The 2016-2021 Strategic Plan

College of Marine Science at the University of South Florida

Locally Applied • Regionally Relevant • Globally Significant

The College of Marine Science seeks to increase and apply fundamental knowledge of global ocean systems and human-ocean interactions through research, graduate education and community engagement.

USF UNIVERSITY OF SOUTH FLORIDA
COLLEGE OF MARINE SCIENCE

Executive Summary

The 2016-2021 College of Marine Science (CMS) Strategic Plan builds on the 2013-2018 University of South Florida (USF) Strategic Plan and focuses on our leading role in assessing the planet's health and enhancing the university's research reputation. Our research and graduate education success provides essential contributions towards USF's AAU aspirational goals, its Carnegie R1 classification, and the State of Florida Preeminence metrics.

Today's political and funding environment has focused attention on undergraduate student success. While student success at the undergraduate level is critically important, USF also has commitments to graduate student success and research. USF rightly prides itself on achieving the status of being a top-50 research university, an achievement to which CMS makes major contributions. While seeking to remain a pillar of excellence in research and graduate teaching, CMS will face financial challenges as USF shifts to a responsibility-centered management (RCM) budget process in the coming year.

In terms of its financial stability and growth, CMS will continue to maintain and grow its high level of federal research funding, which per faculty member exceeds all other units within Academic Affairs. In addition, with the anticipated changes in indirect allocations our ability to provide the infrastructure support necessary to be competitive in the research arena will increase. An increase in patents with subsequent technology transfer is within the scope of our endeavors. We also seek to boost our financial stability through increased philanthropic engagement, as highlighted by the establishment of a Dean's Circle, described below. Our greatest challenge within the RCM budget model will be the generation of tuition through increased funded student credit hours. At the graduate level, we will continue to include requests for tuition support in grant applications; however, not all funding sources allow for this expense. While we anticipate some increase in graduate tuition revenues through establishment of certificate programs and in undergraduate tuition revenues through continuing our current path of growing our course offerings (particularly online), it is expected that CMS will be reliant on subvention funding. The challenges CMS will face will need to be carefully considered as we move into the RCM model.

This strategic plan reinforces our commitment to the graduate teaching and research missions of USF, thus enhancing the university's national and international research reputation. Implementation of this plan allows CMS to make critical contributions to USF's Carnegie R1 classification and to make significant progress toward achievement of Preeminence status within the State of Florida and of our AAU aspirations.

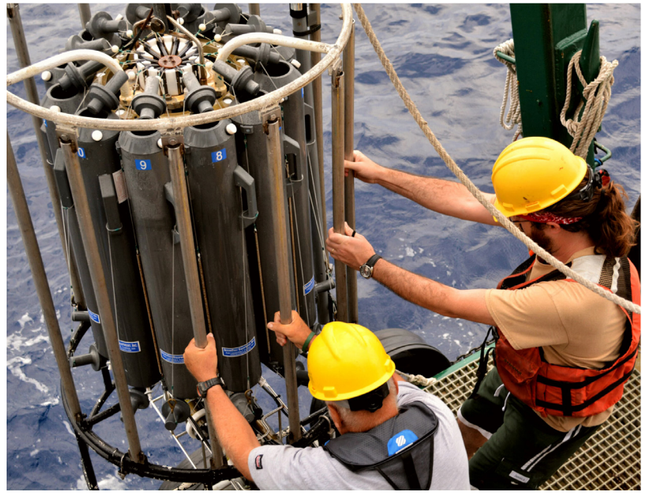
The following are the steps to realize this vision

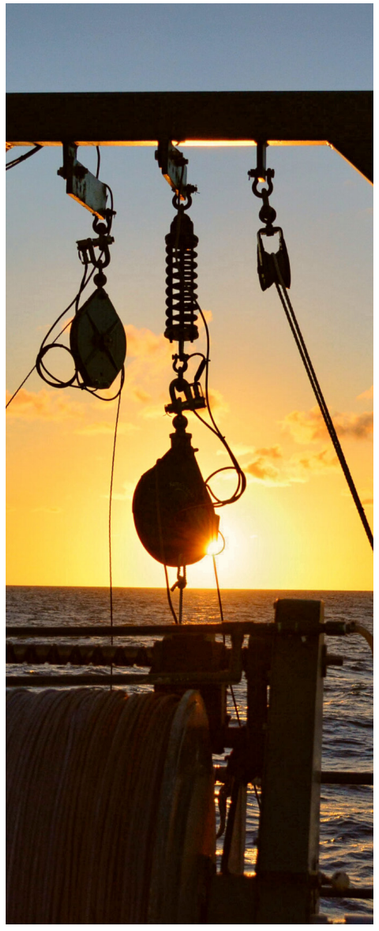
Goals and Objectives

In the next five years, the College of Marine Science's goals are to:

1. Enhance research productivity and impact through strategic hiring and establishment of an endowment to support research infrastructure
2. Graduate highly competitive MS and PhD students prepared for employment and leadership positions in ocean sciences
3. Increase engagement with undergraduate programs on USF Tampa and USFSP campuses
4. Enhance college visibility and fund-raising capacity within the community and nationally
5. Complete deferred maintenance project master plan and get approval for a new building to house new education initiatives

The College of Marine Science's ability to realize its strategic goals and its continued contributions to USF's strategic plan remains dependent on the potential for the allocation of new resources, re-allocation of current university-wide resources, and/or subvention funding. Specifically, over the next five years CMS needs to increase the number of faculty by 20% (a total of eight hires, five of them new positions). As discussed below, with a 20% increase in faculty, we expect to produce 20% increases in important metrics of research productivity, post-doctoral fellows, graduate degree production, and undergraduate student success. The five new hires will require a recurring budget increase of $750,000 for salary and benefits and one-time investments in start-ups ($3.2M). In addition, critical investments in deferred maintenance (~$6.7M) and desired investments in a new building (~$15M), as described under the last goal, will be critical to assuring that our facilities allow us to continue our world-class teaching and research programs. We strive to increase all available sources of revenue (i.e., direct and indirect grant funding, licensing, tuition revenues, fundraising, etc.) to achieve these goals.





CMS Strategic Plan Summary

Goals	1. Enhance research productivity and impact through strategic hiring and establishment of an endowment to support research infrastructure	2. CMS will graduate highly competitive MS and PhD students prepared for employment and leadership positions in ocean sciences	3. CMS will increase engagement with undergraduate programs on USF Tampa and USFSP campuses	4. CMS will enhance its visibility and fund-raising capacity within the community and nationally	5. Invest in facility deferred maintenance and develop plan for renovation and expansion of the MSL building
USF Linked Goals	Goal 2. USF will generate new knowledge and solve problems through high-quality research and innovation to change lives, improve health, and foster positive societal change Goal 4. USF will pursue a more secure economic base, greater operational and resource efficiencies, and increased transparency in its business practices	Goal 1. USF will produce well educated, highly skilled global citizens through its continuing commitment to student success Goal 3. USF will, as a highly effective major economic engine, create new partnerships to build a strong and sustainable future for Florida in the global economy	Goal 1. USF will produce well educated, highly skilled global citizens through its continuing commitment to student success	Goal 3. USF will, as a highly effective major economic engine, create new partnerships to build a strong and sustainable future for Florida in the global economy Goal 4. USF will pursue a more secure economic base, greater operational and resource efficiencies, and increased transparency in its business practices	Relevant to all USF Goals
Strategies	1.1 Make strategic faculty hires in areas of research excellence 1.2 Maintain external research funding per faculty 1.3 Establish the "Dean's Circle" with individuals, as well as representatives from corporations and foundations, with affluence, influence and access 1.4 Develop the Dean's Innovation Endowment to support research and innovation 1.5 Develop a model to increase ROI on CMS research innovation that has gone to market	2.1 Enhance our ability to attract and recruit a stronger cohort of graduate students 2.2 Enhance student success 2.3 Enhance student progress to encourage graduation within target dates 2.4 Enhance diversity of student body 2.5 Enhance career training for graduate students and post-doctoral fellows	3.1 Increase number of courses offered to undergraduates through both online and face-to-face offerings 3.2 Provide research opportunities for undergraduates through lab, research cruise, and educational outreach internships	4.1 Establish a Dean's Circle to increase support for research, graduate student education and outreach at CMS 4.2 Serve as a lead stakeholder in outreach activities, such as Oceanography Camp for Girls, St. Petersburg Science Festival, Blue Ocean Film Festival, and Port Discovery 4.3 Identify faculty, staff and students to serve on local, regional, national, and international panels, workshops, editorships 4.4 Facilitate at least two faculty nominations for national or international awards, with at least one of these for an award that is relevant for AAU status	5.1: Complete the deferred maintenance master plan 5.2: Obtain an additional $7.5M for two years to renovate and extend the north end of the MSL to enhance teaching and research spaces
Key Performance Indicators	1.1.1 Total number of faculty (goal of 33 ranked faculty) 1.1.2 Number of faculty in defined areas of excellence (cluster hires within CMS and USF) 1.2.1 Number of postdoctoral appointees (USF Metric 2.1) 1.2.2 Federal research expenditures 1.2.3 Federal research expenditures/faculty member 1.2.4 Total R&D expenditures (USF Metric 2.4) 1.2.5 Total R&D expenditures/faculty member 1.2.6 Total Indirect 1.2.7 Patents awarded in a 3-year period of time (USF Metric 2.8) 1.3.1 & 1.4.1 (Endowment value) Build Dean's Innovation Endowment to $5 M in 5 years (USF Metric 4.2) 1.5.1 Value of royalties returned to CMS	2.1.1 Average GRE scores of accepted students 2.2.1 Doctoral Degrees Awarded (USF Metric 1.8) 2.2.2 Graduate Degrees in Areas of Strategic Emphasis (USF Metric 3.4) 2.2.3 Number of student awards and fellowships 2.2.4 Number of student publications 2.3.1 Time to degree for MS 2.3.2 Time to degree for PhD 2.4.1 Composition of student body using accepted categories 2.5.1 Percent employment of graduates in ocean sciences	3.1.1 Number of undergraduate SCH 3.2.1 Number of students involved in research	4.1.1 Endowment value for research, education and outreach (USF Metric 4.2) 4.2.1 Number of people impacted by outreach activities such as Oceanography Camp for Girls, St. Petersburg Science Festival, Blue Ocean Film Festival, Port Discovery 4.3.1 Number of local, regional, national, and international panels, workshops, and editorships served on by faculty 4.4.1 Number of faculty award nominations that we facilitate	5.1.1 Secure funding for deferred maintenance 5.2.1 Secure state and private funding for new building

Preamble

The oceans produce half of the oxygen we breathe, provide critical food and energy resources, moderate Earth's weather and climate, and enable worldwide commerce. Coastal tourism and recreation contribution over 1.7 million jobs to the nation's economy and over 200,000 jobs and $50 billion to Florida's economy (Appendix 1). In Florida, the fishing industry contributes more than cattle and citrus industries combined. Over $8 trillion worth of oil and gas reserves lie below the global oceans, with the Gulf of Mexico representing a significant fraction. Seafood sales contribute more than $100 billion to the nation's economy and $30 billion to the state's economy. More than 95% of US commerce travels through American ports.

