

# NOAA CENTER FOR COASTAL AND MARINE ECOSYSTEMS (CCME)

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Semi-Annual Performance Report for  
Award Number NA16SEC4810009  
Reporting Period: March 1, 2021 – August 31, 2021

## **Lead Institution - Florida A&M University**

1601 Martin Luther King Jr. Blvd, Suite 400,  
Tallahassee, FL 32307

Dr. Larry Robinson  
Director and Principal Investigator

## **Partner Institutions**

Bethune-Cookman University  
*Dr. Hyun Jung Cho (Institutional PI)*

California State University Monterey Bay  
*Dr. Corey Garza (Institutional PI)*

Jackson State University  
*Dr. Timothy Turner (Institutional PI)*

Texas A&M University, Corpus Christi  
*Dr. Paul Montagna (Institutional PI)*

University of Texas, Rio Grande Valley  
*Dr. David Hicks (Institutional PI)*

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## **Acronyms and Abbreviations**

FAMU: Florida A&M University

B-CU: Bethune-Cookman University

CSUMB: California State University Monterey Bay

JSU: Jackson State University

TAMUCC: Texas A&M University-Corpus Christi

UTRGV: University of Texas at Rio Grande Valley

CCME: Center for Coastal Marine Ecosystems

CMT: Center Management Team

CSC: Cooperative Science Center

CWCC: Center-Wide Core Competency

EPP: Educational Partnership Program

HBCU: Historically Black Colleges and Universities

MSI: Minority Serving Institution

NCCOS: National Centers for Coastal Ocean Science

NERTO: NOAA Experiential Research & Training Opportunities

NMFS: National Marine Fisheries Service

NOAA: National Oceanic and Atmospheric Administration

NOS: NOAA's National Ocean Service

OAR: Oceanic and Atmospheric Research

SEFSC: Southeast Fisheries Science Center

URM: Underrepresented Minority

Degree Level: B: Undergraduate, M: Master's, D: Doctoral

# NOAA Cooperative Science Center Project Performance Report

## I. Executive Summary

This report covers the accomplishments for the reporting period March 1, 2021 – August 31, 2021, for the National Oceanic and Atmospheric Administration’s Center for Coastal and Marine Ecosystems (CCME). During this reporting period, CCME supported 82 students (90% from URM communities, Appendix A Table 1), with a total of 139 students (pursuing 147 separate degrees) supported to date.

### CCME Goals and Objectives

CCME has established the following education and research goals and specific objectives:

- 1) Recruit, train, and graduate students, particularly from underrepresented minority groups, with the competencies and skills that support NOAA’s Education Strategic Plan, workforce goals, and strategic objectives:
  - a. Provide financial support, education and training experiences for undergraduate students, graduate students, and postdoctoral fellows through teaching and mentoring provided by NOAA CCME faculty.
  - b. Leverage new and existing partnerships with community colleges and to recruit and prepare students for NOAA-relevant degree programs at NOAA CCME institutions.
  - c. Utilize the Center-Wide Core Competency (CWCC) course to ensure student proficiency in NOAA CCME focal areas.
  - d. Expose students to broader research and experiential learning opportunities such as Student Scholarship Internship Opportunities (SSIO) and NERTOs and additional training activities through partnerships with NOAA and other scientists.
- 2) Conduct research leading to the development of management and communication tools that can be utilized to enhance the resilience of coastal communities and economies, including:
  - a. Assess coastal risks and vulnerabilities
  - b. Identify solutions to reduce risks and vulnerability
  - c. Utilize engagement to empower coastal communities.
  - d. Conduct research at the private and public properties of waterfront communities.
  - e. Conduct public education and assess their knowledge using pre- and post-education surveys
- 3) Develop competency and skills in the utilization of new and existing NOAA data archives for research and development of decision support tools that promote the vibrancy of coastal and marine ecosystems:

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- a. Develop and implement a “Big Data Analytics Boot Camp” to train students in Big Data and GIS analysis tools and methods.
- b. Conduct research utilizing NOAA datasets related to coastal and marine ecosystems.
- c. Develop communication and mitigation strategies associated with threats to coastal and marine ecosystems and coastal communities.

**CCME Education and Training Objectives (CCME specific objectives 1a-d and 3a)**

- During this reporting period, CCME graduated 13 students (10 B.S., 2 M.S., and 1 Ph.D.), all of whom are from URM communities. Since inception, CCME has graduated 57 students with 58 degrees – 1 Ph.D., 16 Master’s, and 41 Bachelor’s - with 51 (88%) of the degrees being earned by students from URM communities (Table 1a).
- The first Ph.D. graduate of CCME, Diana del Angel, defended her dissertation on “Social-Ecological System Approach for Assessing Impacts of Sea-Level Rise and the Benefits of Natural And Nature-Based Features” at TAMU-CC. Dr. del Angel is now working as a Postdoctoral Scholar at the Harte Research Institute.
- M.S. scholars Taylor Eddy (CSUMB) and Rebekah Hernandez (UTRGV) successfully defended their M.S. theses. Taylor Eddy is working as a biologist at USGS.
- CCME graduates were hired in the NOAA Mission Enterprise (Appendix A Table 6), including Dr. Diana del Angel (Harte Research Institute) and Mario Molina (UTRGV Coastal Studies Laboratory). Sixteen (16) CCME current or former students and two former postdocs are now employed in NOAA mission-relevant fields. Many of the other CCME graduates are continuing in their studies.
- Thirteen (13) new scholars joined CCME during this reporting period, including one Ph.D. student, four M.S. students, and eight B.S. students.
- Seventeen (17) CCME Graduate Scholars participated in their NERTOs during this reporting period, with nine completing and eight ongoing. The total number of students completing NERTOs to date is 39. Seven additional CCME scholars have approved SSIOs and are working with their mentors to develop their work plans and time frames for participation.
- During this reporting period, a new CCME postdoctoral research associate, Dr. Benjamin Ross, was hired at FAMU. Dr. Ross prepared and submitted his postdoctoral plan.
- CCME held the Center-Wide Core Competency (CWCC) course themed "Restoration of Hydrology as a Key Step in Restoring the Function of Coastal Wetlands." The event was held at the Whitney Lab for Marine Bioscience - the University of Florida from July 25-30, 2021 and was hosted by CCME partner institution BCU. The CWCC was attended by 54 CCME scholars.
- CCME hosted Phase 1 of the 10<sup>th</sup> Biennial NOAA EPP/MSI Education and Science Forum virtually on 8-9 April 2021. This phase of the form focused on plenary talks and student development workshops, with invited talks by CSC students who anticipate graduating before the in-person Phase 2 of the Forum (scheduled for April 2022).

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*Table 1. Graduates of CCME*

**Graduates of CCME**

	Name (Last, First)	Partner Institution	Degree	URM Community	Cohort	Graduation Date
<b>Graduated Students from URM Communities</b>						
1	Alanis, Briana	University of Texas Rio Grande Valley	M.S.	Hispanic	2	December 2019
2	Alanis, Brianna	University of Texas Rio Grande Valley	B.S.	Hispanic	1	May 2017
3	Alexander, Shirley	Jackson State University	B.S.	Black or African- American	3	May 2019
4	Andrews, Kaylah	Bethune-Cookman University	B.S.	Black or African- American	5	July 2021
5	Bellamy, Philip	Bethune-Cookman University	M.S.	Black or African- American	1	December 2017
6	Boisen, Olivia	California State University, Monterey Bay	B.S.	Asian American	1	May 2019
7	Brooks, Erica	Jackson State University	B.S.	Black or African- American	5	May 2021
8	Brown, Aaliyah	Florida A&M University	B.S.	Black or African- American	3	May 2021
9	Bruce, Terrius	Florida A&M University	B.S.	Black or African- American	2	May 2020
10	Chui, Emily	California State University, Monterey Bay	B.S.	Asian American	1	December 2019
11	Corbett, Rhamira	Florida A&M University	B.S.	Black or African- American	3	May 2021
12	Del Angel, Diana	Texas A&M University – Corpus Christi	Ph.D.	Hispanic	1	July 2021
13	Eddy, Taylor	California State University, Monterey Bay	M.S.	Native American or Pacific Islander	1	May 2021
14	Etienne- Stanley, Ra’Teema	Florida A&M University	M.S.	Black or African- American	2	August, 2019
15	Flores, Daniel	University of Texas Rio Grande Valley	B.S.	Hispanic	3	December 2019
16	Gonzalez, Edith	University of Texas Rio Grande Valley	B.S.	Hispanic	4	July 2020
17	Grant, Jada	Jackson State University	B.S.	Black or African- American	1	May 2019
18	Gunn, Derrick	Jackson State University	B.S.	Black or African- American	5	May 2021
19	Guruvadoo, Shan	Bethune-Cookman University	M.S.	Asian American	1	May 2019
20	Hamilton, Alexis	Florida A&M University	B.S.	Black or African- American	1	May 2021

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**Graduates of CCME**

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21	Hernandez, Rebekah	University of Texas Rio Grande Valley	M.S.	Hispanic	1	July 2021
22	Jones, Kennedy	Jackson State University	B.S.	Black or African- American	2	May 2020
23	Leal, Sandra	University of Texas Rio Grande Valley	B.S.	Hispanic	3	May 2019
24	Lecusay, David	University of Texas Rio Grande Valley	B.S.	Hispanic	1	December 2018
25	Lima, Anthony	University of Texas Rio Grande Valley	M.S.	Hispanic	1	December 2018
26	Lopez, Jaime	University of Texas Rio Grande Valley	B.S.	Hispanic	1	May 2018
27	Machado, Malia	California State University, Monterey Bay	B.S.	Hispanic	4	May 2021
28	Madrid, Cristina	University of Texas Rio Grande Valley	M.A.	Hispanic	1	December 2018
29	Martinez, Meghan	Texas A&M University – Corpus Christi	M.S.	Hispanic	1	December 2019
30	Martinez, Summer	Florida A&M University	B.S.	Hispanic	3	December 2019
31	McKinzie, Robert	Bethune-Cookman University	B.S.	Black or African- American	3	July 2021
32	Miller, Andria	Jackson State University	B.S.	Black or African- American	4	May 2021
33	Minor, Keenasha	Jackson State University	M.S.	Black or African- American	1	August 2019
34	Molina, Mario	University of Texas Rio Grande Valley	B.S.	Hispanic	4	December 2020
35	Navarro, Javier	University of Texas Rio Grande Valley	M.S.	Hispanic	2	July 2020
36	Pavlock- McAuliffe	California State University, Monterey Bay	M.S.	Asian American	1	May 2020
37	Perriman, Geramy	Jackson State University	B.S.	Black or African- American	1	May 2019
38	Rodriguez, Cassandra	University of Texas Rio Grande Valley	B.S.	Hispanic	1	December 2018
39	Sanchez, Katia	University of Texas Rio Grande Valley	B.S.	Hispanic	3	May 2021
40	Rolle, Shaquila	Florida A&M University	B.S.	Black or African- American	1	May 2020
41	Shokere, Alexis	Florida A&M University	B.S.	Black or African- American	1	May 2019
42	Simpson, Queriah	Florida A&M University	M.S.	Black or African- American	3	July 2020
43	Smith, Liyah	Jackson State University	B.S.	Black or African- American	1	April 2018
44	Thomsen, Alexandra	California State University, Monterey Bay	M.S.	Asian American	3	July 2020
45	Vance, Miracle	Jackson State University	B.S.	Black or African- American	3	May 2020



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**Graduates of CCME**

	Name (Last, First)	Partner Institution	Degree	URM Community	Cohort	Graduation Date
46	Vaughn, Natalie	California State University, Monterey Bay	B.S.	Native American or Pacific Islander	3	May 2020
47	Watson, Harrison	Jackson State University	B.S.	Black or African- American	1	May 2019
48	Watson, KiAnna	Bethune-Cookman University	B.S.	Black or African- American		May 2020
49	Webb, Jessica	Jackson State University	B.S.	Black or African- American	1	May 2019
50	White, Miranda	Bethune-Cookman University	B.S.	Black or African- American	4	May 2020
51	Windham, Shelby	Jackson State University	B.S.	Black or African- American	1	May 2019
<b>Graduated Students not from URM Communities</b>						
52	Bauer, Shelby	University of Texas Rio Grande Valley	B.S.		1	May 2019
53	Breaux, Jonathan	Jackson State University	B.S.		1	May 2019
54	Brooks, Mallory	Bethune-Cookman University	M.S.		1	December 2020
55	Coogan, Brian	Florida A&M University	B.S.		3	December 2020
56	Meredith, Melissa	California State University, Monterey Bay	B.S.		1	May 2019
57	Murphy, Elizabeth	University of Texas Rio Grande Valley	M.S.		1	December 2019
58	Young, Riley	California State University, Monterey Bay	B.S.		3	May 2020

**CCME Scientific Research Objectives (CCME Specific Objectives 2a-e, 3b-c)**

The Center conducts scientific research as an educational tool for training our students with topics aligned with the special award conditions of the grant. CCME Research focuses on the areas of Coastal Resilience, Coastal Intelligence, and Place-Based Conservation, with research and training conducted in collaboration with NOAA and part through NERTOs. In-person research experiences and conference travel were restricted during this reporting period due to COVID-19. Still, CCME scholars and faculty were productive in publishing 18 works (papers, dissertations, and theses) and giving 28 presentations at conferences, workshops, and seminars.

- During this reporting period, CCME students authored or co-authored two papers published in peer-reviewed journals, one dissertation, and two master's theses. There were an additional 13 publications by CCME faculty.

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- During this reporting period, CCME had 18 oral or poster student presentations and ten faculty presentations at scientific conferences, workshops, and seminars.
- Seventeen (17) students participated in their NERTOs during this reporting period developing new analyses and data products contributing to the host facilities' research.
- CCME faculty were awarded 8 funded proposals generating \$2,609,298 in leveraged support to provide expanded research and education opportunities to students.

### CSC Administration

- CCME was invited by NOAA EPP to submit a proposal in response to the prepared and submitted a proposal in response to the RFA for a second five-year institutional award for the CSC. The proposal with budget totaling \$30 million was submitted on June 18, 2021.
- CCME worked with NOAA EPP and other CSCs to host the first phase (virtual) of the 10<sup>th</sup> Biennial NOAA EPP/MSI Education and Science Forum that was previously delayed due to COVID-19. A report from Phase 1 of the Forum was submitted to EPP, and a Forum Plan for the in-person Phase 2 (scheduled for April 2022) was also submitted.
- CCME held Center-wide monthly virtual meetings with Focal Area Leads and Institutional P.I.'s reporting on activities and student progress. Also, during these calls, Education and Social Science Leads reported on student development, incorporation of social and human dimensions into student research projects, and planning for the Center-Wide Core Competency Course.
- CCME Science Advisory Council and Community Stakeholder Advisory Board members have enhanced participation in CCME activities by attending CCME monthly calls and interacting with the faculty and students on individual research activities. Members of the Council and Board have actively collaborated with CCME on student research and development of training activities and proposals with faculty.
- CCME submitted revisions to a proposal to NOAA EPP for a ceiling increase for Year 5 to address the impacts of COVID-19 on CCME scholars.
- CCME submitted and was approved for a no-cost extension to the award through August 2022.
- CCME held virtual meetings with the External Evaluator to review findings, recommendations, and virtual site visits (see Appendix C).

### Looking Forward

#### **Education and Training**

- CCME now enters its one-year no-cost extension period. Except for some new fall semester enrollees who technically start after this reporting period (September 1), CCME does not anticipate further recruitment activities for students funded on this award.
- CCME will work with postdoctoral scholar Dr. Keir Macartney to develop his postdoctoral plan with NOAA mentors.

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- CCME has 13 graduate students who have not yet participated in nor applied for their NERTOs. Some are CCME scholars who have delayed NERTOs due to COVID-19 and are either modifying their NERTO plans for virtual participation or delay in-person opportunities. Seven additional scholars have applied for SSIOs with their mentors and are in the process of scheduling their upcoming participation. CCME will identify NOAA mentors and develop SSIOs for the remainder of the currently enrolled graduate scholars.
- CCME anticipates a large number of graduating students during the upcoming reporting period. By the end of the no-cost extension period, CCME anticipates all supported students either graduating or being evaluated for requests for continuing support under a new award.

**Research**

- CCME will work with the other CSCs and NOAA EPP to plan for the upcoming Phase 2 of the 10<sup>th</sup> Biennial NOAA EPP/MSI Education and Science Forum to be held at FAMU in April 2022. Abstracts will be collected and evaluated for the technical program beginning in the Fall of 2021.
- Several CCME scholars near completion of their research are working on manuscripts with their academic advisors and NOAA mentors. Several journal manuscripts are expected to be submitted, along with their associated datasets, during the upcoming reporting period.
- New research projects for recently recruited scholars will be developed in collaboration with NOAA scientists. Synopses for these research projects will be presented to CCME and reviewed prior to approval.
- CCME students nearing graduation or completing their NERTOs will present their work at OneNOAA Science Seminars and scientific conferences.

**CSC Administration**

- CCME will submit a spending plan for the no-cost extension year.
- CCME will submit reports as required by the award.

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CCME Focal Area Participants

Administration

Center Director: Larry Robinson, Ph.D.  
Associate Director: Michael Abazinge, Ph.D.  
Assistant Director: Sharmini Pitter, Ph.D.  
Distinguished Research Scientist: Steve Morey, Ph.D.  
Data, Communication, and Information Manager: Kris Suchdeve  
Administrative Coordinator: Sherry Wells

Institutional Principal Investigators

CCME B-CU: J. Cho, Ph.D.  
CCME CSUMB: Corey Garza, Ph.D.  
CCME JSU: Tim Turner, Ph.D.  
CCME TAMUCC: Paul Montagna, Ph.D.  
CCME UTRGV: David Hicks, Ph.D.

Committee Leadership

Education Expert: Bernadette Kelley, Ph.D.  
Social Science Lead: Phyllis Gray-Ray, Ph.D.  
Coastal Intelligence Co-Chairs: Richard Long, Ph.D.; Paul Montagna, Ph.D.  
Coastal Resilience Chairs: Owen Temby, Ph.D.  
Place-Based Conservation Co-Chairs: J. Cho, Ph.D.; Corey Garza, Ph.D.

