



**The California State University**

COUNCIL ON OCEAN AFFAIRS, SCIENCE AND TECHNOLOGY



# COAST

Semi-Annual Report #3

Period of Performance: July 1 2009-December 30 2009

[www.calstate.edu/coast](http://www.calstate.edu/coast)

## A letter from the COAST Leadership

As we present the third COAST semi-annual progress report, we'd like to take the opportunity to comment on the progress of the program since its inception in 2007. COAST grew out of a long, rich history of strong marine and coastal science and individual programs distributed throughout the CSU. Dedicated faculty and staff have worked hard over past decades to promote marine science research and education in the CSU and the results can be seen in our vast inventory of research assets, our diverse faculty, and most of all in our highly successful graduates who now work in all aspects of marine science, policy, engineering, education, regulation and research throughout California and the nation. The COAST collaborative network is a natural outgrowth of this history. It brings together the collective resources, including, most importantly, human resources, of the CSU to provide coordinated, integrated solutions to the challenges we face in the marine environment both statewide and nationally.

COAST continues to achieve its stated goals:

- Promote the advancement of coastal and marine-related research throughout the CSU.
- Enhance research and professional development opportunities for CSU faculty engaged in coastal and marine education and research activities.
- Enhance educational opportunities for undergraduate and graduate students.
- Increase public awareness of the challenges facing our coast and increase stewardship of our resources.

To date, COAST has

- Successfully engaged faculty from each of the 23 campuses, including faculty in marine and coastal science, environmental science, social science and engineering disciplines;
- Invested over \$150,000 in faculty to increase their likelihood of success in securing extramural funding;
- Developed a dynamic, informational website that provides a single access point to CSU's marine and coastal resources, including people;
- Established a formal governance structure and created a strategic plan; and
- Engaged policy and decision makers and resource managers in Washington, D.C. and Sacramento to raise awareness about COAST.

As 2010 begins, we look forward to another year of program growth and expansion. We welcome your input and active participation and look forward to working with you!

### **COAST Executive Committee**

Dr. Larry Allen, Ocean Studies Institute and California State University, Northridge

Dr. Kenneth Coale, Moss Landing Marine Laboratories, San Jose State University

Dr. Toby Garfield, Romberg Tiburon Center, San Francisco State University

Dr. Rikk Kvitek, California State University, Monterey Bay

Dr. Andrew Mason, California State University, Long Beach

Dr. Steve Murray, California State University, Fullerton

Dr. Rhea Williamson, California State University, East Bay

Dr. Krista Kamer, Program Coordinator, San Francisco State University

## ***Campus Representation***

[www.calstate.edu/coast/about/governance.shtml](http://www.calstate.edu/coast/about/governance.shtml)

At the May 2009 annual system-wide meeting, a governance structure was adopted. The governance structure calls for up to two Faculty Representatives from each campus, one Representative from each of the two marine consortia (Moss Landing Marine Laboratories and Ocean Studies Institute), and five Administrative Representatives. Representatives serve for 3 years and terms are staggered. The Executive Committee is elected from the Campus Representatives.

In October 2009 an election was held to add two additional members to the existing Executive Committee. Dr. Rhea Williamson of CSU East Bay and Dr. Larry Allen of the Ocean Studies Institute and CSU Northridge were chosen. The Executive Committee now has seven members.

### ***2009-2010 Campus Representatives***

#### ***Bakersfield***

Antje Lauer, Biology  
Staci Loewy, Geology

#### ***Channel Islands***

Sean Anderson, Environmental Science  
and Resource Management  
Christopher Cogan, Environmental  
Science and Resource Management

#### ***Chico***

Cristina Archer, Geosciences

#### ***Dominguez Hills***

Ana Pitchon, Anthropology  
John Keyantash, Earth Science

#### ***East Bay***

Stephanie Molloy, Biological Sciences  
James Murray, Biological Sciences  
*Rhea Williamson, Associate Vice  
President, Office of Research and  
Sponsored Programs\*\**

