SWES Colloquium Series 2013-2014

Department of Soil, Water and Environmental Science

Ocean viruses: Nanoscale entities with global scale impacts

Microbes drive the biogeochemical cycles that fuel the planet, and their viruses (phages) play important roles ranging from mortality and nutrient cycling to gene transfer. However, our inability to "see" viruses in the environment challenges our broader and quantitative understanding of viral roles in ecosystem processes. My lab specializes in developing new experimental and informatic approaches to "see" and interpret the diversity of wild viruses across myriad data types. Together these methods directly link viruses to their hosts with reduced or no culturing requirements, provide both single-cell and population perspectives on virus-host interactions, or shed light on the vast unknown sequence space that dominates surveys of wild viruses in a manner that will illuminate these 'viral' signals in diverse metagenomic projects. With these tools, environmental virologists can now define what a viral 'population' is, quantify and map viral lineages across time and space, more rigorously interpret metagenomic 'fragment recruitment plots', and investigate infection dynamics of environmental virus-host systems at the single-cell and population levels. By coupling these new measurement capabilities to well-contextualized oceanographic transects and cruise tracks, we hope to usher in a new era of phenomenological discovery and understanding of the two most abundant biological entities in the Earth and Ocean Systems.

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Monday, February 3, 2014 -- 3:00pm

Marley 230
Refreshments at 2:45

School of Earth and Environmental Sciences

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