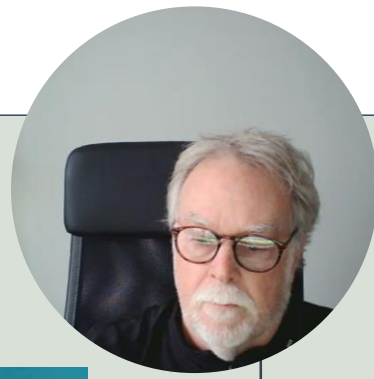




Research Theme 5: Oceanography





Oceanography

- Oceanic, atmospheric, and terrestrial processes are coupled and interdependent, making **OCEANOGRAPHY** a critical research element.
- Physical processes from the deep ocean to the coastline impact regional ecosystems' functionality, health, and resilience.
- Impacts include thermal stress response, recovery after disturbance, animal reproduction, and connectivity of organisms and materials, such as sediment, in the marine environment.





Meet The Team



Dr. Tyler Smith
VI-EPSCoR co-P.I.
Professor, UVI



Mr. Doug Wilson
Courtesy Professor, CMES

	Dr. Rick Nemeth VI-EPSCoR co-P.I. Professor, UVI		Ms. Vanessa McKague Oceanographic Technician
	Dr. Paul Jobsis Director, CMES		Mr. Travis Hamlin Data Manager Glider Technician
	Dr. Dan Holstein Asst. Professor LSU		Dr. Kayla Blincow Asst. Professor UVI



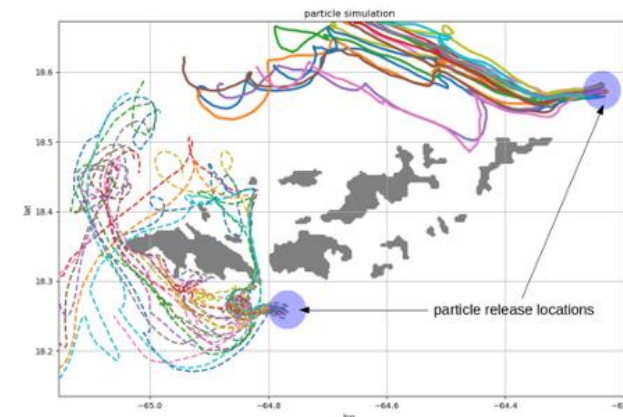
OCEANOGRAPHY

- Our overall GOAL is to develop and perpetuate the human, physical, and cyber infrastructure to support oceanographic research that contributes to a deeper understanding of ocean processes and their influence on USVI ecosystems, coastlines, and population.

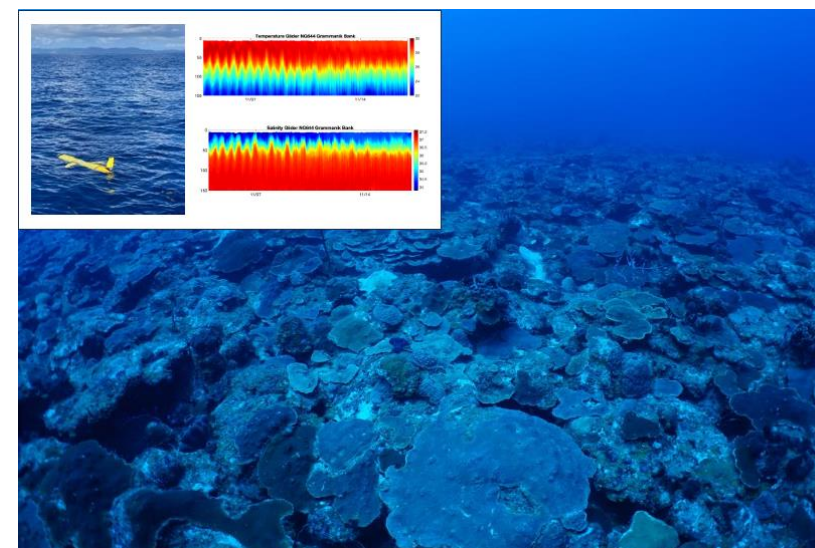


Years 1-3 Goals & Activities

Initial	Quantify the influence of oceanographic and environmental variables on significant R2R processes (fish behavior, larval dispersal)
Years 1- 3	Reef Bay spawning studies
Years 1 -3	USCROMS model studies (dispersal + new Sargassum award)
Years 1 - 3	Share USVI Oceanography Research with Stakeholders & Provide Opportunities for New Partnerships



ROMS Model Larval Transport Pathways

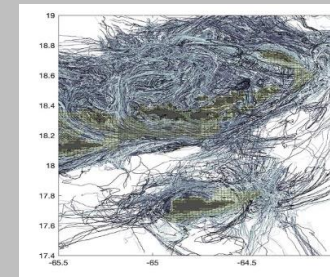
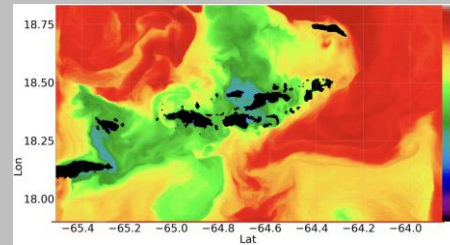


Salinity and Temperature variability affecting mesophotic coral reefs measured by ocean gliders



Year 4 Goals

- Focus on new strategies and partnerships while continuing to address wider impacts and student opportunities.



