



The California State University
COUNCIL ON OCEAN AFFAIRS, SCIENCE AND TECHNOLOGY (COAST)

COAST

2016-2021 STRATEGIC PLAN



INTRODUCTION

The California State University (CSU) Council on Ocean Affairs, Science and Technology (COAST) was formed in 2008 as a way to integrate CSU system-wide expertise and resources to promote marine and coastal research and education throughout the CSU and the state of California. COAST's original interests lay in the open and coastal ocean and coastal zones, such as bays, estuaries, and beaches. COAST's initial stated goals included supporting faculty research, enhancing student educational experiences, and promoting environmental literacy among decision makers and the public in order to foster stewardship and sustainable use of California's coastal resources. The first COAST strategic plan covering 2009-2015 reflected these goals as well as those germane to a nascent organization, such as establishing a governance structure and securing sustained funding.

Over the last eight years, COAST has grown significantly in size, scope and activities. COAST has established itself as an active and robust CSU-wide network of hundreds of faculty members, research scientists and students from diverse disciplines actively working to address critical marine and coastal environmental issues. COAST is widely recognized both within and outside of the CSU as the umbrella organization for marine and coastal related activities within the system. As there are also clear linkages between terrestrial practices and processes and coastal and oceanic conditions, the scope of COAST has expanded to actively include coastal watersheds to the extent that they ultimately articulate with the coast (e.g., anadromous fish, surface and groundwater flow, water quality, land use).

COAST continues to prioritize:

1. Support for research and education to advance our knowledge of marine and coastal resources and the processes that affect them, and
2. Dissemination of scientific information to stakeholders for informed decision-making and the development of responsible policy.

COAST's new strategic plan for 2016-2021 encompasses these priorities and includes several additional goals that reflect the organization's evolution and desired future direction. It is envisioned that achievement of the goals and actions contained within this plan will allow COAST to serve the CSU, the state of California and the nation more effectively and successfully.



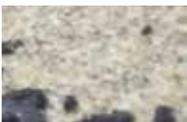
CONTEXT

Around the world, human activities have directly affected marine ecosystems ubiquitously, and for the most part negatively (Halpern et al. 2008). In 2003, the Pew Ocean Commission Report found that America's oceans were in crisis and cited a number of associated factors: coastal development leading to habitat loss and degradation; nutrient pollution resulting in harmful algal blooms and hypoxia; overfishing and destructive fishing practices; and marine invasive species (Pew Oceans Commission, 2003). More recently, studies have predicted that as human use of the oceans intensifies, we may experience widespread marine defaunation globally (McCauley et al. 2015) or even mass extinction (Jackson 2008).

Additionally, humans have impacted the global climate system profoundly, and in turn, climate change has impacted natural and human systems worldwide in recent decades (IPCC 2014). Our future climate depends on the warming that is yet to occur as a result of past anthropogenic emissions, as well as the warming that current and future anthropogenic

emissions will cause, and natural climate variability. It is highly likely that human-induced climate change will continue and that many of its impacts will be pervasive, long lasting (on the order of centuries), and in some cases irreversible (IPCC 2014). For example, it is predicted that extreme weather events (e.g., precipitation, storms) will become more frequent and more intense regionally, the ocean will continue to warm and acidify, and global mean sea level will continue to rise (IPCC 2014). Furthermore, climate change may exacerbate any human-induced organism loss in the oceans and subsequent ecosystem impacts (McCauley et al. 2015).

As a result, our coasts and oceans worldwide face a growing number of threats, and unfortunately California, with its 840-mile coastline, is no exception. California has rich and diverse oceanic and coastal resources: sandy beaches, rocky intertidal zones, estuaries, kelp forests, deep marine canyons, and offshore islands just to name a few. However, along the shore and in the ocean we face sea-level rise,



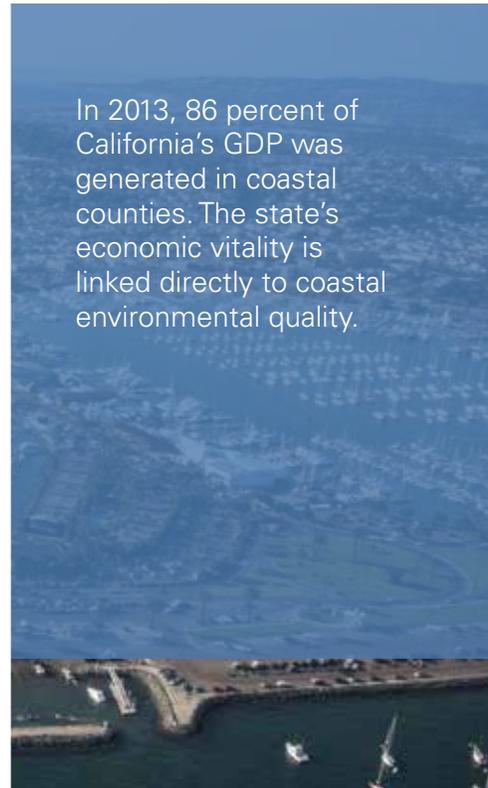
ocean acidification, harmful algal blooms, depleted fisheries, pollution, habitat degradation or loss, hypoxia, and many more challenges that occur on local to global scales. These conditions and events reduce the quality of our marine ecosystems and the services they provide. The challenges to California's vast coastal resources and their needs have been well documented by the California Ocean Protection Council (OPC 2006, 2012) the California Resources Agency and California Environmental Protection Agency (CRA and CEPA, 2004), and the California Office of Environmental Health Hazard Assessment (OEHHA, 2013).

