

**State University System
Education and General
2017-2018 Legislative Budget Request
Form I**

University(s):	Florida Institute of Oceanography (FIO) and AISO for the State University System/hosted by the University of South Florida (USF)
Issue Title:	Support for FIO's Keys Marine Laboratory (KML)
Priority Number	
Recurring Funds Requested:	\$800,000
Non-Recurring Funds Requested:	\$1,000,000
Total Funds Requested:	\$1,800,000
Please check the issue type below:	
Shared Services/System-Wide Issue for Fiscal Year 2017-2018	<input checked="" type="checkbox"/>
New Issue for Fiscal Year 2017-2018	<input checked="" type="checkbox"/>

I. Description - 1. Describe the service or program to be provided and how this issue aligns with the goals and objectives of the strategic priorities and the 2016 Work Plan established by your institution (include whether this is a new or expanded service/program). If expanded, what has been accomplished with the current service/program? 2. Describe any projected impact on academic programs, student enrollments, and student services.

The Florida Institute of Oceanography (FIO), an Academic Infrastructure Support Organization (AISO) established by the Board of Governors (BOG), serves as the State University System (SUS) coordinating body for the two (2) sea going research vessels, Keys Marine Laboratory (KML), equipment, and other shared-use facilities and services. Shared-use of resources, expertise and infrastructure maintains Florida's status as a leader in supporting excellence in marine science, technology and education.

The KML is located in the middle of the Florida Keys, in Layton, FL. This valuable platform provides unique opportunities for short and long term field and laboratory experiences/research for undergraduate and graduate students, faculty and scientists from across Florida, the U.S. and even globally.

The KML is nestled in one of the few tropical environments that is available in the U.S., as well as the one of the few laboratories that provides access to a new state-of-the-

art seawater in-house circulation system perfect for conducting mesoam studies. KML also provides support for existing and new degree/certificate programs in the SUS to support undergraduates and graduates interests in marine science programs. In return, the availability of well-trained students will also attract potential employers to Florida, producing high-technology, high-wage jobs the SUS seeks for its graduates and for the benefit of the State's economy.

Consistent with FIO's mission to support *Excellence in Marine Science, Technology and Education*, the KML provides the necessary platforms to develop the marine scientists of tomorrow with the ever changing tools through unlimited field, classroom and laboratory access. The KML also participates in the State-Subsidized Program (SUS). This program through an annual competitive process meets the goal of optimizing the BOG's expectation of FIO as an AISO to support overarching education and research goals. The program is STEM-focused and offers students a once-in-a-lifetime opportunity, which is often the only way many students experience working at a marine laboratory. In addition to providing support under the SUS program, the KML is the field station used by Florida Atlantic University (FAU) during the "Field Studies in Marine Biology" summer course. This station focuses on coral reefs and related subtropical coastal habitats which allows students to connect to different habitats as they circulate around Florida's ecosystems. The highly successful course created collaborations and garnered knowledge among five (5) different SUS institutions (UNF, UWF, USFSP, FGCU, FAU) faculties and students.

The KML through a National Science Foundation (NSF) federal grant, recently installed the most advanced seawater circulation system to expand the capacity to conduct laboratory experiments and manipulate water quality and hence allow on-site research not previously possible. This state-of-the-art system can reconstruct historical, present and future ocean conditions allowing never before research to be conducted at KML. Since January 2016, the seawater system has been integrated into the Florida Wildlife Research Institute (FWRI) and National Oceanic and Atmospheric Administration's (NOAA's) efforts to rescue and restore the Pillar corals in the Florida Keys, while developing tools that are transferred globally.

The acquisition of research dollars is becoming more competitive, especially as the federal dollars for biological/physical research efforts are decreasing. Unfortunately, the research dollars that are available from the Deepwater Horizon Oil spill **cannot be used** to operate FIO/KML day-to-day activities. The Resources and Ecosystem Sustainability, Tourist, Opportunities and Revived Economies (RESTORE Act of 2012) funds can only be accessed for research operations for the RESTORE Act Centers of Excellence Grants Program, defined in 31 CFR Part 34.