Focal Area Participants – Faculty

*Coastal Intelligence:*

Elijah Johnson, Ph.D., Florida A&M University  
Michael Abazinge, Ph.D., Florida A&M University  
James C. Gibeaut, Ph.D., Texas A&M University-Corpus Christi  
Hongmei Chi, Ph.D., Florida A&M University  
J. Cho, Ph.D., Bethune-Cookman University  
Timothy Turner, Ph.D., Jackson State University  
Paul Tchounwou, Ph.D., Jackson State University  
Charles Jagoe, Ph.D., Florida A&M University  
Corey Garza, Ph.D., California State University-Monterey Bay  
Phyllis Gray-Ray, Ph.D., Florida A&M University  
Erin Easton, Ph.D., University of Texas Rio Grande Valley  
Thomas Sawicki, Ph.D., Florida A&M University  
Gawlik, Dale, Ph.D., Texas A&M University-Corpus Christi  
Hu, Xinping, Ph.D., Texas A&M University-Corpus Christi  
MacCartney, Keir, Ph.D., University of Texas Rio Grande Valley  
Ross, Benjamin, Ph.D., Florida A&M University

*Coastal Resilience:*

Phyllis Gray-Ray, Ph.D., Florida A&M University  
J. Cho, Ph.D., Bethune-Cookman University

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Hongmei Chi Ph.D., Florida A&M University  
Elijah Johnson, Ph.D., Florida A&M University

*Place-Based Conservation:*

David Hicks, Ph.D., University of Texas Rio Grande Valley  
Charles Jagoe, Ph.D., Florida A&M University  
Phyllis Gray-Ray, Ph.D., Florida A&M University  
Michael Abazinge, Ph.D., Florida A&M University  
Carlos Cintra, Ph.D., University of Texas Rio Grande Valley  
Alejandra Fierro-Cabo, Ph.D., University of Texas Rio Grande Valley  
Erin Easton, Ph.D., University of Texas Rio Grande Valley  
Paul Montagna, Ph.D., Texas A&M University Corpus-Christi  
Dr. Greg Stunz, Ph.D., Texas A&M University Corpus-Christi  
Dr. David Yoskowitz, Ph.D., Texas A&M University-Corpus Christi  
Brent Thoma, Ph.D., Jackson State University  
Timothy Turner, Ph.D., Jackson State University  
Ranjani Kulawardhana, Ph.D., Jackson State University

Cross-cutting Area Participants

Social Science

Phyllis Gray-Ray, Ph.D., Florida A&M University  
Turner, Milanika, Ph.D., Florida A&M University  
J. Cho, Ph.D., Bethune-Cookman University  
Hongmei Chi Ph.D., Florida A&M University  
Elijah Johnson, Ph.D., Florida A&M University  
Michelle Dovil, Ph.D., Florida A&M University  
Dr. David Yoskowitz, Ph.D., Texas A&M University-Corpus Christi  
Dr. Owen Temby, Ph.D., University of Texas Rio Grande Valley

Education

J. Cho, Ph.D., Bethune-Cookman University  
Sarah Krejci, Ph.D., Bethune-Cookman University  
Leticia Contreras, University of Texas Rio Grande Valley  
Laura Good, Ph.D., California State University-Monterey Bay  
Brent Thoma, Ph.D., Jackson State University  
Ranjani Kulawardhana, Ph.D., Jackson State University  
Mikell Smith, M.S., Texas A&M University-Corpus Christi

Focal Area Participants – Students (See Appendix A Table 1)

## II. Accomplishments

## Major Activities

During this reporting period, CCME:

- **Continued its mission of educating and training the next generation of scientists, particularly from underrepresented minority communities, in NOAA-relevant STEM disciplines and social sciences –**  
CCME trained 82 students and two postdoctoral scholars during this reporting period (see Appendix A Table 1). 90% of the students supported during this period are from URM communities.
- **Hosted the first phase (virtually) of the 10<sup>th</sup> Biennial NOAA EPP/MSI Education and Science Forum –**  
Planning began for the second (in-person) phase of the forum to be held at FAMU in April 2022.
- **Prepared and submitted a proposal for a second five-year institutional award -**  
CCME submitted a \$30 million proposal after being invited to respond to the RFA for a second five-year institutional award for the CSC. If awarded, this will allow CCME to continue its mission of educating and training the next generation of scientists, particularly from underrepresented minority communities, in NOAA-relevant STEM disciplines and social sciences.
- **Provided training opportunities to CCME students to utilize interdisciplinary approaches to address environmental challenges confronting marine and coastal ecosystems –**  
CCME held the Center-Wide Core Competency (CWCC) course themed "Restoration of Hydrology as a Key Step in Restoring the Function of Coastal Wetlands." The event was held at the Whitney Lab for Marine Bioscience - the University of Florida from July 25-30, 2021 and was hosted by CCME partner institution BCU. The CWCC was attended by 54 CCME scholars. Other experiential research training activities and accomplishments are detailed below in the summary of CCME Areas of Focus.
- **Shared research and Center information with the scientific community through publications and presentations and with the broader community through outreach activities –**  
These activities are highlighted below.

## Significant Results:

During this reporting period, CCME:

- **Had student research published in 2 peer-reviewed articles, two theses, and one dissertation, as well as shared in 18 oral or poster presentations –**

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Thirteen additional CCME faculty-authored papers were published, and there were ten additional faculty presentations of CCME research and training at scientific conferences, workshops, and seminars. All publications and presentations are detailed in Section II.

- **Secured \$2,609,298 in leveraged funding for enhanced research opportunities for scholars at the partner institutions –**  
This funding is detailed in Section VIII. Financial Information.
- **Had 17 scholars participate in NERTOs, with seven more scholars developing SSIOs with their NOAA mentors –**  
These NERTOs are described below in the summary of CCME Areas of Focus.
- **Hired one postdoctoral research fellow–**  
CCME Postdoc Dr. Benjamin Ross was hired at CCME FAMU in May 2021. Dr. Ross prepared his postdoctoral plan with his NOAA mentor, Dr. Emily Osbourne (OAR/AOML).

**Key outcomes or other achievements:**

During this reporting period, CCME:

- **Trained 82 active (funded during this period) students –**  
CCME Students and their statuses are detailed in Appendix A (Table 1).
- **Graduated 13 students (10 BS, 2 MS, 1 Ph.D.) –**
  - **Diana del Angel**, Ph.D., Coastal and Marine System Science, CCME TAMUCC. Dr. del Angel is now working as a Postdoctoral Scholar at the Harte Research Institute.
  - **Taylor Eddy**, MS, Marine Science, CCME CSUMB. Taylor is working as a biologist at USGS.
  - **Rebekah Hernandez**, M.S., Ocean, Coastal and Earth Science, CCME UTRGV. Rebekah participated in the NOAA Explorer in Training Program following her defense.
  - **Andria Miller**, B.S., Biological Sciences CCME JSU
  - **Erica Brooks**, B.S., Biology, CCME JSU
  - **Derrick Gunn**, B.S. Biology, CCME JSU
  - **Malia Machado**, B.S., Biology, CCME CSUMB
  - **Aaliyah Brown**, B.S. Biology, CCME FAMU
  - **Rhamira Corbett**, B.S., Environmental Studies, CCME FAMU
  - **Alexis Hamilton**, B.S., Environmental Science, CCME FAMU
  - **Katia Sanchez**, B.S., Environmental Sciences, CCME UTRGV
  - **Robert McKinzie**, B.S., Mathematics, CCME BCU
  - **Kaylah Andrews**, B.S., International Relations, CCME BCU

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- **Recruited 13 additional scholars–**  
CCME added eight scholars pursuing Bachelor’s degrees, 4 Master’s students, and 1 Ph.D. scholar.
- **Had 16 current or graduated student scholars and two former postdocs employed in the NOAA-mission workforce –**  
Graduates of CCME are making an impact in NOAA-relevant STEM and social science fields (Table 6).
- **Had undergraduate scholars engaged in relevant internships –**
  - **Robert McKenzie**, CCME BCU, participated in an internship with the Kennedy Space Center. He graduated and is now employed full-time at the Space Center.
  - **Asael Rodruiguez**, CCME UTRGV, completed an internship with the Nature Conservancy in the Texas Southernmost Preserve.
  - **Maya McWilliams**, CCME JSU, and **Miles Jordan**, CCME FAMU, participated in the Woods Hole Partnership Education Program.
  - **Jayewon Hill**, CCME JSU, participated in the REU Raptor Research Program at Boise State University.
  - **Carlos Ray**, CCME FAMU, conducted an internship with Eli Lilly.
  - **Natalie Uribe**, CCME UTRGV, completed an internship with the Texas Parks and Wildlife Division of Coastal Fisheries Summer Internship sponsored by the Coastal Conservation Association.
- **Had scholars and faculty receive awards for their outstanding service, academic performance, and research–**
  - **Monisha Sugla**, CCME UTRGV, was awarded the Next Swell Scholarship.
  - **Monisha Sugla**, CCME UTRGV, and **Miranda White**, CCME BCU, were awarded CERF Rising TIDES Awards. This award provides pre- and post-conference training, mentoring, a two-year CERF membership, workshops, and free conference registration.
  - **Alyssa Outhwaite**, CCME TAMUCC, received the Erin Caroline Donalson Memorial Endowed Scholarship.
  - **Molly McBride**, CCME TAMUCC, and **Mariana Leon-Perez**, CCME TAMUCC, received a Texas State Aquarium Endowed Scholarship in Biodiversity and Conservation Science.
- **Had scholars participate in a large number of scientific webinars, workshops, technical training, and professional development activities, including:**
  - NOAA and CSC webinars and workshops
    - NOAA webinar “How to Facilitate a Virtual Meeting.”
    - NOAA webinar “NOAA Facilitation Training.”



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- CSC Education Leads Webinar Series webinar “Faculty and Peer Mentorship” featuring Ashok Deshpande, Valerie Were, and Leticia Williams
- NOAA webinar “NOAA Eastern Region Climate Services: Spring Flood Outlook.”
- NOAA EPP/MSI 10<sup>th</sup> Biennial Education and Science Forum Phase 1
- NOAA Webinar “When Sharks Bite They Leave Evidence Behind: Forensics for Surfers and Shark Depredation”
- NOAA Webinar “Linking chlorophyll concentration and wind patterns using satellite data in the Central and Northern California Current System.”
- NOAA Seminar “Understanding how members of the U.S. public access, share, & interpret changing forecast information: tropical cyclone threats.”
- NOAA Seminar “People, Platforms, and Culture - The Roadmap to Sustainable Excellence”
- OneNOAA Seminar Series webinar “Can Oyster Aquaculture Help Restore Coastal Water Quality?”
- CCME Center-Wide Core Competency Course
- CCME Annual Meeting
- 
- Other scientific seminars, webinars, and meetings
  - Southampton Science and Engineering Festival webinar “Managing Seaweed through More than Maps.”
  - Webinar “Sargassum Ocean Sequestration of Carbon (SOS Carbon)” given by Andres Bisonó
  - MSGSO-TAMUCC Brown Bag webinar series
  - Webinar “Why Science Needs Story” hosted at TAMUCC
  - Webinar “Finding the Needle in the Haystack: Sampling, Extraction, and Analysis of Microplastics” given by Todd Gouin
  - Webinar, “The Problem May, Get Smaller: Nanoplastics.” given by Susanne Brander
  - L3 Harris webinar on Environmental Intelligence
  - TAMUCC MSGSO 9th Annual Student Research Forum
  - Webinar, “The National Park Service, presents The Narrative Blitz.”
  - SETAC South Central Chapter 2021 Annual Meeting
  - The Nature Conservancy webinar “Living Shorelines: A Nature-Based Solution for Coastal Resilience.”
  - US Symposium on Harmful Algae
  - Webinar “Sargassum Golden Tides, a global problem” hosted by Algae-UK
  - United Nations webinar “The Sargassum Challenge; Opportunities for collaboration between West Africa and the Wider Caribbean Region.”
  - TAMUCC webinar “Coral Reef Science from Organisms to Ocean Basins.”
  - Annual Meeting of the American Malacological Society

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- Technical and Professional development training
  - University of South Florida Muma College of Business/Academic Central training “Emotional Intelligence” led by Dr. Doreen MacAulay as part of a Diversity, Equity, and Inclusion in the Workplace Certificate
  - Crawford Scientific virtual training “CHROMacademy Essential Guide to: Preventative GC Maintenance.”
  - Statistics workshop “Prstatistics: Introduction to Data Wrangling using R.”
  - Virtual Coastal Career Development Workshop, hosted by the Coastal Society.
  - Primer 7 Online Workshop hosted by the Plymouth Marine Laboratory
  - “Workshop on Multivariate Analysis in Ecology (& Other Sciences)” using PRIMER v7
  - USF training module “Sustainable Business Model” led by Steve Curral, Alexies Mootoo, Dean Kevin Sneed, and Shirley Smith on Academia Central
  - TAMUCC Scientific Diving training
  - Georgia State University Leadership Seminar Series
  - Matlab training course (led by CCME DRS Dr. Steven Morey)
  
- **Engaged in outreach to the public and educational communities –**
- **Asael Rodriguez** (CCME UTRGV) has founded the student organization “Ecological Restoration Club.” The club has 25 members, and he is the current president. Initial activities include volunteering in local preserves.
- **Alyssa Outhwaite** (CCME TAMUCC) participated in the Science Olympiad at TAMUCC, a virtual event for Middle and High School students. Feb
- **Aaliyah Brown** (CCME FAMU) participated in a College boundary outreach panel at the North Hollywood High School magnet program virtually.
- **Patricia Cockett** (CCME TAMUCC) participated in a panel discussion during “Campus Conversations: a Forum on Anti-Asian Racism,” presented by the TAMUCC Asian American and Pacific Islander Committee and the Division of Student Engagement and Success.
- **Devin Comba** (TAMUCC) participated in an Oyster Bagging Event hosted by HRI’s Oyster Recycling Program at Goose Island State Park, working with volunteers from Gulf Coast Growth Ventures.
- **Elizabeth Harris** (TAMUCC) participated in a community outreach event at the Nueces Delta Preserve, hosted by the Coastal Bend Bays and Estuaries Program. Elizabeth spoke on behalf of NOAA NCCOS’s Ecotoxicology Branch from the Hollings Marine Laboratory (her NERTO host laboratory) about NOAA research, her personal academic experiences, and how internships are of the utmost importance to reaching your goals in the STEM field.
- Outreach Activities HESTEC 2021- Texas Reefs: Virtual Dive, CCME UTRGV participants included: **Katia Sanchez, Victoria Salinas, Rebekah Hernandez, Elizabeth Mogus Garcia**
  
- **Collaborated with other CSCs –**

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- CCME Distinguished Research Scientist Dr. Steve Morey continued hosting regular monthly meetings with Distinguished Research Scientists from the other three CSCs to share best practices, identify potential research opportunities, and develop plans for convening scientific sessions at upcoming conferences.
- CCME Education Expert Dr. Bernadette Kelley continued hosting a regular monthly meeting with the Education teams from the other CSCs to share ideas for educational and professional development activities. This group also hosts a monthly CSC education seminar series.
- CCME coordinated with LMRCSC on preliminary planning of a Joint Collaborative Research Project for inclusion in their respective proposals in response to the RFA for a second five-year institutional award for the CSC.
- CCME DRS's coordinated to identify invited student speakers for the Virtual Phase 1 of the 10<sup>th</sup> Biennial NOAA EPP/MSI Education and Science Forum.

### CCME Areas of Focus

CCME focuses on three areas of research and training, including Coastal Resilience (CR), Coastal Intelligence (CI), and Place-Based Conservation (PBC), along with two cross-cutting areas of Education and Social Science. Big data training is integrated into all focal areas. Faculty and scholars conducting research are assigned to one of the three focal areas for reporting and assessment purposes, but integration between these focal areas occurs during combined monthly center-wide meetings and monthly calls for the CR, CI, PBC, and the Social Science teams.

CCME facilitates student development of competencies aligned with the focal areas (shown in Appendix Table 3) as follows:

- For graduate students:
  - Through courses required for their degree programs;
  - Through their research;
  - Through CCME training, such as the CWCC, NERTO, and internships;
  - Through mentoring opportunities with NOAA personnel.
- For undergraduate students:
  - Through courses required for their degree programs;
  - Through participation in NOAA and CCME webinars;
  - Through mentoring opportunities with NOAA personnel.

The following are the events, activities, outputs, and outcomes by CCME students towards meeting each of the competencies:

- Developing synopses of their research plans
- Conducting research leading toward theses, dissertations, and publications
- Prepared final synopses of completed research
- Participation in and presentation at seminars, workshops, meetings, and conferences
- Participation in the CCME Center-Wide Core Competency Course (held in July 2021 at the Whitney Lab for Marine Bioscience).

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- Conducting workshops, public education, and surveys with the community/local government entities
- Attending local town hall meetings and planning board meetings
- Attending NOAA Webinars
- Engaging NERTO and NOAA mentors
- Developing tools and reports for NOAA through NERTO projects
- Conducting NERTO research and writing NERTO reports

**Focal Area Accomplishments this reporting period:**

1. Status of Students: The Focal Areas to which graduate students report are indicated in Appendix A Table 1. Additionally, some B.S. students also conduct research aligned with the focal areas, and those are indicated in the table as well.
2. Research Accomplishments – Outcomes and outputs of CCME graduate student research are now reported to the Focal Areas through Final Synopses of Completed Research.

Graduating M.S. Scholar **Taylor Eddy** (PBC) submitted her final synopsis for her research project “Multiscale habitat use and effects of resource availability on California Spiny Lobster (*Panulirus interruptus*) population success” during this reporting period. This assessed the performance of long-standing MPA on Catalina Island as it relates to the management of the California Spiny Lobster. The project employed the use of drones to assess habitat composition inside and outside of the MPA. Stable isotope analysis was also used to determine which components of intertidal habitat lobsters foraged on inside and outside of an MPA. Data from the National MPA Center in Monterey were used to determine the efficacy of the Catalina MPA relative to other MPAs along the U.S. West Coast. The study revealed that lobsters use intertidal habitat as a foraging subsidy during the Spring-Summer breeding season. Female lobsters, in particular, utilize the intertidal to offset the energetic costs associated with brooding eggs during the summer. The results of this research will support the development of future MPAs as it relates to understanding the need to incorporate habitat that supports target species across all phases of its life cycle.

Graduating M.S. Scholar **Rebekah Hernandez** (PBC) submitted her final synopsis for her research project “Assessing Long-Term Coral Coverage at East and West Flower Garden Banks”. The goal of this project was to assess changes and variability in coral coverage at East and West Flower Garden Banks (FGB) located within the boundaries of the Flower Garden Banks National Marine Sanctuary to inform management decisions for these economically important banks. This work involved analysis of repetitive photo stations from within the sanctuary. Results show a significant increasing trend in coral coverage was observed at West FGB, but no trend was observed at East FGB. *Orbicella franksi* and *Pseudodiploria strigosa* were found to be the most reoccurring species observed at both East and West FGBs photo stations. Results of this study will be utilized by the Flower Garden Bank National Marine Sanctuary Office in Galveston, TX, and will allow for further studies to be conducted on the potential drivers of the healthy coral reef ecosystem at East and West FGBs.

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Graduating Ph.D. Scholar **Diana del Angel** (PBC) submitted her final synopsis for her research project, “Social-ecological system approach for assessing impacts of sea-level rise and the benefits of natural and nature-based features,” during this reporting period. This project contributes data and knowledge for the planning and mitigation of SLR in the Northern Gulf of Mexico. This research uses a social-ecological system framework to explore the consequences of SLR and the information and policy tools available and used for mitigating these consequences. The socio-economic impact of a 1% and 0.2% annual return storm surge under 4 SLR scenarios (0.2 m, 0.5m, 1.2 m, and 2.0 m) for the year 2100 was assessed using HAZUS-MH software. Economic impact analysis focused on buildings, essential facilities, vehicles, roads, and crops. Additionally, the technical aspects and output of three prominent SLR transition models were compared: the Sea Level Rise Affecting Marshes Model (SLAMM), the Hydrodynamic Marsh Equilibrium Model (Hydro-MEM), and the NOAA-Marsh Migration Model (NOAA-MMM). Finally, the use of green infrastructure for SLR mitigation in place-based plans of the Florida Panhandle was assessed using a content analysis approach. This work utilized NOAA datasets, including the 1% and 0.2% Stillwater Floodplains and the NOAA Marsh Migration Model. The work produced a new dataset archived in GRIIDC (see Section III below).

3. Student synopses: In addition to their written synopses, Scholars also present their synopses during Focal Area Monthly Calls. These calls are attended by CCME faculty, including the Social Science Lead, and members of the Science Advisory Council and Community Stakeholder Advisory Board who provide recommendations.
  - Seven CCME graduate students presented synopses during this reporting period (For a list of all approved synopses, see Appendix A Table 1):
    - **Connie Machuca** (CR): The Effect of Small-Scale Pesticide-Remediating Bioreactors on Community Dynamics of Bacteria and Ecological Function: Salinas, CA
    - **Alyssa Outhwaite** (PBC): Ecological structure and function of estuarine habitats in Matagorda Bay, Texas
    - **Evelyn Roozee** (PBC): The Impact of Control on Trust and Risk in Salish Sea Transboundary Fishery Governance in the Salish Sea
    - **Nina Mauney** (PBC): Characterizing movement and habitat use of leatherback sea turtle (*Dermochelys coriacea*)
    - **Kylee Lewis** (CI): Hydrodynamic Modeling on Oyster Reefs under Climate Change Conditions
    - **Monisha Sugla** (PBC): Evaluating biodiversity and ecosystem services of restored oyster reefs in Aransas Bay, Texas
    - **Shawn Melendy** (PBC): Improving eDNA Detection as a Biological Survey Tool in Rivers: Modeling Degradation of Salmon eDNA
4. Student NERTO updates (All student NERTO information is listed in Appendix A Table 1)

NERTOS completed during this period:

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- **Jeanna Dampier** (PBC) “Assessment of Metals in the Northern Gulf of Mexico from NOAA NCCOS Mussel Watch Program Data - For NOAA EPP Graduate Student” with Dr. Dennis Apeti, NOS/NCCOS.
- **Elizabeth Harris** (CI) “Ecotoxicology Assessment of Climate and Pesticide Interactions in Estuarine Systems” with Dr. Marie de Lorenzo, NOS/NCCOS.
- **Ryan Rubino** (PBC) “Describing behavior of scup *Stenotomus chrysops* associated with aquaculture gear and rock reef habitats in Long Island Sound” with Dr. Renee Mercado-Allen, NMFS/NEFSC-Milford
- **Miranda White** (PBC) “Communicating ecosystem and community vulnerability to flooding under sea-level rise in the Gulf of Mexico with online data visualizations to improve coastal decision making” with Christine Buckel, NOS/NCCOS.
- **Devin Comba** (PBC) “Assessment of the Hydrologic Restoration Effectiveness Monitoring (Tier II) Projects Funded by the Community-based Restoration Program (CRP)” with Dr. Polly Hicks, NMFS/OHC
- **Kylee Lewis** (CI) “Oceanographic Data Analysis Using Modeled and Observed Water Level Data” with Artara Johnson, NOS/CO-OPS.
- **Lily Walker** (CI) “Eutrophication, shellfish aquaculture, and bio extraction: ecosystem services provided by oysters” with Dr. Suzanne Bricker, NOS/NCCOS.
- **Daryin Medley** (CI) “Analysis of Satellite Ice Thickness Products in the Bering and Chukchi Seas” with Dr. Catherine Berchok, Jessica Crance, NMFS/AFSC, and Dr. Phyllis Stabeno, OAR/PMEL.
- **Anthony Lima** (CR) “Eutrophication, shellfish aquaculture, and bio extraction: ecosystem services provided by oysters” with Dr. Suzanne Bricker, NOS/NCCOS.

