

SoMAS Hiring Plan Narrative

A. SoMAS long-term vision and goals:

This document is an outgrowth and updated expression of the SoMAS Vision and Goals that were expressed in our Strategic Plan, “A Vision for SoMAS Science, Education, and Outreach Leadership, 2019-2024” released in April 2019 (<https://www.stonybrook.edu/commcms/somas/about/strategic-plan>), updated via a faculty/staff retreat that was held on 28 January 2022. It is excerpted from our Strategic Plan, currently under revision during the 2021/2022 Academic Year.

The **Mission of SoMAS** is to advance fundamental knowledge and solve critical global and regional problems through the study of natural and human systems, aligning with multiple global, national, New York State (NYS), and SBU initiatives (see section B). Our **Vision** is to be a world-class integrative program in marine, atmospheric and sustainability research and education, committed to a culture that promotes academic excellence, innovation, diversity, equity, and inclusion. All of the wide array of SoMAS faculty, staff, and students’ scholarly pursuits may not fundamentally be about climate change. However, it is certainly the case that climate change significantly influences all environments we study, in terms of physics, chemistry, biology, and geology. Thus, climate change is a common and often integrating theme across all of SoMAS’ disciplines. Since climate change, its mitigation, adaptation, and enhancing resilience are grand challenges for the 21st century, our collective expertise places us in a position of leadership at local, municipal, state, national, and international scales.

SoMAS’ scientific **focus** is directed at developing fundamental understanding of a range of processes primarily within the coastal zone. Forty percent of the global human population lives within 60 miles of the coast, and 26% of all biological diversity is in coastal waters. Our coastal environment consists of complex and interactive natural and built systems. Natural systems have been impacted greatly by human activity including climate change, ocean acidification, eutrophication, hypoxia, habitat destruction, release of pollutants and atmospheric aerosols and their precursors, nutrient cycle alteration, and overfishing. These impacts are especially true for New York State which has experienced rapid coastal population growth (50% in the last 50 years). Our vision and coastal focus connect to our local geography, our history of achievements and stature in the study of marine and atmospheric processes (See slide #1), and SBU initiatives such as Governors Island. To position SoMAS for a vibrant and productive future, and to respond to the challenges facing our natural environment, we herein propose hires that support SBU’s quest to be a world leader in understanding environmental processes and impacts and developing strategies for adaptation and mitigation, focusing on coastal environments. Further, in conjunction with recent entrepreneurial hiring efforts, the highly targeted faculty and staff positions described in this hiring proposal would add disciplinary and interdisciplinary strength, breadth and depth supporting a strong SoMAS as well as SBU’s grander vision of establishing a world-class “College for a Sustainable Earth (CSE).”

Through this vision, we will strengthen and expand SoMAS educational programs and allow more cross-disciplinary degrees and research at SBU. We plan to create a Climate Solutions major across campus, establishing SBU as a leader in climate change education, mitigation and resilience efforts. A transdisciplinary cross-campus Climate Solutions Minor is already under development. A multitude of

cross-disciplinary, federally-supported research opportunities within this theme will naturally evolve from these efforts, and we will be more competitive with successful pursuit of the targeted hires proposed here.

