

TUESDAY AFTERNOON CHALK TALKS (1/2 hour)

<u>time</u>	<u>room</u>	<u>speaker</u>	<u>title and description</u>
13:15-13:45	A	Colleen Petrik	<i>Adding traits to size-structured global fish model:</i> Life history has recently been added to a size-structured global fish model. We would like to use this model to examine questions about recruitment variability. One question is, "Can this model reproduce observed recruitment variability?" What types of biological traits (e.g. size at maturity, spawning season, duration of spawning period) are necessary to reproduce different observed patterns of recruitment variability?
13:15-13:45	B	Jeff Bowman	<i>Can genetic traits inform biogeochemical models? A possible functional prediction approach:</i> We've recently developed a method for predicting metabolic pathways from bacterial 16S rRNA gene data. Our ultimate goal is to use these predictions to model the flow of carbon and nutrients in and out of the bacterial community. We are eager for chalk talk discussion on possible approaches, and on improving our current methods.

<u>time</u>	<u>room</u>	<u>speaker</u>	<u>title and description</u>
13:45-14:15	A	Adrian Burd	<i>Modeling zooplankton community structure and particle flux attenuation in the ocean:</i> The flux of sinking particulate material in the water column is usually modeled as either a simple power law, or as a function of the sinking particles. However, the decrease of flux with depth results from biological the activity of microbes and zooplankton. This chalk talk will outline some ideas we are currently developing to model the attenuation of flux using a trait-based approach within an agent-based model of zooplankton and particles and their interactions.
13:45-14:15	B	Alexandra Marki	<i>From fat to fit:</i> We plan to modify the optimality-based plankton ecosystem model (OPEM) to simulate the regulatory physiological responses of zooplankton to food quality and environmental stressor by balancing zooplankton lipid acquisition and metabolism, in particular, by implementing phosphorus and carbon allocation into structural, storage and active pools.

<u>time</u>	<u>room</u>	<u>speaker</u>	<u>title and description</u>
14:15-14:45	A	Ken Anderson	<i>Size- and trait-based modelling of plankton trophic strategies:</i> I will outline a simple idea for a size- and trait-based model of plankton. I will use the outline as a basis for a discussion of the applicability of such models and about how they are implemented in circulation models

<u>time</u>	<u>room</u>	<u>speaker</u>	<u>title and description</u>
14:45-15:15	A	Mick Follows	<i>A macromolecular basis for modeling marine plankton:</i> Modeling populations of marine microbes and their biogeochemical role on the basin and global scales requires balancing dynamic descriptions of traits including elemental composition and growth rate against simplicity and computational efficiency. In this context will discuss the pros and cons of developing physiological models which resolve key macromolecular pools, e.g. protein, pigment, lipid, carbohydrate, etc.

TUESDAY AFTERNOON SMALL GROUP DISCUSSIONS (1 hour)

<u>time</u>	<u>room</u>	<u>moderator</u>	<u>title and description</u>
13:15-14:15	C	Heidi Sosik, Kristen Hunter-Cevera	<i>Phytoplankton Size – Challenges in Observation and Interpretation:</i> We will discuss advantages and disadvantages of existing methods and approaches for characterizing cell size in the context of driving research questions. Participants will be asked to consider how results from different methods can best be combined to meet the full range of needs and to highlight outstanding methodological challenges and promising areas for future development.
13:15-14:15	D	Colin Kremer, Mridul Thomas	<i>Does the ocean behave like your beaker? Linking experimental and natural evolution:</i> Evolutionary experiments are uncovering fascinating insights into how marine organisms may respond to global change stressors. But how well do these (typically lab-based) experiments reflect evolution as it occurs in nature, and how can they inform modeling and prediction efforts? We hope to bring together
13:15-14:15	E	Jen Hammock	<i>Trait coverage for all marine taxa. Are there no shortcuts?</i> Trait data availability for marine taxa is vanishingly thin over most species. Can we help fill it in using edgy/scalable methods like textmining, crowdsourcing, and taxonomic
13:15-14:15	F	Susanne Menden-Deuer	<i>What are the large scale, ecological ramifications of physiological and behavioral diversity at the scale of individual organisms?</i> There is considerable species-specific variability in physiology, behavior, resource acquisition strategies and modes of cell cell interactions, all of which can be modulated by abiotic conditions. How can this variability at the small scale be adequately summarized to understand and predict emergent larger scale processes?

<u>time</u>	<u>room</u>	<u>moderator</u>	<u>title and description</u>
14:15-15:15	B	Susanne Wilken	<i>Key traits and trade-offs defining a mixotrophic lifestyle:</i> Mixotrophic protists combine the ability to both photosynthesize and to ingest food particles, and hence can be described by traits traditionally ascribed to phytoplankton and zooplankton separately. The goal of this discussion group is to define a key set of traits required to describe a mixotrophic lifestyle, identify potential trade-offs among them, and outline ideas to empirically test for such trade-offs.
14:15-15:15	C	Nick Record	<i>A community repository for trait-based model code:</i> To facilitate the sharing and development of model code, it could be beneficial to have an organized open code repository for trait-based models. We would like to discuss whether such a resource would be valuable to the research community, and if so, how it should be structured, maintained, and distributed. If there is sufficient support for the idea, we will set out to establish the repository.

TUESDAY AFTERNOON SMALL GROUP DISCUSSIONS (1 hour)

<u>time</u>	<u>room</u>	<u>moderator</u>	<u>title and description</u>
14:15-15:15	D	Adam Martiny, Jorn Bruggeman	<i>Traits and phylogeny:</i> Recent studies reveal that microbial traits are differentially conserved across the tree-of-life and appear to be distributed in a hierarchical fashion, possibly linked to a traits biochemical complexity. Developments in such a framework may offer predictions not only for how microbial composition responds to changing environmental conditions, but also for how these changes alter nutrient and energy cycling in marine systems. In this group, we will discuss (1) if such a framework is useful to describe the distribution of key traits (e.g., light optimum, temperature optimum, nutrient uptake) across marine organisms and (2) under what circumstances a phylogenetic framework would be useful - or not.
14:15-15:15	E	Anna Hickman	<i>What are the most important traits and do we measure them?</i> In this session we will brainstorming / list the key traits that are a) important for ecological processes (species selection), b) important for biogeochemical cycles, c) are easy to measure. I don't think the lists will be the same and that may have some interesting implications. Differences between fields (microbes vs. larger organisms) may be insightful too.
14:15-15:15	F	Bror Jonsson	<i>Taken for a ride: how do ocean currents affect traits in marine organisms?</i> We all know that physics and biology interact closely in the ocean, but there is less agreement about the relative importance of different temporal and spatial scales. This question is critical in a traits perspective since large-scale processes can transport organisms between vastly different environmental conditions. In this get-together we will discuss if and how dispersal and other physical processes affect marine ecosystem, and maybe try to come up with some ideas for a paper. Some concepts I'm thinking about are eco-regions, connectivity, Lagrangian vs Eulerian frame, land-ocean continuum, and resilience.