

## INVENTORY OF SUSTAINABILITY RESEARCH

### SCHOOL OF LAW

Name	Affiliation	Sustainability Research
Tony Alfieri	School of Law	environmental justice clinic (which happens to be collaborating this year with academics in South America on the rights of climate refugees)
Felix Mormann	School of Law	environmental law, energy, and corporate law
Ileana Porras	School of Law	international law of sustainable development, trade, and environment
Rick Williamson	School of Law	international environmental law
Jim Nickel	School of Law	environmental ethics and the intersection of the environment and human rights

### RSMAS

Name	Affiliation	Sustainability Research
Bruce Albrecht	Atmospheric Sciences	Atmospheric Convection, Boundary Layer Structure and Clouds, Aircraft Turbulence and Microphysics Measurements, Cloud-Climate Interactions, Tropical Meteorology, Remote Sensing of Clouds and Precipitation. University of Miami Radar Group
Elliot Atlas	Atmospheric Sciences	My research interests are in the sources, transport, and transformation of atmospheric trace gases in the global atmosphere. This work has a primary focus on trace gases and aerosols associated with the formation and destruction of ozone in the atmosphere. The research involves development and application of advanced trace gas sampling and measurement techniques. My research group investigates the distributions and trends of a large variety of halocarbons (both natural and man-made), hydrocarbons, and photochemical oxidation products of these species (such as organic nitrates). The research extends from studies of sub-surface distribution of trace gases in the polar firn record to studies of urban and regional chemical distributions of short-lived tropospheric gases to measurement of halocarbons in the stratosphere up to 32 km altitude. The research platforms include tropospheric and stratospheric aircraft (C-130, P-3B, ER-2, WB-57), high altitude balloons, oceanographic research ships, and land and island-based experiments. New work at RSMAS will develop techniques to examine the organic content of aerosol particles to investigate the formation and

		chemistry of secondary aerosol products and their impact in the global atmosphere.
Jerald S. Ault	Marine Ecosystems & Society	Development of large-scale dynamic ocean ecosystem models to assess sustainability risks of multispecies coral reef and coastal gamefish resources from exploitation and environmental changes
Elizabeth Babcock	Marine Biology & Ecology	We evaluate the impact of marine reserves and fishery management measures such as quotas and size limits on the sustainability of marine fisheries and ecosystems.
Andrew Baker	Marine Biology & Ecology	I am a marine biologist interested in the biology, ecology and conservation of coral reefs, with a focus on the impacts of climate change on these ecosystems. Much of my research studies corals from the perspective of their algal symbionts (zooxanthellae in the genus <i>Symbiodinium</i> ). Many corals have the ability to host different types of algal symbionts, and this flexibility helps them adapt to environmental variability. My lab has been assessing how important and widespread this ability is, and how it affects the response of corals (and the ecosystems they build) to climate change. Much of this work involves the study of molecular systematics and ecology (since these symbionts are most readily identified from their DNA), but this work also has a strong experimental focus in Miami, using corals growing in indoor and outdoor facilities, as well as fieldwork on coral reefs worldwide. Additional interests include population genetics and ecological physiology of coral reef organisms (including coral bleaching), marine conservation biology, and fostering better communication of science to public and policy audiences.
Lisa Beal	Ocean Sciences	Broadly, my research interests are in large scale ocean circulation and the role of the oceans in climate and climate change. In particular, the measurement of Western Boundary Currents, such as the Agulhas Current, in terms of their structure, transports, water masses, and mixing, and the estimation of basin-wide thermohaline fluxes in the Indian and Atlantic Oceans. I use a variety of oceanographic instrumentation, including lowered and shipboard acoustic velocity profilers, and moored arrays of current meters and CTDs (Conductivity, Temperature, Depth). I study the role of the Agulhas system in the broader context of regional and global climate through analysis of ocean eddy-resolving coupled climate models. My service work revolves around increasing the diversity of our scientific community, including the retention of women in oceanography, and

