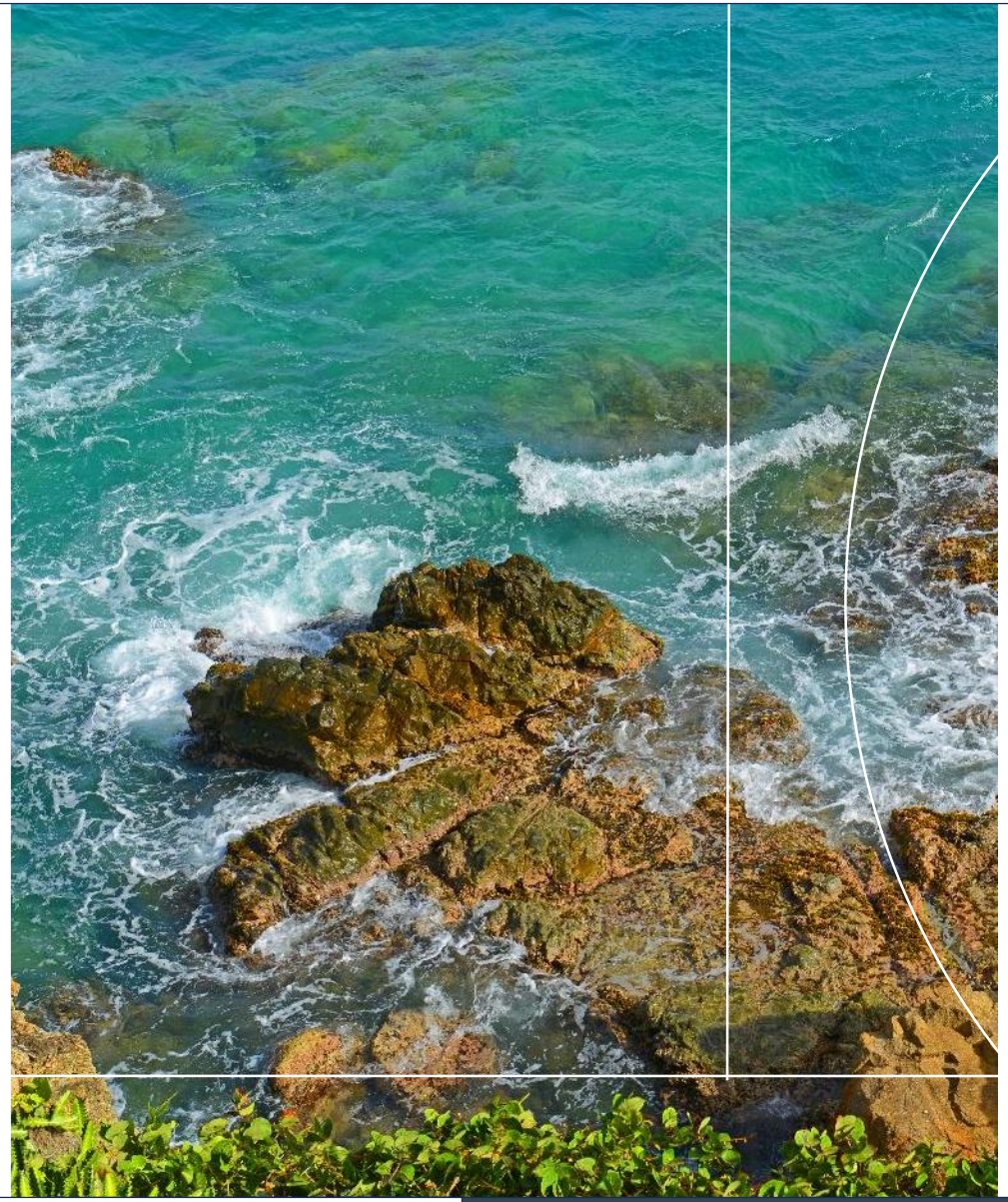

Research Theme 3:

Emerging Areas
Shoreline Response

Meet The Team

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

Nikita Beck, Research Tech.

