Earth Systems Academic Advisors

The instructors who teach in the Earth Systems Program consist of the most outstanding scientists, scholars, and teachers in the Stanford community. The Earth Systems Program at Stanford is one of the few places in the world where students can study the components of both the natural and social sciences in a coherent, contemporary, and rigorous curriculum of environmental knowledge. The following list identifies current Earth Systems Academic Advisors. Earth Systems majors are required to have an Academic Advisor by Winter quarter of the Junior year. Once an Academic Advisor has been secured, please notify Kristin Tewksbury (ktewks@stanford.edu) to get the Advisor added to your record.

Patrick Archie (jparchie@stanford.edu)
http://earth.stanford.edu/farm/people/patrick-archie
- Lecturer in the Earth Systems Program and the Department of Earth System Science. He worked for 20 years in sustainable urban agriculture and food justice, integrating this work with education. At Stanford, he is the farm educator and manages the new community farm. His interests include agroecosystem design, urban and peri-urban food systems, sustainable community development, alternative land tenure models, food justice, experiential education and community-based learning.

Nicole Ardoin (nmardoin@stanford.edu)
http://ed.stanford.edu/faculty/nmardoin
- Nicole Ardoin is an assistant professor with a joint appointment with the Graduate School of Education and the Woods Institute for the Environment. Her research focuses on how environmental learning and place-based connections influence motivations for environmental behavior. She is particularly interested in the role of geographic scale in people-place relationships in the context of a rapidly globalizing and urbanizing world. Professor Ardoin has current studies on the use of education, communication, and other social strategies in informal and community-based settings, including nature-based tourism programs, to engage individuals and communities in contemporary dialogue, environmental decision-making, and informed conservation behavior. Professor Ardoin also researches the effectiveness of a range of environmental education and social science endeavors in achieving measurable and meaningful conservation results. To this end, she conducts evaluations with informal organizations including museums, zoos/aquariums, parks, and residential environmental education programs, with an emphasis on using innovative, non-traditional metrics and adaptive management approaches. She is also interested in philanthropic support of environmental education and emergent trends in the field of environmental education research.

Kevin Arrigo (arrigo@stanford.edu)
http://earth.stanford.edu/kevin-arrigo
- Victoria and Roger Sant Director, Earth Systems Program; Donald & Donald M. Steel Professor in Earth Sciences; Gerhard Casper University Fellow in Undergraduate Education; Professor, Department of Earth System Science; Associate Chair of Earth System Science. His research efforts focus on understanding biogeochemistry, particularly in the polar oceans, in order to better understand the flux of carbon dioxide into the oceans and sediments. His research is highly interdisciplinary and incorporates three fundamental approaches, satellite remote sensing, ecophysiological modeling, and laboratory and field studies.

Greg Asner (gpa@carnegiescience.edu)
http://asnerlab.stanford.edu/
- Staff Scientist at the Carnegie Institution Department of Global Ecology. Professor by courtesy in Earth System Science. Professor Asner specializes in understanding anthropologic effects on ecosystems in South American through geospatial analysis. He has pioneered new methods regarding satellite and airborne imagery for investigating tropical deforestation, degradation, ecosystem diversity, invasive species, carbon emissions, climate change, and more. He is currently the principle investigator at the Carnegie Department of Global Ecology.

Sally Benson (smbenson@stanford.edu)
http://earth.stanford.edu/sally-benson
- Professor of Energy Resources Engineering, Senior Fellow at the Precourt Institute for Energy, Director of the Global Climate and Energy Project, Affiliate of the Stanford Woods Institute for the Environment. Her research interests include geologic storage of carbon dioxide in deep underground formations, technologies and energy systems for a low carbon future, and geotechnical instrumentation for subsurface characterization and monitoring.
Barbara Block (bblock@stanford.edu)
http://hopkinsmarinestation.stanford.edu/content/barbara-block

Charles and Elizabeth Prothro Professor in Marine Sciences and Senior Fellow, by courtesy, of the Woods Institute for the Environment. Her research is focused on how large pelagic fishes utilize the open ocean environment, specifically thermal physiology, open ocean predators, ecological physiology and tuna biology. Investigations center upon understanding the evolution of endothermic strategies in tunas, billfishes, and sharks. Block and her colleagues investigate the cellular mechanisms underlying heat generation and force production in skeletal muscle, the evolution of endothermy, and the physiological ecology of tunas and billfishes. Her research in the lab is interdisciplinary, combining physiology, ecology, and genetics with oceanography and engineering. Professor Block and colleagues at the Monterey Bay Aquarium have also established the Tuna Research and Conservation Center, a unique facility that permits physiological research on tunas. They are employing new techniques in wildlife telemetry and molecular genetics to directly examine the short and long-term movement patterns, stock structure and behavior of tunas and billfishes. The fish are highly exploited in international fisheries and effective management of existing biodiversity requires an understanding of their biology and population structure. The Block lab actively engages in research at sea to understand the movements and physiological ecology of tunas and billfishes and to gain insight into the selective advantage of endothermy in fishes.

