

NOAA CENTER FOR COASTAL AND MARINE ECOSYSTEMS (CCME)



Semi-Annual Performance Report for
Award Number NA16SEC4810009
Reporting Period: September 1, 2020 – February 28, 2021

Lead Institution - Florida A&M University

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Director and Principal Investigator

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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. Richard McLaughlin / Dr. Paul Montagna (Institutional PI)

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

CCME Semi Annual Performance Report
(September 1, 2020 – February 28, 2021)
Larry Robinson, Principal Investigator and Center Director

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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 September 1, 2020 - February 28, 2020 for the National Oceanic and Atmospheric Administration's Center for Coastal and Marine Ecosystems (CCME). During this reporting period, CCME supported 74 students (88% from URM communities, Appendix A Table 1), with a total of 126 students (pursuing 134 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, as well as 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

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- 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:
- 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 tools such as 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 a total of 3 students (2 B.S. and 1 M.S.), 1 of these being from URM communities. To date, CCME has graduated 44 students with 45 degrees – 14 Master’s and 31 Bachelor’s - with 38 (84%) of the students earning degrees being from URM communities (Table 1a).
- CCME graduates Mallory Brooks and Alexandra Thomsen began their post-master’s employment in NOAA-relevant STEM and social science fields (Appendix A Table 6). Former CCME postdoc Dr. Emily Jones joined the faculty at Humboldt State University as an instructor. 15 CCME current or former students and two former postdocs are now employed in NOAA mission-relevant fields. Many of the other previous CCME graduates are continuing in their studies.
- Eighteen (18) new scholars were recruited and began their degrees with CCME. These include one Ph.D. student, six M.S. students, and eleven B.S. students.
- Three (3) CCME Graduate Scholars participated in their NERTOs virtually during this reporting period, with two completing and one ongoing. The total number of students completing NERTOs to date is 30. Eleven additional CCME scholars have approved SSIOs and are working with their mentors for summer participation.
- CCME Fall 2019 graduate Meghan Martinez (M.S. CCME TAMUCC) was awarded the NOAA Coastal Management Fellowship and will be working at the California State Coastal Conservancy.
- During this reporting period a new CCME postdoctoral research associate, Dr. Kier John Macartney was hired at UTRGV. Dr. Macartney prepared and submitted his postdoctoral plan.

Table 1. Graduates of CCME

Graduates of CCME						
Name (Last, First)	Partner Institution	Degree	URM Community	Cohort	Graduation Date	
Graduated Students from URM Communities						

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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, Shirly	Jackson State University	B.S.	Black or African-American	3	May 2019
4	Bellamy, Philip	Bethune-Cookman University	M.S.	Black or African-American	1	December 2017
5	Boisen, Olivia	California State University, Monterey Bay	B.S.	Asian	1	May 2019
6	Bruce, Terrius	Florida A&M University	B.S.	Black or African-American	2	May 2020
7	Chui, Emily	California State University, Monterey Bay	B.S.	Asian	1	December 2019
8	Etienne-Stanley, Ra'Teema	Florida A&M University	M.S.	Black or African-American	2	August, 2019
9	Flores, Daniel	University of Texas Rio Grande Valley	B.S.	Hispanic	3	December 2019
10	Gonzalez, Edith	University of Texas Rio Grande Valley	B.S.	Hispanic	4	July 2020
11	Grant, Jada	Jackson State University	B.S.	Black or African-American	1	May 2019
12	Guruvadoo, Shan	Bethune-Cookman University	M.S.	Asian	1	May 2019
13	Jones, Kennedy	Jackson State University	B.S.	Black or African-American	2	May 2020
14	Leal, Sandra	University of Texas Rio Grande Valley	B.S.	Hispanic	3	May 2019
15	Lecusay, David	University of Texas Rio Grande Valley	B.S.	Hispanic	1	December 2018
16	Lima, Anthony	University of Texas Rio Grande Valley	M.S.	Hispanic	1	December 2018
17	Lopez, Jaime	University of Texas Rio Grande Valley	B.S.	Hispanic	1	May 2018
18	Madrid, Cristina	University of Texas Rio Grande Valley	M.A.	Hispanic	1	December 2018
19	Martinez, Meghan	Texas A&M University – Corpus Christi	M.S.	Hispanic	1	December 2019
20	Martinez, Summer	Florida A&M University	B.S.	Hispanic	3	December 2019
21	Minor, Keenasha	Jackson State University	M.S.	Black or African-American	1	August 2019
22	Molina, Mario	University of Texas Rio Grande Valley	B.S.	Hispanic	4	December 2020
23	Navarro, Javier	University of Texas Rio Grande Valley	M.S.	Hispanic	2	July 2020
24	Pavlock-McAuliffe	California State University, Monterey Bay	M.S.	Asian	1	May 2020
25	Perriman, Geramy	Jackson State University	B.S.	Black or African-American	1	May 2019

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26	Rodriguez, Cassandra	University of Texas Rio Grande Valley	B.S.	Hispanic	1	December 2018
27	Rolle, Shaquila	Florida A&M University	B.S.	Black or African-American	1	May 2020
28	Shokere, Alexis	Florida A&M University	B.S.	Black or African-American	1	May 2019
29	Simpson, Queria	Florida A&M University	M.S.	Black or African-American	3	July 2020
30	Smith, Liyah	Jackson State University	B.S.	Black or African-American	1	April 2018
31	Thomsen, Alexandra	California State University, Monterey Bay	M.S.	Asian	3	July 2020
32	Vance, Miracle	Jackson State University	B.S.	Black or African-American	3	May 2020
33	Vaughn, Natalie	California State University, Monterey Bay	B.S.	Native American	3	May 2020
34	Watson, Harrison	Jackson State University	B.S.	Black or African-American	1	May 2019
35	Watson, KiAnna	Bethune-Cookman University	B.S.	Black or African-American		May 2020
36	Webb, Jessica	Jackson State University	B.S.	Black or African-American	1	May 2019
37	White, Miranda	Bethune-Cookman University	B.S.	Black or African-American	4	May 2020
38	Windham, Shelby	Jackson State University	B.S.	Black or African-American	1	May 2019
Graduated Students not from URM Communities						
39	Bauer, Shelby	University of Texas Rio Grande Valley	B.S.		1	May 2019
40	Breaux, Jonathan	Jackson State University	B.S.		1	May 2019
41	Brooks, Mallory	Bethune-Cookman University	M.S.		1	December 2020
42	Coogan, Brian	Florida A&M University	B.S.		3	December 2020
43	Meredith, Melissa	California State University, Monterey Bay	B.S.		1	May 2019
44	Murphy, Elizabeth	University of Texas Rio Grande Valley	M.S.		1	December 2019
45	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

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the areas of Coastal Resilience, Coastal Intelligence and Place-Based Conservation, with research and training conducted in collaboration with NOAA and in part through NERTOs. In-person research experiences and conference travel were restricted during this reporting period due to COVID-19, but CCME scholars and faculty were productive in publishing 10 works.

- During this reporting period, CCME students authored or co-authored four papers published in peer-reviewed journals and one Master's thesis. There were an additional five publications by CCME faculty.
- During this reporting period, CCME had three oral student presentations and three faculty presentations at virtual scientific conferences.
- Three students participated in their NERTOs during this reporting period developing new analyses and data products contributing to the host facilities' research.
- CCME faculty generated \$1,322,853 in leveraged funding to provide expanded research and education opportunities to students.

CSC Administration

- CCME participated in the Independent External Review Team (IERT) virtual site meeting in September, 2020 and Administrative Review in November, 2020. CCME submitted final responses to the IERT report in February, 2021.
- 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 worked with NOAA EPP and other CSCs in developing a plan for the 10th Biennial NOAA EPP/MSI Education and Science Form that was previously delayed due to COVID-19. The Forum will be held in two phases, with the first phase being virtual on April 8-9, 2021, and the second phase being planned as an in-person event at FAMU in the Fall of 2021, subject to evolution of COVID-19 restrictions.
- CCME Science Advisory Council and Community Stakeholder Advisory Board members have enhanced participation in CCME activities through attendance on CCME monthly calls and interaction 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 impacts of COVID-19 on CCME scholars.
- CCME submitted and was approved for a no-cost extension to the award through August, 2022.

