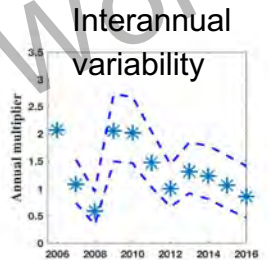
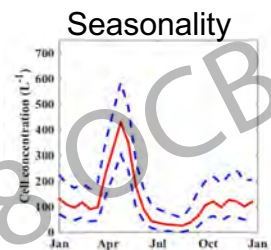
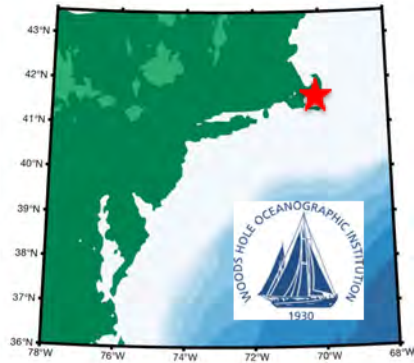
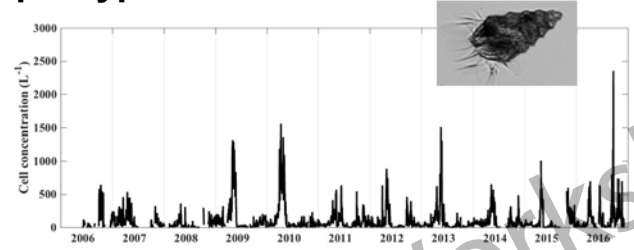
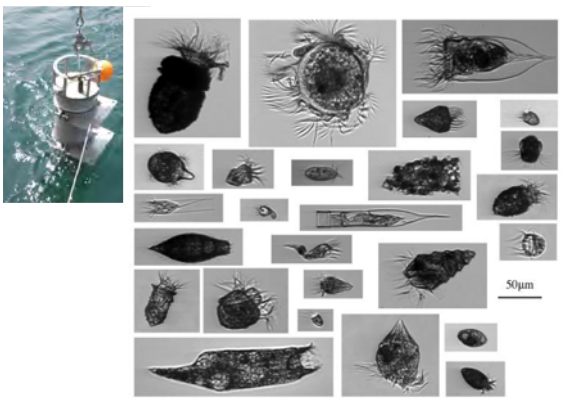
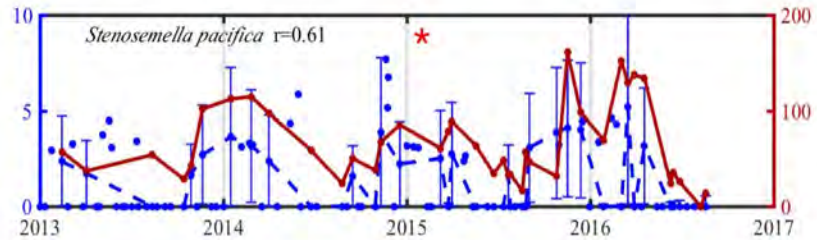


Exploring seasonal patterns of ciliate communities through integrative taxonomic analyses (Advisor: Dr. Heidi Sosik)

-Time series modeling of ciliate morphotypes



-Can genotyping complement what we know about seasonality determined by morphology?



---- IFCB Counts

---- Sequencing

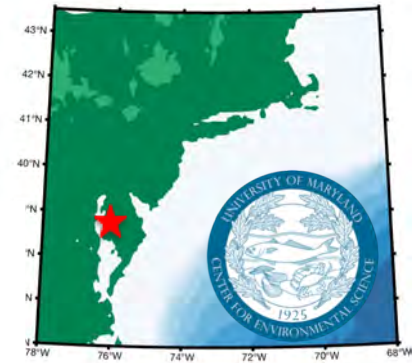
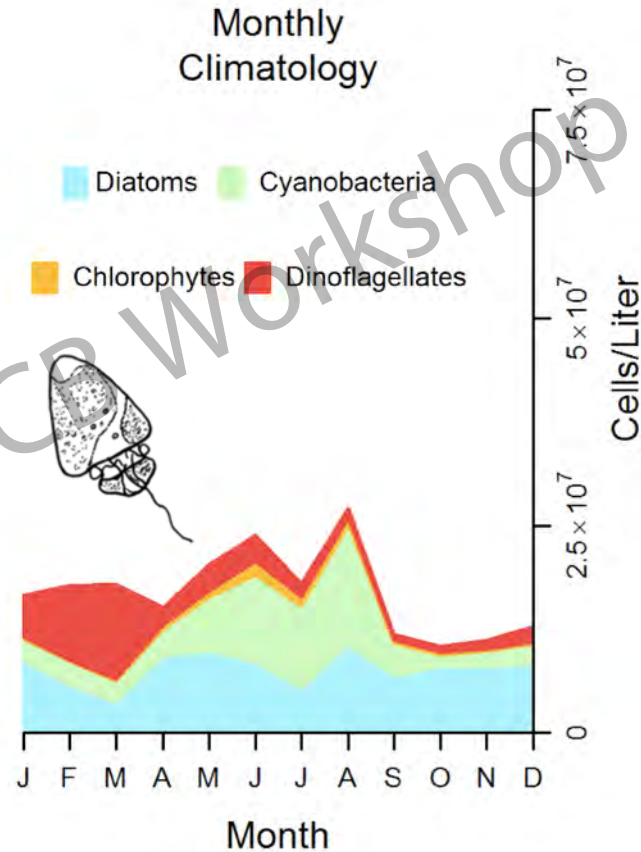


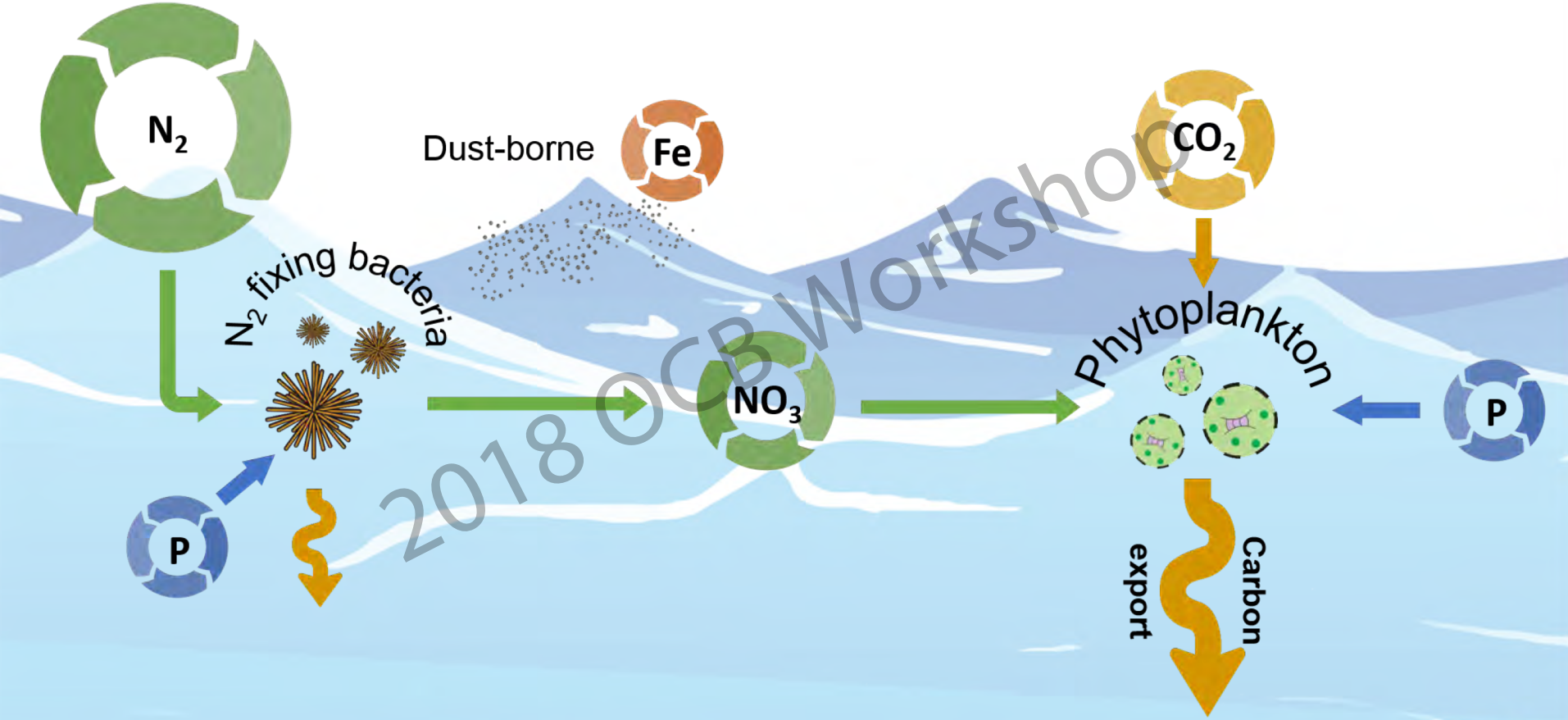
Mixotrophic dinoflagellates: wintertime dynamics

(Advisors: Drs. Sairah Malkin and Greg Silsbe)

