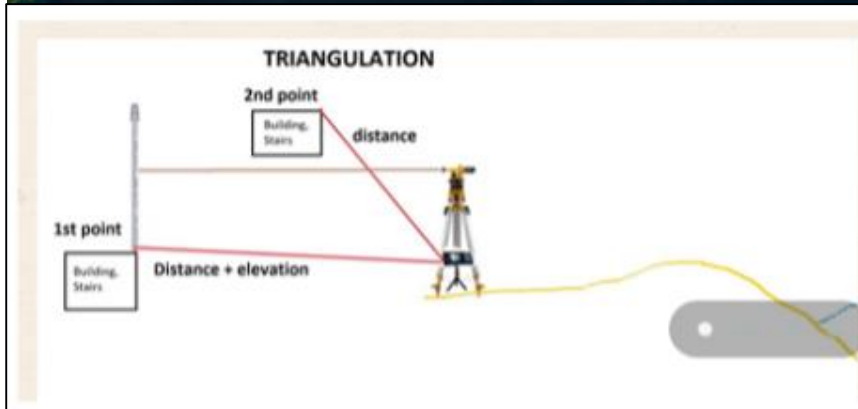
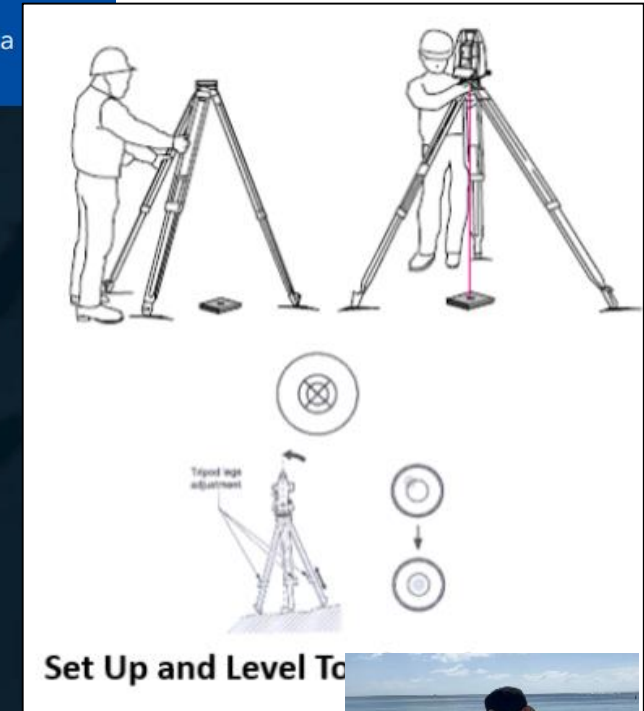
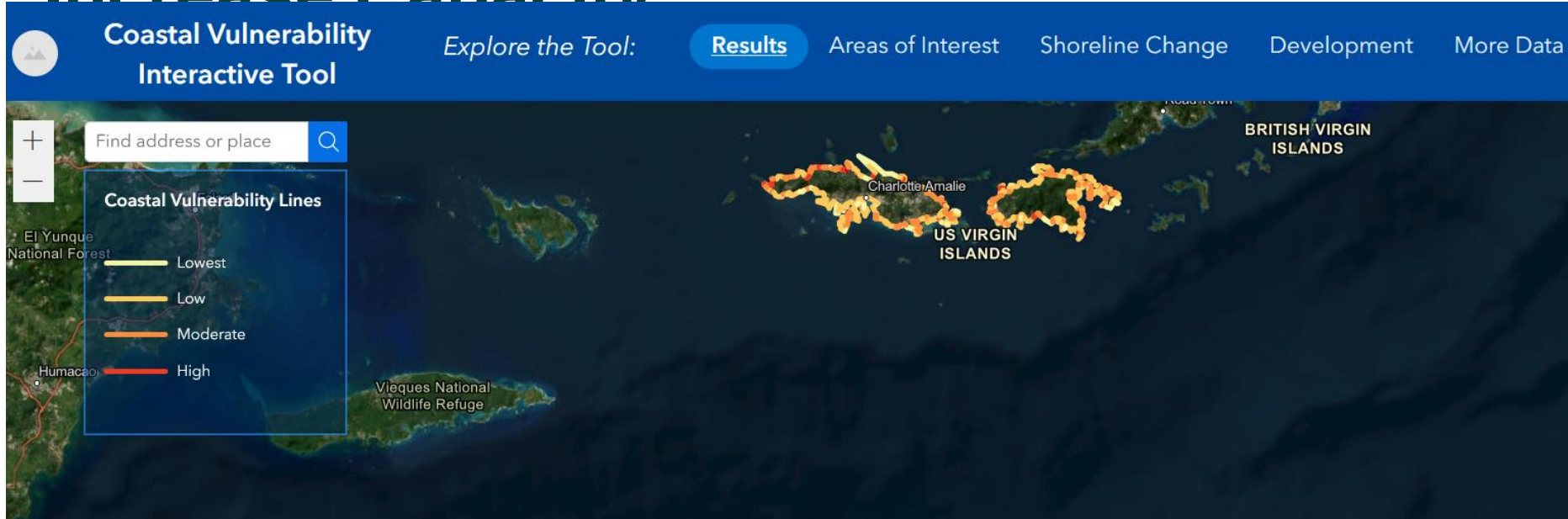
⁴ Department of Naval Architecture and Ocean Engineering, United States Naval Academy, Annapolis, MD, United States