Unfortunately, many of these ocean contributions to our physical and economic well-being are at risk. Threats include pollution, increasing temperature and acidification, ecosystem degradation and over-fishing. Balancing our exuberant use of fossil fuels and consumption of fish with our desire for long-term ocean health will challenge our society economically, technologically, and politically. It also challenges our scientific understanding of how global ocean systems work at a fundamental level. Traditional academic disciplines struggle to understand the interconnected ocean-atmosphere-biosphere-cryosphere-solid Earth system. Oceanographic institutions, with their emphasis on exploration, inter-disciplinary research and graduate education, have proven to be a key resource for the nation and the world.

At the University of South Florida (USF), the College of Marine Science (CMS) responds to these challenges by providing fundamental knowledge and understanding of oceans, by educating the next generation of leaders, and by passing this knowledge on to the public through community engagement.

Graduate students using bongo nets to collect plankton in the Gulf of Mexico aboard the R/V Weatherbird II.

Our faculty, students, and staff address socially-relevant issues in addition to fundamental research on problems in the watershed that drains to the coastal zone, in shelf/coastal and estuarine waters, and in the deep ocean. This research is locally applied, regionally relevant, and globally significant. These issues include long-term sea-level rise, coral reef demise, recent and past climate change, ocean acidification, harmful algal blooms, fisheries management, water quality, shoreline change, impacts of oil drilling, navigation, and development of new sensing technologies. Our programs are at the forefront of marine environmental observation and prediction, helping to inform effective solutions for Florida, the nation and the planet.

As we plan for the future, we need to be aware of changes in funding at the state and national levels. We need to find entrepreneurial ways to maintain and fortify the research and educational infrastructure, as support once provided by earmarks and research funding has waned. We need to strengthen areas of interdisciplinary excellence through targeted hires and investments. We need to continue to broaden the education we provide by expanding our professional training opportunities and by expanding undergraduate offerings. We need additional financial resources to attract the best and the brightest students, faculty and researchers. We need to invest in our aging infrastructure to ensure a safe and reliable environment for research and education. This plan outlines these needs.

History of the College of Marine Science

To plan for our future, we need to first look at our past (modified from Muller-Karger et al., 2010, Gulf of Mexico Science, 164-172). The College of Marine Science began in 1967 as the Marine Science Institute of the University of South Florida. It was originally located in the old U.S. Merchant Marine training station, built in 1939 on what would become the 11-acre USF branch campus near the harbor in St. Petersburg, Florida. The first three faculty – Harold Humm (Director, and a marine phycologist), Thomas Hopkins (marine plankton and micronekton ecology), and Hugh Dewitt (ichthyology) – set up laboratories in that facility and began to mentor graduate students working toward master's degrees. By 1969 the group doubled in size and included Thomas Pyle (marine geology), Kendall Carder (optical/physical oceanography) and Ronald Baird (ichthyology). When Peter Betzer (chemical oceanography) joined the faculty in 1971, all of the major sub-disciplines of oceanography were represented, and the Institute was re-designated as the Marine Science Department within the USF College of Natural Science, later incorporated into the USF College of Arts and Sciences. In 2000, the Department formally became a separate USF College, with a focus on research and graduate education, located on the USF St. Petersburg campus while reporting directly to the USF Provost on its main Tampa campus.

The rapid growth of the USF marine science program is a tribute to collaborations among a large group of stakeholders. These include our faculty, colleagues from other agencies and universities, other colleges at USF, community business leaders (especially the St. Petersburg Downtown Partnership), the City of St. Petersburg, members of Florida's legislature, the US Congress, and a host of private citizens.

In particular, the college benefited greatly from the support of the late U.S. Congressman C.W. Bill Young. The College of Marine Science is a member of the C.W. Bill Young Marine Science Complex, made up of six Federal and State environmental research and operational agencies in close proximity, including the USGS Coastal Geology division, the NOAA National Marine Fisheries Service Southeast Regional Office, the US Coast Guard, the Fish and Wildlife Research Institute (FWRI) of the Florida Fish and Wildlife Conservation Commission, the Florida Institute for Oceanography (FIO), and the Tampa Bay National Estuary Program. Several private research groups including SRI International are co-located in this research cluster. Together with the College, these agencies and institutions employ ~890 researchers, engineers, technicians and support staff, making St. Petersburg one of the largest marine-science research complexes in the southeastern US. An estimated 75% of those employed have advanced degrees; at least 30% have a PhD. The total economic impact of this high tech cluster is close to $100M.

Among the many highlights of the growth of USF Marine Science, several stand out and illustrate the impact of direct state investment. The first big boost came in 1978 when the Board of Regents of the Florida State University System (SUS) designated the Department as a "Center of Excellence." Each state university received one, and only one, of these centers, and the designation led to the near doubling of the faculty when we were given permission by

the Florida Legislature to hire eight new faculty one year later. Another milestone came in 1982, when the Florida Board of Regents established our independent PhD program. In 1988 Florida's legislature provided funding for six new marine science faculty positions.

In 1993, the Department set up PORTS (Physical Oceanography Real Time System) in partnership with NOAA and the Tampa Bay Harbor Pilots Association. This system of moorings and instrumented locations around Tampa Bay has provided critical data on currents, winds, tides, and other parameters to all marine interests. This program has led to a greater than 60% reduction in the frequency of vessel groundings in the Bay. After the west coast of Florida was ravaged by an undetected, or "no-name" hurricane in 1993, the experience of USF Marine Science in monitoring physical circulation and meteorological processes helped to persuade the state of Florida to fund the West Florida Shelf COMPS (Coastal Ocean Monitoring & Prediction System). In 1993 the College installed its first satellite-tracking antenna to download real-time imagery from space-based ocean observing instruments; a second antenna was built on the Bayboro Peninsula in 1998, providing the capability to track NOAA and NASA satellites covering the Gulf of Mexico, Caribbean Sea, U.S. East Coast, and part of the eastern tropical Pacific Ocean. These programs provide real-time imagery and data to researchers and to the public on a 24 hour / 7-day a week basis.

In 1994, The Knight Oceanographic Research Center was completed, effectively doubling research and office space. Jointly constructed by the State University System and the General Services Administration of Florida, this new facility is shared by the College of Marine Science and the state's Department of Environmental Protection, which became the FWRI. Also in 1994, Florida's legislature provided funding for five engineering positions to establish the Center for Ocean Technology (COT) within the Department of Marine Science.

In 2009, USF acquired Florida's newest oceanographic research vessel, the R/V Weatherbird II. This 115-foot, 194-ton vessel was purchased by USF for $2.1 million for use through the Florida Institute of Oceanography, a consortium of Florida's public universities, private higher education institutions, and state agencies involved in marine research.

In 2010, the College further expanded its science footprint on the USF St Petersburg campus with a new Science and Technology facility planned jointly with the USF St. Petersburg campus and the College of Marine Science. Approximately one half of the laboratory space in this new building is utilized by the NOAA-funded Marine Resource Assessment Program.

R/V Weatherbird II

In spring 2010, researchers from the College of Marine Science were at the forefront of tracking the Deepwater Horizon oil spill, determining its extent in the subsurface, and determining the toxicity and ecosystem impacts. We continue to play a major role in studying the longer-term environmental impacts, including selection as lead institution for a research consortium funded by the Gulf of Mexico Research Initiative (GoMRI; http://www.gulfresearchinitiative.org). Research by our consortium, Center for Integrated Modeling and Analysis of Gulf Ecosystems (C-IMAGE, http://cimage.rc.usf.edu) focuses on assessing ecosystem impact of the spill and was funded at $11M (2012-2014) and $22M (2015-2018).

In the 49 years since its official beginning, CMS has expanded in size and capability and is internationally recognized as a leader in ocean science. There are now 26 faculty, ~100 graduate students, 47 full-time support personnel, and 48 temporary staff. CMS researchers have ~$13M in annual research expenditures and a total endowment of ~$18M.

College of Marine Science Strategic Plan 2015-2019

Goal 1: *Enhance research productivity and impact through strategic hiring and establishment of an endowment to support research infrastructure*

USF Linked Goal 1. USF will generate new knowledge and solve problems through high-quality research and innovation to change lives, improve health, and foster positive societal change

USF Linked Goal 4. USF will ensure sound financial management to establish a strong and sustainable economic base in support of US's continued academic advancements

Strategies:

1.1 Make strategic faculty hires in areas of research excellence

1.2 Maintain external research funding per faculty member

1.3 Establish the "Dean's Circle" with individuals, as well as representatives from corporations and foundations, with affluence, influence and access

1.4 Develop the Dean's Innovation Endowment to support research and innovation

1.5 Develop a model to increase ROI on CMS research innovation that has gone to market

Key Performance Indicators:

1.1.1 Total number of faculty (goal of 33 ranked faculty)

1.1.2 Number of faculty in defined areas of excellence (cluster hires within CMS & USF)

1.2.1 Number of postdoctoral appointees (USF Metric 2.1)

1.2.2 Federal research expenditures

1.2.3 Federal research expenditures/faculty member

1.2.4 Total R&D expenditures (USF Metric 2.4)

1.2.5 Total R&D expenditures/faculty member

1.2.6 Total Indirect

1.2.7 Patents awarded in a 3-year period of time (USF Metric 2.8)

1.3.1 & 1.4.1 (Endowment value) Build Dean's Innovation Endowment to $5M in 5 years (USF Metric 4.2)

1.5.1 Value of royalties returned to CMS

Discussion:

1.1 Make strategic faculty hires in areas of research excellence

The most important asset of any academic institution is its faculty. The strength of our hires over the coming decade will determine the research and education successes of our college. Defining the priorities for strategic hiring, while remaining nimble to take advantage of unexpected opportunities, is the most important outcome of this planning exercise.

We propose a 20% increase in the number of faculty. Our 2021 target is 33 faculty (30 in unit and three out-of-unit administrative). As of January 2016, we have 28 faculty (25 in unit and three out-of-unit administrative). We anticipate three retirements in the next five years. To achieve our goal, we require five new positions (one new position per year) in addition to replacing retirements over the next five years. All performance metrics should be expected to track the number of faculty. For example, if we have a 20% increase in faculty over the next five years, then federal expenditures and total research expenditures should be expected to also increase by 20%, provided the appropriate time is allocated for the ramping up of junior faculty member's productivity and provided the national funding remains stable.