The Florida Keys are intrinsically dependent on a reliable and healthy marine ecosystem for tourism, and commercial and recreational fisheries. It is critical for Florida to have the infrastructure that monitors this delicate and important ecosystem, while providing teaching and research resources for faculty and students across the State.

The receipt of requesting recurring funds will allow KML to:

- FIO as the sole operator of the KML, the need for critical personnel to support not only the increasing demands, and usage of the facility, but also to maintain the upkeep of all operational systems at the laboratory.
- Support and expand marine education programs (i.e. State-Subsidized Program (often awarded to Florida State University for use of the KML) and as a field station for the Florida Atlantic University during the “*Field Studies in Marine Biology*” summer course) through a centrally maintained marine laboratory.
- Assist in the development of research mechanisms/activities to control the invasive lionfish population threatening Florida’s native species, as well as developing a method of commercial utilization of lionfish. The KML is the ideal location to launch these types of research as there is a large lobster fishing industry that currently uses ‘traps’ to harvest lobsters. This research could potentially modify these traps to effectively harvest lionfish without damaging our local habitat.
- Create a new education and outreach coordinator position at KML to work with the 30 members to initiate and implement new programs directed at expanding and enhancing STEM education focusing on K-12 and postsecondary teacher certification. Teachers will be exposed to the newest field and laboratory technologies in research and innovative strategies in education across all oceanographic disciplines.
- Develop and offer partnerships with industry to offer beginner, intermediate and advance scientific diving courses/skills that are American Academy of Underwater Sciences (AAUS) certified to graduate and undergraduate students who upon graduation have accrued the practical experience often lacking and sought after by employers in federal and state agencies and industry.
- Develop a STEM undergraduate education program through an on-site intern program integrating students with day to day operations of the laboratory with ongoing research conducted by KML staff scientists, and SUS scientists conducting their research at KML.

The receipt of requesting non-recurring funds will allow FIO to:

- Introduce an advanced video and satellite-enabled communication (e.g. Mondo pads for Skyping abilities) and IT systems for both research and education. An advanced system will enable students to follow daily updates from their faculty remotely, as well as being able to interact directly with classmates from ship to shore or remotely from the Keys Marine Lab to classrooms. This capability will enhance the faculty and students experience conducting courses or research and allow staff to participate in classes offered elsewhere, seminars, workshops and symposia. In this way, staff will be able to keep current with research results, methods and tools. Lectures can be archived on the KML website for access to anyone for incorporation into their curricula. Establishment of KML as a distance learning facility while being recognized as a world class site to conduct sub-tropical and tropical system research.
- With the new unique salt water system at the KML, demand is increasing to conduct controlled experiments on various marine species. Purchasing holding tanks and other necessary equipment to address the demands of the salt water system is essential. The holding tanks can control temperature, light, monitor water quality, and capacity for water recirculation are needed to conduct research and meet requests to utilize the KML.

- Maintain state-of-the-art marine laboratory at a reduced cost to member institutions, and other research institutions. In order to continue to support top-notch research and educational laboratory for Florida, essential upgrades of scientific equipment, additional marine fleet is needed to provide fundamental data on Florida's environmental water conditions of the Keys.
- Allow for modification of existing infrastructures. The additional funding will allow FIO to provide on-going maintenance, system upgrades and expansion of infrastructure (wet and dry lab capabilities, divisible classroom space), tools to insure that academic and research standards are achieved at the marine laboratory and ensure safety standards meet local and state hurricane code(s).