NERTOs starting during this reporting period and ongoing:

- **Juliet Vallejo** (CR) “Comparative review of Collaborative Science partnerships in CA Central Valley” with Maria Rea, NMFS West Coast Regional Office - Sacramento.
- **Margarette Bayron-Arcelay** (CI) “Comparison of species richness and abundance between foraminifera molecular data and morphospecies count” with Dr. Jeff Guyon, NOS/NCCOS
- **Victoria Salinas** (PBC) “Developing propagation techniques for the black wire coral, *Stichopathes lutkeni*” with Dr. Cheryl Woodley, NOS/NCCOS
- **Elizabeth Mogus-Garcia** (PBC), “Identifying genotypic and phenotypic effects of thermal stress on shrimp species in a south Texas marsh” with Dr. Jennifer Leo, NMFS/SEFSC Galveston.
- **Elena Flores** (PBC), “Assessing nutrient levels in black mangrove habitats and potential effects on the distribution and composition of estuarine nekton species assemblages in a changing salt marsh-black mangrove landscape” with Jennifer Doerr, NMFS/SEFSC Galveston.
- **Sandra Leal** (PBC) “Identifying genotypic and phenotypic effects of thermal stress on shrimp species in a south Texas marsh” with Dr. Jennifer Leo, NMFS/SEFSC Galveston.

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- **Liyah Smith** (CI) “DNA Metabarcoding of Gut Content for Brown Shrimp in Black Mangroves and Saltwater Marshes” with Dr. Jeff Guyon, NOS/NCCOS.
- **Ashley Lacey** (CR) “NOAA EPP/MSI Research and Training Opportunity with NOAA Office of Legislative Affairs and the House Natural Resources Committee” with Erin Schnettler, NOAA OLIA.

SSIOs for seven (7) additional CCME scholars’ NERTOs have been developed and approved. These include:

- **Summer Martinez** (CR), “Growth Response of *Pleurotus ostreatus* to Petroleum Crude Oil with Nutrient Amendments,” Dr. Edward Wirth, NOS/NCCOS. Planned for Fall 2021.
- **Jordana Cutajar** (CI), “Taxonomy and Toxicology of Harmful Algal Bloom species from Texas Residential Canals,” Dr. Steve Morton, NOS/NCCOS. Planned for Spring 2022.
- **Nigel Lascelles** (CI), “Kinetics of chemical contaminant uptake by the microplastics,” Dr. Ashok Deshpande, NMFS/NEFSC. Planned for Fall 2021.
- **Kelsey Martin** (PBC), “Individual-based modeling of the effects of artificial reef quantity and density on economically important reef fish communities,” Dr. Matt Campbell, NMFS/SEFSC, Planned for Fall 2021.
- **Nina Mauney** (PBC), “Top predator ecology and ecosystem response to climate variability and change in the Northeast Pacific,” Dr. Elliot Hazan, NMFS/SWFSC, Planned for Fall 2021.
- **Molly McBride** (CI), “Investigation of the nutrient and salinity controls on growth of the HAB *Karenia brevis* in Texas waters,” Dr. Rance Hardison, NOS Beaufort Lab, Planned for Spring 2022.
- **Demarcus Turner** (CI), “Detection and identification of microplastics in a deep-diving cetacean, the pygmy sperm whale (*Kogia breviceps*),” Dr. Ashok Deshpande, NMFS/NWFSC and Dr. Wayne McFee, NOS/NCCOS, Planned for Summer 2022.

### III. Products of Award

The following are products of the FY16 CSC award accomplished during this reporting period.

#### Degrees Awarded:

**Eddy, Taylor**, CCME CSUMB, M.S. Marine Science

**Miller, Andria**, CCME JSU, B.S. Biological Sciences

**Brooks, Erica**, CCME JSU, B.S. Biology

**Gunn, Derrick**, CCME JSU, B.S. Biology

**Machado, Malia**, CCME CSUMB, B.S. Biology

**Brown, Aaliyah**, CCME FAMU, B.S. Biology

**Corbett, Rhamira**, CCME FAMU, B.S. Environmental Studies

**Hamilton, Alexis**, CCME FAMU, B.S. Environmental Science  
**Sanchez, Katia**, CCME UTRGV, B.S. Environmental Sciences  
**Del Angel, Diana**, CCME UTRGV, Ph.D. Coastal and Marine System Science  
**Hernandez, Rebekah**, CCME UTRGV, M.S. Ocean, Coastal, and Earth Science  
**McKinzie, Robert**, CCME BCU, B.S. Mathematics  
**Andrews, Kaylah**, CCME BCU, B.S. International Relations

### Student Publications in Journals:

*Only publications with CCME award attribution are included.*

\*CCME Student, \*\*CCME Faculty, \*\*\*NOAA Collaborator, CCME students, and postdocs are in **bold**

1. Haskins, J., Endris, C., **Thomsen, A.S.\***, Gerbl, F., Fountain, M.C., and Wasson, K. (2021). UAV to Inform Restoration: A Case Study From a California Tidal Marsh. *Frontiers in Environmental Science* DOI: <https://doi.org/10.3389/fenvs.2021.642906>
2. **Thomsen, A.S.\***, Krause, J., Appiano, M., Tanner, K.E., Endris, C., Haskins, J., Watson, E., Woolfolk, A., Fountain, M.C., and Wasson, K., 2021. Monitoring Vegetation Dynamics at a Tidal Marsh Restoration Site: Integrating Field Methods, Remote Sensing and Modeling. *Estuaries and Coasts*, pp.1-16. Doi: [doi.org/10.1007/s12237-021-00977-4](https://doi.org/10.1007/s12237-021-00977-4)

### Faculty Publications in Journals:

1. Behl, M., S. Cooper, C. Garza\*\*, S.E. Kolesar, S. Legg, J.C. Lewis, L. White, and B. Jones. Changing the Culture of Coastal, Ocean, and Marine Sciences: Strategies for Individual and Collective Actions. *Oceanography*. Doi: 10.5670/oceanog.2021.307
2. Bhusal, M., Calderon\*\*, J. and Cho\*\*, H.J., 2021. Opinion mining of newspaper articles using natural language processing: a pilot test using texts on Indian River Lagoon. *Florida Scientist*, 84, pp.226-231.
3. Chen, X., Zhang, D., Larson, S.L., Ballard, J.H., Knotek-Smith, H.M., Nie, J., Hu, N., Ding, D. and Han, F.X., 2021. Microbially Induced Carbonate Precipitation Techniques for the Remediation of Heavy Metal and Trace Element–Polluted Soils and Water. *Water, Air, & Soil Pollution*, 232(7), pp.1-15. Doi: 10.1007/s11270-021-05206-z
4. Cooper, P., J. Nie, S. L. Larson, J. H. Ballard, H. M. Knotek-Smith, A. Celik, S. Dasari, X. Zhu, F.X. Han\*\* (2021). Uranium adsorption on three nano-hydroxyapatites under various biogeochemical conditions” *Water Air and Soil Pollution*. In Press
5. Garza\*\*, C. (2021). Diversifying the ocean sciences: Thoughts on the challenge ahead. *Oceanography*, 34(2). Doi:10.5670/oceanog.2021.204
6. Guo F., G. Proctor, S. L. Larson, J.H. Ballard, H. M. Knotek-Smith, D.Cao, R. Yang, X. Wang, F.X. Han\*\*. (2021). Effects of Mn(II)-salts on metaschoepite dissolution in soil under different water regimes. *ACS Earth and Space Chemistry*. In Press.
7. Harris, L. Garza\*\*, C., et al. (2021). Equitable Exchange: A framework for diversity and inclusion in the geosciences. *AGU Advances*. Doi:10.1029/2020AV000359
8. Harris, L., Grayson, T., Neckles, H.A., Emrich, C., Lewis, K.A., Grimes, K.W., Williamson, S., Garza\*\*, C., Whitcraft, C.R., Pollack, J.B., Talley, D.M., Fertig, B., Palinkas, C.W., Park, S., Vaudrey, J.M.P., Fitzgerald, A.M., Quispe, J. (2021). A socio-ecological imperative for



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broadening participation in coastal and estuarine research and management. *Estuaries and Coasts*. Doi:10.1007/s12237-021-00944-z

9. Kolesar, S., Behl, M., Cooper, S., Garza\*\*, C., Jones, B., Legg, S. and Lewis, J. (2021). Charting a course to a Just, Equitable, Diverse, and Inclusive (JEDI) future. *Oceanography*. In Press.
10. Montagna\*\*, P.A. (2021). How a Simple Question About Freshwater Inflow to Estuaries Shaped a Career. *Gulf and Caribbean Research* 32 (1): ii-xiv. doi:10.18785/gcr.3201.04
11. Montagna, P.A.\*\* (2021). How a simple question about freshwater inflow to estuaries shaped a career. *Journal Gulf and Caribbean Research*, 32(1), doi:10.18785/gcr.3201.04
12. Palmer, T.A., N. Breaux, B. Lebreton, G. Gouillou, and J. Beseres Pllack\*\* (2021). Importance of Serpulid Reef to the functioning of a hypersaline estuary. *Estuaries and Coasts*. Doi: 10.1007/s12237-021-00989-0
13. Shropshire, T., S.L. Morey\*\*, E. Chassignet, M. Karnauskas\*\*\*, V. Coles, E. Malca, R. Laiz-Carrión, Ø. Fiksen, P. Regiero, A. Shiroza, J. Quintanilla Hervas, T. Gerard\*\*\*, J. Lamkin\*\*\*, and M. Stukel (2021). Trade-offs between risks of predation and starvation in larvae make the shelf break an optimal spawning location for Atlantic Bluefin tuna. *J. Plankton Res.*, Doi:10.1101/2020.11.01.363465.

### Editor of Special Issues

None to report

### Books:

None to report

### Book Chapters

None to report

### Thesis/Dissertations:

1. **Angel, D.\*** (2021). Social-ecological system approach for assessing impacts of sea-level rise and the benefits of natural and nature-based features. Dissertation. Texas A&M University – Corpus Christi.
2. **Eddy, T.\*** (2021). Multiscale habitat use and effects of resource availability on California Spiny Lobster (*Panulirus interruptus*) population success. Thesis. California State University - Monterey Bay.
3. **Hernandez, R.\*** (2021). Assessing Long-Term Coral Coverage at East and West Flower Garden Banks. Thesis. University of Texas – Rio Grande Valley.

### Conference Papers, Posters and Presentations:

\*CCME Student, \*\*CCME Faculty, \*\*\*NOAA Collaborator, CCME students and postdocs are in **bold**

*Oral Presentations*

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1. Cho, H.J.\*\* (2021). Public Forum: Aesthetics and Maintenance of Stormwater Ponds as part of Low Impact Development. Green Volusia Program.
2. **Comba, D.\***, J. Beseres Pollack\*\*, T. Palmer, and N. Breaux (2021). Evaluating the relative habitat value of intertidal and subtidal oyster reefs to improve restoration methods. TAMUCC Marine Science Graduate Student Organization 9th Annual Research Forum.
3. **Del Angel, D.\***, L. Balthis\*\*\*, M.V. Bilskie, C.A. Buckel\*\*\*, R. Collini, D. DeLorme, S.C Hagen, and D. Yoskowitz\*\* (2021). Communicating the Socio-Economic Impacts of Storm Surge Flood Plains under the Coastal Dynamics of Sea-Level Rise in the Northern Gulf of Mexico. Gulf Coastal Solution Workshop.
4. **Del Angel, D.\***, and D. Yoskowitz\*\* (2021). Evaluation of 3 marsh evolution models for the Northern Gulf of Mexico National Estuarine Research Reserves: Comparison of modeling approaches and available output. TAMUCC Marine Science Graduate Student Organization 9th Annual Research Forum.
5. Fierro Cabo A.\*\* (2021). Managed resacas: insights on diversity and health of a novel aquatic ecosystem. Research Seminar. Department of Biology, UTRGV.
6. Han, F.X. \*\* (2021). Phytoremediation of U contaminated soil. Mississippi Academy of Science Annual Meeting, Biloxi MS.
7. Han, F.X.\*\* (2021). Biogeochemistry of uranium in US Army ranges. Mississippi Academy of Science Annual Meeting, Biloxi MS.
8. Han, S., M. Davis., A. Zhang, W. Hsieh, R. Hsieh, L. Olafuyi, A. Batista, N. Ibrahim, and F.X. Han\*\* (2021). Potential of Using Earthworm as a Bioindicator for Soil Health as Affected by Herbicides. Mississippi Academy of Science Annual Meeting, Biloxi MS.
9. León-Pérez, M.C.\* (2021). Massive Arrivals of Pelagic Sargassum: Vulnerability of Social-Ecological Systems and Management Implications in Puerto Rico. Iniciativa multisectorial para el manejo de las mareas de sargazo en el Caribe.
10. **Lima, A.\*** (2021). Oyster Aquaculture in Texas- Nutrient Bioextraction and the development of a new Aquaculture Industry. NCCOS Science Brief.
11. **Lima, A.\***, J. M. Fox\*, B. Lomax, G. Sutton, and V. Prunte (2021). Development and Potential of a New Aquaculture Industry for Texas. Aquaculture America 2021, World Aquaculture Society, San Antonio, Texas.
12. Montagna, P.\*\* (2021). Into the Benthos and Back: : What have Infauna Taught Us? International Oil Spill Conference.
13. Morey, S.L.\*\* (2021). Data Science Applications in Oceanography, Environmental Science, and the NOAA Center for Coastal and Marine Ecosystems. Oak Ridge Associated Universities Data Science Webinar Series.
14. Murawski, S., P. Montagna\*\*, C. Smith, and T. Sutton (2021). Brazil-US Oil Spill Response and Restoration Virtual Workshop.
15. Olafuyi, L., Han, F.X.\*\* (2021). Earthworm (*Lumbricus Terrestris*) response to highly concentrated U sites in contaminated soils, Mississippi Academy of Science Annual Meeting, Biloxi MS.
16. **Olsen, C.\*** (2021). Students as citizen scientists: testing groundwater quality across rural communities in Nebraska. SRM Institute of Sciences and Technology, RASTH 2021 International Conference on Recent Advances in Applied Sciences, Technology & Health.
17. **Outhwaite, A.** (2021). What's Eating You? a comparison of faunal communities and trophic structure on harvested and unharvested oyster reefs. National Shellfisheries Association.

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18. **Rigo, J.\*** and H. Chi\*\* (2021). Exploring Rip Current Image Analysis and Model Validation, The ADMI 2021 Virtual Conference.
19. **Rubino, R.\*** (2021). A Preliminary Evaluation of the Effects of Oyster Cage Aquaculture on Seagrass Colony Health. TAMUCC Marine Science Graduate Student Organization 9th Annual Research Forum.
20. **Rubino, R.\***, and J. Fox\*\* (2021). A preliminary evaluation of the effects of oyster cage aquaculture on seagrass colony health. Aquaculture America 2021, World Aquaculture Society. San Antonio.
21. Stunz, G.W.\*\* (2021). New sampling methods for Red Snapper. Gulf States Marine Fishery Commission virtual meeting.
22. **Turner, D.\*** (2021). Validating a model of microplastic hotspots from Apalachicola watershed to Apalachicola Bay. Florida Dept. of Environmental Protection Sci-Café Seminar.
23. **Uribe, N.\*** and Cintra Buenrostro C.E.\*\* (2021). Seagrass invertebrates' diversity and potential role as prey supporting recreational fisheries in Texas. UTRGV Engage Scholar Symposium. Brownsville, TX.
24. **Walker, L.\*** (2021). Oyster aquaculture in Texas – nutrient bioextraction and the development of a new aquaculture industry. NCCOS Science Brief

*Poster Presentations*

1. **Cutajar, J.\*** (2021). Spatial-temporal variability in phytoplankton biomass and community composition in Texas residential canals. US Symposium on Harmful Algae.
2. Kulawardhana, R.W.\*\*, W. Wu and **K. Jones\***. (2021). Mississippi's coastal wetland Land Use/Land Cover (LULC) change analysis: Quantitative assessments using remote sensing, 2021 Ecological Society of America (ESA) Annual Meeting,
3. Schultz, A., **D. Comba\***, and J. Beseres Pollack\*\* (2021). Analyzing the effect of estuarine organismal grazing on biodegradable mesh bags. TAMUCC Marine Science Graduate Student Organization/Annual Research Forum.
4. White, D., **D. Comba\***, and J. Beseres Pollack\*\* (2021). Assessing the influence of temperature and light on the rate of degradation of oyster bag materials. TAMUCC Marine Science Graduate Student Organization/Annual Research Forum.

**Technologies or Techniques:**

None to report

**Patents:**

None to report

**Inventions:**

None to report

**Licenses:**

None to report

### **Websites:**

Tenth Biennial NOAA EPP/MSI Education and Science Forum website:

<https://ccme.famu.edu/eppforum2021/> and <https://ccme.famu.edu/eppforum2022/>

CCME website: <http://ccme.famu.edu>

### **Other Products:**

#### **Publicly available datasets and products**

1. Del Angel D.C., Yoskowitz, D., Bilskie M., and Hagen S., (2021). Socioeconomic Risk Associated with the 1% and 0.2% Return Period Stillwater Flood Elevation Under Sea-Level Rise for the Northern Gulf of Mexico. GRIIDC UDI HL.x801.000:0001. 10.7266/V8T1M61X

#### **Unpublished data and products (Developed for host offices during NERTOs)**

1. Harris, E. Species counts and water quality measurements from mesocosm experiments. Developed during NERTO “Field-based mesocosms: in situ deployments for assessing impacts of chemical spills in coastal areas”, NOAA/NOS/NCCOS, 2021.

