

Executive Summary

This report covers the period of September 1, 2014 through February 28, 2015. The mission of the NOAA-ECSC is to train a new generation of environmental professionals, particularly from under-represented minorities, in the NOAA-relevant sciences, and to develop natural and socioeconomic science research products and policy/decision making tools in support of NOAA's mission and objectives in coastal environmental science and management". The NOAA-ECSC is a cooperative agreement between NOAA Educational Partnership Program for Minority Serving Institutions (NOAA EPP-MSI), Florida A&M University (FAMU) – as lead institution and Texas A&M University-Corpus Christi (TAMU-CC), Jackson State University (JSU), Delaware State University (DSU), Creighton University (CU) and the University of Texas-Brownsville (UT-B).

The four (4) core goals for addressing the NOAA-ECSC mission are:

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 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.

Across the six (6) partner institutions, 67 graduate and undergraduate students (20 Ph.D., 26 M.S., 6 J.D., 15 B.S.) were directly supported during this reporting period, as shown in [Appendix 1](#). Of the 67 graduate and undergraduate students, four (4) of these students graduated during this reporting period.

To accomplish Goal 1: In our implementation and science plans, our targets are to recruit and train 45 students and we have exceeded this number. We are on target to meet and exceed our recruitment goal for year 4 of this award (see [Table 1](#)). Since the inception for the grant, we have graduated 234 students (39 Ph.D., 65 M.S., 3 M.A., 9 J.D., 116 B.S., 1 B.A.). Of the 67 NOAA-ECSC currently funded students, 50 (14 Ph.D., 18 M.S., 5 J.D., 13 B.S.) are from underrepresented communities. Of the 4 NOAA-ECSC graduates this reporting period, four (4) students (1 Ph.D., 1 M.S., 2 B.S.) were from underrepresented communities. In addition to the 67 students supported by NOAA-ECSC, an additional 637 were trained in 29 courses in NOAA-relevant disciplines offered by NOAA-ECSC faculty (see Section II.B). To date, NOAA has hired 10 NOAA-ECSC students that were funded under previous cooperative agreements, and 22 others are employed in NOAA-related disciplines by other agencies at the federal, state and local levels or in the private sector. NOAA-ECSC faculty and students published a total of 22 peer-reviewed papers during this reporting period in disciplines related to the missions of NOAA and NOS, as shown in [Table 2](#). Nine (9) more publications are in press during this reporting period.

To accomplish Goal 2: Research and training activities focused on natural and social science dimensions of environmental issues in the northern Gulf of Mexico. The projects that support this goal address the NOS priorities road map, to “enhance capacity at the community level to understand, effectively communicate, and address risks associated with coastal hazards”, including one on the socioeconomic impact of algal blooms using social validation to identify and manage ecosystem services, and another to develop a conservation plan for the sand tiger sharks in near-shore coastal habitats (see <http://ecsc.famu.edu/>). These projects also support the NOS and NCCOS Strategic Plans for effective and sustainable management of coastal resources and characterization of impacts of harmful algal blooms (HABs) on humans and coastal ecosystems.

To accomplish Goal 3: This was addressed by projects developed across the focal areas. For example, a NCCOS Strategic Plan objective is to better characterize impacts of harmful algal blooms on coastal ecosystems, and an NOS Roadmap strategy (C1.3.1) is to strengthen detection and observation of ecological hazards: both are addressed by the project of J. Dampier (Ph.D. candidate, JSU) on HABs.

NCCOS identifies characterizing extent and risks of coastal pollution as a strategic goal and objective; this is addressed by student projects such as J. McComb's (Ph.D. Candidate, JSU) project on biogeochemistry and environmental quality in Grand Bay NERR, and L. Allen's (Ph.D. Candidate, FAMU) project on the effects of the Deepwater Horizon oil spill on coastal fish. NCCOS also identifies characterizing coastal ecosystem and habitat vulnerabilities to climate change and sea level variation as another strategic objective. These are addressed by projects such as J. O'Donnell's (M.S. student, CU) work on salt marsh vegetation changes over decadal scales; M. Guitierrez-Ramirez's (M.S. student, DSU) work on barrier island ecosystem connectivity); Duc Le's (Ph.D. candidate, FAMU) work entails modeling the salinity of the Apalachicola Bay, see http://www.epp.noaa.gov/news/apr_1_2015.html for more details; and Rebecca Rodriguez's (M.S. student, UT-B) internship opportunity aboard the NOAA Research Vessel Okeanos Explorer. Additional student projects that highlight training and professional development can be found in the NOAA ECSC Newsletter at <hyperlink>

To accomplish Goal 4: This goal was addressed through a number of activities carried out by the NOAA-ECSC partner institutions, including summer camps, middle school poster competition, and public outreach. These activities are in support of NOAA's goal of environmental literacy and prepared the pipeline for degree programs in NOAA-relevant sciences. NOAA-ECSC outreach activities engaged 2,400 students (K-12) and other stakeholders, in NOAA-related learning opportunities during this reporting period.

In previous awards, NOAA-ECSC has generated over 242 peer-reviewed publications in NOAA-relevant sciences (see <http://ecsc.famu.edu/t-publications.html>). In this reporting period, NOAA-ECSC students and faculty presented 81 papers, both oral and posters, at scientific conferences; 53 of these has current or previous NOAA-ECSC students as co-authors. NOAA-ECSC personnel published 22 articles in referred journals; of these, 5 had students as first or co-authors. These activities enhance the training and student development needs of our students. This will ensure well-trained scientists to meet the needs of a more diversified NOAA workforce.