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- 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 will engage in recruitment activities in anticipation of additional Year 5 funding and to replace students who have left the Center without graduating. Planned recruitment efforts will include scientific conferences, recruitment of undergraduates in 3+2 BS/MS programs to continue in the pipeline as Master's students, identification of suitable candidates enrolled at the partner institutions, as well as individual recruitment efforts at locally affiliated community colleges.
- CCME anticipates hiring a postdoctoral research associate at FAMU. Interviews with candidates have already taken place.
- A large number of CCME scholars who had NERTOs delayed due to COVID-19 are getting ready to participate in virtual NERTOs in Summer 2021 and other scholars are looking forward to possible in-person opportunities later in 2021 or 2022. Eleven scholars have developed SSIOs with their mentors for summer 2021 NERTOs and five more are currently working with their mentors to develop SSIOs for later NERTOs. CCME will identify NOAA mentors and develop SSIOs for the remainder of the currently-enrolled graduate scholars.
- Work is ongoing to develop the curriculum for the next CCME Center-Wide Core Competency Course, planned for late summer 2021 in St. Augustine, FL. The course materials will include online modules and hybrid in-person/remote activities (depending on COVID-19 travel restrictions at each institution). At this time travel for CCME students and faculty in California will likely remain restricted during the summer.
- CCME anticipates graduation of 18 students during the next reporting period.

Research

- CCME will host the first phase of the 10th Biennial NOAA EPP/MSI Education and Science Forum virtually on April 8-9, 2020. CCME will complete planning of the second phase of the Forum, anticipated to be held in-person at FAMU during Fall 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.

CSC Administration

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- CCME will prepare and submit an application for a 5-year extension of the Cooperative Agreement based on guidance from NOAA EPP.
- CCME will hold an annual meeting during Year 5 at a time and location TBD.
- 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: Richard McLaughlin, Ph.D. / 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 Co-Chairs: Owen Temby, Ph.D.; David Yoskowitz, 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
Emily Jones, Ph.D., Florida A&M 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

Coastal Resilience:

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Richard McLaughlin, Ph.D., Texas A&M University-Corpus Christi
Phyllis Gray-Ray, 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

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
Richard McLaughlin, Ph.D., Texas A&M University-Corpus Christi
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

Richard McLaughlin, Ph.D., Texas A&M University-Corpus Christi
Phyllis Gray-Ray, 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 74 students and 1 postdoctoral scholar during this reporting period (see Appendix A Table 1). An additional 11 undergraduate students participated in the CCME-supported Rising Sophomore program at BCU (four additional participants in this program received full CCME support and are counted in the 74 students mentioned above).
- **Underwent its 4-th year review site visits -**
CCME participated in the Independent External Review Team (IERT) virtual site meeting in September, 2020 and Administrative Review in November, 2020. CCME submitted final responses to the IERT report in February, 2021.
- **Provided training opportunities to CCME students to utilize interdisciplinary approaches to address environmental challenges confronting marine and coastal ecosystems –**
Experiential research training activities and accomplishments are detailed below in the summary of CCME Areas of Focus.
- **Shared research and Center information with the broader community through outreach activities –**
These activities are highlighted below.

Significant Results:

During this reporting period, CCME:

- **Had student research published in four peer-reviewed articles and one thesis –**
Four additional CCME faculty-authored papers were published. All publications are detailed in Section II.
- **Secured \$1,322,853 in leveraged funding for enhanced research opportunities for scholars at the partner institutions –**

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This funding is detailed in Section VIII. Financial Information.

- **Had three (3) scholars participate in NERTOs, with eleven 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. Kier MacCartney was hired at CCME UTRGV in January, 2021.

Key outcomes or other achievements:

During this reporting period, CCME:

- **Trained 74 active (funded during this period) students –**
CCME Students and their statuses are detailed in Appendix A (Table 1).
- **Graduated 3 students (2 BS, 1 MS) –**
 - **Mallory Brooks**, MS, Integrated Environmental Science, CCME B-CU (currently employed as an environmental scientist at Zev Cohen and Associates, Inc. which an interdisciplinary civil engineering, environmental and planning firm that promotes the best urban planning practices)
 - **Mario Molina**, BS, Marine Biology, CCME UTRGV
 - **Brian Coogan**, BS, Civil and Environmental Engineering, CCME FAMU
- **Recruited 17 additional scholars–**
CCME added 10 scholars pursuing Bachelor’s degrees, 6 Master’s students, and 1 Ph.D. scholar. Of these, four CCME B-CU undergraduate scholars were recruited from its CCME-supported rising sophomore program, which provided 15 rising sophomore students with 10 weeks of virtual modules on coastal intelligence topics.
- **Had 17 current or graduated student scholars and 1 former postdoc employed in the NOAA-mission workforce –**
Graduates of CCME are making an impact in NOAA-relevant STEM and social science fields (Table 6). As highlights, former CCME graduate scholar Alexandra Thomsen who had previously been employed at the Elkhorn Slough National Estuarine Research Reserve, was awarded a California Sea Grant Fellowship. Former CCME graduate student A. Elizabeth Murphy was hired as a Biological Scientist IV by the Florida Fish and Wildlife Conservation Commission, Office of Conservation Planning Services-Land Use Planning Program.
- **Had undergraduate scholars engaged in relevant internships –**

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- **Rhamira Corbett** CCME FAMU, was a Leadership Intern for Environment Florida and received training in interviewing and making a video to communicate science to the general public.
- **Asael Rodruiguez**, CCME UTRGV, began an internship with the Nature Conservancy in the Texas Southernmost Preserve.

- **Had scholars and faculty receive awards for their outstanding service, academic performance and research–**
 - **Andria Miller**, CCME JSU, was selected as the JSU Department of Biology’s 2020-2021 HEADWAE (Higher Education Appreciation Day-Working for Academic Excellence) Scholar Nominee. The HEADWAE Award is one of the most prestigious awards given by the Mississippi’s Institution for Higher Learning Board to the state’s top university educators and students.
 - **Lily Walker**, CCME TAMUCC, had her publication highlighted in the January 2021 issue of Coastal and Estuarine Science News.
 - **Dr. Timothy Turner**, CCME JSU, was the recipient of the Diversity and Inclusion Award given by the Mississippi Board of Trustees of the State Institutions of Higher Learning. This award, given annually to individuals from each of the states’ public universities during Black History Month, celebrates campus and community leaders for their efforts in advancing diversity and encouraging understanding and respect.
 - **Dr. Corey Garza**, CCME CSUMB, was selected for the Board of Directors of the American Geophysical Union in January, 2021.

- **Had scholars participate in a large number of training and professional development activities including:**
 - Technical training
 - Eurofins Environmental Testing Virtual Training
 - SCUBA and Scientific Diving training
 - Workshop in Slow Motion: Fundamentals of AI
 - IOC Ocean Best Practices System webinar “Evolving and Sustaining Ocean Best Practices Workshop IV
 - Texas General Land Office Living Shoreline Virtual Workshop
 - TAMUCC Virtual Oysterm Summit
 - Thermoscientific GC/MS training
 - Matlab training (led by CCME DRS Dr. Steven Morey)
 - NOAA and CSC webinars and workshops
 - NOAA Webinar NOAA Knauss Fellows 2020
 - NOAA Webinar Taking Action on Climate
 - NOAA AI Workshop - Leveraging AI in Environmental Science
 - OneNOAA Science Seminars
 - NOAA Fisheries National Stock Assessment Seminar Series webinar “Enhancing Stock Assessment Methodologies for Main Hawaiian

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- Islands Bottomfish Through Inclusion of Research Video-Camera Surveys and Fishing Industry Engagement”
- National Centers for Coastal Ocean Science-Atmospheric Oceanographic and Meteorological Laboratory Symposium
- NOAA EPP/MSI CSC Education Lead Webinar Series
- Other scientific webinars and meetings
 - Volusia County Coastal Resilience Workshop
 - Women in Geosciences/Association of Women in Geosciences scientific and professional development seminars
 - GCAN Webinar Series: Coastal Acidification Monitoring and State-Level Actions
 - TAMUCC Marine Science Graduate Student Organization Brown Bag Seminar Series
 - Google “Geo for Good Summit”
 - United Nations webinar “Sargassum in the Wider Caribbean Region- challenges, responses, and synergies”
 - Maryland Shellfish Aquaculture Conference
 - SETAC North America 41st Annual Meeting
 - Apalachicola National Estuarine Research Reserve Symposium
 - A community on Ecosystem Services (ACES) virtual symposium
 - UCSD Scripps-Rady Ocean Plastic Pollution Challenge
- Professional development training
 - Margaret A. Davidson Coastal Career Development Workshop
 - BCU Career Mapping webinar
 - Institutional-specific training, such as Risk Management and Career Services training (resume writing, interviewing, etc.)
 - CCME center-wide and individual campus student meetings
 - Journal-specific scientific publishing webinars (Experimental Results journal)
 - HRI webinar “How to get an Agency Job”
 - GROW Workshop “Writing a Literature Review/Introduction”
 - Wisdom from Black Women in STEM webinar series
- **Engaged in outreach to the public and educational communities –**
 - Dr. Paul Montagna was interviewed for “Seafloor damage from BP spill vastly underestimated in rush for legal settlement” which appears on nola.com.
 - Dr. Paul Montagna was interviewed for “Land use and climate changes are throwing estuaries off balance” which appears in the Texas Water Resources Institute online news
 - CCME Scholar Monisha Sugla participated in a virtual presentation “Being a woman and minority in STEM” given for Lakeside High School 8th graders in Seattle, WA. It was recorded for other classes to watch.
 - CCME Scholar Lily Walker helped coordinate and participated in the 2021 Billy Sandifer Big Shell Beach Cleanup with other local volunteers.