Natural and Nature-Based Features (NNBF) are promoted as alternatives to structural flood protection measures. Progress has been made in understanding the physics and engineering of these systems; however, engineering, ecological, and social barriers to implementation remain. This paper identifies these barriers using the results of a literature review and summary of expert opinion; contrasts the state of the practice of

Foster Knowledge Exchange and Collaboration With Agencies and Regional Groups



Tools Developed to Communicate Research Outcomes and Increase Capacity



Develop Activities that Advance Science and Help Inform Policy



In-person Workshop, St.

The U.S. Army Corps of Engineers (USACE) is inviting your participation in our ongoing d NSMS Caribbean Regional Assessment.

Please join us for an in-person workshop to discuss our progress on the draft of the latest findings and research and response to your prior input and feedback. We encourage you to invite your colleagues to join us too.

U.S. Virgin Island In-person
Tuesday, November 1-3pm
The Innovation Center, 8666
University of Virgin Islands, St.

The NSMS Caribbean Regional Assessment is prepared to identify key regional issues, effects of erosion and accretion, high socioeconomic, environmental, and collaboratively develop recommendations for enhanced U.S. Virgin Island shoreline resiliency and improved shoreline management.

Your active participation and input at the workshop, and we look forward to your input at this workshop and future recurring draft report development. If you have

Regards,
The National Shoreline Management Study (NSMS) Team



About NSMS: Authorized by Section 215(c) of the Water Resources Development Act of 1999 (PL 106-53), the legislation directs preparation of reports on the shores of the USACE initiated the NSMS through collaborative efforts with other agencies and in coordination with states, territories, and Commonwealths to assess and understand the condition of U.S. coastlines. NSMS Regional assessments have been completed for Hawaii, Alaska, and the continental US, and are available for viewing and downloading at <https://www.iwr.usace.army.mil/missions/coasts/national-shoreline-management/>



ABOUT US PUBLICATIONS TRAINING WORKSHOP AWARD PROGRAMS RESEARCH RESOURCES

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Conclusions
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Research Resources ▾

The Public Health Implications of Social Vulnerability in the U.S. Virgin Islands

Greg Guannel
University of the Virgin Islands

Hilary Lohmann
U.S. Virgin Islands Department of Planning and Natural Resources

Joe Dwyer
University of the Virgin Islands

CGTC Caribbean Green Technology Center VOLUNTEER FOR CLIMATE ADAPTATION

Help record how high tides can have an affect the shores of the U. S. Virgin Islands.

Why We're Doing This

King Tides are the highest tides of the year. They give us an idea of how sea level rise will impact our islands in the future

What You'll Do

Go to a coastal site and take a photo during the King Tide.