#### ***Fresno***

Frederick Zechman, Biology  
Fraka Harmsen, Earth & Environmental  
Sciences

#### ***Fullerton***

Kathryn Dickson, Biological Science  
*Steven Murray, Dean College of Natural  
Sciences and Mathematics and  
Professor of Biology\*\**  
Danielle Zacherl, Biological Science

#### ***Humboldt***

Steven Hackett, Economics  
Dave Hankin, Fisheries Biology

#### ***Long Beach***

Zed Mason, Biological Sciences\*\*  
Jesse Dillon, Biological Sciences

#### ***Los Angeles***

Carlos Robles, Biological Sciences  
Pat Krug, Biological Sciences

## 2009-2010 Campus Representatives

### *Maritime*

Lloyd Kitazono, Mathematics  
Rich Muller, Marine Operations

### *Monterey Bay*

Rikk Kvitek, Science and  
Environmental Policy\*\*  
James Lindholm, Science and  
Environmental Policy

### *Northridge*

Gerry Simila, Geological Sciences  
Mark Steele, Biology

### *Pomona*

Angel Valdes, Biological Sciences  
Kristine (Tina) Hartney, Biological  
Sciences

### *Sacramento*

Tom Savage, Chemistry  
Ronald Coleman, Biological Sciences

### *San Bernardino*

W. Britt Leatham, Geology  
James Noblet, Chemistry and  
Biochemistry  
*Jeffrey Thompson, Associate Provost for  
Research*

### *San Diego*

Todd Anderson, Biology  
Matt Edwards, Biology

### *San Francisco*

Toby Garfield, Director, RTC and  
Professor of Geosciences\*\*  
Karen Crow-Sanchez, Biology

### *San Jose*

Scott Shaffer, Biological Sciences  
Don Reed, Geology

### *San Luis Obispo*

Mark Moline, Biological Sciences  
*Susan Opava, Dean of Research and  
Graduate Programs*  
Dean Wendt, Biological Sciences

### *San Marcos*

Victoria Fabry, Biological Sciences  
Jacqueline Trischman, Chemistry and  
Biochemistry

### *Sonoma*

Karina Nielsen, Biology  
Daniel Crocker, Biology  
*Saeid Rahimi, Dean, School of Science  
and Technology and Professor of  
Physics and Engineering Science*

### *Stanislaus*

Pamela Roe, Biological Sciences  
Horacio Ferriz, Geology

### **Marine Consortia**

#### *Ocean Studies Institute*

Larry Allen, Interim Director SCMI\*\*

#### *Moss Landing Marine Laboratories*

Kenneth Coale, Director\*\*

*Italics denote Administrative Representatives*

\*\* denote Executive Committee members

## *Collaborative Incentive Awards*

[www.calstate.edu/coast/funding/internal\\_funding.shtml](http://www.calstate.edu/coast/funding/internal_funding.shtml)

Six research teams received assigned time funding during Fall 2009 through the Collaborative Incentive Award Program:

- Drs. Antje Lauer (Biology, CSUB), Sean Craig (Biology, HSU) and Joshua Mackie (Biology, SJSU): Evolution and Invasion: speciation, ecological differentiation and microbial symbiosis in the exotic bryozoans *Bugula neritina* and *Watersipora subtorquata* in California
- Drs. Thomas Savage (Chemistry, CSUS) and G. Jason Smith (MLML-SJSU): Molecular Regulation of Domoic Acid Biosynthesis in *Pseudo-nitzschia* spp.
- Drs. Jonathon Stillman (Biology, SFSU) and Lars Tomanek (Biology, Cal Poly SLO): Transcriptome and proteome fingerprints of the potential for synergistic effects of ocean acidification and thermal stress along the California coast
- Drs. Donna Ross (Teacher Education, SDSU), Brian Hentschel (Biology, SDSU) and Maria Grant (Secondary Education, CSUF): SEAWaRD: Stewardship, Education, and Advocacy through Wetlands Research Data
- Drs. Steven Hackett (Economics, HSU) and Ana Pitchon (Anthropology, CSUDH): Transitioning to High Value, Low Volume Fisheries in California
- Drs. Jesse Dillon (Biology, CSULB), Christine Whitcraft (Biology, CSULB) and Tomoko Komada (Chemistry and Biochemistry, SFSU): Predicting the Effects of Sea Level Rise on Biological Communities and Carbon Flow in Coastal Salt Marshes

