Stanford | Center for Ocean Solutions

Stanford Experts at the 2018 Ocean Sciences Meeting

Portland, Oregon February 11-16

Click on names for more info. For assistance in locating these faculty members, contact

- *Chris Black: christineblack@stanford.edu +1(415) 320-3813*
- *Nicole Kravec: nkravec@stanford.edu +1(415)825-0584*

OCEAN EDUCATION AND LEADERSHIP DEVELOPMENT

Laura H Good

Laura Good is the education manager for the Stanford Center for Ocean Solutions. Originally from the UK, Laura's background is in Marine Resource Management and Informal Science Education. Her research interests center on marine education, scientist engagement in education and outreach, and professional development for informal educators, where her doctoral work focused on the interpretive practice of science center docents as they communicate science to the public. Laura specializes in free choice learning, where we have choice and control over the learning opportunities at hand.

Contact: lhgood@stanford.edu, (831)333-2093

Presentations:

Innovations in Interdisciplinary Ocean Leadership and Workforce Development for Early-Career Scientists I (**Thursday, February 15, 2018** from **10:30am-12:30pm** in the *Oregon Convention Center – D139-D140*)

Understanding the Professional Learning Needs of Emerging Ocean Leaders (**Thursday, February 15, 2018** from **12:45pm-01:45pm** in the *Oregon Convention Center – D139-D140*)

Innovations in Interdisciplinary Ocean Leadership and Workforce Development for Early-Career Scientists Posters (**Thursday, February 15, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Education, Outreach and Policy: Examining the Professional Learning Needs of Emerging Environmental Leaders **(Thursday, February 15, 2018** from **4:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

CIVIL AND ENVIRONMENTAL ENGINEERING

Stephen Monismith

Professor Monismith is currently director of the Environmental Fluid Mechanics Laboratory and Chair of Stanford University's Department of Civil and Environmental Engineering. Monismith's research in environmental and geophysical fluid dynamics involves the application of fluid mechanics principles to the analysis of flow processes operating in rivers, lakes, estuaries and the oceans, with a particular interest in the ecological impacts of those flows.

Contact: monismith@stanford.edu (650) 723-4764

Presentations:

Diurnal and sub-diurnal impacts of tropical seagrass community metabolism on the seawater carbonate system **(Heidi Hirsh – Stanford University) (Monday, February 12, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Recent Advancements in Stratified Turbulent Mixing I (Stephen Monismith and Jeffrey Koseff) (**Tuesday, February 13, 2018** from **08:00am-10:00am** in the *Oregon Convention Center – A107-A109*)

The Red Sea: A Laboratory for Ocean Processes in a Changing World I (**Tuesday, February 13, 2018** from **08:00am-10:00am** in the *Oregon Convention Center – B117-B119*)

Buoyancy Fluxes in Stratified Flows: Observations and Parameterizations (Stephen Monismith, Jeffrey Koseff, Clifton Brock Woodson and Michael E Squibb) (**Tuesday, February 13, 2018** from **09:00am-09:15am** in the *Oregon Convention Center – A107-A109*)

Recent Advancements in Stratified Turbulent Mixing II (Stephen Monismith and Jeffrey Koseff) (**Tuesday, February 13, 2018** from **02:00pm-04:00pm** in the *Oregon Convention Center – A107-A109*)

Recent Advancements in Stratified Turbulent Mixing III Posters (**Tuesday, February 13, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

The Red Sea: A Laboratory for Ocean Processes in a Changing World II Posters (**Tuesday, February 13, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Water Column Modeling of Stratification and Turbulence in a Tidal River (**Tuesday, February 13, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

The role of lateral boundaries in sediment transport due to river plumes in rotational, stratified environments **(Thursday, February 15, 2018** from **09:30am-09:45am** in the *Oregon Convention Center – Oregon Ballroom 201***)**

Hydrodynamic roughness: spatial variability of bottom drag on a coral reef (**Thursday, February 15, 2018** from **03:30pm-03:45pm** in the *Oregon Convention Center – Oregon Ballroom 201*)

Jeffrey R Koseff

Jeff Koseff, founding co-director of the Stanford Woods Institute for the Environment, is an expert in the interdisciplinary domain of environmental fluid mechanics. His research focuses on the interaction between physical and biological systems in natural aquatic environments, and in particular on turbulence and internal wave dynamics; transport, mixing, and phytoplankton dynamics in estuarine systems; and coral reef, kelp forest, and sea-grass hydrodynamics.

