



Stony Brook University

School of Marine and Atmospheric Sciences (SoMAS)

Strategic Plan 2014-2018



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V. SUMMARY

I. VISION

The vision of SoMAS is to achieve international leadership in research, education, and service to society on marine, atmospheric, and environmental problems, and to become the preferred destination for graduate and undergraduate students to study in our disciplines. SoMAS aspires to be among the top five marine and atmospheric schools in the nation and to be a recognized world leader in several areas of specialties.

II. MISSION

SoMAS has three core missions:

- Research — to increase fundamental understanding of the oceans, the atmosphere, their interactions, and the life systems they support.
- Education — to develop academic excellence in students, enabling them to become society's future leaders and informed and productive citizens.
- Service — to design and communicate innovative solutions to the environmental problems of society at local, regional, national, and global scales.

III. INTRODUCTION

Few academic institutions have the diversity of research SoMAS possesses in oceanography and atmospheric sciences, with substantial programs in biological, chemical, geological, physical oceanography, marine biogeochemistry, atmospheric chemistry, climate and meteorology. SoMAS provides truly comprehensive and interdisciplinary education as well as engagement from region to global areas. The strengths of SoMAS are as follows:

- No internal boundaries: SoMAS does not have traditional divisions or departments within the school, thus allowing for a more organic and regular collaboration across multiple disciplines.
- A collegial academic environment that values excellence: SoMAS has a tradition and culture where people respect quality, excellence, and one another.
- Location on a major research university campus: SoMAS has access to and has fostered collaborations with multiple highly ranked departments in physics, biological sciences, chemistry, geosciences, engineering, and medicine all within Stony Brook University.
- Brookhaven National Laboratory (BNL): This proximity to this national lab allows for easy collaborations with BNL scientists, the use of the National Synchrotron Light Source, and several other BNL facilities and resources.
- Cold Spring Harbor Laboratory: This world-famous genomics laboratory remains relatively untapped by oceanographers, but remains a promising resource for in-depth genetic research.
- National Weather Service: SoMAS has active cross-research collaborations with the regional forecasting services of the National Weather Service, thereby facilitating the transition from research to operational application.

- Collaborations with governmental agencies: SoMAS has long standing professional collaborations and good relationships with the New York State Department of Environmental Conservation (DEC), Department of State (DOS), the US Geological Survey (USGS), the US Army Corps of Engineers (ACE), the US Environmental Protection Agency (EPA), the New York Sea Grant, and the Port Authority of New York and New Jersey.

The SoMAS Ph.D. program was ranked 6th in the nation by the National Research Council (NRC) in terms of its 95 percentile R-Score. While this is a great achievement for a school that was formed in 1965, we aspire to rise higher.

Current and new opportunities for SoMAS include:

- Funding of Stony Brook University by the New York State SUNY 2020 legislature helped to stabilize the financial condition of the University and provided mechanisms of recruiting new faculty members.
- The university interdisciplinary faculty cluster initiative has enabled SoMAS to strengthen collaborations with other colleges and departments on campus and to broaden its faculty portfolio in new dimensions.
- Environmental problems such as climate change, water quality, marine conservation, and public health present major societal challenges that marine and atmospheric sciences research can help to address.
- Recent severe weather events such as Superstorm Sandy, Hurricane Irene, and Nor'easter Nemo have raised awareness of the importance of SoMAS research.

This strategic plan will evolve with changes in the composition of the faculty, the external funding environment, the emergence of new opportunities, and other factors. It was built on the previous strategic plan in 2010 that was an update of the more comprehensive plan in 2008.

IV. GOALS, OBJECTIVES AND ACTION PLAN

Goal 1: Build a World Class Faculty

Objective 1.1: Increase the number of faculty in areas of subcritical mass

Action: We currently have four state-funded faculty members in physical oceanography. This number is not sufficient to cover the range of specialty needs in remote sensing, storm surges, coastal oceanography and global oceans while maintaining substantial interactions with faculty doing research in weather systems, climate change, marine pollution, water quality, algal blooms, and other oceanographic disciplines. Likewise, the three faculty members in geological oceanography are also not sufficient to meet research needs in ground water, sea level rise, coastal erosion, coastal hydrology, and the development of marine resources. We need to recruit new members in each of these areas to

bring the number of faculty above critical mass and to have overlap with current faculty who may retire in the next few years. In addition, we need to add a faculty member in satellite or radar remote sensing to take advantage of the modern observational techniques and data.