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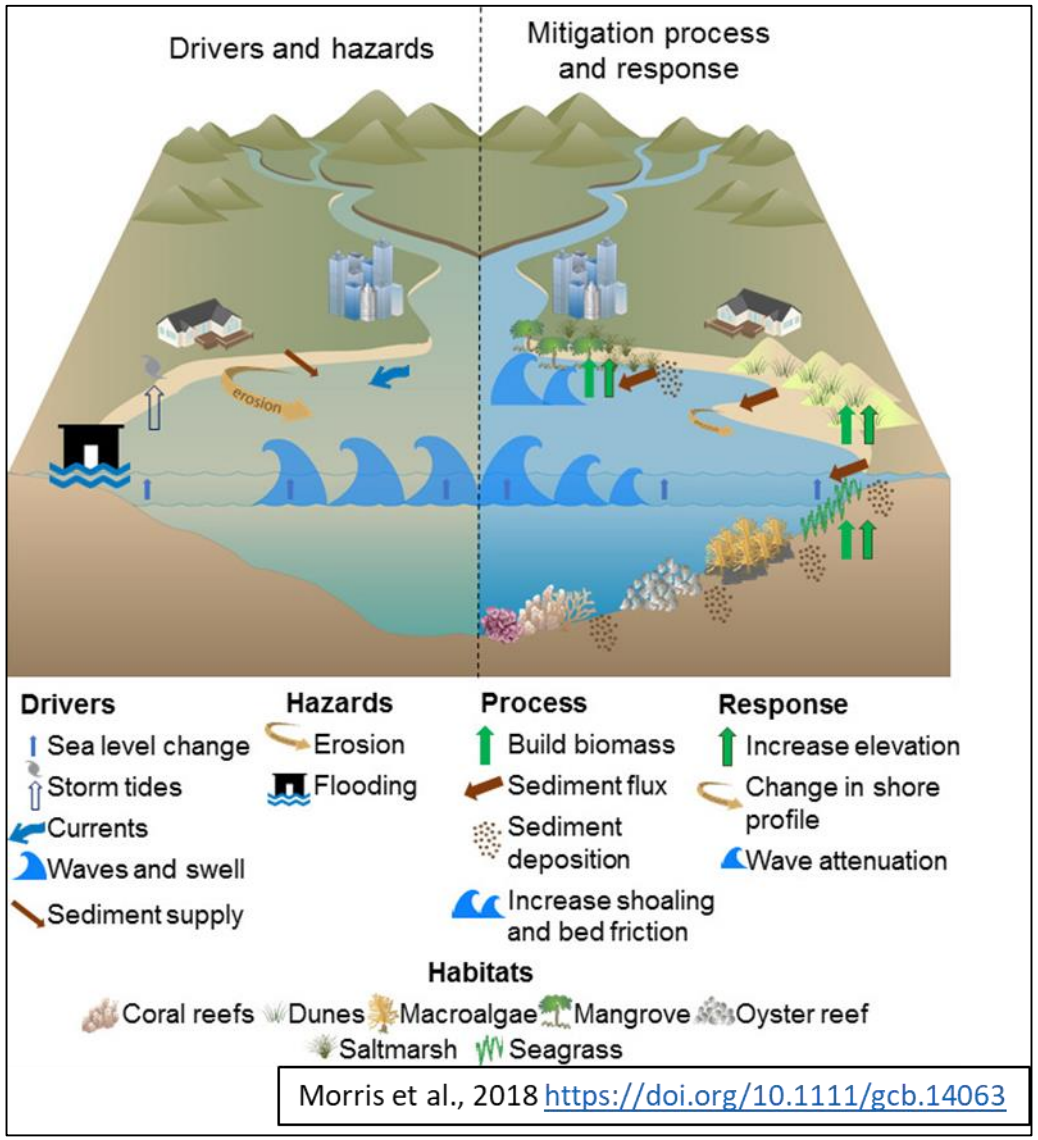
Tamia Grant, Undergrad Student