## IV. Participants in Award Performance

See Executive Summary and Appendix Table 1

*Table 2: CCME Award Participants*

Name	Most Senior Project Role	Project Hours Worked per Month
<b>Larry Robinson, PhD</b>	Director/Principal Investigator	10
<b>Michael Abazinge, Ph.D.</b>	Associate Director	10
<b>Sharmini Pitter, Ph.D.</b>	Assistant Director	160
<b>Bernadette Kelley, Ph.D.</b>	Education Expert	20
<b>Sherry Wells</b>	CCME Coordinator	160
<b>Benjamin Ross, Ph.D.</b>	Postdoctoral Research Associate	160
<b>Steve Morey, Ph.D.</b>	Distinguished Research Scientist	160
<b>Kris Suchdeve</b>	Data and Communication Manager	160
<b>Richard Long, Ph.D.</b>	Co-PI, Coastal Intelligence Co-Lead	26
<b>Phyllis Gray-Ray, Ph.D.</b>	Social Science Lead	42
<b>Charles Jagoe, Ph.D.</b>	Faculty advisor	N/A, not budgeted under the award
<b>Elijah Johnson, Ph.D.</b>	Faculty advisor	N/A, not budgeted under the award
<b>Michael Martinez-Colon, Ph.D.</b>	Faculty advisor	N/A, not budgeted under the award
<b>Hongmei Chi, Ph.D.</b>	Big Data Lead	26
<b>David Yoskowitz, Ph.D.</b>	Co-Investigator	21.7
<b>Paul Montagna, Ph.D.</b>	Principal Investigator	21.7
<b>James Gibeaut, Ph.D.</b>	Co-Investigator	21.7
<b>Greg Stunz, Ph.D.</b>	Co-Investigator	21.7
<b>Jennifer Pollack, Ph.D.</b>	Faculty advisor	N/A, not budgeted under the award
<b>Michael Wetz, Ph.D.</b>	Faculty advisor	N/A, not budgeted under the award
<b>Mikell Smith</b>	TAMUCC CCME Coordinator	139
<b>J. Cho, Ph.D.</b>	Co-principal Investigator	80 hrs/mo, one summer month budgeted, the rest is leveraged.
<b>Corey Garza, Ph.D.</b>	co-principal Investigator	40 hrs/mo, two weeks in summer, rest is leveraged.
<b>Laura Good, Ph.D.</b>	Education Liaison	20

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**Table 2**

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Project Hours Worked per Month</b>
<b>Cheryl Logan, Ph.D.</b>	CSUMB mentor	N/A, not budgeted under the award
<b>Alison Haupt, Ph.D.</b>	CSUMB mentor	N/A, not budgeted under the award
<b>James Lindholm, Ph.D.</b>	CSUMB mentor	N/A, not budgeted under the award
<b>John Goeltz, Ph.D.</b>	CSUMB mentor	N/A, not budgeted under the award
<b>Ivano Aiello, Ph.D.</b>	Moss Landing mentor	N/A, not budgeted under the award
<b>Tim Turner, Ph.D.</b>	Principal Investigator	5
<b>Paul Tchounwou, Ph.D.</b>	Co-Investigator	1
<b>Paulette Bridges</b>	Program Manager	24
<b>Ibrahim Farah, Ph.D.</b>	Co-Investigator	Funded during the summer months
<b>Fenxiang Han, Ph.D.</b>	Co-Investigator	Funded during the summer months
<b>Ranjani Kulawardhana, Ph.D.</b>	Co-Investigator	Funded during the summer months
<b>Brent Thoma, Ph.D.</b>	Co-Investigator	Funded during the summer months
<b>Carlos Cintra, Ph.D.</b>	Co-Investigator	50
<b>Owen Temby, Ph.D.</b>	Co-Investigator	50
<b>Kier MacCartney Ph.D.</b>	Postdoctoral Research Associate	160
<b>David Hicks Ph.D.</b>	Principal Investigator	50
<b>John Breier Ph.D.</b>	Co-Investigator	Leveraged, not budgeted during the time frame
<b>Alejandro Fierro Ph.D.</b>	Co-Investigator	50
<b>Leticia Contreras</b>	Education Liaison	64

**\*\*\* For each individual listed in this table, hours beyond hours assigned to this award are funded through leveraged funding sources. Individuals may fulfill more than one role (e.g., Focal Area Co-Lead and Faculty Advisor). Summer hours must be pre-approved by CCME Institutional PI based on expected participation through student supervising and other award activities. Faculty must provide justification to CCME Institutional PI for approved summer funding.**

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**What other organizations have been involved as partners?**

*Table 3: Federal and State Organizations as CCME Collaborative Partners*

<b>Type of Partner Organization:</b>	<b>Organization Name:</b>	<b>Partner's Contribution to CCME</b>
State/Federal	Elkhorn Slough National Estuarine Research Reserve	Host for thesis research
State	Texas A&M University-Corpus Christi	Leveraged Training and Research Opportunities for CCME students, collaborative research, thesis committee members
Federal	NASA	Leveraged Training and Research Opportunities for CCME student
State	Texas Parks and Wildlife	Leveraged Training and Research Opportunities for CCME student
Federal	NGA	Provide research funding, internship, and job for CCME student
Federal	EPA	Funding for the current CCME students research
State	FDEP	Oversight of funded research by CCME students
State	FWC	Providing in-kind services and boat hours for CCME students
State	Texas Parks & Wildlife Department	Leveraged Training, Research Opportunities, and Research Infrastructure for CCME student
State	Charles Jacoby, St. Johns River Water Management District	Thesis committee members, communication, and sharing of data with CCME students
State/Federal	Duane De Freese, Indian River Lagoon National Estuary Program	Funding agency liaison and director of the NEP program that provides current research funding for CCME student research
State	Florida Department of Environmental Protection (FDEP)	Providing external partners of current funded projects; providing guides for field sites, design, and data. Providing funds
Federal	National Geospatial-Intelligence Agency	Sponsored and hired CCME student's research, internship, and job
State	Annie Roddenberry, Florida Fish and Wildlife Conservation Commission (FWC)	Providing in-kind hours and boat times for projects by CCME students
Federal	United States Geological Service	Leveraged Research Infrastructure for CCME student
Federal	Monterey Bay National Marine Sanctuary	Leveraged Training, Research Opportunities, and Research Infrastructure for CCME student
State/Federal	USC Sea Grant	Providing in-kind funds to support research equipment purchase for CCME
Federal	NOAA Pacific Marine Environmental Lab (PMEL)	Leveraged Training, Research Opportunities, and Research Infrastructure for CCME student
Federal	NOAA Southwest Fisheries Science Center	Leveraged Training and Research Opportunities, and Research Infrastructure for CCME student

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**Have other collaborators or contacts been involved? Yes**

*Table 4: Non-Federal or State External Collaborative Partners with CCME*

<b>Type of Partner Organization:</b>	<b>Organization Name:</b>	<b>Partner's Contribution to CCME</b>
Independent Nonprofit	Woods Hole Oceanographic Institute	Leveraged Training and Research Opportunities for CCME student
Academic	Mak Saito, Woods Hole Oceanographic Institution / Rod Johnson, Bermuda Institute of Ocean Science	Leveraged Training and Research Opportunities for CCME student
Academic	Texas State University	Leveraged Training and Research Opportunities for CCME student
Academic	Dana Yoerger, Woods Hole Oceanographic Institution	Leveraged Training and Research Opportunities for CCME student
Academic	Mak Saito, Woods Hole Oceanographic Institution	Leveraged Training and Research Opportunities for CCME student
Academic	Darlene Lim, NASA AMES/ Chris German Woods Hole Oceanographic Research Institution	Leveraged Training and Research Opportunities for CCME student
Municipal	Cities of New Smyrna Beach, Edgewater, Oakhill, and South Daytona	Providing their properties (e.g., waterfront parks) for research, assist with outreach of the projects/workshops by CCME students
Municipal	Ginger Adair, Volusia County Environmental Management	Providing in-kind funds and cash matches for projects by CCME students
Municipal	Marine Discovery Center, Environmental Discovery Centers, and Marine Science Center	Providing platforms for student engagement with the communities
Independent Nonprofit	Project H2O and Riverside Conservancy	Providing volunteering hours/students
Academic	University of Southern California, Wrigley Institute for Environmental Science	Host for thesis research
Independent Nonprofit	Monterey Bay Aquarium Research Institute (MBARI)	Leveraged Research Infrastructure for CCME student
Academic	Hopkins Marine Station of Stanford University	Leveraged Research Infrastructure for CCME student
Academic	Moss Landing Marine Labs	Leveraged Training, and Research Infrastructure for CCME student



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**Have NOAA collaborators or contacts been involved? Yes**

*Table 5: NOAA Individuals as NOAA Collaborative Partners*

**Table 5**

<b>NOAA Mentor Name</b>	<b>NOAA Facility</b>	<b>CCME Scholar Name</b>	<b>Description of Collaboration</b>
Andrew Devogelerare	NOS/Monterey Bay NMS	Lauren Parker; Miya Pavlock McAuliffe	NERTO Mentor
Artara Johnson	NOS/CO-OPS	Kylee Lewis	NERTO Mentor
Ashok Deshpande	NMFS/NEFSC	Nigel Lascelles; Julian Venable	NERTO Mentor
Bill Arnold	NMFS/SE Regional Office	Mallory Brooks	NERTO Mentor
Phyllis Stabeno	OAR/PMEL	Daryin Medley	NERTO Mentor
Carol Stepien	OAR/PMEL	Liyah Smith	NERTO Mentor
Catherine Berchok	NMFS/AFSC	Daryin Medley	NERTO Mentor
Chad Entremont	NWS	Keenasha Minor	NERTO Mentor
Charlie Wahle	NOS/National MPA Center	Taylor Eddy	NERTO Mentor
Cheryl Woodley	NOS/NCCOS	Angelique Rosa- Marin; Margarette Bayron-Arcelay Victoria Salinas	NERTO Mentor
Chris Kelble	OAR/AOML	Brianna Alanis; Phillip Bellamy, Abraham DaSilvio, David Lecusay	NERTO Mentor
Christine Buckel	NOS/NCCOS	Miranda White	NERTO Mentor
Dennis Apeti	NOS/NCCOS	Jeanna Dampier	NERTO Mentor
Ed Wirth	NOS/NCCOS	Summer Martinez	NERTO Mentor
Emily Osborne	OAR/AOML	Benjamin Ross	Postdoctoral Mentor
Eric Weissberger	NMFS/Office of Habitat Conservation	Meghan Martinez	NERTO Mentor
Erin Schnettler	OLIA	Ashley Lacey	NERTO Mentor
Greg Duseck	NOS/CO-OPS	Shan Guruvadoo	NERTO Mentor
Jeff Guyon	NOS/NCCOS	Margarette Bayron Arcelay Liyah Smith	NERTO Mentor
Jennifer Doerr	NMFS/SEFSC	Javier Navarro Elena Flores; Emily Jones	NERTO Mentor; Postdoctoral Mentor

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Jennifer Leo	NMFS/SEFSC	Elizabeth Mogus-Garcia Sandra Leal	NERTO Mentor
Joe Serafy	NMFS/SEFSC	Elizabeth Murphy	NERTO Mentor
John Christensen	NOAA/NCCOS	Queriah Simpson	NERTO Mentor
John Jacobs	NOS/NCCOS	Prian Vidal	NERTO Mentor
Kim Penn	NOS/Office of Coastal Management	Cristina Madrid	NERTO Mentor
Leslie Craig	NMFS/SE Regional Office	Samuel Mwenda	NERTO Mentor
Maria Rea	NMFS West Coast Reg. Office	Julliet Vallejo	NERTO Mentor
Marie DeLorenzo	NOS/NCCOS	Elizabeth Harris	NERTO Mentor
Mark Rowe	OAR/GLERL	Andrea Pugh-Kelley	NERTO Mentor
Mary Culver	NOS/Office of Coastal Survey	Diana DelAngel	NERTO Mentor
Matthew Campbell	NMFS/Office of Habitat Conservation	Kelsey Martin	NERTO Mentor
Michael Churma	NWS/Model Development Laboratory	Ra'Teema Etienne; Josh Rigo	NERTO Mentor
Michelle Johnson	Office of NMS, Flower Garden Banks	Rebekah Hernandez	NERTO Mentor
Peter Etnoyer	NOS/NCCOS	Erin Easton	Postdoctoral Mentor
Polly Hicks	NMFS/OHC	Devin Comba	NERTO Mentor
Randall Kosaki	NOS/Papahānaumokuākea Marine National Monument	Patricia Cockett	NERTO Mentor
Reagan Errera	OAR/GLERL	Ariana Uwaibi	NERTO Mentor
Renee Mercaldo-Allen	NMFS/NEFSC-Milford	Ryan Rubino	NERTO Mentor
Scott Large	NMFS/NEFSC	Anthony Lima	NERTO Mentor
Steve Lonhart	NOS/ONMS	Alexandra Thomsen	NERTO Mentor
Suzanne Bricker	NOS/NCCOS	Lily Walker Anthony Lima	NERTO Mentor
Thomas Oliver	NMFS/PIFSC	Caroline Rodriguez	NERTO Mentor
Trey Flowers	NWS/National Water Center	Elizabeth DelRosario	NERTO Mentor

*Table 6. CCME Scholars hired within the NOAA Mission Enterprise*

CCME Scholar	Employer
Alanis, Brianna	University of Texas Rio Grande Valley
Bellamy, Philip	National Geospatial-Intelligence Agency
Boisen, Olivia	Point Blue Conservation Science
Brooks, Mallory	NOAA NMRS SE Regional Office
Brooks, Mallory	Zev Cohen (environmental consulting)

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Chui, Emily	CSUMB College of Science (Program Assistant)
Del Angel, Diana	Florida Department of Environmental Protection
Del Angel, Diana	Harte Research Institute (Postdoctoral Scholar)
Destafano, Antoinette	Bethune-Cookman University (Research Scientist)
Eddy, Taylor	USGS (Biologist)
Guruvadoo, Shan	Channel Logistics (dba Space Eyes) (Data Scientist)
Madrid, Cristina	Texas Economic Development-Governor's Business and Community Development Division (Research Specialist)
Martinez, Meghan	California State Coastal Conservancy (NOAA Coastal Management Fellow)
Molina, Mario	UTRGV Coastal Studies Laboratory (Research Associate I)
Murphy, Ashley (Elizabeth)	West Virginia Department of Environmental Protection (Environmental Resource Specialist)
Murphy, Ashley (Elizabeth)	Florida Fish and Wildlife Conservation Commission (Biological Scientist IV)
Mwenda, Samuel	State of Florida
Pavlock-McAuliffe, Miya	PolArctic LLC (Coastal Morphology Specialist)
Thomsen, Alexandra	Accepted position as California Sea Grant Fellow

## V. Impacts of Award

**What is the impact on the development of future workforce candidates for the principal discipline(s) of the award and NOAA mission-aligned support of the project?**

A total of 139 students (pursuing 147 separate degrees) and four postdocs have been recruited to join CCME in a variety of disciplines, including environmental science, technology, and policy, ocean, coastal and earth science, marine sciences, civil and environmental engineering, biology, computer science, and social sciences. CCME has graduated 57 students earning 58 degrees (41 B.S., 16 M.S./M.A., and 1 Ph.D.), including 13 (10 B.S., 2 M.S., and 1 Ph.D.) during this award period, in the principal disciplines of this award.

**What is the impact on other disciplines and Program Level Outputs and Outcomes aligned with the 2016 FFO? What is the impact on the development of candidates for the NOAA mission future workforce?**

CCME has increased the number of CSC post-secondary students trained with core competencies relevant to the NOAA-mission workforce, including: increased quantitative and analytical skills, increased competence in applying STEM to decision making, policy and management, and increased skills to use large data sets, geographical information systems and

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statistical analysis, computer modeling, and algorithm development. These core competencies are achieved through the recruitment and graduation of students in Center-approved relevant degree programs to provide this training. To increase the training above the typical academic degree requirements, CCME students also participate in the Center-Wide Core Competency course (with student competencies detailed in Appendix A Table 3), are provided with additional training (detailed in Section II), and conduct research aligned with the CCME focal areas that include social science and big data as cross-cutting themes. Fifty-four (54) CCME scholars were trained in these competencies at the CWCC in summer 2021, held at the Whitney Lab for Marine Bioscience in Florida. The impact on candidate development is tracked and measured through the Individual Student Development Plan. Individual Student Development Plans were assessed with CCME Scholars at the end of the Spring 2021 semester.

CCME has increased the number of students educated and graduating with degrees in NOAA mission-related disciplines (13 degrees were awarded during this reporting period). In addition to the professional development opportunities detailed in Section II, 17 graduate scholars participated in NERTOs with mentors from NOAA during this reporting period. Student research was disseminated in 2 peer-reviewed journal articles, two theses, one dissertation, and 18 conference presentations this period.

CCME has increased the number of students, particularly from URM communities, attaining degrees and employment in NOAA mission fields. During this reporting period, CCME graduated ten scholars from a URM community, bringing the Center's total number of degrees awarded to students from URM communities to 51 (Executive Summary Table 1a). As detailed in Section I, 16 current or former CCME students and two former postdoctoral scholars are employed in NOAA mission fields. A large number of other graduates are currently pursuing graduate degrees.

**What is the impact of the Center activities to build institutional capacity in support of the objectives of the NOAA FY16 CSC award?**

Throughout the CSC award, CCME partner institutions increased their institutional capacity as a result of CCME through adding faculty, infrastructure, and equipment and enhancing their education and research programs to provide students with additional proficiencies and skills relevant to the Center and to the NOAA mission. As examples: CCME partner institution UTRGV established two new MS degrees in Ocean, Coastal, and Earth Sciences and Agricultural, Environmental, and Sustainability Sciences in Spring 2017. New courses supporting these degrees include Ecosystem Management and Social-Ecological Resiliency, Systems Science and Applications, In Situ Environmental Sensing, and Autonomous Vehicles. In the fall of 2017, UTRGV added a new track in Environment and Society to its Environmental Science BS degree program, adding courses in Environment and Society as well as Urban Sustainability. UTRGV has hired additional faculty for these new programs. BCU has added three new faculty with specialization in aquaculture and marine genetics, coastal ecology and fisheries, and aquatic biology. BCU also was approved for associate membership within the Florida Institute of Oceanography (FIO), joining FAMU as a member. FIO provides infrastructure support to facilitate collaborative research and education related to Florida's coastal and ocean environment and to serve as a coordinating body across academia, state and

federal agencies, ocean science organizations, and the private sector in addressing new opportunities and problems to be solved through research, education, and outreach. FAMU added a new tenured faculty line within the School of the Environment and has a new Ph.D. program in Sustainability Science approved along with new faculty lines. CSUMB established a new Marine Science Department in the fall of 2019 with a new bachelor's degree in social science, place-based conservation, and coastal intelligence training integrated within its curriculum. A new assistant professor was hired with expertise in biological oceanography and remote sensing technologies. Enhancements have been made to their Moss Landing Marine Laboratory to provide additional research capabilities for students. This increase in STEM and social science education and research capacity at these MSIs further enables them to produce graduates that have attained proficiencies and skills relevant to the NOAA mission enterprise.

CCME faculty were additionally awarded \$2,609,298 in leveraged research funding during this reporting period. This funding builds upon Center student research activities to support field work for students and to provide additional equipment to be used for student research. This funding is detailed in Section VIII item 2.

**What is the impact of the NOAA award on the Center's data and information resources? To whom and how is this information and the Center accomplishments communicated?**

The CCME Data, Information, and Communication Manager support this function, coordinating with other CCME team members to utilize sophisticated tracking tools to support data collection in keeping with the implementation of the award. Center Management and Institutional PIs also work closely with our external evaluator for quality assessment and quality control of more extensive data points associated with award activities to track how CCME is meeting our goals and objectives. Center accomplishments are communicated to the public and scientific community via the CCME website, various social media platforms, publications, and presentations.

**How has the Center successfully conducted transfer of research results and new technologies in support of NOAA mission-aligned R2X?**

There are no research results or new technologies transitioned into operations, applications and commercialization to report at this time.

**What were the societal impacts of the Center's research activities? How were or are the impact results communicated to the general public.**

CCME scholars and faculty conduct research of societal importance. Each student's synopsis is evaluated to ensure that the societal relevance of the research is clearly identified. Additionally, the societal impacts of completed student research are now reported to CCME through the Final Synopsis form, which is used for tracking these outcomes and to identify highlights for inclusion in Center media and communications. The impactful research by the Center is communicated to the scientific community through publications and presentations and to the larger community by the participation of CCME scholars and faculty in outreach

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activities. The CCME website has been developed to feature research developments and disseminate research results within one year of data collection.

CCME management, faculty, and students have also had the opportunity to emphasize the importance of their research and the NOAA CSC to Federal, State, and Local officials through yearly visits to Capitol Hill, participation in events such as Oceans Day at the state capitols, and participation in panels at briefings or stakeholder engagement events.

## VI. Changes / Challenges

### **Challenges in performance of the award objectives - approach and reason(s) for change:**

- Differences between proposed and accomplished student recruitment goals (shown in Appendix A Table 2) and how these are being addressed are explained as follows:
  - To date, CCME has supported a total of 147 degrees exceeding the 5-year recruitment goal of 116. Some institutions had differences in numbers of students recruited versus proposed for each degree type, but Center-wide, CCME has supported more than the proposed numbers of students for each degree type.
  - Eleven students have left the Center without graduating due to academic or personal reasons (see Appendix A Table 1 – red font indicates students leaving the program without completing a degree). When supported students fall below the GPA requirement, an action plan is required to address this deficit. Following the FFO guidelines, students are given one semester to bring their GPA back to 3.0 and CCME partner institutions provide tutorials and any additional help needed. Some students have left due to other opportunities (e.g., transferring to a different university, degree program, or employment).
  - Some students have reached the end of their period of support but are still continuing in their degree programs and are progressing toward graduation (entries in a purple font in Appendix A Table 1).
  - Over-recruitment of students compensates for those students who do not complete.
- Students recruited by CCME whose expected graduation dates are after the end of Year 5 of the award will continue to receive support after Year 5 using carry-forward funds during a no-cost extension period.
- A no-cost extension period through August 2022 has been approved.