Objective 1.2: Broaden the scope of faculty to new areas of strategic importance

Action: SoMAS faculty led two successful faculty cluster hire proposals through university-wide competitions. These two clusters provided the unprecedented opportunity for the school to expand to new areas. The cluster on Coastal Ecosystem Management and Engineering will connect SoMAS research to sustainability and engineering solutions, while the cluster in Genomics will position SoMAS in the forefront of marine biological research. In the Coastal Ecosystem Management and Engineering cluster, we have already hired a coastal engineer and marine resource economist. We are in the process of hiring a coastal groundwater hydrologist and an engineer with specialty in ports and harbors. We anticipate that both will have predominant ties to SoMAS while adding a new dimension to our interdisciplinary interactions with Civil Engineering, the Department of Geosciences, and the Sustainability Program. Two more faculty positions are to be filled in 2014-2015. In the Genomics cluster, six positions have been advertised. We will ensure high-quality searches for these two clusters and will leverage the collaborations with other campus units through these interdisciplinary initiatives. We expect that these two clusters will add at least four full-time equivalents (FTE) of faculty in the school. We will continue to identify areas of strategic importance and pursue new cluster proposals.

Objective 1.3: Strengthen specialty areas where SoMAS is already strong

Action: We will augment SoMAS's current strengths to better position the school for the future. In collaboration with the Center for Interdisciplinary Environmental Research (CIDER), we have initiated hiring of three junior faculty members in biogeochemistry. We have also started a search for two junior faculty members in atmospheric sciences. We expect to add five junior faculty members in these two areas. New areas may be identified to augment other SoMAS strengths to build the school as a world leader in several specialty areas.

Objective 1.4: Mentoring of junior faculty

Action: The current faculty mentoring program will be reviewed and strengthened to help assistant professors achieve their potential in the school. This is especially important because we have more than 10 junior faculty members who recently joined or will join the school in the next three years. An Associate Dean will be charged to oversee the program and monitor its effectiveness.

Goal 2: Improve Undergraduate Programs

Objective 2.1: Enhance recruitment of undergraduate students into SoMAS majors

Action: We will reexamine our current Marine Sciences (MAR), Marine Vertebrate Biology (MVB), Environmental Studies (ENS), Atmospheric and Oceanic Sciences (ATM) majors in light of the evolving nature of our discipline, enrollment figures, and societal demands on students. We will seek opportunities to develop new tracks in the existing majors or to develop new majors. Potential areas include Marine Conservation and Policy, joint degrees in Ocean Engineering and Environmental Engineering with CEAS, in Environmental Health with the Medical School, in Environmental Business with the Business School, and in Environmental Journalism with the School of Journalism, and Global Studies with other colleges. We intend to collaborate with the Sustainability Programs to develop courses and tracks that fully support both programs. We will develop new introductory level marine science classes of broad interest to service the University's undergraduate population and enhance their general ocean literacy. We aim to maintain an enrollment of about 500 students in the SoMAS undergraduate majors. The SoMAS Director of Undergraduate Programs (DUG) will lead this action plan.

Objective 2.2: Grow the Semester by the Sea (SbtS) program at Southampton

Action: The Semester by the Sea program (SbtS) was launched in Fall of 2012. The first class of residential students was admitted in Fall 2013 with about two dozen students. The first spring semester of the program is being offered in Spring 2014. We aim to grow the program to about 50 residential students in each semester. We will seek opportunities to form strategic partnerships with other domestic and foreign universities for their students to participate in the program. We will also reach out to and visit prospective universities that have large marine and environmental sciences programs but do not have waterfront facilities as such institutions may desire to send students to SbtS. We will take advantage of the new Marine Sciences building to promote the program. The Faculty Director of the SbtS program and the Academic Director of SoMAS Southampton will lead this action plan.