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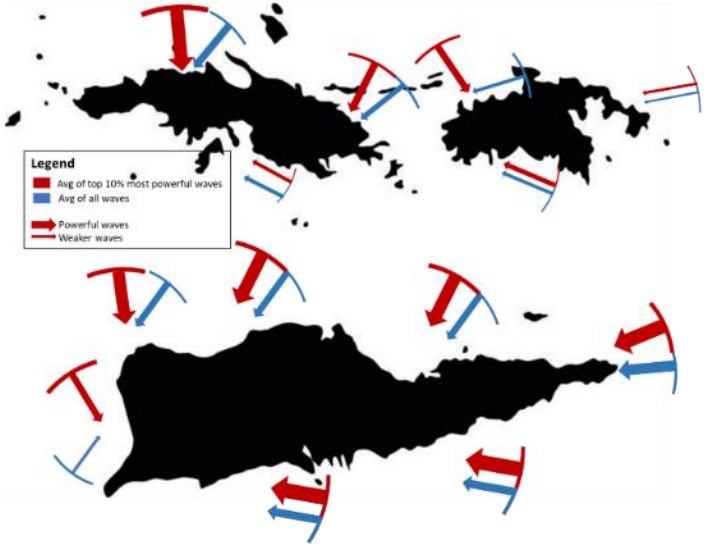
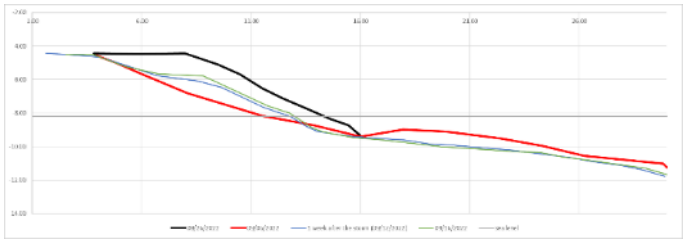
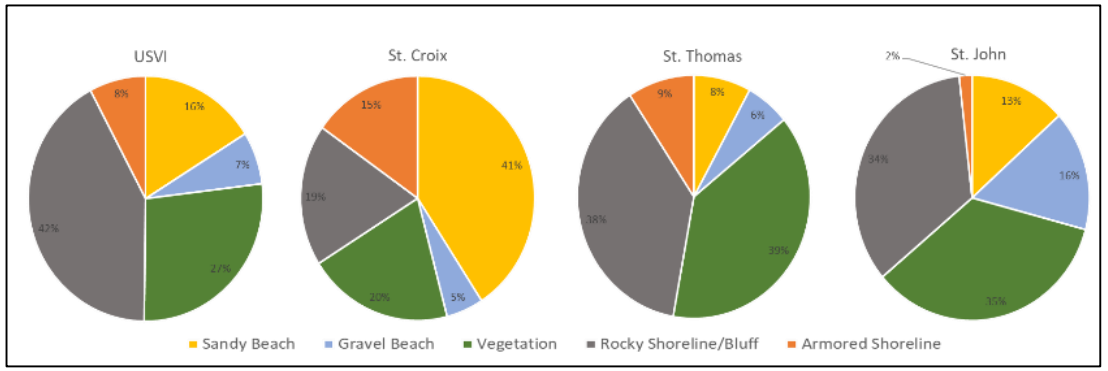
Year 3	Linking Seagrass Hydrodynamics with Beach Response	Delayed. Paperwork between UVI and USA finalized.	Further characterization of coastal environment and processes. UVI student hired. M.S. Student identified. Observations continue.
Year 4	Continuation of Y3	Site visit and equipment deployment in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







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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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Abstract:

To increase the use of natural and na n methodologies consistent with conventional coastal methodology for emergent vegetation, which is able t gineered design. Using