### **Actual or anticipated problems or delays and actions or plans to resolve them:**

The COVID-19 pandemic has presented challenges during this entire semi-annual reporting period. CCME has been regularly communicating with NOAA EPP and NOAA collaborators to develop plans to address these challenges.

- The 10<sup>th</sup> Biennial NOAA EPP/MSI Education and Science Forum, originally scheduled for 29 March – 1 April 2020, was rescheduled to be held in two phases. The first phase was held virtually on April 8-9, 2021, with the second phase anticipated to allow for in-person participation at FAMU during April 2022.
- Student NERTOs have been affected by travel restrictions and NOAA laboratory closures. A large number of students adapted existing NERTO plans to facilitate remote participation, with others opting to delay NERTOs in hopes of in-person options becoming available. As the COVID-19 situation evolves and CCME is provided guidance from host labs on the ability to accommodate in-person NERTOs or not, upcoming NERTOs will be adapted as necessary.

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- CCME scholars all had to transition to remote learning at their institutions. During this reporting period, some institutions resumed in-person classes, and others continued with remote learning.
- Many CCME scholars conducting research have experienced delays due to laboratory closures and the inability to travel to conduct field work. This has resulted in some scholars modifying their research plans and with others potentially needing to extend their time to graduation.
- Delays in research timelines and lack of in-person conferences have resulted in a reduction in the number of student and faculty presentations at scientific conferences or in the inability for students to attend in-person conferences. CCME works with scholars to identify opportunities for participation in virtual conferences and student development opportunities as well as in-person events when possible.

CCME has been granted a no-cost extension that will permit existing scholars the opportunity to complete their research and degrees. CCME has also been awarded additional Year 5 funding to address impacts of COVID-19 on students and research. The funding is being used to facilitate opportunities for remote training and research, additional financial support for scholars to alleviate financial hardships caused by the pandemic, and funding for students whose graduations and research have been delayed.

**Changes that have a significant impact on expenditures:**

COVID-19 travel restrictions and laboratory closures have had a significant impact on expenditures over the past year. Notably, student and faculty travel has been limited. These impacts on expenditures will be addressed with the submission of a spending plan for the no-cost extension period for the award.



## VII. Special Award Conditions

This section details the progress made during this reporting period for the specified special award conditions below.

### 1. EPP/MSI CSC Performance Progress Reports

NOAA CCME has complied with the requirement that Performance Progress Reports will be provided no later than 30 days following the end of each 6-month period from the start date of the original award.

### 2. Evaluation Plan for Coastal and Marine Ecosystems Cooperative Science Center

See Appendix C for a summary of the External Evaluator activities during this period.

### 3. Required Center Implementation Plan

The Center Implementation Plan was submitted on March 16, 2017, and has since been reviewed. An Implementation Plan Addendum was submitted to Grants Online (File ID: 2676722) on June 30, 2017, to address further suggestions from EPP. An additional revised Implementation Plan that included the addendum was submitted to Grants Online (File ID: 2650452) on June 15, 2018. Further revisions have occurred. The current Center Implementation Plan is also available publicly at <http://ccme.famu.edu>.

### 4. EPP/MSI CSC Substantial Involvement and Collaborative Engagement

NOAA CCME frequently engages with the NOAA EPP management team through email correspondence and conference calls. The EPP Supervisor Ms. Jacqueline Rousseau, EPP CSCs Program Manager Dr. Audrey Trotman, and co-Technical Monitors Dr. Steve Thur (NOS) and Dr. Chris Kelble (OAR) are invited to participate in monthly NOAA CCME calls with the NOAA CCME Center Management Team and Co-PIs to discuss progress updates and upcoming events. In addition to reviewing internship opportunities, the EPP management team has also been substantially engaged in fostering the development of new collaborative opportunities (e.g., NOAA ESRL and NSF AI Institute). The EPP management team has also been closely engaged with the planning of the NOAA EPP/MSI 10<sup>th</sup> Biennial Education and Science Forum, which has been delayed due to the COVID-19 restrictions. CCME held the virtual Phase I of the Forum during this period and is planning for the in-person Phase 2 to be held in April 2022 at FAMU.

NOAA CCME continued collaboration with the other CSCs and NOAA EPP/MSI in planning the virtual Phase 1 and in-person Phase 2 10<sup>th</sup> Biennial NOAA EPP/MSI Forum, particularly by organizing the technical program. The Associate and Assistant Directors met with NOAA EPP/MSI and the CSC Assistant Directors monthly during the reporting period to continue NOAA EPP/MSI Forum planning activities.

The Distinguished Scientists from the four CSCs worked together to coordinate invited student speakers for the Phase 1 virtual form, and the CSCs and EPP also reached out to

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NOAA colleagues to fill invited speaker roles. The results of these actions will be used to streamline the preparation of the rescheduled Forum.

The NOAA CCME Education Expert convenes a monthly meeting of the Education Experts from all four CSCs. This team has initiated a monthly CSC Education webinar series featuring student speakers. The NOAA CCME Distinguished Research Scientist convenes a monthly meeting with the DRSs from all four CSCs to discuss best practices, share research and mentorship opportunities, and plan joint-CSC chaired sessions at upcoming scientific conferences.

The NOAA Technical Monitors for the Center are involved in facilitating collaborations between NOAA CCME and NOAA scientists for NERTO mentorships and for identifying other student and faculty research opportunities.

CCME engaged with NOAA EPP in developing the proposal after being invited to respond to the RFA for a second five-year institutional award for the CSC. The proposal was submitted on June 18, 2021.

#### **5. EPP/MSI Direct Student Support, Post-Doctoral Program, and Pre-Publication During the reporting**

NOAA CCME monitors student recruitment and academic progress to ensure that all requirements for participant eligibility as detailed in the Special Award Conditions and FFO are met. Monitoring methods include a review of application materials, mid-term and end of academic period check-ins as part of the individual student development plan process, review of student transcripts each semester, and review of data entered into the Student Tracker database. All NOAA CCME supported students sign a memorandum of understanding that details requirements for participation in the program. Direct student support for each participant is detailed in Table 6.

#### **Publications**

All publications acknowledging the support of this award are reported to NOAA CCME monthly and are reviewed by the Center DRS. Publications are listed on the NOAA CCME website with links to each publication. Publications are also sent to the NOAA Institutional Repository as appropriate (some publication types such as book chapters are not accepted by the repository)

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**Participant Beneficiaries**

*Table 7: Direct Student Support disbursed during the reporting period.*

Direct Student Support disbursed during the reporting period								
	Student Name	CCME Partner Institution	Tuition	Stipend	Travel	NERTO	One-time research	Professional Development
1	Alfred, Teon	TAMUCC	\$4,001.97	\$2,200.00	\$0.00	\$0.00	\$0.00	\$0.00
2	Andrews, Kaylah	BCU	\$7,257.00	\$5,500.00	\$1,237.00	\$0.00	\$1,532.00	\$0.00
3	Bayron, Margarette	FAMU	\$4,361.00	\$17,500.00	\$0.00	\$10,000.00	\$354.67	\$0.00
4	Boston, Bethany	JSU	\$0.00	\$3,998.66	\$1,579.76	\$0.00	\$0.00	\$0.00
5	Brooks, Erica	JSU	\$0.00	\$3,998.66	\$1,508.76	\$0.00	\$0.00	\$0.00
6	Brown, Aaliyah	FAMU	\$1,500.00	\$7,500.00	\$0.00	\$0.00	\$0.00	\$0.00
7	Byrne, Jamie	CSUMB	\$2,871.00	\$4,800.00	\$0.00	\$0.00	\$402.91	\$0.00
8	Choice, Lalah	FAMU	\$6,500.00	\$5,000.00	\$0.00	\$0.00	\$0.00	\$0.00
9	Clark, Sammuel	BCU	\$7,257.00	\$5,500.00	\$950.00	\$0.00	\$1,532.00	\$0.00
10	Cockett, Patricia	TAMUCC	\$1,369.09	\$13,200.00	\$0.00	\$0.00	\$0.00	\$0.00
11	Comba, Devin	TAMUCC	\$1,584.29	\$8,984.41	\$70.00	\$5,000.00	\$0.00	\$0.00
12	Corbett, Rhamira	FAMU	\$1,500.00	\$7,500.00	\$0.00	\$0.00	\$0.00	\$0.00
13	Cutajar, Jordana	TAMUCC	\$1,574.29	\$9,600.00	\$70.00	\$0.00	\$2,002.20	\$0.00
14	Dampier, Jeanna	JSU	\$1,425.00	\$15,000.00	\$0.00	\$0.00	\$0.00	\$0.00
15	Del Angel, Diana	TAMUCC	\$1,584.29	\$13,200.00	\$0.00	\$0.00	\$218.83	\$0.00
16	Del Rosario, Elizabeth	TAMUCC	\$1,369.09	\$13,200.00	\$0.00	\$0.00	\$12.60	\$0.00
17	Estrada, Beto	TAMUCC	\$2,705.51	\$2,200.00	\$0.00	\$0.00	\$0.00	\$0.00
18	Flores, Elena	UTRGV	\$3,444.17	\$7,500.00	\$1,853.26	\$962.80	\$213.93	\$25.00
19	Garrett-Mills, Amonra	FAMU	\$4,500.00	\$10,500.00	\$725.00	\$0.00	\$0.00	\$0.00
20	Gates, Maryssa	TAMUCC	\$2,395.51	\$2,200.00	\$0.00	\$0.00	\$0.00	\$0.00
21	Gniffke, Edward	UTRGV	\$0.00	\$2,750.00	\$1,783.10	\$0.00	\$0.00	\$0.00
22	Gonzalez, Jacob	UTRGV	\$3,925.17	\$8,571.42	\$1,416.57	\$0.00	\$0.00	\$0.00
23	Gunn, Derrick	JSU	\$0.00	\$3,998.66	\$1,133.33	\$0.00	\$0.00	\$0.00
24	Hamilton, Alexis	FAMU	\$1,500.00	\$7,500.00	\$0.00	\$0.00	\$0.00	\$0.00

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**Direct Student Support disbursed during the reporting period**

	<b>Student Name</b>	<b>CCME Partner Institution</b>	<b>Tuition</b>	<b>Stipend</b>	<b>Travel</b>	<b>NERTO</b>	<b>One-time research</b>	<b>Professional Development</b>
25	Harris, Elizabeth	TAMUCC	\$1,369.09	\$12,514.94	\$0.00	\$2,172.01	\$352.76	\$0.00
26	Hernandez, Rebekah	UTRGV	\$3,359.57	\$2,580.00	\$0.00	\$0.00	\$35.90	\$0.00
27	Hill, Jayewon	JSU	\$0.00	\$3,998.66	\$2,303.76	\$0.00	\$0.00	\$0.00
28	Johnson, Arion	BCU	\$7,257.00	\$5,500.00	\$1,182.00	\$0.00	\$1,532.00	\$0.00
29	Jordan, Miles	FAMU	\$1,500.00	\$7,500.00	\$1,244.00	\$0.00	\$0.00	\$0.00
30	Kilbane, Sarah	CSUMB	\$2,871.00	\$4,800.00	\$0.00	\$0.00	\$22.99	\$0.00
31	Lacey, Ashley	FAMU	\$4,361.00	\$17,500.00	\$899.00	\$10,000.00	\$0.00	\$0.00
32	Lascelles, Nigel	TAMUCC	\$1,574.29	\$12,000.00	\$0.00	\$0.00	\$381.78	\$0.00
33	Leal, Sandra	UTRGV	\$3,937.30	\$7,500.00	\$1,514.35	\$242.60	\$3,006.40	\$0.00
34	Lecusay, David	UTRGV	\$3,444.17	\$7,500.00	\$0.00	\$0.00	\$143.98	\$0.00
35	Leggett, Travis	CSUMB	\$0.00	\$4,998.00	\$0.00	\$0.00	\$0.00	\$0.00
36	Leon Perez, Mariana	TAMUCC	\$1,584.29	\$13,200.00	\$0.00	\$0.00	\$1,449.79	\$0.00
37	Lewis, Kylee	TAMUCC	\$1,584.29	\$8,984.41	\$0.00	\$5,000.00	\$0.00	\$0.00
38	Lima, Anthony	TAMUCC	\$1,369.09	\$7,541.09	\$0.00	\$10,000.00	\$286.14	\$0.00
39	Lyons, Willis	FAMU	\$10,833.00	\$17,500.00	\$0.00	\$0.00	\$0.00	\$0.00
40	Machuca, Connie	CSUMB	\$3,900.00	\$9,996.00	\$0.00	\$0.00	\$0.00	\$0.00
41	Martin, Kelsey	TAMUCC	\$1,584.29	\$13,200.00	\$0.00	\$0.00	\$0.00	\$0.00
42	Martinez, Summer	FAMU	\$2,567.00	\$15,701.00	\$899.00	\$0.00	\$856.09	\$0.00
43	Matuch, Cindy	CSUMB	\$2,871.00	\$4,800.00	\$0.00	\$0.00	\$70.00	\$0.00
44	Mauney, Nina	CSUMB	\$3,900.00	\$9,996.00	\$0.00	\$0.00	\$254.44	\$0.00
45	McBride, Molly	TAMUCC	\$1,499.29	\$9,600.00	\$70.00	\$0.00	\$4,678.50	\$0.00
46	McGregor, Lakean	BCU	\$7,050.00	\$1,500.00	\$0.00	\$0.00	\$0.00	\$0.00
47	McKinnon, Taylor	FAMU	\$2,708.00	\$10,500.00	\$0.00	\$0.00	\$0.00	\$0.00
48	McWilliams, Maya	JSU	\$0.00	\$3,998.66	\$1,094.81	\$0.00	\$0.00	\$0.00
49	Medley, Daryin	FAMU	\$10,833.00	\$15,701.00	\$1,866.00	\$5,000.00	\$0.00	\$0.00
50	Melendy, Shawn	CSUMB	\$3,900.00	\$9,996.00	\$0.00	\$0.00	\$8,575.31	\$0.00

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**Direct Student Support disbursed during the reporting period**

	<b>Student Name</b>	<b>CCME Partner Institution</b>	<b>Tuition</b>	<b>Stipend</b>	<b>Travel</b>	<b>NERTO</b>	<b>One-time research</b>	<b>Professional Development</b>
51	Miller, Andria	JSU	\$0.00	\$3,998.66	\$1,124.81	\$0.00	\$0.00	\$0.00
52	Mogus, Elizabeth	UTRGV	\$4,804.73	\$7,500.00	\$2,008.30	\$490.49	\$10,366.40	\$25.00
53	Molina, Mario	UTRGV	\$1,430.00	\$0.00	\$0.00	\$0.00	\$1,426.00	\$0.00
54	Olson, Christopher	FAMU	\$6,166.00	\$17,500.00	\$899.00	\$0.00	\$0.00	\$0.00
55	Outhwaite, Alyssa	TAMUCC	\$1,574.29	\$12,000.00	\$70.00	\$0.00	\$250.00	\$0.00
56	Poole, Shatoria	FAMU	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
57	Pugh-Kelley, Andrea	FAMU	\$4,361.00	\$17,500.00	\$1,703.00	\$0.00	\$6,600.00	\$0.00
58	Ray, Carlos	FAMU	\$1,500.00	\$7,500.00	\$0.00	\$0.00	\$0.00	\$0.00
59	Rigo, Josh	FAMU	\$3,393.00	\$9,367.00	\$0.00	\$5,000.00	\$0.00	\$0.00
60	Rivera, Zachary	UTRGV	\$0.00	\$1,800.00	\$1,498.56	\$0.00	\$3,308.37	\$0.00
61	Roberts, Jordan	FAMU	\$3,416.00	\$10,500.00	\$0.00	\$0.00	\$0.00	\$0.00
62	Rodriguez, Asael	UTRGV	\$1,430.00	\$3,061.28	\$1,680.28	\$0.00	\$179.79	\$0.00
63	Rodriguez, Caroline	CSUMB	\$3,900.00	\$9,996.00	\$0.00	\$0.00	\$5,265.55	\$0.00
64	Roozee, Evelyn	UTRGV	\$3,894.17	\$7,500.00	\$1,899.84	\$0.00	\$0.00	\$0.00
65	Rubino, Ryan	TAMUCC	\$1,574.29	\$9,527.27	\$0.00	\$5,000.00	\$195.69	\$0.00
66	Salinas, Victoria	UTRGV	\$3,444.17	\$7,500.00	\$0.00	\$8,325.00	\$9,165.18	\$0.00
67	Sanchez, Katia	UTRGV	\$0.00	\$2,411.48	\$0.00	\$0.00	\$0.00	\$25.00
68	Seida, Maggie	CSUMB	\$2,871.00	\$4,800.00	\$0.00	\$0.00	\$731.64	\$0.00
69	Smth, Liyah	FAMU	\$6,166.00	\$15,701.00	\$0.00	\$0.00	\$4,445.00	\$0.00
70	Soius, Mervia	BCU	\$7,257.00	\$5,500.00	\$950.00	\$0.00	\$1,532.00	\$0.00
71	Sugla, Monisha	TAMUCC	\$1,584.29	\$9,600.00	\$70.00	\$0.00	\$49.84	\$0.00
72	Terrell, Lateisha	BCU	\$7,257.00	\$1,000.00	\$0.00	\$0.00	\$0.00	\$0.00
73	Torres, Jazmin	UTRGV	\$0.00	\$1,527.27	\$1,082.94	\$0.00	\$55.85	\$0.00
74	Turner, DeMarcus	FAMU	\$6,166.00	\$15,701.00	\$706.00	\$0.00	\$1,644.63	\$0.00
75	Uribe, Natalie	UTRGV	\$1,430.00	\$866.40	\$0.00	\$0.00	\$0.00	\$0.00
76	Uwaiabi, Ariana	FAMU	\$4,361.00	\$17,500.00	\$0.00	\$0.00	\$0.00	\$0.00

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**Direct Student Support disbursed during the reporting period**

	<b>Student Name</b>	<b>CCME Partner Institution</b>	<b>Tuition</b>	<b>Stipend</b>	<b>Travel</b>	<b>NERTO</b>	<b>One-time research</b>	<b>Professional Development</b>
77	Vallejo, Juliet	UTRGV	\$3,802.30	\$7,500.00	\$1,685.01	\$0.00	\$0.00	\$25.00
78	Venable, Julian	JSU	\$2,760.00	\$15,000.00	\$1,124.81	\$0.00	\$0.00	\$0.00
79	Walker, Lily	TAMUCC	\$2,919.27	\$8,008.98	\$70.00	\$9,991.02	\$3,999.88	\$0.00
80	Wallace, Kourtney	FAMU	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
81	White, Miranda	BCU	\$14,307.00	\$9,000.00	\$190.00	\$5,000.00	\$1,782.00	\$0.00
82	White, Daphne	TAMUCC	\$4,039.34	\$2,200.00	\$0.00	\$0.00	\$0.00	\$0.00
83	Woods, Aleeshia	JSU	\$0.00	\$1,666.66	\$0.00	\$0.00	\$0.00	\$0.00
	<b>Totals</b>		\$254,289	\$663,741	\$40,162	\$82,184	\$78,913	\$100
	<b>Grand Total</b>	<b>\$1,119,389</b>						

*\*Note fringe and indirect costs not included in the final calculation of Direct Student Support. Mario Molina graduated during the previous reporting period but had some expenses paid during this period. Some students joined CCME toward the end of this reporting period and did not yet have any support disbursed during this period.*

**Post-Doctoral Program -**

During this reporting period, CCME hired a new postdoctoral research scientist at FAMU, Dr. Benjamin Ross. Dr. Ross identified his NOAA mentor, Dr. Emily Osbourne (OAR/AOML), and developed and submitted his postdoctoral plan.

**NERTO and Student Internships with NOAA**

Thirty-nine (39) CCME scholars have completed their NERTOs at NOAA facilities (or virtually) with NOAA federal employees as their mentors. CCME scholars have also participated in experiential training opportunities aboard NOAA vessels (e.g., the Okeanos).

**6. EPP/MSI Center External Evaluator Support on Award Funds Special Award Condition**

The remaining Year 5 support for the Center External Evaluator (\$15,000) will be expended during the next reporting period.

**7. Competitive Award Special Award Condition for EPP/MSI CSC Recipient Institutional MOA Association**

The University/NOAA MOA is incorporated by reference into the terms of the competitive award. Performance reports for the project follow the timetable of the funding program and are submitted directly to the funding program.