Four research teams received assigned time funding for Spring 2010 through the same program:

- Drs. Gerald Simila (Geological Science, CSUN) and Daniel Francis (Geological Sciences, CSULB): High Resolution Fault Kinetics, California Continental Borderland
- Drs. Michael Graham (MLML-SJSU) and Matthew Edwards (Biology, SDSU): Development of an Integrated Seaweed-Abalone Aquaculture System for Sustainable Resource Use and Bioremediation
- Drs. James Murray (Biological Science, CSUEB), Taro Amagata (Chemistry and Biochemistry, SFSU) and Monika Sommerhalter (Chemistry and Biochemistry, CSUEB): Chemical Warfare In the Ocean: How *Tritonia diomedea* Preys Upon the Toxic Soft Coral *Ptilosarcus gurneyi*
- Drs. Brad Monsma (English, CSUCI), Alison Purcell (Environmental and Natural Resources Sciences, HSU), Donald Rodriguez (Environmental Science and Resource Management, CSUCI) and Corey Lewis (English, HSU): Interdisciplinary Student Research Along the California and Mexico Coasts

Many of the teams from both Fall 2009 and Spring 2010 will submit full proposals to external funding agencies by September 2010 if not sooner. If successful, these proposals have the potential to bring in over \$6M in grant funding to the CSU in return for an investment of ~\$130,000 in assigned time funding. This represents a leveraging of precious CSU resources to generate extramural grant activity by a factor of almost 50:1, a benefit that cannot be ignored in today's economy and budget situation.

Periodically, this program will be evaluated based on results and input from past award recipients and the COAST membership. If necessary, the program will be restructured to maximize effectiveness.



The sea slug *Tritonia diomedea* and its prey, the sea pen *Ptilosarcus gurneyi*. Photo courtesy of James Murray, CSUEB.

## ***Technology Centers***

[www.calstate.edu/coast/technologycenters/](http://www.calstate.edu/coast/technologycenters/)

COAST is developing Technology Centers to address critical national environmental issues and to provide focal points around which the collective knowledge and expertise held by CSU faculty and staff can coalesce. These cyber-enabled virtual Centers link people, data and equipment together to provide the State of California with sound expertise and practical solutions to its most pressing environmental issues. COAST, by virtue of its statewide organization, has the capacity and expertise to conduct applied research studies to address critical environmental challenges; establish more cost-effective, and sustainable equipment and facilities usage; provide state agencies, government, and the general public with accurate coastal management information; and accelerate the training of the next generation of scientists, engineers, and policy makers equipped to build the coastal economy, while protecting its environmental quality.

The COAST FY 2011 federal request seeks funding for the six Centers currently in development and for electronic networking infrastructure to link resources distributed remotely throughout the CSU together.

### **COAST Technology Centers in FY 2011 federal request, with requested funding.**

Applied Organism Health	\$ 500,000
Climate Change Analysis	\$ 100,000
Environmental Quality	\$ 500,000
Geospatial Analysis	\$ 650,000
Marine and Estuarine Policy	\$ 200,000
Marine Ecosystem Dynamics	\$ 500,000
Electronic Networking Infrastructure	\$ 550,000
<b>TOTAL REQUEST</b>	<b>\$3,000,000</b>

By linking these Centers and sharing CSU equipment and data using high-speed networks, COAST will create an unparalleled, robust statewide resource that maximizes the coastal research and education capabilities throughout the 23-campus CSU system. COAST is currently developing criteria to guide the establishment of these Centers and additional Centers in a manner that is consistent with COAST's mission and CSU policy.

## *Marine and Estuarine Policy Group*

[www.calstate.edu/coast/technologycenters/MarineEstuarinePolicy/index.shtml](http://www.calstate.edu/coast/technologycenters/MarineEstuarinePolicy/index.shtml)

COAST leadership and staff worked closely with Dr. Steven Hackett in the Department of Economics at Humboldt State University to take the initial steps in establishing an ocean policy center. The CSU Marine and Estuarine Policy Group (MEPG) was formed with the ultimate goal of developing and establishing a COAST Marine and Estuarine Policy Center to address current topics in ocean and coastal use and resource policy. The Center will be a resource for public policy and decision makers and will promote the development of holistic solutions that can be accepted by all segments of society.

