



Annual Report

January 1 – December 31, 2022
Dean Thomas K. Frazer

2022



**UNIVERSITY OF
SOUTH FLORIDA**
College of MARINE SCIENCE

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THE VIEW FROM THE BRIDGE

Each year that I prepare this report, I find myself inspired by the faculty, staff, and students at the College of Marine Science. This year was no exception. CMS continues to demonstrate extraordinary achievements in our disciplines of oceanography through world-class research and community leadership. We are truly of the highest caliber.



Our 2022 Annual Report reflects the many accomplishments of the CMS community. A few of the highlights you'll read about in this issue include:

- As we emerged from the pandemic era, CMS saw a welcome increase in research expenditures across the College.
- A return to an in-person Graduate Student Symposium gave twenty graduate students the opportunity to present their research to the CMS community.
- Seventeen of our students published 25 papers, including 15 first-authored publications. Twenty-six students gave 53 talks or presentations, including nine talks internationally.
- Dr. Bob Weisberg, who retired in 2022 after an impressive career at CMS, was named a Fellow at the American Geophysical Union.
- Dr. Mya Breitbart was named a University of South Florida Distinguished University Professor.
- Dr. Alastair Graham led a first-of-its-kind study about West Antarctica's Thwaite's Glacier, which was published in *Nature Geoscience*.
- Dr. Chuanmin Hu was part of a team who developed the first global map of chronic oil slicks. They published their results in *Science*.
- CMS became home to the Florida Flood Hub for Applied Research and Innovation.

I hope you enjoy the following report and join me in celebrating another outstanding year for the College.

COLLEGE OF MARINE SCIENCE LEADERSHIP TEAM



THOMAS K. FRAZER
Dean, College of Marine Science
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Dr. Thomas Frazer is a Professor and Dean of the College of Marine Science at the University of South Florida. Prior to his arrival at USF, Dr. Frazer was Director of the School of Natural Resources and Environment at the University of Florida and served also as Chief Science Officer for the State of Florida. Dr. Frazer holds a Bachelor's Degree in Fisheries Biology from Humboldt State University and a Master's Degree in Fisheries and Aquatic Sciences from the University of Florida. He earned his Ph.D. in Biological Sciences from the University of California, Santa Barbara. His research addresses contemporary and emerging environmental issues, and is, by nature, interdisciplinary. His work involves collaborators from disparate disciplines, and it includes sampling and experiments conducted across a wide range of spatial and temporal scales. Dr. Frazer has received research funding from a broad suite of granting entities to address topics pertaining to water quantity and quality, nutrient dynamics, biogeochemical processes, fish population dynamics, food web interactions, and ecological restoration of degraded ecosystems. He has conducted field research in both freshwater and marine systems around the globe, and he is intimately familiar with a broad suite of environmental and natural resource issues (e.g., eutrophication of fresh, estuarine, and coastal waters; invasive species; and the ecological impacts of contemporary environmental change, including coral bleaching, ocean acidification, and sea level rise). Dr. Frazer has authored and/or co-authored more than 175 peer-reviewed publications, technical reports, and book chapters. Dr. Frazer currently serves as a member of the Gulf of Mexico Fisheries Management Council and chairs multiple standing committees. He is also a member of Florida's Environmental Regulation Commission.



GARY MITCHUM

Associate Dean, College of Marine Science

PhD, Florida State University, 1984

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Dr. Mitchum is the Associate Dean and Professor of Physical Oceanography. After receiving his PhD from the Department of Oceanography at the Florida State University in 1985, he spent 11 years in the Department of Oceanography at the University of Hawaii, first as a postdoctoral researcher and then as a member of the research faculty and as the Director of the University of Hawaii Sea Level Center. He came to the University of South Florida in 1996. His research interests emphasize short-term climate changes, ranging from interannual variations such as ENSO, to decadal processes, to the problem of long-term sea-level rise. He has also done work on continental shelf dynamics, mesoscale eddy interactions with mean flows, internal tide generation and propagation, physical controls on fisheries variables, and storminess changes in the southeastern United States. He is especially interested in analyses of tide gauge and satellite altimetric data, and notably proposed and developed the presently accepted method of estimating temporal drift in altimeters via comparisons with the global tide-gauge network. Mitchum serves on numerous local, national, and international committees, most notably he serves as Chair of the Global Sea Level Observing System (GLOSS) Group of Experts and is President of the IUGG/IAPSO Commission on Mean Sea Level and Tides.



DAVID NAAR

Associate Dean of Academic Affairs, College of Marine Science

PhD, Scripps Institution of Oceanography, UCSD, 1990

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Dr. Naar is the Associate Dean of Academic Affairs and Professor in Geological Oceanography. He has overseen the graduate academic program and graduate student matters since 2012. He received his bachelor's degree in Geology with an emphasis in Geophysics from University of California, Santa Barbara in 1982, and his PhD in Earth Sciences from Scripps Institution of Oceanography, at the University of California, San Diego in 1990.

Dr. Naar started as an assistant professor at the University of South Florida's Department/College of Marine Science in 1990. In 1996, he became an associate professor and in 2020, a full professor. His research interests include microplate tectonics, propagating rifts, plate motions, seamount chains, and seafloor mapping from deep ocean trenches to the shoreline, including mapping several marine protected areas from American Samoa to Florida. These interests and his role overseeing the graduate program have meshed well with the education component of the USF-NOAA Center for Ocean Mapping and Innovative Technologies. Dr. Naar has served on several panels and working groups for the National Science Foundation, Ocean Observatory Initiative, Ocean Drilling programs, NOAA, and on the United States Scientific Advisory Committee.



MONICA DUFAULT
Budget Director, College of Marine Science
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Ms. Monica Dufault Leake is the Budget Director for the College of Marine Science. She received her Master's degrees in Research Administration and Nonprofit Management from the University of Central Florida. She began her career in higher education and research administration at the University of Central Florida from 2000-2007 before relocating to Baltimore to work at Johns Hopkins University from 2007-2011. Dufault returned to Florida in 2011 to join the College of Marine Science as the Manager of Business and Fiscal Administration.



TIM TROWBRIDGE
Unit HR Administrator, College of Marine
Science
(727) 553-3375
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Mr. Tim Trowbridge is the Unit HR Administrator for the College of Marine Science. He received his bachelor's degree in business management and minor in leadership studies from the University of South Florida in 2008.

Since that time, he has been employed by the University of South Florida serving as the Unit HR Coordinator for the Student Affairs Shared Services Center from 2009-2011 and in the College of Marine Science from 2011-2012. In May 2012, Trowbridge was promoted to Unit HR Administrator and continues to serve in this role. He earned his Professional in Human Resources (PHR) certification in December 2013 and earned Certified Research Administrator (CRA-USF/basic) designation in August 2015.



JOSEPH DONNELLY
Facilities Project Manager, College of Marine
Science
MS, University of South Florida, 1986
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Mr. Donnelly is the Facilities Project Manager for the College of Marine Science. He received his bachelor's degree in marine biology from the University of West Florida in 1980 and master's degree in marine science from USF in 1986. From 1985 through 2006, he was an assistant/associate in research at CMS working with Dr. José Torres studying the biology and ecology of midwater fish and invertebrates. From 1988 to 1997 he also worked as an adjunct instructor in Earth Science and Oceanography at St. Petersburg Junior College (now St. Petersburg College). After recovering from a serious work-related accident in 2006, he took on the newly-created position of CMS Facilities Manager in 2008. Donnelly currently serves on several CMS committees (Space, Safety, and Computer) and is also a member of the USFSP campus EMT, which deals with all matters relating to the USFSP Campus Emergency Management Plan (CEMP).



KRISTEN KUSEK
Director of Strategic Communications
MS, MA, University of South Florida, 1998
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Ms. Kusek has operated as our Director of Strategic Communications since late 2018. Her primary job is to lead the communications strategy for the College, as well as the tactical execution of that strategy.

She serves as the chief storyteller for the College, and is responsible for print and/or digital news, collaborating with USF's news teams on media outreach, and for supporting outreach, strategic fundraising, and community engagement initiatives. She is also spearheading the newest education outreach STEAM program in the CMS portfolio, a partnership with Boys & Girls Clubs of the Suncoast that is focused on coastal resiliency called Guardians of the Gulf. The first to earn dual master's degrees in marine science and journalism/mass communications from USF, Kusek brings to her cross-functional role nearly 25 years of experience working on all sides of the science communications landscape. Her passion is developing programs that leverage the power of storytelling to inspire, educate, and empower. Before boomeranging back to USF, she served as Chief Communications and Development Officer for the Boston-based global nonprofit Earthwatch Institute, where her team raised more than \$4 million annually while implementing creative education and marketing campaigns that increased expedition engagement year over year. Career highlights include reporting live from expeditions in the South Pacific and the Arctic, spearheading Earthwatch's first virtual reality experience, leading Harvard's Wyss Institute for Biologically Inspired Engineering in its communication strategy, serving as creative education director in an NSF-funded IMAX film "Volcanoes of the Deep Sea," and founding a Science Journalism Center at USF.