Contact: koseff@stanford.edu

Presentations:

Shape effects on transport of microplastics in wavy flows (Michelle H DiBenedetto, Nicholas T Ouellette, and Jeffrey R Koseff) **(Monday, February 12, 2018** from **09:30am-09:45am** in the *Oregon Convention Center – A107-A109*)

Recent Advancements in Stratified Turbulent Mixing I **(Stephen Monismith and Jeffrey R Koseff) (Tuesday, February 13, 2018** from **08:00am-10:00am** in the *Oregon Convention Center – A107-A109)*

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Recent Advancements in Stratified Turbulent Mixing II **(Stephen Monismith and Jeffrey Koseff) (Tuesday, February 13, 2018** from **02:00pm-04:00pm** in the *Oregon Convention Center – A107-A109*)

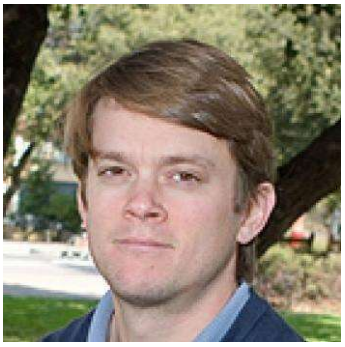
Dense Gravity Currents with Breaking Internal Waves (Yukinobu Tanimoto, Charlie Alan Renshaw Hogg, Nicholas T Ouellette, and Jeffrey R Koseff) **(Tuesday, February 13, 2018** from **03:45pm-04:00pm** in the *Oregon Convention Center – Oregon Ballroom 202*)

Recent Advancements in Stratified Turbulent Mixing III Posters **(Stephen Monismith and Jeffrey R Koseff) (Tuesday, February 13, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Effect of canopy inhomogeneity in submerged vegetative flow (Hayoon Chung, Tracy Mandel, and Jeffrey R Koseff) **(Thursday, February 15, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Characterizing Submerged Ecosystems and Their Hydrodynamics from Surface Disturbances (Tracy Mandel, Hayoon Chung, and Jeffrey R Koseff) **(Friday, February 16, 2018** from **11:30am-11:45am** in the *Oregon Convention Center – E141-E142*)

Oliver B Fringer



Oliver Fringer is associate professor in the Department of Civil and Environmental Engineering at Stanford University, where he has been since 2003. His research focuses on the application of numerical models and parallel computing to the study of laboratory- and field-scale environmental flows to understand the physics of salt and sediment transport in lakes and estuaries, internal waves and mixing, and turbulence in rivers.

Contact: fringer@stanford.edu, (650) 725-6878

Presentations:

Multiscale Topographic Effects on Large-Scale Flow: From Wakes and Lee Waves to Small-Scale Turbulence and Mixing I (**Monday, February 12, 2018** from **10:30am-12:30pm** in the *Oregon Convention Center – A107-A109*)

Multiscale Topographic Effects on Large-Scale Flow: From Wakes and Lee Waves to Small-Scale Turbulence and Mixing II (**Monday, February 12, 2018** from **02:00pm-04:00pm** in the *Oregon Convention Center – A107-A109*)

Multiscale Topographic Effects on Large-Scale Flow: From Wakes and Lee Waves to Small-Scale Turbulence and Mixing III Posters (**Monday, February 12, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

The role of lateral boundaries in sediment transport due to river plumes in rotational, stratified environments **(Thursday, February 15, 2018** from **09:30am-09:45am** in the *Oregon Convention Center – Oregon Ballroom 201***)**

Internal Waves/Tides and Sediment Processes on Continental Margins I Posters - Transport and dispersion due to breaking internal gravity waves on slopes (**Thursday, February 15, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Internal Waves/Tides and Sediment Processes on Continental Margins I Posters (**Thursday, February 15, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Observations of Suspended Sediment Dynamics in San Francisco Bay using Landsat 7 Imagery (**Thursday, February 15, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Internal Waves/Tides and Sediment Processes on Continental Margins II (**Friday, February 16, 2018** from **02:00pm-04:00pm** in the *Oregon Convention Center – A107-A109*)

John O. Dabiri

John Dabiri is Professor of Civil & Environmental Engineering and of Mechanical Engineering at Stanford University. His research focuses on science and technology at the intersection of fluid mechanics, energy and environment, and biology.

