College of Marine Science 2005

Progress within the College of Marine Science in 2005 was achieved with respect to four objectives

1. Enhancement of Research Achievement and Federal Funding for the College

This past year marked the 12^{th} consecutive year that our College received a federal "mark" in the defense budget focused on sensor development. Five faculty research groups are receiving this critical support. The impressive list of their successes has vaulted our college into a position of international recognition for technological advances. For example, Robert Byrne and his research team have become "the" world leaders in developing a spectrophotometric system that can rapidly and precisely evaluate the four major variables associated with the carbon dioxide system in sea water. Side-by-side comparisons made at sea with much more expensive systems clearly show that Byrne's miniature spectrophotometric system is more dependable and robust than the higher-priced, more voluminous system NOAA uses to make pCO₂ measurements. Furthermore, long-term ONR funding for sensor development such as Byrne's has stimulated a host of productive interactions between our engineering group (COT) and our faculty and students.

This past year marked the 5th year that CMS has had a MicroElectroMechanicalSystems (MEMS) program with the U.S. Army. Although focused on military applications, the MEMS program has special relevance for our biologists (molecular and otherwise), our chemists, and our optics group. Just like the ONR-funded sensor research, this Army-funded research is opening new scientific vistas for our faculty and students as well as enhancing our reputation in international arenas.

In 2005, the NSF-funded project on the Cariaco Basin entered its third year of operation, involving a national/international coalition of scientists. Headed by Frank Muller-Karger, its objective is to study as many aspects of this anoxic basin in the Venezuelan continental shelf as possible in order to evaluate its potential as an indicator of oceanic carbon cycling and long-term climatic trends. It joins the HOT time-series sampling off Hawaii and the BATS time-series sampling off Bermuda as an NSF-designated long-term monitoring site devoted to climate/decadal change. Collaborators include Weisberg and Fanning from USF; investigators from SUNY Stony Brook and the Univ. of S. Carolina in the US; and, among others, investigators from EDIMAR and the Universities of Oriente, and Simon Bolivar in Venezuela.

Also in 2005, Dr. Kendra Daly was successful in getting a multi-year, multi-university NSF grant funded to study the zooplankton that penetrate the anoxic, sulfide-bearing deeper waters in the Cariaco Basin. The objective is to study how they manage to survive and, if possible, why they have evolved the ability and inclination to penetrate such hostile, poisonous waters. Dr. Daly's research will dovetail nicely with the ongoing Cariaco Basin project. Her collaborators include scientists from the University of Rhode Island and the Skidaway Institute.

Dr. Jose Torres received a multi-year award from NSF for the synthesis and modeling of data acquired on the previous, NSF-funded Southern Ocean GLOBEC study of the environment and fate of krill along the western Antarctic Peninsula.

Our College took a major leadership position in the effort to deploy a system of observing installations around the entire coast of the US, including the Great Lakes. Ultimately, these will all be interlinked, and the physical and other data they generate will be widely available by

Internet. As part of this effort in 2005, Dr. Robert Weisberg received a large (\$688,000) ONR grant for SEACOOS (South East Atlantic Coastal Ocean Observing System).

All told, the College of Marine Science received **\$6,649,540** as either new monies or additional yearly funding of existing grants and contracts in calendar year 2005. These funds came from such agencies as NSF, ONR, NOAA, USGS, Dept. of Energy, Dept. of Interior, US Army, US Coast Guard, Dept. of Defense, and NASA. These grants and contracts are part of an ongoing research effort that will bring in **\$71.8 million** to USF eventually. Since many of these are multi-year, the annualized research expenditures total about 1/4 that amount. According to the College Portfolio, C&G expenditures for Marine Science were ~ **\$1.3 million** per tenure/tenure-earning faculty FTE in 2004-5. We take pride in the fact that this ratio is up ~**19%** from 2003-4.

Finally, on March 18, 2005, the Department of the Navy honored Dr. Kendall Carder, a world expert in ocean optics, with the Annual Alan Berman Publications Award for 2004.

2. Continue and Improve Graduate Education in Marine Science

In 2005, 16 MS students and 7 PhD students in the College of Marine Science completed and successfully defended their theses and dissertations, respectively. These graduation rates are reasonably typical of the normal performance of Marine Science graduate students. 2005 marked the graduation of the **100th** USF Marine Science PhD: Dr. Robt. T. Masserini, Jr. Some special educational features in 2005 were the following. We have now taken major steps in moving our educational program in two significant directions: increased diversity (the NSF-funded Bridge-to-the-Doctorate program) and the production of graduates with experience in public outreach and education (the NSF-funded GK-12 project). We are among the national leaders in these efforts!