**8. NOAA Environmental Data and Information**

Data collected through student research associated with the CCME are shared with the public within two years of data collection as described in the CCME Data Management Plan of the award proposal.

**9. New Award Special Award Condition**

This award number NA16SEC4810009, to Florida A&M University, supports the work described in the Recipient's proposal entitled "NOAA Center for Coastal and Marine Ecosystems" dated March 30, 2016, and revisions dated July 27, 2016 and August 23, 2016, which are incorporated into the award by reference. Where the terms of the award and proposal differ, the terms of the award shall prevail.

**10. Multi-Year Special Award Condition**

NOAA CCME recognizes that continued funding of the current award is contingent upon availability of funds. The funding period for this award is 09/01/2016 – 08/31/2020. The award has now been extended through 08/31/2022 for the no-cost extension period from 9/01/2021 – 8/31/2022.

**11. NERTO**

All NERTOs conducted during this reporting period adhered to the NERTO guidelines for location and duration, with modifications for virtual participation being approved by NOAA EPP.

**X. EPP MSI CSC Programmatic Special Award Conditions**

**CSC Programmatic Special Award Conditions**

**A. Provide FY16 Center award information for:**

1. **Total Number of EPP-funded post-secondary students from underrepresented minority communities** who are trained 120 (seeking 128 degrees) and graduate 50 (51 degrees) in NOAA-mission sciences.
2. **Total number of EPP-funded post-secondary students** who are trained 139 (147 degrees) and graduate 57 (58 degrees) in NOAA-mission fields relevant to this announcement.
3. **Number of EPP-funded graduates who enter the NOAA mission workforce as hires** by NOAA, NOAA contractors 1 (NOAA NMRS SE Regional Office), NOAA partners 2 (Elkhorn Slough NERR; California Sea Grant), resource management agencies 8, NGO community 4, academia 5 or as entrepreneurs 0. (Note: some alumni have been employed in multiple sectors. See Table 6.)
4. **Number of EPP-funded graduates who participate in and complete NOAA agency mission-related postdoctoral level programs** 0.
5. **Total new funds leveraged with NOAA EPP award** (including post-secondary student support): Total leveraged funding for the reporting period: \$2,609,298.

**B. Provide FY16 Center award information to demonstrate contribution to supporting CSC Desired Program level Outcomes and Outputs defined in FFO p. 7 - 10, for the current reporting period.**

*Please see the Executive summary, Impacts of the Award, and Products of the Award.*

### **5.1 Education and Training**

*Please refer to the Evaluation Plan in Appendix C, Impacts of the Award, and the Executive Summary for updates on the following:*

***Outcome 1. Increased number, annually, of CSC post-secondary students trained.***

*Outputs:*

- *Increased quantitative and analytical skills;*
- *Increased competence in applying STEM to decision making, policy and management; and,*
- *Increased skills to use large data sets, geographical information systems (GIS) and statistical analysis, computer modeling, and algorithm development.*

CCME has increased the number of CSC post-secondary students trained with core competencies relevant to the NOAA-mission workforce, including increased quantitative and analytical skills, increased competence in applying STEM to decision making, policy, and management, and increased skills to use large data sets, geographical information systems and statistical analysis, computer modeling, and algorithm development. These core competencies are achieved through the recruitment and graduation of students in Center-approved relevant degree programs to provide this training. To increase the training above the typical academic degree requirements, CCME students also participate in the Center-Wide Core Competency course (with student competencies detailed in Appendix A Table 3), are provided with additional training (detailed in Section I), and conduct research aligned with the CCME focal areas that include social science and big data as cross-cutting themes. CCME held the 2021 CWCC during this reporting period at the Whitney Lab for Marine Bioscience near St. Augustine, FL. This course was attended by 54 CCME scholars. The impact on candidate development is tracked and measured through CWCC pre- and post-tests and the Individual Student Development Plan. Individual Student Development Plans were assessed with CCME Scholars at the end of the Spring 2021 semester.

***Outcome 2. Increased number of CSC post-secondary students educated and graduated annually.***

*Outputs:*

- *The number of degrees earned annually in NOAA mission-related disciplines.*



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- *The number of students (total and URM) who participated in professional development opportunities, to include at least one on-site experiential research and training opportunity at a NOAA lab, office, or facility with tangible training and research: (a) for a minimum duration of 4 consecutive weeks, and (b) resulted in a publication or an oral or poster presentation to experts, peers, and/or other stakeholders.*

During this six-month reporting period, CCME graduated a total of 13 students (10 B.S., 2 M.S., and 1 Ph.D.) in NOAA mission-related disciplines. Since its inception in the fall of 2016, CCME has graduated 57 individuals earning 58 degrees.

All CCME students participate in a variety of professional development opportunities tracked through the Individual Student Development Plan. To date, CCME has had 47 graduate scholars participate in a NERTO. At a minimum, students participating in a NERTO prepare a report and present results to staff of the host facility. Many of these scholars also present their NERTO results in the center and CSC-wide webinars, national meetings, and publications.

***Outcome 3. Increased CSC capacity to train and graduate students.***

***Outputs:***

- *Number of seminars, new courses, new programs, and new degrees offered to develop working skills and functional competencies to support the NOAA mission and workforce*
- *Total numbers of students supported by the CSCs and degrees awarded that reflect the changing demographics of the nation*

CCME students received additional training and educational opportunities through seminars, workshops, CCME-hosted mini-courses, and professional development activities during this reporting period. Other regular CCME training events (such as those at the NOAA EPP Education and Science Forum and the CWCC) occur outside of this reporting period. Examples of seminars and training opportunities include:

- OneNOAA Seminar Series
- CSC Education Lead Webinar Series
- Professional development workshops (Detailed in Section 1 description of Areas of Focus, item 5)
- NOAA internship opportunities, such as NERTOs (17 during this period) and cruises (one student participated on a NOAA cruise during this reporting period).

To date, CCME has supported 139 students pursuing 147 degrees. 90% of CCME-supported students are from URM communities. To date, CCME has graduated 57 students with 58

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degrees – 1 Ph.D., 16 Master’s, and 41 Bachelor’s - with 51 (88%) of these degrees being awarded to students from URM communities.

***Outcome 4. Reduce the attainment gap for URM students in NOAA mission-relevant fields***

*Outputs*

- *Increased number of URM students in student development activities that will lead them to the attainment of degrees and/or employment in NOAA mission fields.*
- *Increased number of URM students who select to pursue higher education in NOAA mission fields.*

A total of 47 URM CCME Scholars have participated in NERTOs (three during this reporting period). Currently, 15 CCME scholars or graduates working in NOAA mission-relevant fields are from URM communities.

Eight CCME Alumni completed or are pursuing a higher education degree within the CCME pipeline:

1. Brianna Alanis (graduated with B.S. and M.S. degrees)
2. Anthony Lima
3. Sandra Leal
4. Nigel Lascelles
5. David Lecusay
6. Liyah Smith
7. Summer Martinez
8. Miranda White

**5.2 Scientific Research**

***Outcome 1. Increased NOAA mission-relevant research capacity at MSIs.***

*Outputs*

- *Number of research collaborations with NOAA and CSC faculty, staff and students.*
- *Number of NOAA scientists serving as mentors and advisors for student research.*
- *Number of intra-institutional collaborative partnerships established and maintained in support of NOAA’s mission.*
- *Number of uses of NOAA data in research and tool development.*
- *Number of inter-institutional collaborative partnerships established and maintained in support of NOAA’s mission.*

See Table 3, Table 4, and Appendix Table 1 for partnerships and collaborations including NOAA mentors.

***Outcome 2. CSC-supported faculty, staff and students' research directly aligned with NOAA's mission and strategic priorities.***

*Outputs*

- *Number of peer reviewed publications, presentations, and tools developed by faculty, staff, and students.*
- *Use of CSC research results and tools by NOAA and other stakeholders.*
- *Number of instances CSC publications are cited.*
- *Number of CSC students, staff or faculty recognized nationally for CSC research.*

During this reporting period, CCME had 18 works published, including 2 student papers in peer-reviewed journals, 13 faculty papers published, 1 dissertation, and 2 theses. CCME also had 28 oral or poster presentations during this reporting period – 18 by students. One dataset was published by a student and one other dataset was developed during a NERTO for internal use at the NOAA host laboratory.

See Section II. Products of Award and Section V. Impacts of Award for details.

**5.3 CSC Administration**

***Outcome 1. Increased CSC capacity to support and sustain education and research in NOAA mission areas.***

*Output*

- *Amount of funds leveraged with CSC award to support NOAA mission in education and research.*

During the reporting period, a total of \$2,609,298 in new leveraged funding was awarded.

***Outcome 2. Increased engagement by CSCs with the URM communities to enhance the mission workforce pipeline.***

*Outputs*

- *Number of structured activities to recruit and retain students, particularly from URM communities, in NOAA mission-relevant higher education programs.*
- *Number of MSI inter-institutional collaborative partnerships established and maintained in support of NOAA's mission.*

CCME institutions led a Planet Stewards project focused on living shorelines, incorporating material in coursework offered at partner institutions. From this course, BCU recruited two new students into CCME (one B.S. and one M.S.).

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JSU was awarded an NSF GEOPaths undergraduate program proposal led by CCME affiliated faculty member Dr. Brent Thoma. This program will allow CCME and other students to participate in expanded professional development seminars, geosciences research seminar series, and will serve as peer mentors for incoming freshman marine or environmental science students.

***Outcome 3. To increase communication of CSC accomplishments and capacity***

*Outputs*

- *Number of CSC products used by stakeholders.*
- *Number of featured articles in print or digital media referencing the NOAA CSC.*

“B-CU Joins Florida Institute of Oceanography Consortium”, East Volusia News.

<https://eastvolusianews.com/stories/605813182-b-cu-joins-florida-institute-of-oceanography-consortium>

CCME made several updates to the functionality of its website (ccme.famu.edu), and social media accounts to communicate accomplishments. CCME also maintains an updated section of news and events on the website.

***Outcome 4. Increased use of post-secondary education evaluation methodologies***

*Outputs*

- *Number of best practices that are measurable, scalable and transferable.*
- Consistent use of established evaluation practices, including higher education practices, to measure effectiveness of each component of the award.

CCME utilizes the following formative and summative evaluation methodologies for education outcomes and student progress:

1. CWCC evaluation through pre and post-test assessment of attendees,
2. Individual Student Development Plan semester reviews,
3. Taskstream project review process,
4. Student research presentations through CCME webinar and student meetings,
5. Student respondent surveys to improve Center processes.

The analytical report provided by the external evaluator uses established metrics to measure the effectiveness of each component of the award.

CCME continuously reviews all Education and Training Outcomes and Outputs. The Center Faculty and Staff are committed to achieving the goals set forth for the FY16 award to:

Goal 1: Increase the number of well-trained and highly qualified scientists and managers, particularly from under-represented minority groups, entering the NOAA and NOAA-related workforce;

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Goal 2: Enhance the scientific understanding of human interactions with the coastal environment in support of NOAA's place-based management specifically as it relates to the response of coastal and marine ecosystems to natural and human induced stressors;

Goal 3: Improve the scientific basis for coastal resource management by developing tools and research products to characterize, evaluate, and forecast coastal and marine ecosystem responses to natural and human induced stressors; and

Goal 4: Facilitate community education and outreach relating to the function and relevance of coastal ecosystems and the services they provide to society.

## Appendix A: Summary Tables

### Appendix Table 1: CCME Scholars

*Blue entries represent students who have graduated from the program before this reporting period and are not continuing in another degree program within CCME. Red entries represent students who left the program without completion prior to this reporting period. Purple entries represent students who reached the end of their funding prior to this reporting period but are still involved with CCME and finishing degree requirements. Black entries represent students who were active in CCME during the reporting period.*

	CCME Scholar	Degree Level	Institution	Cohort	URM	Focal Area	Faculty Advisor(s)	Synopsis Title	Expected NERTO Participation Dates	NOAA/NERTO Mentor's Name or Potential NOAA Mentors or NOAA Office of Interest	NOAA Mission-Aligned Research Project (NERTO) Title
1	Alanis, Brianna	B; M	UTRGV	1; 2	Y	CI	John Breier	-; Using primary productivity proxies as ecosystem health metrics	-; COMPLETED: Spring 2019	-; Dr. Chris Kelble, AOML	-; Patterns of Pelagic Primary Productivity in South Florida Coastal Waters for CSC Graduate Student
2	Alexander, Shirley	B	JSU	3	Y	PBC	Brent Thoma	-	-	-	-
3	Alfred, Teon	B	TAMUCC	5	Y						
4	Andrews, Kaylah	B	BCU	5	Y						
5	Bauer, Shelby	B	UTRGV	1			Alejandro Fierro Cabo	-	-	-	-
6	Bayron-Arcelay, Margarete	D	FAMU	2	Y	CI	Michael Martinez-Colon	It takes two to tango: protist and bacteria as bioindicators of estuarine health in FL and TX	Summer 2021	Dr. Cheryl Woodley, Research Microbiologist, NOS	Meta-analysis of West Coast MPA Performance

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7	Bellamy, Philip	M	BCU	1	Y	CI	J. Cho	-	COMPLETED: Fall 2017	Dr. Christopher Kelble, AOML, NOAA OAR	Determining Trends in Water Quality Using High Resolution Land Use Data
8	Boisen, Olivia	B	CSUMB	1	Y	CI	John Goeltz	-	-	-	-
9	Boston, Bethany	B	JSU	5	Y						
10	Breaux, Jonathan	T	JSU	1		PBC	Brent Thoma	-	-	-	-
11	Brooks, Erica	B	JSU	5	Y						
12	Brooks, Mallory	M	BCU	1		CR	Dr. Hyun Jung (J.) Cho	Evaluating the effectiveness of restored shorelines in mitigating non-point source pollution and climate impacts in the Mosquito Lagoon, Florida, USA	COMPLETED: Summer 2018	Dr. Bill Arnold, NOAA Fisheries Southeast Regional Office	Implementing Ecosystem-based Management in the U.S. Caribbean
13	Brown, Aaliyah	B	FAMU	3	Y	CI	Richard Long	-	-	-	-
14	Bruce, Terrius	T	FAMU	2	Y	CI	Steve Morey	-	-	-	-
15	Byrne, Jamie	B	CSUMB	4	Y	PBC	Corey Garza	-	-	-	-
16	Choice, Lalah	B	FAMU	5	Y						
17	Chui, Emily	B	CSUMB	1	Y	CI	Alison Haupt	-	-	-	-
18	Clark, Samuel	B	BCU	5	Y						
19	Cockett, Patricia	D	TAMUCC	1	Y	CI	Paul Montagna	Linking the Land and Sea: Adaptation of Hawaiian Traditional Ecological Knowledge to South Texas Coastal Marine Ecosystems	Completed, Fall 2019	Dr. Randall Kosaki, Papahānaumokuākea Marine National Monument	Temporal and Spatial Comparison of Intertidal Community Dynamics Within Papahānaumokuākea Marine National Monument
20	Comba, Devin	M	TAMUCC	3		PBC	Jennifer Pollack	Advancing oyster reef restoration projects: comparing functions of different habitats and addressing the use of	COMPLETED: Summer 2021	Polly Hicks, NMFS/Office of Habitat Conservation/NO	Assessment of the Hydrologic Restoration Effectiveness Monitoring (Tier II) Projects Funded by the

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								plastic in small-scale restorations		AA Restoration Center	Community-based Restoration Program (CRP)
21	Coogan, Brian	B	FAMU	3		CI	Steve Morey	-	-	-	-
22	Corbett, Rhamira	B	FAMU	3	Y		Michael Abazinge	-	-	-	-
23	Cutajar, Jordana	M	TAMUCC	4	Y	CI	Mike Wetz	A Lagrangian Study of Red Tide Bloom Dynamics in Corpus Christi Bay	Fall 2021	Dr. Steve Morton; NOAA/NOS/NC COS	In Development
24	Dampier, Jenna	D	JSU	4	Y	TBD	Tim Turner	Assessment of Physical and Chemical Characteristics of the Water in the Grand Bay National Estuarine Research Reserve in Moss Point, Mississippi in the Gulf of Mexico	COMPLETED: Spring 2021	Dr. Dennis Apeti, NOAA/NOS/NC COS	Assessment of Metals in the Northern Gulf of Mexico from NOAA NCCOS Mussel Watch Program Data - For NOAA EPP Graduate Student
25	DaSilvio, Abraham	M	BCU	2	Y	PBC	J. Cho	Assessment of Storm-water Pollution within a Coastal Urban Canal Basin: A Case Study of Nova-Reed Canal Basin along the Halifax River Estuary, Florida	Spring 2020	Dr. Chris Kelble;AOML Miami, FL	Investigating the connection between water quality and coral health
26	Davis, Beth	M	CSUMB	4		TBD	Alison Haupt	In Development	TBD	Seeking	In Development
27	Del Angel, Diana	D	TAMUCC	1	Y	PBC	David Yoskowitz	Assessment of Salt Marsh Ecosystem Services in the US Gulf of Mexico	COMPLETED: Spring 2019	Dr.Mary Culver; NOAA Office of Coastal Survey	Improving Coastal Resilience through the Use of Natural and Nature Based Features
28	Del Rosario, Elizabeth	D	TAMUCC	1	Y	PBC	Richard McLaughlin	Environmental Flows Management Strategy for the Coastal Zone in Texas	COMPLETED: Summer 2019	Dr. Trey Flowers, P.E.Director, Analysis and Prediction Division NOAA/NWS/NW C/Office of Water Prediction	Evaluating indicators of regulatory complexity to understand the cost of compliance
29	Destefano, Antoinette	M	BCU	3	Y		Raphael Isokephi	In Development		Seeking	In Development



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30	Duke, Shalalia	B	BCU	3	Y	PBC	Sarah Krejci	-	-	-	-
31	Eddy, Taylor	M	CSUMB	1	Y	PBC	Corey Garza	Multiscale habitat use and effects of MPAs on California spiny lobster success	COMPLETED: Fall 2018	Dr. Charlie Wahle, NOAA National MPA Center	Meta-analysis of West Coast MPA Performance
32	Estrada, Beto	B	TAMUCC	5	Y		-	-	-	-	-
33	Etienne (Stanley), RaTeema	M	FAMU	2	Y	CI	Hongmei Chi	Predict Florida Beach rip current via Data Analytics Techniques	COMPLETED: Summer 2019	Mike Churma and Dr. Jung-Sum Im, Meteorological Development Laboratory Office of Science and Technology Integration NWS	Rip Current Model Validation
34	Figueroa, Gabrielle	T	FAMU	2	Y	CI	Michael Martinez-Colon	-	-	-	-
35	Flores, Daniel	B	UTRGV	2	Y	PBC	Alejandro Fierro Cabo	-	-	-	-
36	Flores, Elena	M	UTRGV	4	Y	PBC	Alejandro Fierro-Cabo	Effects of Nutrient Enrichment on Mangrove and Saltmarsh Habitats	Summer 2021	Jennifer Doerr, NMFS/SEFSC Galveston	Assessing nutrient levels in black mangrove habitats and potential effects on the distribution and composition of estuarine nekton species assemblages in a changing salt marsh-black mangrove landscape
37	Garcia, Javier	B	UTRGV	2	Y		John Breier	Using computer vision techniques for event classification and data compression during autonomous oceanographic missions.	-	-	-
38	Garrett-Mills, Amonra	T	FAMU	4	Y		-	-	-	-	-
39	Gates, Maryssa	B	TAMUCC	5			-	-	-	-	-
40	Gniffke, Edward	M	UTRGV	5	Y	PBC	Erin Easton	In Development	TBD	Seeking	In Development

