

## Who we are / Mission Statement

Welcome to the School of Marine and Atmospheric Sciences (SoMAS) at Stony Brook University. We are the State University of New York's center for marine and atmospheric research, education, and public service. Currently, there are more than 500 undergraduate and graduate students and 90 faculty and staff from 16 different nations working together to better understand how our marine, terrestrial, and atmospheric environments function and are related to one another. Research at SoMAS explores solutions to a variety of issues facing the world today ranging from local problems affecting the area around Long Island to processes that are impacting the entire globe.

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# School of Marine and Atmospheric Sciences

## New Faculty Appointments 2012 – 2015



Stony Brook University  
**School of Marine and  
Atmospheric Sciences**



The picture above is the new 15,000-square foot, two-story Marine Sciences Center located on its Southampton campus. Already home to cutting edge and internationally recognized research on harmful algal blooms, ocean acidification, seagrasses, shellfish, and ocean acoustics, this new facility has greatly expand the research capabilities of SoMAS in Southampton. These expanded abilities ultimately benefit Long Island and its coastal ecosystems as a majority of the research in Southampton focuses on our local bays, harbors, and estuaries.

The central feature of the new facility is a computerized, state-of the-art 2,500-square-foot indoor seawater lab, which is capable of supplying three different seawater scenarios; ambient, temperature control and a closed recirculation system. The ambient seawater line allows researchers to mimic the seasonal temperature changes of Shinnecock Bay by pulling water directly from the bay to supply various research tanks. With temperatures fluctuating between approximately 1°C during the winter and 26°C in the summer, a temperature control line is able to instantly heat or chill incoming water to any temperature desired by a researcher. For research requiring very specific water quality parameters, the closed recirculation system allows for greater control of not only temperature, but salinity and various other aspects of the water chemistry.



## Dean's Introduction to the SoMAS New Faculty Brochure

It is with great pleasure that I introduce to you the new faculty in the School of Marine and Atmospheric Sciences (SoMAS) whom we hired over the last three years. From marine genomics to coastal engineering, from biogeochemical element cycling to fishery ecology, from the study of extreme weather to climate change, our new colleagues bring an infusion of new expertise and energy to the School. Each and every one of them is among the best in his or her respective field.

In the last one and a half centuries -- a very short time in the history of human civilization -- economic development and population growth around the world have greatly impacted the air we breathe, the water we drink, and the natural world we enjoy. Environmental challenges to human society are numerous, and they will continue to grow when people deservedly strive for better lives. As a premier marine and atmospheric sciences institution in the world, SoMAS has been at the forefront to advance new knowledge on how human and nature interact, to design solutions of restoring, preserving, and protecting the natural environment, and to find methods of using sustainable marine resources for food, energy, and medicine. We also educate undergraduate and graduate students to be responsible citizens and future leaders in their professions.

The 17 new faculty members in this brochure have enriched the scope of SoMAS research and education. They also add greater depth to our existing strength. I invite you to join me in wishing them success in their pursuits of excellence in research, education and service to society!

**Minghua Zhang**, Dean and Director  
School of Marine and Atmospheric Sciences

We are the State University of New York's center for marine and atmospheric research, education, and public service. Currently, there are more than 500 undergraduate and graduate students and 90 faculty and staff from 16 different nations working together to better understand how our marine, terrestrial, and atmospheric environments function and are related to one another. Research at SoMAS explores solutions to a variety of issues facing the world today ranging from local problems affecting the area around Long Island to processes that are impacting the entire globe.

The SoMAS faculty are internationally known for their leadership in research in both the atmospheric sciences and all the major disciplines of oceanography – biological, chemical, geological, and physical. The expertise of SoMAS faculty places them in the forefront in addressing and answering questions about immediate regional problems, as well as long-term problems relating to the global oceans and atmosphere. The primary focus of the SoMAS faculty and students is on fundamental research designed to increase understanding of the processes that characterize the coastal ocean and the atmosphere. But the SoMAS is also committed to the applying research to solve problems that result from society's uses and misuses of the environment.