Contact: jodabiri@stanford.edu, (650)721-5311

Presentations:

Biological Propulsion in (and of?) the Ocean (**Tuesday, February 13, 2018** from **11:30am-12:30pm** in the *Oregon Convention Center – Portland Ballroom*)

A Spectral Graph-Theoretic Approach to Identification of Coherence in Ocean Flows (**Thursday, February 15, 2018** from **09:00am-09:15am** in the *Oregon Convention Center – A107-A109*)

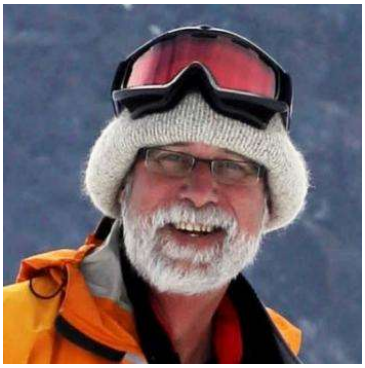
Development and Deployment of a Diver-Operated Volumetric Velocimetry Imaging System (**Thursday, February 15, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Swarm-scale eddies generated by collective swimmers (**Friday, February 16, 2018** from **10:45am-11:00am** in the *Oregon Convention Center – E141-E142*)

The Pressure's On, Then Off: Sea Lampreys Rapidly Switch from Push to Pull Thrust When Accelerating from Rest (**Friday, February 16, 2018** from **11:45am-12:00pm** in the *Oregon Convention Center – E141-E142*)

EARTH SYSTEM SCIENCE

Rob Dunbar - not attending



Rob Dunbar is a professor in the Earth System Science Department at Stanford and a Senior Fellow at the Stanford Woods Institute for the Environment. His research and teaching interests include Climate Dynamics, Oceanography, Marine Ecology, and Biogeochemistry. Dunbar's main focus is in environmental policy and how it is directed towards problem-solving. His research group studies global environmental change with a focus on air-sea interactions, tropical marine ecosystems, polar climate, and biogeochemistry.

Contact: dunbar@stanford.edu, (650)725-6830

Presentations:

Sustaining Ocean Observations to Understand Future Changes in Earth's Climate (Emily Twigg – National Academics of Sciences, Engineering, and Medicine) (Monday, February 12, 2018 from **09:15am-09:30am** in the *Oregon Convention Center – F150*)

Daily variability of the carbon system within a giant kelp forest habitat across three seasons (Kerry Jean Nickols – California State University Northridge) (Monday, February 12, 2018 from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Diurnal and sub-diurnal impacts of tropical seagrass community metabolism on the seawater carbonate system (Heidi Hirsh – Stanford University) (Monday, February 12, 2018 from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

CLIMATE CHANGE ADAPTATION, COASTAL AND NEARSHORE ENVIRONMENTS

Eric Hartge

Eric Hartge is the Research Development Manager at the Stanford Center for Ocean Solutions. He specializes in organizational management and project portfolio development. He also helps decision-makers plan for a changing ecosystem by advising them on coastal adaptation strategies based in the preservation of natural features. His current projects include a collaborative effort with the Natural Capital Project and Stanford Law School using the spatial analysis tool "InVEST" to incorporate multiple benefits from natural habitats in decision processes regarding coastal adaptation planning throughout California. In addition, Eric is developing and implementing a revised project portfolio management approach for the center.

Contact: ehartge@stanford.edu

Presentations:

Connecting the Dots: Coastal Adaptation Decision Making Under Rising Seas (Eric Hartge, Jesse Reiblich, Lisa Wedding, and Greg Verutes) **(Monday, February 12, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Adapting to a changing climate: the human dimensions of California's coast (Sierra Killian, Lisa Wedding, Eric Hartge, and Gregg Verutes) **(Wednesday, February 14, 2018** from **08:26am-08:39am** in the *Oregon Convention Center – E141-E142)*

Lisa Wedding – not attending

Lisa Wedding is a Research associate for spatial ecology and analysis at the Stanford Center for Ocean Solutions. Wedding works with the Ocean Tipping Points team to quantitatively assess spatial ecological resilience across distinct gradients of human and natural impacts in order to identify ecosystem-based solutions for managing human activities in the Hawaiian Archipelago. In addition, she is engaged in spatial modeling efforts to support the InCCAP (Incorporating Natural Capital into Climate Adaptation Planning) project focused on the valuation of natural systems in protecting coastal communities from climate change impacts along the California central coast.

Contact: lwedding@stanford.edu

Presentations:

Connecting the Dots: Coastal Adaptation Decision Making Under Rising Seas (Eric Hartge, Jesse Reiblich, Lisa Wedding, and Greg Verutes) **(Monday, February 12, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

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Jesse Reiblich

Jesse Reiblich is an early career law and policy fellow with the Stanford Center for Ocean Solutions. As a fellow, Jesse uses his extensive background in environmental and land use law to contribute to the center's projects dealing with land-sea interactions. He works to identify the legal challenges posed by sea-level rise and other effects of climate change, as well as suitable legal and land use adaptation strategies to confront these challenges.