Updated content was developed for the website including a list of CSU faculty and experts who share a common interest in ocean, coastal, and estuarine policy. The MEPG is open to anyone in the CSU with interest in any aspect of marine policy.

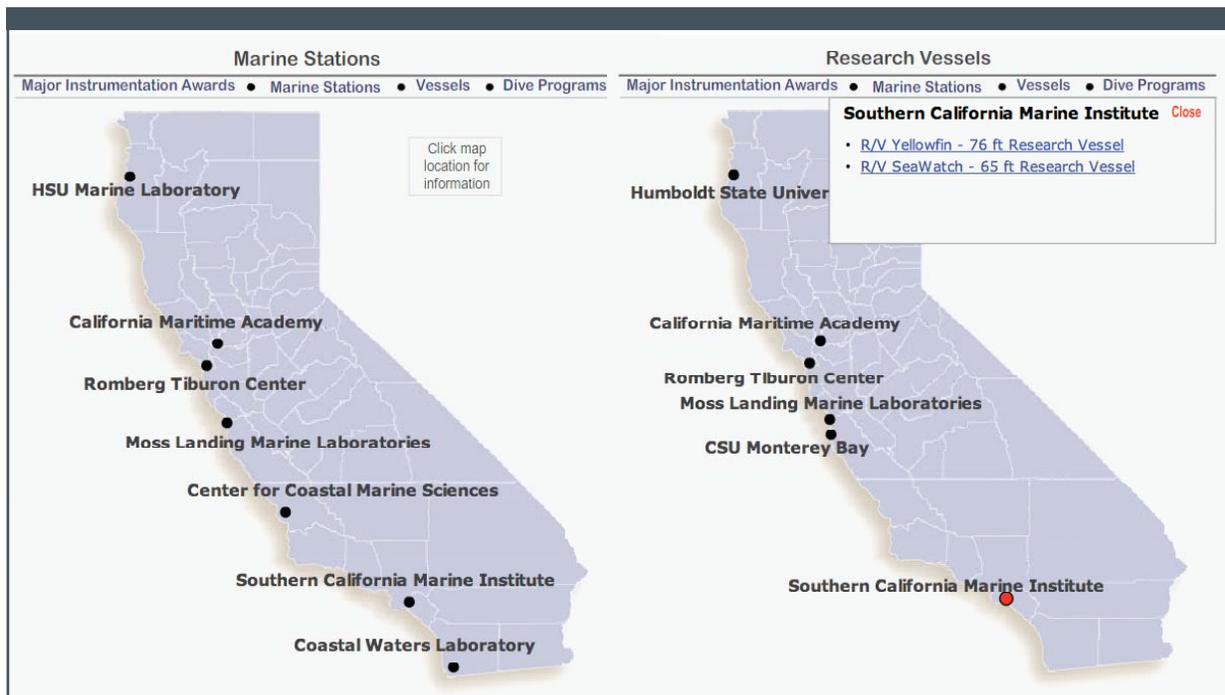
**Example of information provided on the Marine and Estuarine Policy Group People page. Links to individuals' emails and Fresca profiles are provided.**

<b>Name</b>	<b>Campus</b>	<b>Dept/School</b>	<b>Interest</b>
<a href="#">Sean Craig</a> <a href="#">Fresca</a>	HSU	Biology	Marine invertebrates – econ – human interaction
<a href="#">Toby Garfield</a> <a href="#">Fresca</a>	SFSU	Geosciences	Ocean current circulation
<a href="#">Sheldon Gen</a> <a href="#">Fresca</a>	SFSU	Public Administration	Human behavioral aspects of environmental policy
<a href="#">Steven Hackett</a> <a href="#">Fresca</a>	HSU	Economics	Commercial fisheries, wave energy economics and policy
<a href="#">David Hankin</a> <a href="#">Fresca</a>	HSU	Fishery Science	Fishery management, endangered species
<a href="#">Philip King</a>	SFSU	Economics	Economics of beaches and coastal processes
<a href="#">William Leach</a> <a href="#">Fresca</a>	Sac State	Public Policy	Collaborative policy & aquaculture
<a href="#">James Lindholm</a> <a href="#">Fresca</a>	CSUMB	Applied Marine Ecology	Interface of science and policy
<a href="#">Melissa Locke</a> <a href="#">Fresca</a>	Cal Poly SLO	Law & Policy	Science-policy nexus
<a href="#">Christopher Lowe</a> <a href="#">Fresca</a>	CSULB	Biological Sciences	MPA design, fisheries, mitigations
<a href="#">Steven Murray</a> <a href="#">Fresca</a>	CSUF	Natural Sciences	MPAs, water quality