The impacts are not only to the marine organisms that live in these waters, however, but extend to human health and the economy. California, which had the world's eighth largest economy in 2014 (CCSCE, 2015), has 39 million residents (US Census Bureau 2016). Almost 75 percent of Californians live in coastal counties (NOEP, 2016a) where they are at risk from sea level rise, storms and flooding, pollution through contact

with the ocean, especially following storms, and consuming contaminated seafood. California's ocean economy (activities that indirectly or directly use the ocean, such as ship and boat building, extraction of natural resources, tourism and recreation, and transportation) was valued at over \$44 billion in 2013 (NOEP, 2016b). When indirect and induced revenue are also considered, its value doubles to over \$80 billion. The much larger coastal economy (the ocean economy as well as all other activities that take place in coastal areas, e.g., construction, financial activities, education and health services, manufacturing, professional and business services, public administration, trade, transportation) was worth over \$1.9 trillion in 2013 and accounted for 86 percent of California's gross domestic product (NOEP, 2016a). While some coastal economy sectors may not appear to have a direct connection to the ocean, overall they support the large population that chooses to live along and visit the coast for the climate, lifestyle and aesthetics. Thus, the health of California's people and its economy are directly tied to the health of the ocean.



In 2013, 86 percent of California's GDP was generated in coastal counties. The state's economic vitality is linked directly to coastal environmental quality.



THE NEED

Looking forward, California needs to conserve and protect its coastal resources while promoting sustainable use and economic growth and development. To reconcile these interests, the state will need to employ a suite of strategies to address marine and coastal challenges: develop innovative, technological solutions where possible; improve management strategies; and develop mitigation and adaptation plans. It is critical that these strategies are informed by the best available, unbiased scientific data and information. An environmentally literate and engaged citizenry and a highly skilled and technically capable workforce are needed to develop, adopt and implement effective strategies to ensure sustainable use and enjoyment of the coast for generations to come.

VISION

COAST envisions a California that actively and sustainably manages its coast and ocean through the application of scientific knowledge by a well-educated, diverse and environmentally literate workforce and citizenry.

MISSION

COAST's mission is to help the state of California maintain a healthy ocean and sustainable use of coastal resources. COAST coordinates and promotes research and education across the 23 campuses of the CSU to advance our knowledge of marine resources and provide solutions to local, state and national issues. COAST promotes workforce development in STEM and other marine-related disciplines and communicates with California's governments, industries and communities to support informed decision-making and responsible policy development.

COAST's overall priorities are to:

- Provide funding and opportunities to advance coastal, marine, and coastal watershed research and education.
- Serve as a primary resource for informed decision-making in government, industry and local communities.
- Train students to successfully join a highly skilled, technologically sophisticated workforce and ensure the success of students from all backgrounds.
- Communicate the activities, successes and impacts of COAST members to stakeholders and the public.



COAST'S MISSION AND VISION

COAST's Mission and Vision statements reflect a deep commitment to research and education, CSU faculty and students, and the state of California in order to improve environmental quality, promote economically and environmentally sustainable use of our coast and ocean, and train the next generation of ocean leaders in California and the nation.

THE CSU'S UNIQUE POSITION

The CSU is the largest, most diverse public university system in the U.S. The CSU enrolls over 460,000 students and graduates over 100,000 students annually. In 2016, there were more than three million CSU alumni. The CSU serves underrepresented communities: more than 50 percent of CSU students are non-white, and more than two-thirds of CSU campuses are recognized as Hispanic Serving Institutions (HSIs). The CSU graduates the majority of Latino students in California, more than all other public and private institutions of higher education in the state combined (IFC International, 2010). A significant percentage of CSU students are federal Pell grant recipients (more than 30 percent of students at more than half of the CSU campuses). Many CSU students are the first in their family to participate in higher education, and many come from racial groups that are historically underrepresented in science, technology, engineering, and mathematics (STEM) disciplines.

The CSU is the largest source of California's skilled workforce and can address the critical need for more STEM graduates as identified by the President's Council of Advisors on Science and Technology (PCAST). The 2012 PCAST report predicts that there will be a national deficit of one million STEM college graduates by 2022. This prediction is based on estimated growth in the STEM workforce and the need for at least some postsecondary education in over 90 percent of the positions (Carnevale et al., 2011). The CSU already plays a significant role in preparing job-ready STEM graduates at the baccalaureate and master's degree levels. The opportunity to participate in research should be an integral part of any STEM student's education. COAST complements the campuses' STEM curriculum with opportunities for students to engage in two High Impact Practices (HIPs): undergraduate research experiences and professional internships (during which students often participate in scientific research). Both of these HIPs broaden students' experiences and strengthen their science identity, which helps students persist in STEM majors and successfully graduate (Eagan et al., 2010). Thus, the CSU and COAST together are perfectly positioned to educate our students and help them graduate with the environmental literacy and technological skills needed to effectively address the myriad challenges California faces.