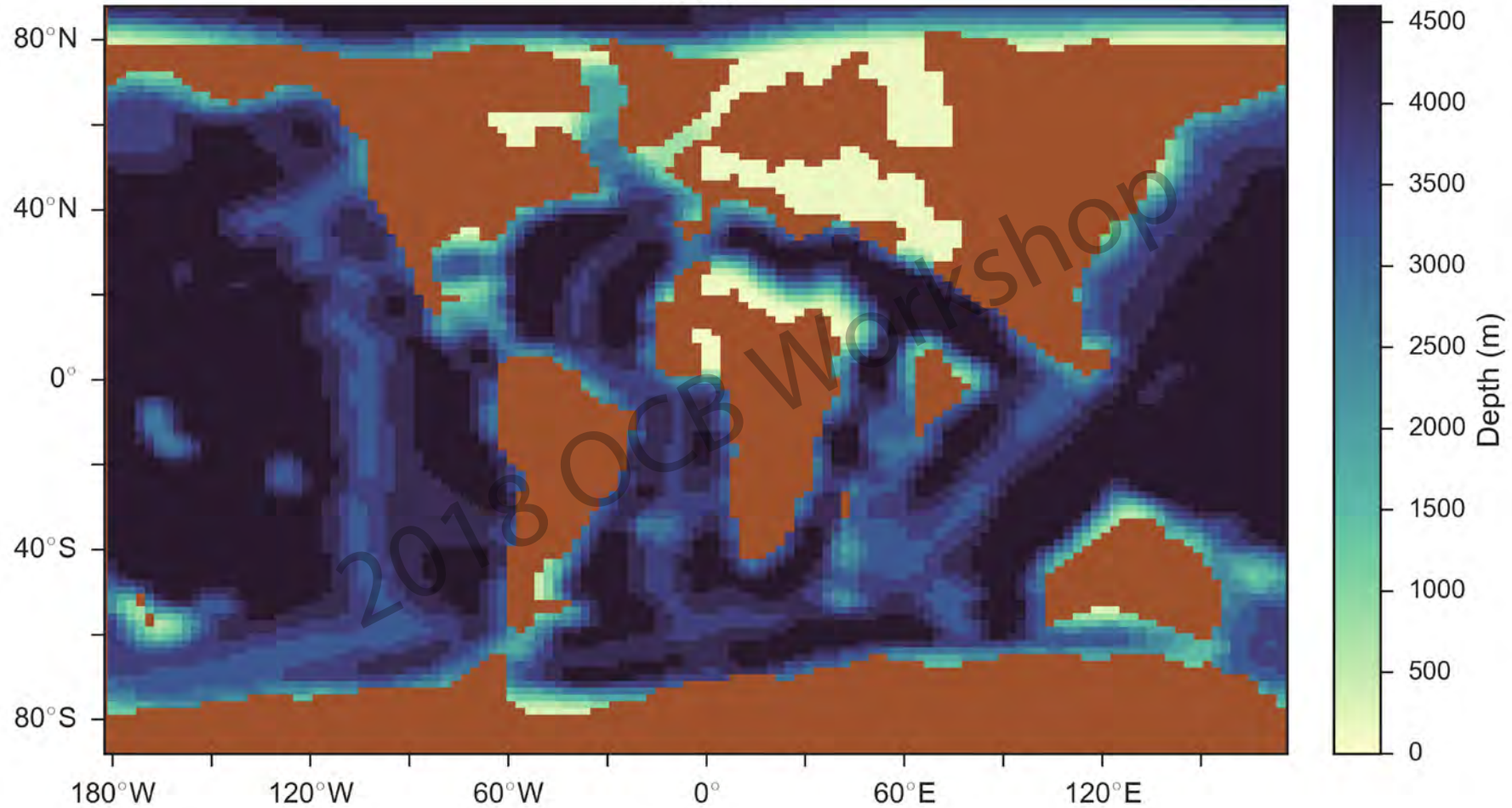
-Exploring the large pool of POC and Chl a found in the dark bottom waters of Chesapeake Bay during the winter

-Assess the utility of natural stable isotope abundance ($\delta^{15}\text{N}$) to quantify the trophic position of mixotrophic protists





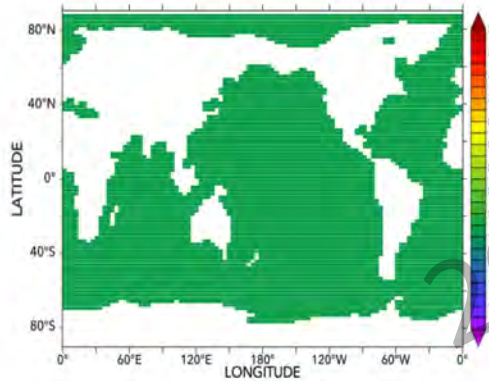
55 Ma



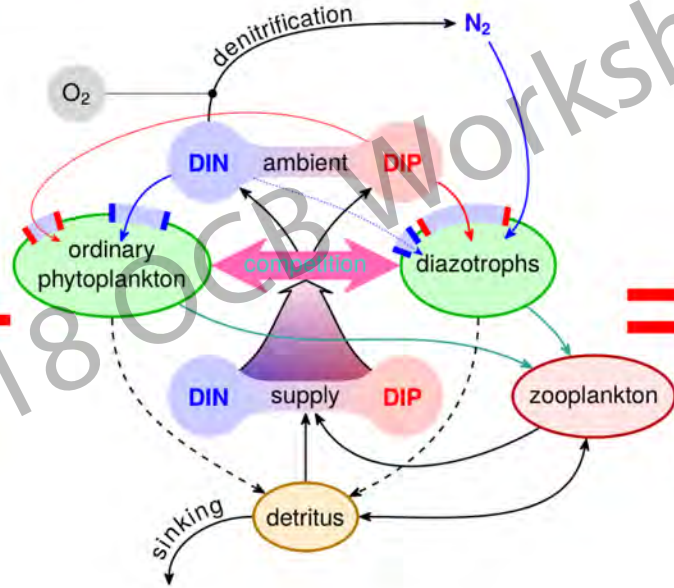
Behavior of a Non-Redfield Ecosystem Model in the UVic-ESCM

Chia-Te Chien, Markus Pahlow, Andreas Oschlies
GEOMAR

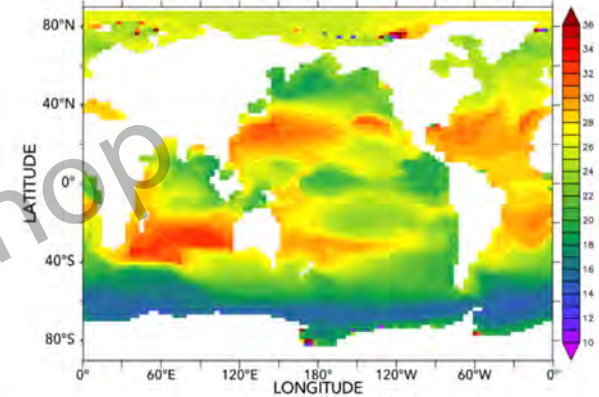
Particulate matters in a fixed N:P model



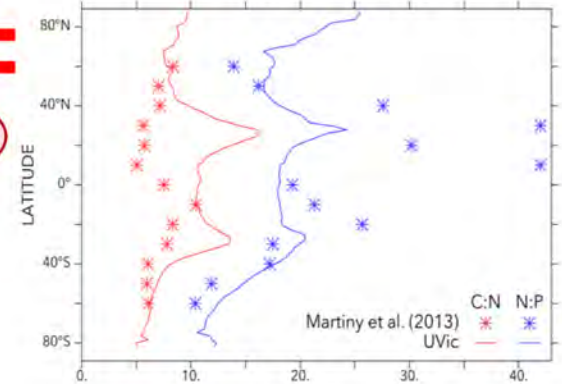
N:P (molNmolP⁻¹)



Particulate matters in our Non-Redfield model



N:P (molNmolP⁻¹)