Relevant courses: BIOHOPK 162H/262H: Comparative Animal Physiology, EARTHSYS 323: Stanford@SEA

Marshall Burke (mburke@stanford.edu)
http://earth.stanford.edu/marshall-burke

Assistant Professor of Earth System Science. He received his BA in International Relations from Stanford in 2003, and his PhD in Agricultural and Resource Economics from Berkeley in 2014. His research focuses on understanding how changes in environmental conditions affect a range of social and economic outcomes, and on understanding the causes and consequences of rural productivity improvements.

Relevant courses: EARTH 2: Climate and Society, EARTHSYS 106/ECON 106: World Food Economy, ESS 301: Topics in Earth Systems Science

Ken Caldeira (kcaldeira@stanford.edu)
http://globalecology.stanford.edu/DGE/CIWDGE/labs/caldeiralab/

Senior Scientist at the Carnegie Institution’s Department of Global Ecology at Stanford University, Professor (by courtesy) of Earth System Science. His research focuses on the global carbon cycle, marine biogeochemistry and chemical oceanography, including ocean acidification and the atmosphere/ocean carbon cycle; land-cover and climate change, the long-term evolution of climate and geochemo cycles; climate intervention proposals; and energy technology.

Karen Casciotti (kcasciotti@stanford.edu)
http://earth.stanford.edu/karen-casciotti

Associate Professor in Earth System Science. Her research focuses on nitrogen cycle biogeochemistry, including how nitrate, nitrite, and nitrous oxide (N2O) are produced and consumed in ocean waters. Nitrate and nitrite are important nutrients for marine photosynthesis, and N2O is a climatically important trace gas. I take an interdisciplinary approach to these questions, applying tools from stable isotope geochemistry, geochemical modeling, microbiology and molecular biology.

Relevant courses: EARTHSYS 152/252: Marine Chemistry, ESS 275: Nitrogen in the Marine Environment

Page Chamberlain (chamb@stanford.edu) 
http://earth.stanford.edu/page-chamberlain

Professor of Earth System Science and, by courtesy, of Geological and Environmental Sciences. Professor Chamberlain uses stable and radiogenic isotopes to understand Earth system history. These studies examine the link between climate, tectonics, biological, and surface processes. Field locations include the New England Appalachians, the Rocky Mountains of Wyoming, the Himalaya, the Southern Alps of New Zealand, and the California Sierra Nevada.

Relevant courses: EARTHSYS 12SC: Environmental and Geological Field Studies in the Rocky Mountains, EARTHSYS 57Q: Climate Change from the Past to the Future, EARTHSYS 100: Environmental and Geological Field Studies in the Rocky Mountains, ESS 300: Climate Studies of Terrestrial Environments

Sara Cina (saracina@stanford.edu)
http://earth.stanford.edu/sara-cina

Undergraduate Program Director for School of Earth, Energy & Environmental Sciences; runs Stanford EARTH Summer Undergraduate Research program. Her focus within the department is working with faculty to develop curriculum and courses, as well as helping students prepare to conduct individual research. She has a background in geology, but broad interests in the intersection of education, environmental science, and sustainability.
• Relevant courses: EARTHSYS 163F/263F: Groundwork for COP21, EARTH 1: Current Research in the Earth and Environmental Sciences, EARTH 100: Research Preparation for Undergraduates, GS 291: GS Field Trips

Larry Crowder (larry.crowder@stanford.edu)
http://crowder.stanford.edu/
• Senior Fellow at the Stanford Woods Institute for the Environment, Ed Ricketts Provostial Professor, Professor of Biology and Marine Conservation at Hopkins Marine Station, Member of Bio-X, Science Director at the Center for Ocean Solutions. His research interests include predation and food web interactions, mechanisms underlying recruitment variation in fishes, population and food web modeling in conservation biology, and interdisciplinary approaches to marine conservation.
• Relevant courses: BIOHOPK 173H: Marine Conservation Biology, BIOHOPK 280: Short Course on Ocean Policy

Gretchen Daily (gdaily@stanford.edu)
http://woods.stanford.edu/about/woods-faculty/gretchen-daily
• Bing Professor in Environmental Science, Senior Fellow at the Woods Institute for the Environment and Director of the Center for Conservation Biology. Her research interests include the future course of extinction, the resulting changes in the delivery of ecosystem services, novel opportunities for biodiversity conservation, and mechanisms for conservation finance that aims to align economic incentives with conservation.

Jenna Davis (jennadavis@stanford.edu)
http://earth.stanford.edu/jenna-davis
• Associate Professor in the Department of Civil and Environmental Engineering and the Higgins-Magid Senior Fellow at the Woods Institute for the Environment. Her research interests include the intersection of economic development and environmental protection, with particular emphasis on cost-effective and sustainable water supply and sanitation (W&S) service delivery in developing countries. Professor Davis’ research and teaching is focused at the interface of engineered water supply and sanitation systems and their users in developing countries. With a background in public health, infrastructure planning, and environmental science & engineering, Davis explores questions related to interventions that trigger household investment in water, sanitation, and hygiene improvements; the features of water and sanitation services that users value and why; and the health and economic impacts of improvements in water supply and sanitation. She has conducted field research in more than a dozen countries, including most recently Kenya, Mozambique, and Bangladesh.