Objective 2.3: Improve student learning and outcomes

Action: We will implement the new course assessment system with augmentation and continuous monitoring of student learning experiences. We will also implement the precise monitoring of retention rate, graduation rate, and time to graduation of SoMAS graduate and undergraduate students. We will maintain and improve the retention and graduation rates of students in all SoMAS majors. We will develop the infrastructure and network to assist students with internship and job placements. Outcomes of SoMAS graduates will be assessed about their post-graduation successes. We will review and revise courses and curricula to reflect and meet the developing needs of society. We intend to collaborate with DoIT to seek better ways of advising and assisting students using advanced online resources. An Associate Dean and the SoMAS Director of Undergraduate Programs (DUG) will lead this action plan.

Objective 2.4: Promote study abroad programs and international collaborations

Action: We currently offer Tropical Marine Ecology in Jamaica over the winter session and Marine Protected Areas in Belize over the summer session. We will encourage more faculty members to take students overseas for study abroad experience. We will also take advantage of existing partnerships and

Memorandum of Understanding (MOU) with foreign institutions such as the University of Queensland (Australia), the University of Dares Salaam (Tanzania), and the Nanjing University of Information Sciences and Technology (China) to allow our students to study in a foreign country for a longer duration. Not only do study abroad programs offer our students learning opportunities that we directly cannot provide, but such programs are also effective marketing tools for recruiting new students. We have been working with Humanities and Social Science Departments for the establishment of “Globalization Studies” at the university. We will continue to contribute to this effort. The SoMAS DUG, Graduate Program Director (GPD), Associate Dean and Dean will lead this action plan.

Objective 2.5: Develop on-line courses

Action: We have offered on-line graduate courses through the School of Professional Development (SPD) since 2008. On-line educational opportunities are expected by today’s students and fits well in the OPEN-SUNY initiative. We will expand our on-line course offerings. This may include Massive Open Online Course (MOOC) offerings as they might be appropriate and consistent with university goals. Our presence at Southampton also makes it imperative that we develop the capability for remote-course offerings. We intend to establish the state-of-the-art remote teaching technology at SoMAS that will allow us to provide these courses not only at SB-Southampton, but at other institutions world-wide. An Associate Dean will lead this action plan.

Goal 3: Maintain High Quality Graduate Programs

Objective 3.1: Recruit high quality students

Action: We encourage faculty members to visit other top domestic and international research universities and give seminars to promote our programs. We will also use professional society conferences and alumni events to enhance our visibility. We will make our financial support competitive with our peer universities. We aim to grow our graduate student population to about 160 in five years. We will use our network of alumni to recruit students from beyond our primary markets as, for example, in South America. The SoMAS Graduate Program Director (GPD) and Chairs of the Graduate Admissions Committee will lead this action plan.

Objective 3.2: Grow the Master in Conservation and Policy Program (MCP)

Action: The MCP program draws self-supporting graduate students to the school to meet a special societal need. We will grow the program by continuing to attract high quality internal and external students. We will engage more faculty members in advising students in the program and will actively develop a network of internship opportunities with local, national, and international government and non-governmental conservation agencies and groups to assist students with internships and job placements. The Faculty Director of the MCP program and the GPD will lead this action plan.

Objective 3.3: Develop a joint Master program in Ocean Engineering with the College of Engineering and Applied Sciences

Action: The faculty cluster in Coastal Engineering and Ecosystem Management will enable us to offer graduate courses in ocean engineering. We will develop a Graduate Certificate Program and explore the feasibility of a joint Master's Program with the College of Engineering and Applied Sciences. This will provide more career options to our students and will facilitate faculty research on engineering solutions to environmental problems. An Associate Dean and the GPD will lead this action plan.

Objective 3.4: Create new 5-year B.S./M.S. degree programs

Action: We will review our existing B.S./M.S. program and assess the possibility of combined B.S./M.S. degrees for all SoMAS undergraduate majors either within the school or jointly with other colleges. Such joint degrees not only provide more educational opportunities to students, but also offer augmented enrollment and revenue to the school. The SoMAS GPD, DUG and an Associate Dean will lead this action plan.