In addition to this cooperative agreement, NOAA-ECSC generated ~\$2,300,000 in new leveraged funding from six (6) sources during this reporting period. NOAA-ECSC also had over \$14,500,000 in ongoing external leveraged funding active during this reporting period. These funds further enhance training and infrastructure needs as well as positively impact the training of our students. Moreover, these funds support of NOAA's mission of resilient ecosystems, communities, and economies, healthy oceans, and resilient coastal communities and economies. The complete list of new funding can be found in [Appendix 4](#).

The mission and goals of the Center in student education, training, research, and outreach directly support NOAA's mission by addressing the areas of "resilient ecosystems, communities, and economies", "healthy oceans", and "resilient coastal communities and economies". To further enhance these center activities, the third-year review panel's recommendations have been addressed. NOAA-ECSC collapsed the *Social and Economic Processes* and *Policy and Decision Tools* focus areas into one focal area called *Human Dimensions*. This became necessary because two of the three faculty members of the *Social and Economic Processes* focal area accepted other appointments with other agencies/institutions. The new focal area (Human Dimensions) will include faculty members from both areas. In addition, a permanent Deputy Center Director has been appointed (Dr. Bernadette Kelley) and will further facilitate the administrative and educational activities of the center. NOAA-ECSC are exposed to social sciences through webinars, seminars, workshops, CWCC, and video (ECSC 101). See <http://ecsc.famu.edu/t-ecsc-101.html> for details.

The list and table below summarizes some of the NOAA-ECSC accomplishments during this reporting period.

NOAA EPP Cooperative Science Centers (CSCs) Program’s standardized Performance Measures for this reporting period:

- Number of students from underrepresented communities who were trained and supported (**# = 50; 14 Ph.D., 18 M.S., 5 J.D., 13 B.S.**)
- Number of students who were trained and supported (**# = 67; 20 Ph.D., 26 M.S., 6 J.D., 15 B.S.**) and **graduated (# = 4; 1 Ph.D., 1 M.S., 2 B.S.)** in NOAA-mission sciences in the past six months;
- Number of students who were selected for experiential opportunities at NOAA facilities (**# = 1**)
- Number of EPP funded students who were hired during this reporting period by NOAA (**# = 0**), NOAA contractors (**# = 1**) and other environmental, natural resource, and science agencies at the Federal (**# = 0**), State (**# = 1**), local and tribal levels, in academia and the private sector;
- Number of NOAA science and administrative personnel engaged in NOAA-ECSC Education and Outreach, Scientific Research, and Administrative functions (**# = 22**)
- Number of collaborative research projects undertaken between NOAA and MSI partners in support of NOAA operations (**# = 16**);
- Number of students (**# = 3**) and faculty (**# = 10**) who participated in and completed postdoctoral level research programs in support of the NOAA mission;
- Number of peer reviewed papers published during this reporting period in NOAA-mission sciences by scientists (faculty, post-doctoral fellows, and students) sponsored by NOAA EPP (**# = 22**);
- New funds leveraged with NOAA EPP funds during this reporting period, including student support. (See *Appendix 4b* (**# = ~\$2,300,000**); and,
- Number of outreach participants that were engaged in NOAA mission relevant learning opportunities (**~2,400**).

**Table 1
Summary of NOAA-ECSC Performance Measures of Success (Education and Outreach Programs) for 2014-2015**

	Accomplished (Mar. 1, 2014 - Aug. 31, 2014) 6 months	Accomplished (Sept. 1, 2014 - Feb. 28, 2015) 6 months	Accomplished (Mar. 1, 2014 - Feb. 28, 2015) 12 months
Activities/Programs	2014	2014-2015	2014-2015
# of students receiving NOAA-ECSC support who were trained in NOAA mission sciences	48	67	67
# of students from underrepresented communities receiving NOAA-ECSC support who were trained in NOAA mission sciences	34	50	50
# K-12 Students and teachers participating in NOAA related science activities	754	2,400	3,154
# of students trained in NOAA related Sciences by NOAA-ECSC faculty	757	637	1,394
# JD./M.S./B.S. Students who graduated in NOAA related studies	4	3	7
# Ph.D. Students who graduated in NOAA core sciences	2	1	3
# of students who completed experiential opportunities at NOAA facilities	3	1 (selected)	3
# of student presentations at conferences	12	55	67
#of student co-authored # of publications	6	5	11

Table 2
Summary of NOAA-ECSC Performance Measures of Success (Research Programs) for 2014-2015

	Accomplished (Mar. 1, 2014 - Aug. 31, 2014) 6 months	Accomplished (Sept. 1, 2014 - Feb. 28, 2015) 6 months	Accomplished (Mar. 1, 2014 - Feb. 28, 2015) 12 months
Activities/Programs	2014	2014-2015	2014-2015
# of collaborative research projects undertaken between NOAA & MSI partners in support of NOAA operations	17 projects	17 projects	17 projects
# of students & faculty who participated in and completed postdoctoral level research programs in support of NOAA's mission	3 postdoctoral positions filled during this reporting period	2 postdoctoral positions filled and 1 postdoctoral position advertised	3 postdoctoral positions filled
# of peer-reviewed papers published in NOAA mission sciences	28 peer-reviewed publications	22 peer-reviewed publications	40 peer-reviewed publications
Amount of leveraged (\$) with NOAA EPP funds	\$2.2 million	\$2.3 million	\$4.5 million