Five new faculty lines will require an addition of ~$150K/position or $750K total to our budget over the five years. In addition, each of the eight hires will require ~$400K in start-up totaling $3.2M over five years. Much of the start-up will be covered by our returned indirect, if a larger proportion is returned to the colleges, but some additional investment may be required. We currently have space for roughly 30 total faculty members. New construction is necessary to provide appropriate educational and research space for the new faculty and their students and staff (section 5).

These hires in areas of strategic importance will increase our research productivity and enhance our ability to collaborate with others at USF and within the Marine Science Cluster. Our research expertise is defined by five overlapping areas:

- Healthy Ecosystems
- Climate Change
- Impacts of Ocean-Human Interaction
- Ocean Observing
- Impacts of Frontier Drilling for Fossil Fuels

Each of these requires collaborative research involving all the major areas of oceanography, each addresses societally relevant problems on local to regional to global scales, and each requires a combination of observation, analysis, and modeling. Below is a summary of our disciplinary needs and a guideline for hiring with respect to three categories: 1.1a) cross-cutting needs, 1.1b) building on existing strengths, and 1.1c) joint or cluster hires with other USF colleges.

1.1a) Cross-cutting needs (3 faculty hires) include:

Our highest cross-cutting priority is to hire two faculty in the area of chemical oceanography. Ocean chemistry is critical to the planet's future health, encompassing issues such as ocean acidification, nutrients and "dead zones", marine pollution, and the planet's overall chemical cycling. A critical shortage in this area is due in part to recent retirements and in part due to a long-term hiring gap. Bolstering our capabilities in chemical oceanography will strengthen all our strategic research areas. A search is underway with an anticipated hire date in the AY 2016-2017.

Another cross-cutting need is in sea-going, observational marine science, with flexibility as to the disciplinary focus. For example, in physical oceanography, expertise in observations of the ocean's heat content and air-sea exchanges are particularly important and will likely have increased funding sources in the future. In biological oceanography, new and expanded efforts on the tracking of fish, marine mammals, endangered species, red tides, etc., would complement our existing strengths in autonomous underwater vehicles (AUVs) and would provide opportunities for large research grant collaborations with NOAA and FWRI.

CMS graduate student Kristina Deak sampling red snapper to study long term impacts of the Deepwater Horizon oil disaster in the Gulf of Mexico.

1.1b) Building on our existing strengths (2 faculty hires):

Hiring in the general area of fisheries research, including fish stock assessment, which strengthen our Healthy Ecosystems and Ocean-Human Interface areas. Fisheries management is often controversial and much of the controversy surrounds the status of managed populations and ecosystems, and impacts of regulations. Increased funding in fisheries is likely and existing faculty are competitive and successful in attracting these funds to CMS. Additional hiring in fisheries science can propel CMS to leadership among peer academic institutions in this field in the Gulf of Mexico region.

In addition, CMS has +30-year strength in ocean optics and satellite remote sensing. This is a key part of our Ocean Observing area and funding is strong in this discipline.

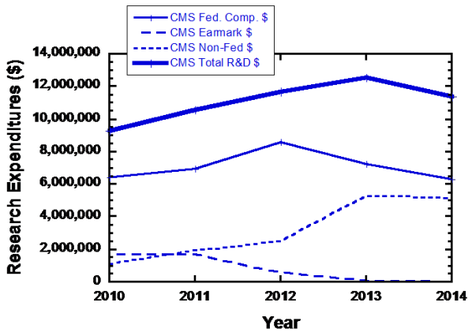
1.1c) Joint or cluster hiring opportunities with other USF Colleges (3 faculty hires with potential for "shared" financial support):

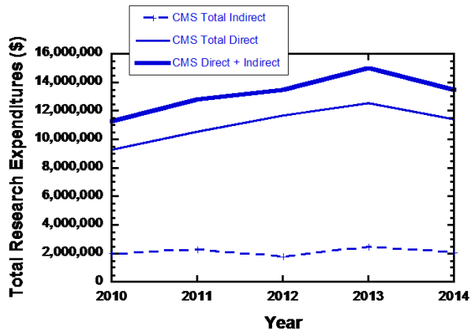
First, we have a long-standing interest in collaborating with our colleagues in the Colleges of Engineering, Arts and Sciences, Global Sustainability, and Public Health at USF and in USF Health in the general area of Oceans and Human Health. We have a long-term strength in supporting port operations that could be expanded to take advantage of recent and expected future opportunities in Port Sustainability. In addition, we have a small but high-powered group focused on Ocean Genomics and Water Quality. Expanding this area of expertise would contribute to the Healthy Ecosystems initiative, and also to the Ocean-Human Interface area. Future study of the toxicology of hydrocarbons on oceans and humans is part of our Impacts of Deep Drilling strategic research area. We propose to work with the Colleges of Engineering, Global Sustainability, and Public Health to develop joint certificate and masters programs in Ocean Engineering and Port Sustainability that may best be served by joint or cluster hires.

Second, we envision adding experts in risk assessment in collaboration with other USF partners. Initially we see possibilities in the general area of Impacts of Frontier (Deep and Remote) Drilling and Climate Change. The latter would include economic studies coupled to traditional studies of the physical climate variables; e.g., what are the risks to humans due to sea level rise, the role of polar ice sheet stability, and changing hurricane tracks and intensities?

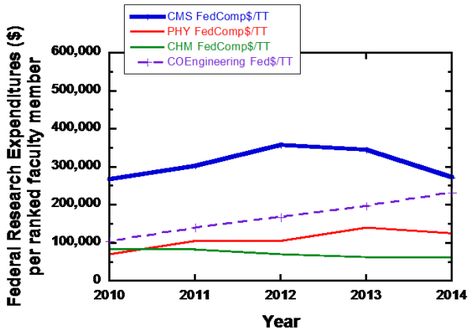
1.2 Maintain external research funding per faculty member

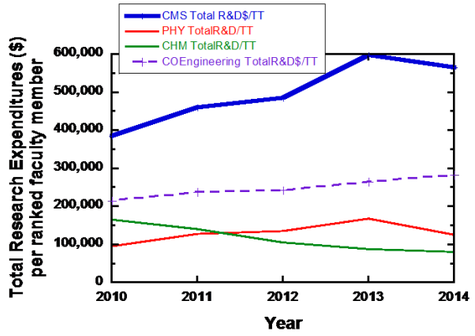
The research profile of the college remains strong in spite of increased competition for external grants. In 2014, our total research expenditures were roughly ~$13.5 M, with ~$11.4 M in direct research expenditures and ~$2.1 M in indirect.





College of Marine Science faculty have some of the highest per faculty research performance metrics in the university. Total research expenditures per CMS faculty member are compared with those in other highly research active units (Physics, Chemistry, and the College of Engineering).





Given the high research productivity of CMS faculty, the most important parameter in predicting the college's productivity is the number of faculty. They are the pistons in our productivity engine. To attract and retain the best and brightest research-intensive faculty, investment in start-ups for new faculty, and in maintenance and upgrades of facilities and research infrastructure will be required.

1.3 Establish the "Dean's Circle" with individuals, as well as representatives from corporations and foundations, with affluence, influence and access

In 2014, the College of Marine Science received its largest planned gift (George & Jane Morgan Endowment for Excellence in Marine Science) in the history of the institution. This $3 million transformative gift provides an opportunity for CMS to establish the "Dean's Circle" and engage other individuals with affinity to USF and representatives from Corporations and Foundations, with affluence, influence and access. Members of the Dean's Circle will serve as advocates for CMS to advance public relations and awareness of the College, and also help the College broaden its base of financial support through identification, cultivation and solicitation of high net worth donors. In anticipation of inviting representatives to the "Dean's Circle," the College will refine and prioritize a robust and realistic fundraising plan with strategies and action plan. The establishment of the CMS "Dean's Circle" will greatly assist the College in attaining its potential for excellence in research productivity and impact.

1.4 Develop Dean's Innovation Endowment to support research and innovation

To recruit and retain the best faculty, and to provide them with the tools they need to be competitive, significant resources are required to buy and maintain state-of-the-art instrumentation, to provide technical personnel, to provide start-up packages, and to be able to provide retention packages. Several factors have conspired to diminish the funds available to support these critical research infrastructure needs, including reduction in overall federal funding levels for oceanography (NSF, ONR, NOAA), elimination of earmarks, reduction in state appropriations, and reduction in the amount of overhead dollars returned to the college. We need to be entrepreneurial in our search for resources.

CMS will establish an endowment for Research Innovation to supplement diminished funds. These funds are critical for CMS to maintain a competitive edge in recruiting and retaining the best and the brightest faculty. Our ultimate target is to build an endowment that will return $1 M/year for research infrastructure support. At a 4% return, this translates into a need for a $25 M endowment. During phase 1 of the campaign, CMS will raise $1M/yr for the next 5 years for the endowment.

1.5 Develop a model to increase ROI on CMS research innovation that has gone to market

Commercialization of research technologies is a driver of economic growth and universities have played a major role in bringing innovative ideas and inventions to market. In recent years, commercialization of research discoveries has increased within CMS and this provides an opportunity for the College to increase individual and corporate investment partnerships. Technology transfer can potentially generate revenues for universities, create research partnerships and collaborations between academia and industry and enhance regional economic growth and development. As with individual, corporation and foundation donors, business relationships take time and energy to build. This long-term investment could ultimately increase potential revenue for CMS and provide a positive feedback loop for incubating next generation technology innovation.

Goal 2: *CMS will graduate highly competitive M.S. and Ph.D. students prepared for employment and leadership positions in ocean sciences*

USF Linked Goal: (1) USF will produce well-educated and highly skilled global citizens through our continuing commitment to student success

USF Linked Goal: (3) USF will, as a highly effective

major economic engine, create new partnerships to build a strong and sustainable future for Florida in the global economy

Strategies:

2.1 Enhance our ability to attract and recruit a stronger cohort of graduate students

2.2 Enhance student success

2.3 Enhance student progress to encourage graduation within target values

2.4 Enhance diversity of student body

2.5 Enhance career training for graduate students and post-doctoral fellows

Key Performance Indicators:

2.1.1 Average GRE scores of accepted students

2.2.1 Doctoral Degrees Awarded (USF Metric 1.8)

2.2.2 Graduate Degrees in Areas of Strategic Emphasis (USF Metric 3.4)

2.2.3 Number of student awards and fellowships

2.2.4 Number of student publications

2.3.1 Time to degree for MS

2.3.2 Time to degree for PhD

2.4.1 Composition of student body using accepted categories

2.5.1 Percent employment of graduates in ocean sciences

Discussion:

The College of Marine Science is a leader in graduate education. Our graduate degrees are mentored degrees that require substantial time investments by our faculty. Our students work one on one with their faculty advisors and their graduate committee members. They learn to be professional scientists by working shoulder to shoulder with professional scientists, much like an apprenticeship program. Intensive training of this type is typical of graduate-level STEM disciplines at all world-class universities. Indeed, this level of faculty commitment and involvement is essential at any research university, like USF, that is nationally and internationally recognized.