RENATE GOTTSCHÉ

Executive Administrative Specialist

M.Ed., Plymouth State University 2018

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Ms. Renate Gottsche is the Executive Administrative Specialist to the Dean of the College of Marine Science. She received her M.Ed. from Plymouth State University. Prior to moving to Florida in 2019 to join the College of Marine Science, Renate worked at the University of New Hampshire. Renate is the first point of contact for the Dean's office. She manages the Dean's calendar, organizes meetings and events for the college, oversees the college's foundation accounts, and acts as a liaison with other colleges, and collaborators in federal and state agencies. She is the central resource person for information, referral, and assistance.

MEET OUR FACULTY & RESEARCHERS

BIOLOGICAL OCEANOGRAPHY



[Dr. Maggie Brisbin, Assistant Professor:](#)

Microbiology, Phytoplankton ecology, Meta 'omics, Bioinformatics



[Dr. Dreux Chappell, Associate Professor:](#)

Marine Microbial Ecology, Marine Microbiology and 'OMICS, Phytoplankton Physiology, Trace Metal Biogeochemistry, Nitrogen Fixation



[Dr. Cameron Ainsworth, Associate Professor:](#)

Fisheries Biology, Ecosystem and Resource Management, Population Modeling



[Dr. Mya Breitbart, Distinguished University Professor:](#)

Genomics, Marine Microbiology, Wastewater Microbiology, Marine Viruses



[Dr. Kendra Daly, Professor:](#) Zooplankton Ecology, Gulf of Mexico and Antarctic Ecosystems, Ocean Observatories, Sensor Technology

BIOLOGICAL OCEANOGRAPHY



[Dr. Joshua Kilborn, Research Assistant Professor:](#) Ecosystem-based Fisheries Management, Fish Ecology; Statistical Analyses, Data Visualization



[Dr. Frank Muller-Karger, Professor:](#) Marine Biodiversity, Marine Ecosystem Health, Satellite Remote Sensing, Climate Change



[Dr. Steve Murawski, Research Professor and St. Petersburg Downtown Partnership Peter R. Betzer Endowed Chair:](#) Fisheries Biology, Marine Ecology, Pollution Impacts, Ocean Mapping and Undersea Technologies



[Dr. Ernst Peebles, Associate Professor:](#) DNA Barcoding, Otolith Microchemistry, Stable Isotope Analysis



[Dr. Brad Seibel, Professor:](#) Physiological response of marine animals to extreme environments, ocean acidification, deoxygenation and warming, polar and deep-sea biology, biology of mollusks

BIOLOGICAL OCEANOGRAPHY



[Dr. Chris Stallings, Associate Professor](#): Fish Ecology, Marine Conservation

CHEMICAL OCEANOGRAPHY

*Planned search to hire two new chemical oceanographers (joining faculty in fall 2023)



[Dr. Kristen Buck, Associate Research Professor](#) (and now at Oregon State University): Trace Metal Biogeochemistry



[Dr. Robert Byrne, Distinguished University Professor](#): Ocean Acidification, Seawater Trace Element Chemistry, Seawater Chemistry Method Development



[Dr. Tim Conway, Associate Professor](#): Marine Trace Metals, Metal Isotopes, Biogeochemistry, GEOTRACES

CHEMICAL OCEANOGRAPHY



[Dr. Isabel Romero, Research Assistant](#)

[Professor:](#) Organic Geochemistry, Environmental Chemistry, Deep Sea Ecosystems, Ecosystem Resilience

GEOLOGICAL OCEANOGRAPHY



[Dr. Jackie Dixon, Professor and former Dean:](#)

Geochemistry, Igneous Petrology, Marine Volcanology



[Dr. Alastair Graham, Associate Professor:](#)

Antarctic Climate History, Seafloor Exploration, Polar Marine Geology, Remotely Operated and Autonomous Instruments for Sea-Floor Exploration



[Dr. Pamela Hallock Muller, Professor:](#)

Bioindicators, Coral Reef Ecology, Foraminifera, Sediment Cores

GEOLOGICAL OCEANOGRAPHY



[Dr. Cheryl Hapke, Research Professor:](#) Coastal Erosion, Coastal Resiliency, Seafloor Mapping, Hurricane Impacts



[Dr. David Naar, Professor and Associate Dean:](#) Sea Floor Mapping, Plate Tectonics



[Dr. Brad Rosenheim, Associate Professor:](#) Paleoceanography/Paleoclimate, stable isotopes, carbon cycling, Antarctica



[Dr. Amelia Shevenell, Associate Professor:](#) Paleoceanography/Paleoclimate; ice sheet instability, Antarctica, Sediment Cores, Sea Level Rise

PHYSICAL OCEANOGRAPHY

**Dr. Brian Barnes, Research Assistant**

Professor: Satellite Remote Sensing, Ocean Optics, Coastal Water Quality



Dr. Don Chambers, Professor: Using satellite observations to understand climate change and ocean dynamics, Sea Level Rise, Ocean Circulation, Glaciers

**Dr. Boris Galperin, Associate Professor:**

Atmospheric, Oceanic and Planetary Turbulence; Theory, Modeling, Experiments; Geophysics



Dr. Chuanmin Hu, Professor: Ocean Optics, Remote Sensing, Harmful Algal Blooms, Coastal Water Quality and Pollution

**Chad Lembke, Research Assistant Professor:**

Ocean engineering, AUVs/ROVs, Sensors, Gliders to study ocean circulation, harmful algal blooms, fish biomass, seafloor mapping

PHYSICAL OCEANOGRAPHY



[Dr. Yonggang Liu, Research Associate](#)

[Professor](#): Ocean Circulation (Focus: Gulf of Mexico, Tampa Bay), Coastal Oceanography, Computer Modeling, Storm Surge, Florida Red Tides



[Dr. Mark Luther, Associate Professor](#):

Maritime Safety and Security; Real-Time Ocean Observation Systems; Numerical Models of Ocean Circulation



[Dr. Gary Mitchum, Professor and Associate](#)

[Dean](#): Climate Change, Ocean Eddies, Satellite Remote Sensing, Sea Level Rise

SEE ALSO:

- Researchers, [Researchers | USF College of Marine Science](#)
- Postdoctoral Researchers, [Postdoctoral Researchers | USF College of Marine Science](#)
- Courtesy Professors, [Courtesy Professor | USF Collège of Marine Science](#)

GRADUATE PROGRAM



GRADUATE PROGRAM HIGHLIGHT FROM 2022

Academic Programs:

The year 2022 continued to throw challenges due to the continuation of the Covid-19 pandemic. Classes were delivered in a spectrum of modes in an effort to provide quality education within the constraints of staying safe. Courses that were taught asynchronously continued without interruption, especially the undergraduate asynchronous online version of OCE 2001, Introduction to Oceanography, which was taught to approximately 1000 undergraduates in 2022 by Dr. Ana Arellano and her team of teaching assistants. Progress towards an online USF Muma College of Business MBA with a concentration in the Blue Economy was completed and submitted for approval for a Fall 2023 start date. The hydrographic concentration has half a dozen students in 2022 and more arriving in 2023.

Student Affairs:

Recruitment events for Fall 2022 were conducted in person in 2022. Online student evaluations for the courses taught in 2022 remain strong. New student activities run by the MSAC group continued to unite the students both virtually and in person. The endurance and flexibility of the students shown in 2022 was impressive.

Student Body Enrollment:

About 87 students were enrolled in the Graduate Program, with 17 (~20%) underrepresented US citizens (as defined by the National Science Foundation) and 12 (~12%) international students.

Active efforts to recruit and hire new faculty has led to a ~45% increase in total student enrollment for the upcoming Fall 2023 semester.

New Students in 2022

8 students entered the PhD program

3 students entered the MS program

Degrees Conferred in 2022

5 PhD

6 MS

Orientation Activities for New Students

Ten new students participated in New Student Orientation August 15-18, 2022. The students were introduced to campus staff, culture, and resources over three days, and a fourth day was spent completing Academic Writing & Presentation Workshops with Dr. Vernetta Mosely. A Canvas course was also created to serve as a resource hub and host online trainings lab safety, campus emergency preparedness, and mandatory reporting. Student retain access to the Canvas course throughout their degree program.

Prior to the start of Orientation, students received monthly communications from CMS, called Cohort News, with information to assist their transition to graduate school and CMS. Each student received a one-on-one welcome meeting with Ms. Sami Francis, the Associate Director of Academic Affairs, to review the graduate handbook, funding, and the student's individual plan of study.

Mentorship Program for New Students

New students were also paired with a current student to serve as their peer mentor in coordination with each lab and professor. These peer mentors help answer questions related to housing and preparing to do classwork, research, etc. The peer mentors received training and guidelines during a mentoring workshop.

Diversi-Teas

Diversi-Teas are a safe space to hold college-wide conversation on societal issues that students, staff, and faculty wish to discuss. These conversations occur a couple times per the semester.