Anne Dekas (dekas@stanford.edu)
http://earth.stanford.edu/anne-elizabeth-dekas
• Assistant Professor of Earth System Science, Anne Dekas is a geomicrobiologist interested in how microbial life affects the chemistry and climate of our planet today and throughout time. She obtained her PhD in Geobiology at the California Institute of Technology in 2013, and her BA in Earth and Planetary Sciences at Harvard University in 2004. She joined the Earth System Science Department at Stanford.

Mark Denny (mwdenny@stanford.edu)
http://hopkinsmarinestation.stanford.edu/content/mark-denny
• John B. & Jean De Nault Professor in Marine Sciences, Hopkins Marine Station. His research interests focus on the mechanical design of intertidal organisms, from the molecular through the material, structural and organismal to the ecological, and the role of hydrodynamic forces in determining mechanical design.
• Relevant courses: BIOHOPK 150H: Ecological Mechanics, BIOHOPK 163H: Oceanic Biology, BIOHOPK 320H: Physical Biology

Noah Diffenbaugh (diffenbaugh@stanford.edu)
http://earth.stanford.edu/noah-diffenbaugh
• Assistant Professor, Earth System Science and Senior Fellow with the Woods Institute for the Environment. Professor Diffenbaugh studies the climate system, including the processes by which climate change could impact agriculture, water resources, and human health. He has served as a Lead Author for Working Group II of the Intergovernmental Panel on Climate Change (IPCC), and has provided testimony and scientific expertise to the White House, the Governor of California, and U.S. Congressional offices.
• Relevant courses: EARTH 2: Climate and Society, EARTHSYS 41N: The Global Warming Paradox, ESS 215: Earth System Dynamics
Rodolfo Dirzo (rdirzo@stanford.edu)  
http://www.stanford.edu/group/dirzolab/  
- Bing Professor in Environmental Science and Director of the Center for Latin American Studies. His research interests include conservation biology with an emphasis on the need to complement the traditional interests of the conservation of taxa with the increasingly needed conservation of ecological processes. Tropical work carried out in Mexico and Central Amazonia.  

Robert Dunbar (dunbar@stanford.edu)  
http://earth.stanford.edu/rob-dunbar  
- W.M. Keck Professor in the School of Earth, Energy & Environmental Sciences and Senior Fellow at the Woods Institute for the Environment. His research and teaching interests include Climate Dynamics, Oceanography, Marine Ecology, and Biogeochemistry, as well as environmental policy directed towards problem-solving. Professor Dunbar’s research group studies global environmental change with a focus on air-sea interactions, tropical marine ecosystems, polar climate, and biogeochemistry. In 2004 he helped start the Palmyra Atoll Research Consortium (PARC) to promote research and conservation of Pacific coral reefs. Current field areas include the American Samoa, Antarctica, the Line Islands, Easter Island, Chile, Patagonian Argentina, and Palau. He also collects deep sea corals to better understand their ecology as well as their self-contained records of change in the deep sea.  
- Relevant courses: EARTHSYS 323: Stanford@SEA, ESS 240: Advanced Oceanography, GS 38N: Science and History of Polar Exploration, OSPGEN 53: Corals of Palau: Ecology, the Physical Environment, and Reefs at Risk, EARTHSYS 56Q: Changes in the Coastal Ocean: The View From Monterey and San Francisco Bays, ESS 10SC: In the Age of the Anthropocene: Coupled-Human Natural Systems of Southeast Alaska

Bill Durham (eb.whd@stanford.edu)  
http://earth.stanford.edu/william-durham  
- Professor of Anthropology, Bing Professor in Human Biology, Stanford Director of the Center for Ecotourism and Sustainable Development, Senior Fellow (by courtesy) of the Stanford Woods Institute for the Environment, Co-Director of the Oso-Golfito Initiative. His research interests include environmental anthropology, the coevolution of genetic and cultural change in human populations, and the challenges of sustainable development in tropics, especially Galapagos, Peru, and Costa Rica.  

Ashley Erickson (ashleye1@stanford.edu)  
http://woods.stanford.edu/about/woods-faculty/ashley-erickson  
- Ashley Erickson is the education and training manager at the Center for Ocean Solutions. In this role Ashley contributes her deep knowledge of ocean and coastal law and policy issues to meet the needs and challenges of decision makers whose actions directly impact ocean health. Ashley transitioned to education and training manager in winter 2014 after working as a law and policy fellow with the Center since 2011. She specifically relies on her previous work with the Center on ecosystem-based marine and coastal planning, the influences of multiple stressors to marine ecosystems, and fisheries management. Her current contributions build on these previous activities as she continues to deepen and broaden the Center’s engagement with decision makers, collaborators, and graduate students, shortening and strengthening the links between knowledge, action, and positive change for the ocean and coasts.