B. Challenges and Opportunities:

SoMAS' mission and current research/educational efforts align with multiple international, national, NYS, and SBU initiatives. The White House Office of Climate Policy has established that climate change is at the top of national priorities, which is reflected in recent RFPs released by NSF, NASA, and NOAA. Successful recruiting efforts will position SoMAS to aggressively pursue these emerging opportunities. The NYS Climate Leadership and Community Protection Act (CLCPA) aims to reduce impacts of climate change, while the US Innovation and Competition Act (USICA) sets a bold vision to advance science and technology to make the US more competitive. SoMAS fits well into the USICA "Natural and anthropogenic disaster prevention or mitigation" mandate as well as NIH plans to substantially increase funding for climate change and human health (e.g. <https://www.niehs.nih.gov/research/programs/climatechange/index.cfm>), and we are aiming to invest in these areas. SoMAS has led efforts working with leaders across campus to develop a workable plan to create and nurture a successful College for a Sustainable Earth, which would create campus-wide educational programs and develop large-scale cross-campus research efforts, aimed at enhancing SBU's federal research support, in areas related to Earth challenges. With examples such as the NYS Center for Clean Water Technology, the Peconic Estuary Program, and SoMAS leadership in the Long Island Shellfish Restoration Program (LISRP), which connects to our recent \$9M infrastructure upgrade at the Flax Pond Marine Lab, SoMAS leverages diverse research support from state, federal, and other sources (see slide #2, Core and Strategic Activities). With the planned recruitments described below, we aim to strengthen critical areas consistent with our vision to better position us for new funding opportunities and support our educational aspirations, and to raise SBU's stature as the flagship SUNY research university. The potential *return on investment* in these areas, in terms of external support for research programs, is substantial; the *return on investment* in terms of fostering understanding and remediation of environmental issues is immeasurable.

C. Our hiring request for 22/23 and 23/24 and beyond:

Reaching our vision will require enhancing our current stature, further growing our research productivity, and recruiting faculty and staff to bridge expertise gaps and support rapid development of critical mass in specific research growth areas. We plan to emphasize four thematic growth areas that are linked by the need to better address the environmental issues from several important angles (described in more detail below): better understanding of coastal physical and ecological systems (Coastal System Processes), anthropogenic impacts on species, biodiversity, reproductive cycles, communities, and ecosystems (Ecosystems on the Move), human adaptations to anthropogenic change, including climate change (Resilient Coastal Communities), and anthropogenic/climate change impacts on human health (Changing Climate and Human Health). These areas are also connected by the current hiring by SoMAS and SOGJ in Climate Change Communications, as well as current EIP hiring in atmospheric boundary layer meteorology, which is related to urban climate and offshore wind resources, and in water policy and economics, which are important climate areas. These hiring initiatives will propel SBU's potential to take advantage of NYS and US priorities of addressing climate and other anthropogenic changes and their consequences within sensitive sectors. These research themes will distinguish SoMAS among peer

institutions, have the potential to substantially enhance funding from diverse sources, attract top quality students, and engage and connect units within SoMAS and across campus.

SBU has the unique opportunity to exploit the combination of an excellent medical school with an outstanding marine science program on the same campus. Arguably only two other campuses in the US, both on the West Coast (Univ. Washington and UC San Diego) have this possibility. Further, SBU helps operate nearby Brookhaven National Laboratory for DOE, with unique facilities for imaging that can be used to address health impacts of pathogens and environmental contaminants, and has close ties to nearby Cold Spring Harbor Labs with their capabilities for exploring molecular and genetic factors that may underlie research on environmentally related diseases. SoMAS should explore hiring joint faculty with both of these institutions as well as with SBU's School of Medicine.

We request authorization to initiate a number of recruitment efforts, as specified in **Slide #4, Hiring Plan and the SoMAS Vision**. The SoMAS five-year hiring plan for faculty and staff positions considers: a) priorities in pursuit of the SoMAS vision; b) broad searches to find outstanding and diverse candidates; c) proactive investment in campus-wide research and educational collaborations; and d) contributions to our goals for leadership, excellence, and a substantial increase in extramural support for SoMAS (our Goal in April of 2019 was to double research expenditures in five years; see current status in **Slide #2**); and e) support recent growth in our SoMAS educational programs. If we do not hire in strategic areas, our research goal will be impossible. Additionally, with student numbers continuing to increase (which we want to support!), then either our research growth will slow further to accommodate the students, or our teaching quality will ultimately degrade, which we cannot accept.

The process of engagement leading to development of our Hiring Plan/Request is described in **Slide #5, Selection Process, Communication, and Transparency**.

Below is the outline of the proposed hires and more details about these positions, including any staff requests that will support SoMAS' research and education activities, consistent with our strategic goals.