U.S. Virgin Islands Coastal Vulnerability Index

February 2023

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 Guannel[2] Esteban L. Biondi[3] Daniel T. Cox[1]
Tori Tomiczek[4]

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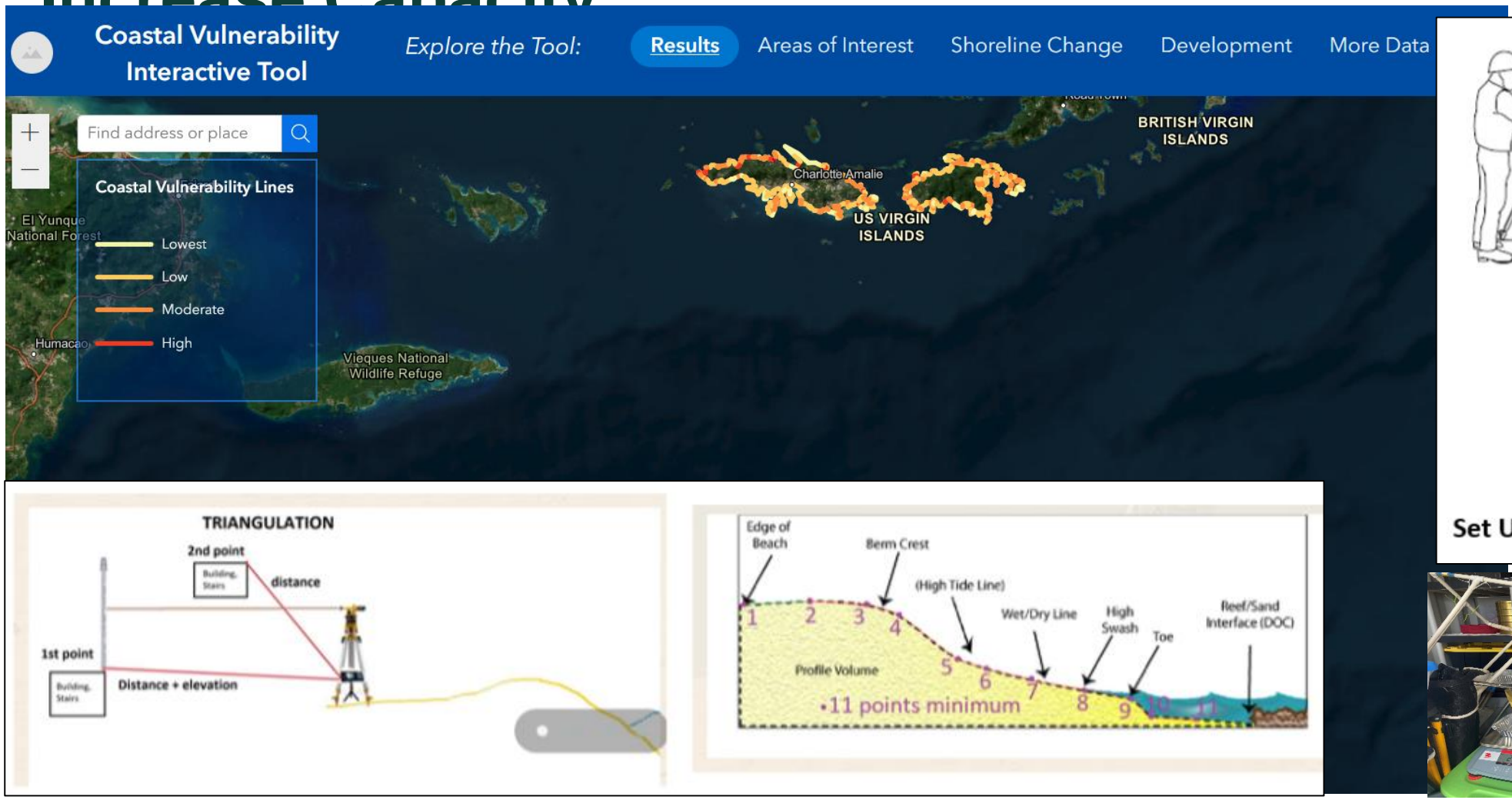
[4] Department of Naval Architecture and Ocean Engineering, United States Naval Academy, Annapolis, MD, United States