Gary Ernst (wernst@stanford.edu)  
http://earth.stanford.edu/w-gary-ernst  
- The Benjamin M. Page Professor in Earth Sciences, Emeritus. Author of seven books and research memoirs, editor or co-editor of 19 others, Ernst is author or co-author of >260 scientific papers dealing with: physical chemistry of rocks and minerals; Phanerozoic interactions of lithospheric plates and orogenic belts, especially in central Asia, the CircumPacific and the western Alps; early Precambrian petrotectonic evolution; high- and ultrahigh-pressure subduction-zone metamorphism and tectonics; geobotanical studies/remote sensing; and geology and human health. He teaches Introduction to Earth Systems fall quarter at Stanford, and conducts research chiefly in northern California and eastern Asia.  
- Previous courses: EARTHSYS 10: Introduction to Earth Systems

Walter Falcon (wpfalcon@stanford.edu)  
http://foodsecurity.stanford.edu/people/walterpfalcon/  
- Walter Falcon is former deputy director of the Center on Food Security and the Environment, former director of the Freeman Spogli Institute for International Studies, Helen C. Farnsworth Professor of International Agricultural Policy, Emeritus and Senior Fellow at the Woods Institute for the Environment. His research interests include agricultural policy in developing
countries. Falcon has consulted with numerous international organizations, and has been a trustee of Winrock International and chairman of the board of the International Rice Research Institute (IRRI) and the International Center for Wheat and Maize Improvement (CIMMYT).

Scott Fendorf (fendorf@stanford.edu)
http://earth.stanford.edu/scott-fendorf

- Professor and Chair of Earth System Science and Senior Fellow at the Woods Institute for the Environment. His research interests include transport of trace elements through soils, movement of inorganic contaminants (like arsenic, cadmium and chromium) through soil, and the impact on plant and animals. Scott does work in Southeast Asia including Bangladesh and Cambodia.

Chris Field (cfield@dge.stanford.edu)
http://dge.stanford.edu/people/cfield

- Director of the Carnegie Institution Department of Global Ecology, Professor of Biological Sciences and of Environmental Earth System Science, and Senior Fellow, by courtesy, at the Freeman Spogli Institute for International Studies. Faculty Director of the Jasper Ridge Biological Preserve. He is co-chair of Working Group II of the Intergovernmental Panel on Climate Change. His research interests include ecosystem responses to global change, and plant ecophysiology.

Chris Francis (caf@stanford.edu)
http://earth.stanford.edu/christopher-francis

- Associate Professor Earth System Science and Senior Fellow, Woods Institute for the Environment. His research involves microbial cycling of carbon, nitrogen, and metals in the environment, molecular geomicrobiology, marine microbiology, and microbial diversity. His research interests center on the molecular, biogeochemical, and ecological aspects of the microbially-mediated cycling of nitrogen and metals in the environment. In particular, the major research avenues actively pursued in my laboratory are focused on examining the diversity and activity of microorganisms involved in manganese cycling, denitrification, and especially nitrification within coastal, estuarine, and select terrestrial systems. Professor Francis uses a combination of molecular, genomic, cultivation, and biogeochemical approaches to study functionally-important groups of bacteria and archaea in both the laboratory and the field.
- Relevant courses: ESS 46N: Exploring the Critical Interface between the and Monterey Bay: Elkhorn Slough, ESS 208: Topics in Geobiology. ESS 259 Environmental Microbial Genomics

Zephyr Frank (zfrank@stanford.edu)
http://history.stanford.edu/people/zephyr-frank

- Director of the Program on Urban Studies, Professor of Latin American History, and founding Director of the Center for Spatial and Textual Analysis. His research interests include social history of Brazil, Latin American economic history, wealth and inequality, and mapping with geographical information systems.
- Relevant courses: EARTHSYS 112: Human Society and Environmental Change, HISTORY 4/104: Introduction to Geospatial Humanities, HISTORY 276/376: Modern Brazil

David Freyberg (freyberg@stanford.edu)
http://profiles.stanford.edu/david-freyberg

- Associate Professor of Civil and Environmental Engineering, and Senior Fellow, by courtesy, in the Woods Institute for the Environment. His research interests include subsurface hydrologic processes, flood wave propagation in and infiltration and recharge from ephemeral channels in arid and semi-arid environments, sediment management in small reservoirs, engineering pedagogy.

Tad Fukami (fukamit@stanford.edu)
http://web.stanford.edu/~fukamit/

- Associate Professor, Department of Biology. He studies how species assemble into ecological communities, with a focus on understanding historical contingency, or when and why the structure and function of communities are contingent on the past history of species immigration. Professor Fukami uses experimental, theoretical, and comparative methods, involving bacteria, protists, fungi, plants, and animals. He is research also focuses on transient states, evolutionary dynamics, community function, bird-pollinated flowers, and lava-fragmented forests.
Margot Gerritsen (margot.gerritsen@stanford.edu)
http://earth.stanford.edu/margot-gerritsen
- Associate Dean for Educational Initiatives, School of Earth, Energy & Environmental Sciences, Associate Professor of Energy Resources Engineering, and, by courtesy, of Mechanical Engineering. Professor Gerritsen is interested in computer simulation and mathematical analysis of engineering processes, and is also the Director of the Institute for Computational and Mathematical Engineering. She specializes in renewable and fossil energy production. She is also active in coastal ocean dynamics and yacht design, as well as several areas in computational mathematics including search algorithm design and matrix computations.