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- Dr. Brent Thoma) presented in a virtual STEM Immersion Day Program with more than 1,200 middle and high school students registered for the event.
- **Collaborated with other CSCs –**
 - 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. This group also conducted planning of the technical program for the upcoming NOAA EPP/MSI Education and Science Forum.
 - 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 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

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- Participation in the CCME Center-Wide Core Competency Course (planned for spring 2021 in Monterey, CA).
- 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:

2. Status of Students (Appendix A Table 1):

Coastal Resilience

- The CR focal area had a total of 7 active graduate students during this reporting period: 2 Ph.D. and 5 M.S. (For all focal areas, these numbers include students who were supported during this reporting period as well as those whose funding has run out but are still continuing to work toward their degrees. Additionally, some B.S. students also conduct research aligned with the focal areas.) One of the CR M.S. students graduated during this reporting period and one new M.S. student was added to this focal area.

Coastal Intelligence

- The CI focal area has a total of 15 graduate students during this reporting period: 4 Ph.D. and 11 M.S. One M.S. student were added to the CI focal area during this reporting period.

Place-Based Conservation

- The PBC focal area has a total of 21 graduate students during this reporting period: 6 Ph.D. and 15 M.S. Four new M.S. students were added to the PBC focal area during this reporting period.

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):
 - **Molly McBride** (CI): Nutrient and Salinity Controls on the Growth of *Karenia brevis*
 - **Jordana Cutajar** (CI): A Lagrangian Study of Red Tide Bloom Dynamics in Corpus Christi Bay
 - **Joshua Rigo** (CI): Rip Current Image Analysis and Model Validation
 - **Nigel Lascelles** (CI): Tire Wear particles in surface waters and their impacts on the Environment

- **Jeanna Dampier** (PBC): 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
- **Miranda White** (PBC): Utilizing Final Ecosystem Goods and Services Scoping Tool to Improve Community Estuarine Shoreline Restoration Decision-Making
- **Elizabeth Mogus-Garcia** (PBC): Red drum (*Sciaenops ocellatus*) trophic web reconstruction using stable isotopes in two systems in the northwestern Gulf of Mexico

4. Student NERTO updates (Appendix A Table 1)

- **Willis Lyons** (CR) completed his virtual NERTO “Utilizing Social Marketing Tools and Theories to Support Protected Species Management” with mentor Allison Rosner, NOAA NMFS Greater Atlantic Regional Office, during this reporting period.
- **Joshua Rigo** (CI), completed his virtual NERTO “Rip Current Image Analysis and Model Validation” with Dr. Michael Churma, NOAA NWS.
- **Jeanna Dampier** (PBC) began her virtual NERTO “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, NOAA NOS NCCOS.
- SSIOs for eleven (11) additional CCME scholars’ NERTOs have been developed and approved. These include:
 - **Victoria Salinas** (PBC), “Developing propagation techniques for the black wire coral, *Stichopathes lutkeni*”, Dr. Cheryl Woodley, NOAA NOS NCCOS.
 - **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”, Jennifer Doerr, NOAA NMFS SEFSC Galveston.
 - **Summer Martinez** (CR), “Growth Response of *Pleurotus ostreatus* to Petroleum Crude Oil with Nutrient Amendments”, Dr. Edward Wirth, NOAA NOS NCCOS. Planned for fall 2021.
 - **Elizabeth Harris** (CI), “Ecotoxicology Assessment of Climate and Pesticide Interactions in Estuarine Systems”, Dr. Marie DeLorenzo, NOAA NOS NCCOS.
 - **Anthony Lima** (CR), “Ecotoxicology Assessment of Climate and Pesticide Interactions in Estuarine Systems”, Dr. Marie DeLorenzo, NOAA NOS NCCOS.
 - **Lily Walker** (CI), “Eutrophication, shellfish aquaculture, and bioextraction: ecosystem”, Dr. Suzanne Bricker, NOAA NOS NCCOS.
 - **Daryin Medley** (CI), “Analysis of Satellite Ice Thickness Products in the Bering and Chukchi Seas – For CSC Student”, Dr. Phyllis Stabeno, NOAA OAR PMEL and Dr. Catherine Berchok, NOAA NMFS AFSC.

- **Juliet Vallejo** (CR), “Comparative review of Collaborative Science partnerships in CA Central Valley”, Maria Rea, NOAA NMFS West Coast Regional Office
 - **Devin Comba** (PBC), “Assessment of the Hydrologic Restoration Effectiveness Monitoring (Tier II) Projects Funded by the Community-based Restoration Program (CRP)”, Polly Hicks, NMFS/Office of Habitat Conservation/NOAA Restoration Center
 - **Kylee Lewis** (CI), “Oceanographic Data Analysis Using Modeled and Observed Water Level Data”, Artara Johnson; Greg Dusek NOAA NOS CO-OPS
 - **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 - for CSC student”, Christine Buckel, NOAA NOS NCCOS
5. Research Accomplishments – Outcomes and outputs of CCME graduate student research are now reported to the Focal Areas through Final Synopses of Completed Research. No new final synopses were completed during this reporting period (graduating M.S. Scholar Mallory Brooks (CR) submitted her final synopsis during the previous reporting period and that is summarized in the previous report).

III. Products of Award

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

Degrees Awarded:

1. **Brooks, Mallory**, MS, Integrated Environmental Science, CCME B-CU
2. **Molina, Mario**, BS, Marine Biology, CCME UTRGV
3. **Coogan, Brian**, BS, Civil and Environmental Engineering, CCME FAMU

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**

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- Walker, L.***, L., M. Wetz**, P. Montagna**, X. Hu (2020). Timescales and Magnitude of Water Quality Change in Three Texas Estuaries Induced by Passage of Hurricane Harvey. *Estuaries and Coasts*, doi: 10.1007/s12237-020-00846-6.
- Breier, J.A.** , Jakuba, M.V., Saito, M.A., Dick, G.J., Grim, S.L., Chan, E.W., McIlvin, M.R., Moran, D.M., **Alanis. B.A.***, Allen, A.E., Dupont. C.L., Johnson, R. (2020), Revealing ocean scale biochemical structure with a deep-diving vertical profiling autonomous vehicle, *Science Robotics*, 5(48), doi:10.1126/scirobotics.abc7104.
- Murphy, A.E.***, Cintra-Buenrostro, C.E.** , Fierro-Cabo, A.** (2021) Identifying nitrogen source and seasonal variation in a Black Mangrove (*Avicennia germinans*) community, south Texas coast. *Aquatic Botany*. <https://doi.org/10.1016/j.aquabot.2020.103339>.
- Wu, D., **E. A. Del Rosario***, and C. Lowry (2020). Exploring the Use of Decision Tree Methodology in Hydrology Using Crowdsourced Data. *Journal of the American Water Resources Association*. Doi:10.1111/1752-1688.12882

Faculty Publications in Journals:

- Orozco, A., Adeljean L.F.C. Ho, and H.J. Cho** (2020). Evaluation of outreach and public education in raising awareness of waterfront community roles in controlling nonpoint pollution around the Mosquito Lagoon, Florida. *International Journal of Energy Water Food Nexus*. 2:7-11
- Zhan, D., X. Chen, S.L. Larson, J.H. Ballard, H. M. Knotek-Smith, D. Ding, N. Hu, F.X. Han** (2020). Uranium Biomineralization with Phosphate - Biogeochemical Process and Its Application. *American Chemical Society Earth and Space Chemistry*, 4, 12, 2205–2214. <https://doi.org/10.1021/acsearthspacechem.0c00252>.
- Manit, B., J. Calderon, and H.J. Cho** (2021). Opinion Mining of Newspaper Articles using Natural Language Processing: Pilot Test Using Texts on Indian River Lagoon, Florida Scientist, accepted.
- Kazery, J.A., G.Proctor, S.L. Larson, J.H. Ballard, H. M. Knotek-Smith, Q. Zhang, A.Celik, S. Dasari, S. M. Islam, P.B. Tchounwou**, F. X. Han** (2021). Distribution and Fractionation of Uranium in Weapon Tested Range Soils. *American Chemical Society Earth and Space Chemistry* DOI: 10.1021/acsearthspacechem.0c00326
- Bao L., F. Guo, H. Wang, S. Larson, JH, Ballard, H. M. Knotek-smith, Q. Zhang, J. Nie, A. Celik, S. Islam, S. Dasari, N. Zhang, and F.X. Han** (2021). Functionalization of clay surface for the removal of uranium from water. *MethodsX* 8, 101275, doi:10.1016/j.mex.2021.101275

Editor of Special Issues

None to report

Books:

None to report

Book Chapters

None to report

Thesis/Dissertations:

Brooks, M.D.* (2020). Evaluating the effectiveness of restored shorelines in mitigating nonpoint source pollution in the Mosquito Lagoon, Florida, USA. Thesis, Bethune-Cookman University.

