

**2018 Distinguished Scientist Seminar**  
***Semester in Environmental Science***  
**MBL ECOSYSTEMS CENTER, WOODS HOLE, MA**

**Dr. Sarah Das**  
**Associate Scientist**  
**Dept. of Geology and Geophysics**  
**Woods Hole Oceanographic Institution**

***Meltdown! Polar Ice Sheets in a***  
***Warming World***

**September 14<sup>th</sup>— 3:00 PM**  
**Speck Auditorium, MBL**



Sarah Das is an interdisciplinary earth scientist whose research is focused on polar glaciology, paleoclimatology, and the interaction of the cryosphere (the planet’s frozen water) with the “Earth System.” She is interested in reconstructing past climate using data collected from ice-cores; understanding and measuring changes in the mass-balance and dynamics of polar ice sheets and exploring the interaction between the coupled cryosphere-atmosphere-ocean systems. She seeks to understand how these physical factors influence biogeochemical processes in polar environments.

Dr. Das has participated in over 20 Antarctic and Greenlandic field expeditions, fourteen as lead principle investigator and expedition leader. She received her graduate training at Pennsylvania State University under the guidance of renowned geologist and climate scientist, Richard Alley, completing her doctoral work in 2003. But she began her career immediately after earning her undergraduate degree in geology at Cornell in 1995, where she worked as a research assistant on the Cornell Earth Observing System (EOS) project which applied the techniques of satellite imaging and monitoring to the study of the interaction of tectonics, erosion, and glaciation in the Andes Mountains. She then joined a team from California Institute of Technology as a field technician working on the West Antarctic Drilling Project before returning to school to pursue a doctorate in geology. She moved to the Woods Hole Oceanographic System as a postdoctoral scholar in 2003 and was appointed assistant scientist in 2004 and tenured associate scientist in 2014.

Dr. Das is committed to sharing the importance and excitement of scientific discovery with policy makers and the public. She has been twice appointed to 3-year terms on the Polar Research Board of the National Academy of Sciences (2014 and 2017). She has been a featured scientist with AAAS ‘*What We Know*’ project, at *Climate Science Day* on Capitol Hill, on NPR, NOVA, at the Smithsonian National Museum of Natural History *Ocean Portal*, at the MIT Museum, and in the popular science book “*Science On Ice*,” among many other outlets. In 2015-16 was invited to be one of the “Nifty-Fifty” speaker to the USA Science and Engineering Festival -- the nation’s largest celebration of science, technology, engineering and mathematics (STEM).

**Suggested readings:**

Fyke, J., Sergienko, O., Löfverström, M., Price, S., & Lenaerts, J. T. M. (2018). An overview of interactions and feedbacks between ice sheets and the Earth system. *Reviews of Geophysics*, 56, 361–408.  
<https://doi.org/10.1029/2018RG000600>

**2018 Distinguished Scientist Seminar**  
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**Dr. James Fourqurean**  
**Director, Center for Coastal Oceans Research**  
**Professor, Marine Sciences Program,**  
**Florida International University**

***Seagrasses are disappearing in Bermuda:  
Is pollution or sea turtle conservation to  
blame?***



**September 21<sup>st</sup> — 3:00 PM Speck Auditorium, MBL**

Jim Fourqurean is Professor of Biological Sciences and Director of the Center for Coastal Oceans Research at Florida International University in Miami, where he has been on the faculty since 1993. He is also the principal investigator for the Medina Aquarius Program that operates the world's only underwater research laboratory and habitat.

Dr. Fourqurean is primarily interested benthic plant communities that flourish in shallow bays and estuaries and understanding how they are affected by nutrients and influence biogeochemistry. His laboratory has used seagrass ecosystems as models for addressing general ecological questions. For example, he and his students have investigated how plant communities alter carbon storage; they have studied plant-plant interactions, plant-animal interactions and the structure of food webs.

Over the last 10 years, Dr. Fourqurean has been helping translate the knowledge about carbon cycling in coastal ecosystems into actionable policy and climate change mitigation strategies. He is one of the lead scientists in the International Blue Carbon Working Group and he also serves as a scientific representative to the International Blue Carbon Policy Working Group. These groups have been successful raising awareness about the importance of coastal ecosystems in carbon cycling and sequestration, which has resulted in the inclusion of coastal ecosystems into national greenhouse gas inventories.

Dr. Fourqurean received his undergraduate and graduate degrees from the University of Virginia and completed a postdoctoral fellowship working at San Francisco State University on Tomales Bay, CA. In addition to his tenure at Florida International University, he has served as a visiting professor at Institut Mediterrani d'Estudis Avançats, CSIC-Universitat des Illes Balears, Esporles in Mallorca, Spain (2001-2) and was a visiting scholar at the Australian National Network in Marine Sciences and Western Australia University (2011). Dr. Fourqurean was recently elected next president of the Coastal and Estuarine Research Federation (CERF), the world's largest association of scientists and resource managers devoted to work on estuaries and coastal bays and lagoons.

For more information: <https://marine.fiu.edu/faculty/james-fourqurean/>; <https://aquarius.fiu.edu/>

**Suggested readings:**

Burgett, C.M.\*, D.A. Burkholder, K.A. Coates, V.L. Fourqurean, W. J. Kenworthy, S.A. Manuel, M.E. Outerbridge and J.W. Fourqurean. 2018. Ontogenetic diet shifts of green sea turtles (*Chelonia mydas*) in a mid-ocean developmental habitat. *Marine Biology* 165:33

Fourqurean, J.W., S.A. Manuel, K.A. Coates, W.J. Kenworthy and J.N. Boyer. 2015. Water quality, isoscapes and stoichioscapes of seagrasses indicate general P limitation and unique N cycling in shallow water benthos of Bermuda. *Biogeosciences* 12:6235-6249

**2018 Distinguished Scientist Seminar**  
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**Dr. Pat Glibert**  
Professor, University of Maryland  
Center for Environmental Science, Horn Point

*Eutrophication and harmful algal blooms:  
the complexities of changing nutrients*



**October 19<sup>th</sup> — 3:00 PM Loeb G70 Auditorium, MBL**

Pat Glibert is a Professor at the University of Maryland Center for Environmental Science, Horn Point Laboratory. She received her Ph.D. from Harvard University in Organismal and Evolutionary Biology and was a Postdoctoral Scholar and an Assistant Scientist at the Woods Hole Oceanographic before moving to the University of Maryland.