Deborah Gordon (dmgordon@stanford.edu)
http://web.stanford.edu/~dmgordon/
- Professor of Biology and Affiliate at the Woods Institute for the Environment. Her research interest includes the behavioral ecology, foraging behavior, territorial behavior, social organization and evolution of ants.

Steve Gorelick (gorelick@stanford.edu)
http://earth.stanford.edu/steven-gorelick
- The Cyrus F. Tolman Professor in the School of Earth, Energy and Environmental Sciences, and a Senior Fellow at the Woods Institute for the Environment at Stanford. One of his research goals is to improve the fundamental scientific understanding of controls on groundwater flow and solute migration by analyzing laboratory and field data. The other research goal is to advance the scientific basis for water resources management by constructing planning models to evaluate water-allocation strategies. In recent research projects, Professor Gorelick and his students have combined hydrogeology with aspects of ecology, geophysics, operations research, and economics to study meadow restoration and wetland protection, water supply management, and contaminated groundwater remediation methods. He directs the Global Freshwater Initiative with past and active projects in India, Mexico, Vietnam, and Jordan. Dr. Gorelick has published extensively in the areas of groundwater management, water resources vulnerability in developing regions, optimal remediation design, hydrogeophysics, ecohydrology, and global oil supply and demand.
- Relevant courses: ESS 220: Physical Hydrogeology, ESS 221: Contaminant Hydrogeology and Reactive Transport

Lawrence Gould (gould@stanford.edu)
http://www.stanford.edu/~goulder/
- Shuzo Nishihara Professor in Environmental and Resource Economics and Senior Fellow at the Precourt Institute for Energy and at the Stanford Institute for Economic Policy Research. His research interests include environmental economics, public economics, applied general equilibrium analysis. Current research: economic and environmental effects of environmental policies, implications of environmental policy for technological innovation.

Elizabeth Hadly (hadly@stanford.edu)
http://www.stanford.edu/group/hadlylab/
- Professor of Biological Sciences. Her research interests include the evolution and ecology of species over the last several thousand years, focusing on how perturbations such as climate change and human modification of the environment influence the evolution and ecology of vertebrates. She is especially interested in the biogeographic history of mammals around the world, most recently working in India and Costa Rica.

Thomas Hayden (thayden@stanford.edu)
http://earth.stanford.edu/thomas-hayden
- Professor of the Practice, Earth Systems. He teaches science and environmental communication and journalism in Stanford’s School of Earth, Energy & Environmental Sciences and Graduate Program in Journalism. He came to Stanford in 2008, following a career of reporting and writing about science and environmental issues for national and international publications. In 2015, Hayden helped launch a new graduate degree program in Stanford’s School of Earth, Energy & Environmental Sciences. The Master of Arts in Earth Systems, Environmental Communication degree is focused on the study and practice of effective, engaging, accurate communication of complex environmental and Earth systems information to nonspecialist audiences.
George Hilley (hilley@stanford.edu)
http://earth.stanford.edu/george-hilley
• Associate Professor of Geological Sciences. His research interests include active tectonics, quantitative structural geology and geomorphology; Geographic Information Systems; unsaturated zone gas transport; near-surface hydrologic response and landscape development; active deformation and mountain belt growth in central Asia, central Andes, and along the San Andreas Fault; integrated investigation of earthquake hazards.
• Relevant courses: ESS 118/218: Understanding Natural Hazards, Quantifying Risk, Increasing Resilience in Highly Urbanized Regions, GS 42N: Landscapes and Tectonics of the San Francisco Bay Area, GS 311: Interpretation of Tectonically Active Landscapes

David Kennedy (dmk@stanford.edu)
http://history.stanford.edu/people/david-m-kennedy
• Professor of History, Emeritus. His research includes an interdisciplinary approach to the fields of history, literature, and economics, in combination with social, cultural, and political analysis.
• Relevant courses: AMSTUD 124A: The American West

Julie Kennedy (juliek@stanford.edu)
http://earth.stanford.edu/julie-kennedy
• Professor (teaching) of Earth Systems Science, Senior Fellow at the Stanford Woods Institute for the Environment, Landreth Family University Fellow in Undergraduate Education, and Advisor to the Earth Systems Program. Her research interests include interdisciplinary teaching and learning, effective communication of interdisciplinary concepts, problems, and solutions for non-expert audiences.
• Relevant courses: EARTHSYS 298: Earth Systems Book Review

Rosemary Knight (rknight@stanford.edu)
http://earth.stanford.edu/rosemary-knight
• George L. Harrington Professor in the School of Earth, Energy, and Environmental Sciences, Professor of Geophysics, Senior Fellow (by courtesy) of the Stanford Woods Institute for the Environment. Her research interests include environmental geophysics, electrical, dialectic, acoustic, and NMR responses of porous media (soils, aquifer sands, oil and gas reservoir rocks) that are saturated with more than one phase (water, air, oil, gas).