Conference Papers, Posters and Presentations:

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

Oral Presentations

R. W Kulawardhana**, **K.A Jones***, and D. D Crockett (2020). Spatial and temporal variations of surface urban heat island effect across metropolitan areas of the conterminous United States. AGU Fall meeting.

Bayrón-Arcelay, M*., Bourke, E., Garwood, J., and Martinez-Colon, M.** (2021). Seasonal Assessment of Benthic Foraminifera in Apalachicola Bay, Florida. Apalachicola Bay National Estuarine Research Reserve Research Symposium.

Del Angel D.*, Yoskowitz, D.**, Bilskie M., and Hagen S. (2021) Economic Impact Analysis of Storm Flooding under Sea Level Rise, Apalachicola Bay National Estuarine Research Reserve Research Symposium.

Najera G., L. Contreras**, and A. Fierro-Cabo** (2020). Greenhouse Gas Soil Emission Fluxes in a south Texas Coastal Saltmarsh. UTRGV 2020 College of Science Annual Conference, Brownsville, Texas.

Martinez-Colon, M.** (2021). Overview of ongoing projects to assess the environmental health condition of Apalachicola Bay. Apalachicola Bay National Estuarine Research Reserve Research Symposium.

Morey, S.L.** (2021). Impacts of river discharge variability on coastal and shelf water properties in and near Apalachicola Bay. Apalachicola National Estuarine Research Reserve Symposium.

Technologies or Techniques:

None to report

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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/>

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

Other Products:

Publicly available datasets and products

None to report

IV. Participants in Award Performance

See Executive Summary and Appendix Table 1

Table 2: CCME Award Participants

Table 2

Name	Most Senior Project Role	Project Hours Worked per Month
Larry Robinson, PhD	Director/Principal Investigator	10
Michael Abazinge, Ph.D.	Associate Director	10
Sharmini Pitter, Ph.D.	Assistant Director	160
Bernadette Kelley, Ph.D.	Education Expert	20
Sherry Wells	CCME Coordinator	160
Emily Jones, Ph.D.	Postdoctoral Research Associate	160
Steve Morey, Ph.D.	Distinguished Research Scientist	160
Kris Suchdeve	Data and Communication Manager	160
Richard Long, Ph.D.	Co-PI, Coastal Intelligence Co-Lead	26
Phyllis Gray-Ray, Ph.D.	Social Science Lead	42
Charles Jagoe, Ph.D.	Faculty advisor	N/A, not budgeted under the award
Elijah Johnson, Ph.D.	Faculty advisor	N/A, not budgeted under the award
Michael Martinez-Colon, Ph.D.	Faculty advisor	N/A, not budgeted under the award
Hongmei Chi, Ph.D.	Big Data Lead	26
Richard McLaughlin, Ph.D.	Principal Investigator	29
David Yoskowitz, Ph.D.	Co- Investigator	21.7
Paul Montagna, Ph.D.	Co-principal Investigator	21.7
James Gibeaut, Ph.D.	Co-Investigator	21.7
Greg Stunz, Ph.D.	Co-Investigator	21.7
Jennifer Pollack, Ph.D.	Faculty advisor	N/A, not budgeted under the award
Michael Wetz, Ph.D.	Faculty advisor	N/A, not budgeted under the award
Mikell Smith	TAMUCC CCME Coordinator	139
J. Cho, Ph.D.	Co-principal Investigator	80 hrs/mo, one summer month budgeted, the rest is leveraged.
Corey Garza, Ph.D.	co-principal Investigator	40 hrs/mo, two weeks in summer, rest is leveraged.

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Laura Good, Ph.D.	Education Liaison	20
Cheryl Logan, Ph.D.	CSUMB mentor	N/A, not budgeted under the award
Alison Haupt, Ph.D.	CSUMB mentor	N/A, not budgeted under the award
James Lindholm, Ph.D.	CSUMB mentor	N/A, not budgeted under the award
John Goeltz, Ph.D.	CSUMB mentor	N/A, not budgeted under the award
Ivano Aiello, Ph.D.	Moss Landing mentor	N/A, not budgeted under the award
Tim Turner, Ph.D.	Principal Investigator	5
Paul Tchounwou, Ph.D.	Co-Investigator	1
Paulette Bridges	Program Manager	24
Ibrahim Farah, Ph.D.	Co-Investigator	Funded during the summer months
Fenxiang Han, Ph.D.	Co-Investigator	Funded during the summer months
Ranjani Kulawardhana, Ph.D.	Co-Investigator	Funded during the summer months
Brent Thoma, Ph.D.	Co-Investigator	Funded during the summer months
Carlos Cintra, Ph.D.	Co-Investigator	50
Owen Temby, Ph.D.	Co-Investigator	50
Kier MacCartney Ph.D.	Postdoctoral Research Associate	160
David Hicks Ph.D.	Principal Investigator	50
John Breier Ph.D.	Co-Investigator	Leveraged, not budgeted during time frame
Alejandro Fierro Ph.D.	Co-Investigator	50
Leticia Contreras	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

Type of Partner Organization:	Organization Name:	Partner's Contribution to CCME
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	Oversighting 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

Type of Partner Organization:	Organization Name:	Partner's Contribution to CCME
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 fund 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

NOAA Mentor Name	NOAA Facility	CCME Scholar Name	Description of Collaboration
Andrew Devogelerare	NOS/Monterey Bay NMS	Lauren Parker; Miya Pavlock McAuliffe	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
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	NERTO Mentor
Chris Kelble	OAR/AOML	Brianna Alanis; Phillip Bellamy, Abraham DaSilvio, David Lecusay	NERTO Mentor
Dennis Apeti	NOS/NCCOS	Jeanna Dampier	NERTO Mentor
Eric Weissberger	NMFS/Office of Habitat Conservation	Meghan Martinez	NERTO Mentor
Greg Duseck	NOS/CO-OPS	Shan Guruvadoo	NERTO Mentor
Jennifer Doerr	NMFS/SEFSC	Javier Navarro; Emily Jones	NERTO Mentor; Postdoctoral 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

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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
Randall Kosaki	NOS/Papahānaumokuākea Marine National Monument	Patricia Cockett	NERTO Mentor
Reagan Errera	OAR/GLERL	Ariana Uwaibi	NERTO Mentor
Scott Large	NMFS/NEFSC	Anthony Lima	NERTO Mentor
Steve Lonhart	NOS/ONMS	Alexandra Thomsen	NERTO Mentor
Suzanne Bricker	NOS/NCCOS	Lily Walker	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)
Chui, Emily	CSUMB College of Science (Program Assistant)
Del Angel, Diana	Florida Department of Environmental Protection
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)
Murphy, Ashley (Elizabeth)	West Virginia Department of Environmental Protection (Environmental Resource Specialist)

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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 126 students (pursuing 134 individual degrees) and 3 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 44 students earning 45 degrees (31 B.S. and 14 M.S./M.A.), including 3 (2 B.S. and 1 M.S.) 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 statistical analysis, computer modeling, and algorithm development. These core competencies are achieved through 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. 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 2020 semester.

CCME has increased the number of students educated and graduating with degrees in NOAA mission-related disciplines (3 degrees were awarded during this reporting period). In addition

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to the professional development opportunities detailed in Section II, three graduate scholar participated in NERTOs virtually with mentors from NOAA during this reporting period. Student research was disseminated in four peer-reviewed journal articles, one thesis, and three conference presentations.

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 one scholar from a URM community, bringing the Center total number of degrees awarded to students from URM communities to 38 (Executive Summary Table 1a). As detailed in Section I, fifteen current or former CCME students and two former postdoctoral scholars are employed in NOAA mission fields.

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. 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 \$1,322,853 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 supports 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.

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 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 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 participation of CCME scholars and faculty in outreach 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 and participation in events such as Oceans Day at the state capitols.

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 134 degrees exceeding the recruitment goal through year 4. Recruitment of additional students in Year 5 is ongoing.
 - Ten 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).
 - 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 10th Biennial NOAA EPP/MSI Education and Science Forum, originally scheduled for 29 March – 1 April 2020, has been rescheduled to be held in two phases. The first phase will be held virtually on April 8-9, 2021, with the second phase anticipated to allow for in-person participation at FAMU at a later time (during the no-cost extension period). Tentatively, the late-October 2021 time period is being considered.
- Given the postponement, CCME has worked with vendors to cancel or modify contracts. Registration refunds were issued as requested. Some funds will be irrecoverable (such as time spent by the event planner).
- The schedule for the Center Fourth-Year Review had been postponed and took place virtually in September, 2020, with the Administrative Review occurring in November, 2020.
- Student NERTOs have been affected by travel restrictions and NOAA laboratory closures. A large number of students opted to delay NERTOs in hopes of in-person options becoming available. With guidance that all NERTOs conducted through Summer 2021 be planned for virtual participation, students have begun working with their mentors to modify the NERTO plans. Two virtual NERTOs were completed during this reporting

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period with a third one underway. Eleven students are planning virtual NERTOs for the upcoming reporting period.