The CSU has 23 individual campuses stretching from San Diego to Eureka and numerous biological field stations and marine laboratories. This remarkable geographic coverage provides an unmatched ability to provide opportunities to students throughout the state and to study the entire coast of California. At present, over 400 CSU faculty members and research scientists are affiliated with COAST and they bring with them hundreds more undergraduate and graduate students, all actively working to address critical marine, coastal and coastal watershed issues. Their expertise comprises the following disciplines, all of which can be brought to bear on issues of coastal affairs, science and technology: biology, chemistry, geology, geography, physics, engineering, computer science, economics, anthropology, archeology, sociology, public policy, maritime affairs, mathematics, statistics, and the arts. Across the CSU there are research vessels, marine laboratories, analytical laboratories, instrumentation, unique programs, and other physical assets that collectively form a robust and unparalleled resource. COAST facilitates access to this collective resource to advance research and education within the CSU and to serve the state and the nation in a way that no other group or organization can.



KEY ACCOMPLISHMENTS SINCE 2009

COAST accomplished the following goals from the 2009-2015 Strategic Plan:

1. Promote the advancement of collaborative, interdisciplinary coastal and marine-related research throughout the CSU.

- COAST has made 70 awards totaling over \$760,000 to CSU faculty members and research scientists. The return on investment from these awards has been over \$8.65M dollars in extramural funding awarded to the CSU, an 11.1:1 ratio.
- COAST has developed multiple funding programs to support various faculty research needs. The programs have been refined and improved based on feedback. Current faculty funding programs include:
 - Grant Development Program
 - Strategic Investment Program
 - Rapid Response Funding
 - Seminar Speaker Series

2. Be a primary resource for stakeholders seeking information about, or novel solutions to, difficult problems in the coastal environment.

- COAST has successfully convened six informational briefings in Sacramento for legislative and agency staff on current, critical marine and coastal issues topics. Briefings have featured CSU faculty members along with stakeholders and decision makers.

3. Secure sustained funding for the management of the COAST administrative infrastructure.

- Chancellor's Office support for COAST has increased by over 150 percent, and annual funding increases are now tied to the Higher Education Price Index.
- Individual campus annual contributions to COAST have increased 25-50 percent.

4. Develop the COAST Governance Structure.

- The initial Governance Structure was adopted in May 2009. A revised Governance Structure was approved by a majority of Campus Representatives in June 2013 and is still in force.





5. Enhance the educational opportunities for undergraduate and graduate students in the CSU, providing student involvement in on-going research projects.

- COAST has established programs to incentivize and support student engagement in research and career development opportunities:
 - Graduate Student Research Awards
 - Undergraduate Research Support Program
 - Student Travel Awards
 - Summer Student Internship Program

To date COAST has awarded \$1M to over 600 students.

6. Increase public awareness of the challenges facing our coast and increase stewardship of our resources.

- COAST regularly posts information on current marine and coastal issues on the COAST website and social media.

7. Develop programs to leverage CSU assets and increase the competitiveness of CSU faculty to successfully realize national and state funding for their research programs.

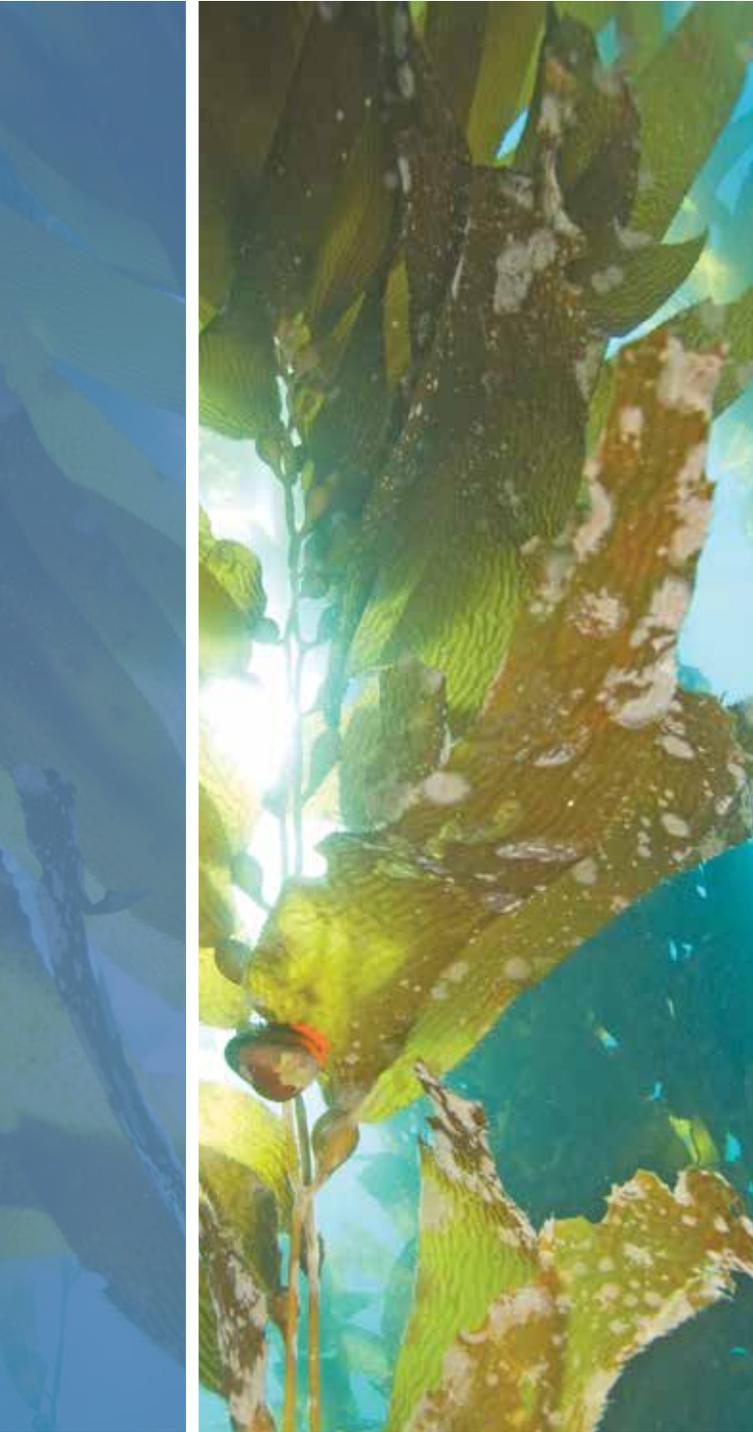
- COAST faculty funding programs are designed to encourage collaborations across disciplines and campuses in order to maximize the expertise and resources available to address basic and applied research questions and critical coastal environmental information needs.
- COAST supports networking opportunities to promote relationship building and collaboration among faculty members and research scientists: Student-Faculty Research Poster Reception, Annual System-wide Meeting, thematic workshops and short courses, and the Speaker Seminar Series.