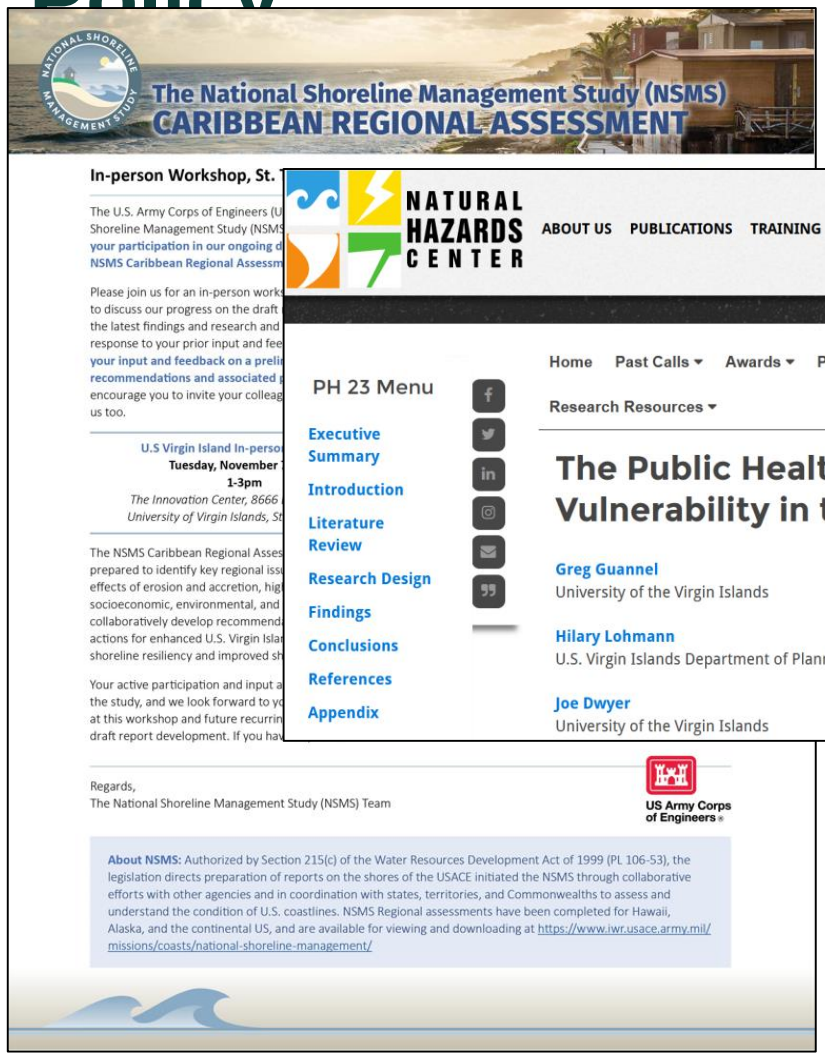
Natural and Nature-Based Features (NNBF) are promoted as alternatives to structural flood protection measures. Progress has been made in understanding the physics and engineering of these systems; however, engineering, ecological, and social barriers to implementation remain. This paper identifies these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