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41	Gonzalez, Edith	B	UTRGV	4	Y	PBC	Carlos Cintra				
42	Gonzalez, Jacob	M	UTRGV	5	Y	PBC	Carlos Cintra	In Development	TBD	Seeking	In Development
43	Grant, Jada	B	JSU	1	Y	PBC	Brent Thoma	-	-	-	-
44	Gullatte, Kennedy	B	FAMU	1	Y		Michael Abazinge	-	-	-	-
45	Gunn, Derrick	B	JSU	5	Y			-	-	-	-
46	Guruvadoo, Shan	M	BCU	1	Y	CI	Craig Tinus	Investigating causes of changing tidal range and timing in U.S. harbors	COMPLETED: Start Date: August 14, 2017 End Date: November 3, 2018; Completed 12 weeks- Fall 2017	Drs. Gregory Dusek; Chris Zervas (CO-OPS); Organization - Jena Kent	Investigating Causes of Changing Tidal Range and Timing in U.S. Harbors
47	Hamilton, Alexis	B	FAMU	1	Y	CI	Richard Long	-	-	-	-
48	Harris, Elizabeth	M	TAMUCC	3		CI	Paul Montagna	Multiple Stressors: Interaction between freshwater inflow and contaminants on toxicity of estuarine organisms	COMPLETED: Spring 2021	Dr. Marie DeLorenzo, NCCOS	Ecotoxicology Assessment of Climate and Pesticide Interactions in Estuarine Systems for CCME Student
49	Hernandez, Rebekah	M	UTRGV	1	Y	PBC	David Hicks	Assessing long-term benthic community dynamics at the Flower Garden Banks National Marine Sanctuary	COMPLETED: June 2018 - August 2018	NERTO Mentor: Dr. Michelle Johnston, Research Marine Biologist, Flower Garden Banks National Marine Sanctuary; NOAA mentor: Dr. Emma Hickerson, Flower Garden Banks National Marine Sanctuary	East Flower Garden Bank Photostation Coral Species Identification and Historical Coral Cover Analysis for CSC Graduate Student
50	Hill, Jayewon	B	JSU	5	Y			-	-	-	-

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51	Holmes, Walter	B	FAMU	1	Y		Charles Jagoe	-	-	-	-
52	Johnsin, Arion	B	BCU	5	Y						
53	Johnson, Benjamin	B	FAMU	1	Y		-	-	-	-	-
54	Jones, Kennedy	B	JSU	2	Y	CI	Ranjani Kulawardhana	-	-	-	-
55	Kilbane, Sarah	B	CSUMB	4			Corey Garza				
56	Kirby, Ayanna	B	FAMU	1	Y		Michael Abazinge	-	-	-	-
57	Lacey, Ashley	D	FAMU	3	Y	CR	Phyllis Gray-Ray/Charles Jagoe	In Development	Fall 2021	Erin Schnettler, OLIA	NOAA EPP/MSI Research and Training Opportunity with NOAA Office of Legislative Affairs and the House Natural Resources Committee
58	Lascelles, Nigel	M; D	FAMU; TAMUCC	1; 3	Y	CI	Charles Jagoe; Jeremy Conkle	Oysters as sentinels of microplastic pollution; In development; Tire Wear particles in surface waters and their impacts on the Environment	COMPLETED: June 1 - August 31, Summer 2018; Anticipated Summer 2021	Dr. Ashok Deshpande, Sandy Hook, Northeast Fisheries Science Center; Dr. Ashok Deshpande	Chemical Characterization of Microplastics Polymers;
59	Leal, Sandra	B; M	UTRGV	3; 4	Y	PBC	Carlos Cintra; Carlos Cintra	Population structure of Red Drum ( <i>Sciaenops ocellatus</i> ) in two systems in the Northwestern Gulf of Mexico	Summer 2021	Jennifer Leo NOAA NMFS SEFSC-Galveston	Identifying genotypic and phenotypic effects of thermal stress on shrimp species in a south Texas marsh
60	Lecusay, David	B; M	UTRGV	1; 3	Y	PBC	Carlos Cintra; Alejandro Fierro Cabo	-; Refining and validating a multimetric index for ecosystem health assessment and monitoring of deltaic freshwater wetlands of the Rio Grande	Completed Spring 2020	-; Dr. Chris Kelble, NOAA OAR AOML	-; A multi-metric index for south Florida coastal ecosystems
61	Leggett, Travis	M	CSUMB	5		PBC	James Lindholm	In Development		Seeking	To be developed

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62	León Pérez, Mariana	D	TAMUCC	2	Y	CR	Dr. James Gibeaut	Massive Arrivals of Pelagic Sargassum: Vulnerability of Coastal Social-Ecological Systems to Sargassum Beaching Events	Summer 2021 (tentative)	Monica Grasso, Performance, Risk and Social Science Office	To be developed
63	Lewis, Kylee	M	TAMUCC	5		CR	James Gibeaut	Hydrodynamic Modeling on Oyster Reefs under Climate Change Conditions” - Kylee’s will be applying hydrodynamic modeling of present and future conditions to gain an understanding of the impact of future climate on oyster reefs	COMPLETED: Summer 2021	Artara Johnson; Greg Dusek NOAA NOS CO-OPS	For EPP CSC Student “Oceanographic Data Analysis Using Modeled and Observed Water Level Data”
64	Lima, Anthony	M; D	UTRGV; TAMUCC	1; 3	Y	PBC; CR	Owen Temby; Dr. Richard McLaughlin	Inter-agency Cooperation, Policy, and Management of the Gulf of Mexico Fishery; Exploring Oyster Aquaculture Potential and Investigating Economic, Ecological, and Legal Barriers	COMPLETED: June 4th - August, Summer 2018; COMPLETED: Summer 2021	Dr. Scott Large, Northeast Fisheries Science Center, NMFS; Seeking a NOAA mentor; Dr. Suzanne Bricker, NOAA NOS NCCOS	Evaluating Indicators of Regulatory Complexity to Understand the Cost of Compliance; Eutrophication, shellfish aquaculture, and bioextraction: ecosystemservices provided by oysters
65	Lirio, Gabriella	M	FAMU	5	Y	CI	Michael Martinez-Colon	In Development		Seeking	To Be Developed
66	Lopez, Jaime	B	UTRGV	1	Y		Owen Temby	-	-	-	-
67	Lyons, Willis	D	FAMU	2	Y	PBC	Michael Abazinge	A Comparative Assessment Environmental Risk Perception and Vulnerability to Saltwater Intrusion, and Support of Proposed Water Management Changes in the Lake Okeechobee Watershed (Working title)	Completed Fall 2020	Allison Rosner, NOAA Fisheries Greater Atlantic Regional Fisheries Office	Social Marketing and Communication as tools to Promote Conservation and Protection of Endangered Sturgeon
68	Machado, Malia	B	CSUMB	4	Y	CI	Nathaniel Jue	-	-	-	-

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69	Machucah, Connie	M	CSUMB	4	Y	CR	Nathaniel Jue	The Effect of Small-Scale Pesticide-Remediating Bioreactors on Community Dynamics of Bacteria and Ecological Function: Salinas, CA	The Effect of Small-Scale Pesticide-Remediating Bioreactors on Community Dynamics of Bacteria and Ecological Function: Salinas, CA	Dr. Kelly Goodwin, NMFS/SWFSC	To be developed
70	Madrid, Cristina	M	UTRGV	1	Y	CR	Dr. Owen Temby	Disaster Coordination in the Rio Grande Valley	COMPLETED: Summer 2018	Kim Penn, Silver Spring, MD at NOAA facility and College Park, MD at the University of Maryland College Park	Gray, Green, and Cultural Infrastructure Solutions to Enhance Coastal Resilience
71	Martin, Kelsey	D	TAMUCC	2		PBC	Greg Stunz	Distribution and Abundance of Economically Important Fish Species in the Western Gulf of Mexico	Spring 2021	Matthew Campbell National Marine Fisheries Service Pascagoula, MS	Developing and Implementing a Simulation Model for Economically Important Species at Varying Densities of Artificial Reefs
72	Martinez, Meghan	M	TAMUCC	1	Y	CI	Jennifer Pollack	Influence of oyster reef restoration on benthic infauna and reef-associated macrofauna	COMPLETED: Summer 2019 (May 28, 2019 – August 20, 2019)	NOAA Mentor: Dionne Hoskins-Brown NERTO mentor: Eric Weissberger, Ph.D., NOAA National Marine Fisheries Service, Office of Habitat Conservation, Restoration Center, Silver Spring MD	Data needs for planning and assessment of Oyster ( <i>Crassostrea virginica</i> ) restoration in the Northern Gulf of Mexico under the Deepwater Horizon Natural Resource Damage Assessment (NRDA)
73	Martinez, Summer	T;M	FAMU	3;4	Y	CI/CR	Richard Long	Growth Response of <i>Pleurotus ostreatus</i> to Petroleum Crude Oil with Co-metabolite Amendments	Fall 2021	Ed Wirth	Growth Response of <i>Pleurotus ostreatus</i> to Petroleum Crude Oil with Nutrient Amendments for CSC Student

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74	Matuch, Cindy	B	CSUMB	4	Y		Nathaniel Jue	-	-	-	-
75	Mauney, Nina	M	CSUMB	4	Y	PBC	Corey Garza	Characterizing movement and habitat use of leatherback sea turtle ( <i>Dermochelys coriacea</i> )	Fall 2021	Elliot Hazan, NMFS/SWFSC	In Development
76	McBride, Molly	M	TAMUCC	4		CI	Mike Wetz	Nutrient and Salinity Controls on the Growth of <i>Karenia brevis</i>	Spring 2022	Rance H NMFS/SEFSC/Beaufort ardison,	Investigation of the nutrient and salinity controls on growth of the HAB <i>Karenia brevis</i> in Texas waters
77	McGregor, LaKean	M	BCU	5	Y	PBC	Sarah Krejci	In Development	TBD	Seeking	In Development
78	McKinnon, Tayler	B	FAMU	1	Y			-	-	-	-
79	McKinzie, Robert	B	BCU	3	Y	CI	Hyun Cho	-	-	-	-
80	McWilliams, Maya	B	JSU	5	Y			-	-	-	-
81	Medley, Daryin	M	FAMU	3	Y	CI	Steven Morey	Fin Whale Trends in the Bering Sea and Unimak Pass	COMPLETED: SUMMER 2021	Dr. Phyllis Stabeno, OAR/PMEL; Dr. Catherine Berchok, NMFS/AFSC	Analysis of Satellite Ice Thickness Products in the Bering and Chukchi Seas – For CSC Student
82	Melendy, Shawn	M	CSUMB	4	Y	PBC	Olson	Improving eDNA Detection as a Biological Survey Tool in Rivers: Modeling Degradation of Salmon eDNA	TBD	Seeking	In Development
83	Meredith, Melissa	B	CSUMB	1		CI	Cheryl Logan	-	-	-	-
84	Miles, Jordan	B	FAMU	4	Y			-	-	-	-
85	Miller, Andria	B	JSU	4	Y		Brent Thoma	-	-	-	-
86	Minor, Keenasha	M	JSU	1	Y	CI	Fengxiang Han	Analysis of Naturally Occurring Radionuclides in the Northern Gulf of Mexico	COMPLETED: Summer 2019	Chad Entremont, NWS	Geospatial mapping of flood extent for river basins in the Jackson, MS NWS forecast area – For CSC Student
87	Mogus-Garcia, Elizabeth	M	UTRGV	5	Y	PBC	Carlos Cintra	Red drum ( <i>Sciaenops ocellatus</i> ) trophic web reconstruction using	Summer 2021	Jennifer Leo, NMFS/SEFSC Galveston	Identifying genotypic and phenotypic effects of thermal stress on

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								stable isotopes in two systems in the northwestern Gulf of Mexico			shrimp species in a south Texas marsh
88	Molina, Mario	B	UTRGV	4	Y	PBC	David Hicks	-	-	-	-
89	Murphy, Elizabeth	M	UTRGV	1		PBC	Carlos Cintra	Tracking nitrogen transfer through Black Mangrove ( <i>Avicennia germinans</i> ) communities	COMPLETED: Spring 2019	Dr. Joe Serafy (NOAA/NMFS/SEFSC) in Miami, FL	Patterns of change in the fish assemblages of Biscayne Bay mangroves
90	Mwenda, Samuel	M	BCU	1	Y	CR	Dr. Hyun Jung (J.) Cho	Assessing Treatment Wetland Efficacy and Public Education in Stormwater Treatment Utilizing Native Wetland Plants	COMPLETED: Summer 2019	Leslie Craig and Dr. Lisa Vandiver, NOAA Fisheries Southeast Regional Office	Identification of cost-effective salt marsh restoration opportunities along the South Atlantic coast
91	Navarro, Javier	M	UTRGV	2	Y	PBC	Alejandro Fierro Cabo	Analysis of the facilitative relationship between <i>Batis maritima</i> and <i>Avicennia germinans</i> seedlings as mangrove restoration strategy	COMPLETED: Summer 2019	Jennifer Doerr, SEFSC	The distribution and composition of estuarine nekton species assemblages in a changing salt marsh-black mangrove landscape for NOAA EPP Graduate Student
92	Olsen, Christopher	D	FAMU	5		TBD	Wenrui Huang	To be developed	TBD	Seeking	To be developed
93	Outhwaite, Alyssa	D	TAMUCC	4		PBC	Jennifer Pollack	Ecological structure and function of estuarine habitats in Matagorda Bay, Texas	TBD	Seeking	To be developed
94	Parker, Lauren	M	CSUMB	1		PBC	James Lindholm	The ecology of organisms on the “lost reefs” of the MBNMS: diver-held video surveys from 20-40 m water depth.	COMPLETED: Fall 2018	Dr. Andrew Devogelaere, Research Coordinator, Monterey Bay NMS	Meso-photic reefs of the Monterey Bay National Marine Sanctuary
95	Pavlock McAuliffe, Miya	M	CSUMB	1	Y	CR	Dr. Rikk Kvitek (CSUMB) & Dr. Tom Connolly (Moss)	Quantifying Sediment Transport Along a Rocky Embayed Coastline: The Southern Monterey Bay, CA	COMPLETED: Summer 2019	Dr. Andrew Devogelaere, Research Coordinator, Monterey Bay	Geospatial data collection and visualization to enhance resource manager/scientist

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							Landing Marine Laboratories)				collaborations- for EPP CSC student
96	Perriman, Geramy	B	JSU	1	Y	PBC	Brent Thoma	-	-	-	-
97	Poole, Shatoria	M	FAMU	5	Y	CI	Hongmei Chi	To be developed	TBD	Seeking	TBD
98	Preyer, Devon	B	CSUMB	3	Y	CI	Steve Moore	-	-	-	-
99	Pugh-Kelley, Andrea	D	FAMU	2	Y	CI	Steve Morey	Pathways of PFAS in the Great Lakes from Sources to Water Intakes and Human Consumption	COMPLETED: Summer 2019	Dr. Mark Rowe, GLERL	Numerical Simulation of PFAS in the Great Lakes for NOAA EPP Graduate Student
100	Ray, Carlos	B	FAMU	3	Y	CI	Michael Abazinge	-	-	-	-
101	Rigo, Joshua	M	FAMU	3	Y	CI	Hongmei Chi	Rip Current Image Analysis and Model Validation	Completed January 2021	Mike Churma, NWS/MDL	Rip Current Image Analysis and Model Validation – For CSC Student
102	Rivera, Zachary	B	UTRGV	5	Y			-	-	-	-
103	Roberts, Jordan	B	FAMU	1	Y		Michael Abazinge	-	-	-	-
104	Rodriguez, Asael	M	UTRGV	4	Y	PBC	Fierro-Cabo	To be developed	TBD	Seeking	In Development
105	Rodriguez, Caroline	M	CSUMB	3	Y	PBC	Cheryl Logan	Physiological responses of corals to temperature stress	Completed, Fall 2019	Dr. Thomas Oliver, Pacific Islands Fisheries Science Center	Scaling Up Coral Demography: Measuring Vital Rates Using Repeated Photomosaics
106	Rodriguez, Cassandra	B	UTRGV	1	Y		David Hicks	-	-	-	-
107	Rolle, Shaquila	B	FAMU	1	Y	CI	Richard Long	-	-	-	-
108	Roozee, Evelyn	M	UTRGV	5	Y	PBC	Owen Temby	The Impact of Control on Trust and Risk in Salish	TBD	Seeking	To be developed



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								Sea Transboundary Fishery Governance in the Salish Sea			
109	Rosa-Marin, Angelique	M	FAMU	1	Y	CI	Michael Martinez-Colon	Implementation of the FORAM Index (FI) in coral reefs from Jobos Bay at Puerto Rico	Completed, Fall 2019	Dr. Cheryl Woodley, NOS	Exploring the use of foraminifera as a bioassay organism for coral reef environments
110	Rubino, Ryan	M	TAMUCC	3	Y	PBC	Joe Fox	Effects of longline oyster cage aquaculture on seagrass ecosystems in Copano Bay, TX	COMPLETED: Summer 2021	Renee Mercaldo-Allen, NMFS/NEFSC-Milford	Describing behavior of scup <i>Stenotomus chrysops</i> associated with aquaculture gear and rock reef habitats in Long Island Sound
111	Salinas, Victoria	M	UTRGV	3	Y	PBC	David Hicks	Growth and Reproduction studies of Black Corals (antipatharians): South Texas	Summer 2021	Dr. Cheryl Woodley, NOS	Developing propagation techniques for the black wire coral, <i>Stichopathes lutkeni</i>
112	Sanchez, Katia	B	UTRGV	3	Y		Owen Temby	-	-	-	-
113	Seida, Maggie	B	CSUMB	4			Moore	-	-	-	-
114	Shokere, Alexis	B	FAMU	1	Y		Michael Abazinge	-	-	-	-
115	Simpson, Queriah	M	FAMU	3	Y	CI	Michael Abazinge	Characterization of the microbiome of deep-water corals along the West Florida Slope	COMPLETED: Summer 2019	John Christensen, NCCOS, NOS	Linking habitat suitability models for deep-sea corals with exploration to discover unique microbiota on the west Florida slope for CSC graduate student
116	Smith, Liyah	T; M	JSU; FAMU	1; 3	Y	CI	Brent Thoma; Richard Long	Characterization of the Prokaryotic Epibionts of <i>Gammarus tigrinus</i>	-; Fall 2021	-; Dr. Jeff Guyon, NOS/NCCOS	-; DNA Metabarcoding of Gut Content for Brown Shrimp in Black Mangroves and Saltwater Marshes - For CSC Student
117	Soius, Mervia	B	BCU	4	Y						
118	Sugla, Monisha	M	TAMUCC	5	Y	PBC	Jennifer Pollack	Evaluating biodiversity and ecosystem services of	TBD	Seeking	To be developed

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								restored oyster reefs in Aransas Bay, Texas			
119	Terrell, Lateshia	B	BCU	5	Y		-	-	-	-	-
120	Thomsen, Alexandra Shien-li	M	CSUMB	3	Y	PBC	Arlene Haffa	Evaluating indicators of and factors contributing to restoration success in a large-scale experiment	Completed: Fall 2019	Dr. Steve Lonhart, ONMS	Exploring the use of foraminifera as a bioassay organism for coral reef environments for CSC Student
121	Torres-Roman, Jazmin	B	UTRGV	5	Y	PBC	Erin Easton	-	-	-	-
122	Turner, Damarcus	M	FAMU	4	Y	TBD	Martinez-Colon	Ground truthing of a GIS microplastic model within the Apalachicola River basin in FL	Summer 2022	Dr. Ashok Deshpande, NMFS NEFSC	Detection and identification of microplastics in a deep diving cetacean, the pygmy sperm whale (Kogia breviceps)
123	Uribe, Natalie	B	UTRGV	4	Y	PBC	Cintra	-	-	-	-
124	Uwaibi, Ariana	D	FAMU	2	Y	CI	Richard Long	Toxicity and Physical Responses to Cyanobacterial Harmful Algal Blooms	Summer 2022	Dr. Reagan Errera, OAR/GLERL	Linking the toxin expression for Microcystis aeruginosa with Environmental factors with the 2021 Lake Erie HAB Season
125	Vallejo, Juliet	M	UTRGV	4	Y	CR	Owen Temby	Scientific Knowledge Management in the Gulf of Mexico	Summer 2021	Maria Rea NOAA NMFS West Coast Regional Office	Comparative review of Collaborative Science partnerships in CA Central Valley
126	Vance, Miracle	B	JSU	3	Y			-	-	-	-
127	Vaughn, Natalie	B	CSUMB	3	Y	PBC	John Olson	-	-	-	-
128	Venable, Julian	D	JSU	1	Y	PBC	Ibrahim Farah/Brent Thoma	Densities and potential impacts of microplastics in Grand Bay National Estuarine Research Reserve	COMPLETED: Summer 2019	Ashok Deshpande NEFSC Habitat Ecology Branch NMFS Sandy Hook, NJ	Characterization of microplastics collected from the beaches, for CSC Graduate Student
129	Vidal, Prian	M	FAMU	1	Y	CI	Charles Jagoe and Elijah Johnson	Nitrogen sequestration associated with oyster aquaculture in the Oyster	COMPLETED: Fall 2019	Dr. Suzanne Bricker, Physical Scientist and	Re-immersion time for reduction of Vibrio parahaemolyticus and