Our students are recruited not only from Florida, but are among the best candidates in the country and internationally. At present 48% of our students are from Florida, 42% are recruited from the best schools in the US, and 10% of our students come to us from overseas. The appeal of our program to students outside Florida and outside the US attests to the national and international stature that we have achieved.

The path to AAU status for USF is strongly dependent upon the success of our MS and PhD programs. Many of our students will become academics at universities around the country and around the world. They will become the leaders of future marine science research and will set the research agenda for decades to come. Some of our students will become leaders in national and state laboratories and agencies. Our graduates will be responsible for the day-to-day and year-to-year decisions concerning the human-ocean interactions that are likely the key to a sustainable future. Some of our students will enter the private sector. In a rapidly changing world, the students we are training will be the visionaries. They will be the CEOs of the next generation of successful businesses. How do we know this? We know this because we have followed the careers of many of our alumni. We know this because we have trained these students to be independent, creative thinkers. They will most assuredly make their mark. Our former students have already done so, and we look forward to seeing what our future graduates will do.

2.1 Enhance our ability to attract and recruit a stronger cohort of graduate students

The prescription for success in a graduate-oriented program starts with recruiting the best faculty, who in turn recruit the best graduate students, and they then work together to produce world-class research. We also need to communicate CMS' strengths and opportunities to potential students through effective media (website) and social media.

It is difficult to find a single metric to fully characterize student quality, but one of the few metrics available to compare applicants from around the US and from around the world is the Graduate Record Examination (GRE). The GRE is not a perfect measuring instrument, but at the least it is required of all applicants and it is standardized. We will monitor the average GRE scores of the students that we accept and to compare this average to our past incoming classes. This metric will fluctuate from year to year, but our goal is for it to increase over time.

2.2 Enhance student success

The number of masters and doctoral graduates will scale with the number of faculty. We expect a 20% increase in the number of ranked faculty to result in a 20% increase in our production of masters and doctoral degrees, an important metric for AAU and Preeminence.

To prepare our graduate students for career success in research and education, they are expected to compete for external funding and awards, to make presentations at national and international meetings, and to publish their work in peer-reviewed journals. Our students already perform at an extremely high level. Our goal is to maintain their success by encouraging our students to attend international conferences, compete for best paper awards, and to apply for other honors and awards. We also encourage our students to apply to various fellowship and funding award opportunities such as NSF, NASA, NOAA, and ONR Graduate Fellowships as well as Fulbright Fellowships. We will continue to encourage faculty to provide professional training in their course work and continue to provide professional development workshops and short courses. We monitor their success by tracking 1) awards given to our students at the local, state, national and international meetings, 2) research fellowships and scholarships, 3) number of student first-authored peer-reviewed publications. We expect to maintain the per-student performance metrics and to increase overall student body metrics as faculty number increases.

2.3 Enhance student progress to encourage graduation within target values

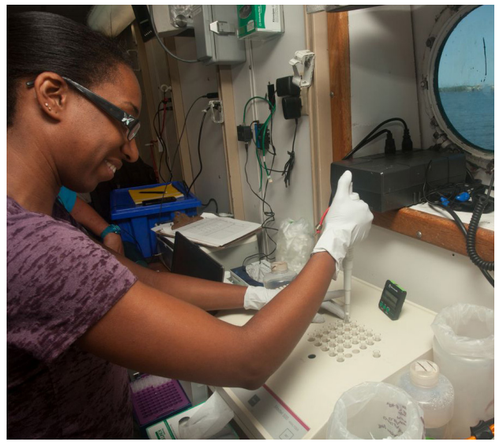
Our faculty members take great pride in being the mentors of the next generation of marine scientists. Our MS and PhD graduates are prepared not only to get a job, but to be the leaders of our field in the future.

A key indicator of student success, and of our success as their mentors, is how long it takes to produce a thesis or dissertation that is of sufficient quality and breadth to justify a graduate degree from our college and university. If the time is too short we risk putting our students into the world without the skills necessary to allow them to make the impact that we expect of them. If the time is too long we are simply holding them back. Currently these values are 3.8 for the MS and 7.3 for the PhD.

Our length to degree target is three years for the MS degree and five years for the PhD degree. We expect that 50% of our students should meet these targets, 70% should succeed within one additional year, and 90% should succeed within two additional years. These metrics include students who leave the program without completing a degree. Over the past three years, our average attrition rate has been a low two percent. We aim to maintain this low rate. Part of doing so includes monitoring student progress on an annual basis, using benchmarks to insure that

students are completing steps towards their degree on time.

In addition, we will monitor the post-graduate success of our students. We will monitor and report on how many students are employed in our field and the nature of their employment (university, state or federal laboratories, private sector).



Graduate student Jonelle Basso performing biological analyses aboard the R/V Weatherbird II.

2.4 Enhance diversity of student body

In addition to student success, our college is committed to recruiting and retaining a diverse student body, and to competing for the most highly qualified applicants in the country. We are already doing an excellent job in this area, and we will continue this success into the future. The percentage of under-represented minorities (URM) in STEM (Science, Technology, Engineering, and Mathematics) is low compared to society (>30%). For ocean sciences, the percentage is even lower than other STEM fields. According to the National Science Foundation and the Consortium of Ocean Leadership surveys, underrepresented graduate student minorities (Hispanic, Black, Native American/Pac Islander) in ocean sciences is about 9% +/- 5%. Over the past fifteen years, our College has grown its diversity from ~2% to ~15% on average. In 2013, seven out of 14 PhD degrees awarded in our College were to URM students. Although that was an exceptional year, our goal is to grow our diversity as much as qualified applicant pool allows for (target of 19% by 2021). This effort will insure that our students are prepared for success in a diverse workplace environment.

2.5 Enhance career training for graduate students, post-doctoral fellows, and research staff

Our goal for the next five years, is to maintain state-of-the-art and relevant professional development training for our graduate students, post-doctoral fellows, and research staff. As described above, to better prepare our students, we need to remain current in professional development techniques and tools, in a rapidly changing world. We will strive to offer this state-of-the-art information to students in the form of orientations, workshops, training, classes, teaching assistantships, and other teaching opportunities to better prepare our graduate students for success during graduate school and for their future employment.

For example, at present we require incoming graduate students to attend a weeklong orientation each fall where they are introduced to staff and are given a complete student handbook. We provide thorough review of all the internal and external resources that are made available to them as a student at CMS. As part of this weeklong orientation, two full days are devoted to Presentation Boot Camp, a National Science Foundation program to assist students in preparing and delivering better presentations. This program has provided a remarkable improvement in our students' defenses and presentations at professional national and international conferences. Their presentation skills have surpassed many of our own faculty, which in turn has inspired some of our faculty to take the same training.

We encourage our incoming students to take the Professional Development Course offered in the fall semester. This course provides students many resources. It also requires that each student write a proposal for a federal fellowship from NSF, NOAA, NASA, and other programs. Through the assistance of our faculty, many of these proposals have been funded. Others courses in scientific writing, GIS, data processing, will continue to be developed to insure our students are well-prepared. Over the next five years, we will work with the Office of Graduate Studies to improve coordination and to take advantage of courses they are teaching, including research ethics and Title IX issues.

We will also work to increase the opportunities for teaching assistantships within the rapidly growing USFSP science programs. We encourage students to participate in the Educational Outreach programs offered within our College such as the Oceanography Camp for Girls, St. Petersburg Science Festival, Blue Ocean Film Festival, National Ocean Science Bowl Spoonbill, to name just a few. These types of marine science education outreach programs will enable our students to have a broader impact for society. Development of new professional certificates will document this type of training and enhance our students experience and marketability.

Goal 3: *Increase engagement with undergraduate programs on USF Tampa and USFSP campuses*

USF Linked Goal: (1) USF will produce well-educated, highly skilled global citizens through its continuing commitment to student success

Strategies:

3.1 Increase number of courses offered to undergraduates through both online and face-to-face offerings

3.2 Provide research opportunities for undergraduates through lab, research cruise, and educational outreach internships

Key Performance Indicators:

3.1.1 Number of undergraduate SCH

3.2.1 Number of students involved in research

Discussion:

3.1 Increase number of courses offered to undergraduates through both online and face-to-face offerings

Students at all levels are fascinated with the ocean providing us an excellent opportunity to provide high quality, strategic enhancements to the undergraduate mission of the university. The best preparation for a career in marine science, however, is not necessarily an undergraduate degree in marine science, but rather a rigorous disciplinary preparation in biology, chemistry, geology, physics, computer science, math, or engineering. Given the concern that minors and dual majors can negatively impact 6- and 4-year graduation rates, the former associated with excess credit hours, we believe we can best contribute to USF's undergraduate education mission by offering well-chosen, high quality undergraduate courses, rather than developing a stand-alone undergraduate program in marine science.

We can do this by working with USFSP to help them develop an undergraduate major in Marine Biology. This would include offering select courses that would benefit their students. We can also provide certificate programs to these students as well as to working professionals. Our goal is to develop relevant certificate programs for science teachers and other scientists wanting to further their education. We are actively pursuing these options and are eager to identify others.

We are working to increase the number of undergraduate SCH generated. In the past year, we have assumed responsibility for the Introduction

to Oceanography course taught for many years by the Department of Geology. We have developed an online course and will be offering this course both in online and face-to-face versions each semester. Five online courses were developed and launched over the past 2 years, tripling our undergraduate enrollment per semester. Based on recent experience with these courses we anticipate 300 or more undergraduates enrolling in our online courses on an annual basis. We will foster and grow these courses towards a goal of increasing our undergraduate enrollment to exceed 400 per year over the next five years.

We will continue to work in coordination with the USFSP Biology Program to offer undergraduate courses on a regular schedule. We are currently offering:

- Coral Biology and Reef Ecology
- Death from the Sea: Realized Public Health Hazards
- Marine Ecology Field Methods
- Marine Aquaculture
- Port Sustainability
- Geological History of Florida
- Fish Biology
- Experiential Learning in Marine Science
- Scanning Electron Microscopy
- Marine Microbiology

We will continue to work with the undergraduate programs at USFSP and Tampa to develop and offer new courses that meet the needs of students interested in Marine Science.