3. Increased Interaction with Donors and Increases in Endowments

A continuing challenge has been to establish and maintain connections with donors. We are distinctive in that regard as the only college in the University of South Florida that does not have a professional fund raiser working full-time on its behalf. (Notice the "flat" level of E&G expenditures in the College Portfolio.) This has been a long-term impediment because increasing demands on College personnel leave little time for interaction with potential or existing donors. Nonetheless, Marine Science has a large number of endowed fellowships (14) and has developed a loyal group of donors, many of whom attend our annual endowed fellowship ceremony each August. This past August a new process was begun. Student/faculty teams were assigned to selected donors, as well as prospective donors, so that when the fellowship presentation ceremony was over they walked the donor(s) to the reception and then offered them a tour of their laboratories. Feedback from the donors was excellent; so this process will be incorporated into future fellowship ceremonies. Our students <u>always</u> impress prospective donors, and these interactions are highly desirable. For the first time, the Von Rosenstiel fellowship recipients met with Werner and Anne Von Rosenstiel at their home in a very positive meeting. No doubt another luncheon at "chez" Von Rosenstiel will take place in 2006 and end up becoming a tradition.

This past year has been especially significant because of a campaign to endow a fellowship for a minority student who is involved in dissertation research in the College. In May 2005 a goal of raising \$600,000 in private/corporate donations over the next two years was established in order to qualify for an additional \$300,000 in matching monies from the State of Florida. Fortunately, Dr.

Steven Bohlen, President of the Joint Oceanographic Institutions, offered to provide \$20,000/year for five years to fund a fellowship for a deserving minority graduate student in our program. Now, all prospective donors can be told that in the first five years all of their earnings would be protected and subsequently reinvested to increase the principal of the endowment.

Our first gift toward the minority fellowship, \$50,000, came from one of our graduates, Mike Morris of Ocean Optics. By the end of the 2005 \$279,509 in cash for the Bridge to the Doctorate Endowed Fellowship was in hand and another \$145,000 was identified as multi-year pledges from other donors. These gifts have been certified by USF's accounting group and sent to Tallahassee where they are in line to be matched with \$139,755 in state monies. As a result, by early August of 2006, we will have \$419,264 in the endowment for the Bridge to the Doctorate Fellowship. This endowment campaign took on special significance because, in late May of 2005, the Florida/Georgia Louis Stokes Alliance for Minority Participation met to decide which university would represent the Florida/Georgia Alliance in the national competition at the National Science Foundation (NSF) for The Bridge to the Doctorate. The final vote ended up being a tie between the University of Florida and the University of South Florida. Because of the gift from Ocean Optics that initiated our minority fellowship, the tie was broken in our favor. This was a monumental decision because it meant that over the next two years we, and the College of Engineering, would receive almost \$1,000,000 in NSF Fellowship support for minority doctoral students. As many will remember from last August's fellowship ceremony, Dr. A. James Hicks of NSF said he was going to ask our Dean to come to Washington to speak at the national meeting of the LSAMP groups. We are pleased to report that our program received special recognition at this national meeting in March of 2006, and we are well on our way to becoming a magnet for talented minority graduate students. If ever there was a time that our university, indeed our country, should be at the forefront of an effort to "mine" the immense talent pool in our minority populations, it is now! The endowment that is being created will be pivotal for our College!

The financial leverage associated with the minority endowment is much greater than the mere financial match from the state of Florida and the Joint Oceanographic Institutions. The most significant financial match that will have a major impact on our graduate education program results from our being designated part of the A.P. Sloan minority program in the United States; an agreement that provides five Sloan fellowships @ \$31,000/year for every one our College of Marine Science provides. As a result, the endowment now being completed will leverage five additional fellowships from the A.P. Sloan Foundation. The College of Marine Science can thank Dr. Ashanti J. Pyrtle who was the primary reason our college was made a part of the elite group – 42 universities - that is part of the Sloan minority program in the United States. This event qualifies as a transformational "coup".