		the advancement of capacity and resources to support a sustained measuring program of the Greater Agulhas System off South Africa.
Daniel Bennetti/Ronald Hoenig	Marine Ecosystems & Society	The Aquaculture Program at the Rosenstiel School of Marine and Atmospheric Science is leading the way in the development of hatchery technology, land-based and offshore aquaculture and nutrition. The Academic and Research Program is recognized as playing a major role in sustainable aquaculture through scientific research, hands on training, and technology transfer to commercial operations around the globe to ensure the future of seafood production
Larry Brand	Marine Biology & Ecology	Some algal species, particularly cyanobacteria and dinoflagellates, produce toxins that affect other biota, including humans. Some of the toxins are fast acting, causing gastrointestinal and/or neurological disorders within minutes, hours, or days. Others can cause liver damage, neurodegenerative diseases, or cancer, which do not develop until years or decades later. I am studying Harmful Algal Blooms of cyanobacteria and dinoflagellates in Florida coastal waters.
Kenneth Broad	Marine Ecosystems & Society; Director, the Abess Center for Ecosystem Science & Policy	Ecological anthropology, climate and society interaction, environmental policy
Shuyi Chen	Ocean Sciences	Air-sea interactions, coupled atmosphere-wave-ocean modeling of tropical cyclones and coastal systems, atmospheric convection and intraseasonal variability, tropical and mesoscale meteorology, and numerical weather prediction.
Amy Clement	Atmospheric Sciences	My research interests focus on some fundamental questions about the behavior of the climate system. How sensitive is the Earth's climate to external forcing? Is abrupt change a characteristic of the climate? What are the mechanisms of climate change? Several of these questions arise out of the paleoclimate record. In addition to observed major swings in global ice volume over the past 600,000 years (the so-called "Ice Ages"), there are superimposed abrupt changes that can happen on the order of decades. The paleoclimate record gives us an idea of the dramatic range of climate behavior that is "natural." It is essential to understand the mechanisms behind these changes in order to put our present climate into the proper context, and to understand and predict how the climate may change in the future as anthropogenic greenhouse gases increase.

		<p>To address these questions, I use mathematical models of the climate. These range in complexity from one-dimensional approximations of the climate to global, three-dimensional models (general circulation models- GCMs). My focus has generally been on the tropical coupled ocean-atmosphere system, and in particular on the El Niño/Southern Oscillation (ENSO). As the largest mode of variability in the modern climate, understanding the whys and hows of past changes in (ENSO) are essential in answering fundamental questions about the behavior of the climate system, and are highly relevant for addressing the problem of how climate may change in the future.</p>
Evan D'Alessandro	Marine Biology & Ecology	<p>Overarching is the sustainability and ecology of tropical marine fish populations. Specifically: Age, growth and movement patterns of the invasive lionfish in Florida. Identity, spatiotemporal patterns, and importance of tropical pelagic forage fishes. The ecology and biology of barracuda and associated Ciguatera fish poisoning.</p>
David Die	Marine Ecosystems & Society	<p>Development of mathematical and statistical models (both for prediction and estimation) to support natural resource management. I give scientific advice on fishery resources and provide quantitative auditing of management performance. I have a special interest in developing an understanding of the mechanisms that are key to the sustainability of fisheries. I have worked for 25 years on research devoted to the assessment and management of tropical fisheries worldwide (Oceania, Asia, Latin America and Africa) and my research has been instrumental in the development of major management changes (fishing closures, fleet capacity reductions) in several fisheries. Presently, I am doing work in the assessment of tuna, billfish and reef-fish fisheries in the Atlantic and Pacific Oceans. I have current collaborative research links with scientists in fishery Institutions all around the world.</p>
William Drennan	Ocean Sciences	<p>Air-sea interaction, turbulence, boundary layers, surface gravity waves.</p>
Gregor Eberli	Marine Geosciences	<p>Seismic stratigraphy, carbonate platform evolution and architecture, basin analysis, petrophysics of carbonates.</p>
Nelson Ehrhardt	Marine Ecosystems & Society	<p>Tropical fishery research is complex because of complicated population dynamic processes exhibited by tropical fish species. Efforts to assess the effects of fishery exploitation on these resources are usually marred by the considerable uncertainties associated with growth, mortality and reproductive characters of the</p>

		species and the multi-species multi-gear character of the fisheries. My research interests are on the population dynamics of tropical fisheries such as coastal pelagics, billfishes and tunas, crustaceans (stone crabs, shrimp and lobsters), reef fishes (snappers and groupers) and squids. In conjunction with the above, I am involved in developing techniques and methods to study tropical fish stocks including simulation modelling and fishery management. I teach courses in Biometrics in Marine Science, Advance Biometrics in Marine Science, Marine Population Dynamics, and Fishery Biology Laboratory.
Rana Fine	Ocean Sciences	The overall goal of our research is to understand the role of the ocean in climate change occurring on time scales of up to decades. Our research involves understanding the physical processes that influence the capacity of the ocean to take up atmospheric constituents, such as carbon-dioxide a greenhouse gas, and oxygen which ventilates the ocean. On time scales of decades, there are two main physical processes that affect the way the ocean and atmosphere interact. First is by air-sea exchange, where we have been using satellite and oceanographic observations to map variability of the global surface ocean alkalinity, a measure of the ability of seawater to neutralize acids. Second is by circulation and mixing of waters within the ocean. We have been using transient tracers to study where atmospheric gases are transported or their pathways, how long they take to get there, and changes in their ventilation time scales. We participate in several international Global Change programs. Our contribution includes the measurement and analysis of transient tracers, chlorofluorocarbons (CFCs) and sulfur hexafluoride (SF6). These tracers are like a dye showing pathways of newly ventilated waters, and their concentrations relative to their atmospheric histories and to each other give time scale information in the context of models.
Hans Graber	Ocean Sciences	Surface wave dynamics, microwave remote sensing of ocean processes, air-sea interaction and boundary-layer dynamics.
Martin Grosell	Marine Biology & Ecology	Research activities in my laboratory include studies of comparative fish physiology and aquatic toxicology. Within comparative physiology, a particular area of interest is osmoregulation in freshwater, marine and euryhaline fish. An additional field of research is copper homeostasis in fish. Toxicity of metals to both freshwater and seawater invertebrates and fish is also at focus with special emphasis on physiological mechanisms of metal toxicity. The above research areas are pursued