# Research Overview

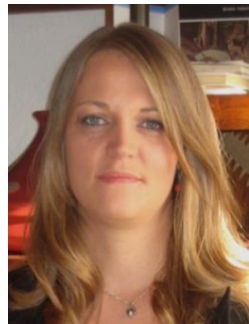


## Steven R. Beupré

Assistant Professor

**Ph.D., 2007, M.S., 2003, Earth System Science, University of California, Irvine**  
**B.S., 1999, Chemistry, SUNY Environmental Science & Forestry**

Dr. Beupré's research constrains the ocean's role in Earth's climate system by examining the marine component of the global carbon cycle. Specifically, he investigates the provenance and reactivity of organic carbon in the sea by coupling radiocarbon dating with chemical analyses. His work has appeared in *Nature Geoscience*, *Geophysical Research Letters*, *Nuclear Instruments and Methods in Physics Research*, and *Fusion: Journal of the American Scientific Glassblowers Society*, and he has contributed several textbook chapters on carbon isotopes in the sea.



## Nolwenn Dheilly

Assistant Professor

**Ph.D., 2010, Biological Sciences, Macquarie University, Sydney, Australia**  
**M.S., 2005, Biology and Biotechnology, Université des Sciences et Technologies, Lille, France**  
**M.S., 2004, Population Biology & Marine Ecosystems, Université de Bretagne Occidentale, Brest, France**

Dr. Dheilly uses state of the art functional genomics approaches to study the ecology and evolution of host-parasite interactions. Dr. Dheilly's work focuses on three areas at the intersection of ecology, immunology, parasitology and microbiology. She is investigating the role of host-parasite interactions in the diversification of immune response proteins and has participated in the discovery and characterization of different highly variable immune response molecules. She is currently developing a new field of research that goes beyond the study of host-parasite interactions by integrating the role of all host and parasite-symbionts in the outcome of the infection. Finally, she is interested in the effect of global warming on ecosystems through its interference in the stability of host-symbiont interactions.

The research being conducted at SoMAS seeks to understand the way our marine, atmospheric, and terrestrial environments function; as well as the impact of human interactions with these systems. These problems all require knowledge from multiple disciplines and the School of Marine and Atmospheric Sciences encourages interdisciplinary research. Unlike many other places, we do not have traditional departments. What we do have is a large number of faculty and students who work together to better understand our planet.

One way of understanding the research that is done here at SoMAS is to look at the traditional scientific disciplines that our faculty came from. Clicking on any of these specific disciplines will provide a list of current SoMAS faculty and their research projects that uses the knowledge from these disciplines. You'll notice that many faculty appear under more than one discipline and that is because most modern problems require interdisciplinary knowledge.





## Christopher Wolfe

Assistant Professor

**Ph.D., 2006, Oregon State University**

Dr. Wolfe's research spans a broad range of topics in theoretical physical oceanography and modeling. His dissertation, "Quantifying Linear Predictability in Periodic and Aperiodic Systems," examined the mathematical relationships between dynamical systems theory and numerical weather forecasting. Since then, Wolfe has studied the generation of

ripples on the ocean surface and has performed laboratory and numerical experiments involving the stability of boundary currents. Recent work has primarily focused on the interplay between mesoscale ocean eddies and the large scale circulation of the ocean, with a particular focus on the global thermohaline circulation. His research has been published in the *Journal of Physical Oceanography*, *Ocean Modelling*, *Geophysical Research Letters*, *the Journal of Atmospheric Research*, *Tellus*, *the Journal of Fluid Mechanics*, and *the Journal of Physics A*. He regularly attends the *American Geophysical Union's Ocean Sciences Meeting* and the *American Meteorological Society's Atmosphere Ocean Fluid Dynamics Meeting*.



## Jie Yu

Associate Professor

**Ph.D., 2000, Civil and Environmental Engineering, Massachusetts Institute of Technology**

**M.S., 1993, Computational and Applied Mathematics, Florida State University**

**B.S., 1989, Mechanical Engineering, University of Sciences and Technology of China**

Dr. Yu's research is in the general area of environmental fluid dynamics, with particular interests in ocean waves, coastal currents, sediment transport, morphodynamic and hydrodynamic instabilities. Though focused on theoretical basic research, much of her work is motivated by applications and problems of coastal engineering and oceanographic interests. Guided by experiments and observations, and with judicious use of mathematical methods, Dr. Yu focuses on carefully formulated theoretical studies of complex fluid phenomena in simplified settings, developing better knowledge and understanding on issues relevant to sustainability, climate and energy in natural environments. Dr. Yu is a recipient of NSF CAREER Award in 2009 for developing research and education in Coastal Dynamics and Environmental Fluid Mechanics.