Student Workshops provided to students, staff, and faculty:

- Monthly Student Lunches with the Dean
- Graduate Student Symposium where students give a talk regarding their research
- Various USF workshops sponsored by the Office of Graduate Studies and the Library
- Various Student run events coordinated by the Marine Science Advisory Committee

Undergraduate Teaching by Marine Science faculty and adjuncts (11 sections, 5 courses, and ~ 1000 students total enrolled)

Introduction to Oceanography - Tampa campus (Greely)

Introduction to Oceanography - Online (Arellano)

Geological History of Florida - Online (Arellano)

Marine Aquaculture - Online (Main)

Port Sustainability - Online (Luther)

Student Publications

25 publications by 17 students

15 first-authored by students

Student Presentations

26 students gave 53 presentations or talks in 2022. Of those 53 presentations, 12 were given virtually, 32 were in person in the US and its territories, and 9 talks were given in 8 unique countries internationally.

2022 Graduate Student Symposium

2022 saw the return of an in-person Graduate Student Symposium. Twenty Master's and doctoral students presented research in their choice of three categories: oral presentation with results; oral presentation without results; and a poster session. Students and faculty judged the presentations and awarded top marks to the following students:

- Hannah Hunt – Poster 1st place
- Kylee Rullo – Poster 2nd Place
- Alexander Ilich – Oral Presentation with Results 1st Place
- Caitlyn Parente – Oral Presentation with Results 2nd Place
- Emily Kaiser – Oral Presentation without Results 1st Place

The 2022 GSS Committee included:

- Dylan Halbeisen, PhD student
- Emily Kaiser, PhD student
- Nicola Guisewhite, Master's student
- Hannah Hunt, PhD student
- Carlyn Scott, Master's student
- Catherine Dietrick, PhD student
- Macarena Martín Mayor, PhD student

DEGREES OFFERED

The following degrees and concentrations are offered at the College of Marine Science: Master of Science (M.S.) and Doctoral (Ph.D.) degrees in Marine Science with a Concentration option in: Biological Oceanography, Chemical Oceanography, Geological Oceanography, Hydrography, Marine Resource Assessment (MRA), and Physical Oceanography.

STUDENTS GRADUATED IN 2022

Doctoral (5)

Andres, Alyssa, advised by Brad Seibel, summer, *The Gulf of Mexico and Their Acute Effects on Coral Bleaching*

Chancellor, Emily, advised by Steve Murawski, fall, *Quantifying Environmental Sensitivity of Marine Resources to Oil Well Blowouts in the Gulf of Mexico*

Michaud, Brianna, advised by Ernst Peebles, summer, *Empirical and modeled $\delta^{13}C$ and $\delta^{15}N$ isoscapes in the Gulf of Mexico and their application to fish eye lens migration studies*

Schockman, Katelyn, advised by Bob Byrne, fall, *Determinations of chemical equilibria in natural waters using spectrophotometric techniques*

Zhang, Yingjun, advised by Chuanmin Hu, summer, *Ocean Eddies and Frontal Zones in the Gulf of Mexico and Straits of Florida*

Master's (6)

Boisvert, Tiffany, advised by Chris Stallings, summer, *Continuous Effort Required to Maintain Populations of Outplanted *Acropora cervicornis* in the Florida Reef Tract, USA*

Bunnell, Zach, advised by Tim Conway, summer, *Elucidating the Sources Supplying Aerosol Iron, Zinc, and Cadmium to the Surface of the North Pacific Ocean with Stable Isotopes*

Ferguson, Megan, advised by Kendra Daly, summer, *Zooplankton Biodiversity in the Northeast Gulf of Mexico and on the West Florida Shelf from 2005-2014*

Martin, Tynisha, advised by Brad Rosenheim, summer, *Coupling ^{210}Pb and ^{14}C to Constrain Carbon Burial Efficiency of Blue Carbon Ecosystems*

Plafcan, Martina, advised by Chris Stallings, summer, *Chronological Accumulation of Microplastics in the Gulf of Mexico and Their Acute Effects on Coral Bleaching*

Williams, Ian, advised by Ernst Peebles, fall, *Interactions between juvenile estuary-dependent fishes and microalgal dynamics*

STUDENT HONORS, AWARDS, AND ACHIEVEMENTS

2022 Awards by the Numbers Totaling \$991,033:

College-based Student Fellowships & Awards: \$497,000

Funding from outside of CMS: \$494,033

Of which come from reoccurring (multi-year) awards: \$307,000

Of which come from one-time awards: \$187,033

&

Of which comes from External Fellowships & Awards: \$366,033

Of which comes from University-based Fellowships & Awards: \$128,000

2022 STUDENT AWARDS AND HONORS from external sources

Rosemary Burkhalter Castro, NSF Graduate Research Fellowship Program Honorable Mention

Savannah Hartman, Excite the Dream Scholar, Old Dominion University

Theresa King, US Antarctic Service Medal, US Antarctic Program

Jessica Caggiano, 2020 NASA Earth Science FINESST Future Investigator for project 19-EARTH20-0209, Understanding Surface Wave Signals in SWOT Altimetry (Year 2 of 3-year award totaling \$128,000), \$43,000

Bea Combs-Hintze, Ron McDowell Student Travel Grant, GEOHAB, \$5,000

April Ellis, Collaborative National Science Foundation Research Traineeship (NSF NRT) STRONG Coasts Doctoral Fellowship, \$32,000

Dylan Halbeisen, NSF Graduate Research Fellowship 2022 Fellow (Year 1 of 3-year award totalling \$128,000), \$43,000

Hannah Hunt, Graduate Student Coastal and Ocean Fellowship, Florida Sea Grant, \$25,000

Alex Ilich, Ron McDowell Student Support Award, GeoHab, \$2,500

Emily Kaiser, International Conference on Paleoceanography Student Travel Grant, PAGES & ICP13, \$1,000

Theresa King, Abby Sallenger memorial Award, \$2,500

Natalia López Figueroa, 2022 - 2024 NOAA Margaret A. Davidson Graduate Fellowship (Year 1 of 2-year award totalling \$120,000), \$60,000

Delfina Navarro-Estrada, NSF Graduate Research Fellowship 2020 Fellow (Year 2 of 3-year award totalling \$128,000), \$43,000

Katherine Neilson, Florida Department of Environmental Protection/Apalachicola National Estuarine Research Reserve Research Fellowship, \$45,000

Jonathan Peake, The Guy Harvey Scholarship, \$5,000

Tiff Raetzel, Donald R. Shepherd Graduate Fellowship, University of Michigan Marching Band, \$10,000

Tiffany Raetzel, Fish Florida Scholarship, \$5,000

Lisa Rose-Mann, NOAA B-WETT scholarship, St Pete Innovation District, \$3,000

Kylee Rullo, Kaye Pearson Memorial Scholarship, Fish Florida, \$10,000

Natalie Sawaya, Marine Microbes Best Poster Award, Gordon Research Conference, \$333

Rebecca Scott, Jane Applegate Promising Scholar Award, USF Women in Leadership and Philanthropy, \$5,000

Mostafa Soliman, Embassy of the Arab republic of Egypt Cultural and Educational Bureau Fellowship (recurring), \$21,000

Luis Sornias Morales, Vembu Subramanian Ocean Scholars Award, Southeast Coastal Ocean Observing Regional Association (SECOORA), \$1200

Jessica Van Vaerenbergh, NOAA B-WETT scholarship, St Pete Innovation District, \$3,000

Christina Welsh, Grace Klein-MacPhee Travel Award, Larval Fish Conference, \$500

2022 STUDENT AWARDS AND HONORS from University Awards

Olivia Blondheim, USF Presidential Fellowship (Resumed, Year 5 of 5-year award totalling \$160,000), \$32,000

Rosemary Burkhalter-Castro, USF Delores Auzenne Fellowship (Year 2 of 3-year award totalling \$30,000), \$10,000

Sophia Emmons, USF Graduate Student Success Fellowship (Year 1 of 3-year award totaling \$30,000), \$10,000

Savannah Hartman, Florida Education Fund McKnight Doctoral Fellowship (Year 5 of 5-year award totaling \$36,000), \$12,000

Naja Murphy, Florida Education Fund McKnight Doctoral Fellowship (Year 3 of 5-year award totaling \$36,000), \$12,000

Kennedy Quillen, USF Graduate Student Success Fellowship (Year 1 of 3-year award totaling \$30,000), \$10,000

Jing Shi, USF Presidential Fellowship (Renewed, Year 4 of 5-year award totalling \$160,000), \$32,000

Marty Sims, USF University Graduate Fellowship, \$10,000

2022 STUDENT AWARDS AND HONORS from endowed sources

Sarah Bartoloni, Paul Getting Endowed Memorial Fellowship in Marine Science, \$13,000

Imogen Browne, William and Elsie Knight Endowed Fellowship Fund for Marine Science (2017, renewed), \$28,000