		through whole animal studies, biochemical and electrophysiological studies on isolated tissues and organs as well as molecular techniques. Surgical procedures and isotopic techniques are employed.
Neil Hammerschlag	Marine Ecosystems & Society	Assessing shark decline, the effect of urbanization on their behavior and health, determining sustainable fishing practices, and testing the efficacy of marine protected areas for threatened sharks.
Dennis Hansell	Ocean Sciences	Biogeochemical cycling of the major elements (carbon, nitrogen, etc.), particularly through dissolved organic matter (DOM). Open ocean and polar seas; times series, ocean sections, and process studies. Air-sea interactions; biogeochemical processes of both surface and deep ocean waters.
Brian Haus	Ocean Sciences	Experimental studies of coastal ocean surface currents for application to oil spill transport prediction and response ( <a href="#">CARTHE</a> ); radar remote sensing of oceanographic processes from satellites in collaboration with <a href="#">CSTARS</a> and from coastal radars ( <a href="http://iwave.rsmas.miami.edu">http://iwave.rsmas.miami.edu</a> ); shelf and inlet dynamics; wave-current interactions; laboratory studies of air-sea interactions in extreme winds, wave dynamics, turbulence and coastal structure design in the SUSTAIN laboratory.
Gary Hitchcock	Marine Biology & Ecology	Our laboratory studies the environmental factors that regulate primary production and respiration in pelagic ecosystems, and more recently, the trophic transfer from primary to secondary producers. Our main regions of interest are the Florida shelf and estuaries as well as the eastern Gulf of Mexico, including the Mississippi River plume and oligotrophic Gulf waters. In the RSMAS Oceans and Human Health Center, we are supported to study the Florida 'red tide' organism, <i>Karenia brevis</i> , and concentrate on its production and respiration in natural populations and cultures, as well as the fate of brevetoxin in coastal communities. A graduate student, Ms Sharein El-Tourky, is examining the secondary productivity of several copepods of <i>Farranula spp.</i> These copepods are key prey for the larvae of several commercially-important fish species in the Florida Current and Florida Reef Track. This research is as a cooperative effort with Prof. Sharon Smith.
William Johns	Ocean Sciences	Dr. Johns is a seagoing oceanographer specializing in the use of long-term moored instrumentation to study ocean circulation. His research involves studies of the large-scale wind-driven circulation, with emphasis on the dynamics of western boundary currents, and on deep flows related to the global thermohaline circulation

		and climate variability. Dr. Johns also studies the dynamics of straits and the exchange processes between the oceans and marginal seas, including marginal sea overflows. Research programs are currently underway in several regions of the Atlantic Ocean, including the Bahamas, the Equatorial Atlantic, and the major Caribbean passages. Other active research areas include the Red Sea, the Arabian Gulf, and the Gulf of Aden in the western Indian Ocean.
Igor Kamenkovich	Ocean Sciences	Dr. Kamenkovich is studying ocean dynamics and its role in climate, and his research has focused on mesoscale (tens to hundreds of kilometers) and large-scale (hundreds to thousands of kilometers) ocean currents, and on how these currents influence the atmosphere. Dr. Kamenkovich combines theory, numerical models and observational data to achieve the most complete understanding of these complex processes.
Ben Kirtman	Atmospheric Sciences; Director, Cooperative institute for Marine & Atmospheric Studies	Dr. Kirtman uses complex coupled ocean atmosphere general circulation models to investigate the predictability of the climate system on time scales from days-to-decades and to study the influence of tropical variability on mid-latitude predictability.
Vassiliki Kourafalou	Ocean Sciences	Dynamics of continental shelves and marginal seas, physical and ecosystem numerical modeling, observational networks
Chris Langdon	Marine Biology & Ecology	Ocean Acidification and Coral Reef Countries at Risk – Understanding how OA might affect economically important species and where these ecological changes could harm human communities is critical for developing site-specific plans to reduce the likely impacts of OA.
David Letson	Marine Ecosystems & Society	Dr. Letson studies: climate change adaptation and the human dimensions of extreme weather. Jillian Drabik is studying how climate change may influence water resources management in south Florida in the coming decades.
Guoqing Lin	Marine Geosciences	Earthquake relocation, seismic velocity and attenuation tomography, volcano seismology, subduction earthquakes, and spatial/temporal variations of seismic properties.
Diego Lirman	Marine Biology & Ecology	The University of Miami's coral restoration project focuses on propagating threatened staghorn coral ( <i>Acropora cervicornis</i> ) in underwater coral nurseries to create a sustainable source of healthy coral colonies for use in restoration activities.
Sharanya Majumdar	Atmospheric Sciences	Improving forecasts of tropical cyclone track and intensity via understanding their predictability; probabilistic prediction using ensembles; initialization; and