Finally, we strive to grow graduate certificate programs in areas of high demand. We have one in Marine Science Education which we will be promoting and growing over the next five years. We have another certificate program that Dr. Luther is developing using his Port Sustainability Online Course. His online course will be part of the Public Health Homeland Security Certificate. His online course will also be part of the Global Sustainability Coastal Sustainability certificate program. It is estimated that it will take 3 years to complete these certificates and build a complete online port studies certificate program. It is estimated that by the end of 5 years, there will be 25 students a year enrolling in this program from CMS and other USF colleges.

3.2 Provide research opportunities for undergraduates through lab, research cruise, and educational outreach internships

Another strength we can offer undergraduates from USF and USFSP is the experience of conducting research at sea and in our labs. Our goal is to expand the number of summer interns working in our labs as volunteers or part-time employees at 5% per year. Another goal is to better coordinate with the Florida Institute of Oceanography and UNOLS to identify opportunities for volunteering at sea by creating a web interface for USF and USFSP students to volunteer within year 1. The number of volunteers would be tracked over the following five years to determine the effect of using a more formal web-based interface to sign up volunteers for at-sea research experiences

Goal 4: *CMS will enhance its visibility and fund-raising capacity within the community and nationally*

Linked USF Goal: (Goal 4) USF will pursue a more secure economic base, greater operational and resource efficiencies, and increased transparency in its business practices

Strategies:

4.1 Establish a "Dean's Circle" to support education and outreach at CMS

4.2 Serve as the lead stakeholder in outreach activities such as Oceanography Camp for Girls, St. Petersburg Science Festival, Blue Ocean Film Festival, Port Discovery

4.3 Identify faculty, staff and students to serve on local, regional, national, and international panels, workshops, and editorships

4. Facilitate at least two faculty nominations for national or international awards, with at least one of these for an award that is relevant for AAU status

Key Performance Indicators:

4.1.1 Endowment value for research, education and outreach (USF Metric 4.2)

4.2.1 Number of people impacted by outreach activities such as Oceanography Camp for Girls, St. Petersburg Science Festival, Blue Ocean Film Festival, Port Discovery

4.3.1 Number of local, regional, national, and international panels, workshops, and editorships served on by faculty

4.4.1 Number of faculty award nominations that we facilitate

Discussion:

Marine Science is not now, and never has been, an ivory tower profession. We study the oceans in order to understand the ocean's influence on human beings and how humans influence the ocean. CMS is a leader in advancing a more ocean literate society through education and outreach activities (section 4.2) on a local, regional, national and international scale (e.g., Oceanography Camp for Girls, St. Petersburg Science Festival, National Ocean Sciences Bowl, Blue Ocean Film Festival and Port Discovery). We help set the research and education agenda for our university, and do the same at the state, federal and international levels (section 4.3). We do not look to others to see what needs to be done; we define what needs to be done, and are often at the leading edge of developing these projects.

4.1 Establish Dean's Circle to support education and outreach at CMS

See 1.3 above. Education and outreach is a vital mechanism to engage individual, corporate and foundation donors with CMS. The current endowment to support education and outreach is $2.9M. Our goal is to increase this to $4M, in addition to our other goals for giving, over the next five years.

4.2 Serve as the lead stakeholder in outreach activities such as Oceanography Camp for Girls, St. Petersburg Science Festival, National Ocean Sciences Bowl, Blue Ocean Film Festival, Port Discovery

Public understanding of science and technology is one of the most important challenges of our time. For communities across our nation, science and technology are deeply tied to issues of economic competitiveness, industrial advancement, health, justice, environmental protection, and social welfare. Acting as an informed consumer, preparing for the demands of the 21st century workplace, and weighing decisions as an engaged citizen, all require individuals to grapple with the rapid pace of scientific discovery and technological innovation. Examples of our continuing efforts to bring the ocean to the public are provided below.

Since 1991, the Oceanography Camp for Girls (OCG), offered at no cost, encourages young women to pursue technical careers in science and engineering. The OCG program is considered a model science program by the National Science Foundation and serves as an outstanding opportunity to educate young women about the ocean environment and inspire them to assume leadership roles in the scientific fields. The uniqueness of the OCG program lies not only in its focus on education, the

environment and economic/workforce development but also in its ability to provide one-to-one mentoring between teenaged girls and scientifically accomplished women. OCG is now in its 25th year and 20% of the participants have stayed in STEM fields with three becoming graduate students at CMS.

Teacher Training - We are engaging teachers to bring the ocean to the classroom through sustained teacher professional development funded by national and international partners, including NOAA (Gulf B-WET and Ocean Exploration), Globe International (NASA, NSF, NOAA).

Port Discovery Marine Exploration Center, to be located in the former St. Petersburg Port facility adjacent to CMS, is envisioned to be a one-of-kind aquarium and education facility that will allow visitors to understand the incontrovertible connection between ourselves and the ocean through personal discovery. These experiences will affect and inspire generations for years to come, providing the public with direct contact with scientists, live experiments and discoveries found nowhere else. The exhibits will serve as a public acknowledgment of the combined assets of the St. Petersburg Ocean Team, showcasing the innovative marine research and technology of Ocean Team members in a cutting-edge, multi-faceted, interactive venue for the public's understanding and appreciation of the marine world.

St. Petersburg Science Festival - Science festivals create a new way to engage communities with science and technology as part of the cultural calendar in much the same way that art festivals and street fairs engage whole communities. Science festivals rally whole communities to celebrate science as alive and local. They bring the public into direct contact with scientists and engineers, leading people to seek out more science experiences throughout the rest of the year. The 2015 St. Petersburg Science Festival drew in over 20,000 visitors including a Sneak Peek Day for 1,500 4th and 5th grade students and teachers. CMS is an event sponsor and encourages faculty, staff, and students to engage with the public.

St. Petersburg Innovation District - CMS is a team member in planning and implementation of the St. Petersburg Innovation District. Other team members include Amy Maguire (All Children's/Johns Hopkins Hospital), Rob Kapusta (SP Downtown Partnership), Chris Steinocher (St. Petersburg Chamber of Commerce), Sophia Wisniewska (USF St. Petersburg), K. Grant Palmer (SRI), David Metz (USFSP Liason), Tim Franklin (Poynter Institute), Jeff Hearn (Foundation for a Healthy SP), Tonya Elmore (Innovation Center), Joni James (SP Downtown Partnership), Lisa Nummi (Bayfront Health) and others from the City of St. Petersburg staff. The goal is to brand and market our identity as a regional center of excellence in education, entrepreneurship, and research in health and marine science in order to attract jobs to St. Petersburg. Participating institutions will share the cost of a district manager. CMS will need to contribute $20,000 for each of the next five years.

4.3 Identify faculty to serve on local, regional, national, and international panels, workshops, and editorships

For a small college, we punch above our weight with respect to impacting the national and international science agenda. Following the 2016 awards, 20% of our faculty members are American Association for the Advancement of Science (AAAS) fellows. Our faculty and staff are active contributors to international and national proposal review panels, workshops, and investigation teams, including the Ocean Studies Board and various National Research Council Committees, on NASA, NOAA and USGS Earth observing planning teams (i.e., MODIS, SeaWiFS, GRACE, Topex/Poseidon, Jason), the University National Observatory System (UNOLS), the National Marine Educators Association, and in the presidential blue-ribbon U.S. Commission on Ocean Policy. These leadership activities enhance USF's reputation on the international stage in ways difficult to monetize in the new RCM budgeting environment.

Over the years, our faculty members, staff, and students have led and participated in many highly visible national and international research expeditions and programs. This leadership enhances our graduate education, workforce training, and public outreach capacity. Among the scientific programs that College of Marine Science faculty have participated and remain engaged in are the Integrated Ocean Drilling Program (IODP), the International Marine Past Global Changes Study (IMAGES), the Integrated Ocean Observing System and several Regional Associations including the Gulf of Mexico, Southeast U.S., and Caribbean Sea, the Ocean Observatory Initiative (OOI), the Global Ocean Ecosystem Dynamics (GLOBEC), the National Ocean Partnership Program (NOPP), the Tropical Ocean-Global Atmosphere and Tropical Atmosphere-Ocean program (TOGA-TAO), the Carbon Retention In A Colored Ocean (CARIACO) Time-Series program, the Bermuda-Atlantic Time-series Study (BATS), and many more. The CMS also was funded to provide nutrient analyses for the hydrography portion of the World Ocean Circulation Experiment (WOCE) and is presently the lead institution for LARISSA, an inter-discplinary initiative of the National Science Foundation on the Antarctic Peninsula.

4.4 Facilitate faculty nominations for national and international honors, including those relevant for AAU status and Preeminence funding.

As mentioned above we already have 20% of our faculty members in the AAU relevant class of AAAS Fellows. In addition, we also have multiple faculty members who have won prestigious awards in our own discipline. Having our faculty members recognized in this way raises the profile of our college and that of the university, enhances our visibility and increases our competitiveness for private funding.

Selection to these honors is beyond our control, but we can insure that our faculty members are nominated and facilitate putting together effective nomination packages. We routinely scan for opportunities and proactively seek out colleagues from outside the university who are willing to nominate our faculty members for honors and awards. We will seek to nominate at least two faculty members per year for national and international awards, and will insure that at least one of these nominations is for an award that is relevant to the university's aspiration to become an AAU member and to meet the State of Florida's criteria for preeminence status.

Goal 5: *Invest in facility deferred maintenance and develop plan for renovation and expansion of MSL building*

USF Linked Goals: All four of USF's strategic goals will be supported through the final CMS goal

Strategies:

5.1 Complete the deferred maintenance master plan (Cost: ~$1-2M per year for a total of $8.7M)

5.2 Obtain an additional $7.5M for two years to rebuild the north end of the MSL to enhance teaching and research spaces (Cost $15M)

Key Performance Indicators:

5.1.1 Secure funding for deferred maintenance

5.2.1 Secure state and private funding for new building

Discussion:

Two buildings, KRC and MSL, serve all of the

research and teaching needs of the College of Marine Science. The KRC building is a four-story laboratory and office building constructed in 1994 as part of a joint-use project with the Florida Fish and Wildlife Conservation Commission (FWC). The KRC building area is ~61,000 gross square feet (GSF) with ~64% of that as occupied space (IFIS tabulation). The MSL building is a two-story poured concrete structure that was constructed from 1939-1941 and served as a U.S. Maritime Service training facility from 1941 until early 1950. The building area is ~ 88,000 gross square feet (GSF), currently with ~75% of that as occupied space (IFIS tabulation). For emphasis, please note that half of our operation is housed in a 75 year old building never intended for scientific research.