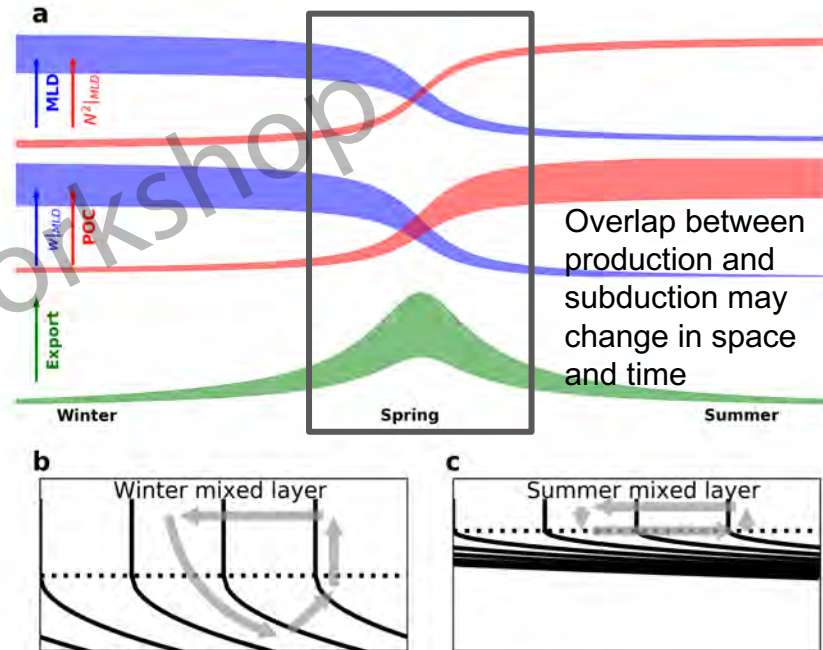
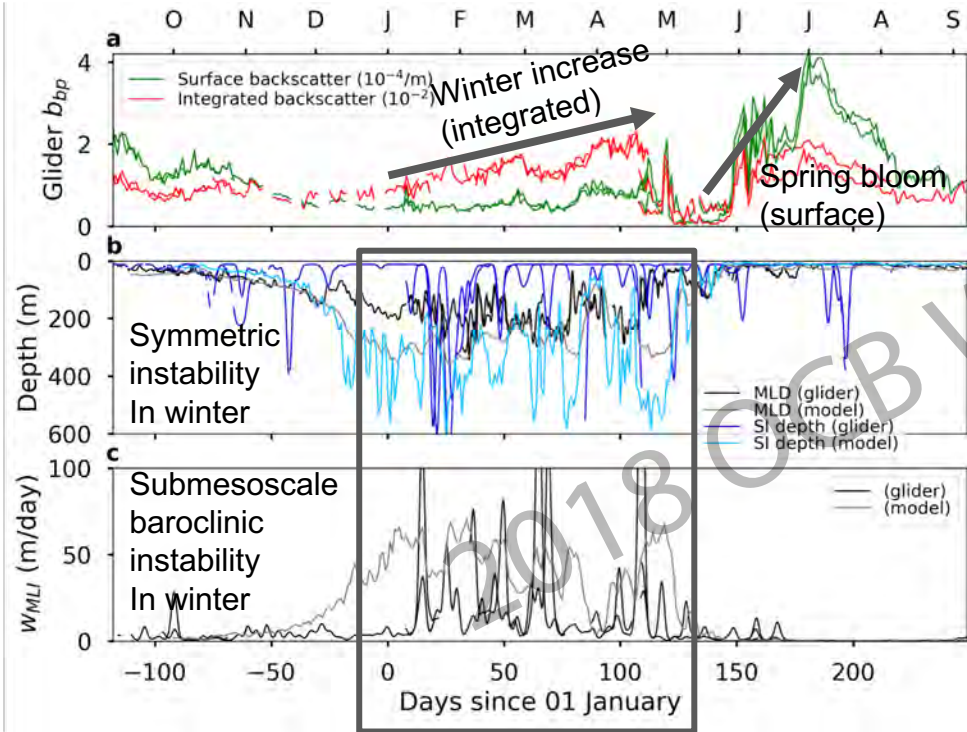


C:N or N:P (mol mol⁻¹)



Seasonal cycle of variability, instabilities, and subduction at submesoscales

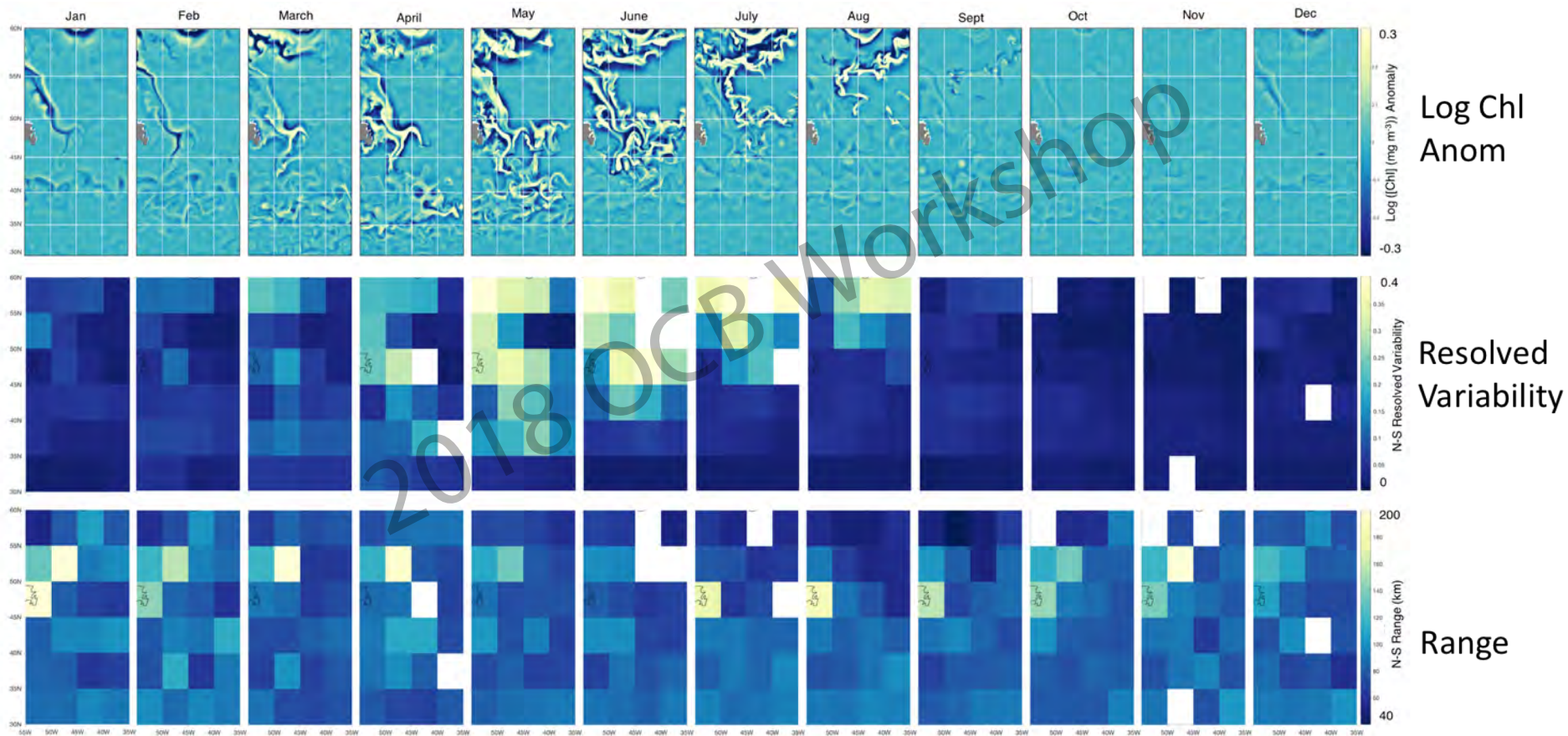
Zachary K Erickson,¹ Andrew F Thompson,¹ Jörn Callies,¹ and Patrice Klein²



See also: Erickson and Thompson, 2018, "The seasonality of physically-driven export at submesoscales in the northeast Atlantic Ocean", *Gl Biogeochem Cy*, accepted and in press soon!

Geostatistical analysis of North Atlantic mesoscale biophysical variability in an eddy resolving CESM run