		assimilation of targeted satellite and aircraft data.
Brian Mapes	Atmospheric Sciences	<p>My work began in atmospheric convection, in the larger context of tropical weather and climate. That larger picture requires understanding other processes like radiation and surface fluxes as well. Working with postdocs, students, and collaborators, I maintain a 3-pronged effort that builds from local scales (very definite and tangible, but always dependent on what lies beyond), via quantitative analysis and abstraction, up toward global scales (vast and pervasive yet evasive: everywhere and nowhere).</p> <ol style="list-style-type: none"> <li>1. We study <a href="#">convective clouds and storms and local atmospheric structure (especially in the vertical)</a>, using observations (radars, aircraft, soundings, satellites) and cloud-resolving models.</li> <li>2. We study the <a href="#">large-scale net thermodynamic and dynamic effects</a> of convection and related processes in the atmosphere, guided by observations; and then try to encapsulate the essence in simple models (the parameterization problem).</li> <li>3. We study several <a href="#">large-scale weather and climate phenomena</a> using regional and global observations and models, to lend more context and meaning to the activities described above.</li> </ol>
Danielle McDonald	Marine Biology & Ecology	The effects of environmental pharmaceutical exposure on fish physiology and behavior.
John McManus	Marine Biology & Ecology	<p>John W. McManus, PhD. is a Professor of Marine Biology and Fisheries, and Director of the National Center for Coral Reef Research (NCORE) at the Rosenstiel School of the University of Miami. In 2007, he chaired the Five-Year Review of the NOAA Coral Reef Conservation Program, which led to major changes in its structure and activities. As the former Leader of the Aquatic Environments Program of the WorldFish Center in Southeast Asia (formerly ICLARM), he was the founder of ReefBase, the Global Coral Reef Database, and the International Coral Reef Action Network (ICRAN). He is known for innovative approaches to science in support of coastal and watershed management which ranging from simple approaches by which villagers can assess their resources to cutting-edge science and technology.</p>
Peter Minnett	Ocean Sciences	Dr Minnett's research interests include infrared remote sensing from satellites, atmospheric effects and derivation of accurate sea-surface temperatures; ship-

		board infrared interferometric measurements of oceanic and atmospheric properties; studies of near-surface temperature structure in the ocean and atmosphere, and their influence on air-sea exchanges; oceanographic applications of satellite remote sensing; measurements of surface radiation and the influence of clouds; the role of the polar regions in the climate system.
David Nolan	Atmospheric Sciences	Hurricanes, tropical meteorology, severe storms, numerical modeling, vortex dynamics, turbulence.
Maria Olascoaga	Ocean Sciences	Modeling of biophysical interactions; geophysical flow stability; Lagrangian dynamics
Marjorie Oleksiak	Marine Biology & Ecology	evolutionary genomics, population responses to environmental stressors, molecular mechanisms of adaptation
Peter Ortner	Marine Biology & Ecology	Physical regulation of biological systems; coastal zone management, ecosystem restoration, and fisheries management science and policy; coastal ecosystem effects of hurricane landfall; coastal ecosystem implications of regional and global climate change and climate variability; trophic relationships in marine plankton communities; phytoplankton physiology, nutrient uptake and trace metal interactions; zooplankton biochemistry; fisheries oceanography; marine sources of biogenic volatiles and radiatively important trace substances; and, zooplankton sampling technology, particularly optical or acoustic.
Tamay Ozgokmen	Ocean Sciences	My research interest centers around the investigation of multi-scale oceanic flows using non-hydrostatic numerical models and Lagrangian methods.
Claire Paris-Limouzy	Ocean Sciences	In coral reef ecosystems, marine populations established among a naturally fragmented habitat are more or less connected by the migration of individuals, typically during the larval phase. My primary interests are in the physical-biological interactions occurring at this critical early life history stage: are patterns of larval dispersal established primarily by animal behavior or by oceanographic processes? How do marine larvae survive the pelagic environment, do they follow cues? While there has been a wealth of research in the field of animal navigation, marine larvae has been largely overlooked. These questions are addressed by developing bio-physical numerical modeling approaches in combination to novel experimental approaches. Significant applications of this research are the optimization of MPA networks, the spread of invasive species, diseases, and pollutants in the marine environment,