Structurally, the north and south ends of the MSL building are separated from the middle area by expansion joints thus dividing the building into three sections. The south section (~25,000 GSF, ~20,000 IFIS space) contains faculty and staff offices and one conference room. The middle section (~52,000 GSF, ~37,000 IFIS space) consists primarily of laboratories (wet and dry) and office spaces (student and staff). The north section (~11,000 GSF, ~10,000 IFIS space) contains the offices, labs, conference room, and machine shop of the CMS Ocean Technology (COT) group. Unlike the KRC, the MSL was not designed or constructed to be a scientific research facility. Over the years, the building has been modified numerous times to make it more suitable for university use, but this work has always presented unique challenges, especially with regard to creating modern research laboratory space. The north section of the MSL was originally an auditorium for the Maritime Service facility and is particularly ill-suited to support the current needs of the college.

5.1: Complete the deferred maintenance master plan (Cost: ~$1-2M per year for a total of $8.7M)

5.1.1 KRC Air Handler Unit (AHU) replacements (timeline: ASAP, cost: $700K)

Because the KRC was designed and constructed to be a research laboratory facility the only major deficiencies that need to be addressed are ones of deferred maintenance. At this time, there is one critical problem that needs to be rectified, but this problem is beyond critical and must be dealt with as soon as possible to avoid disruption of our research enterprise.

We need to replace four of the AHUs in the HVAC system. All four units are past their life-span and badly corroded. Replacement is critical to avoid system failure which would shut down research operations in the building. The current imbalance of the HVAC system is causing building-wide problems (e.g., fume hood and elevator operation, mold/ mildew proliferation, improper door closures). A comprehensive testing, adjustment and balancing of the HVAC system has not been done since original construction.

A company has been selected for this project and immediate funding approval for this project (estimated at $525K) is needed to avoid catastrophic interruption of research activities in KRC. In mid-December the freight elevator became inoperative due to this problem, and we are concerned that shutdowns of major sections of the building are imminent. (note added 1/19/16-First stage of AHU replacement approved for ~$290K as of 1/15/16).

5.1.2 MSL 2nd floor middle section lab/hallway/ stairwell renovation (timeline: year 1, cost: $2M)

The primary goal is to renovate ~3500 square feet of laboratory space that is presently too outdated to support our funded research needs. This space is needed to support C-IMAGE research worth more than $20M. This renovation requires that we extend sprinkler coverage to the entire middle section of the 2nd floor, enclose two existing stairwells, and close off the third.

This renovation addresses building-wide code deficiencies (fire suppression, required chemical control area separation between floors, protected egress from this area of the 2nd floor), meets the immediate, time-sensitive, critical needs of a funded research program, and replaces numerous old, dysfunctional utilities.

The planning and quoting phase of this project is complete and the project is ready to begin as soon as funding is available. The need is immediate in order to support a more than $20 million research grant that is presently compromised due to lack of adequate space.

5.1.3 MSL south section HVAC upgrade (timeline: year 2, cost: ~$2M)

The south section of the building is primarily office spaces that lack adequate fire suppression systems and suffer from air quality issues in addition to highly uneven climate control. The required work is to replace two existing AHUs and all duct work, install individual VAVs and thermostats for all rooms, and install sprinkler coverage for the entire south section of the building on both floors.

5.1.4 MSL roof replacement (timeline: year 4, cost: $2M)

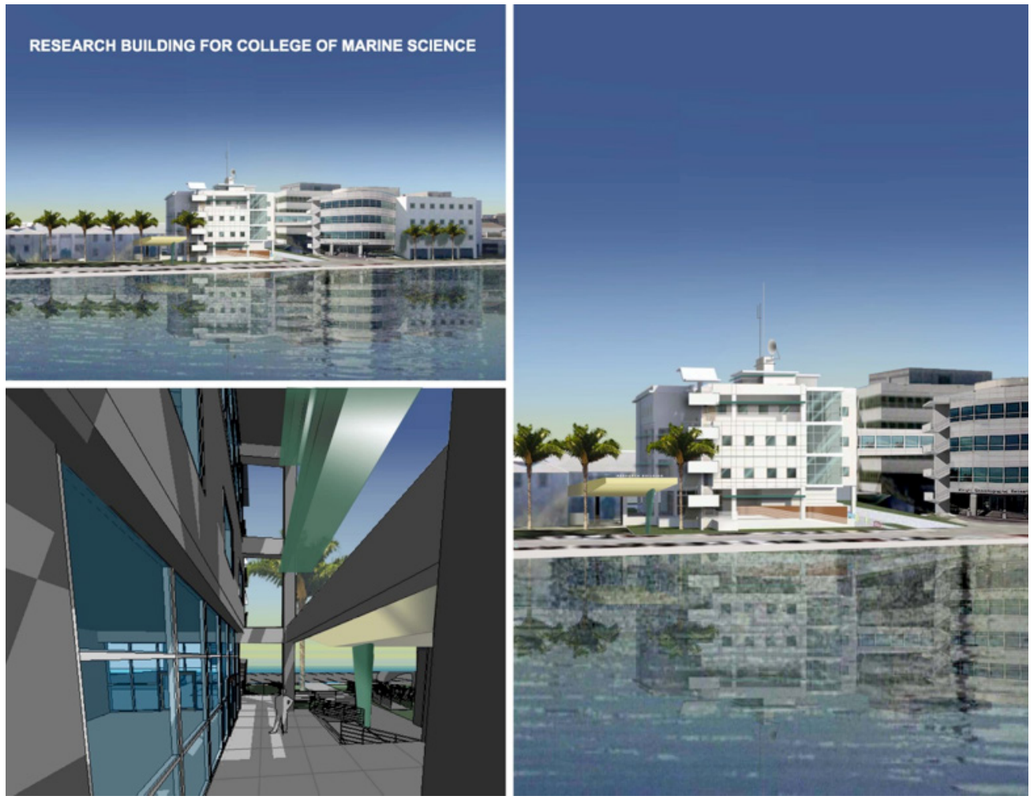
Once the preceding renovations and rebuild to the MSL are completed, we will need to do a major overhaul of the roof in order to protect our investment. The existing shingle roof is more than 20 years-old and there is longstanding, widespread termite damage and infestation in the existing wood structure, which is mostly from the original construction 75 years ago. It is required that we replace the roof structural timber, including joists, trusses, and the supporting walls, and install new shingle or metal roofing. The major benefits are to remedy structural deficiencies of the existing roof, to create a proper weather barrier, and thus protect the sizeable investment we will have made by this time in the MSL.

5.2 Obtain an additional $7.5M for two years to rebuild the north end of the MSL to enhance teaching and research spaces (Cost $15M)

The north section of the MSL requires renovation and upgrades similar to those outlined about for the middle and south sections. The problems in this area are more severe, however, meaning that the remedies will be more expensive. In addition, this space is poorly suited to modern research and teaching needs. Spending the money in this case is not the best solution. The best solution is to take out this space and put in a new building that will connect the MSL and the KRC. This will allow us to put in dedicated teaching spaces that are missing in the present MSL and KRC buildings, and will also allow us to put in spaces that can support modern oceanographic research and education programs. This will empower our strategic goals in teaching and will also enable cutting edge research. Neither of these goals is best served by simply renovating this section of the MSL.

Funding for the construction of state university buildings is derived through a multi- year process required to obtain resources from the Public Education Capital Outlay (PECO) fund. Florida's current procedures to select and fund higher education facility construction projects include multiple levels of review by the Board of Governors and State Legislature to ensure that institutional requests for new construction are coordinated with the state's higher education goals, local strategic plans, and community development plans. USF adheres to this process and had a replacement for the MSL building on the PECO list for many years, but to date it has never been advanced high enough to even receive consideration. With this plan, we intend to renew our request for consideration.

A plan has already been developed for new construction to replace the north section of MSL with a four-story multidisciplinary research facility as part of a proposal that was submitted to the National Institute of Standards and Technology (NIST) call for proposals associated with the 2010 American Recovery Act. The proposal was very well received but not selected for funding. The cost at that time was $15M, so we have placed a funding goal of $7.5M per year in years 4 and 5. The additional funding would transform a marginal space (even after renovation) into an exciting hub for teaching and research in the CMS.



Rendering of potential extension and renovation of the MSL building.

Appendix 1: Valuation of Florida's Coastal and Ocean Environment

(source: FIO Strategic Plan Appendix V: Areas of Economic Importance of the Coastal and Ocean Environments in Florida)

The data regarding Florida's coastal and ocean economies are based on three main sources[1,2,3] from years 2010, 2011, 2012, with the last data set updated in June, 2014. The information may appear confusing unless the data and date are carefully followed.

Florida's coastal counties provided $599.8 billion to the state in 2014, accounting for 77.2 percent of the state's GDP.[4] The Atlantic shoreline contributed $366 billion (65 percent) and the Gulf shoreline counties contributed 218 billion (35 percent) including the Panhandle (based on 2010 data).[5] Florida ranked #3, after New York and California, among the top five states by employment in ocean sectors and total ocean economy (2010). Florida's direct ocean economy added $24.5 billion in 2012, accounting for 3.3 percent of the state's GDP.[6]

More than 37,000 companies located along the coastline count 228,000 employees directly related to the state's ocean resources; considering the indirect effects, that number rises to more than 440,000 jobs. Pinellas (St. Petersburg) and Hillsborough (Tampa) counties are among the top nine counties measured by the number of employees in the industry sectors associated with Florida's oceans and coasts. Employment and wages can be calculated for each of the categories listed below and specifically for the clusters identified in Florida: ocean tourism (46 percent), ocean transportation (36 percent), marine industry (10 percent), recreation (6 percent) and fishing/living resources (2 percent).[7]

Income Generating Sectors of the Ocean Economy[8]

(The first six are the industrial sectors of the ocean economy as defined by NOEP)

Marine Construction

- Port construction
- Marine related buildings
- Coastal real estate—75.5 percent of Florida's $20 M residents live near the coast on land a few feet above sea level.[9]

Living Marine Resources

- Commercial fishing—valued at $199.4 million in 2012
- Fish hatcheries and aquaculture
- Seafood markets—in 2012, the Atlantic Coast produced 28.6 million pounds of seafood whereas the Gulf Coast contributed 63 million pounds of commercial seafood[10] valued at $141.7 million.
- Seafood processing
- Coastal agriculture

[1] Florida Ocean Alliance, Florida's oceans and coasts: An economic and cluster analysis, May, 2013.
[2] National Ocean Economics Program, State of the U.S. Ocean and Coastal Economies, 2014.
[3] Center for Blue Economy, National Ocean Economics Program, Florida Ocean and Coastal Economies, March, 2014.
[4] Center for Blue Economy, National Ocean Economics Program, Florida Ocean and Coastal Economies, March, 2014, pp. 13-14.
[5] Florida Ocean Alliance, Florida's oceans and coasts: An economic and cluster analysis, May, 2013. Data from the U.S. Bureau of Economic Analysis, 2012 Flash Estimates, p.2.
[6] Center for Blue Economy, National Ocean Economics Program, Florida Ocean and Coastal Economies, March, 2014, pp. 13-14.
[7] Florida Ocean Alliance, 2014 Perspective on Florida's Oceans and Coasts: First annual dispatch to Florida Governor Rick Scott and the Florida Legislature.
[8] Based on Table ES.2 Ocean Economy by Sector 2010, State of the U.S. Ocean and Coastal Economies, National Ocean Economics Program, p. 8, 2014.
[9] Center for Blue Economy, National Ocean Economics Program, Florida Ocean and Coastal Economies, March, 2014, pp. 13-14.
[10] Ibid. p. 13.