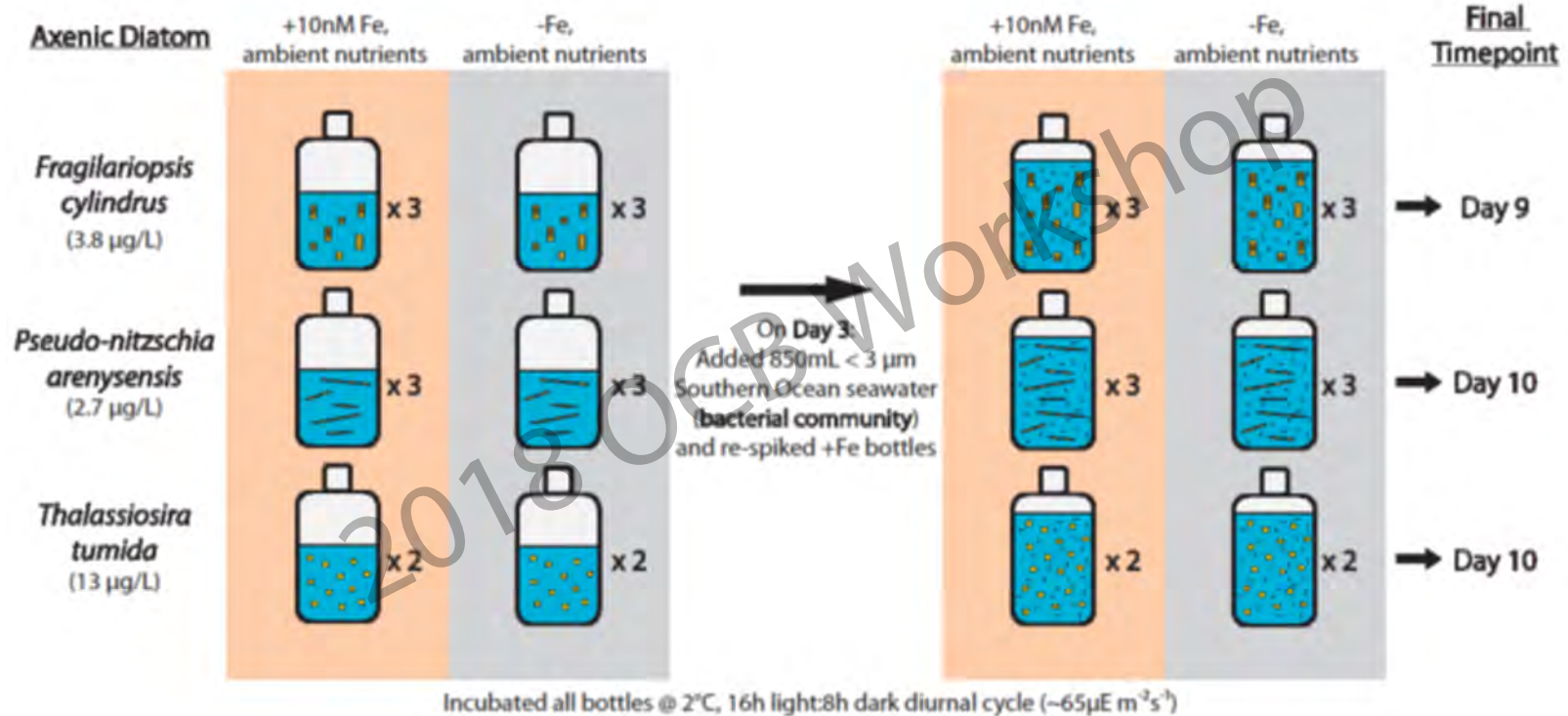
Rachel Eveleth, Scott Doney, Ivan Lima,



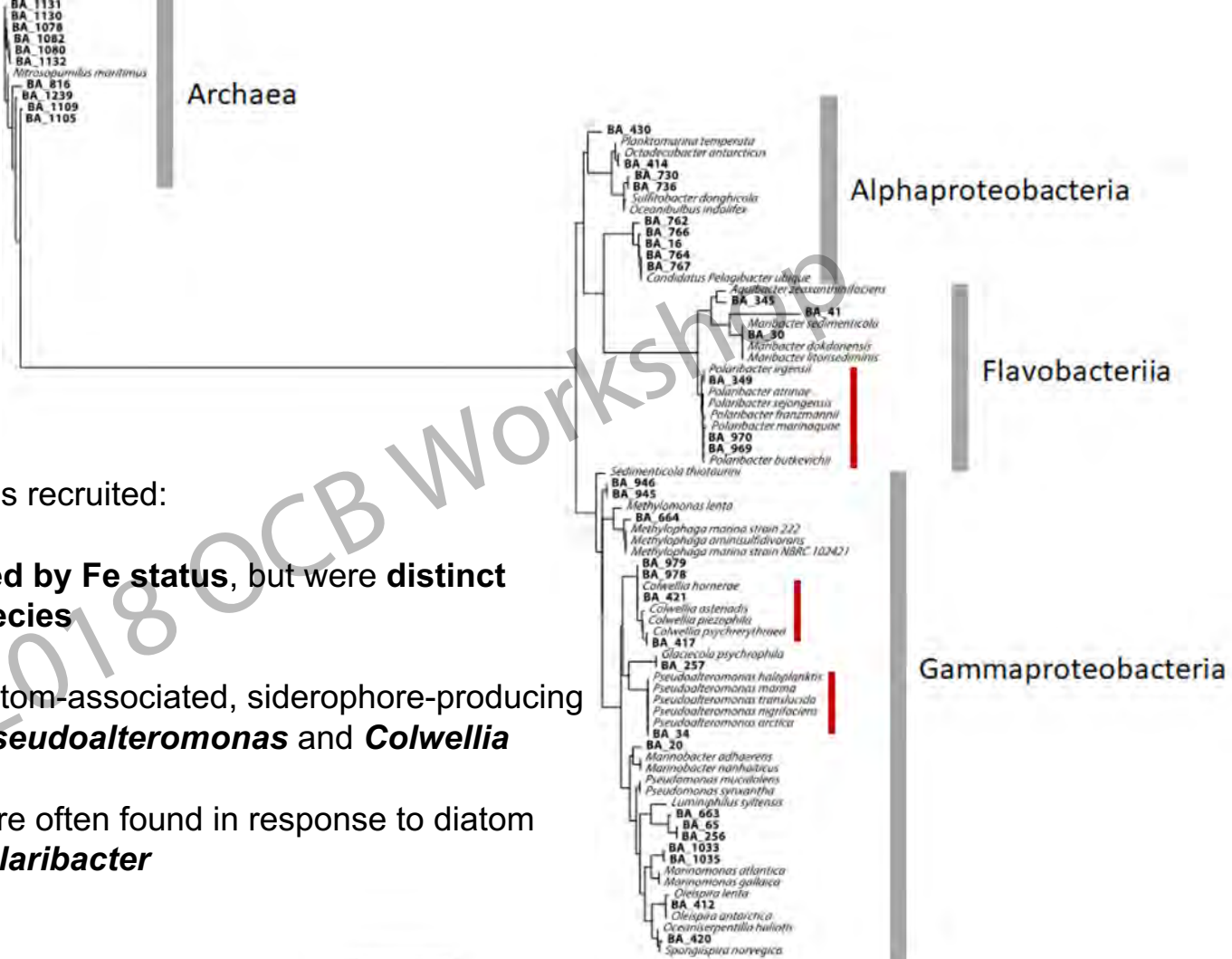
Comparison of bacteria recruited by axenic Southern Ocean diatoms under Fe stress

Laura Holland (Jenkins Lab, University of Rhode Island)

SO diatoms may take up bacterially-produced organic ligands (siderophores) bound to Fe



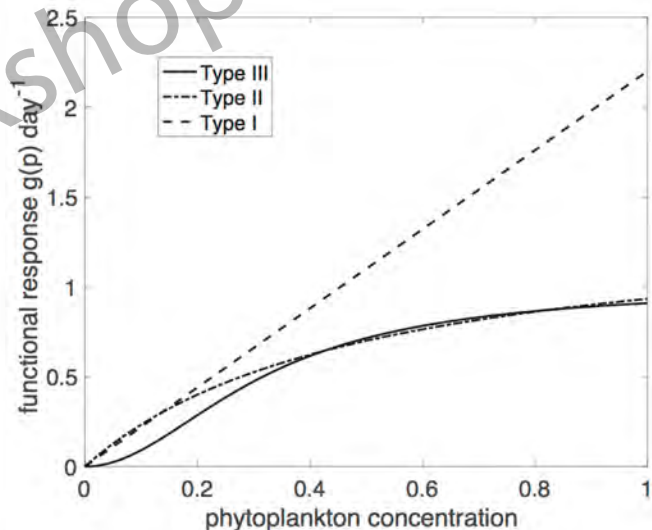
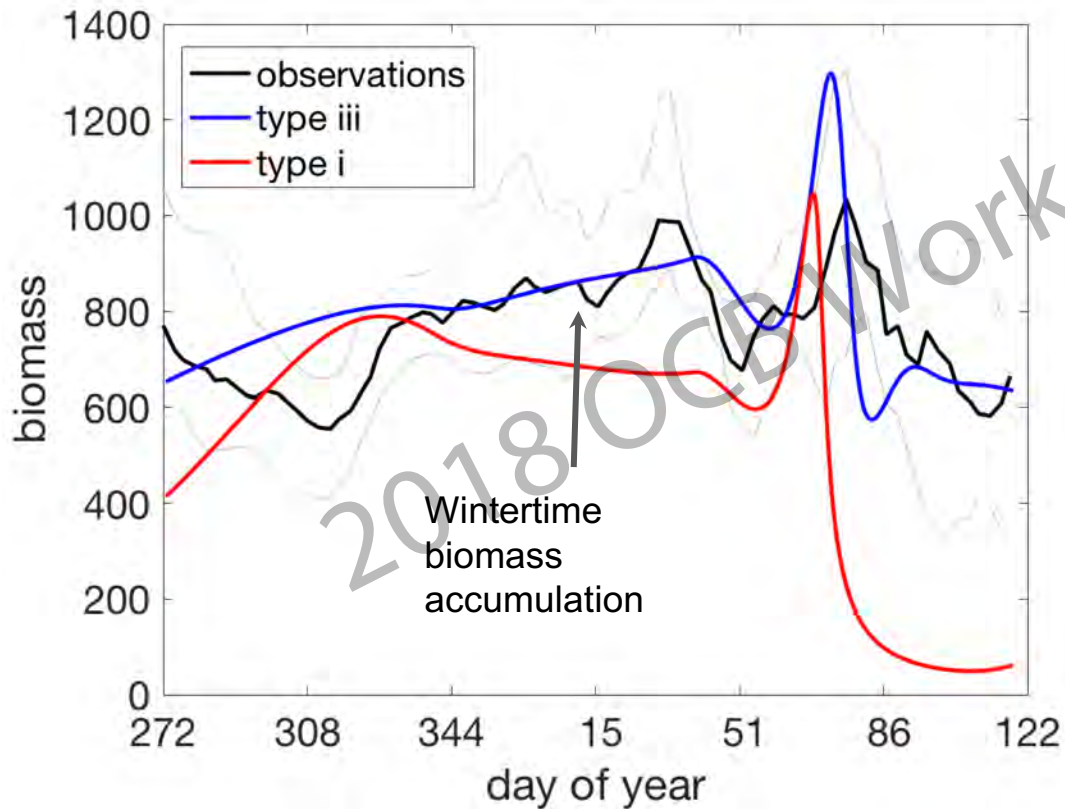
- Do Fe-stressed diatoms recruit distinct bacterial communities?
- Are the recruited bacteria producing siderophores?