## *Marine and Coastal Equipment and Resource Inventory*

COAST staff continued to work toward the development of a marine and coastal asset inventory. As an initial step, a prototype for an interactive, web-based map tool to aid in asset discovery was developed. The map tool displays different categories of resources such as NSF MRI awards, marine stations, vessels, and dive programs. Relevant location information is displayed on the map for each category and the user can click on a location to learn more and to link directly to the resource, such as the marine lab or R/V. The next step is to convene a small focus group of potential users to review the tool and provide feedback that will be used to guide development of its next iteration.

**Interactive web-based map tool showing CSU marine stations (left) and vessels (right). The user can click on each location in the map for more information. The pop up box that appears contains live links that the user can follow to go directly to the resource.**



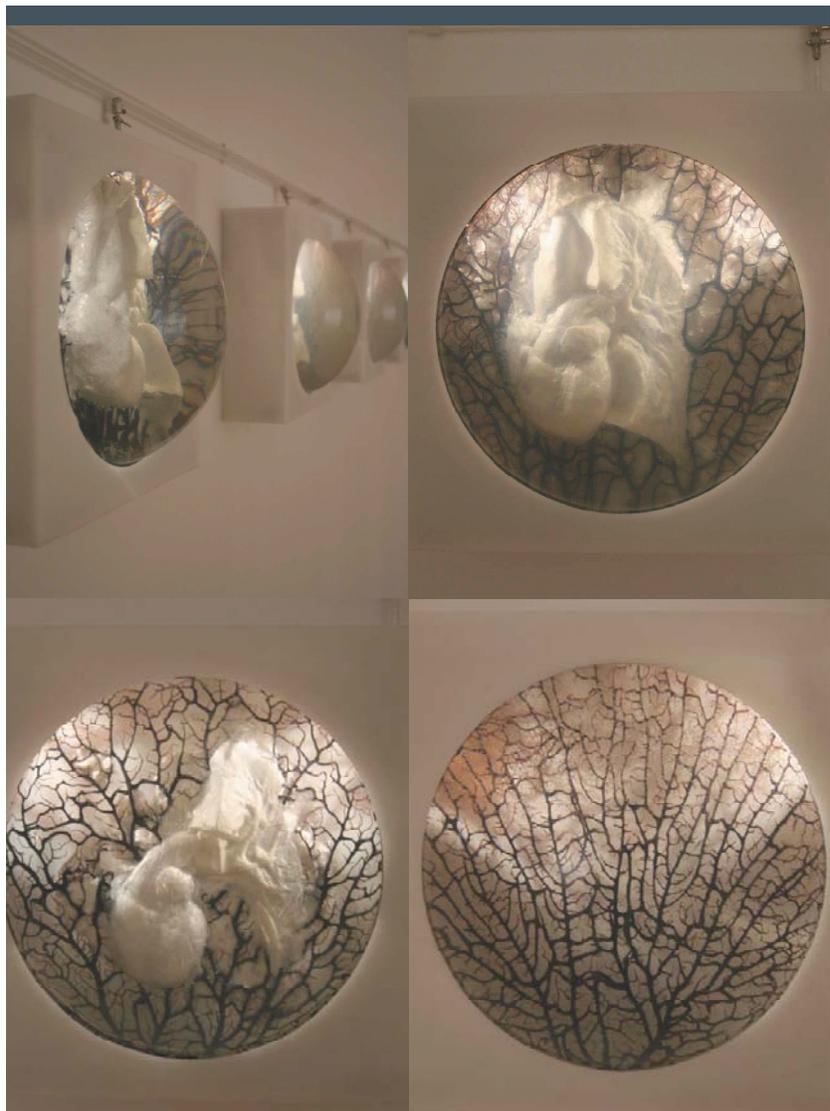
COAST will continue to work with the Chancellor's Office and other affinity groups toward the larger goal of creating an inventory of system-wide research assets that will ultimately:

