



DEPARTMENT OF OCEANOGRAPHY

Photo Credit: Devin Hogate - GES student

*Mai Uka Ā Ke Kai - From the Mountain to the Sea*

## GLOBAL ENVIRONMENTAL SCIENCE

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About GES



# GES SYMPOSIUM FALL 2024

Friday, December 13th, 2024  
10:30am - 12:00pm  
MSB Room 114



# THE SYMPOSIUM

GES students presenting at the Symposium conducted faculty-mentored research, analyzed their results, and compiled their findings into a thesis format. Some theses are converted into peer-reviewed journal publications; a feat usually accomplished by students once in graduate school. The GES Symposium is a celebration and culmination of undergraduate research efforts and experiences, so join us in supporting, engaging, and applauding our presenters.



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# ABOUT GES

The University of Hawai'i at Mānoa Department of Oceanography launched the undergraduate Global Environmental Science (GES) Program in 1998 with the generous support of the Pauley Foundation. The vision and brainchild of the late Oceanography Emeritus Professor Dr. Fred Mackenzie, the GES Program is known for its rigorous math and science foundation, integrated study of environmental and sustainability-related issues, and required research experience.

This research experience results in every GES graduate having completed a faculty-mentored research project, written a thesis, and presented their research results in a public forum. As a result of the challenging curriculum and research requirement, GES graduates are well prepared to enter the workforce in environmental science-related fields and industries, or continue in further academic pursuits in a many different fields such as the natural sciences, social sciences, law, medicine, and engineering.



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## Sarah Blichfeldt

Sarah was born and raised O‘ahu, where she developed her love and respect for the ocean through outrigger paddling and open ocean swimming. As she graduated high school in 2020, her first year of college at Santa Clara University was online. In the beginning of her junior year, she studied abroad in Barcelona where she took her first oceanography class. Wanting to learn more and realizing that there were no marine

focused classes at Santa Clara, she submitted a transfer application to UH while abroad in November, and by January she was at UH Mānoa in the GES program. In that semester, she applied to the PI-CASC SURF internship where she got paired with her mentor Dr. Charles Fletcher for the summer and started research for her GES Thesis focusing on Sea Level Rise Exposure to Cultural Sites in Ko‘olaupoko. After graduation, Sarah wants to travel and eventually work in Climate Adaptation Planning.

## Zachary Loo

Zachary was born and raised in O‘ahu, Hawai‘i, where he developed a deep connection to the environment. His interest in environmental science began in high school through an AP Environmental Science class which led him to the GES program at UH Mānoa. With an additional interest in medicine and public health, Zachary focused his GES degree with the Environmental Health Sciences track that the department



offers. In his senior year, he found his thesis mentors Dr. Daniel Amato and Dr. James Potemra. His thesis focuses on water quality in O‘ahu by examining how land-use patterns impact local water health. With the aim to improve public health, his research provides insights into sustainable land and water management practices. During his last year at UH Mānoa, he gained a strong passion for analyzing environmental data and participated in data science programs offered by Chaminade University. Zach hopes to further his studies at graduate school, where he plans to pursue a master's in environmental data science.

# AGENDA

- 10:30 Opening Remarks
- 10:40 **Kari Agcaoili** - *"Managed Retreat as a Strategy to Mitigate Sea Level Rise Impacts in Hawai‘i"*  
**Mentors:** Dr. Chip Fletcher, Department of Earth Sciences Professor & Interim Dean for the School of Ocean and Earth Science and Technology (SOEST); Dr. Juliette Budge, Climate Resilience Collaborative (CRC) Operations Project Manager
- 11:00 **Vivian Bønsager** - *"A Comparison of Satellite-Based Estimates of Coral Bleaching"*  
**Mentor:** Dr. James Potemra, International Pacific Research Center (IPRC) Specialist for the Asia-Pacific Data-Research Center (APDRC)
- 11:20 **Sarah Blichfeldt** - *"Sea Level Rise Exposure to Cultural Sites in Ko‘olaupoko"*  
**Mentor:** Dr. Chip Fletcher, Department of Earth Sciences Professor & Interim Dean for the School of Ocean and Earth Science and Technology (SOEST)
- 11:40 **Zachary Loo** - *"Investigating the Impact of Land Use Composition on Water Quality in the Ala Wai Watershed"*  
**Mentors:** Dr. Daniel Amato, Marine Biology Graduate Program Affiliate Faculty & Dr. James Potemra, International Pacific Research Center (IPRC) Specialist for the Asia-Pacific Data-Research Center (APDRC)
- 12:00 Closing Remarks followed by refreshments on the MSB Lanai



# Kari Agcaoili



Kari is a first-generation college student. She was born in the Philippines and grew up in Ewa Beach, Hawai'i. Her curiosity of how things work and interest in physical sciences initially led her to pursue a degree in Civil and Environmental Engineering, a path she followed for about two years until the pandemic hit. During this time, Kari felt change was necessary and switched her major to GES. Seeing in person and online the effects of climate change locally and globally sparked her interest in environmental systems.

As she progressed through her degree, Kari's interests expanded to other fields like Urban Planning, which deepened her understanding of how people interact with the built environment and its impact on the natural world. After expressing her interests with a SOEST faculty member, she was able to connect with Dr. Juliette Budge with the Climate Resilience Collaborative and Dr. Chip Fletcher for her thesis on Managed Retreat. Throughout her studies, she secured internships with the State's Office of Planning and Sustainable Development's Coastal Zone Management Program, where she used GIS to assess the vulnerability of state-managed facilities to SLR, and with the Department of Hawaiian Home Lands, reviewing Climate Action Plans. Her next goal is to obtain her master's degree with the Department of Urban Planning at Mānoa.

# Vivian Bønsager



Vivian grew up in the suburbs of Minneapolis, Minnesota, but also spent extended periods of time in Denmark. From a young age, she was an avid outdoors enthusiast, especially involved in sailing. She moved to Southern California towards the end of middle school, where she further developed her love of nature and competitive sailing. Her first college semester was aboard a 112-foot sailing vessel in Southeast Asia through the SeaMester program, University of South Florida. Upon enrolling at University of Hawai'i at Mānoa, she selected to major in Global Environmental Science in order to focus on Oceanography. Her passion lies in ocean conservation and raising awareness of climate change impacts. Working with Dr. James Potemra, Vivian's thesis focuses on evaluating the accuracy of satellite products to predict coral bleaching. Her research compares NOAA satellite measurements of Sea Surface Temperature Anomalies and Degree Heating Weeks to observational data of coral bleaching from Reef Check. She will graduate from the University of Hawai'i in Spring 2025 and plans to pursue a career in ocean conservation.