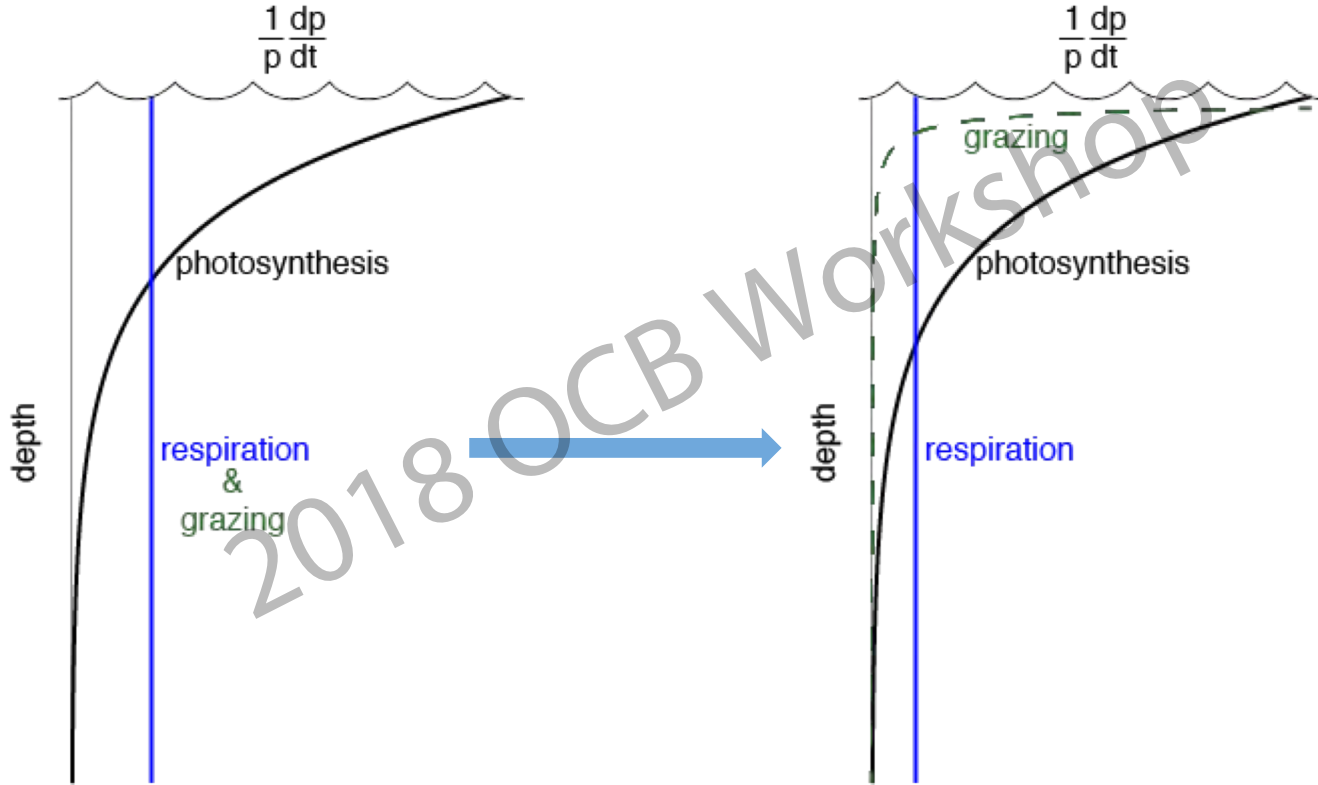
The bacterial communities recruited:

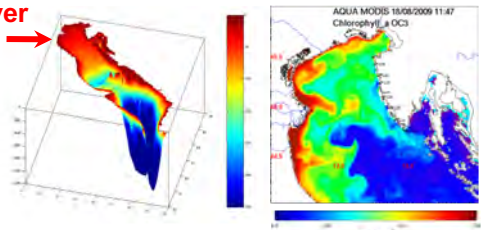
- were **not influenced by Fe status**, but were **distinct across diatom species**
- Included known diatom-associated, siderophore-producing bacteria such as ***Pseudoalteromonas*** and ***Colwellia***
- Included bacteria are often found in response to diatom blooms such as ***Polaribacter***

Mara Freilich



Mara Freilich

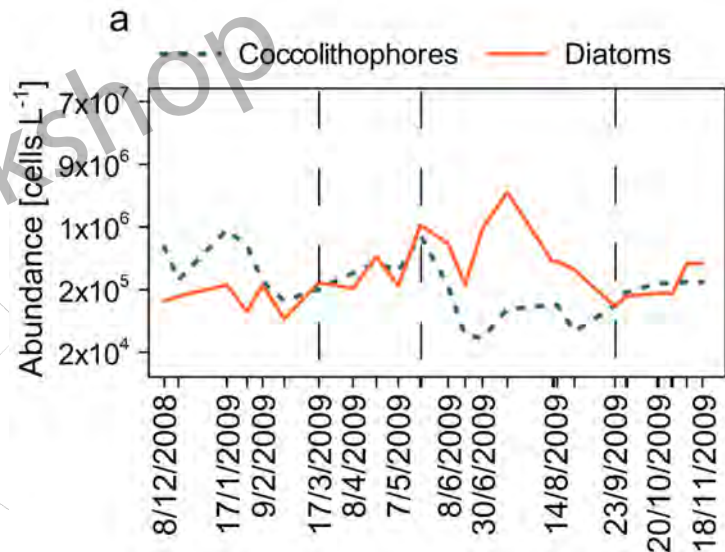
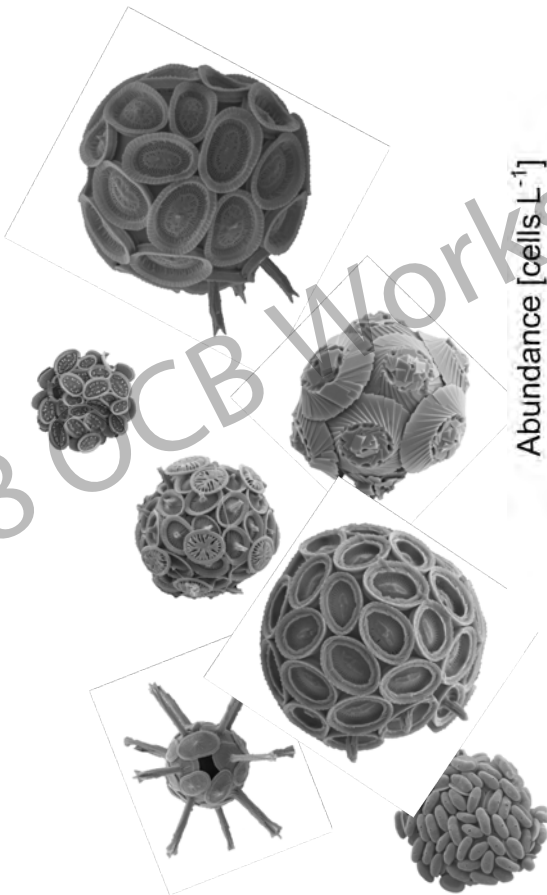
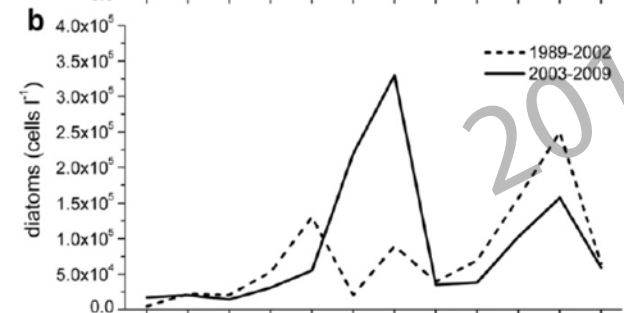
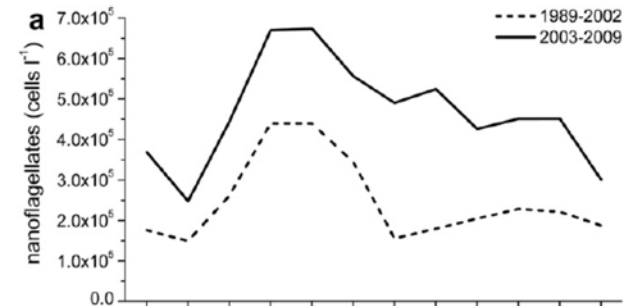


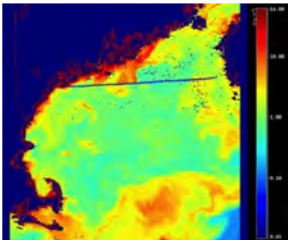
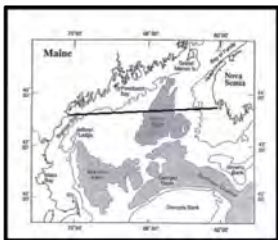


Jelena Godrijan

Bigelow Laboratory for Ocean Sciences

jgodrijan@bigelow.org

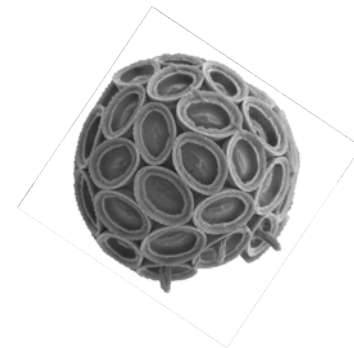
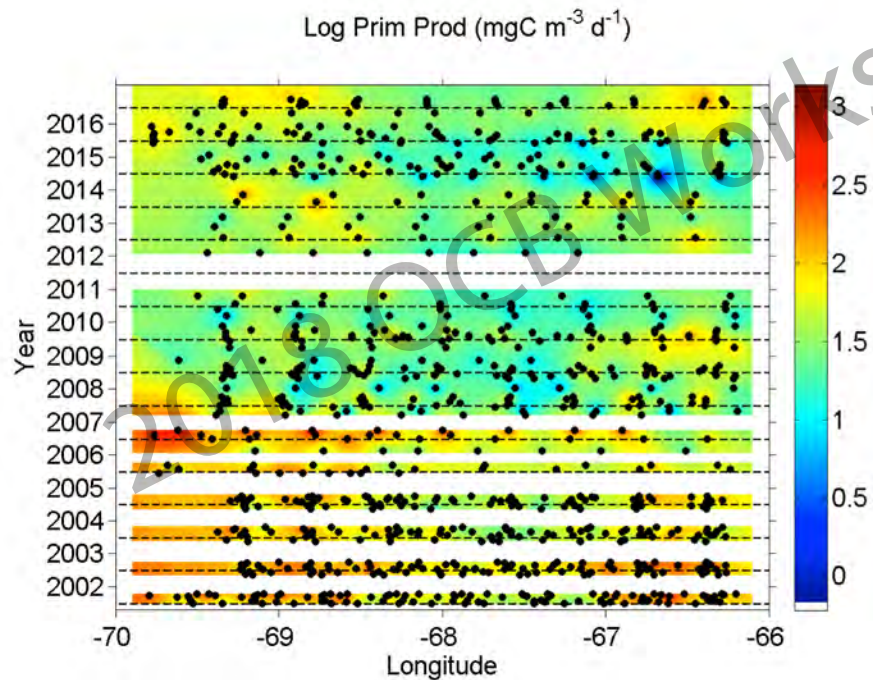