Jeffrey Koseff (koseff@stanford.edu)
http://earth.stanford.edu/jeffrey-koseff
• Professor of Civil and Environmental Engineering, Co-Director and Senior Fellow of Woods Institute for the Environment. His research interests include interdisciplinary work on environmental issues, fluid mechanics, and interactions between physical and biological systems in natural aquatic environments.
• Relevant courses: CEE 101B: Mechanics of Fluids, CEE 161A/264A: Rivers, Streams, and Canals, THINK 40: Meeting the Global Sustainability Challenge

Tony Kovscek (kovscek@stanford.edu)
http://earth.stanford.edu/anthony-kovscek
• Keleen and Carlton Beal Professor in Energy Resources Engineering, Affiliate of the Precourt Institute for Energy. His research interests focus on hydrocarbon recovery and the efficient use of energy. His research group examines the physics of oil recovery.

Eric Lambin (elambin@stanford.edu)
http://earth.stanford.edu/eric-lambin
• Co-Chair, Earth System Science, George and Setsuko Ishiyama Provostial Professor, and Senior Fellow at the Woods Institute for the Environment. His research is in the area of human-environment interactions in land systems. He develops integrated approaches to study land use change by linking remote sensing, GIS and socio-economic data. He aims to better understand causes and impacts of changes in tropical forests, drylands, and farming systems.
• ESS 270: Analyzing Land use in a Globalized World, ESS 306: From Freshwater to Oceans to Land Systems: An Earth System Perspective to Global Challenges
David Lobell (dlobell@stanford.edu)
http://earth.stanford.edu/david-lobell
- Associate Professor of Earth System Science and Senior Fellow at the Freeman Spogli Institute and the Woods Institute for the Environment. His research interests include food security, climate change, land use, remote sensing, ecosystem modeling, statistics, and geographic information systems.

Gilbert Masters (gmasters@stanford.edu)
http://www-ge.stanford.edu/faculty/masters/
- Professor of Civil and Environmental Engineering (Emeritus). His research interests include renewable and efficient energy systems, environmental quality and energy consumption, design and evaluation of renewable energy systems and energy efficient buildings.

Pamela Matson (pamela.matson@stanford.edu)
http://earth.stanford.edu/pamela-matson
- Chester Naramore Dean of the School of Earth, Energy & Environmental Sciences, Richard and Rhoda Goldman Professor in Environmental Studies and Senior Fellow at Woods Institute for the Environment. Her research interests include measurement and modeling of nutrient cycling and trace gas, biogeochemical consequences of tropical land use change and agriculture, regional and global environmental change.

Stephen Monismith (monismith@stanford.edu)
http://www-ge.stanford.edu/faculty/monismith/
- Obayashi Professor in the School of Engineering, Senior Fellow at the Woods Institute for the Environment and Professor, by courtesy, of Geophysical Sciences. His research interests include application of fluid mechanics principles to the analysis of flow processes operating in rivers, lakes, estuaries and the oceans; estuarine hydrodynamics and mixing processes flows over coral reefs, wind wave-turbulent flow interactions in the upper ocean, turbulence in density stratified fluids, and physical-biological interactions in phytoplankton and benthic systems.

Harold Mooney (hmooney@stanford.edu)
http://www.stanford.edu/group/Mooney/
- Paul S. Achilles Professor of Environmental Biology and Senior Fellow, by courtesy, at the Woods Institute for the Environment. His research interests include carbon balance of plants with specific interests in the nature of interaction of plants with their biotic environment. He is also engaged in research on the impact of global change on terrestrial ecosystems.

Rosamond Naylor (roz@stanford.edu)
http://earth.stanford.edu/rosamond-naylor
- Professor of Earth System Science and Economics, by courtesy; Senior Fellow at the Freeman Spogli Institute for International Studies, and at the Woods Institute for the Environment, Director of the Center on Food Security and the Environment. Her research interests include agriculture, aquaculture, ecosystem services, food security, and economic development. She and her students are looking at the ways in which agricultural policies can increase food production while simultaneously assessing the environmental and equity impacts of those policies.

Richard Nevle (rnevle@stanford.edu)
http://earth.stanford.edu/richard-nevle
- Deputy Director and Lecturer, Earth Systems. As the Deputy Director of Earth System, Nevle is devoted to fostering the intellectual formation of students poised to become the next generation of environmental leaders and problem-solvers. He teaches a number of courses in Earth Systems including a field seminar on the geology, ecology, and environmental history of the Eastern Sierra Nevada. In his research, Nevle assembles reconstructions of climate history from natural archives to elucidate drivers of past climate change. Most recently, his research has focused on the study of interactions among Holocene climate, human land use, and fire ecology.
Steve Palumbi (spalumbi@stanford.edu)
http://palumbi.stanford.edu/
- Jane and Marshall Steel Jr. Professor in Marine Sciences, Director of the Hopkins Marine Station, and Senior Fellow at the Stanford Woods Institute for the Environment. His research interests include coral diversity, the adaptive potential of corals in response to climate change, the movement of organisms between marine reserves, genetic changes in abalone in response to environmental conditions, local adaptation of in sea urchins, invasive species, and historic population sizes in whales.
- Relevant courses: BIOHOPK 43: Plant Biology, Evolution, and Ecology, BIOHOPK 44Y: Core Laboratory in Plant Biology, Ecology and Evolution