- CCME scholars all had to transition to remote learning at their institutions. During this reporting period some institutions resumed limited in-person classes.
- Many CCME scholars conducting research have experienced delays due to laboratory closures and 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 has resulted in a reduction in the number of student and faculty presentations. As laboratories open and research activities resume, CCME is working with scholars to identify opportunities for participation in upcoming virtual conferences and student development opportunities.

CCME has been awarded additional Year 5 funding to address impacts of COVID-19 on students and research. The funding will be 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, students have delayed participation in NERTOs, laboratory analyses, and field work. These impacts on expenditures, particularly delay of travel and research spending, will be addressed with a 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 engages frequently 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 was also been substantially engaged in the planning of the NOAA EPP/MSI 10th Biennial Education and Science Forum, which has been delayed due to the COVID-19 restrictions. Forum planning continued throughout the current reporting period. To accommodate the delays in travel due to COVID-19 restrictions the NOAA EPP/MSI Tenth Biennial Education and Science Forum, the Forum will take place in two phases. The first phase will be virtual and is scheduled for April 8-9, 2021. The second phase is expected to take place in person in the Fall of 2021.

NOAA CCME continued collaboration with the other CSCs and NOAA EPP/MSI in planning the 10th Biennial NOAA EPP/MSI Forum, particularly the technical program. The Distinguished Scientists from the four CSCs worked together to coordinate invited student speakers for students who plan to graduate prior to the Fall 2021 Phase 2 of the Forum. The CSCs and EPP also reached out to NOAA colleagues to fill invited

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speaker roles. The results of these actions will be used to streamline 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.

An external review was conducted by NOAA and an independent expert external review team (IERT) during the fourth year of the award. This review took place September 22-30, 2020 virtually. During this reporting period the IERT report was received by CCME. CCME submitted a response to the IERT report, which was also accepted during the reporting period.

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 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 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	Andrews, Kaylah	BCU	\$7,257	\$3,000.00	\$0.00	\$0.00	\$0.00	\$0.00
2	Bayron, Margarette	FAMU	\$7,000	\$1,861	\$0	\$0	\$0	\$0
3	Boston, Bethany	JSU	\$8,270	\$5,000	\$0.00	\$0.00	\$0.00	\$0.00
4	Brooks, Erica	JSU	\$8,270	\$5,000	\$0.00	\$0.00	\$0.00	\$0.00
5	Brown, Aaiyah	FAMU	\$3,000	\$1,500	\$0	\$0	\$0	\$0
6	Byrne, Jamie	CSUMB	\$3,500.00	\$3,500.00	\$0.00	N/A	\$1,713.53	\$0.00
7	Clark, Sammuel	BCU	\$7,257	\$3,000	\$0.00	\$0.00	\$0.00	\$0.00
8	Cockett, Patricia	TAMUCC	\$7,031	\$13,200	\$0	\$0	\$3,482	\$0
9	Comba, Devin	TAMUCC	\$8,447	\$9,600	\$0	\$0	\$438	\$0
10	Coogan, Brian	FAMU	\$1,500	\$0	\$0	\$0	\$0	\$0
11	Corbett, Rhamira	FAMU	\$3,000	\$1,500	\$0	\$0	\$0	\$0
12	Cutajar, Jordana	TAMUCC	\$8,597	\$9,600	\$0	\$0	\$89	\$0
13	Dampier, Jeanna	JSU	\$2,760	\$15,000	\$0.00	\$10,000.00	\$0.00	\$0.00
14	Davis, Beth	CSUMB	\$5,670.00	\$9,996.00	\$0.00	\$0.00	\$1,474.86	\$0.00
15	Del Angel, Diana	TAMUCC	\$8,322	\$13,200	\$0	\$0	\$200	\$0
16	Del Rosario, Elizabeth	TAMUCC	\$7,031	\$13,200	\$0	\$0	\$0	\$0
17	Flores, Elena	UTRGV	\$6,888	\$7,500	\$0	\$0	\$1,036	\$0

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18	Garrett-Mills , Amonra	FAMU	\$3,000	\$1,500	\$0	\$0	\$0	\$0
19	Gonzalez, Jacob	UTRGV	\$3,925	\$1,429	\$0	\$0	\$0	\$0
20	Gunn, Derrick	JSU	\$8,270	\$5,000	\$0.00	\$0.00	\$0.00	\$0.00
21	Hamilton, Alexis	FAMU	\$1,500	\$3,000	\$0	\$0	\$0	\$0
22	Harris, Elizabeth	TAMUCC	\$7,131	\$9,600	\$0	\$0	\$0	\$0
23	Hernandez, Rebekah	UTRGV	\$6,719	\$8,470	\$0	\$0	\$73	\$98
24	Hill, Jayewon	JSU	\$8,270	\$5,000	\$0.00	\$0.00	\$0.00	\$0.00
25	Johnson, Arion	BCU	\$7,257	\$3,000	\$0.00	\$0.00	\$0.00	\$0.00
26	Kilbane, Sarah	CSUMB	\$3,500.00	\$3,500.00	\$0.00	N/A	\$0.00	\$0.00
27	Lacey, Ashley	FAMU	\$7,000	\$1,861	\$0	\$0	\$0	\$0
28	Lascelles, Nigel	TAMUCC	\$8,322	\$12,000	\$0	\$0	\$256	\$0
29	Leal, Sandra	UTRGV	\$7,501	\$7,500	\$0	\$0	\$10,927	\$0
30	Lecusay, David	UTRGV	\$6,888	\$7,500	\$0	\$0	\$366	\$0
31	Leon Perez, Mariana	TAMUCC	\$8,322	\$13,200	\$0	\$0	\$45	\$0
32	Lewis, Kylee	TAMUCC	\$8,372	\$9,600	\$0	\$0	\$155	\$0
33	Lima, Anthony	TAMUCC	\$0	\$12,000	\$0	\$0	\$3,011	\$0
34	Lyons, Willis	FAMU	\$7,000	\$4,667	\$0	\$10,000	\$0	\$0
35	Machado, Malia	CSUMB	\$3,500.00	\$3,500.00	\$0.00	N/A	\$0.00	\$0.00
36	Machuca, Connie	CSUMB	\$7,176.00	\$9,996.00	\$0.00	\$0.00	\$326.66	\$0.00
37	Martin, Kelsey	TAMUCC	\$8,322	\$13,200	\$0	\$0	\$4,587	\$0

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38	4	Martinez, Summer	FAMU	\$6,334	\$1,861	\$0	\$0	\$0	\$0
39	4	Matuch, Cindy	CSUMB	\$3,500.00	\$3,500.00	\$0.00	N/A	\$0.00	\$0.00
40	4	Mauney, Nina	CSUMB	\$7,176.00	\$9,996.00	\$0.00	\$0.00	\$0.00	\$0.00
41	4	McBride, Molly	TAMUCC	\$8,622	\$9,600	\$0	\$0	\$0	\$0
42	4	McKinnon, Taylor	FAMU	\$3,000	\$1,500	\$0	\$0	\$0	\$0
43	4	McWilliams, Maya	JSU	\$8,270	\$5,000	\$0.00	\$0.00	\$0.00	\$0.00
44	4	Medley, Daryin	FAMU	\$6,334	\$4,667	\$0	\$0	\$0	\$0
45	4	Melendy, Shawn	CSUMB	\$7,176.00	\$9,996.00	\$0.00	\$0.00	\$0.00	\$0.00
46	4	Miles, Jordan	FAMU	\$3,000	\$1,500	\$0	\$0	\$0	\$0
47	4	Miller, Andria	JSU	\$7,735	\$5,000	\$0.00	\$0.00	\$0.00	\$0.00
48	5	Mogus, Elizabeth	UTRGV	\$8,369	\$7,500	\$0	\$0	\$2,000	\$0
49	5	Molina, Mario	UTRGV	\$1,430	\$2,296	\$0	\$0	\$1,104	\$0
50	5	Olson, Chistopher	FAMU	\$3,500	\$5,162	\$0	\$0	\$0	\$0
51	5	Outhwaite, Alyssa	TAMUCC	\$8,547	\$12,000	\$0	\$0	\$1,945	\$0
52	5	Poole, Shatoria	FAMU	\$3,167	\$1,860	\$0	\$0	\$0	\$0
53	5	Pugh-Kelley, Andrea	FAMU	\$7,000	\$1,861	\$0	\$0	\$0	\$0
54	5	Ray, Carlos	FAMU	\$3,000	\$1,500	\$0	\$0	\$0	\$0
55	5	Rigo, Josh	FAMU	\$6,334	\$1,861	\$0	\$5,000	\$0	\$0
56	5	Roberts, Jordan	FAMU	\$3,000	\$1,500	\$0	\$0	\$0	\$0
57	5	Rodriguez, Asael	UTRGV	\$1,430	\$3,466	\$0	\$0	\$431	\$0