## Anthony Dvarskas

Assistant Professor

**Ph.D, 2007, Marine-Estuarine-Environmental Sciences, University of Maryland**

**B.S., 1999, Biology, Washington and Lee University**

Dr. Dvarskas is an environmental economist in the School of Marine and Atmospheric Sciences and also teaches courses with the Sustainability Studies Program. His most recent position was

with the United Nations in New York, working on the System of Environmental-Economic Accounting and its Experimental Ecosystem Accounting framework. Prior to the United Nations, he worked as an economist in the Office of Response and Restoration at the National Oceanic and Atmospheric Administration from 2008 through 2012, where he focused on valuing losses to the public (e.g., oil spills, Superfund sites) and benefits from restoration activities



## Ali Farhadzadeh

Assistant Professor

**Ph.D., 2011, Coastal and Ocean Engineering, Center for Applied Coastal Research, University of Delaware**

**M.S., 2009, Coastal and Ocean Engineering, Center for Applied Coastal Research, University of Delaware**

Dr. Farhadzadeh's research areas include numerical and experimental modeling of storm surge and wave, sediment transport and nearshore morphology evolution, wave-coastal structure interaction and sea level rise and storm intensification impact on coastal communities. Dr. Farhadzadeh is a Professional Civil Engineer (PE) with significant industrial experience. Prior to joining Stony Brook University, he was a Senior Engineer and a Technical Specialist at Bechtel Corporation. Dr. Farhadzadeh received his Ph.D. and M.Sc. in Coastal and Ocean Engineering from Center for Applied Coastal Research (CACR) at the University of Delaware. He also earned a M.Sc. in Hydraulic Structures from Tarbiat Modares University (TMU) and a B.Sc. in Civil Engineering from University of Tabriz, Iran. He has authored several journal papers and conference proceedings.



## Michael French

Assistant Professor

**Ph.D., 2012, Meteorology, University of Oklahoma**

**M.S., 2006, Meteorology, University of Oklahoma**

**B.S., 2003, Atmospheric Sciences, Cornell University**

Michael French earned his doctorate degree from the University of Oklahoma in 2012 where he specialized in using experimental mobile, ground-based, Doppler radars to obtain and analyze data in supercell thunderstorms and tornadoes. His main research interests are Doppler weather radar applications using emerging weather radar technologies and obtaining a better understanding of the dynamics of mesoscale phenomena using observational data. Most of his work thus far has focused on observations of warm season convection, though he also is interested in cool season systems like mesoscale snow banding. Michael has published research papers in several meteorological journals including the *Journal of Applied Meteorology and Climatology* and *Monthly Weather Review*.



## Hye-Mi Kim

Assistant Professor

**Ph.D., 2008, Atmospheric Science, Seoul National University, Korea**

**M.S., 2004, Atmospheric Science, Seoul National University, Korea**

**B.S., 2001, Earth Science Education, Ewha Woman's University, Korea**

Dr. Kim's general area of research is climate variability on timescales ranging from a few weeks to several decades which span a wide range of topics from extreme weather events to large-scale climate variability. More specifically there are four focus areas: Prediction and predictability of climate variability from intraseasonal to decadal timescales, large-scale ocean-atmosphere coupled dynamics, tropical cyclone activity in a changing climate, and climate impact on marine ecosystem. Prior to joining Stony Brook Univ., Dr. Kim was a senior research scientist at Georgia Institute of Technology. She is the recipient of the Best Ph.D. Thesis Award from the Korean Meteorology Society and Best paper award from Georgia Tech/EAS.