Jonathan Payne (jlpayne@stanford.edu)
http://earth.stanford.edu/jonathan-payne
- Assistant Professor in Geological Sciences, Associate Professor (by courtesy) of Biology, Chair of Geological Sciences, Member of Bio-X, Affiliate of the Stanford Woods Institute for the Environment. His research interests focus on the relationship between environmental change and biological evolution in the fossil record, with a focus on mass extinction events and long-term trends in the ecological structure of marine ecosystems.
- Relevant courses: GS 4: How to Build and Maintain a Habitable Planet: An Introduction to Earth System History, GS 123: Paleobiology, GS 208: Topics in Geobiology

Kabir Peay (kpeay@stanford.edu)
http://mykophile.wordpress.com/
- Assistant Professor of Biology in the school of Humanities and Sciences. He studies the structure and links between ecological community structure and the cycling of nutrients, focusing primarily on fungi. Much of the research focuses on plant-fungal root associations, more commonly known as mycorrhizas, an incredibly pervasive mutualism in terrestrial ecosystems.

Katie Phillips (kphill@stanford.edu)
http://earth.stanford.edu/kathleen-phillips
- Lecturer in the Earth Systems Program. Teaches classes on natural hazards, Earth sciences, and interdisciplinary science communication. She works to advise undergraduate and coterminal Master’s students in Earth Systems. Her academic interests include curriculum development in interdisciplinary environmental sciences, experiential learning in the field, and helping students prepare for the job search through communications training and reflection.
- Relevant courses: EARTH SYS 200: Sustaining Action: Research, Analysis and Writing for the Public, EARTH SYS 210A/C: Senior Capstone and Reflection, EARTH SYS 210P: Earth Systems Capstone Project, EARTH SYS 290: Master’s Seminar

Bala Rajaratnam (brajarat@stanford.edu)
http://earth.stanford.edu/bala-rajaratnam
- Assistant Professor of Statistics, Associate Professor of Earth System Science, Member of Bio-X, Affiliate of the Stanford Woods Institute for the Environment. His research interests include multivariate statistical analyses, graphical models, statistical decision theory, random matrix theory, machine learning, and mixture models. His research has applications in genomics, climate and environmental sciences, social sciences, and finance.

Dan Reineman (d2r@stanford.edu)
http://earth.stanford.edu/dan-reineman
- Postdoctoral Research Fellow, Political Science who joined the Bill Lane Center for the American West in September 2015 and will be helping the Center's ongoing work focused on the California Coastal Commission. His research examines the relationships between coastal resources and coastal societies in the context of resource management in a changing environment. Reineman combines natural science, social science, and citizen science in order to advance the theory and practice of coastal management through engagement with coastal resource user communities.
- Relevant courses: ENVRES 315: Environmental Research Design Seminar

Matt Rothe (mrothe@stanford.edu)
http://dschool.stanford.edu/bio/matt-rothe/
- University academic staff Fellow at the d.school. He prototypes designs for a food systems laboratory that builds off of his previous work at Stanford. The laboratory aims to enable long-term empathic partnerships with thought leaders who are working on big opportunities in the food system—justice and equity, appropriate technology for small, diversified farms, disruptive food distribution models, and sustainable eating behaviors.
Gary Schoolnik (schoolni@cmgm.stanford.edu)
- Professor of Medicine (Infectious Diseases) and of Microbiology and Immunology and Senior Fellow at the Woods Institute for the Environment. His research interests include structure-function analysis of bacterial adhesion proteins and toxins, design and synthesis of synthetic antigens, immunobiology of human papillomaviruses.

George Somero (somero@stanford.edu)
http://hopkins/somero.htm
- David and Lucile Packard Professor in Marine Science and Senior Fellow at the Woods Institute for the Environment. George N. Somero received his Ph.D. from Stanford University. His group studies the effects of environmental factors—temperature, salinity, hydrostatic pressure, and oxygen availability—on marine animals. Their studies of molecular evolution focus on macromolecular adaptations, for instance, changes in protein structure that underlie adaptive variation in functional properties and stability, and "micromolecular" adaptations that provides the appropriate intracellular milieu for macromolecular function. Studies of short-term responses to environmental change use DNA microarray technology to follow shifts in gene expression in marine organisms. In the context of climate change, studies of the thermal tolerance limits of such physiological processes as protein synthesis, induction of the heat-shock response, heart function, and nerve conduction are showing that certain marine species may currently live near the upper limits of their thermal tolerance ranges. Species living at high temperatures, for instance, animals from the upper intertidal zone, seem less able to adapt to warming than related species found in cooler habitats, such as the subtidal zone. On-going studies are being conducted to reveal further aspects of the effects of global warming on marine species, in an attempt to allow predictions of how this warming may affect biogeographic patterning with latitude and along vertical gradients.
- Relevant courses: BIO 163H: Ocean Biology, BIOHOPK 171H/271: Ecological and Evolutionary Physiology

Erik Sperling (esper@stanford.edu)
http://earth.stanford.edu/erik-anders-sperling
- Assistant Professor, Geological Sciences. His research interests are Earth history and the evolution of life, and the interactions between the biosphere and the geosphere. As such this research can generally be considered paleontology, insofar as paleontology encompasses all aspects of the history of life. This research incorporates multiple lines of evidence, and multiple tools, to investigate questions in the history of life. These lines of evidence include fossil data, molecular phylogenetics, sedimentary geochemistry, and developmental and ecological data from modern organisms. Ultimately, the goal is to link environmental change with organismal and ecological response through the lens of physiology.