- Increase collaborative research and educational ventures within the CSU;
- Enhance efficiency of resource utilization within the CSU by reducing redundancy;
- Improve technology transfer with the CSU; and
- Increase competitiveness of grant proposals to funding agencies keen on promoting shared usage facilities and programs that promote cross-disciplinary research.

## *Public Outreach*

COAST and Aquarium of the Pacific (AoP) in Long Beach held an initial meeting and follow-up workshop during Fall 2009 at AoP to explore the possibility of creating a visual media installation that combines science and art to convey the concept of ocean acidification to the public. Attending on behalf of COAST were Dr. Victoria Fabry (CSU San Marcos), Ms. Judit Hersko (CSU San Marcos), and Dr. Andrew (Zed) Mason (CSU Long Beach). Dr. Fabry is a renowned ocean acidification expert and Ms. Hersko is an installation artist whose collaborations with scientists have resulted in exhibits that visualize the science of climate change through various media. Also in attendance was Mr. David Liittschwager, an independent photographer who has worked with Dr. Fabry in the past to depict the effects of ocean acidification on gastropod shells over time. COAST and AoP will continue to pursue this effort in 2010.

**Example of Ms. Judit Hersko's work from her exhibit "Shifting Baselines" shown at the California Center for the Arts, Escondido, March 17-July 2, 2006. This portion of the exhibit, titled "Seven Days of Dissolution," consisted of seven 12"x12" acrylic tanks, each containing black sea fans with capiz shell sculptures of a human heart and lungs in different states of dissolution. Images provided by Ms. Hersko.**



## *Sacramento Connections*

COAST met with the CSU Office of Advocacy and State Relations (ASR) in December 2009 to discuss plans for outreach in Sacramento in 2010. The following goals have been identified:

- Raise awareness of COAST as a resource for State policy and decision makers;
- Build relationships between CSU scientists and public policy and decision makers to facilitate a direct exchange of information; and
- Promote research and education within the CSU.

The first step will be to meet with staff members from key legislative committees to determine what their needs and priority issues are. In early 2010 we will meet with the consultants from the following standing committees:

- Senate Environmental Quality
- Senate Natural Resources & Water
- Assembly Water, Parks & Wildlife
- Assembly Environmental Safety & Toxic Materials
- Assembly Natural Resources
- Assembly Republican Caucus

In preparation for these meetings, COAST and ASR will work together to develop a message to educate policymakers about COAST.



California State Capitol, Sacramento, CA. Photo courtesy of rysac1 via flickr creative commons.

## *Outlook for the next six months*

Over the next six months COAST will:

- Convene a focus group to provide feedback on the marine and coastal asset inventory prototype tool and refine product based on feedback.
- Submit the COAST federal request and obtain letters of support from stakeholders.
- Meet with legislative committee staff in Sacramento.
- Present the strategic plan to the Campus Representatives for official approval.
- Mentor faculty recipients of the Collaborative Incentive Award Program as they prepare proposals for research funding.
- Participate in an affinity group leadership retreat. The leads of the various affinity groups will spend a day together discussing their respective programs, challenges and successes in order to learn from each other and identify common interests and needs.
- Hold the third annual COAST system-wide meeting.
- Work with AoP to identify potential sources of support for the ocean acidification visual media project.
- Engage potential stakeholders.
- Evaluate the Collaborative Incentive Award Program based on results and input from past recipients and the COAST membership, and restructure if necessary.



Zooplankton net tow, San Francisco Bay, CA. Photo courtesy Rob O'Dea Photography.

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Cover photograph "The Pacific Blood Star, *Henricia leviuscula*" courtesy Rob O'Dea Photography



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