Shannon Burns, Gulf Oceanographic Charitable Trust Fellowships Endowment, \$12,000

Bea Combs-Hintze, Young Fellowship Program Fund, \$13,000

Calyn Crawford, Wells Fargo Fellowship in Marine Science, \$10,000

Kalla Fleger, St. Petersburg Downtown Partnership Fellowship in Coastal Science, \$15,000

Nicola James Guisewhite, Tampa Bay Parrot Head Fellowship in Marine Science, \$10,000

Margaret Hanley, Von Rosenstiel Endowed Fellowship, \$26,000

Alexander Ilich, William and Elsie Knight Endowed Fellowship Fund for Marine Science (2017, renewed), \$28,000

Emily A. Kaiser, Thomas E. Pyle Memorial Fellowship in Marine Science, \$10,000

Keith Keel, Bridge-to-Doctorate Endowed Fellowship (Year 2 of 2-year award, totally \$24,000), \$12,000

Macarena Martín Mayor, Kent A. Fanning Endowed Fellowship in Marine Science, \$10,000

Siria Muñoz Navarro, Von Rosenstiel Endowed Fellowship, \$26,000

Naja Murphy, Jack and Katharine Ann Lake Fellowship in Marine Science, \$13,000

Caitlyn Parente, Linton Tibbetts Endowed Graduate Student Fellowship, \$10,000

Tiff Raetzel, Oceanography Camp for Girls Fellowship, \$10,000

Sara Reinelt, Von Rosenstiel Endowed Fellowship, \$26,000
Hallie Repeta, Southern Kingfish Association's Fellowship, \$10,000
Isabella Ritchie, Von Rosenstiel Endowed Fellowship, \$26,000
Lisa Rose-Mann, Norman Blake Endowed Memorial Fellowship in Marine Science, \$10,000
Catalina Rubiano, Sanibel-Captiva Shell Club / Mary & Al Bridell Memorial Fellowship, \$10,000
Kylee Rullo, Carl Riggs Fellowship in Marine Science, \$10,000
Natalie A. Sawaya, Renate E. Bernstein Outstanding Authorship Award, \$1,000
Natalie A. Sawaya, William and Elsie Knight Endowed Fellowship Fund for Marine Science (2020, renewed), \$28,000
Katelyn Schockman, William and Elsie Knight Endowed Fellowship Fund for Marine Science (2019, renewed), \$28,000
Michael J. Schram, William T. Hogarth Fellowship in Marine Mammals, \$10,000
Rebecca L. Scott, Garrels Memorial Fellowship in Marine Science, \$15,000
Jill Thompso-Grim, William and Elsie Knight Endowed Fellowship Fund for Marine Science (2022), \$28,000
Alexander W. Timpe, William and Elsie Knight Endowed Fellowship Fund for Marine Science (2021, renewed), \$28,000
Christina J. Welsh, Gulf Oceanographic Charitable Trust Fellowships Endowment, \$12,000

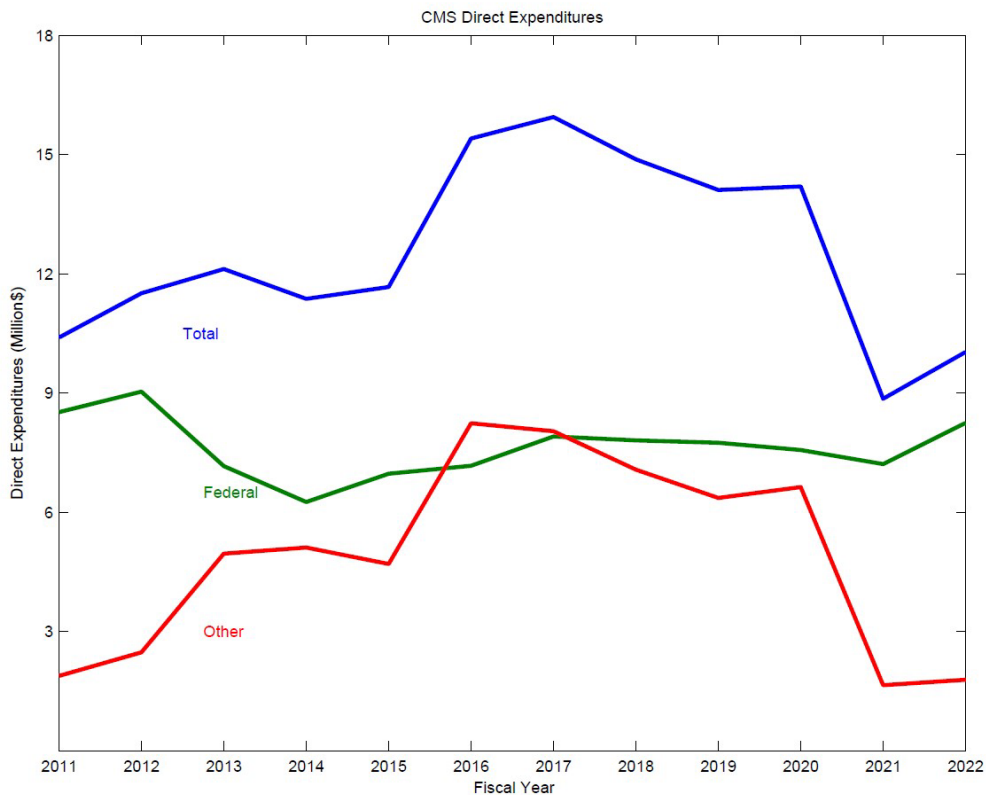
STUDENTS in the NEWS

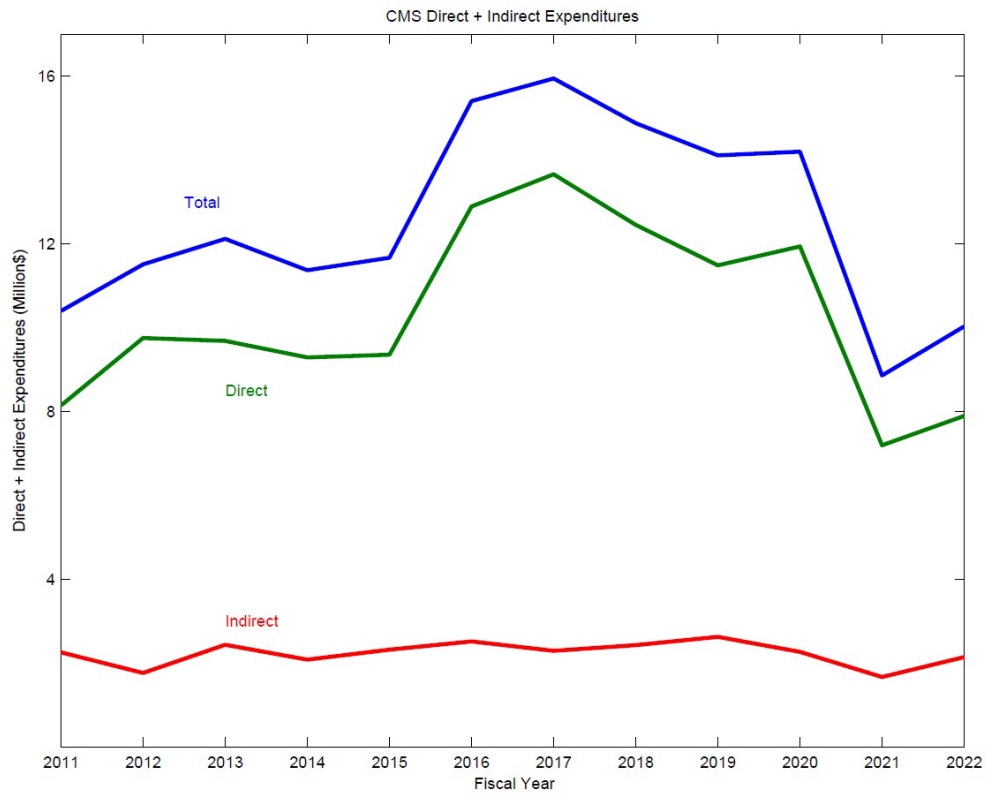
Alyssa Andres (recent PhD, Seibel lab) and Sophia Emmons (Brad Seibel's newest student) were interviewed by Nat Geo and were both featured on the "City Bites" and "Taste for Men" episodes of Shark Fest on Disney+