To date COAST has awarded \$1M to over 600 students.

PRIORITIES FOR 2016-2021

COAST staff and members of the Executive Committee met in January 2015 to evaluate the program's activities and achievements to date and to identify priorities, goals and actions for the future. COAST has identified the following overall priorities for 2016-2021:

- Provide funding and opportunities to advance coastal, marine, and coastal watershed research and education.
- Serve as a primary resource for informed decision-making in government, industry and local communities.
- Train students to successfully join a highly skilled, technologically sophisticated workforce and ensure the success of students from all backgrounds.
- Communicate the activities, successes and impacts of COAST members to stakeholders and the public.



GOALS FOR 2016-2021

The goals articulated below for the next five years constitute an ambitious course of action designed to make COAST and the CSU a more significant force within the state of California and the U.S. with regard to marine and coastal issues, research and education. Actions listed in *italics* are proposed new activities that have not been undertaken previously.

Goal One: Promote the advancement of CSU marine, coastal, and coastal watershed research and education.

COAST will engage in actions that raise the profile of faculty members and students working to address marine, coastal, and coastal watershed issues both internally, among the CSU Chancellor's Office, Presidents, Provosts, and Deans, and externally, among state and federal agencies, elected officials, and other stakeholders. To accomplish this, COAST will articulate and disseminate the marine science related activities of CSU faculty and students and make this information available both within and outside of the CSU. COAST will continue outreach among CSU faculty members and students to increase the number of people engaged in COAST and to increase awareness of and participation in COAST-sponsored programs and activities.

Actions:

- a. Produce annual reports on COAST activities and accomplishments for distribution throughout the CSU and to external stakeholders. Highlight COAST support of faculty and student research, results and impacts.
- b. Post items about activities and successes of COAST faculty members, research scientists, and students on the COAST website and social media regularly.
- c. Convene annual system-wide meeting with representatives from each of the 23 campuses. Address COAST's system-wide role, priorities, and impact. Use meeting to advance COAST within the CSU and develop strategies for increased effectiveness with external stakeholders and strategic partners.
- d. Convene annual student research poster reception at the Chancellor's Office showcasing COAST-supported research by CSU faculty members and students.



- e. Produce individual year-end reports for each campus detailing campus contributions to COAST, COAST funds awarded to campus faculty members and students, and extramural funding resulting from COAST support for each of the three preceding fiscal years.
- f. *Advocate for infrastructural support for CSU facilities and resources that enable research and education opportunities for CSU faculty members and students.*
- g. Visit campuses in person to meet with faculty members and administrators to cultivate awareness of COAST funding opportunities, program initiatives and successes.
- h. Represent COAST at scientific and professional meetings.
- i. *Inventory and summarize the marine, coastal, and coastal watershed related research and educational activities of COAST faculty members, research scientists and students.*
 - i. *Create an online bibliography of peer-reviewed publications by COAST faculty members, research scientists and students. Student authors and publications resulting from COAST support will be noted. Links to primary publication sources will be provided to facilitate access.*
- ii. *Inventory and publish all extramural funding to CSU faculty members and research scientists for marine, coastal, and coastal watershed research annually.*
- iii. *Engage in actions to increase the visibility of faculty and student accomplishments (e.g., grants, publications, presentations) online and in social media.*
- iv. *Publish reports from the COAST Rapid Response Funding Program online to highlight what CSU faculty members, research scientists, and students are doing to respond to urgent or unexpected marine and coastal events.*
- v. *Showcase CSU faculty, research scientist, and student responses to requests for information from and interactions with local, state and federal government, agencies, and industry.*

Performance Metrics:

Timely completion of annual reports and campus year-end financial reports; convening of annual meeting and poster reception; number of campuses visited; number of scientific and professional meetings attended or presentations made; publication of bibliography; list of annual extramural funding



awarded to COAST members; website and social media traffic and interaction; number of responses to requests for information and interactions with local, state and federal government, agencies, and industry.

