

## **The Dark Side of the Sea: How Microbial Communities Process Carbon, Nutrients, and Oxygen and Alter Marine Ecosystems**

Many, many microscopic organisms (bacteria and archaea) thrive below the sunlit layer of the ocean, where their large numbers make them critically important components of marine ecosystems. One of their most important roles is to consume dissolved oxygen (DO) in seawater, as this affects ocean biogeochemistry and ecology in multiple ways. Aerobic microorganisms catalyze the respiration of organic carbon and the oxidation of ammonia and nitrite; therefore they regulate the consumption of DO and organic matter, regeneration and cycling of nutrients, and the availability of substrates and nutrients to other organisms. As DO is consumed, anaerobic forms of metabolism are subsequently favored—which favors microorganisms, rather than fish, invertebrates, or marine mammals. However, our understanding of this is still limited and many questions remain. For example, how predictable are microbial community responses to low DO, both biogeochemically and ecologically? Which organisms and processes ‘win’ the competition for oxygen and other resources? How does oxygen affect the distribution of larger organisms? In this talk, I will address these challenges through new biogeochemical results and quantitative analyses of microbial communities in the largest low-oxygen region of the ocean—the eastern tropical North Pacific (ETNP)—as well as in “marine lakes”—including Jellyfish Lake, Palau.



**Michael Beman, Ph.D.**

**UC Merced**

**Friday, May 3, 2019**

3:00 – 4:00 PM

Science 2, room 109

For further information: [www.csufresno.edu/biology](http://www.csufresno.edu/biology)

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Bio: Dr. Beman earned his B.S. from Yale University and his Ph.D. from Stanford in Geological and Environmental Sciences. He is currently an assistant professor at UC Merced. His research seeks to understand linkages and feedbacks among microbial communities and the biogeochemical processes that they mediate, and to determine how microbial communities and biogeochemical processes may be altered by (or resilient to) ocean deoxygenation, ocean acidification, pollution, and climate change. <https://bemanlab.org/>

If you need a disability-related accommodation or wheelchair access, please contact Lindasue Garner at the Department of Biology at 278-2001 or e-mail [lgarner@csufresno.edu](mailto:lgarner@csufresno.edu) (at least one week prior to event).