		and the impact of climate change on marine ecosystems.
Larry Peterson	Marine Geosciences	Reconstruction of past oceans and climates from marine sediments; abrupt climate change; deep sea sedimentation processes; stable isotope geochemistry of foraminifera.
Roland Romeiser	Ocean Sciences	Dr. Romeiser has wide experience in the remote sensing of winds, waves, and current fields by various microwave sensors – altimeter, scatterometer, conventional and interferometric synthetic aperture radar (SAR / InSAR). He has been involved in many theoretical studies and experiments, and he has developed the numerical SAR / InSAR imaging model “M4S”. Furthermore, Dr. Romeiser is an Associate Editor of the IEEE Journal of Oceanic Engineering. His current research interests focus on the theoretical modeling and interpretation of SAR and InSAR signatures of ocean features associated with spatially varying surface currents and winds, the development of quantitative geophysical parameter retrieval algorithms, and performance studies for future spaceborne SAR / InSAR missions.
Joe Serafy	Marine Biology & Ecology	<p>My current research has three foci:</p> <ol style="list-style-type: none"> <li>1. examining the role of the seagrass-mangrove-reef complex in the ontogeny of economically-valuable coral reef fishes (i.e., groupers, snappers, grunts, great barracuda);</li> <li>2. developing methods for, and assessing the effectiveness of, ecosystem restoration;</li> <li>3. furthering knowledge of the early life history, movement and conservation of pelagic fishes.</li> </ol> <p>Other research experience/interests include: conducting empirical field and laboratory research to support ecosystem modeling efforts that seek to link land use, terrestrial hydrology and coastal hydrodynamics with aquatic animal and plant populations; examining the efficacy of changes in fishing gear; quantifying the functional “costs” of habitat depletion, fragmentation, degradation and/or change for ecologically and economically important organisms; investigating biological responses to episodic stressors with a focus on how stress frequency, magnitude and duration affect community structure and function; exploring how molecular techniques may be applied to tackle basic problems in species and stock identification.</p>

Lynn Shay	Ocean Sciences	Dr. Shay's research interests include: upper ocean response and coupled atmosphere-ocean interactions, coastal ocean circulation processes, surface wave current interactions and atmospheric and oceanic boundary layer interactions. These phenomena are studied largely from experimental and empirical perspectives using measurements from aircraft, satellite, buoy and land based radar (i.e. Wullen Radar).
Brian Soden	Atmospheric Sciences	<p><b>Tropical Climate Change, Climate Modeling, Remote Sensing</b></p> <p>My current research activities are concentrated in two areas:</p> <ol style="list-style-type: none"> <li>1. To better understand the magnitude of key feedback processes, such as water vapor and clouds, which determine the sensitivity of the climate system to natural and anthropogenic forcings. Differences in the way these climate feedbacks are represented in models are the primary contributor to uncertainties in projections of future climate change. Because of their ability to provide global observations, remotely-sensed measurements are a key focus of my research. Satellite observations of water vapor, clouds, and precipitation are used to understand the mechanisms which drive changes in the hydrological cycle and evaluate their representation in climate models. Results from these comparisons provide key guidance which is necessary to assess model projections of future global warming.</li> <li>2. To understand the response of extreme weather events to changes in climate from global warming. Specific areas of interest include the response of hurricane activity, including both hurricane frequency/intensity and hurricane tracks; the response of extreme precipitation events; and the response of the atmospheric circulation and extreme wind events.</li> </ol>
Nikki Traylor-Knowles	Marine Biology & Ecology	My lab studies how the coral reef immune system reacts to climate change.
Charles Vincent	Ocean Sciences	Research interests include air-sea interaction and surface wave dynamics, high resolution simulation of the ocean-wave-air interface, remote sensing of the ocean, coastal processes.
Chidong Zhang	Ocean Sciences	Large-scale air-sea interaction and atmospheric dynamics in the tropics; tropical climate.
Paquita Zuidema	Atmospheric Sciences	My research interests revolve around clouds, of all latitudes: their radiative

		impacts, lifecycle processes, interaction with large-scale circulation, and characterization.
--	--	---