Goal Two: Provide financial resources directly to faculty members to incentivize faculty research.

COAST will continue to support faculty members and research scientists engaged in marine, coastal, and coastal watershed research with the ultimate goals of increasing: 1) the amount of extramural funding for marine, coastal, and coastal watershed research and education in the CSU; 2) the number of externally funded marine, coastal, and coastal watershed related principal investigators throughout the CSU; 3) collaboration among campuses; and 4) the overall research capacity of the CSU.

COAST supports the teacher-scholar model and will facilitate CSU faculty members' scholarly work by providing resources to advance research and aid in the pursuit of extramural funding for research. These resources may be in the form of seed funding and/or assigned time funding.

Actions:

- a. Provide funding to CSU faculty members and research associates to support development and submission of full-length proposals for discrete research projects to external funding agencies and organizations. Funds will support activities deemed necessary to maximize subsequent success in obtaining external funding in support of scholarly work.
- b. Provide funding to teams of CSU faculty members and research associates seeking significant external support for large-scale marine and coastal initiatives such as centers that further COAST's programmatic goals and objectives and increase the research capacity of the CSU overall.
- c. Provide funding for projects that require a quick response outside of the existing annual COAST funding programs. Projects may include responses to unexpected or sudden events, those that have a short opportunity to access data, facilities or specialized equipment, or problems that require immediate attention.



Performance Metrics:

Number of faculty members supported; number of campuses participating; total amount of funding provided in each program and overall; number of proposals funded; total amount of extramural funding secured; calculated return on investment

Goal Three: Support CSU undergraduate and graduate student research.

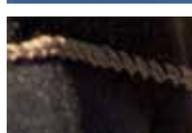
COAST will continue to provide financial support to CSU undergraduate and graduate students engaged in marine, coastal, and coastal watershed research and education. Existing programs provide students who are interested in marine-related careers with the means to support themselves while in school, fund their research, and travel to scientific meetings. These experiences allow students to participate in research and gain the skills necessary to join a highly skilled, technologically advanced workforce while promoting and supporting CSU research.

Actions:

- a. Provide support to undergraduate and graduate students to attend and present the results of original marine and coastal-related research at scientific meetings and conferences.
- b. Increase the number of undergraduate students participating in faculty-mentored marine, coastal and coastal watershed related research and activities by providing support designated for this purpose directly to each of the 23 campuses.
- c. Provide support to graduate students conducting research that supports one or more of COAST's goals under the direction of a CSU faculty member.

Performance Metrics:

Number of student travel awards provided; number of undergraduate students supported; number of graduate students supported; total amount of funding provided in each program and overall.



Goal Four: Support CSU undergraduate and graduate student career and workforce development.

COAST will continue to provide opportunities for CSU undergraduate and graduate students to conduct scientific research with CSU faculty members, learn new skills, and intern with potential employers throughout the state. Both the Undergraduate Student Research Support Program and the Summer Student Internship program help students gain valuable experience and secure employment upon graduation.

Actions:

- a. Provide support to each campus to promote undergraduate student participation in marine, coastal and coastal watershed related research that will increase graduates' competitiveness in the job market.
- b. Provide paid summer internship research opportunities with professional organizations (e.g., state and federal agencies, non-profits, private industry) to continuing undergraduate and graduate students who will work side-by-side with professional scientists and resource managers on societally relevant projects in both field and laboratory settings throughout California.

Performance Metrics:

Number of undergraduate students participating in faculty-mentored research; amount of funding awarded annually; amount of campus match provided. Number of students placed in internships; results of internship surveys; percentage of students employed by host following internship.

Goal Five: Support mutually beneficial relationships with and collaborations among CSU marine consortia and campus marine facilities.

The CSU has eight waterfront facilities with marine access including two consortia (Moss Landing Marine Laboratories and Ocean Studies Institute) that together comprise 16 campuses, and six other individual campus facilities: Santa Rosa Island Research Station (Channel Islands), California State University Maritime Academy, Telonicher Marine Laboratory (Humboldt), Coastal & Marine Institute (San Diego), Romberg Tiburon Center for Environmental Studies (San Francisco), Center for Coastal Marine Sciences (San Luis Obispo). These eight facilities span the entire coast of California from Humboldt County in the north to San Diego County in the south and are located in both the state's largest population centers (e.g., RTC in San Francisco Bay, the largest estuary on the U.S. west



coast, and OSI in the Los Angeles/Long Beach Harbor complex) and more pristine areas (SRIRS in the Channel Islands and CCMS along the central coast).

Coordination both with COAST and among the individual facilities themselves to address common goals maximizes efficient use of state funds, promotes best practices, and strengthens the CSU's ability to conduct research and train students.