II. Return on Investment - *Describe the outcome(s) anticipated, dashboard indicator(s) to be improved, or return on investment. Be specific. For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate. Similarly, if it focuses on expanding access to academic programs or student services, indicate the current and expected outcomes.*

It can be said that no aspect of Florida's economic health goes untouched by the ocean. We must be prepared for future activities that could have dramatic impacts on Florida's economy. Florida has an ever-growing coastal population, record setting tourism, and the largest recreational fisheries in the U.S., along with its viable commercial industry supplying fresh seafood serving our locals as well as millions of tourists each year. In fact:

- Florida's largest gross domestic product component is agriculture, fishing and hunting, all of which continue to grow. Florida's commercial and recreational fisheries economic value together contribute more than \$30B to Florida's economy, more than the citrus, cattle, ranching and space industries combined. Tourism which depends on clean, healthy beaches and viable fish populations continues to dominate economic driver for the State of Florida.
- Sustainable oceans and coastal ecosystems are the foundation for the quality of life of Florida residents, not only necessary to attract tourists to the Sunshine State, but also integrally important to economic recovery and sustainable growth. FIO's presence enables the SUS researchers, faculty and students the opportunity to survey the ocean and coastal ecosystems to determine the future of Florida's various industries such as: recreational and commercial fisheries, recreational boating and diving, beach-related recreation, tourism, nature observation and a myriad of other natural and societal values that are collectively worth hundreds of billions of dollars a year to the state's economy and creating thousands of jobs in Florida.
- Faculty members and graduate students have utilized the KML over the past 5 years with support from over 30 federal, state, and private agencies and organizations. Almost 50 Masters and Doctorate degrees have been awarded to students who conducted research from and at the KML.
- According to NOAA, the coral reefs of the Florida Keys and southeast Florida alone have an asset value of \$8.5 B producing \$4.4 B in local sales, \$2 B in local income and over 70,000 full and part time jobs.

- The Gulf of Mexico contains the world's third largest oil and gas reserves. Regardless of whether drilling takes place in Florida's water or Mexico or Cuba, the impact of drilling could seriously impact the multi-billion dollars tourist and fishing industries of Florida. Additional permits are being granted for deep-water drilling and Cuba will drill: Both of these activities could have dramatic impacts on Florida's economy, especially in the Florida Keys, should a disaster occurs.
- Most importantly, the FIO will significantly strengthen the SUS' competitive position in securing higher levels of R&D investment from the federal government, foundations and industry.

III. Facilities *(If this issue requires an expansion or construction of a facility, please complete the following table.):*

	Facility Project Title	Fiscal Year	Amount Requested	Priority Number
1.				
2.				

2017-2018 Legislative Budget Request
Education and General
Position and Fiscal Summary
Operating Budget Form II
 (to be completed for each issue)

University: Florida Institute of Oceanography (FIO) an AISO
for the State University System/ hosted by the
University of South Florida (USF)

Issue Title: Support for FIO's Keys Marine Laboratory (KML)

	<u>RECURRING</u>	<u>NON-RECURRING</u>	<u>TOTAL</u>
<u>Positions</u>			
Faculty	0.00	0.00	0.00
Other (A&P/USPS)	3.00	0.00	3.00
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Total	3.00	0.00	3.00
	=====	=====	=====
<u>Salary Rate (for all positions noted above)</u>			
Faculty	\$0	\$0	\$0
Other (A&P/USPS)	\$180,000	\$0	\$180,000
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Total	\$180,000	\$0	\$180,000
	=====	=====	=====
Salaries and Benefits	\$240,000	\$0	\$240,000
Other Personal Services	\$0	\$0	\$0
Operating Expenses	\$200,000	\$0	\$200,000
Operating Capital Outlay	\$0	\$0	\$0
Electronic Data Processing	\$0	\$0	\$0
Special Category (Specific)	\$0	\$0	\$0
<u>Seawater Maintenance/upgrade systems</u>	\$360,000	\$150,000	\$510,000
<u>Specialized Marine laboratory equipment</u>	\$0	\$250,000	\$250,000
<u>New Satellite Communication System/Equipment</u>	\$0	\$200,000	\$200,000
Holding Tanks for seawater system	\$0	\$150,000	\$150,000
Development education/research programs	\$0	\$50,000	\$50,000
Mod./Upgrades current infrastructure to safety standards	\$0	\$200,000	\$200,000
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Total All Categories	\$800,000	\$1,000,000	\$1,800,000
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