Year 1: (1) Coastal System Processes (Assistant rank), (2) Changing Climate and Human Health (50/50 with PPH/Medical School; Assistant Rank), (3) Marine Ecological Modeler (50/50 with IACS; Assistant Rank).

The *Coastal Processes* position improves our current expertise in understanding an integrated system that includes seabed, air-sea, and land-sea boundary processes, internal water column processes, and changes in extreme coastal storms, land use, urban inputs, and hydrology in the context of expanding population pressure and climate change. We also seek to build our expertise base by hiring an *Ecological Modeler* to better understand processes driving population, community, and ecosystem change across multiple levels from physical, biogeochemical, plankton, fisheries, and marine mammals to ecosystem dynamics. Both the physical and biotic changes experienced within the coastal zone will have impacts on human health, thus a need for a position covering issues in *Changing Climate and Human Health*. Some important topics include how ocean-derived and/or photochemically generated particles (aerosols) can impact human health, seafood contamination, and sustainable aquaculture.

Year 2: (1) Equitable and Just Climate Change Adaptation and Hazard Mitigation; (2) Movement Ecology (Open Rank); and (3) Coastal System Processes (Assistant Rank).

We need resilient coastal human communities to mitigate anthropogenic change, which motivates a position in *Adaptation and Hazard Mitigation*. This person will collaborate to complement the Year 1 hires and other units on campus to address issues such as environmental justice, adaptation strategies, and public policy related to coastal hazard mitigation and resilience. Meanwhile, we propose to hire a *Movement Ecologist*, someone who applies chemical tracers, oceanographic knowledge, modern telemetry, and numerical modeling to better understand the processes driving marine animal movement and ecosystem change and to better predict their response to perturbations, such as changes in thermal regimes and other climate change impacts, shoreline evolution as sea level rises, overfishing, and the emerging deployment of offshore wind structures. A second *Coastal Processes* position is proposed to complement and expand our research expertise in ocean processes and human-ocean interactions, and build critical mass in this important area.

Years 3-5: Meeting our goals to be a world leader in coastal processes points to the need for at least six more hires in the four thematic growth areas we listed earlier. Most will be at Assistant Professor Rank.

Staff hiring: The realization of our vision is also dependent on having highly capable and adequate SoMAS support staff to help us rise to our potential, and support state-of-the-art capabilities that help us to push disciplinary boundaries. We recommend these hires below to enhance and enable modern and capable research and operations: (1) Financial coordinator to support faculty-driven research activities; (2) Full-time position to engage mass media, outreach, and the public directly, to promote the impact of our research and engagement; and (3) Administrative assistant who can support the Marine and Sustainability Divisions as well as other SoMAS-wide administrative activities.

D. Fiscal Context in support of the SoMAS vision:

For FY 22/23 and 23/24

- Slide number 3 outlines our growing research enterprise, increased enrollments, and decreasing faculty and staff complement. The university cannot achieve its goals if such trends are not corrected.
- We must rebuild our faculty and staff complement in a strategic approach aimed at achieving our goals and enabling us to capitalize on our great opportunities, in light of new investments at municipal, state, and national levels, as well as the growing interest of students in understanding and protecting the natural environment.
- Over the past two years, SoMAS IDC and IFR cash reserves have been rapidly depleted. The current remainder of SoMAS IFR funds is largely committed to existing SoMAS start-up, retention, and other special projects.

If we do not or cannot invest as proposed (**Slide #4**), SoMAS' base of historical strength in coastal processes will be severely degraded, to the detriment of our intended competitive advantage in the pursuit of rapidly emerging and expanding philanthropic, private, federal, state, and municipal investments in climate and environmental research, and building resilience against climate change in New York coastal and urban environments.

Conversely, each proposed hire would add to SBU's building reputation for research excellence, and attracting and serving the best students. We are aggressively aiming to increase the diversity of our faculty, staff, and students, while articulating a vision and research goals and opportunities that will attract high achievers to Stony Brook University. SoMAS intends to be a key contributor to taking SBU to the next level of excellence in academic and research stature.