Take a photo of the coast with structures as reference

How to Submit

Upload your photos to the link below and name your photo:

"Initial_LocationDate"

Contact Us
340-693-1691

For More Information
www.cgtc-usvi.org

To Submit Photos



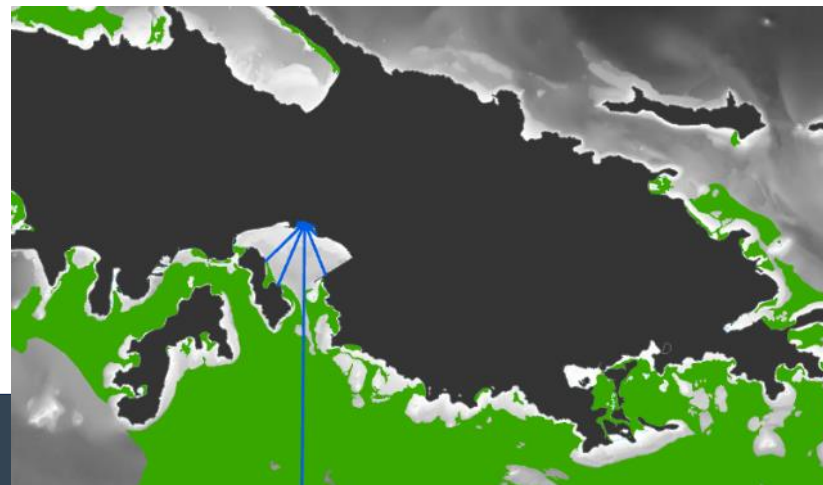
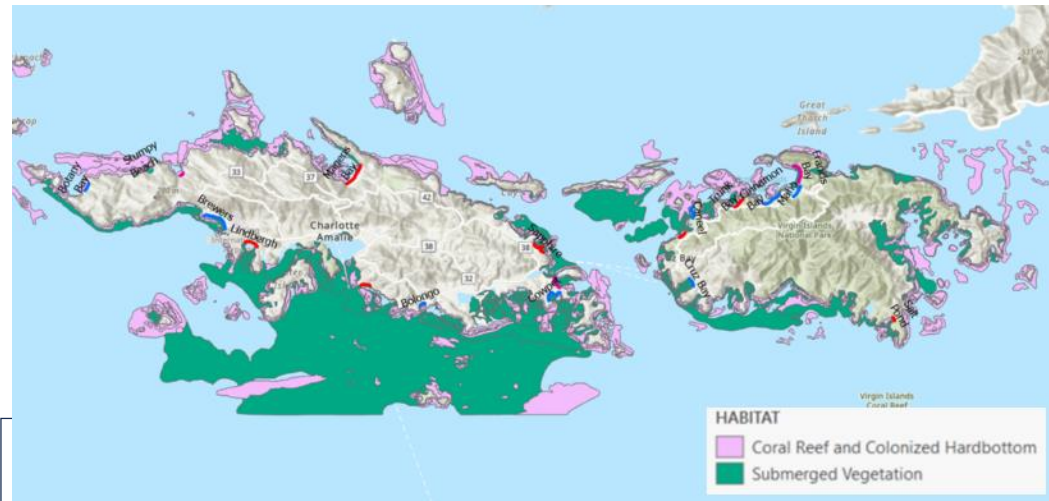
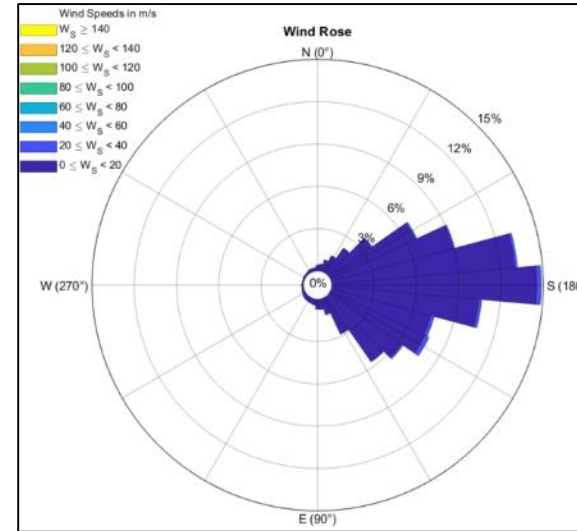
NOVEMBER

27

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Future Plans

- Deploy remote sensing equipment at select sites
- On-site monitoring of select sites
- Monitoring of hydrodynamics and beach response in seagrass dominated nearshore regions
- Creation of wind-wave generation tool
- Creation of wave atlas for the USVI





Thank you!

Dr. Gregory Guannel

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PHONE: 340-693-1158