CMS RESEARCH

EXCELLENCE IN RESEARCH

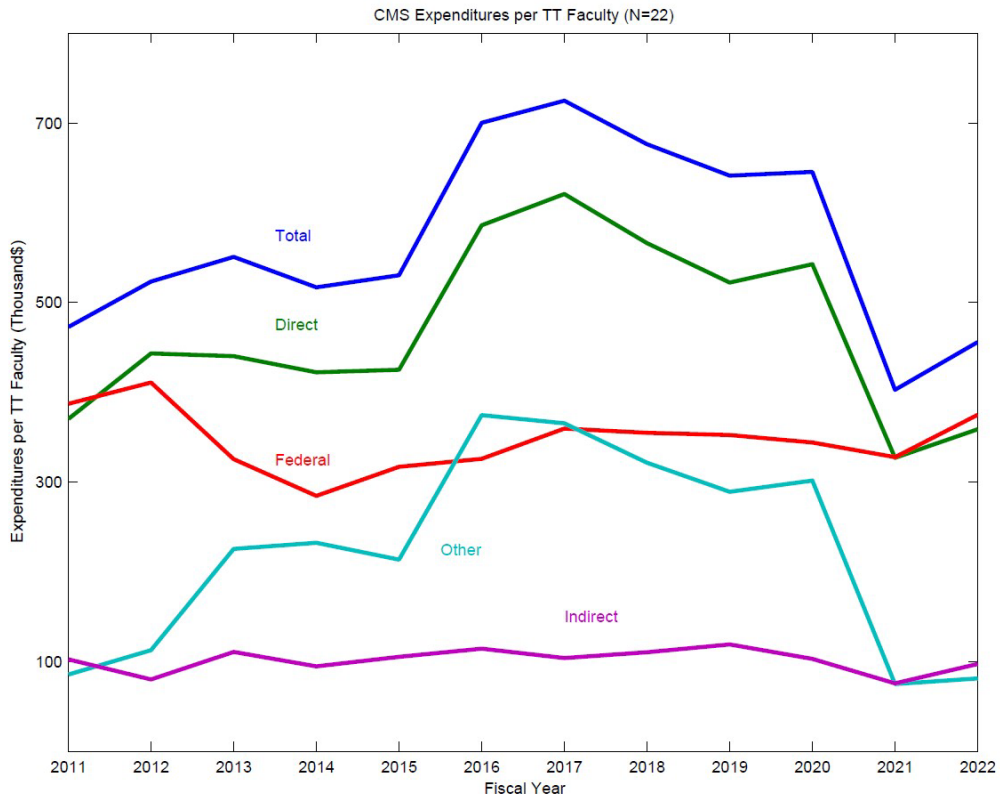
This year we are seeing the expected increase in research expenditures as we come out of the pandemic era. Total expenditures are up and the largest increase is in Federal expenditures. The Other expenditures are down from the level of the past 7 years, but this is because the large increase from 2016 to 2020 due to the C-IMAGE project (funding obtained after the Deep Water Horizon disaster) ended. Once that is accounted for, the Other category is also increasing. Note carefully that the CMS success at the Federal level has been stable during the pandemic, which also means that the F&A recovery rate has also remained stable. Finally, although the data are not final yet, the preliminary data for the coming fiscal year show continued upward trends in all categories and we look forward to sharing that data next year.





ANNUAL RESEARCH EXPENDITURES PER FACULTY

As expected for a research-intensive unit, our faculty generally have some of the highest per faculty research performance metrics in the university. The long-term level has been about \$500,000 per year, with an increase of about 20% during the C-IMAGE years. Despite the COVID pandemic our faculty continued at close to this level and this year are back on track. The largest post-pandemic increases are in Federal expenditures, which also means increases in F&A recovery. As we mentioned above, the preliminary data from the coming year show substantial increases and we look forward to reporting those numbers next year. Also, a number of new projects have started in the past year that will substantially increase these metrics.

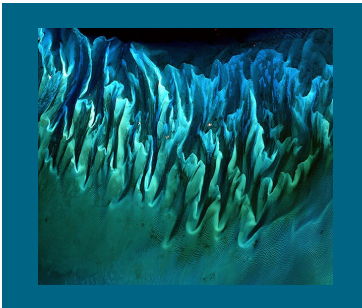


FACULTY HIGHLIGHTS



Dr. Bob Weisberg retired in 2022. He also became an AGU Fellow.

- [Hustle and flow: USF studies how water moves in Tampa Bay](#)
- [Dr. Bob Weisberg retirement 2022 video](#)
- [Robert H. Weisberg was elected as an AGU Fellow | USF College of Marine Science](#)



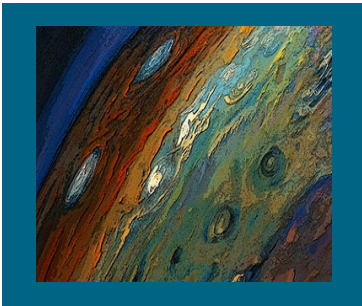
Dr. Frank Muller-Karger was awarded the 2021 William T. Pecora Award, [Dr. Frank Muller-Karger Receives 2021 William T. Pecora Award | USF College of Marine Science](#). He was also appointed by Dr. Rick Spinrad, the NOAA Administrator, to serve as a member of the Ocean Exploration Advisory Board (OEAB).



Dr. Don Chambers became a member of the Committee on Earth Sciences and Applications from Space (CESAS).



Dr. Mya Breitbart became a Distinguished University Professor - [Mya Breitbart, “virus hunter” at the CMS, named Distinguished University Professor | USF College of Marine Science.](#) Earlier in the year she was inducted into the Academy of Science, Engineering and Medicine of Florida (ASEMFL) -- [Academy of Science, Engineering and Medicine of Florida Announces Selection of 15 New Members for 2022 | USG College of Marine Science \(usf.edu\).](#)



Dr. Boris Galperin's work was pivotal in advancing the science of turbulence. [Advances in the science of turbulence | USF College of Marine Science](#)

ALUM SPOTLIGHTS



[Dr. Lee Kump \(Class of 1986\)](#), Dean of the College of Earth and Mineral Sciences at Penn State University, was elected to the National Academy of Sciences. Kump is the only Ph.D. student from USF's history to do so.

Dr. Christin Murphy (Class of 2013) runs the Navy's Bio-Inspired Research and Development Lab. Our communications team did a Q&A with her to learn more: [A Q&A with Dr. Christin Murphy | USF College of Marine Science](#)

Dr. Erica Ombres (Class of 2013) about her work managing NOAA's Ocean Acidification Program in Washington, DC. [Q&A with CMS Alum Dr. Erica Ombres | USF College of Marine Science](#)

EDUCATION & OUTREACH

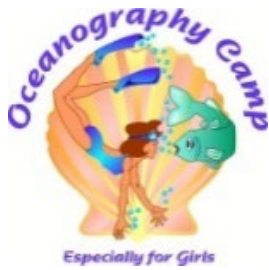
Dr. Teresa Greely, is a teaching faculty and leads the college's education and outreach (E&O) programs in support of the USF mission for community engagement. Makenzie Kerr works part-time with E&O programs, and contributed significantly to our 2022 successes. The accomplishments in E&O reflect a diversity of programs and events that have advanced ocean literacy, coastal field experiences, and research amongst K-12 teachers and their students, undergraduate and graduate students, as well as collaborations with scientist and community agencies. E&O programming returned to full operations with the addition of new programming through public/private partnerships to expand innovation and creativity. Overall, E&O programs directly served 1,800 individuals, including 1,175 K-12 students, 254 college students, 152 K-12 teachers, and 219 other adults.



The Spoonbill Ocean Sciences Bowl. The annual Spoonbill academic ocean brain bowl continued for its 18th year. During springtime we hosted **70 high school students, 11 teacher coaches, 24 college students, and 25 scientists**, representing 12 Florida high schools. Guest scientists were Gary Mitchum and Cheryl Hapke, who addressed the theme, Climate Change: Ocean Science & Solutions. Seventy-five volunteers, both returning and new, represented Eckerd College, FMSEA, FWCC, New College, NOAA, Ocean Optics, USGS, USFSP, and USF Marine Science.



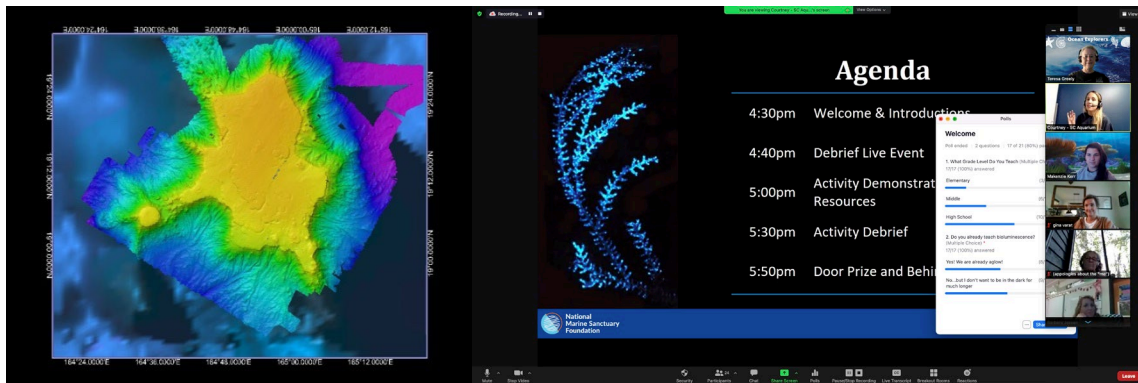
(Left, OCGers in molecular medical research lab of Dr. Larry Dishaw; center, OCGers aboard R/V Angari examining a sediment sample; right, OCGers as ocean stewards during coastal cleanup)



The Oceanography Especially Camp for Girls. Our pre-college STEM program returned to in-person and continued to encourage teens to consider careers in the sciences while developing a positive sense of self, science, and the environment. More than **1,280 teenaged girls have completed the 3-week program. This past summer 30 teens, 12 peer counselor teens, and 15 science mentors participated in the OCG.** Graduate and undergraduate students served as science mentors alongside professional staff, and participating scientists from FWCC, USGS, NOAA and CMS. In addition to providing ten coastal field expeditions and three research cruises, teens joined research labs across USF campuses to engage with scientists and the tools of their science used to answer current questions being pursued about the ocean and our coastlines.