### COLLEGE OF ENGINEERING

Name	Affiliation	Sustainability Research
Jean-Pierre Bardet	College of Engineering	Epidemiology of water distribution
Francisco De Caso & Basalo	Civil, Architectural & Environmental Engineering	Dr. De Caso's research interests are in the area of civil and structural engineering, which include: resilient and sustainable composite systems for concrete infrastructure repair, rehabilitation and strengthening; experimental methodologies for material characterization and evaluation of durability in composites; and technology transfer of external and internally used composite systems for concrete structures. Dr. De Caso and his team work in projects sponsored by federal and state agencies, and private industry.
James Englehardt	Civil, Architectural & Environmental Engineering	Research interests center on development of methods of probabilistic risk assessment and water treatment, with applications for example design of low-energy, low-emissions net-zero water and waste systems. Development of predictive Bayesian methods of inferring risk based on available information using principles of self-organization and information theory. Development of physicochemical treatment methods including advanced oxidation and metal-mediated aeration.
Ali Ghahremaninezhad	Civil, Architectural & Environmental Engineering	Bio-inspired cement-based materials; Sustainable and smart infrastructure materials; Recycled cementitious materials; Nanotechnology in infrastructure materials. Multiscale deformation and fracture of polycrystalline metallic alloys; Experimental solid mechanics, Constitutive Modeling, Dynamic Materials Behavior. Chemical-mechanical couplings and failure of energy materials.
James Giancaspro	Civil, Architectural & Environmental Engineering	Sustainable infrastructure materials including inorganic and fire-resistant coatings, hybrid composites, biocomposites, and concrete Material testing including high-rate loading, fire exposure, non-destructive / non-contacting optical measurement methods, and digital image correlation

Victor Graham	Mechanical & Aerospace Engineering	Solar energy, aerodynamic analysis of wind turbines, turbomachinery, thermal energy efficiency technologies
Sung Hee Joo	Civil, Architectural & Environmental Engineering	Nanotechnology for environmental remediation, advanced oxidation technology, fate and transport of emerging contaminants, ecotoxicological impact of metal oxide nanoparticles, novel nano-catalysts for wastewater treatment, disinfection chemistry, and applications of membrane technology for water reuse.
Hongtan Liu	Mechanical & Aerospace Engineering	PEM Fuel Cells, Direct Methanol Fuel Cells, Solar Energy, Hydrogen Energy, Storage Energy, Clean Energy
Antonio Nanni	Civil, Architectural & Environmental Engineering	Dr. Nanni is a structural engineer interested in construction materials, their structural performance, and field application. His interests are in the field of civil infrastructure sustainability and renewal.
Landolf Rhode-Barbarigos	Civil, Architectural & Environmental Engineering	Lightweight structures, adaptive structures, form-finding and analysis of structures, structural design and optimization, computer-aided engineering.
Helena Solo-Gabriele	Civil, Architectural & Environmental Engineering	Relationships Between the Environment and Health. Contaminant Fate and Transport. Microbial Contaminants in the Environment and Their Transmission Pathways. Oceans and Human Health. Environmental and Human Health Impacts of Heavy Metals including those from pressure treated wood. Environmental Hydrology.
Matthew Trussoni	Civil, Architectural & Environmental Engineering	Quantifying sustainable structures through material properties testing and the Life Cycle Assessment (LCA) of structural systems.
Wangda Zuo	Civil, Architectural & Environmental Engineering	I am interested in building energy efficiency, indoor environment modeling, modeling of building energy and control system. My team is currently participating in the International Energy Agency (IEA) Annex 60 "New generation computational tools for building and community energy systems based on the Modelica and Functional Mockup Unit standards" and IEA Annex 66 "Definition and Simulation of Occupant Behavior in Buildings".
Chin, David	Civil, Architectural & Env Engineering	COOLING CANAL SYSTEM
Wang, Gang	Civil, Architectural & Env Engineering	DEMONSTRATION OF A BUILDING AUTOMATION SYSTEM EMBEDDED PERFORMANCE DEGRADATION DETECTOR US
Shyu, Mei-Ling	Electrical & Computer Engineering	FPHLM STORM SURGE ENHANCEMENT
Asfour, Shihab	Industrial Engineering	UNIVERSITY OF MIAMI INDUSTRIAL ASSESSMENT CENTER.

Celik, Nurcin	Industrial Engineering	ASSESSMENT OF THE IMPACT OF SINGLE STREAM RECYCLING ON PAPER CONTAMINATION IN RECOVERY FAC
Erkoc, Murat	Industrial Engineering	WORKLOAD DATA ANALYTICS FOR AAR LANDING GEAR SERVICES BUSINESS INTELLIGENCE AND DEVELOPMEN
Shaikh, Nazrul	Industrial Engineering	QUANTITATIVE MODELS FOR EXCELLENCE IN RETAIL ENGINEERING
Celik, Emrah	Mechanical and Aerospace Engineering	DEVELOPING NANOPILLAR ANTIBACTERIAL COATING TECHNOLOGY FOR AEROSPACE APPLICATION
Karkkainen, Ryan	Mechanical and Aerospace Engineering	DEVELOPMENT OF MEDIATOR-ENHANCED SOLID STATE HYBRID SUPERCAPACITOR ENERGY SYSTEMS
Yang, Qingda	Mechanical and Aerospace Engineering	A WORKSHOP FOR HIGH-FIDELITY SIMULATION BASED VIRTUAL TESTING OF COMPOSITE MATERIALS AND S