Jelena Godrijan

Bigelow Laboratory for Ocean Sciences

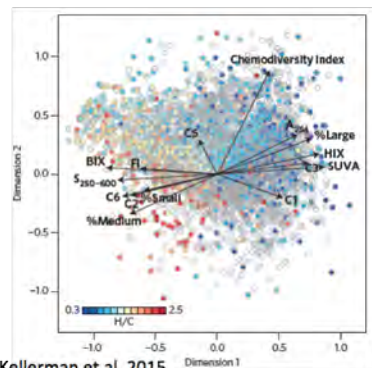
jgodrijan@bigelow.org



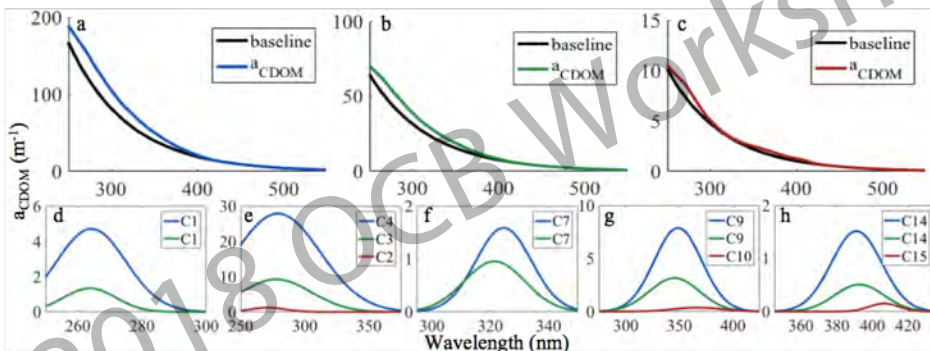
Optically estimating CDOM composition

Brice Grunert

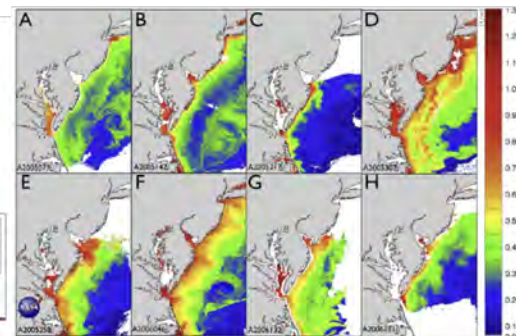
Chemical characterization



In situ spectral characterization



Satellite estimate



Optically estimating CDOM composition

Brice Grunert

The coffee analogy...

Chemical characterization



- Origin
- Elevation
- Roasting process

In situ spectral characterization



- Roasting process
- Maybe origin?

Satellite estimate

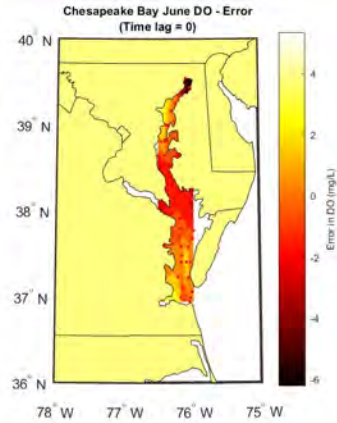
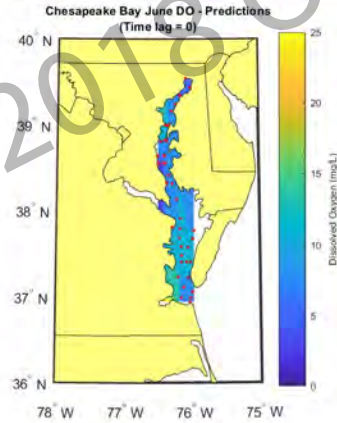
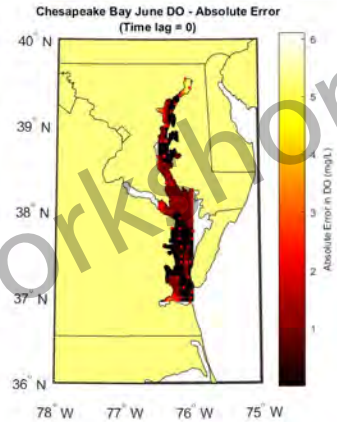
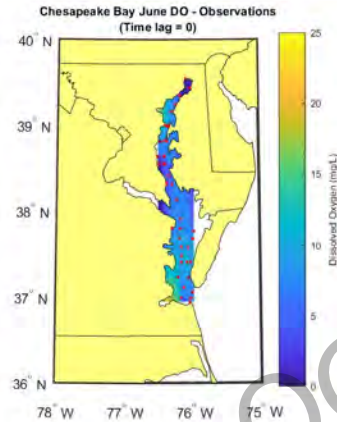


- Yea, that's coffee

Random Forests and a Potential Function for the Chesapeake Bay

Christopher Holder and Anand Gnanadesikan
Department of Earth and Planetary Sciences, Johns Hopkins University

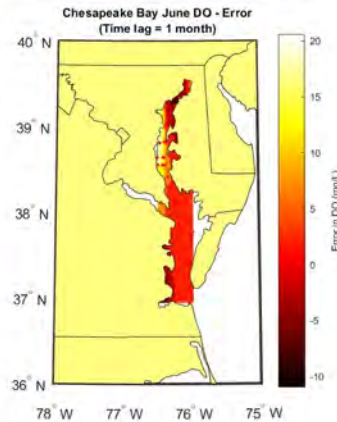
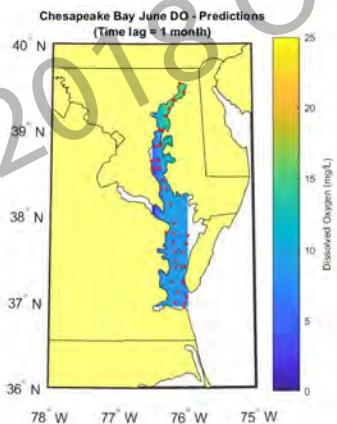
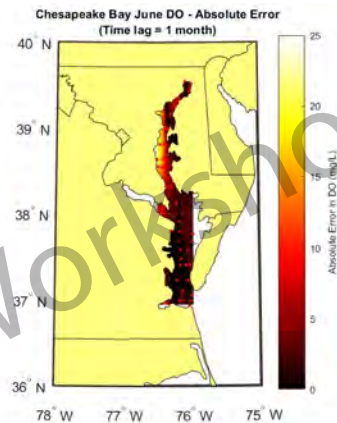
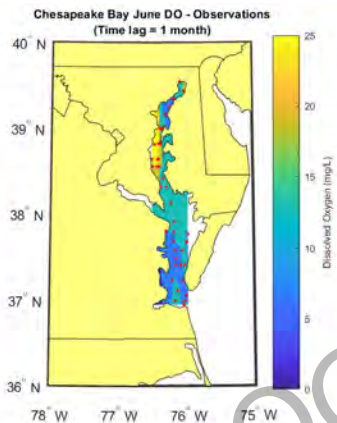
Time lag:
0 months



Random Forests and a Potential Function for the Chesapeake Bay

Christopher Holder and Anand Gnanadesikan
Department of Earth and Planetary Sciences, Johns Hopkins University