Teacher Professional Development. As a NOAA Ocean Exploration facilitator, Greely led a series of Teacher Professional Development opportunities. During 2022 NOAA facilitators helped NOAA continued with virtual only PD series, the Deep Ocean Education Project, and companion website. Springtime Florida teachers learned about '*Deep Sea Corals*' and '*Deep Ocean Seamounts*' in partnership with National Marine Sanctuaries Foundation, Schmidt Foundation, and Ocean Exploration Trust. NOAA OE strives to engage broad audiences to enhance America's environmental literacy through the excitement of ocean discovery following the NOAA Ship *Okeanos Explorer*. The program provides multimedia resources for teachers, students and the public. **Over 120 teachers participated in the virtual educator PD series.** CMS alum, Dr. Christina Kellogg, participated as our guest scientist for Q&A with teachers during the deep sea corals PD event. The images below are of a seamount (left image), and Dr. Teresa Greely, as a guest scientist for Q&A with teachers during PD events for CMS and the South Carolina Aquarium (right image).



Clam Bayou Marine Education Center. Activities include teaching graduate course, coastal field trips for K-12 and UG students, Service Learning, Environmental Monitoring using GLOBE protocols for hydrology and atmosphere, and Teacher Professional Development events. During Fall semester USFSP Environmental Sciences classes visited for field demonstrations of the atmospheric and water monitoring systems installed on site in partnership with SECOORA. The Clam Bayou location was provided coastal field trips for **138 K-12 students, 210 college students, 25 adults**. The Clam Bayou location also hosted distinguished guests from the USDOS "Hidden No More" Empowering Women Leaders in STEM, delegates from Armenia, Dominican Republic, Kyrgyz Republic, Mexico, Philippines, Tunisia & Zambia, US Dept. of States International Visitor Leadership Program.



Leadership St. Petersburg Class of 2022 selected the Clam Bayou Marine Education Center as its class project, 'Waves of Inspiration.' The project mission is to enhance the outdoor spaces by May 2022 as a way to foster improved comfort, enjoyment, and by extension, enhanced learning. Class members will create cool, attractive surface areas to extend teaching and recreational space to outdoor areas during the hot summer months; enhance accessibility through inviting connectors and pathway; and, improve landscaping with native Florida seaside plants to educate the youth about coastal ecology. The class donated over \$125,000 of improvements to the property.

Another significant improvement to the Center were the additional of solar panels and installation donated by friends of the College and Clam Bayou, Peter and Susan Betzer, valued at over \$27,000. The Clam Bayou Marine Education Center is now providing surplus energy for the power grid and will be a wonderful teaching concept and demonstration site for alternative energy use.



**NOAA
FISHERIES**

Coastal Field Trips for St. Petersburg's youngest scholars. Second award (\$95,000) from NOAA Gulf of Mexico Bay-Watershed Education and Training (B-WET) grant to continue providing coastal field trips for elementary scholars and teachers, in grades 4-5 in south St. Petersburg Title I schools adjacent to the Clam Bayou Marine Education Center. This was version 2.0 of our The Elementary Scholars and Teachers Exploring the Watershed program that aims to continue educating St. Petersburg, Florida's 4th and 5th grade students about what makes their home a unique and special ecosystem, how people can influence the Tampa Bay watershed, and how youth can make a difference as ocean stewards. To date, **Total ~175 Elementary students, 5 grad students, 11 teachers.**



New partnership with WorldStrides to provide a series of immersive, experiential coastal geology and ecology field trips for middle and high school students as part of WorldStrides Florida Science student education programs. We provided **over 700 students** with coastal ecology and geology field experiences at Pinellas county's Fort Desoto Marine Park and Caladesi Island State Park.

Other Education & Outreach included:

- Teaching undergraduate ocean science courses in Tampa and for the USFSP Honors College that included coastal field trips at Clam Bayou Marine Education Center and Caladesi Island for over **100 undergraduate students**.
- Supporting broader impact components of partnership grants and research faculty grants.
- Continued support of the Guardians of the Gulf program led by Sarah Grasty and Kristen Kusek, in partnership with the Boys & Girls Clubs of the Suncoast

Guardians of the Gulf (Sarah Grasty and Kristen Kusek)

March 22 - Smart City Showcase (Sponsored by the St. Petersburg Innovation District) on the USF St. Petersburg campus. We hosted an outside booth as part of this program. Guardians Program Director, Kristen Kusek, was also a panelist during a discussion about the future of tech in St. Petersburg that included Mayor Ken Welch. Additional attendees included City Council Members Ed Montanari and Gina Driscoll, as well as several other business and city leaders from Charter-Spectrum, the City of St. Petersburg, US Ignite, and Duke Energy.



April 26 - GOMCON (Gulf of Mexico Conference). Sarah Grasty delivered an oral presentation on the Guardians program in Baton Rouge, LA (Guardians of the Gulf – A multisensory, informal STEAM program about resiliency for underserved youth)



June 2022 – We completed the prototype of a gamified Guardians of the Gulf app that leverages augmented reality to teach youth about coastal stewardship in a fun, engaging way. We developed three interactive experiences – two focused on saving sea turtle nests on Egmont Key, and one focused on how best to safeguard Egmont Key, which is under threat from erosion. This project was funded by a Creative Scholarship (Internal USF Award, \$9640.00) and included development of a professional introductory video. We will test the app during a Spring Break Guardians camp planned for March 2023. Partners: USF's Advanced Visualization Center team led by Howard Kaplan; Laura Harrison from the USF Access 3D Lab, who provided supporting digital assets (3D scans of Egmont Key); graphic designer Tessa Wilson; and subcontracts for the supporting video (Future Vision Multisensory Media).

October 2022 – We submitted a three-year, nearly \$1 million proposal to NOAA for “Guardians of the Gulf: Bolstering Resiliency in South St. Pete and Clam Bayou.” This was submitted to a new RFP under NOAA’s Coastal Habitat Restoration and Resilience Grants for Underserved Communities. Includes new proposed partnerships with USF’s Department of Anthropology, the Warehouse Arts District Association (WADA) in South St. Petersburg, EcoSphere Restoration Institute, Boys & Girls Clubs of the Suncoast, and more.

December 2022 – We were awarded a Tampa Bay Estuary Program (TBEP) Mini-grant for our proposal, Guardians of the Gulf: Green vs. Gray in Tampa Bay. The award amount was \$4998.23. This will include development of a youth-friendly video about green and gray infrastructure, development of a hands-on demo, and additional stewardship-related activities such as development and installation of a rain barrel. These will all be tested/installed during our Spring Break Guardians camp planned for March 2023.

Center for Ocean Mapping and Innovative Technologies (COMIT; Sarah Grasty)

Full Education and Outreach team: S. Grasty, S. Gilbert, D. Naar, K. Kusek, M. Hommeyer, S. Murawski, H. Clark, L. Hotaling, A. Graham

Year-Round Activities

2022 Webinar Series

March: [COMIT Webinar | Dr. Johnson Oguntuase \(USM\) - YouTube](#)

May: [COMIT Webinar | Dr. Leslie Sautter \(College of Charleston\) - YouTube](#)

August: [COMIT Webinar | Ms. Jennifer Jencks \(NOAA NCEI/IHO\) - YouTube](#)

October: [COMIT Webinar | Dr. Matthew Johnson-Roberson \(Carnegie Mellon Univ.\) - YouTube](#)

November: Dr. Morteza Karimzadeh (Univ. of Colorado) – no recording

December: [COMIT Webinar | Dr. Rachel Gittman \(East Carolina University\) - YouTube](#)

Quarterly Newsletters

[Feb. 2022 \(Vol 2, Issue 1\)](#)

[May 2022 \(Vol 2, Issue 2\)](#)

[Aug. 2022 \(Vol 2, Issue 3\)](#)

[Dec. 2022 \(Vol 2, Issue 4\)](#)

Podcast Series

[Episode #1](#) (of 3) launched in May 2022 for COMIT's podcast, *Deep Soundings*

Events/Key Dates

4/26 – Liesl Hotaling presented at GOMCON in Baton Rouge, LA on COMIT's education and outreach activities

8/8-12 – COMIT hosted a training workshop for the QPS software suite which included 6 students, 2 staff, 1 faculty from CMS; 2 undergrad students (1 now CMS grad student) from the College of Charleston; 1 graduate students from the University of Southern Mississippi; 1 professional from SeaTrac; and 1 professional who is an independent contractor.