Florida marine fisheries industry overall supported 500,000 jobs in 2012 and contributed $29.7 billion to the Florida economy.[11]

Mineral Extraction

- Sand and gravel
- Shell
- Oil and gas exploration and production

Ship and Boat Building

- Boat building and repair
- Ship building and repair

Tourism and Recreation – more than 100 million tourists visit Florida beaches and stay in beach front hotels every year. This sector accounted for 83.9 percent of the jobs ($10.7 billion in wages) in the ocean economy in 2012 and contributed $16.4 billion to Florida's ocean GDP.[12]

- Amusement and recreation services
- Recreational boating and fishing
- Boat dealers
- Eating and drinking establishments
- Hotels and lodging
- Marinas
- Recreation vehicles and campsites
- Scenic water tours and commercial parks
- International cruise
- Sporting goods retailers
- Zoos and aquaria

Marine Transportation and Shipping—accounts for 20.5 percent of the jobs in the coastal and ocean economies.[13]

- Deep sea freight transportation
- Marine passenger transportation (cruise lines)
- Marine transportation services
- Search and navigation equipment
- Warehousing
- Port cargo data

Other Marine-Related Economic Sectors in Florida

Demographic and Housing

- Part-time second homes
- Commuters
- Retirees
- Home ownership
- Rental units

Marine Science and Education

Beach erosion and need for beach re-nourishment

Restoration of mangroves, estuaries and watersheds

Red Tide outbreaks

Sea level rise

- Impact on canals
- Damage to homes
- Stress to coastal infrastructure

[11] 2012 figures from oceaneconomics.org
[12] Ibid. p. 13.
[13] Florida Ocean Alliance, Florida's oceans and coasts: An economic and cluster analysis, May, 2013, p.4.

Appendix 2: Analysis of hiring needs

Our research agenda is defined by the overarching theme of Assessing and Predicting the Health of Ocean, Human Interactions. Our research umbrella covers five overlapping areas:

- Healthy Ecosystems
- Climate Change
- Impacts of Ocean-Human Interaction
- Ocean Observing
- Impacts of Deep Drilling for Fossil Fuels

Each of these requires collaborative research involving all the major areas of oceanography, each addresses problems at local to regional to global scales, and each requires a combination of observation, analysis, and modeling. The strengths, gaps, and potential partners for each of these five areas are described in detail in Appendix 2 and summarized below.

Healthy Ecosystems

An ecosystem spans everything from viruses to whales and includes all of the parameters that define the state of the system, such as temperature and salinity, ocean chemistry, ocean currents, and seafloor geology. Our focus is on understanding how ocean ecosystems are changing and predicting what they may look like in the future. To give just a few examples, we study how red tides affect our local fish and beaches (local), how invasive species will change the Gulf of Mexico (regional), how ocean acidification will affect our coral reefs (global) and the health of the Antarctic benthos (global).

Strengths: Faculty involved in ecosystem research include biologists [Ainsworth (ecosystem modeling), Breitbart (marine microbiology/viruses), Daly (zooplankton ecology), Muller-Karger (marine remote sensing/marine biodiversity), Murawski (fisheries biology/C-IMAGE), Paul (marine microbiology), Peebles (coastal/estuarine fish and shellfish ecology/habitat quality), Stallings (fisheries ecology), Walsh (phytoplankton/red tide)], geologists [Domack (Antarctic benthic ecosystems), Hine (seafloor habitat mapping), Hallock-Muller (reef health), Naar (seafloor habitat mapping)], chemists [Buck (nutrients and trace metals), Hollander (organic geochemistry)], and physical oceanographers [Hu (ocean color), Luther (estuary circulation), and Weisberg (shelf and estuary circulation)].

Gaps: Upcoming retirements will leave gaps in carbonate sedimentology, coral reef and red tide research. Due to recent retirements we do not presently have sufficient strength in ocean chemistry, particularly in the organic and inorganic areas, including nutrient analyses. We also presently do not have faculty involved in research on protected species (whales, dolphins, turtles), top predators (e.g., sharks), and phytoplankton ecology.

Strategic hires: We should build clusters of excellence that include faculty in genomics (with USF Health and CAS Dept. of Cell Biology, Microbiology and Molecular Biology), fisheries and fish stock assessment (with NOAA and FWC), ecology of top predators such as sharks (with CAS Dept. of Integrated Biology), seagoing experimental biological oceanography, e.g., ocean tracking of marine mammals and fishes (with COT, OTN, FWC). In addition to these clusters, we have an immediate need to bolster our capabilities in chemical oceanography in order to address this important research area.

Climate Change

The ocean plays a dominant role in determining the Earth's climate and how it might change in the future. Consider the following questions, which

are just examples of the wide range of research opportunities. What sea level rise should we be planning for? What do paleoceanographic studies tell us about past extremes in our climate? What is going on in the sensitive polar regions? Will understanding the 20th century enable us to predict the 21st? Will rising sea levels change storm surge impacts (local), how will rising atmospheric CO2 levels will impact ocean acidity (regional to global), and how will increasing ocean and atmospheric temperatures impact polar and glacial ice volumes and sea level (global)? How will changing climate conditions affect ecosystems (e.g., lionfish invasions) and coral reef health?

Strengths: Faculty involved in climate change research include biologists [Muller-Karger (changing biodiversity and climate), Daly (phytoplankton and carbon cycling), Stallings (invasive species)], chemists [Byrne (ocean acidification)], geologists [Domack (ice sheets and paleoclimate), Hallock-Muller (reef health), Hine (past sea level change), Naar (seafloor mapping of paleoshorelines), Rosenheim (changing climate and carbon cycling), Shevenell (paleoceanography)], and physical oceanographers [Chambers (sea level, ice volumes), Luther (Tampa Bay circulation), Mitchum (sea level), Weisberg (Gulf and WFS circulation)].

Gaps: Our strengths are in observations and analysis of existing observations. Due to recent retirements we do not have the capability in organic chemistry that is necessary to understand global carbon cycling. We are weak in regional to global scale modeling capabilities that would inform and guide our observational and analysis efforts. We are strong in high latitude, ice processes and understanding sea level variations, but do not have a strong presence in observations and analysis of ocean temperature and heat content variations. In both the chemistry and ocean heat content areas, a seagoing experimentalist would build on our general strengths in ocean observation. Finally, at the local to regional scale we need to consider possible future gaps in studies of climate-related changes in coral reef health.

Strategic hires: The first priority is a Chemical Oceanographer in the general area of organic chemistry and in the particular area of understanding the ocean's role in global carbon cycling. We need to bolster our modeling capability, possibly with cluster hires with CAS and COE in the area of computational fluid dynamics. We need to hire a mid-career person in ocean thermal variations who would serve as a nucleus for future expansion in this area.

Impacts of Ocean-Human Interactions

This area includes ocean impacts on humans and human impacts on the ocean, which are of course intimately related. The latter, among other things, includes pressure on fisheries and the consequences of pollution, with the word pollution being defined very broadly. Research includes assessment of human impacts as well as evaluating strategies, such as marine protected areas, to mitigate those impacts. The former, among other things, involves harmful algal blooms (i.e., red tides), consequences of overfishing and climate-related invasive species. Examples of research areas include connections between ocean health and human health (e.g., possible relationships between harmful algal blooms and asthma), ocean viruses, and oil spill impacts on food resources. Another problem in this general area is how humans make use of the oceans for transporting goods; i.e., ocean ports. Note that Tampa is one of the largest ports in the United States. The economic aspects of this are huge and we need to be involved.

Strengths: Faculty carrying out research in this area include biologists [Ainsworth (impact of human activities and climate on the structure and functioning of marine communities), Breitbart (changing virus populations), Muller-Karger (impact of large-scale phenomena on marine ecosystems including climate change and marine protected areas), Paul (development of biological sensors to detect harmful microbes in the coastal ocean; development of "Grouper Forensics" to detect authenticity of seafood in restaurants and seafood suppliers), Peebles (coastal fish and shellfish habitat use and quality), Stallings (ecology-informed marine conservation and management), Walsh (harmful algal blooms)]; chemists [Buck (trace metals and nutrients), Byrne (ocean acidification), Hollander (hydrocarbons and the coastal ocean)]; geologists [Hallock-Muller (coral reefs), Hine (past sea level change), Naar (seafloor habitat mapping of marine protected areas)]; and physical oceanographers [Luther (estuary circulation and port sustainability), Mitchum (sea level), Weisberg (estuary and shelf circulation)].

Gaps: Recent retirements have removed our capability to measure ocean nutrients. This must be replaced with an appropriate ocean chemist. We could also soon lose our capability for modeling plankton dynamics (e.g., harmful algal blooms), which would also need to be replaced. We do not have a strong presence in the general area of how the oceans impact human health, which is an area where we need to expand.

Strategic hires: An immediate CMS need is an ocean chemist specialized in organic chemistry and ocean nutrients. A cluster hire with Public Health and possibly with USF Health in the general area of Oceans and Human Health is obvious. This would enable new access to NIH funding to CMS, and enhanced NIH funding to our colleagues across campus. Enhancing our strength in fisheries research via partnerships across the state is important. Port sustainability is also a potential growth area, perhaps with economics partners in CAS.

Ocean Observing

In the past oceanographic observations consisted of at-sea collection and later analysis of the samples collected. Modern technical advances have resulted in ever-increasing incorporation of remote and in-situ instrumentation for both at-sea investigation and the development of ocean observing systems for continuous, long-lived time series observations. Connecting the scientific requirements for research with the technological developments and capabilities is a vital function of modern oceanographic institutions, and one essential to success. In addition, successful implementation of new technology requires the infrastructure to build, maintain, deploy and retrieve, and assess the validity of novel instruments. Our CMS Ocean Technology (COT) group in conjunction with our talented shop personnel stands ready to move ocean observing forward. We have an existing strength in this area and need to insure that we can continue to move forward.

