Commonwealth Center for Coastal Physical Oceanography
Old Dominion University
Spring 2013 Seminar Series

"DISPERSION OF TERRESTRIAL PATHOGENS IN COASTAL WATERS OF CENTRAL CALIFORNIA: LINKING SEA OTTERS TO YOUR CAT"

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Monday, February 11, 2013
3:30 PM
Room 1202, Engineering and Computational Sciences Building

<u>Abstract</u>

This talk describes how oceanographic processes link watersheds and nearshore ecosystems along the central California coast. The relative importance of river buoyancy, river momentum, and wind-driven transport affect the fate of materials discharged to the coast. Notably, particles flushed from the watershed in storm-level stream discharges experience very different oceanic and atmospheric conditions compared to base flows. Field observations from Cambria, California, a high-resolution coastal ocean model of the central California coast, and a particle tracking model are combined to develop a probabilistic framework for examining dispersion. This work is applied to investigate the widespread infection of southern sea otters by a terrestrial protozoan parasite, *Toxoplasma gondii*. Toxo is only known to sexually replicate in cats, and so widespread prevalence of sea otter infections indicates that the hardy, free-living infectious stage of this pathogen is capable of surviving transport from the watershed to the coastal ocean. The direct mechanism of infection is unknown, though statistics are available describing where along the coast infectious rates are highest. These statistics can be combined with the particle dispersion estimates as a means of advancing our understanding of how terrestrial materials affect nearshore ecosystems.

<u>Biography</u>

Nick Nidzieko is an Assistant Professor at Horn Point Laboratory, University of Maryland Center for Environmental Science. He earned a B.S. in Marine Biology from UCLA (2000) and graduate degrees in Environmental Fluid Mechanics from Stanford University (M.S., 2004; Ph.D., 2009).

Reception before seminar at 3:00 PM