10/11 – Harrison Clark presented at the Southeast Acoustics Consortium (SEAC) meeting on the Crowd-Sourced Bathymetry project plans at COMIT.

10/15-18 – Ali Graham's Marine Geophysical course included a training cruise (co-led by Matt Hommeyer) that hosted 6 students, 1 staff, 1 faculty from CMS; 1 student from the

College of Archeology at USF; and 1 graduate student and 1 faculty from the University of North Carolina.



12/1 – Sarah Grasty was invited as a guest panelist (alongside on Crowd-Sourced Bathymetry at the Florida Coastal Mapping Program meeting.

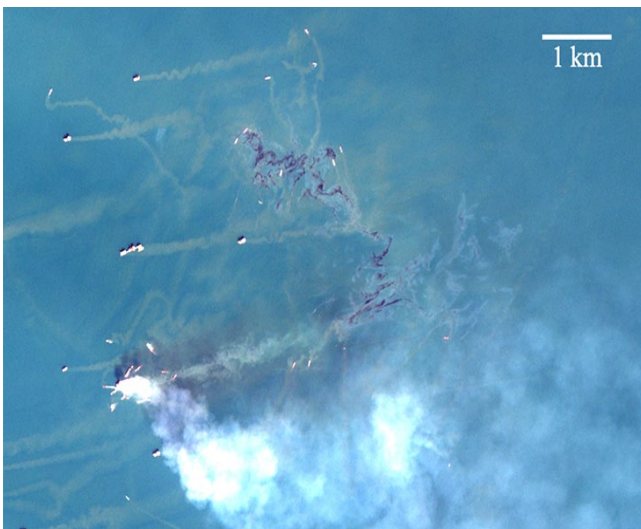
STORIES ABOUT OUR RESEARCH

Shrinking real estate for marine animals in warming seas?

Warming oceans have less oxygen and are therefore less “breathable” for marine life. Dr. Brad Seibel’s lab is teasing out the mysteries of “ocean deoxygenation.” Contrary to the dominant narrative, Seibel says not all species will react to changing ocean conditions in the same way. “We really need to drill down into animal physiology and better understand the ways that various species evolve and adapt to environmental conditions,” he said. In 2022 Seibel made great strides in better understanding how vertical migrators, such as krill and the jumbo squid, will respond to warming seas.



Eyes in the sky: humans responsible for 90% of oil slicks



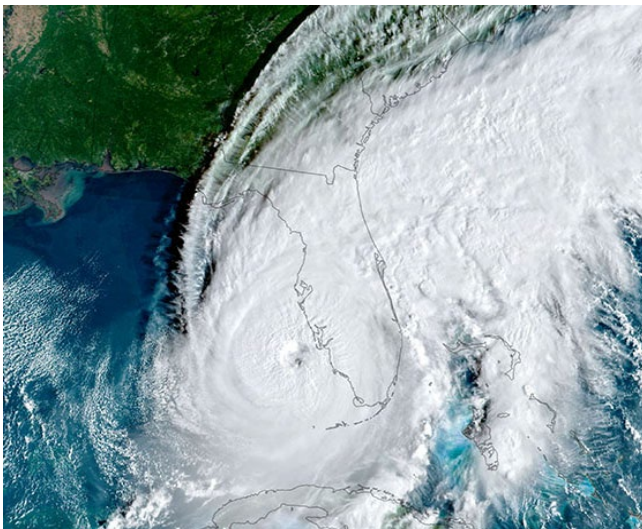
Dr. Chuanmin Hu was part of scientists who developed the first global map of chronic oil slicks in the ocean and found that more than 90% of them come from human sources -- significantly more than previously reported. He published the results in *Science*. “Most of these oil slicks are microscopically thin, widely observed, and different from major oil spills,” said Hu.

All eyes on Florida-sized Thwaites Glacier

The Thwaites Glacier in West Antarctica has been an elephant in the room for scientists trying to make global sea level rise predictions. A total loss of the glacier could raise sea level from three to ten feet. Dr. Alastair Graham led a first-of-its-kind study in *Nature Geoscience* that adds even more cause for concern. The team showed, using stunning high-resolution maps, that the glacier moved even faster in the past, which may not bode well for its future. This story was one of the top two performers for USF's press team – generating record-breaking coverage around the globe. It also ranked as the 2nd best study for the journal in terms of coverage and exposure and has been downloaded more than 60,000 times.



Cross-disciplinary team at CMS responds to Hurricane Ian



Days before Ian made landfall, as many Tampa Bay residents braced for double-digit storm surge, a model developed by the Ocean Circulation Lab told a different story. Tampa Bay would likely see reverse storm surge, according to the model -- flushing feet of water *out* of the bay. Read more about how the modeling team and others at the College responded to the call for science during and after this unprecedented storm.

Fjords: small but mighty planetary “thermostats”

There isn't a fjord to be found in Florida. Nevertheless Dr. Brad Rosenheim's lab at the College here in St. Pete was pivotal in a new study in *Science Advances* about fjords. “Fjords punch far above their weight in their ability to pull out a lot of carbon from the atmosphere and store it in the mud,” Rosenheim said. The study found that fjords are funky in acting as both a carbon sink and source.



Team detects toxic “forever chemicals,” or PFAS, in Tampa Bay



For the first time, a team led by the USF College of Marine Science (USF CMS) assessed the distribution and concentration of per- and polyfluoroalkyl substances (PFAS), or “forever chemicals,” in sediments and fishes in Tampa Bay. These initial results, reported in *Frontiers in Marine Science*, suggest cause for concern. The team found the highest concentrations of PFAS pollution in Old Tampa Bay and Hillsborough Bay.

COMMUNICATIONS UPDATE

MEET THE TEAM

Kristen Kusek

Communications Director

CMS alum Kristen Kusek ('98, MS, Marine Science, MA, Journalism/Mass Comm), Director of Strategic Communications, has managed the communications team and all external and internal communications since the fall of 2018. She is also program lead on the Guardians of the Gulf outreach program for underserved youth.

Jay Novitzke

Web Developer/Webmaster

Jay Novitzke, full-time webmaster, is responsible for designing, developing, implementing, and enhancing dynamic and technical websites for the graduate college and some of its partners and groups. In addition, he performs routine site updates, content management, content maintenance, custom UI/UX design builds, and various updates to ensure websites align with the goals and objectives of the USF CMS communication strategy. Jay continuously increases visibility and interaction among people and ideas in virtual communities and networks through social media platforms, search engine optimization, and accessibility best practices.

Carlyn Scott

Science Communications Assistant

Carlyn Scott is a master's student at CMS studying zooplankton ecology in the Gulf of Mexico. Carlyn holds a 20-hour per week appointment for which she writes and produces multimedia content about CMS publications, events, and more. She also manages the college's Instagram account.

Jess Van Vaerenbergh

Science Communications Assistant

Jess Van Vaerenbergh is a master's student at CMS who creates engaging scientific content for our Instagram and other social media accounts. She works closely with Carlyn. She creates informative videos about current CMS research or interesting marine science-related topics that may strike the interest of prospective students, whom we see as our target audience on Instagram. She also attends our events to help capture the moments through the eye of a camera lens.

MEET THE TEAM

Dyllan Furness

Science Communications Manager

Dyllan Furness oversees communications for the Florida Flood Hub, a flood-forecasting initiative based at USF CMS. He started in July 2022. His responsibilities include strategic storytelling, media relations, and brand management. Clarity is key to science communication — Dyllan makes sure the Flood Hub's science is accessible to all stakeholders.

The Communications team achieved the following growth in engagement over the prior year, as reflected in the table below.

- Website - 16.56% increase
- Facebook - 15.31% increase
- Twitter - 10.44% increase
- YouTube - 17.63% increase
- Instagram - 46% increase

	Website	Facebook	Twitter	YouTube	Instagram
2018	43.422	1400	No Data	No Data	N/A
2019	59.199	1726	1880	280	256
2020	52.452	1845	2230	354	533
2021	70.265	1946	2376	397	791
2022	81.899	2244	2624	467	1155

Launched Facebook and Twitter in December 2012. Launched Instagram in 2019.

2022 MILESTONES



Feb 11-12: CMS hosted the Spoonbill Competition, part of the National Ocean Sciences Bowl

Feb 17: [The Leadership St. Pete® \(LSP\) Class of 2022 chose the Clam Bayou Marine Education Center as its class project](#)

Feb 18: CMS hosted the Annual Graduate Student Symposium

Feb 28 – March 4: CMS sponsored and participated in the Bay Area Scientific Information Symposium 7 – Association of National Estuary Program (BASIS 7-ANEP), in St. Petersburg. Focus: Health of the Tampa Bay watershed.