This past year also saw a "different" initiative, i.e., one that involved asking for graduate student help in getting commitments for our College. Last January was the first occasion when Dean Betzer and a graduate student (Carrie Wall) approached a donor. They flew to Jacksonville, Florida and met with Jack Holmes, Executive Director of the Southern Kingfish Association (SKA). Most supportive of Carrie's research on relating kingfish catches to thermal and color oceanic fronts along the West Florida Shelf, he readily agreed that creating an endowment was a good idea -- *within the first hour*! When he heard how much we needed - \$100,000 – he said he would have to ask for a vote of his Board of Directors. About one month later we found out the board of the Southern Kingfish Association voted to support creating an endowed fellowship in USF's College of Marine Science, and last August the SKA made their first pledge payment and signed an agreement with the USF Foundation that qualifies them for a 50% match on their gift. This was most impressive, and similar efforts will be expanded in the future. The task will be to match donor interest with student interest!

We have also worked a great deal with the CEO of Progress Energy, William Habermeyer, who has in the past been most interested in our sensor development program in The Center for Ocean Technology and as well as being supportive of our major summer program – The Oceanography Camp for Girls. This year we were extremely fortunate that Progress Energy provided \$25,000 for the Oceanography Camp and \$100,000 to help continue the GK-12 fellowship program that connects our graduate students with K-12 classrooms in Pinellas County.

The Fund Raising graph in the College Portfolio reflects these substantial increases in support.

4. Expanding the Research Complex in Bayboro Harbor

Since 1988 we have had a cooperative with the U.S. Geological Survey that supports faculty and students in our college. Although the USGS has expanded considerably since they arrived in St. Petersburg, our cooperative agreement has not. Within their new 11,000 square foot research facility completed in February of 2006, the USGS has created some "shared" research space where our researchers/students will be able to work with their USGS colleagues and with colleagues from USFSP's Environmental Science and Policy Program. One of the "shared" laboratories will focus on remote sensing and our own Chuanmin Hu will be a principal tenant in the new USGS research laboratory. This encouraging evolution should lead to greater collaboration between our federal partners and faculty/students from our college.

Chris Schwint has also been working with USGS administrators in Reston, Virginia, to create multi-year research contracts for our USF/USGS Cooperative. At present, our faculty and students are limited to one-year contracts, and normally the start dates on our contracts are within *six months* of the end dates. The current cooperative is a most inefficient system that has hampered/frustrated our researchers and students for years. The proposal that has been formulated by USGS administrators and Chris Schwint would set up all of our research contracts on three-year cycles. This would be an immense help for all of the people in our college who are involved with the USGS.

Another critical project for our college and USF St. Petersburg is the "shared" Science and Technology facility that is currently on the university's capital construction PECO list. Last year we received planning monies, and some construction monies are currently being considered by the Florida legislature. Both USFSP and we are working hard to get additional construction funding included in this year's state budget. Regrettably, the Science and Technology facility does not seem to be a high priority for the Tampa administration. Without the proposed new facility there is **no** space to assimilate any new faculty, students or staff for the College of Marine Science or for our colleagues on the campus of USF St. Petersburg.

This past year Larry Langebrake, Carol Steele, and Gary Brown worked hard to create a National Center for Port and Maritime Security in our college, and there is hope that some funding will appear in this year's federal budget. Our plans for the new center include adding some top-notch engineering talent from the U.S. Coast Guard Research Center in Groton, Connecticut. The Coast Guard seems most supportive of the initiative, which would not only strengthen our engineering Group but also generate additional federal funding.

Finally, it is encouraging that two technology-based companies have made contributions to our minority fellowship endowment – **Bridge to the Doctorate**. The first, **Marine Desalination Systems (MDS),** moved to town three years ago and rented space near our college so they could interact with our researchers. Currently they are working with Robert Byrne to purchase a high pressure reaction vessel that could be used for their research and ours. Further, in July of 2005, MDS contributed \$5,000 to our endowment for the Bridge to the Doctorate Fellowship. This is an excellent example of the economic benefits associated with our expanding research complex. A second company, **Coda Octopus**, has indicated that in 2006 they will relocate their New York headquarters to St. Petersburg, Florida, because they would be able to interact more regularly with our engineers. Coda Octopus just gave \$25,000 for the Bridge to the Doctorate endowed fellowship. We are fortunate to have become a magnet for technology firms because they are in a position to: 1) provide advanced technology to our group; 2) support research in our college; and 3) contribute to endowments that are critical to moving us forward.