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58	Rodriguez, Caroline	CSUMB	\$7,176.00	\$9,996.00	\$0.00	\$0.00	\$215.19	\$0.00
59	Roozee, Evelyn	UTRGV	\$7,847	\$7,500	\$0	\$0	\$0	\$25
60	Rubino, Ryan	TAMUCC	\$8,820	\$9,600	\$0	\$0	\$253	\$0
61	Salinas, Victoria	UTRGV	\$6,888	\$7,500	\$0	\$163	\$1,602	\$108
62	Sanchez, Katia	UTRGV	\$2,860	\$3,769	\$0	\$0	\$0	\$25
63	Seida, Maggie	CSUMB	\$3,500.00	\$3,500.00	\$0.00	N/A	\$384.89	\$0.00
64	Smith, Liyah	FAMU	\$6,334	\$4,667	\$0	\$0	\$0	\$0
65	Soius, Mervia	BCU	\$7,257	\$3,000	\$0.00	\$0.00	\$0.00	\$0.00
66	Sugla, Monisha	TAMUCC	\$9,030	\$9,600	\$0	\$0	\$3,722	\$0
67	Turner, DeMarcus	FAMU	\$6,334	\$4,700	\$0	\$0	\$0	\$0
68	Uribe, Natalie	UTRGV	\$2,860	\$2,137	\$0	\$0	\$85	\$0
69	Uwaibi, Ariana	FAMU	\$7,000	\$1,861	\$0	\$0	\$0	\$0
70	Vallejo, Juliet	UTRGV	\$7,246	\$7,500	\$0	\$0	\$0	\$50
71	Venable, Julian	JSU	\$5,520	\$15,000	\$0.00	\$0.00	\$0.00	\$0.00
72	Walker, Lily	TAMUCC	\$8,322	\$12,000	\$0	\$0	\$3,464	\$0
73	White, Miranda	BCU	\$7,257	\$7,500	\$0.00	\$0.00	\$5,900.00	\$0.00
74	Woods, Aleeshia	JSU	\$8,270	\$5,000	\$0.00	\$0.00	\$0.00	\$0.00
BCU Rising Sophomore Prog								
1	Boykin, Heavenly	BCU	\$0	\$1,000	\$0.00	\$0.00	\$0.00	\$0.00
2	Burey, Jamal	BCU	\$0	\$1,500	\$0.00	\$0.00	\$0.00	\$0.00

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3	Burkes, Jatwon	BCU	\$0	\$1,500	\$0.00	\$0.00	\$0.00	\$0.00
4	Dennis, Tanyiah	BCU	\$0	\$1,500	\$0.00	\$0.00	\$0.00	\$0.00
5	Hill, Jayla	BCU	\$0	\$1,500	\$0.00	\$0.00	\$0.00	\$0.00
6	Jefferson, Jordan	BCU	\$0	\$1,500	\$0.00	\$0.00	\$0.00	\$0.00
7	McGlashon, Brent	BCU	\$0	\$1,500	\$0.00	\$0.00	\$0.00	\$0.00
8	Milliner, Brandi	BCU	\$0	\$1,500	\$0.00	\$0.00	\$0.00	\$0.00
9	Shelly, Noah	BCU	\$0	\$1,500	\$0.00	\$0.00	\$0.00	\$0.00
10	Walker, Jasmine	BCU	\$0	\$1,500	\$0.00	\$0.00	\$0.00	\$0.00
11	Watkins, Raiyyana	BCU	\$0	\$1,500	\$0.00	\$0.00	\$0.00	\$0.00
	Totals		\$445,219	\$473,635	\$0	\$25,163	\$49,286	\$306
	Grand Total	\$993,609						

*Note fringe and indirect costs not included in final calculation of Direct Student Support.

Post-Doctoral Program -

During this reporting period, CCME hired a new postdoctoral research scientist at UTRGV, Dr. Kier MacCartney. Dr. MacCartney developed and submitted his postdoctoral plan.

NERTO and Student Internships with NOAA

Thirty 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 will be 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 110 (seeking 118 degrees) and graduate 37 (38 degrees) in NOAA-mission sciences.
2. **Total number of EPP-funded post-secondary students** who are trained 126 (134 degrees) and graduate 44 (45 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 7, NGO community 4, academia 3 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 reporting period: \$\$1,322,853.

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 Executive summary, Impacts of the Award, and Products of 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 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 the Section I), and conduct research aligned with the CCME focal areas that include social science and big data as cross-cutting themes. The next CWCC is planned for summer 2021 in St. Augustine, FL (with a virtual participation option). 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 Fall 2020 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.*
- *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 3 students (2 B.S. and 1 M.S.) in NOAA mission-related disciplines. Since its inception in the fall of 2016, CCME has graduated students with 45 degrees.

All CCME students participate in a variety of professional development opportunities tracked through the Individual Student Development Plan. To date, CCME has had 30 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 center and CSC-wide webinars, national meetings, and in 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

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- Professional development workshops (Detailed in Section 1 description of Areas of Focus, item 5)
- NOAA internship opportunities, such as NERTOs (3 during this period) and cruises (one student participated on a NOAA cruise and one on a cruise related to a NOAA-funded project).

To date, CCME has supported 126 students pursuing 134 degrees. 87% of these students are from URM communities. To date, CCME has graduated 44 students with 45 degrees – 14 Master’s and 31 Bachelor’s - with 38 (84%) of these degrees being awarded to students from URM communities.

Outcome 4. Reduce the attainment gap for URM 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 30 URM CCME Scholars have participated in NERTOs (three during this reporting period). Currently, 11 CCME scholars or graduates working in NOAA mission-relevant fields are from URM communities.

CCME Alumni 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.*

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- *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 10 works published including: 4 student papers in peer-reviewed journals, 5 faculty papers published, and 1 student thesis. CCME also had 6 oral presentations at seminars this reporting period – 3 by students.

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 \$1,322,853 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.*

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- *Number of MSI inter-institutional collaborative partnerships established and maintained in support of NOAA's mission.*

CCME B-CU led a sophomore research experience for undergraduate students from which four were recruited as undergraduate CCME scholars.

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.*

CCME made several updates to the functionality of its website (ccme.famu.edu), and social media accounts to communicate accomplishments.

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;

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

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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.

CCME Scholars											
	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 Title (to be determined in collaboration with NOAA mentor)
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	Andrews, Kaylay	B	BCU	5	Y						
4	Bauer, Shelby	B	UTRGV	1			Alejandro Fierro Cabo	-	-	-	-

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5	Bayron-Arcelay, Margarette	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
6	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
7	Boisen, Olivia	B	CSUMB	1	Y	CI	John Goeltz	-	-	-	-
8	Boston, Bethany	B	JSU	5	Y						
9	Breaux, Jonathan	T	JSU	1		PBC	Brent Thoma	-	-	-	-
10	Brooks, Erica	B	JSU	5	Y						
11	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
12	Brown, Aaliyah	B	FAMU	3	Y	CI	Richard Long	-	-	-	-
13	Bruce, Terrius	T	FAMU	2	Y	CI	Steve Morey	-	-	-	-
14	Byrne, Jamie	B	CSUMB	4	Y	PBC	Corey Garza	-	-	-	-
15	Chui, Emily	B	CSUMB	1	Y	CI	Alison Haupt	-	-	-	-
16	Clark, Samuel	B	BCU	5	Y						
17	Cockett, Patricia	D	TAMUCC	1	Y	CI	Paul Montagna	Linking the Land and Sea: Adaptation of	Completed, Fall 2019	Dr. Randall Kosaki,	Temporal and Spatial Comparison of Intertidal Community

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								Hawaiian Traditional Ecological Knowledge to South Texas Coastal Marine Ecosystems		Papahānaumoku ākea Marine National Monument	Dynamics Within Papahānaumokuākea Marine National Monument
18	Comba, Devin	M	TAMUCC	3		PBC	Jennifer Pollack	Advancing oyster reef restoration projects: comparing functions of different habitats and addressing the use of plastic in small-scale restorations	Summer 2021	Polly Hicks, NMFS/Office of Habitat Conservation/N OAA Restoration Center	Assessment of the Hydrologic Restoration Effectiveness Monitoring (Tier II) Projects Funded by the Community-based Restoration Program (CRP)
19	Coogan, Brian	B	FAMU	3		CI	Steve Morey	-	-	-	-
20	Corbett, Rhamira	B	FAMU	3	Y		Michael Abazinge	-	-	-	-
21	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/NCCOS	In Development
22	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	Spring 2021	Dr. Dennis Apeti, NOAA/NOS/NCCOS	Assessment of Metals in the Northern Gulf of Mexico from NOAA NCCOS Mussel Watch Program Data - For NOAA EPP Graduate Student
23	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