April 25-28: CMS participates in the Gulf of Mexico Conference (GOMCON) in Baton Rouge, LA

May – A CMS team participated in NSF's new All-ABOARD program

[Bull's Eye for JEDI on the high seas \(er ... a freshwater lake!\) | USF College of Marine Science](#)

May 12-13: CMS hosted a Women in Science Leadership Training sponsored by NOAA and the Earth Science Women's Network

[CMS hosts Women in Science Leadership Training | USF College of Marine Science](#)

June: The team wrapped its 31st Oceanography Camp for Girls and produced a video in celebration of its milestone

[\(61\) Celebrating more than 30 years of Oceanography Camp for Girls \(OCG\). - YouTube](#)

June 13 – 19: A CMS team works together to untangle the mysteries of red tides

[CMS labs join forces to solve the mysteries of Florida's red tides | USF College of Marine Science](#)

August: Drs. Kristen Buck and Tim Conway are part of a team that launched the fieldwork program for a three-year NSF study to investigate how submarine groundwater discharge contributes to nutrients in the Gulf of Mexico

[On the hunt: where do phytoplankton get their food in the nutrient-starved Gulf? | USF College of Marine Science](#)

September 9: CMS hosted a welcome back party

October 2-7: CMS hosted the 50th Underwater Minerals Conference at the Vinoy Resort in St. Petersburg

[Field Trip | UMC \(underwaterminerals.org\)](#)

November 17: CMS hosted the annual Fellowship & Awards Ceremony, the first to be in person since 2019

[\(23\) 2022 Fellowships and Awards Celebration - YouTube](#)

Dec 5: In November the CMS lost an endeared member of its family on Nov 5th, Dr. William T. "Bill" Hogarth, [A Tribute to William T. "Bill" Hogarth, Ph.D. \(1939-2022\) | USF College of Marine Science](#) and held a celebration of his life at the Maritime & Defense Technology Hub

FACILITIES

No major projects occurred in 2022 but numerous minor projects were completed. As mentioned in the 2021 summary, final testing and certification of the MSL fire alarm system and the new hood in KRC 1125 was completed in 2022.

Notable minor projects completed throughout the year include the remodel of MSL faculty offices 216, 219 and 220 (paint, flooring, electrical); new tack boards in the KRC lab hallways (all three floors); new exhaust fan for the MSL 138H wax table lab; plumbing repairs of the KRC 105 floor drains and MSL hot water supply piping; and electrical repairs on pier #1. A comprehensive project to replace failed pipe hangers and correct plumbing problems in the MSL crawl space was started. Repairs to two ~90' sections under the east side hallway were completed with work on a third section slated for early 2023.

Also worth noting is that in late 2022, Tampa IT coordinated and funded audio visual upgrades to three CMS teaching spaces: MSL 169, KRC 2116 and 3120.

CMS OCEAN TECHNOLOGY GROUP

The CMS Ocean Technology (COT) group continues to be involved in several high-profile projects totaling over \$20M in current and future grant funding. Some highlights from the past year include:

- COT continues to support observing system activities such as the Coastal Ocean Monitoring and Prediction System (COMPS) in the Gulf of Mexico and Tampa Bay, including participation in several cruises and service visits. These efforts now have spanned over two decades. Data collected in this capacity is used by researchers and stakeholders throughout the region and is part of the national backbone of oceanographic data.
- The USF robotic glider fleet continues to expand its efforts and collaborations. Our glider crew's work resulted in over 300 glider days over twelve glider deployments spanning the entire year, with efforts continuing in the Gulf of Mexico and Atlantic Ocean. These efforts support research efforts including understanding red tides, predicting hurricane strength, understanding ocean circulation, and quantifying fish population dynamics. Funding for future work continues to expand with funding from federal and state sources.
- The NOAA collaboration, The Center for Ocean Mapping and Integrated Technologies (COMIT), is moving forward with field experiments and partnerships with agencies and private industries including two new hires that will integrate well into the technology group's efforts. COMIT is expected to be a long-term fixture of future College effort with heavy technological support.
- The Geo-Buoy collaboration with Professor Dixon from Geosciences has been successfully continuing by preparing for two spar buoy deployments in 2023 to foster research efforts including being networked into the COMIT research efforts.

Appendix A. PUBLICATIONS

Bold indicates Faculty and Research Staff/Faculty; Underline indicates CMS graduate student or post-doc.

Almeida, L.L., **C.D. Stallings**, M.V. Condini, A.M. Garcia, O.E. Tzadik, C.C. Koenig, and M. Hostim-Silva (2022) Non-lethal stable isotope analysis reveals consistent trophic growth of juvenile Goliath Grouper *Epinephelus itajara* in Brazilian estuaries. *Bulletin of Marine Science* 98, 17-26.

Amao, A.O., M.A. Kaminski, C. Bucci, **P. Hallock**, E. Al-Enezi, and F. Frontalini (2022) Benthic foraminifera in the Arabian Gulf: Biodiversity and geographical trends. *Mar.Micropaleontol*, 176, 102167, doi:10.1016/j.marmicro.2022.102167

Amergian, K.E., S. Beckwith, C. Gfatter, C. Selden, and **P. Hallock** (2022) Can areas of high alkalinity fresh-water discharge provide potential refugia for marine calcifying organisms? *J. Foramin. Res.*, 52(1), 60–73, doi:10.2113/gsjfr.52.1.60.

Azevedo, L.; S. D. Meyers, A. Pleskachevsky, H.P.P. Pereira, and **M.E. Luther** (2022) Characterizing Rogue Waves at the Entrance of Tampa Bay (Florida, USA). *J. Mar. Sci. Eng.* 10, 507, doi:10.3390/jmse10040507.

BadrElDin, A.M., and **P. Hallock** (2022) Foraminifers associated with macroalgae on a wave-cut platform off Abu Qir coastal area, Egypt. *Egypt. J. Aquat. Res.*, 48(4), 389–395, doi:10.1016/j.ejar.2022.08.003.

BadrElDin, A.M., N.B.W. Badr, and **P. Hallock** (2022) Evaluation of trace-metal pollution in sediment cores from Lake Edku, Egypt. *Reg. Stud. Mar. Sci.*, 53 (2022) 102454, doi:10.1016/j.rsma.2022.102454.

BadrElDin, A.M., M.M.A. Makbool, M.A., ElSabrouti, and **P. Hallock** (2022) Distribution and diversity of benthic Foraminifera in the coastal area of Al-Bawadi Island, Southern Red Sea. *J. Foramin. Res.*, 52(4), 264–277, doi:10.2113/gsjfr.52.4.264.

Balladares, C., D. Rueda-Roa, D. Rodríguez, **F. Muller-Karger**, and H. Barrios-Garrido (2022) Seasonal factors affecting sea turtle nesting in the Southeastern Caribbean Sea (Gulf of Paria, Venezuela). *Ocean and Coastal Research*. doi:10.1590/26752824070.22049cb.

Barnes, B. B., S. W. Bailey, **C. Hu**, and B. A. Franz (2022) Vicarious Calibration of the Long Near Infrared Band: Cross-Sensor Differences in Sensitivity. *IEEE Trans. Geosci. Remote Sens.* 60, 4208109, doi:10.1109/TGRS.2022.3185932.

Beal, L. M., L. Padman, L. Zhou, A. Singh, **D. Chambers**, M. Friedrichs, et al. (2022) What's new at JGR-Oceans? confronting bias, burn out, and big data. *Journal of Geophysical Research: Oceans*, 127, e2022JC019539, doi:10.1029/2022JC019539.

Beck, M., A. Altieri, C. Angelini, M.C. Burke, J. Chen, D.W. Chin, J. Gardiner, **C. Hu**, K.A. Hubbard, **Y. Liu**, C. Lopez, M. Medina, E. Morrison, E.J. Philips, G.E. Raulerson, S. Scolaro, E.T. Sherwood., D. Tomasko, R.H. Weisberg, and J. Whalen (2022) Initial estuarine response to inorganic nutrient inputs from a legacy mining facility adjacent to Tampa Bay, Florida, *Marine Pollution Bulletin*, 178, 113598, doi:10.1016/j.marpolbul.2022.113598.

Boss, E., A.M. Waite, J. Karstensen, T. Trull, **F.E. Muller-Karger**, H.M. Sosik, J. Uitz, S.G. Acinas, K. Fennel, I. Berman-Frank, S. Thomalla, H. Yamazaki, S.D. Batten, G.J. Gregori, A.J. Richardson, and R. Wanninkhof (2022) Recommendations for plankton measurements on OceanSITES moorings with relevance to other observing sites. *Frontiers in Marine Science, section Ocean Observation*. doi:10.3389/fmars.2022.929436.

Canonico, G., J.E. Duffy, and **F.E. Muller-Karger** (2022) Marine Life 2030: Building Global Knowledge of Marine Life for Local Action in the Ocean Decade. *Marine Technology Society Journal*, doi:10.4031/MTSJ.56.3.15.

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