## COLLEGE OF ARTS & SCIENCES

Name	Affiliation	Sustainability Research
George Gonzalez	Political Science	<p>Prof. Gonzalez's area of research specialization is U.S. environmental politics and policy (e.g., energy, pollution, global warming). He is author of the following books: <i>Corporate Power and the Environment</i> (2001, Rowman &amp; Littlefield); <i>The Politics of Air Pollution</i> (2005, State University of New York Press); <i>Urban Sprawl, Global Warming, and the Empire of Capital</i> (2009, State University of New York Press); <i>Energy and Empire: The Politics of Nuclear and Solar Power in the United States</i> (2012, State University of New York Press); and <i>Energy and the Politics of the North Atlantic</i> (State University of New York Press). He co-edited <i>Flashpoints in Environmental Policymaking</i> (1997, State University of New York Press) – which won the 1998 Lynton Caldwell Book Award (given by the Science, Technology, and Environmental Policy section of the American Political Science Association). Prof. Gonzalez has published three research articles in <i>Polity</i> (the journal of the Northeastern Political Science Association). He has also published 3 research articles in the journal of <i>Environmental Politics</i>, and 2 in <i>Capitalism Nature Socialism</i>.</p>

Carol Horvitz	Biology	<p>We study ecology from a population dynamic perspective with a focus on stochastic processes. Our research is characterized by the combination of field intensive studies with mathematical modeling, focused particularly on demography of structured populations in variable environments. This conceptual arena includes the development and application of new parameters (e.g. environment-specific elasticity) and encompasses an array of topics from biology of aging and evolution of life span to spatial population dynamics of both native and exotic species, and has exciting applications to plant-animal interactions, forest dynamics, as well as disturbance, global change and invasion biology. We are interested in currencies of population dynamics that link ecology to evolution: the stochastic growth rate measures fitness in variable environments and selection must act through it. We are interested in applied aspects as well: what is the impact of biocontrol agents on the population dynamics of invasive species? The interactive process between theory and data is very rewarding and fascinating. Dr. Horvitz is a founding member of UM's Institute for Theoretical and Mathematical Ecology. Every lifetime is a realization of a probabilistic or stochastic process. It is imperative to learn to think stochastically to understand ecology in nature. Organisms ultimately experience time and space on scales much larger than I can measure. Modeling is essential. We explore the universe empirically and through modeling, putting field data into the context of larger extents of time and space than we could ever physically observe. Working closely with theoreticians (Caswell, Tuljapurkar), we are partners in the development of new analytical tools. In application of theory to data, new theoretical issues arise, as do new empirical issues. There is feedback in both directions and science makes a little step forward.</p>
Jim Klaus	Geological Sciences	<p>Evolution and extinction of Cenozoic to Recent reef corals, paleoecology of Cenozoic reef coral communities, geomicrobiology of modern coral reef ecosystems</p>
Gina Maranto	English Composition	<p>Professor Gina Maranto directs the undergraduate program in Ecosystem Science and Policy and coordinates the graduate program in Environmental Science and Policy. She is a Senior Lecturer in English Composition. She is a prize-winning science writer who has covered the environment, earth sciences, and biomedicine at the national level since 1982. Her articles, opinion pieces, and</p>

		reviews have appeared in Discover, The Atlantic Monthly, Scientific American, The New York Times, and other publications. Her cover piece for Discover on climate change won the National Association of Science Writers Award for best magazine piece of 1986 and limned the major issues that remain of interest today with regard to that subject.
Christopher Mader	Center for Computational Science	GIS & Software engineering
Shivangi Prasad	Geography & Regional Studies	Shivangi Prasad's research focuses on environmental and social vulnerability modeling, climate change and natural hazards risks and impacts, and GIS/spatial analysis. She is particularly interested in exploring human-environmental interactions from the perspective of human vulnerability, response and adaptation to creeping climate stresses as well as sudden shocks caused by natural hazard events. Other topics of interest include environmental justice, inequities in resource allocation and political ecology as they relate to the hazard-disaster realm.
Kathleen Sealey	Biology	<ul style="list-style-type: none"> <li>• Conservation and Restoration Biology</li> <li>• Tropical Biology</li> </ul> <p>Coastal Ecology of the Bahamas: The long-term goal of this research is to better understand coastal processes in the tropical carbonate islands of the Bahamian archipelago. We wish to develop methods to remotely map an integrated coastal zone of plant communities and near shore marine communities, looking at the environments above and below the water. This mapping can help identify environmental damage from a variety of sources, as well as monitor restoration or mitigation efforts.</p>
Christopher Searcy	Biology	<p>My lab is engaged in conservation ecology, the use of ecological principles to answer questions related to basic ecological theory, while also informing conservation practices and management of threatened or endangered species.</p> <p>I am particularly interested in metacommunities (species assemblages that coexist across a landscape comprised of distinct habitat patches). It is assumed that many species can be modeled as classic metapopulations, which has clear implications for how we should manage them at the landscape scale in order to ensure their long-term persistence. However, how well actual populations fit the</p>