Contact: jesselr@stanford.edu

Presentation:

Connecting the Dots: Coastal Adaptation Decision Making Under Rising Seas (Eric Hartge, Jesse Reiblich, Lisa Wedding, and Greg Verutes) **(Monday, February 12, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

EARTH SYSTEM SCIENCE

Karen Casciotti

Karen Casciotti is an Associate Professor of the Earth System Science department at Stanford. 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. Casciotti takes an interdisciplinary approach to these questions, applying tools from stable isotope geochemistry, geochemical modeling, microbiology and molecular biology.

Contact: kcasciot@stanford.edu

Presentation:

Nitrogen cycling processes across the upper and lower boundaries of the Primary Nitrite Maximum in the **Eastern Tropical North Pacific** (Nicole Mayu Travis, Matthew Sean Forbes, and Karen Casciotti) **(Wednesday, February 14, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Kevin Arrigo – not attending

Kevin Arrigo is the Donald and Donald M. Steel Professor in Earth Sciences and Director of the Earth Systems Program at Stanford. His research is highly interdisciplinary and incorporates three fundamental approaches, (1) satellite remote sensing, (2) ecophysiological modeling, and (3) laboratory and field studies. Arrigo uses his expertise as a biological oceanographer to study how anthropogenic and atmospheric forcing controls the flux of CO2 into the oceans and ocean sediment. In particular, Dr. Arrigo's interest is in the role marine microalgae play in biogeochemical cycling and how the variability of their productivity affects CO2 flux.

Contact: arrigo@stanford.edu

Presentations:

Zooplankton feeling climate changes in the **Amundsen Sea, Antarctica** (Ho Kyung Ha, Hyoung Sul La, Keyhong Park, Anna Wahlin, Kevin R Arrigo, Dongseon Kim, Eun Jin Yang, Angus Atkinson, Sophie Fielding, Jungho Im, Tae-Wan Kim, Hyeong Chul Shin, and Sang Hoon Lee) **(Monday, February 12, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Characterization of and controls on phytoplankton productivity along the Western Antarctic Peninsula (Hannah Joy-Warren, Gert van Dijken, Katelyn Lewis, Anne-Carlijn Alderkamp, Virgina Selz, and Kevin R Arrigo) **(Tuesday, February 13, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Abundance and activity of the N2 fixing unicellular Cyanobacterial symbiont UCYN-A at a Southern California coastal site: light and nutrient controls (Matthew M Mills, Kendra A Turk-Kubo, Samuel T Wilson, Kevin R Arrigo, and Jonathan P Zehr) **(Wednesday, February 14, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

The ice shelf meltwater pump contribution to vertical exchange over the open shelf in the **Amundsen Sea and elsewhere around Antarctica** (Michael S Dinniman, Pierre St-Laurent, Kevin R Arrigo, Eileen E Hofmann, John Michael Klinck, Robert M Sherrell, Sharon Elisabeth Stammerjohn, and Patricia L Yager) **(Thursday, February 15, 2018** from **08:45am-09:00am** in the *Oregon Convention Center – C123-C124*)

The effects of visible and ultraviolet radiation on under-ice phytoplankton growth (Kevin R Arrigo, Kate E Lowry, Katelyn Lewis, Matthew M Mills, and Atsushi Matsuoka) **(Thursday, February 15, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Ice algal production in the Chukchi Sea from 1979 to present (Virgina Selz, Benjamin T Saenz, Gert van Dijken, and Kevin R Arrigo) **(Thursday, February 15, 2018** from **04:00pm-06:00pm** in the *Oregon Convention Center – Poster Hall*)

Acclimation Strategies of Arctic Ocean Phytoplankton to the Seasonal Transition from **Light to Nutrient Limitation** (Katelyn Lewis, Kevin R Arrigo, Matthew M Mills, Gert van Dijken, Kate E Lowry, Virgina Selz, and Hannah Joy-Warren) (**Friday, February 16, 2018** from **08:15am-08:30am** in the *Oregon Convention Center – C123-C124*)

Fiorenza Micheli – not attending

Fiorenza Micheli is the David and Lucile Packard Professor of Marine Science and the co-director, with Jim Leape, of the Stanford Center for Ocean Solutions. Micheli's research focuses on the processes shaping marine communities and incorporating this understanding in the management and conservation of marine ecosystems.

