



Bridget Seegers is a PhD candidate in Marine Biology and Biological Oceanography at USC working with Dr. Burt Jones. Her work focuses mainly on coastal ecology and harmful algal blooms using gliders, autonomous underwater vehicles, to gather multi-month data sets in the very dynamic coastal ocean. She earned a Masters in Water Resources Science from the University of Minnesota researching Lake Superior grazing rates and she has a B.A in Biology at Carleton College.



ENVIRONMENTAL ENGINEERING SEMINAR SERIES

FRIDAY, APRIL 4TH FROM 1:30PM-2:20PM

MCDONNELL DOUGLAS AUDITORIUM (MDEA)

Understanding the Influence of Coastal Ocean Dynamics on Harmful Algal Blooms in Southern California Using the Integrated Observations from Autonomous Gliders, Moorings, and Satellites

Presented By: Bridget Seegers, Ph.D. Candidate

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Abstract:

Harmful algal blooms, particularly of the toxic diatom *Pseudo-nitzschia* sp. have been a recurrent problem along the California coastline. Early efforts to monitor, understand and model the blooms relied on nearsurface measurements from piers, boats and remotely sensed ocean color and temperature. However, periodically marine birds and mammals would express symptoms of domoic acid toxicity without evidence of a corresponding *Pseudo-nitzschia* bloom. To better understand the occurrence of HAB species and the oceanographic processes that lead to these occurrences, we incorporated the use of autonomous underwater vehicles (gliders) along with moorings equipped environmental sample processors (ESPs, developed by MBARI), weekly pier data, and ocean color data provide a multidimensional view of the development and evolution of harmful algal blooms (HABs). We applied this approach in the central Southern California Bight to better understand the spring seasonal variation in phytoplankton blooms related to many factors including upwelled nutrients and subsurface seeding of surface blooms. The data can also shed light on anthropogenic influences on the coastal ecosystem. Results from the glider and ESP observations show that blooms of toxic *Pseudo-nitzschia* sp. can develop offshore and subsurface prior to their manifestation in the surface layer and/or near the coast. A significant surface manifestation of the blooms appears to coincide with periods of upwelling, or other processes that cause shallowing and surfacing of the pycnocline and subsurface chlorophyll maximum. These same observations also enable us to evaluate the interaction of anthropogenic sources such as sewage effluent plumes with the subsurface phytoplankton populations.

Next Week's Seminar (Friday, April 11th)

Alice Robinson—Post Doctoral Researcher
University of California, Irvine