Time lag:
1 month

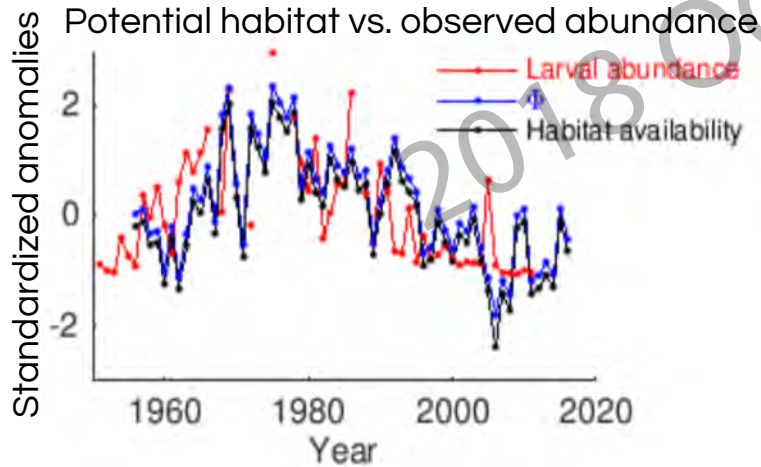


TEMPERATURE-DEPENDENT HYPOXIA SHAPES FISH HABITAT

Evan Howard, University of Washington

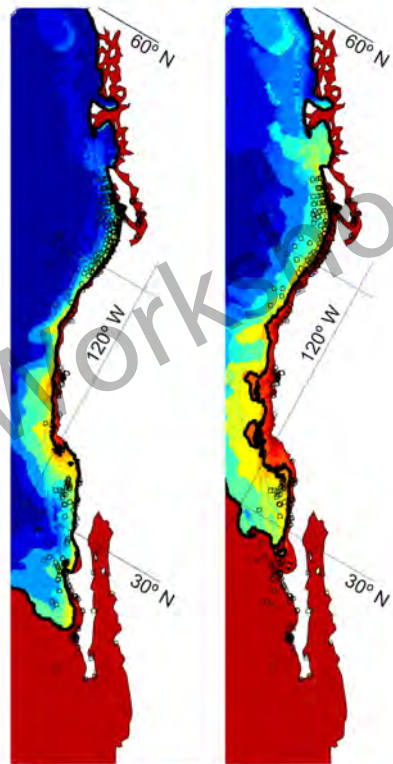


MBARI



a 1994-2011

b ~2100



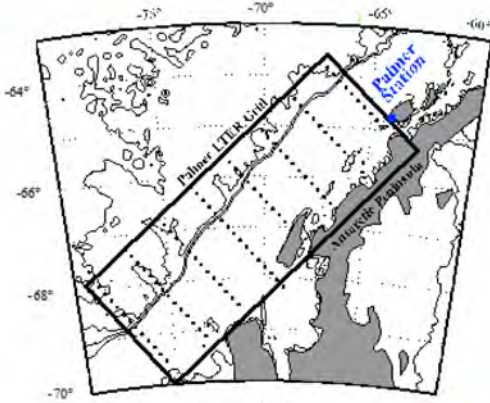
-0.3 -0.2 -0.1 0 0.1 0.2 0.3

Habitat availability (fraction of upper 100 m relative to CalCOFI (1951-2011))

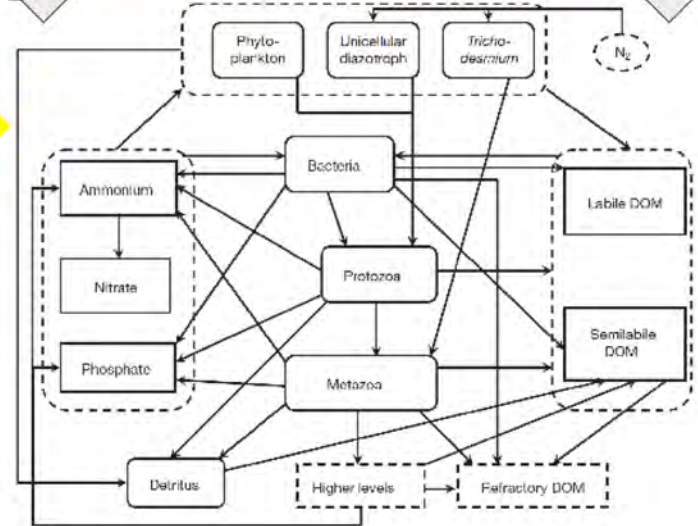
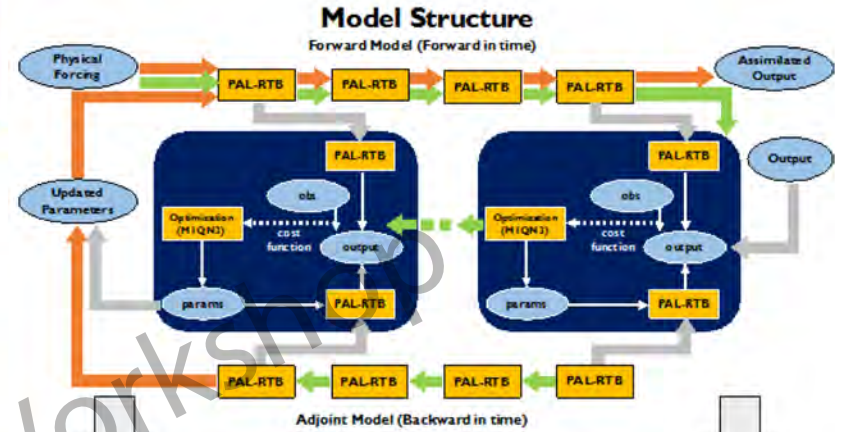
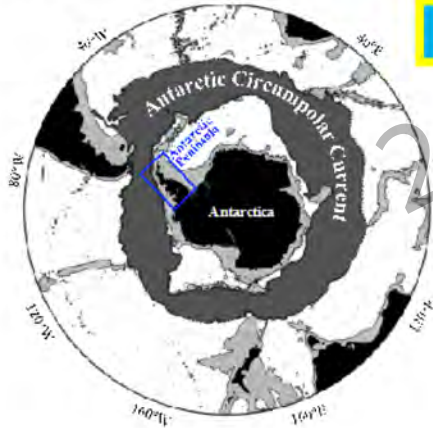
- OBIS anchovy observations
- Approximate exclusion threshold

DATA ASSIMILATIVE ECOSYSTEM MODELING OF THE WEST ANTARCTIC PENINSULA

Hyewon Kim, Scott Doney, University of Virginia



Palmer LTER
(since 1991)

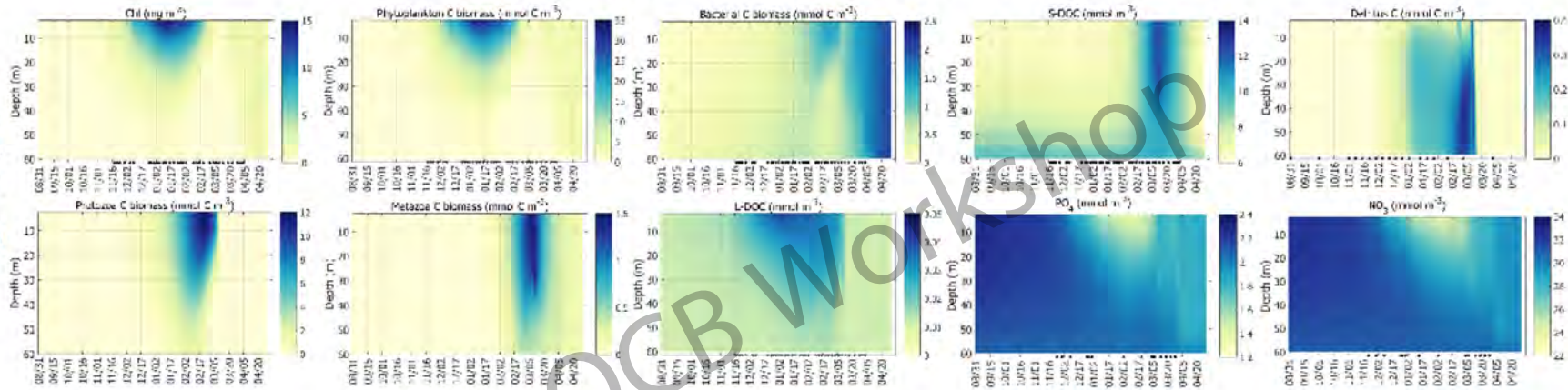


DATA ASSIMILATIVE ECOSYSTEM MODELING OF THE WEST ANTARCTIC PENINSULA

Hyewon Kim, Scott Doney, University of Virginia

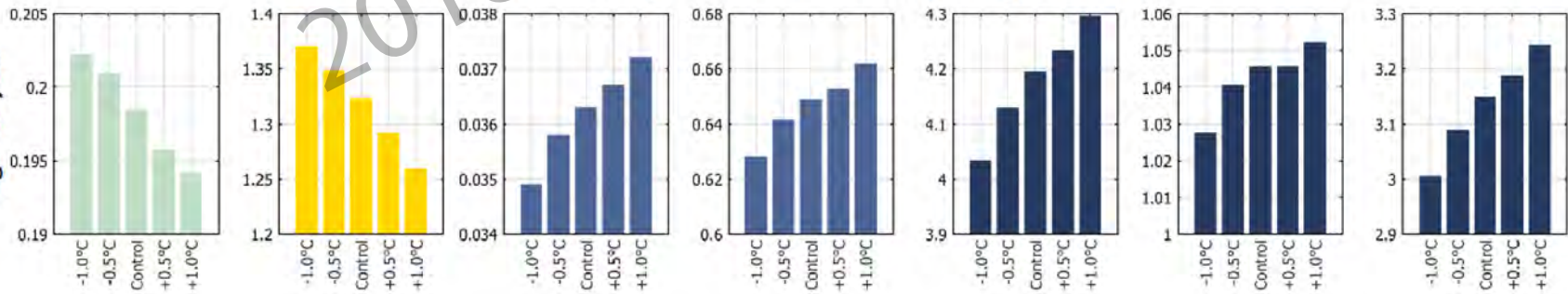
Modeled ecosystem dynamics

Field season 2005-2006
High ice year



Ecosystem responses to increasing temperatures

Field season
2005-2006
High ice year



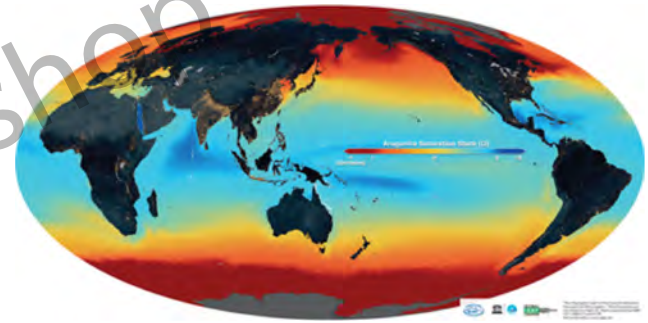
Pteropods - planktonic snails at risk from ocean acidification



Credit: C. Weldrick



Credit: D. Adhikari



Does organic periostracum protect pteropod shell from dissolution?