UVI Ocean Glider Lab (NSF MRI)

Developing New Ocean Modeling Capabilities through partnerships

Exploring new ocean research partnerships – Roxsi



UVI Ocean Glider Lab

NSF Major Research Instrumentation Award

- Supports multiple aspects of UVI R2R research
- VI Marine Mammal studies with NOAA SEFSC
- Opportunities for new partnerships
- Supports other unmanned assets
- Attractive to diverse array of student interests



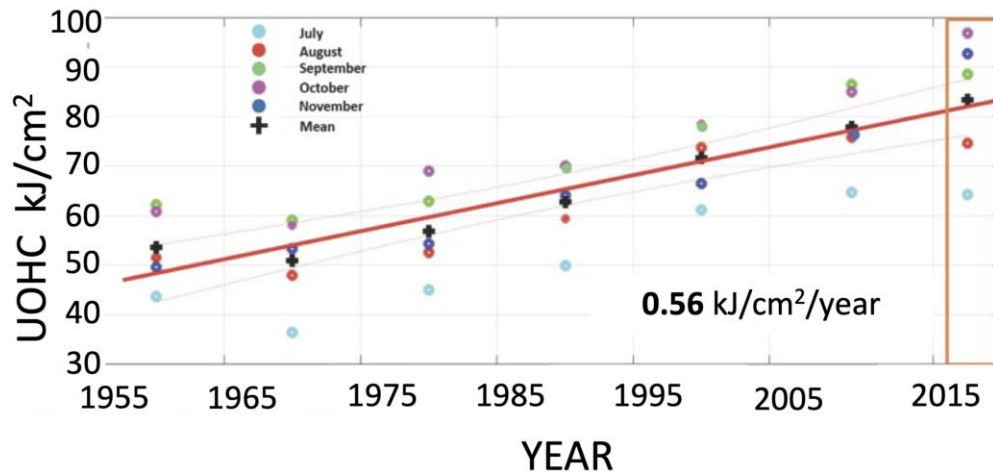


All these will provide new outreach opportunities to community, students, and UVI researchers – including STEM engagement from other disciplines – and will provide a long-term base capability for the Oceanography program and supporting researchers and faculty.



Impacts and Research Results

Upper Ocean Heat Content (a strong factor in tropical cyclone intensification)



MMES Graduate Students 2023-



Cole Sheeley, Joshua Solls



Jesse Joy

Recent Papers and Presentations

Mukherjee, S., D. Wilson, P. Jobsis, and S. Habtes, 2023. Numerical modeling of internal tides and submesoscale turbulence in the US Caribbean regional ocean. Sci Rep 13(1) DOI 10.1038/s41598-023-27944-2

Gradone, J, W. Wilson, S. Glenn, T. Miles, 2023. Upper Ocean Transport in the Anegada Passage from Multi-Year Glider Surveys. J. Geophys Res, 128(7), <https://doi.org/10.1029/2022JC019608>

Undergraduates – Rutgers U. Glider Workshop, 2022



Dishon Heyliger

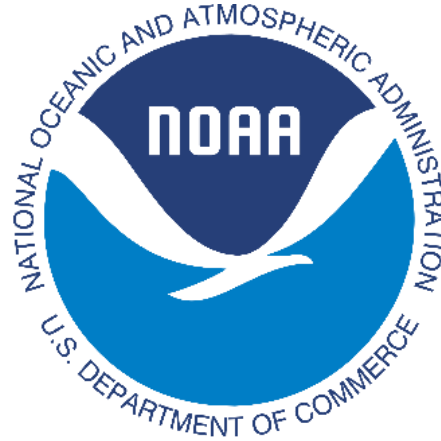


Zach Briggs

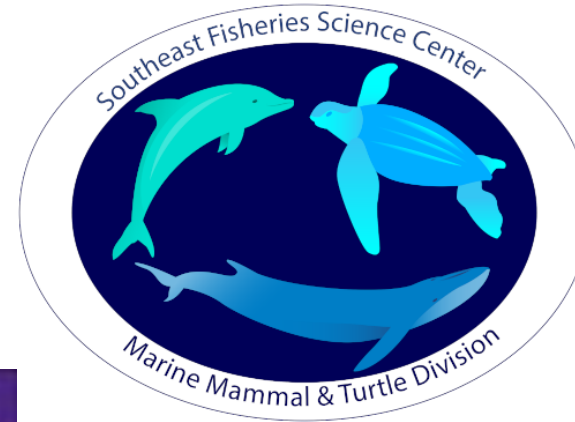
Wilson, D., 2022. Gliders, climatology, and ocean models – what we can learn about the NE Caribbean by increasing upper ocean observation density. Underwater Gliders Users Group Workshop Seattle '22, <https://drive.google.com/drive/folders/1QFua98fWN6yAlyWmtnVS22kjX89t0Rg6>

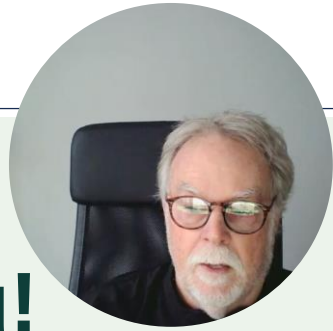


Collaborations



RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY





Thank you!

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