Contact: micheli@stanford.edu, (831)655-6251

Presentations:

Unexpected resilience of seagrass-epiphyte grazer mutualism to future ocean acidification (Juhyung Lee, Fiorenza Micheli, Kristy Kroeker, and Brent Hughes) **(Monday, February 12, 2018** from **09:36am-09:48am** in the *Oregon Convention Center – Oregon Ballroom 201*)

Integrated field and laboratory approaches to assess the performance of juvenile abalone under climate change and local oceanographic variability (Charles A. Boch, Fiorenza Micheli, Clifton Brock Woodson, Maha W Alnajjar, Jody M Beers, Stephen G Monismith, Giulio De Leo, Steven Yitzchak Litvin, Emil Aalto, Jose Bonilla, Antonio Espinoza, Leonardo Vazquez, and James Barry) **(Thursday, February 15, 2018** from **12:15pm-12:30pm** in the *Oregon Convention Center – Oregon Ballroom 203*)

Barbara Block – not attending

Barbara Block is the Charles and Elizabeth Prothro Professor in Marine Sciences in the Department of Biology. Her lab is based at Stanford's Hopkins Marine Station. Her research focuses on how large pelagic fishes utilize the open ocean environment. Investigations center upon understanding the evolution of heat management 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 internal heat production, and the physiological ecology of tunas and billfishes. The research in the lab is interdisciplinary, combining physiology, ecology, and genetics with oceanography and engineering.

Contact: bblock@stanford.edu

Presentations:

Oceanographic drivers of the vertical distribution of a highly migratory, endothermic shark (Daniel Coffey, Aaron B Carlisle, Elliott L. Hazen, **Barbara Block**) **(Tuesday, February 13, 2018** from **03:15pm-03:30pm** in the *Oregon Convention Center – E145-E146*)

Electronic Tags Permit Long-Term Monitoring and Mortality Estimates of Atlantic Bluefin Tuna (**Barbara Block**, Rebecca Whitlock, Mike Stokesbury, Robert Schallert, Steve Wilson) **(Tuesday, February 13, 2018** from **03:45pm-04:00pm** in the *Oregon Convention Center – E145-E146*)

Guilio de Leo – not attending

Guilio de Leo is a Professor of Biology at Stanford University. He is a theoretical ecologist by formation, generally interested in investigating factors and processes driving the dynamics of natural and harvested populations and in understanding how to use this knowledge to inform practical management. Leo has been particularly interested in investigating factors and processes that provide resilience of natural or managed population to natural and anthropogenic stressors, environmental shocks and climate change.

Contact: deleo@stanford.edu

Presentation:

Integrated field and laboratory approaches to assess the performance of juvenile abalone under climate change and local oceanographic variability (Charles A. Boch, Fiorenza Micheli, Clifton Brock Woodson, Maha W Alnajjar, Jody M Beers, Stephen G Monismith, Giulio De Leo, Steven Yitzchak Litvin, Emil Aalto, Jose Bonilla, Antonio Espinoza, Leonardo Vazquez, and James Barry) **(Thursday, February 15, 2018** from **12:15pm-12:30pm** in the *Oregon Convention Center – Oregon Ballroom 203*)

Nicholas Ouellette

Nick Ouellette is broadly interested the behavior of complex systems far from equilibrium. In particular, a running theme in his research is dynamical self-organization. He seeks both to understand the physical principles that govern the spontaneous emergence of low-dimensional structure in high-dimensional systems and to harness this self-organization for engineering applications. His current research includes studies of turbulent flows in two and three dimensions, in both simple and complex fluids; the transport of inertial, anisotropic, and active particles in turbulence; the erosion of granular beds by fluid flows and subsequent sediment transport; and quantitative measurements of collective behavior in insect swarms and other animal groups.

Contact: nto@stanford.edu

Presentations:

Shape effects on transport of microplastics in wavy flows (Michelle H DiBenedetto, Nicholas T Ouellette, and Jeffrey R Koseff) **(Monday, February 12, 2018** from **09:30am-09:45am** in the *Oregon Convention Center – A107-A109*)

Dense Gravity Currents with Breaking Internal Waves (Yukinobu Tanimoto, Charlie Alan Renshaw Hogg, Nicholas T Ouellette, and Jeffrey R Koseff) **(Tuesday, February 13, 2018** from **03:45pm-04:00pm** in the *Oregon Convention Center – Oregon Ballroom 202*)