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								Bay, Aquaculture Use Zone, Wakulla Co, FL		Manager of NOAA's National Estuarine Eutrophication Assessment, NCCOS, Cooperative Oxford Laboratory	Vibrio vulnificus to ambient concentrations in Eastern Oysters
130	Walker, Lily	D	TAMUCC	1	Y	CI	Michael Wetz	Dissolved Oxygen Dynamics in Texas Estuaries	COMPLETED: Summer 2021	Dr. Suzanne Bricker, Physical Scientist and Manager of NOAA's National Estuarine Eutrophication Assessment, NCCOS, Cooperative Oxford Laboratory	Eutrophication, shellfish aquaculture, and bioextraction: ecosystem services provided by oysters
131	Wallace, Kourtney	D	FAMU	5	Y	PBC		To be developed	TBD	Seeking	In Development
132	Watson, Harrison	B	JSU	1	Y	PBC	Brent Thoma	-	-	-	-
133	Watson, KiAnna	B	BCU	4	Y			-	-	-	-
134	Webb, Jessica	B	JSU	1	Y	PBC	Brent Thoma	-	-	-	-
135	White, Daphne	B	TAMUCC	5				-	-	-	-
136	White, Miranda	B,M	BCU	4;4	Y	PBC	J. Cho	Utilizing Final Ecosystem Goods and Services Scoping Tool to Improve Community Estuarine Shoreline Restoration Decision-Making;	COMPLETED: Summer 2021	Christine Buckel, NOAA NOS NCCOS	Communicating ecosystem and community vulnerability to flooding under sea level rise in the Gulf of Mexico with online data visualizations to improve coastal decision making - for CSC student
137	Windham, Shelby	B	JSU	1	Y	PBC	Brent Thoma	-	-	-	-

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138	Woods, Aleisha	B	JSU	5	Y			-	-	-	-
139	Young, Riley	B	CSUMB	3		PBC	Corey Garza	-	-	-	-

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*Appendix Table 2: Number of Degrees Supported by Cohort (Sept. 2016-Feb. 2021)\**

Institution	Degree	Proposed	Accomplished	Proposed	Accomplished	Proposed	Accomplished	Proposed	Accomplished		Proposed	Accomplished*	
<b>FAMU</b>	<b>Cohort 1 and 2</b>			<b>Cohort 3</b>				<b>Cohort 4</b>			<b>Cohort 5</b>	<b>(In Progress)</b>	
	Bachelor's	11	11	Bachelor's	5	5	Bachelor's	0	2	Bachelor's	11	1	
	Master's	4	4	Master's	0	4	Master's	4	2	Master's	0	2	
	PhD	6	4	PhD	0	1	PhD	0	0	PhD	0	2	
<b>B-CU</b>													
	Bachelor's	0	0	Bachelor's	0	3	Bachelor's	0	2	Bachelor's	0	4	
	Master's	4	5	Master's	0	1	Master's	4	2	Master's	0	1	
<b>CSUMB</b>													
	Bachelor's	3	3	Bachelor's	0	3	Bachelor's	3	5	Bachelor's	3		
	Master's	2	3	Master's	3	2	Master's	0	3	Master's	0	1	
<b>JSU</b>													
	Bachelor's	5	8	Bachelor's	2	2	Bachelor's	3	1	Bachelor's	5	6	
	Master's	2	1	Master's	0	0	Master's	2	0	Master's	0	0	
	PhD	1	1	PhD	0	0	PhD	0	1	PhD	0	0	
<b>TAMUCC</b>													
	Bachelor's	0	0	Bachelor's	0	0	Bachelor's	0	0	Bachelor's	0	4	
	Master's	3	1	Master's	0	3	Master's	3	2	Master's	0	2	
	PhD	5	6	PhD	0	2	PhD	0	1	PhD	0	0	
<b>UTRGV</b>	<b>Cohort 1 and 2</b>			<b>Cohort 3</b>				<b>Cohort 4</b>			<b>Cohort 5</b>		
	Bachelor's	5	7	Bachelor's	0	2	Bachelor's	0	3	Bachelor's	5	2	
	Master's	6	6	Master's	0	2	Master's	6	4	Master's	0	4	
<b>Center Total</b>													
	<b>Cohort 1 and 2</b>			<b>Cohort 3</b>			<b>Cohort 4</b>			<b>Cohort 5</b>			
	Bachelor's	24	29	Bachelor's	7	15	Bachelor's	6	13	Bachelor's	24	10	
	Master's	21	20	Master's	3	12	Master's	19	13	Master's	0	10	
	PhD	12	11	PhD	0	3	PhD	0	2	PhD	0	2	
<b>TOTAL</b>		<b>57</b>	<b>60</b>		<b>10</b>	<b>30</b>		<b>25</b>	<b>28</b>		<b>24</b>	<b>22</b>	
<b>Total Degrees Proposed</b>		<b>116</b>	<i>Total degrees proposed excludes Postdoctoral research associates (4)</i>								<i>* Differences between proposed and accomplished goals are explained in Section VI.</i>		
<b>Total Degrees Supported</b>		<b>147</b>	<i>Total degrees supported excludes Postdoctoral research associates (4)</i>										

*Appendix Table 3: Student Competencies*

<i>Coastal Resilience</i>	<i>Coastal Intelligence</i>	<i>Place-Based Conservation</i>
1. The natural and nature-based infrastructure that address the impact of extreme weather on coastal ecosystems and communities.	1. The elements of sea-level rise observation networks and their relationship to sea-level rise projections.	1. The policies and commonly-used decision-making tools that support place-based conservation.
2. The community-based approaches for the preservation, fortification, and enhancement of natural and nature-based coastal infrastructure.	2. The leading stressors on ecosystem processes and their relationship to ecosystem health.	2. The relationship between natural, applied, and social sciences and the policies as it pertains to capacity management.
3. The models for community-based approaches for assessing the vulnerabilities and value of proposed solutions relating to the impact of extreme weather and sea-level rise on coastal ecosystems and communities.	3. Archived, existing, and new data streams that support ecosystems dynamics and research.	3. Best practices for engaging community stakeholders in addressing specific site-based concerns.
4. The tools used to study natural and nature-based infrastructure that mitigate the impact of extreme weather and sea-level rise on coastal communities and ecosystems.	4. Widely-used databases and decision-support tools that address coastal hazards.	4. Broadly-used ecosystems valuation tools and their use in place-based conservation efforts.
5. Integrating models and practices and other decision-making tools for ecosystem-based management.	5. Best practices for ecosystem assessment and restoration.	5. The tools used to balance conservation with demand for coastal resource utilization and economic development.
6. Advocating for the accountability of social science in planning and budgeting to enhance coastal community projects.	6. Demonstrate the use of communication approaches to deliver more effective warnings about coastal resources and coastal hazards.	6. Understand socio-economic data needs
–	7. Evaluate a select suite of products and services to confirm the integration and effective use of social science into coastal intelligence research.	7. Engage community stakeholders

## **Appendix B: Advisory Boards**

B1. Science Advisory Council Members

B2. Community Stakeholder Advisory Board

## Appendix B1: CCME Science Advisory Council Members

**Chair:** Dr. James Pinckney, Director  
Belle W. Baruch Institute for Marine and Coastal Sciences  
Marine Ecologist at the University of South Carolina

Dr. James Pinckney is the Director of the Baruch Institute for Marine and Coastal Sciences at the University of South Carolina. He is also a Professor in the Department of Biological Sciences and the Marine Science Program at USC in Columbia, SC. Dr. Pinckney is a marine ecologist who studies how marine ecosystems work, especially in terms of how they process energy derived from microscopic plants (phytoplankton and microalgae). Most of his work is conducted in estuarine and coastal waters, including the Gulf of Mexico, San Salvador Island in the Bahamas, North Inlet Estuary on the South Carolina coast, and Galveston Bay, Texas.

### Council Members

Dr. Brean Duncan, Ecological Program Integrated Mission Support Services,

Dr. Brean Duncan is a Geographer/Spatial Ecologist with the Ecological Program at NASA's John F. Kennedy Space Center, Florida. His interests include investigating how anthropogenic influences alter natural terrestrial systems and their maintenance processes with a focus on mimicking the results of natural maintenance processes through land management application. This includes establishing baseline knowledge of resource abundance/distribution/pattern to guide effective land management practices for conserving/maintaining native fire dependent species habitats and favorable demography for their survival. He has considerable experience using remote sensing, geographic information system (GIS), and global positioning system (GPS) technology to design, implement, and automate spatial databases for ecological modeling and spatial analysis. This includes vegetation, landuse/landcover, habitat, fuels, fire event and fire regime mapping/modeling.

Jenn Eckerle, Deputy Director, Ocean Protection Council

Jenn Eckerle joined OPC in December 2016. As OPC's Deputy Director, she is responsible for supervising staff and helping set the strategic priorities for coast and ocean policy in California. Before joining OPC, Jenn spent eight years as an ocean policy analyst for the Natural Resources Defense Council, where she conducted technical analysis and developed policy recommendations to advance ocean conservation. Prior to that, she was a coastal program analyst for the California Coastal Commission and the San Francisco Bay Conservation and Development Commission. Jenn earned an M.S. in Marine Biology from the Florida Institute of Technology and a B.S. in Biology from the University of Vermont.

Dr. Robert Richmond, University of Hawaii at Manoa

Dr. Bob Richmond is a Research Professor and Director of the Kewalo Marine Laboratory, University of Hawaii at Manoa. His major areas of interest and expertise include coral reef



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biology, ecotoxicology, marine conservation biology, bridging science to management and policy, and the integration of traditional ecological knowledge with modern approaches to natural resource use and protection. He has worked in the Pacific Islands for 40 years and has mentored over 70 Native Hawaiian and Pacific Islanders in pursuing undergraduate and graduate degrees in STEM disciplines. He has been the P.I. on four NSF Advanced Technological Education grants that serve the Pacific regional community colleges in American Samoa, the Marshall Islands, the Federated States of Micronesia, the Commonwealth of the Northern Mariana Islands and Palau, supporting efforts to increase the engagement of underrepresented minorities in STEM.

Dr. Curt Storlazzi, Research Geologist, USGS Pacific Coastal and Marine Science Center

Dr. Curt Storlazzi is a Project Chief Scientist with the U.S. Geological Survey's Coastal and Marine Hazards and Resources Program and Research Associate with the University of California at Santa Cruz's Institute for Marine Science. He presently leads a USGS team examining the geologic and oceanographic processes that affect the health and sustainability of coral reefs, and the hazard risk reduction they provide adjacent coastlines. He is on the steering committee for the US Coral Reef Task Force and regularly contributes scientific review for the US Global Change Research Program, the US Department of the Interior, the US Department of the State, the US Department of the Defense, and the US's and other countries' National Science Foundations.

#### NOAA Employee Members

Dr. LaToya Myles, Director, NOAA Air Resources Laboratory, Atmospheric Turbulence and Diffusion Division, Oak Ridge, TN,

Dr. Latoya Myles' research is interdisciplinary, involving both atmospheric chemistry and environmental science. She measures the exchange (i.e., emission and deposition) of gases and particles between the air and land in coastal and agricultural ecosystems. Many of her measurement studies focus on ammonia (NH<sub>3</sub>), the most abundant basic gas in the atmosphere and an important part of the biogeochemical cycle. The data collected from these studies is used to improve estimates of air pollution and provide information about the potential impact on human health and the environment.

Dr. Francisco Werner, Director of Scientific Programs and Chief Science Advisor,  
NOAA Fisheries

Dr. Francisco (Cisco) Werner is the Director of Scientific Programs and Chief Science Advisor for NOAA Fisheries, a role he took on in June 2017. In this capacity, he leads NOAA Fisheries' efforts to provide the science needed to support sustainable fisheries and ecosystems and to continue our nation's progress in ending overfishing, rebuilding fish populations, saving critical species, and preserving vital habitats.

## Appendix B2: Community Stakeholder Advisory Board Members

**Chair:** Dr. Charles Jacoby  
Supervising Environmental Scientist  
Water Resources  
St. Johns River Management District

Dr. Charles Jacoby is the Supervising Environmental Scientist for the Estuaries Section at the St. Johns River Water Management District and a Courtesy Associate Professor in the Soil and Water Sciences Department at the University of Florida. In these roles, he translates science into sustainable management of aquatic systems. He received bachelor's and master's degrees in biological sciences from Illinois State University, a doctorate in biological sciences from Stanford University, and a master's in business administration from the University of Western Australia.

During his career, he has investigated water quality, seagrasses, spring-fed systems, saltmarshes, mid-water systems, invertebrates, fish, and manatees. Drawing from his experience, he has provided advice to industry and federal, state, and local governments in both the United States and Australia, including being a Gubernatorial appointment to Florida's Harmful Algal Bloom Task Force.

### Board Members

Dr. Jude Apple, Director, Padilla Bay National Estuarine Research Reserve

Dr. Jude Apple is an oceanographer, estuarine ecologist, STEM educator, and Director of the Padilla Bay National Estuarine Research Reserve. His research interests include ocean acidification, plankton communities, eelgrass ecology, and response of coastal ecosystems to a changing climate – and how to use this information to achieve sustainable management of our valuable coastal resources. He is also involved in developing curriculum and professional learning opportunities that advance climate and data literacy for K-12 learners.

Jenna Harper, Director, Apalachicola National Estuarine Research Reserve

Ms. Jenna Harper has served as the Director of the Apalachicola National Estuarine Research Reserve since 2014. Before moving into the Director role, Jenna served as the Research Coordinator for the Reserve, facilitating in-house research, collaboration with outside researchers and the running the System-wide Monitoring Program. As the Director, Jenna partners with many institutions to address locally relevant coastal management issues such as declining water quality and quantity, changing fisheries status, and climate change impacts. The Apalachicola NERR has been a partner with FAMU in the CCME, and previous to that the Environmental Cooperative Science Center, for 19 years. The NERR is committed to facilitating priority research with CCME scientists and supporting the development of the next generation workforce.

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Keith Laakkonen, Director, Rookery Bay National Estuarine Research Reserve

Keith Laakkonen is the Director of the Rookery Bay National Estuarine Research Reserve in Naples, Florida. He is responsible for administration and supervision of the 110,000-acre Reserve and more than thirty employees involved in research, education and coastal stewardship. Priority efforts at the Reserve include watershed restoration, maintaining native biodiversity, research and monitoring. In addition, Keith serves as the state's regional administrator for aquatic preserves in Southwest Florida with oversight of field offices in Tampa Bay, Charlotte Harbor and Estero Bay. Currently, Keith serves as Vice President for the National Estuarine Research Association (NERRA). Keith has earned a M.S. from Florida Gulf Coast University with a focus on environmental policy.

Dr. Steve Lonhart, Research Coordinator, Monterey Bay National Marine Sanctuary

Dr. Lonhart has worked as a marine ecologist for MBNMS since 2002. He is responsible for maintaining research and monitoring programs and implementing scientific goals to integrate existing monitoring programs within the sanctuary; supporting research and monitoring programs that address important resource management issues; and disseminating information to resource managers, researchers, educators, and the general public. Dr. Lonhart collaborates and partners with multiple research and monitoring programs, spanning estuarine, rocky intertidal, and subtidal nearshore habitats. Dr. Lonhart has biology degrees from UCLA (BS 1990), California State University Long Beach (MS 1996), and UC Santa Cruz (PhD 2001). Though he has several interests in marine ecology, his scientific research has focused on invasion biology, kelp forest ecology, range shift ecology, biogeography, and marine invertebrate natural history.

## **Appendix C: Evaluation Summary**

The External Evaluator continued to work with the CCME Management Team (CMT) to advance efforts in alignment with CCME Evaluation Plan. The Evaluator held virtual meetings with the Associate Director and the CMT to review ongoing performance data to ensure that the center is on track to achieving its goals. Additionally, the Evaluator worked with the Assistant Director, Distinguished Research Scientist, Education Expert, and Data and Communication Specialist to review and revise the Center data reporting template, as well as to validate the Year 5 Evaluation outcomes. The Evaluator participated in a focused call with the Education Expert and CMT to discuss ongoing recommendations regarding the IERT Response. The Evaluator and CMT discussed the activities aligned to the Year 5 Evaluation Plan and discussed arrangements for the Year 5 site visits.

The Evaluator also worked with his associates and the CMT to develop and implement the Year 5 CCME site visit protocol. The COVID 19 Pandemic continues to have significant impact on the External Evaluator's mode of engagement with Center Management Team and other partner institutions. Meetings and visits that were traditionally conducted in-person had to be held virtually. The External Evaluator and Center Management Team are conducting scheduled virtual site and meeting summaries will be included in the Summative Evaluation Report.

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## VIII. Financial Information

### 1. Total NOAA funding breakout

FY 16 Award Center base funds: Indicate how funds were used for the reporting period, using award budget categories to provide detailed information for the reporting period. Unobligated balances will be compared with SF 425 reporting.

NOAA Funding Year	Tuition	Stipend	Post-Secondary Student Travel	One-Time Allocation Grad. Research	One-Time Support NERTO	Professional Development	Total
1	\$424,759.82	\$702,612.12	\$76,954.97	\$27,380.20	\$28,908.18	\$0.00	\$1,260,615.29
2	\$335,449.84	\$595,778.19	\$88,427.00	\$28,534.52	\$69,445.65	\$2,376.00	\$1,120,011.20
3	\$296,708.53	\$579,020.90	\$45,106.43	\$57,429.21	\$60,186.15	\$3,725.00	\$1,042,176.22
4	\$239,666.14	\$445,501.15	\$19,173.80	\$54,635.12	\$19,437.67	\$445.49	\$778,859.37
5	\$699,507.58	\$1,137,375.53	\$40,162.25	\$107,346.98	\$128,198.93	\$406.22	\$2,112,997.49
Total	\$1,996,091.91	\$3,460,287.89	\$269,824.45	\$285,324.63	\$296,177.98	\$6,952.71	\$6,314,659.57

### 2. Total leverage funding breakout

Indicate funding source, type (grant or contract), amount, Center PI, project title; and how funding contributed to the FY 16 Center award for:

*Postsecondary Student Support:*

- Matagorda Bay Mitigation Trust. \$499,917. PI J. Conkle (CCME TAMU-CC). “Mercury and Plastic in Commercial and Recreational Fisheries in Lavaca, Matagorda, and San Antonio Bays: Risk Assessment and Interaction between the Two Contaminants.” Award provides research and training opportunities for CCME students.
- The Jacob and Terese Hershey Foundation. \$33,000. P.I. P. Montagna (CCME TAMU-CC). “Freshwater Inflows to Texas Bays and Estuaries.” Award provides research and training opportunities for CCME students.
- Texas General Land Office. \$1,325,449. PI. P. Montagna, with CCME co-PIs J. Gibeaut, J. Pollack, G. Stunz, and M. Wetz (CCME TAMU-CC). “Freshwater Inflows to Texas

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Bays and Estuaries: A State-Wide Review, Synthesis, and Recommendations.” Award provides research and training opportunities for CCME students.

- Florida Institute of Oceanography. \$0 (provides ship time only). P.I. M. Martinez-Colon and co-PI R. Long (CCME FAMU). “One week of ship time for student training.” Provides research cruise experience integrated into a course for CCME students.
- Matagorda Bay Mitigation Trust. \$110,028. PI P. Montagna and co-PI J. Gibeaut (CCME TAMU-CC). “Evaluation of the Proposal for Widening and Deepening the Matagorda Ship Channel.” Award provides research and training opportunities for CCME students.
- FWC Florida Fish and Wildlife Conservation Commission. \$202,850. PI. H.J. Cho (CCME BCU). “Mosquito Impoundment Seagrass Nursery and Living Shorelines for Indian River Lagoon Seagrass Beds.” Award provides research and training opportunities for CCME students.
- NSF GEOPaths Undergraduate Program: GP-UP. \$314,421. PI. B. Thoma (CCME JSU). “Increasing representation and success of African Americans in the geosciences.” CCME Students will participate in expanded professional development seminars, geosciences research seminar series and will serve as peer mentors for incoming freshman marine or environmental science students.
- NOAA RESTORE. \$126,633. PI. C. Cintra Buenrostro and co-PI A. Fierro-Cabo (CCME UTRGV). “Is the Bahia Grande currently functioning as a fishes nursery, and what are the associated resource management implications?” Award provides research and training opportunities for CCME students.

**Total leveraged funding for reporting period: \$2,609,298**