## Nils Volkenborn

Assistant Professor

**Doctor of Science (Dr. rer. nat.), 2005, University of Bremen, Germany.**

Dr. Volkenborn's research is centered on the intersection of marine sediment biogeochemistry and benthic ecology. He is particularly interested in animal-sediment relations in the seafloor and in the linkages between key benthic species and ecosystem function. Prior to joining Stony Brook Dr. Volkenborn worked as researcher in the Department of Coastal Ecosystem Dynamics at the French Institute for Exploitation of the Sea (Ifremer) in France. Between 2008 and 2013 Dr. Volkenborn was a postdoctoral research fellow in the Department of Biological Sciences at the University of South Carolina, Columbia, SC, and between 2006 and 2008 in the Department of Coastal Ecology at the Alfred Wegener Institute for Polar and Marine Research, Germany. In parallel to his PhD research he participated in the International Max Planck Research School of Marine Microbiology, Bremen, Germany.



## Laura Wehrmann

Assistant Professor

**Ph.D, 2010, Max Planck Institute for Marine Microbiology, Bremen**

Dr. Wehrmann's research focuses on several aspects of (bio)geochemical element cycling in marine systems, ranging from subseafloor sediments to glacially influenced fjords. She is specifically interested in the drivers of early diagenetic processes and the connections between different element cycles, e.g., the carbon, sulfur and iron cycles. She also investigates the response of microbially mediated processes in the deep sub-seafloor biosphere to changing (paleo)environmental conditions over different temporal and spatial scales. Her work combines classical inorganic geochemical techniques with stable isotope analyses and the application of radiotracer methods.



## Carl Safina

Endowed Research Chair Professor for Nature and Humanity

**Ph.D., 1987, Ecology, Rutgers University**  
**M.S., 1981, Ecology, Rutgers University**  
**B.A., 1977, Environmental Science, State University of New York at Purchase.**

Carl Safina's work explores how the durability of human dignity will depend on survival of the natural world. Dr. Safina has helped lead campaigns to ban high-seas driftnets, overhaul U.S. fisheries law, achieve a United Nations fisheries treaty, and reduce albatross and sea turtle drownings on commercial fishing lines. Along the way, he became a leading voice for conservation. His books include *Song for the Blue Ocean*, *The View From Lazy Point* and his latest *Beyond Words: What Animals Think and Feel*. He is host of *Saving the Ocean* <<http://www.pbs.org/programs/saving-the-ocean/>> on PBS television. He is founder of the Safina Center at Stony Brook University, where he co-chairs the Alan Alda Center for Communicating Science. Safina's writing has appeared in *The New York Times*, *National Geographic*, *Audubon*, and others. *Audubon* magazine named him among the 100 most influential conservationists of the 20th Century. He has won Pew and Guggenheim fellowships, and his various laurels include the John Burroughs Medal, National Academies' Science Communication Award, Lannan Literary Award, Orion Book Award, and a MacArthur "genius" Prize.



## Lesley Thorne

Assistant Professor

**Ph.D., 2010, Ecology, Duke University**

Dr. Thorne's research interests focus on understanding the environmental factors that underlie the ecology, habitat use and conservation issues facing different marine predators. In particular, much of Dr. Thorne's work applies spatial analysis and landscape ecology techniques to examine how oceanographic and bathymetric features influence the habitat use of marine predators. She is also interested in long-term projects that can be used to document how previous populations of marine predators have responded to ecological change, and how we can use this knowledge to inform and predict future change. Ongoing examples include a study examining how oceanographic change has influenced the habitat use and reproductive success of North Pacific albatrosses over a 30-year period, and a long-term study investigating changes in the diet of loggerhead sea turtles over the last 25 years in relation to broad-scale ecological change.



## Pavlos Kollias

Professor

**Ph.D., 2000, Meteorology, University of Miami**  
**M.S., 1996, Environmental Physics, University of Greece**  
**B.S., 1994, Physics, University of Greece**

Kollias is an international leader in the application of short wavelength radars for cloud and precipitation research from ground-based and space-based platforms. He is the leader of the DOE Atmospheric Systems Research (ASR) radar science group. He is a member of the Mission Advisory Group and algorithm development team of the European Space Agency Earth Clouds Aerosols Radiation Experiment (EARTHCARE) Explorer Mission. He has served as a member at the National Science Foundation Engineering Research Center for the Collaborative Adaptive Sensing of the Atmosphere. Kollias also served for three years (2007-2009) as Associate Chief Scientist for the US DOE Atmospheric Radiation Measurements (ARM) program. He has served as the Chair of the American Meteorological Society (AMS) Committee on Radar Meteorology and has organized and chaired numerous sessions in AMS, AGU and ASR conferences.