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24	Davis, Beth	M	CSUMB	4		TBD	Alison Haupt	In Development	TBD	Seeking	In Development
25	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
26	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
27	Destefano, Antoinette	M	BCU	3	Y		Raphael Isokephi	In Development		Seeking	In Development
28	Duke, Shalalia	B	BCU	3	Y	PBC	Sarah Krejci	-	-	-	-
29	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
30	Etienne (Stanley), Ra'Teema	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 LaboratoryOffice of Science and Technology IntegrationNWS	Rip Current Model Validation
31	Figuroa, Gabrielle	T	FAMU	2	Y	CI	Michael Martinez-Colon	-	-	-	-

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32	Flores, Daniel	B	UTRGV	2	Y	PBC	Alejandro Fierro Cabo	-	-	-	-
33	Flores, Elena	M	UTRGV	4	Y	PBC	Alejandro Fierro-Cabo	Effects of Nutrient Enrichment on Mangrove and Saltmarsh Habitats	Spring 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
34	Garcia, Javier	B	UTRGV	2	Y		John Breier	Using computer vision techniques for event classification and data compression during autonomous oceanographic missions.	-	-	-
35	Garrett-Mills, Amonra	T	FAMU	4	Y						
36	Gonzalez, Edith	B	UTRGV	4	Y	PBC	Carlos Cintra				
37	Gonzalez, Jacob	M	UTRGV	5	Y	PBC	Carlos Cintra	TBD	TBD	TBD	TBD
38	Grant, Jada	B	JSU	1	Y	PBC	Brent Thoma	-	-	-	-
39	Gullatte, Kennedy	B	FAMU	1	Y		Michael Abazinge	-	-	-	-
40	Gunn, Derrick	B	JSU	5	Y						
41	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;	Drs. Gregory Dusek; Chris Zervas (CO-OPS); Organization -	Investigating Causes of Changing Tidal Range and Timing in U.S. Harbors

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									Completed 12 weeks- Fall 2017	Jena Kent	
42	Hamilton, Alexis	B	FAMU	1	Y	CI	Richard Long	-	-	-	-
43	Harris, Elizabeth	M	TAMUCC	3		CI	Paul Montagna	Multiple Stressors: Interaction between freshwater inflow and contaminants on toxicity of estuarine organisms	Summer 2021	Dr. Marie DeLorenzo, NCCOS	Ecotoxicology Assessment of Climate and Pesticide Interactions in Estuarine Systems for CCME Student
44	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
45	Hill, Jayewon	B	JSU	5	Y						
46	Holmes, Walter	B	FAMU	1	Y		Charles Jagoe	-	-	-	-
47	Johnsin, Arion	B	BCU	5	Y						
48	Johnson, Benjamin	B	FAMU	1	Y		-	-	-	-	-
49	Jones, Kennedy	B	JSU	2	Y	CI	Ranjani Kulawardhana	-	-	-	-

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50	Kilbane, Sarah	B	CSUMB	4			Corey Garza				
51	Kirby, Ayanna	B	FAMU	1	Y		Michael Abazinge	-	-	-	-
52	Lacey, Ashley	D	FAMU	3	Y	TBD	Phyllis Gray-Ray/Charles Jagoe	In Development	TBD	Seeking	In Development
53	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;
54	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 Doerr NOAA NMFS SEFSC-Galveston	In Development
55	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
56	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

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57	Lewis, Kylee	M	TAMUCC	5		CR	James Gibeaut		Summer 2021	Artara Johnson; Greg Dusek NOAA NOS CO-OPS	For EPP CSC Student "Oceanographic Data Analysis Using Modeled and Observed Water Level Data"
58	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; 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: ecosystem services provided by oysters
59	Lopez, Jaime	B	UTRGV	1	Y		Owen Temby	-	-	-	-
60	Lyons, Willis	D	FAMU	2	Y		Michael Abazinge	In Development	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
61	Machado, Malia	B	CSUMB	4	Y	CI	Nathaniel Jue	-	-	-	-
62	Machucah, Connie	M	CSUMB	4	Y		Nathaniel Jue	In Development		Seeking	To Be Developed
63	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

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64	Martin, Kelsey	D	TAMUCC	2		PBC	Greg Stunz	Characterizing large predatory fish across Gulf of Mexico habitat	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
65	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)
66	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
67	Matuch, Cindy	B	CSUMB	4	Y		Jue				
68	Mauney, Nina	M	CSUMB	4	Y		Garza	In Development	TBD	Seeking	In Development
69	McBride, Molly	M	TAMUCC	4		CI	Mike Wetz	Nutrient and Salinity Controls on the Growth of <i>Karenia brevis</i>	TBD	Rance H NMFS/SEFSC/Beaufort ardison,	In Development
70	McKinnon, Tayler	B	FAMU	1	Y			-	-	-	-

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71	McKinzie, Robert	B	BCU	3	Y	CI	Hyun Cho	-	-	-	-
72	McWilliams, Maya	B	JSU	5	Y						
73	Medley, Daryin	M	FAMU	3	Y	CI	Steven Morey	Fin Whale Trends in the Bering Sea and Unimak Pass	April 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
74	Melendy, Shawn	M	CSUMB	4	Y		Olson	In Development		Seeking	In Development
75	Meredith, Melissa	B	CSUMB	1		CI	Cheryl Logan	-	-	-	-
76	Miles, Jordan	B	FAMU	4	Y						
77	Miller, Andria	B	JSU	4	Y		Brent Thoma	-	-	-	-
78	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	Meso-photic reefs of the Monterey Bay National Marine Sanctuary
79	Mogus-Garcia, Elizabeth	M	UTRGV	5	Y	PBC	Carlos Cintra	Red drum (<i>Sciaenops ocellatus</i>) trophic web reconstruction using stable isotopes in two systems in the northwestern Gulf of Mexico	TBD	Seeking	TBD
80	Molina, Mario	B	UTRGV	4	Y	PBC	David Hicks	-	-	-	-
81	Murphy, Elizabeth	M	UTRGV	1		PBC	Carlos Cintra	Tracking nitrogen transfer through Black Mangrove (<i>Avicennia</i>	COMPLETED: Spring 2019	Dr. Joe Serafy (NOAA/NMFS/SEFSC) in Miami, FL	Patterns of change in the fish assemblages of Biscayne Bay mangroves

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								germinans) communities			
82	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
83	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
84	Olsen, Christopher	D	FAMU	5	N	TBD	Wenrui Huang	To be developed	TBD	Seeking	To be developed
85	Outhwaite, Alyssa	D	TAMUCC	4		PBC	Jennifer Pollack	To be developed-	TBD	Seeking	To be developed
86	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
87	Pavlock McAuliffe, Miya	M	CSUMB	1	Y	CR	Dr. Rikk Kvittek (CSUMB) & Dr. Tom Connolly (Moss Landing Marine	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 collaborations- for EPP CSC student

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							Laboratories)				
88	Perriman, Geramy	B	JSU	1	Y	PBC	Brent Thoma	-	-	-	-
89	Poole, Shatoria	M	FAMU	5	Y	CI	Hongmei Chi	To be developed	TBD	Seeking	TBD
90	Preyer, Devon	B	CSUMB	3	Y	CI	Steve Moore	-	-	-	-
91	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
92	Ray, Carlos	B	FAMU	3	Y	CI	Michael Abazinge	-	-	-	-
93	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
94	Roberts, Jordan	B	FAMU	1	Y		Michael Abazinge	-	-	-	-
95	Rodriguez, Asael	M	UTRGV	4	Y	PBC	Fierro-Cabo	To be developed	TBD	Seeking	In Development
96	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
97	Rodriguez, Cassandra	B	UTRGV	1	Y		David Hicks	-	-	-	-

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98	Rolle, Shaquila	B	FAMU	1	Y	CI	Richard Long	-	-	-	-
99	Roozee, Evelyn	M	UTRGV	5	Y	PBC	Owen Temby	To be developed	TBD	Seeking	In Development
100	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
101	Rubino, Ryan	M	TAMUCC	3	Y	PBC	Joe Fox	To be developed-	Summer 2021	Seeking	To be developed
102	Salinas, Victoria	M	UTRGV	3	Y	PBC	David Hicks	Growth and Reproduction studies of Black Corals (antipatharians): South Texas	Anticipated Spring 2021	Dr. Cheryl Woodley, NOS	Developing propagation techniques for the black wire coral, Stichopathes lutkeni
103	Sanchez, Katia	B	UTRGV	3	Y		Owen Temby	-	-	-	-
104	Seida, Maggie	B	CSUMB	4			Moore				
105	Shokere, Alexis	B	FAMU	1	Y		Michael Abazinge	-	-	-	-
106	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
107	Smith, Liyah	T; M	JSU; FAMU	1; 3	Y	CI	Brent Thoma; Richard Long	Characterization of the Prokaryotic Epibionts of Gammarus tigrinus	-; Anticipated Summer 2020	-; Pending	-; To be developed
108	Soius, Mervia	B	BCU	4	Y						