Actions:

- a. Support and facilitate meetings of marine facility directors and personnel (e.g., diving safety officers, small boats operations).
- b. Support research activity of CSU marine consortia and campus marine facility faculty members and students through existing funding programs (e.g., Grant Development Program, Short Course, Workshop and Symposia Funding Program, Graduate Student Research Awards).
 - i. Specifically, facility directors will be encouraged to leverage COAST funding opportunities to jointly seek funding for physical facilities improvement and maintenance (instrumentation, dormitories, classroom capacity, ships), field courses and other joint educational opportunities (student/faculty exchanges) that enhance the overall capacity of the facilities to function as a network.
- c. *Encourage broader use of existing marine facilities, particularly by inland campuses.*
- d. *Communicate the achievements, successes and broader impacts of marine facilities and their faculty members and students.*

Performance Metrics:

Number of marine facility meetings facilitated; number of collaborative marine facility enhancement proposals supported; increased use of marine facilities by inland campuses.



Goal Six: Provide professional development activities for CSU faculty members, research scientists, staff, and students.

COAST will provide opportunities for CSU faculty members, research scientists, staff, and students to learn new skills, develop expertise and build collaborations. The outcomes will be increased capacity and innovation, more collaborative interdisciplinary or intercampus research proposals for extramural funding; and an increase in the research profile of the CSU on a national level. These activities may also lead to increased shared use and integration of CSU infrastructure.

Actions:

- a. Provide funding to departments to host seminar speakers from other CSU campuses that they would not otherwise be able to invite. One of the benefits of this program is the increased exchange of ideas among campuses in order to foster increased collaboration across campuses.
- b. *Provide funding for thematic workshops and short courses hosted at individual CSU campuses or marine laboratories. Workshops and short courses may be technical or topical in nature. Support will be used to cover logistical costs of hosting an event and to help defray travel costs for CSU participants, including students. Workshop and short course participation may be extended beyond the CSU in order to engage key stakeholders and form strategic partnerships.*

Performance Metrics:

Number of collaborations that develop; number of attendees at each seminar; number of thematic workshops and short courses funded; number and natures of attendees (faculty, students, non-CSU) at workshops/short courses; total amount of funding provided.

Goal Seven: Enhance extramural resources to 1) support the growth and development of COAST and its staff and 2) enhance faculty-led external research funding and scholarship.

The CSU's unique, statewide distribution makes it perfectly suited to conduct research and monitoring along California's entire 840-mile coastline, which spans 10 degrees of latitude and significant environmental variability. With eight marine facilities, fleets of research vessels and degree programs in marine biology, marine science and related fields, the CSU is an unparalleled resource for addressing state and national informational needs in marine and coastal environments. As the umbrella organization for marine, coastal and coastal watershed related activities within the CSU, COAST provides coordination to help maximize resources and promote collaboration.

COAST will engage state and federal agencies and legislators to increase awareness of the CSU's capacity to conduct marine, coastal and coastal watershed research that 1) provides the scientific basis for policy development and decision-making; 2) is cost-effective; and 3) helps train the next generation of marine and coastal professionals. COAST will facilitate engagement with CSU faculty members with the express purpose of helping position them to receive external funding for research directly. COAST will also seek programmatic funding that it would subsequently distribute to CSU faculty members and students to conduct coordinated, statewide research and monitoring that addresses state and national priorities.

COAST staff will identify appropriate external funding opportunities and develop proposals for submission to secure funds in support of programmatic activities and initiatives that promote research, enhance student education, and facilitate informed decision-making. Federal, state and private funding sources will be included.



Actions:

- a. *Develop new positions within COAST to engage state and federal agency staff and legislators.*
- b. *Develop materials that showcase the relevant expertise of COAST faculty members and facilitate communications with them.*
- c. *Develop inventory of CSU marine and coastal long-term monitoring efforts to demonstrate added value to stakeholders.*
- d. *Work with state legislators to develop funding mechanisms.*
- e. *Development and submission of proposals for external funding from federal, state and private sources to support programmatic activities and initiatives.*

Performance Metrics:

Creation of new positions; development of materials for stakeholder education and engagement; amount of additional state and extramural funding secured.

Goal Eight: Expand and diversify membership.