Jenny Suckale (jsuckale@stanford.edu)
http://earth.stanford.edu/jenny-suckale
- Assistant Professor in Geophysics. Explores a wide range of phenomena from the microscopic to the planetary scale and space a wide variety of geophysics systems such as volcanoes, glaciers, and magma oceans. Develops original computational methods to improve our basic understanding and predictive capabilities of fundamental Earth Sciences problems.

Jim Sweeney (jim.sweeney@stanford.edu)
http://profiles.stanford.edu/james-sweeney
- Director, Precourt Center, Professor of Management Science & Engineering, Senior Fellow at Precourt Center and at the Stanford Institute for Economic Policy Research and, by courtesy, at the Hoover Institution. His professional activities focus on economic policy and analysis, particularly in energy, natural resources, and the environment.
- Relevant Courses: MS&E 243: Energy and Environmental Policy Analysis, MS&E 248: Economics of Natural Resources

Leif Thomas (leif@stanford.edu)
http://earth.stanford.edu/leif-thomas
- Assistant Professor of Earth System Science. His research interests center on the physics of the ocean circulation. Specifically, he seeks to understand the dynamics of highly energetic, time-variable flows in the upper ocean, such as fronts and eddies. These flows efficiently exchange heat, salt, nutrients, and dissolved gases between the surface of the ocean and the ocean interior and hence play an important role in the Earth's climate and the oceanic sequestration of carbon. He uses theory, computer modeling, and field observations to characterize the fundamental physics of the ocean circulation with the goal of improving the oceanic component of climate models.
Barton H. “Buzz” Thompson, Jr. (buzzt@stanford.edu)
http://earth.stanford.edu/barton-thompson
• Robert E. Paradise Professor in Natural Resources Law, Law School, and Perry L. McCarty Director of the Woods Institute for the Environment. He is a leading expert in environmental and natural resources law and policy and has contributed a large body of scholarship on environmental issues ranging from the future of endangered species and fisheries to the use of economic techniques for regulating the environment. His research interests include natural resources law, water law, international environmental law, environmental law, and property law. Particularly interested in constitutional protection of economic interests and water policy.

Peter Vitousek (vitousek@stanford.edu)
http://earth.stanford.edu/peter-vitousek
• Professor of Biology, and Earth System Science, by courtesy; Senior Fellow at the Woods Institute for the Environment, the Center on Food Security and the Environment, and the Freeman Spogli Institute for International Studies. His research interests include terrestrial ecosystem level responses to succession, invasives, and nutrient cycles, integrating independently studied areas of biological diversity with global climate changes using the ecosystem of Hawaii as a model. He uses this information to understand principles of sustainable agriculture, as well as human-environment interactions in Pacific societies.

Virginia Walbot (walbot@stanford.edu)
http://www.stanford.edu/people/walbot
• Professor of Biological Sciences. Her research interests include genetics, interplay of the environment and development during the life cycle of plants, regulation of Mutator transposable elements in maize.
• Relevant Courses: BIO 137/237: Plant Genetics, BIO 342: Plant Biology Seminar

Michael Wara (michael.wara@stanford.edu)
http://law.stanford.edu/directory/michael-wara/
• Associate Professor of Law, Research Fellow at the Freeman Spogli Institute for International Studies, Faculty Fellow at the Steyer-Taylor Center for Energy Policy and Finance, Affiliate at the Woods Institute for the Environment. His research interests include climate policy and regulation, with a focus on the market for greenhouse gases and mechanisms for reducing emissions, particularly in developing countries.
• Relevant Courses: ECON 159: Economic, Legal, and Political Analysis of Climate-Change Policy, LAW 455: Energy Law, LAW 603: Environmental Law and Policy, LAW 605: International Environmental Law

Paula Welander (welander@stanford.edu)
http://earth.stanford.edu/paula-welander
• Assistant Professor of Earth System Science and Biology, by courtesy. Her research interests include the use of bioinformatics, microbial genetics, physiology, and biochemistry in order to understand the distribution of biomarkers in modern bacteria as well as the evolutionary history of the biosynthetic pathway.
• Relevant courses: EARTHSYS 255: Microbial Physiology, EARTHSYS 44N: The Invisible Majority: The Microbial World That Sustains Our Planet

Mark Zoback (zoback@stanford.edu)
http://earth.stanford.edu/mark-zoback
• Benjamin M. Page Professor in Earth Sciences and Senior Fellow at the Precourt Institute for Energy. His research interests include physics of faulting along major plate boundaries such as San Andreas Fault and intraplate areas such as the New Madrid seismic zone.
• Relevant Courses: GEOPHYS 202: Reservoir Geomechanics, GEOPHYS 290: Tectonophysics