Objective 3.5: Refine the 2012 curriculum

Action: The SoMAS graduate curriculum was revised in 2012 to reflect the broadening scope of marine and atmospheric sciences in the last three decades and evolving needs for interdisciplinary skills and problem solving. We have started implementation of a new culture of assessment in all of our programs and courses to meet the missions of the University, SoMAS, SoMAS programs and individual courses. All faculty members will participate in this action plan.

Objective 3.6: Enhance the SoMAS student experience

Action: We now offer and will increase SoMAS travel awards for students to attend professional meetings. We will continue to encourage and support student involvements in school activities such as the Akira Okubo Distinguished Visiting Speaker program, faculty searches, student clubs, student symposia, strategic planning, and regular meetings with the Dean. We will review student feedback and databases to monitor and improve the student experiences and outcomes in the school. We will maintain open channels of communication within the school through the weekly newsletters, the SoMAS website, and the SoMAS Facebook site. All faculty members will participate in this action plan.

Objective 3.7: Prepare students for professional careers

Action: We will review and revise current student teaching practicums to ensure maximal effectiveness for our graduate students. We will encourage and assist students in writing external fellowship and scholarship proposals. We will maintain and augment our current scientific communication courses with workshops and seminar on fellowship applications, manuscript, and grant writing, establishing relationships with funding agencies, and pursuing private funding from non-for-profit organizations. We will maintain and grow the student travel award program to encourage all students to attend and

present at professional meetings. We will work to ensure all graduate students publish peer reviewed papers in international journals during the dissertation research at SoMAS. We have an extensive alumni/alumnae database going back over 30 years. We intend to exploit this network for the successful integration of our graduates with the professional community. The GPD will oversee the plan. All faculty members will participate in the actions.

Goal 4: Pursue Excellence in Research

Objective 4.1: Grow PI-driven research projects

Action: We will work with the Office of Vice President for Research to better assist the faculty in maintaining and increasing the level of external research grants. We will organize new research initiatives around the expertise of our new (cluster) faculty hires, engaging faculty members both internal and external to SoMAS. We will invite experts in relevant specialty areas as needed to visit the school to facilitate the development of new research proposals. We will also arrange internal seminars and forums on grant writing for new faculty members. All faculty members will participate in the actions. The Dean will lead the efforts.

Objective 4.2: Develop large interdisciplinary projects

Action: We will encourage and provide all necessary support to faculty to write large interdisciplinary proposals. These large projects, if funded, not only support students and staff, but also drive the core research mission of the school. They also provide high visibility to the school. We will provide staff support and relief in teaching and other obligations to assist faculty in writing large team proposals. The recent New York State Resilience Institute for Storms and Emergencies (NYS RISE) is one of the examples. We will nurture NYS RISE to ensure its success. All faculty members will participate in the actions.

Objective 4.3: Build interdisciplinary research

Action: The recent interdisciplinary faculty clusters will result in joint positions between SoMAS and other units on campus. We will nurture and foster the interdisciplinary areas to grow and strengthen our research portfolio, in particular in environmental economics, environmental management, environmental engineering, environmental health, environmental genomics, and high performance computing. All faculty members will participate in the actions. The Dean will oversee the plan.

Objective 4.4: Enhance interactions with other SUNY campuses

Action: We intend to build on our existing interactions in the Great Lakes and expand our statewide collaborations through the SUNY-4E Initiative (Energy, Environment, Economics, Education). Examples include “water” as a statewide theme, for which we intend to collaborate with other SUNY institutions in potable water demand, flooding during extreme events, aquatic pollution and other topics of impact in NY. An Associate Dean will oversee the plan.

Objective 4.5: Develop research collaborations with other institutions

Action: We will continue to seek and encourage research collaborations with other domestic and international institutions to benefit our research goals. We will also seek opportunities to attract other federal or state research entities to collaborate with the school to augment our research environment. These include the National Weather Service regional forecasting headquarter and/or office, the United States Geological Survey (USGS) water resources group, New York Sea Grant, and the marine division of the DEC. We will work with the University of Connecticut to pursue opportunities of an externally funded joint cooperative research institute. The Dean will lead this action plan.