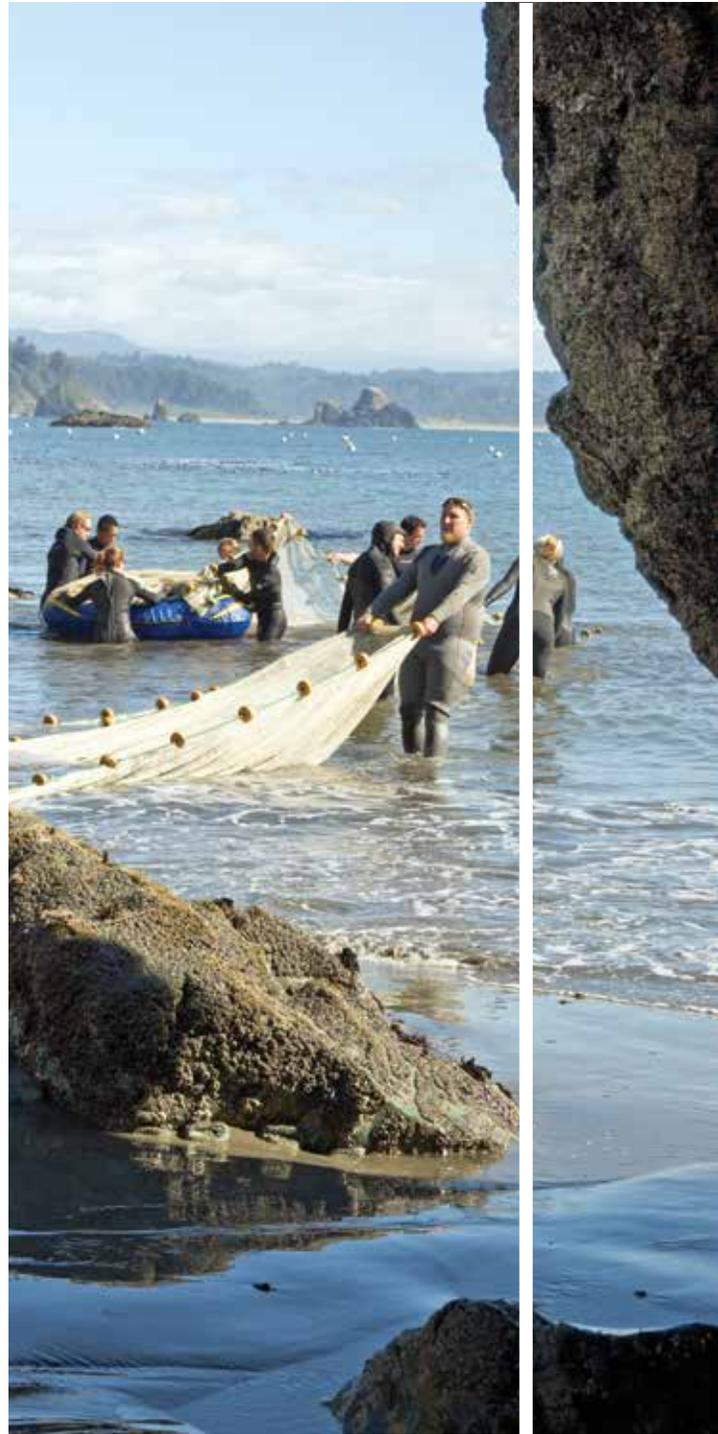
COAST leadership will reach out intentionally and broadly throughout the CSU to engage new members and expand the expertise represented among members. This will increase COAST members' ability to participate in interdisciplinary research and will strengthen connections between marine and terrestrial scientists in the CSU.

Actions:

- a. Engage newly hired faculty members and existing faculty members not previously involved in COAST.
- b. Purposefully seek out new members in disciplines not yet well represented within COAST.

Performance Metrics:

Increased membership in COAST; increased number of areas of expertise represented.



Goal Nine: Create an external Advisory Board.

Through the Chancellor's Office, COAST will invite up to ten individuals representing diverse institutional (e.g., government, agencies, industry and non-profits) and geographical affiliations to sit on an external Advisory Board (Board).

These individuals will be prominent leaders from government, agencies, non-profits and the private sector: with 1) interest in or knowledge of marine, coastal or coastal watershed environments and issues, and 2) strong commitment to the CSU and its mission.

The Board will: 1) provide professional perspective and advice to better inform COAST priorities and actions, particularly with regard to relevant state and national policy and industry needs, 2) help COAST better position itself to secure external funding, and 3) provide input to help ensure the CSU is meeting workforce demands in marine, coastal, and coastal watershed related sectors.

The Board will meet in person at least once per calendar year. It is envisioned that Board members will not only guide COAST, but will become advocates for the program in their professional circles as well, leading to increased stakeholder engagement and potential revenue sources.

Actions:

- a. *Identify potential Board members in consultation with faculty and administrators from throughout the CSU and other professionals.*
- b. *Convene Board meetings at least annually.*
 - i. *Present COAST current and planned activities and priorities to Board, and use feedback to refine goals and objectives as needed.*
 - ii. *Charge Board members with identifying mechanisms to increase broad support for COAST and use of COAST resources (data, information, faculty expertise).*

Performance Metrics:

Establishment of Board that meets annually.

Goal Ten: Support the marine-related informational needs of government staff and elected officials.

COAST will support informed decision-making at all levels by government, industry, and communities by providing unbiased scientific information and expertise. The goal is to facilitate development of responsible policies that promote sustainable use of the ocean, coastal zone and coastal watersheds. COAST will use specific platforms and events to showcase the work of CSU faculty members, research scientists and students.

Actions:

- a. Host informational briefings and events, such as the annual California Ocean Day Luncheon, featuring the research and expertise of CSU faculty members in Sacramento, for agency, committee and legislative staff.
- b. Travel to Washington, D.C. annually to attend Capitol Hill Ocean Week and meet with elected officials and heads of national agencies and offices to increase awareness of COAST and its members' activities.
- c. *Produce thematic products and/or convene events targeting decision-makers that highlight the expertise and involvement of CSU faculty members in critical marine and coastal topics (e.g., invasive species, sea level rise, climate change).*

Performance Metrics:

Number of informational briefings and events; number of attendees and organizations represented at informational briefings and events; number of legislative and agency meetings in D.C. and elsewhere; thematic products or events highlighting CSU faculty expertise and involvement in critical issues.