## Janet Nye

Assistant Professor

**Ph.D., 2008, Marine Estuarine & Environmental Science, University of Maryland**  
**M.S., 2002, Marine Biology & Biochemistry, University of Delaware**  
**B.S., 1996, Biology, Duke University**

Dr. Nye is a quantitative fisheries ecologist and uses mathematical and statistical methods to study fish populations and coastal ecosystems. Interested in a variety of issues in fisheries ecology, her research is focused on how climate variability and anthropogenic climate change affects *fish populations, marine ecosystems and fisheries*. Her research seeks to understand how large scale climate variability (like the NAO and AMO) translates to more local oceanographic processes and how those processes influence North Atlantic ecosystems. Dr. Nye works with climate scientists using IPCC-class global climate models to project changes in abundance and distribution of living marine resources



## Emmanuelle Pales-Espinosa

Research Scientist and Adjunct Assistant Professor

**PhD, 1999, Marine Biology from the University of Nantes (France)**

Dr Pales Espinosa is a Research Scientist and adjunct Assistant Professor at Stony Brook University and an active member of the MADL. She obtained a PhD degree in Marine Biology from the [University of Nantes](#) (France)

working on microalgae ecology and effects of biotic and abiotic factors on microalgae assemblages. Her post-doc (in France and in the US) focused on the interactions between suspension-feeding bivalves and their preys. She is co-PI and lead PI on several projects with Allam with research spanning various aspects of bivalve-microbe interactions with a particular focus on the mechanisms of particle selection in suspension-feeding bivalves.



## Roy Price

Adjunct Assistant Professor

**Ph.D., 2008, University of South Florida, Tampa, FL**

Dr. Price's research interests generally focus on element cycling in the hydrological cycle. As such, he is interested in a wide range of topics. However, his primary focus is on the geochemical evolution of hydrothermal vent fluids, particularly for shallow-sea vents, and

the consequences this has for toxic metal cycling, bioaccumulation and microbial communities in these important coastal environments.

Shallow-sea hydrothermal vents are generally defined as occurring at a water depth < 200 m, a depth which marks the deepest extent of the photic zone and coincides with a large change in the slope of the seawater boiling curve. Their easy accessibility, relative to deep-sea hydrothermal systems, makes them excellent natural laboratories to study a wide range of chemical, physical, and biological processes and he has undertaken several research projects related to these types of hydrothermal vents.



## Kevin Reed

Assistant Professor

**Ph.D., 2012, University of Michigan**

Kevin Reed's research focuses the ability of global models to simulate extreme weather events, such as tropical cyclones, and how such extreme events change in a changing climate. Prior to joining Stony Brook University, Dr. Reed was a postdoctoral research at the National Center for Atmospheric Research in the Advanced Study

Program and also spent time as an American Geophysical Union Congressional Science Fellow. Kevin received his Ph.D. in 2012 from the University of Michigan where he studied the ability of NCAR's Community Atmosphere Model (CAM) to simulate tropical cyclones at high-resolutions (< 50 km grid spacing).



## Tara Rider

Lecturer

**Ph.D., 2014, History, Stony Brook University**

Tara Rider's research interests focus around how maritime environments have shaped societies around the world, with an emphasis on the Atlantic world. She is interested in exploring how historical decisions have shaped not only the physical environment, but also society's evolving views of nature,

especially the waterways. Human responses to the different types of environmental conditions and physical landscapes have shaped social thoughts and attitudes. Her current research has been centered on the geo-politics of sixteenth century Ireland and includes a study in how gender becomes symbolic of the turmoil involved in colonization. The linkage of gender and race with landscape is about questions of power, culture, and identity. She has presented on this research at several national and international conferences.