Her research addresses questions about the fate of inorganic and organic nitrogen in marine and estuarine systems; global changes in the nitrogen cycle caused by anthropogenic activities, and the ecology of phytoplankton in estuarine and oceanic environments. She is an expert in the application of stable isotopes to explore problems related to eutrophication and its effects on growth, physiology and mixotrophy among marine cyanobacteria and harmful algal bloom (HAB) species. She has conducted research on impacts of HAB on food webs and shellfish growth, invasive species and effects of ocean fertilization on carbon sequestration.

She has been active in international environmental issues related to eutrophication and harmful algal blooms. In 2001 she received the “Environmental Expert Award” bestowed by the Kuwait Minister of Health, and in 2012 was awarded the Distinguished Service Award from Kuwait University. Dr. Glibert also holds an Honorary Doctorate from Linnaeus University, Sweden (awarded in 2011). In 2014 she was appointed visiting professor at Zhejiang University in China and named one of China’s “1000 talents.”

She has received a number of prestigious awards for her work (e.g. University of Maryland Board of Regents Award for Excellence in Research, Scholarship and Creative Activity) and is a Fellow of the American Association for the Advancement of Science. Most recently (2016) she was named a Fellow of the Association for the Sciences of Limnology and Oceanography.

For more information: <http://www.umces.edu/pat-glibert>

**Suggested readings:**

Glibert P.M., Beusen A.H.W., Harrison J.A., Dürr H.H., Bouwman A.F., Laruelle G.G. (2018) Changing Land-, Sea-, and Airscapes: Sources of Nutrient Pollution Affecting Habitat Suitability for Harmful Algae. In: Glibert P., Berdalet E., Burford M., Pitcher G., Zhou M. (eds) Global Ecology and Oceanography of Harmful Algal Blooms. Ecological Studies (Analysis and Synthesis), vol 232. Springer, Cham. [https://doi.org/10.1007/978-3-319-70069-4\\_4](https://doi.org/10.1007/978-3-319-70069-4_4)

Glibert P.M. et al. (2018) Key Questions and Recent Research Advances on Harmful Algal Blooms in Relation to Nutrients and Eutrophication. In: Glibert P., Berdalet E., Burford M., Pitcher G., Zhou M. (eds) Global Ecology and Oceanography of Harmful Algal Blooms. Ecological Studies (Analysis and Synthesis), vol 232. Springer, Cham. 232, [https://doi.org/10.1007/978-3-319-70069-4\\_12](https://doi.org/10.1007/978-3-319-70069-4_12)

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**Dr. Eric Seabloom**  
**Professor, University of Minnesota**  
**Dept. Ecology, Evolution & Behavior**



***Grassland ecosystems and global change:  
Insights from NutNet, a globally-replicated experiment***

**November 9th — 3:00 PM Speck Auditorium, MBL**

A conundrum facing scientists is the mismatch between the scales at which we conduct research (single sites or small regional networks) and the global scale of the most critical questions facing humanity. For example, human activities have increased global nutrient inputs, however nutrient-addition experiments are typically conducted only at single sites. To address the lack of comparable, experimental data on global change, Eric Seabloom and his colleagues co-founded the Nutrient Network (NutNet), a grass-roots, distributed experiment manipulating nutrient supply and herbivore abundance at over 130 terrestrial sites in 27 countries. In addition to providing general ecological insights, NutNet has served as a new model for studying global-scale questions in ecology.

Dr. Seabloom's research explores a wide array of topics in community, ecosystem, and disease ecology including herbivore foraging strategies, invasive species, ecosystem stability, and the effects of nutrients on plant and pathogen communities. He is also the Co-Leader of the iconic Cedar Creek Long-Term Ecological Research (LTER) site in Minnesota. Cedar Creek encompasses a 2200 hectare mosaic of uplands dominated by oak savanna, prairie, hardwood and pine forests, abandoned agricultural fields and lowlands of ash and cedar swamps, acid bogs, marshes, and sedge meadows. Researchers at Cedar Creek have conducted a series of long-term, ground-breaking experiments by manipulating the number of species, abundance of insects and herbivores, temperature, as well as water, nutrient and CO<sub>2</sub> supplies in over 1000 experimental plots enabling them to test theory and assess controls on productivity and functioning of terrestrial ecosystems.

Dr. Seabloom received his Ph.D. at Iowa State University and was then awarded a postdoctoral fellowship at the National Center for Ecological Analysis and Synthesis at the University of California, Santa Barbara (1997-2003). He joined the faculty at University of Oregon in 2004, then moved to University of Minnesota in 2010. He spent 2013 as a Distinguished Visiting Scientist at CSIRO in Brisbane, Australia.

**Suggested readings:**

Borer, E.T. et al. (2017). A decade of insights into grassland ecosystem responses to global environmental change. *Nature Ecology & Evolution* 1:0118 DOI: 10.1038/s41559-017-0118

Seabloom, E.W. (2015) Plant species' origin predicts dominance and response to nutrient enrichment and herbivores in global grasslands. *Nature Communications* 6:7710 DOI: 10.1038/ncomms8710.