IMPLEMENTATION TIMELINE

The actions listed above include existing activities that occur continuously throughout the year as well as existing discrete activities that occur annually. There are also new actions that COAST will initiate over the next five years; these items are noted in *italics*. Actions are grouped by timeframe below.

Year-round activities and deliverables

- Support for CSU faculty members and research associates through the following programs
 - Grant Development Program
 - Strategic Investment Program
 - Rapid Response Funding
 - Seminar Speaker Series
 - *Thematic workshops and short courses at individual CSU campuses or marine laboratories*
- Support for CSU undergraduate and graduate students
 - Graduate Student Research Awards
 - Undergraduate Student Research Support Program
 - Student Travel Awards
- Student career and workforce development
 - Undergraduate Student Research Support Program
 - Summer Student Internship Program
- *Inventory and summarize the marine, coastal, and coastal watershed related research and educational activities of COAST faculty members, research scientists and students*
 - *Online bibliography*
 - *Increased visibility of faculty and student accomplishments online and in social media*



- *Online publication of Rapid Response Funding Program reports*
- *Inventory of CSU faculty member, research scientist, and student responses to requests for information and interactions with local, state and federal government, agencies, and industry*
- Coordination with and among marine facilities
- Outreach to expand and diversify membership
- Outreach at state and federal levels to engage agency staff and legislators
 - Informational briefings and events in Sacramento
 - *Thematic products and/or events to highlight the expertise and involvement of CSU faculty members in critical marine and coastal topics*
- Website and social media postings
- Campus visits
- Representation at scientific and professional meetings

Annual activities and deliverables

- Annual Report
- System-wide meeting
- Student research poster reception at Chancellor's Office
- Campus year-end financial reports
- *Marine facility meeting*
- *Extramural funding inventory*
- *External Advisory Board meeting*



REFERENCES

- California Ocean Protection Council, 2006. A Vision for Our Ocean and Coast: Five-Year Strategic Plan, 2006.
- California Ocean Protection Council, 2012. A Vision for Our Ocean and Coast: Five-Year Strategic Plan, 2012-2017. <http://www.opc.ca.gov/strategic-plan/>
- California Resources Agency and California Environmental Protection Agency, 2004. Protecting Our Ocean-California's Action Strategy. Final Report to Governor Arnold Schwarzenegger. http://www.resources.ca.gov/ocean/Cal_Ocean_Action_Strategy.pdf
- Carnevale, A.P, N. Smith, and M. Melton. 2011. STEM. Washington, DC: Georgetown University Center on Education and the Workforce. <https://cew.georgetown.edu/wp-content/uploads/2014/11/stem-complete.pdf>
- Center for the Continuing Study of the California Economy. 2015. California Remains the World's 8th Largest Economy. Numbers in the News. July 2015. <http://www.ccsce.com/PDF/Numbers-July-2015-CA-Economy-Rankings-2014.pdf>
- Eagan, M. Kevin Jr., Sylvia Hurtado, and Mitchell J. Chang. 2010. What Matters in STEM: Institutional Contexts That Influence STEM Bachelor's Degree Completion Rates. 2010 Annual Meeting of the Association for the Study of Higher Education, Indianapolis, IN. 34 pp.
- Halpern, Benjamin S. et al. 2008. A global map of human impact on marine ecosystems. *Science* 319: 948-952. DOI:10.1126/science.1149345
- IFC International, 2010. Working for California: The Impact of the California State University. <http://www.calstate.edu/impact/docs/CSUImpactsReport.pdf>
- Intergovernmental Panel on Climate Change (IPCC). 2014. Climate Change 2014 Synthesis Report Summary for Policymakers. http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_SPM_Final.pdf
- Jackson, Jeremy B. C. 2008. Ecological extinction and evolution in the brave new ocean. *PNAS* 105: 11458-11465. www.pnas.org/cgi/doi/10.1073/pnas.0802812105
- McCauley, Douglas J. et al. 2015. Marine defaunation: Animal loss in the global ocean. *Science* 347. DOI: 10.1126/science.1255641.
- National Ocean Economics Program (NOEP). 2016a. <http://www.oceaneconomics.org>. Accessed 3/14/16.
- National Ocean Economics Program (NOEP). 2016b. State of the U.S. Ocean and Coastal Economies, Coastal States Summaries - 2016 Update. 62 pp. <http://www.OceanEconomics.org/Download>.
- Office of Environmental Health Hazard Assessment (OEHHA). 2013. Indicators of Climate Change in California. 228 pp. <http://oehha.ca.gov/multimedia/epic/pdf/climatechangeindicatorsreport2013.pdf>
- PCAST. 2012. Engage to Excel: Producing One Million Additional College Graduates with Degrees in Science, Technology, Engineering, and Mathematics. PCAST, Washington, DC.
- Pew Oceans Commission, 2003. America's Living Oceans: Charting a Course for Sea Change. http://www.pewtrusts.org/our_work_report_detail.aspx?id=30009
- U.S. Census Bureau. 2016. State and County QuickFacts. <http://quickfacts.census.gov/qfd/states/06000.html>. Accessed 3/14/16.