Strengths: Faculty doing research relevant to this theme include chemists [Byrne (pH analysis, SEAS, MSEAS), Buck (nutrients and trace metals)]; biologists [Breitbart (wastewater detection), Muller-Karger (satellite remote sensing, CARIACO time-series), Murawski (fishery independent fish stock assessment via C-BASS), Paul (genomics sensing), Daly (SIPPER)]; geologists [Naar (repeat bathymetric and backscatter mapping of dynamic seafloor)]; and physicists [Chambers (satellite altimetry and gravimetry), Mitchum (satellite altimetry and in situ sea level), Hu (glider and optical observations of red tide), Luther (PORTS), Weisberg (COMPS, coastal and estuary circulation, buoy development, glider observations)].

Gaps: Recent retirements have substantially reduced our capability to develop new observational systems in chemical oceanography. Over the past decade we have also shifted more towards data analysis rather

than data generation and need to regain our strength in ocean observations. One area poorly represented at CMS is ocean-atmosphere interactions, especially the chemistry and physics of air-sea exchanges. Finally, observations are intricately linked to the software and database systems that support these observations. Building strength in these areas is also important.

Strategic hires: The most pressing need is to expand our expertise in ocean chemistry in order to increase the demand for the associated technological developments in this area. We have strength in optical observations that range beyond planktonic to fish scale and need to enhance and expand in this area. We have some expertise in ocean tracking of marine mammals and fish that should be expanded. This could be done jointly with Integrative Biology and the College of Engineering, and the state via DEP/FWRI.

Impacts of Frontier Drilling for Fossil Fuels

The Deepwater Horizon (DWH) oil spill was unprecedented in the long history of maritime oil exploration and production. Response agencies and production companies were underprepared to deal with the unique challenges of a deep blowout. Given that the Gulf of Mexico is one of the world's largest oil provinces and the fact that we continue to rely on fossil fuels, we can expect deep drilling to continue, and to pursue even deeper oil and gas formations in the Gulf and elsewhere. We have established a leadership role in this area thanks to the CMS response to the DWH catastrophe, the subsequent C-IMAGE project and the most recent funding of the $22M C-IMAGE II project. Our challenge is continue to expand this highly successful research area to investigate key unresolved scientific issues related to understanding previous spills and to assist in mitigating future events. In this area we would include frontier exploration in the Polar Regions and in remote areas of the Tropics where regional governments are not as prepared for the potential risks.

Strengths: Faculty involved in relevant research areas include Ainsworth (ecosystem modeling of oil spills), Daly (marine snow and plankton responses), Hollander (sediment biogeochemistry), Hu (satellite observations of oil slicks), Main (toxicology exposure studies), Murawski (oil impacts on fish and fisheries), Paul and Breitbart (marine microbiology), Peebles (isotope chemistry and biomarkers of oil exposure), Rosenheim (biogeochemistry), Walsh (plankton modeling) and Weisberg (transport models).

Gaps: Recent retirements have removed expertise in organic chemistry and analytical chemistry. Expertise in the interactions between oil and nutrients is needed and has also been impacted by a retirement in the area of ocean nutrients. Expertise in toxicology is required and would be new to the CMS. Risk assessment is another new area that would benefit our efforts in this strategic area.

Strategic Hires: Gaps in ocean chemistry require immediate hires in the general areas of organic, inorganic and nutrient chemistry. These are required for the ongoing analysis of the data collected post-DWH, and for the analysis of the data that will be collected as part of the CIMAGE II project. New expertise in toxicology is required and this could be developed in partnership with Public Health. Risk assessment is another new area to the CMS and partnerships across the USF community will be investigated and developed.

CMS Strategic Metrics

CMS Strategic Plan Goals 2016-2021	USF 2013-2018 Linked Goals	USF Tier 1 Metrics	CMS Performance Metrics		USF Strategic Priority		Performance			Goals						Source
					PBF	Research	'12-'13	'13-'14	'14-'15	'15-'16	'16-'17	'17-'18	'18-'19	'19-'20	'20-'21	
GOAL 1. Enhance research productivity and impact through strategic hiring and establishment of an endowment to support research infrastructure	**GOAL 2.** USF will generate new knowledge and solve problems through high-quality research & innovation to change lives, improve health, and foster positive societal change.		1.1.1	Number of ranked in-unit faculty (Goal of 30, does not include 3 admin faculty)			21	23	24	25	26	27	28	29	30	
			1.1.2	Number of faculty in defined areas of excellence			21	23	24	25	26	27	28	29	30	
		2.1	1.2.1	Number of Post-doctoral appointees	PBF - 10	"AAU II-6 PE - 9 Carnegie - 3"	24	21	20	20	21	22	22	23	23	From Graduate School
			1.2.2	Federal Research Expenditures		AAU I-1	$7,251,654	$6,287,051	$6,039,077	$6.28M	$6.52M	$6.76M	$7.0M	$7.24M	$7.5M	USF Research & Innovation
			1.2.3	Federal Research Espenditures per Tenure-Track Faculty			$345,317	$273,350	$250K	$250K	$250K	$250K	$250K	$250K	$250K	Data from USF Research & Innovation
		2.4	1.2.4	Total R&D Expenditures		"AAU II-5 PE - 6,7 Carnegie - 1,2"	$12.5M	$11.4M	$10.1M	$12.5M	$13.0M	$13.5M	$14M	$14.5M	$15M	USF Research & Innovation
			1.2.5	Total Research Expenditures per Tenure-Track Faculty			596K	565K	$422K	$500K	$500K	$500K	$500K	$500K	$500K	USF Research & Innovation
			1.2.6	Indirect Generated			$2,453,920	$2,079,018	$2,315,379	$2.5M	$2.6M	$2.7M	$2.8M	$2.9M	$3M	USF Research & Innovation
		2.8	1.2.7	Patents awarded in a 3-yr period		PE - 11		33 '11-'13	26 '12-'14	change depends on specialization of faculty hires						USF Research & Innovation
	GOAL 4. USF will ensure sound financial management to establish a strong and sustainalbe economic base in support of US's continued academic advancements.	4.2	1.3.1 & 1.4.1	Endowment Value to support research		PE - 12	$4,523,349	$5,098,383	$5,006,941	$5.5M	$6M	$7M	$8M	$9M	$10M	USF Foundation, market values
			1.5.1	Values of royalties returned to CMS			~$1K	~$1K	~$1K	~$1K	~$1.5K	~$2K	~$3K	~$4K	~$5K	Research Foundation
GOAL 2. CMS will graduate highly competitive MS and PhD students prepared for employment and leadership positions in ocean sciences.	**GOAL 1.** USF will produce well educated, highly skilled, global citizens through its continuing commitment to student success.		2.1.1	Average GRE scores of accepted students			311	312	313	313	314	314	315	315	315	CMS Academic Affairs (CMS AA)
		1.8	2.2.1	Doctoral Degrees Awarded		"AAU II-7 PE - 10 Carnegie - 5-8"	12 '12-'13 AY	11 '13-'14 AY	5 '14-'15 AY	8	9	10	11	12	13	ODS/P&A; A=Attrition
			2.2.3	Number of student awards			45	19	79	80	81	82	83	84	85	CMS AA
			2.2.4	Number of student publications			FA=15, CA=15	FA=9, CA=8	FA=22, CA=13	15, 15	16, 16	17 ,17	18, 18	19 ,19	20, 20	Source - progress reports; FA, CA (first, co -authored)
			2.3.1	Time to Degree - MS			3.93	3.4	3.73	3.5	3.4	3.3	3.2	3.1	3	CMS AA
			2.3.2	Time to Degree - PhD			6.11	6.66	7.34	7	6.6	6.2	5.8	5.4	5	CMS AA
			2.4.1	Composition of student body			M=44/F=72, C=104/F=12, NW=18.3	M=39/F=55, C=85/F=9, NW=18.1%	M=42/F=60, C=91/F=11, NW=16.7%	NW=17%	NW=17.5%	NW=18%	NW=18.5%	NW=19%	NW=19%	Male/Female, Citizen/ Foreign, %NW=%non-white (Hispanic, Asian, American Indian, Black)
			2.5.1	Percent employment of graduates in ocean sciences			82.30%	70.80%	82.30%	85%	86%	87%	88%	89%	90%	CMS AA
	GOAL 3. USF will provide a first class, higher educationa institution that drives the economic engine of Tampa Bay.	3.4	2.2.2	Graduate Degrees Awarded in Areas of Strategic Emphasis (D=Doctoral, M=Masters)	PBF - 8		D=12, M=7, A=8%	D=11, M=10, A=5%	D=5, M= 11, A=3%	D&M=20 A=3%	D&M=21 A=3%	D&M=22 A=3%	D&M=23 A=3%	D&M=24 A=3%	D&M=25 A=3%	From ODS/P&A; A=Attrition
GOAL 3. CMS will increase engagement with undergraduate programs on USF Tampa and USFSP campuses.	**GOAL 1.** USF will produce well educated, highly skilled, global citizens through its continuing commitment to student success.		3.1.1	Number of undergraduate SCH			333	348	489	600	800	900	1000	1100	1200	Source - CMS Academic Affairs Office
			3.2.1	Number of undergraduates involved in research			21	29	41	45	45	50	55	60	65	Source - CMS Human Resources Office
GOAL 4. CMS will enchance its visibility and fund-raising capacity with the community and nationally.	**GOAL 4.** USF will ensure sound financial management to establish a strong and sustainalbe economic base in support of US's continued academic advancements.	4.2	4.1.1	Endowment value (to support education and outreach)		PE - 12	$2,457,009	$2,770,136	$2,895,218	$3M	$3.2M	$3.4M	$3.6M	$3.8M	$4M	USF Foundation, market values
			4.2.1	Number of people impacted by outreach events			13,100	16,000	22,000	27,000	45,000	55,000	50,000	60,000	55,000	CMS Education & Outreach Office
	GOAL 3. USF will provide a first class, higher educationa institutuion that drives the economic engine of Tampa Bay.		4.3.1	Number of local, regional, national, and international panels, workshops, and editorships served on by faculty			40	40	40	50	52	54	56	58	60	Faculty annual evaluation materials
			4.4.1	Number of faculty award nominations that we facilitate			1	1	1	2	2	2	2	2	2	CMS Associate Dean tracks
GOAL 5. CMS will complete essential deferred maintenance and plan for new building	All USF Goals		5.1	Complete the deferred maintenance master plan (Cost: ~$2M per year for a total of $15M)							$700K	$2M	$2M	$2M		Prior investment limited to PECO
			5.2	Obtain an additional $7.5M for two years to renovate and extend the north end of the MSL to enhance teaching and research spaces (Cost $13M)										$7.5M	$7.5M	


USF
R/V WEATHERBIRD II

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