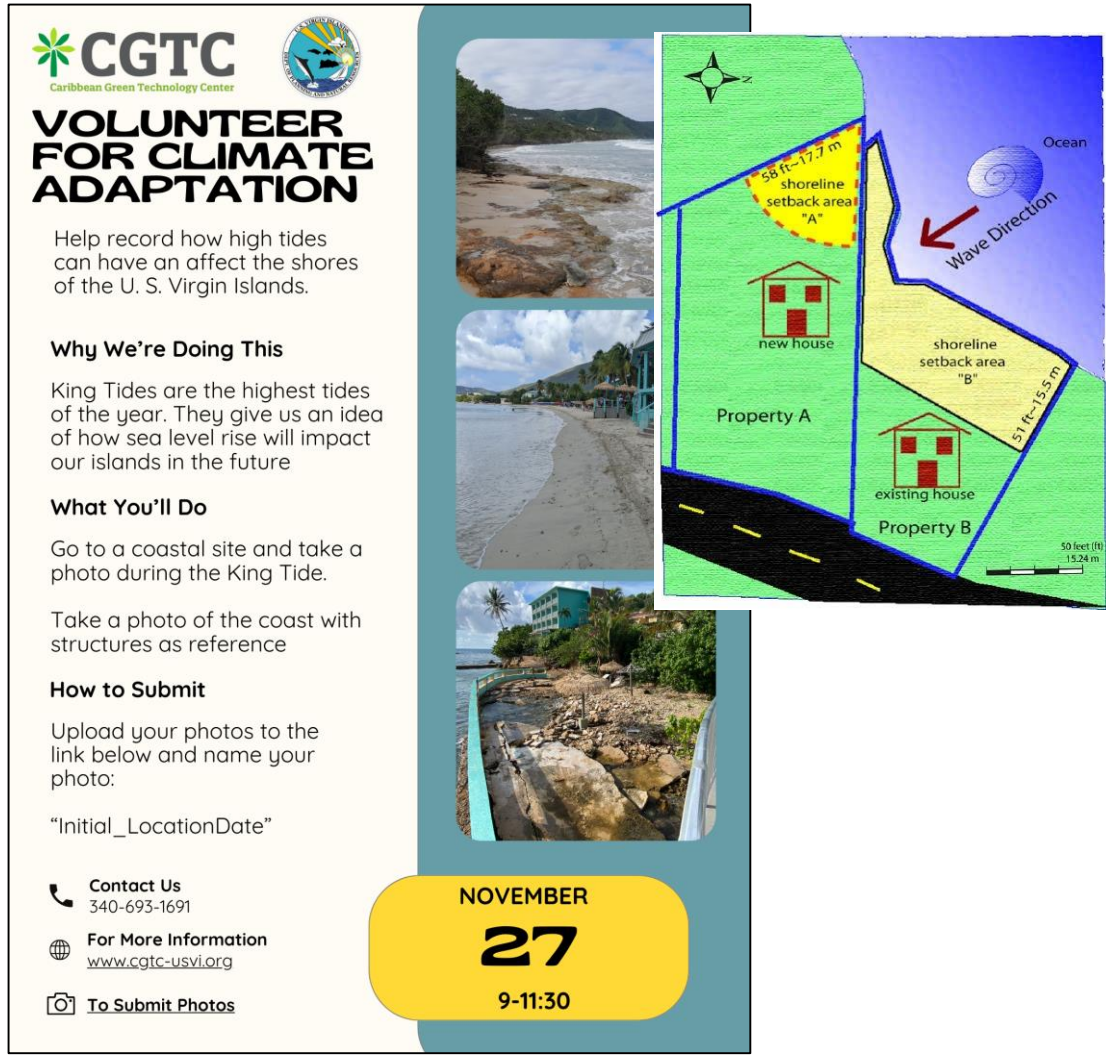
Foster Knowledge Exchange and Collaboration With Agencies and Regional Groups