Objective 4.6: Improve research facilities and professional staffing

Action: We will actively engage the campus facilities personnel in the design of the new SoMAS building on main campus that is in the University Construction Plan. We will ensure flexibility both in the new building design and in the use of our current space to meet our special needs. We will seek opportunities for new major equipment, renovation of existing labs, and additional staffing to support our research programs. We will reassess the space needs of the faculty and optimize the space sharing in the school. We will ensure that SoMAS IT staff support and facilities are sufficient and up to date, including video conferencing, network, troubleshooting, configuration, and security, for both PC and Unix/Linux systems. We will actively seek more stable funding for our professional staff in some of the service centers. The Dean and an Associate Dean will lead this action plan. All faculty and staff will participate.

Goal 5: Enhance Public Outreach and Societal Services

Objective 5.1: Maintain and improve public outreach

Action: SoMAS has a variety of audiences outside of the academic world. These include the general public, prospective students, alumni, resource managers, government officials, non-government organizations, and citizens at large. Many of these groups are already aware of SoMAS and its work as well as the relevance of that work to their specific interests and/or responsibilities. We will seek to expand our abilities in this realm. We will continue our public lecture program at Southampton, keep our website up to date with news stories and publications, continually update our Facebook site, utilize university press releases, and produce biannual reports of SoMAS achievements for the public. We will seek ways to expand the reach of our work through news and social media. We will continue to be engaged in the leadership of such programs as the Long Island Sound Study. SoMAS is the host institution for the New York Marine Sciences Consortium, a consortium of some 25 marine sciences degree-granting programs. This group actively engages in marine policy issues for the purpose of calling attention to the importance of the marine environment within the state. An Associate Dean and the SoMAS IT manager will lead this plan.

Objective 5.2: Enhance engagement with public schools in the region

Action: K-12 schools provide another platform for the dissemination of public science. Through the Achieving a College Education (ACE) Program we now offer introductory oceanographic courses in several high schools, including one in Idaho. In 2014, three of our faculty mentored students named as semi-finalists in the INTEL competition. We intend to build on these networks with high schools to offer University courses for SBU credit, lectures and activities to their students. These courses not only give students the option to earn college credits, but also generate revenues for the school to advance its educational mission. We will also develop educational activities for high school students by taking advantage of our Flax Pond Lab and the new Marine Sciences Center at Southampton. SoMAS will continue to offer its two-week summer course in Oceanography at Southampton specifically designed for high school students. We will specifically continue to expand our summer offerings of introductory levels marine sciences classes for credit for high school students in Southampton and Flax Pond. An Associate Dean, the DUG and GPD, and the Lab Facility Manager will lead this plan. We will continue to support and host the Bay Scallop Bowl, the New York State region's competition that is part of the National Ocean Sciences Bowl. This is an academic endeavor that exposes high school students throughout the country to marine and earth sciences. SoMAS, as of 2015, has hosted 14 Bay Scallop Bowls, which includes 16 high school teams from around the state.

Objective 5.3: Provide societal solutions

Action: We will be adaptive in our research and education to meet the solution needs of marine and atmospheric sciences problems from the society. These include ecosystem restoration in local waters, marine pollutions and ecosystem disruption caused by Superstorm Sandy, resiliency preparedness to storms, wastewater treatment, and other environmental and sustainability problems that require both short term and long term solutions. The Dean will oversee this action plan.

Objective 5.4: Grow private funding

Action: We will continue to work with the university Advancement Office and the SoMAS Dean's Council to grow the donor base and to increase private funding to the school. We will keep regular communications with our alumni and previous donors to build relationships and maintain the trust. We will continue to organize targeted fundraising activities, with priorities on endowed professorships, a SoMAS-specific postdoctoral program, endowed student scholarships, student travel awards, new instruments and facilities, and faculty research. The Dean will lead this action plan.

V. SUMMARY

The missions and objectives of this document will guide the planning, prioritization, resource allocation, and operation in the school. The actions will be carried out through a participatory approach by all faculty, staff, and students. The SoMAS administration and the leaders will mobilize the school community to implement the plans.