		<p>classic metapopulation model is highly dependent upon many factors such as dispersal rates between habitat patches and the level of demographic synchrony between individual populations.</p> <p>My lab is engaged in collecting detailed data on both demography and dispersal from wild populations in order to improve our understanding of the mechanisms that allow them to persist at the landscape scale. We are also interested in niche partitioning and ecological tradeoffs that allow multiple species to coexist in the metacommunity framework. Finally, we strive to use this information to inform applied conservation practices, such as calculating mitigation credits, evaluating taxon substitutes, and predicting the effects of climate change on range shifts.</p>
Floria Mora-Kepfer Uy	Biology	<p>My research is focused on understanding the evolution of cooperation and the selective pressures that favor the transition from solitary life to cooperative group living. To this end, I explore the evolution of cooperation and group formation in animals by studying and comparing insect colonies that vary in their extent of sociality. I am particularly interested in answering fundamental questions that provide critical bases to understand the relationship between brain development and sociality in animals. How do social animals process information from their physical and social environment to make decisions that enhance their survival and reproductive success? In animal societies where group members are constantly interacting, how do these interactions shape brain architecture and function? I use an integrative approach to investigate the relationship among genetic relatedness, social interactions, behavior cues, variability in environmental factors and brain architecture in group formation and cooperation.</p>
Harold Wanless	Geological Sciences	<p>Dr. Wanless has an active research program, funded by the National Park Service, the National Biological Survey, and NOAA to document hurricane effects on coastal environments; also to document the Holocene and historical evolution of the mangrove coastal wetlands and anthropogenic effects on coastal and shallow marine environments.</p>

**MILLER SCHOOL OF MEDICINE**

<b>Name</b>	<b>Affiliation</b>	<b>Sustainability Research</b>
John Beier	Public Health	Dr. Beier specializes in the epidemiology and control of vector-borne diseases in

	Sciences/Director, Center for Global Health Sciences	developing countries, and has worked extensively in the Middle East, Africa, and the Latin America-Caribbean region. His research involves field and laboratory studies on malaria, dengue, West Nile Virus, and in the past he has worked on leishmaniasis and filariasis. Current research involves interdisciplinary studies on vector-borne diseases in urban environments, development and field-testing improved methods for malaria vector control, climate-based models for predicting outbreaks of dengue, and impacts of anthropogenic environmental changes on the ecology of pathogen transmission
--	--	--

### SCHOOL OF ARCHITECTURE

Name	Affiliation	Sustainability Research
Sonia Chao	School of Architecture; Director, Center for Urban & Community Design	Sonia Chao serves as Research Associate Professor in the School of Architecture and Director of the Center for Urban and Community Design. Her areas of interest include: sustainable/environmental design, historic preservation, and urban design.
Denis Hector	School of Architecture	Denis Hector is a registered architect with expertise in structure and environment. He teaches Building Construction II: Structural Systems and studios with a focus on structure and environment, including recent work in Haiti, both before and after the earthquake. Other areas include Design, Structures and Theory of Technology, Environment and Green Building.
Yi Li	School of Architecture	Urban Design, GIS, Mapping & Visualization
Elizabeth Plater-Zyberk	School of Architecture	Architectural Design, Urban Design

### SCHOOL OF COMMUNICATION

Name	Affiliation	Sustainability Research
Clay Ewing	Cinema & Interactive Media	Social Impact Games, Interactive Design, Gameful Learning, mobile development
Jyotika	Journalism & Media	Ramaprasad has consulted for disaster preparedness in Southeast Asia and for

Ramaprasad	Management	journalism/communication education in East Africa. She has received several US State Department grants for capacity building in journalism and communication for social change in South Asia and East Africa. She has run workshops, given talks, and taught as well as provided curricular advice in several institutions around the world including Europe, Africa and Asia.
Lien Tran	Cinema & Interactive Media	Professor Tran's creative research centers around humanitarian and participatory design and includes social impact games, design advocacy, and web- and print-based information design.

#### **SCHOOL OF EDUCATION AND BUSINESS ADMINISTRATION**

<b>Name</b>	<b>Affiliation</b>	<b>Sustainability Research</b>
Edward Baker	Management Science	Decision modeling for the management of natural resources
David Kelly	Economics	Environmental Economics and Policy: Climate change policy under uncertainty and learning, design of environmental regulation under uncertainty, economic growth and the environment, government policy and the environment, adaptation to climate change.