Tools Developed to Communicate Research Outcomes and Increase Capacity



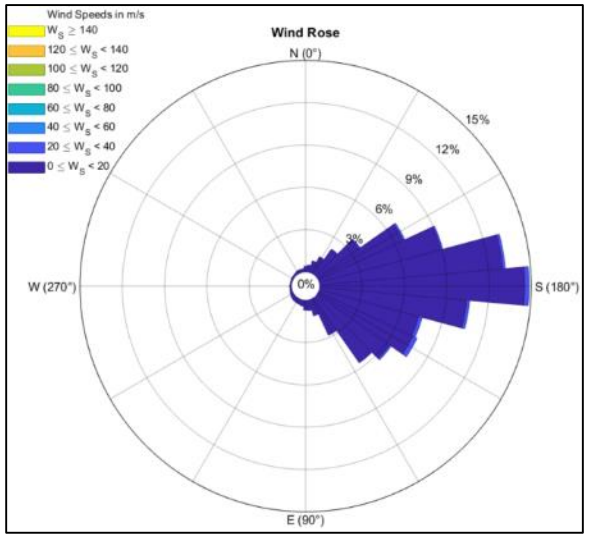
Develop Activities that Advance Science and Help Inform Policy

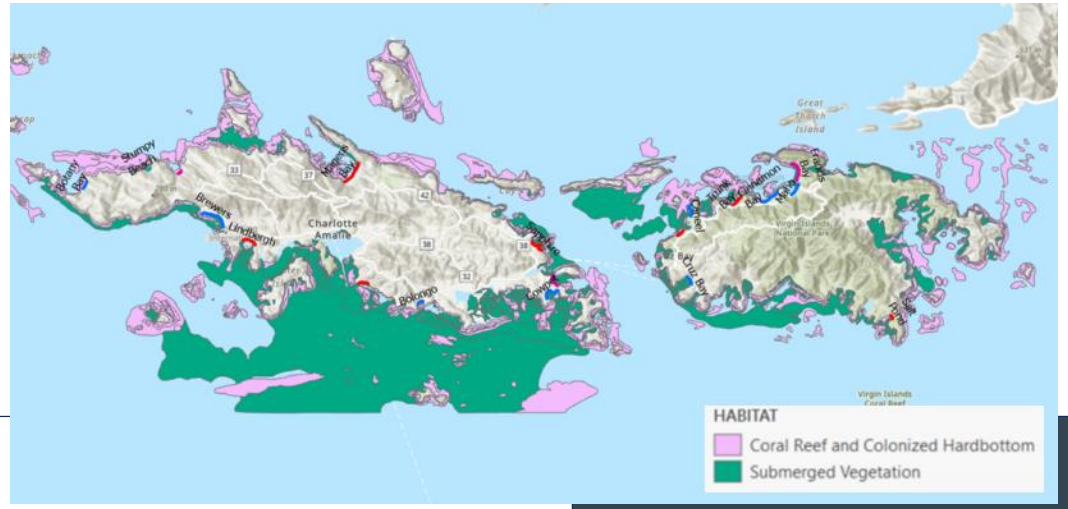


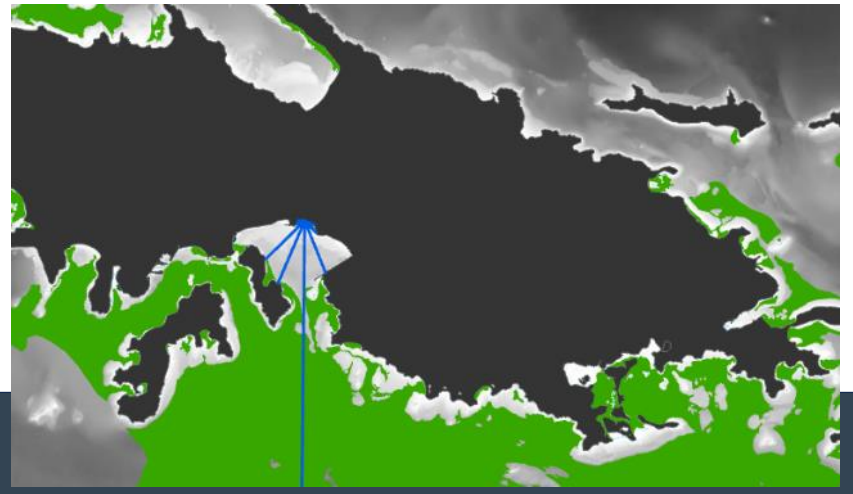


Future Plans

- 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!

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