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109	Sugla, Monisha	M	TAMUCC	5	Y	PBC	Jennifer Pollack				
110	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
111	Turner, Damarcus	M	FAMU	4	Y	TBD	Martinez-Colon	Ground truthing of a GIS microplastic model within the Apalachicola River basin in FL	Fall 2021	Dr. Ashok Deshpande, NMFS NEFSC	Detection and identification of microplastics in a deep diving cetacean, the pygmy sperm whale (<i>Kogia breviceps</i>)
112	Uribe, Natalie	B	UTRGV	4	Y	PBC	Cintra				
113	Uwaibi, Ariana	D	FAMU	2	Y	CI	Richard Long	In development	Summer 2020	Dr. Reagan Errera, OAR/GLERL	To be developed
114	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
115	Vance, Miracle	B	JSU	3	Y			-	-	-	-
116	Vaughn, Natalie	B	CSUMB	3	Y	PBC	John Olson	-	-	-	-
117	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

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118	Vidal, Prian	M	FAMU	1	Y	CI	Charles Jagoe and Elijah Johnson	Nitrogen sequestration associated with oyster aquaculture in the Oyster Bay, Aquaculture Use Zone, Wakulla Co, FL	COMPLETED: Fall 2019	Dr. Suzanne Bricker, Physical Scientist and Manager of NOAA's National Estuarine Eutrophication Assessment, NCCOS, Cooperative Oxford Laboratory	Re-immersion time for reduction of Vibrio parahaemolyticus and Vibrio vulnificus to ambient concentrations in Eastern Oysters
119	Walker, Lily	D	TAMUCC	1	Y	CI	Michael Wetz	Dissolved Oxygen Dynamics in Texas Estuaries	Summer 2020	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
120	Watson, Harrison	B	JSU	1	Y	PBC	Brent Thoma	-	-	-	-
121	Watson, KiAnna	B	BCU	4	Y						
122	Webb, Jessica	B	JSU	1	Y	PBC	Brent Thoma	-	-	-	-
123	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;	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

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124	Windham, Shelby	B	JSU	1	Y	PBC	Brent Thoma	-	-	-	-
125	Woods, Aleeshia	B	JSU	5	Y						
126	Young, Riley	B	CSUMB	3		PBC	Corey Garza	-	-	-	-

*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
FAMU	Cohort 1 and 2			Cohort 3		Cohort 4		Cohort 5			(In Progress)
	Bachelor's	11	11	Bachelor's	5	5	Bachelor's	0	2	Bachelor's	11
	Master's	4	4	Master's	0	4	Master's	4	2	Master's	0
	PhD	6	4	PhD	0	1	PhD	0	0	PhD	0
B-CU											
	Bachelor's	0	0	Bachelor's	0	3	Bachelor's	0	2	Bachelor's	0
	Master's	4	5	Master's	0	1	Master's	4	2	Master's	0
CSUMB											
	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
JSU											
	Bachelor's	5	8	Bachelor's	2	2	Bachelor's	3	1	Bachelor's	5
	Master's	2	1	Master's	0	0	Master's	2	0	Master's	0
	PhD	1	1	PhD	0	0	PhD	0	1	PhD	0
TAMUCC											
	Bachelor's	0	0	Bachelor's	0	0	Bachelor's	0	0	Bachelor's	0
	Master's	3	1	Master's	0	3	Master's	3	2	Master's	0
	PhD	5	6	PhD	0	2	PhD	0	1	PhD	0

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UTRGV	Cohort 1 and 2		Cohort 3		Cohort 4			Cohort 5				
	Bachelor's	5	7	Bachelor's	0	2	Bachelor's	0	3	Bachelor's	5	
	Master's	6	6	Master's	0	2	Master's	6	4	Master's	0	
Center Total												
	Cohort 1 and 2		Cohort 3		Cohort 4			Cohort 5				
	Bachelor's	24	29	Bachelor's	7	15	Bachelor's	6	13	Bachelor's	24	
	Master's	21	20	Master's	3	12	Master's	19	13	Master's	0	
	PhD	12	11	PhD	0	3	PhD	0	2	PhD	0	
TOTAL		57	60		10	30		25	28		24	
Total Degrees Proposed	116	<i>Total degrees proposed excludes Postdoctoral research associates (3)</i>									<i>* Differences between proposed and accomplished goals are explained in Section W</i>	
Total Degrees Supported	134	<i>Total degrees supported excludes Postdoctoral research associates (3)</i>										

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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

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-	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
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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

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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 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 (NH₃), 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

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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.

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. Andrew DeVogelaere, Research Coordinator, Monterey Bay National Marine Sanctuary

Dr. Andrew DeVogelaere oversees the Sanctuary's Research Program. This includes facilitating collaboration among over 20 research institutions in the region, providing technical information to decision makers and the Sanctuary staff, and initiating research on resource management issues. Dr. DeVogelaere is also leading the effort to develop the Sanctuary Integrated Monitoring Network (SIMoN), a critical program that assesses how populations of marine organisms and habitats are changing through time. He has been directly involved in a wide variety of research projects, ranging in habitats from the deep sea to estuaries. His past work experience includes being an elected official as Commissioner for the Moss Landing Harbor District and Research Coordinator for the Elkhorn Slough National Estuarine Research Reserve. He earned a Bachelor of Arts in Biology from the University of California, Berkeley, a Master of Science in Marine Science from Moss Landing Marine Laboratories, and a Doctorate in Biology from the University of California, Santa Cruz.

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 had virtual meetings with the Associate Director, and Assistant Director to review ongoing performance in order 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 annual data reporting template, as well as to validate the Year 4 Evaluation Report. 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 COVID 19 Pandemic has had significant impact on the External Evaluator's mode of engagement with Center Management Team and other stakeholders. Meetings that were traditionally conducted in-person had to be held remotely. The External Evaluator and Center Management Team are working to plan and schedule virtual site visits early in the next reporting period.

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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 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	\$445,218.68	473,634.96	\$0	\$49,285.89	\$25,163.06	\$306.22	\$993,608.81
Total	\$1,741,803.01	\$2,796,547.32	\$229,662.20	\$217,264.94	\$203,140.71	\$6,852.71	\$5,195,270.89

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:

- Social Sciences and Humanities Research Council of Canada , \$168,458 CAD (approx. \$134,135 USD). Co-PI Owen Temby (CCME UTRGV). “Understanding trust, risk and control dynamics as the ‘Architecture of Collaboration’ within Canadian and US transboundary fisheries governance networks,” Funds a postdoctoral fellow to co-supervise NOAA-CCME students working on fishery governance projects and introduces CCME students to faculty and students at McGill University.
- JSU Research Centers in Minority Institutions (RCMI) Center for Health Disparities Research (CHDR) Pilot Project Program (PPP), \$169,000. PI R.W. Kulawardhana

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- (CCME JSU). “Developing geospatial modeling framework for uncovering health disparities during COVID 19 Pandemic”. Provides research and training opportunities for students in geospatial analysis.
- National Academy of Sciences Gulf Research Program (UGOS-1). \$35,800 (FAMU subaward amount – 1-year project extension). Institutional PI Steven Morey (CCME FAMU). "Understanding and Predicting the Gulf of Mexico Loop Current -- Numerical Modeling". Provides support for CCME Distinguished Research Scientist to remain engaged in NOAA CCME activities and student training during the summer months.
 - Matagorda Bay Mitigation Trust. \$159,055. PI. Paul Montagna (CCME TAMU-CC). “Long-term Trends in Lavaca-Colorado and Guadalupe Estuaries”. Provides potential research project opportunities to future CCME scholars.
 - National Science Foundation. \$399,863 PI. Wenrui Huang (CCME FAMU).” Dynamic modeling of hurricane wind-wave-surge loads on buildings and resilience analysis”. Provides potential research project opportunities related to coastal resilience to future CCME scholars.
 - National Science Foundation. \$300,000. PI: C. Garza. and Co-PI L. Good (CCME CSUMB). “Building a diverse ocean science community through collaboration: Reframing the R1-MSI research partnership model”. Provides collaborative research and training opportunities for CCME scholars.
 - NOAA IOOS. \$125,000. PI C. Garza (CCME CSUMB). “CeNCOOS renewal grant”. CCME students will help support the development of communication strategies with the public around the value of ocean observing systems.

Total leveraged funding for reporting period: \$1,322,853