Incubation Experiment

Ambient seawater

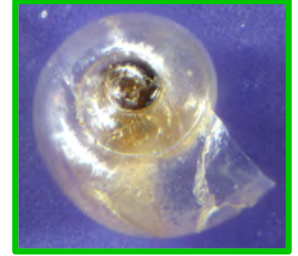
$$\Omega_{\text{arag}} = 1.40$$

Slightly undersaturated
wrt. aragonite

$$\Omega_{\text{arag}} = 0.89$$

Highly undersaturated
wrt. aragonite

$$\Omega_{\text{arag}} = 0.78$$

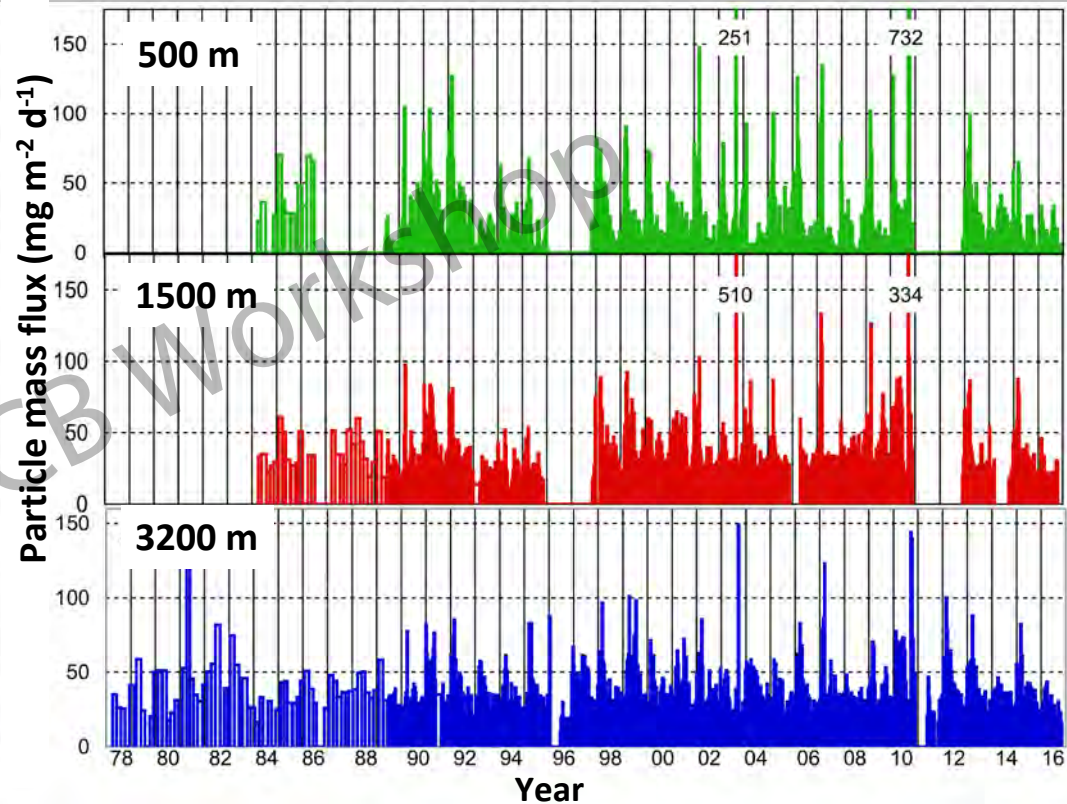
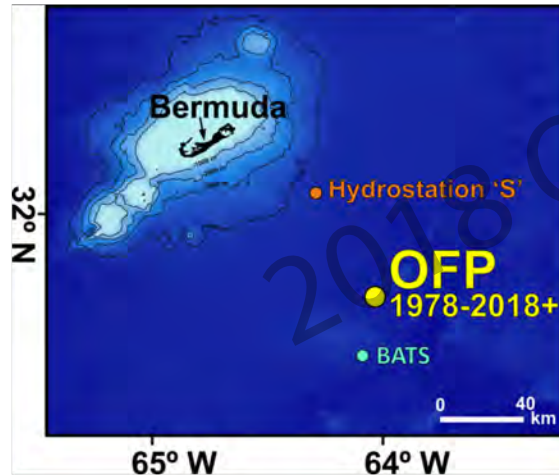


Impact of Hurricane Nicole on carbon cycling in the Sargasso Sea water column: Insights from lipid biomarkers in suspended and sinking particles



The Oceanic Flux Program

Celebrating
40 Years
1978-2018+



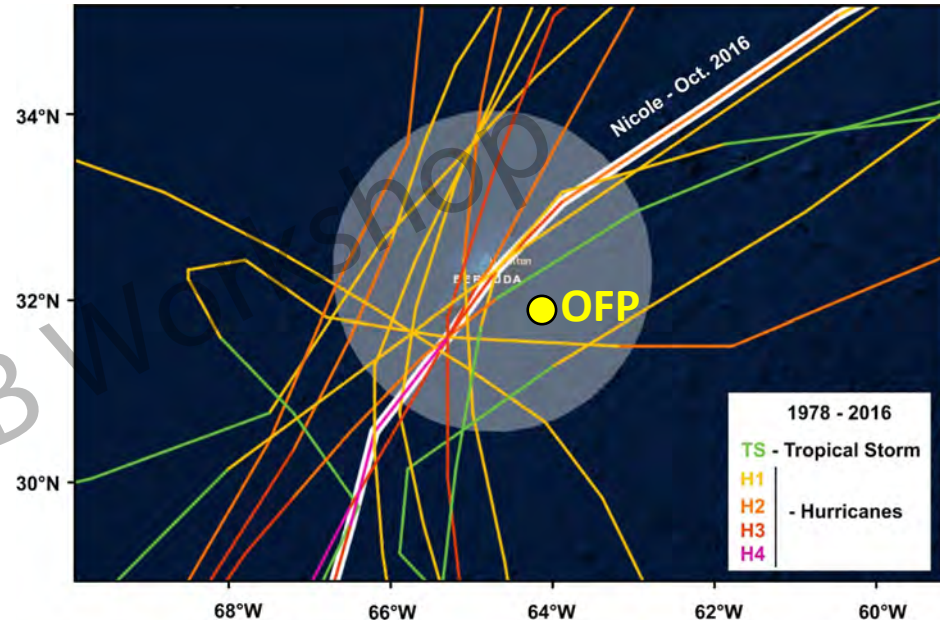
R. Pedrosa-Pàmies¹ (rpedrosa@mbi.edu), M. Conte^{1,2}, JC Weber¹, R. Johnson²
(¹The Ecosystems Center – Marine Biological Laboratory; ²Bermuda Institute of Ocean Science)

Impact of Hurricane Nicole on carbon cycling in the Sargasso Sea water column: Insights from lipid biomarkers in suspended and sinking particles



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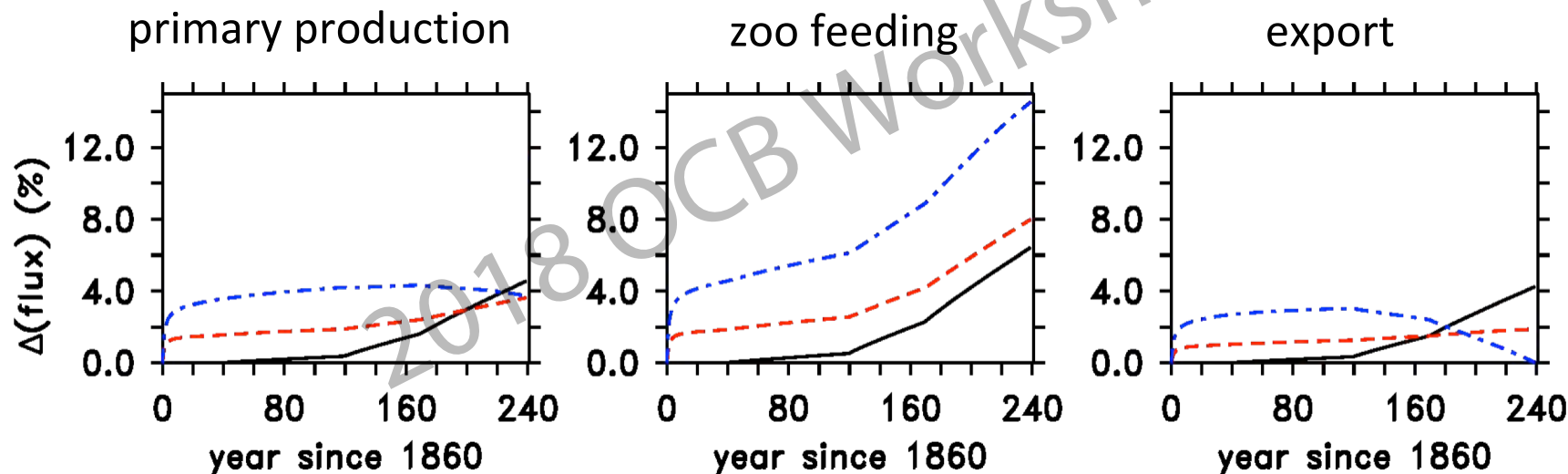
Hurricane Nicole – Category 3 (October 2016)

Lipid biomarkers!



R. Pedrosa-Pàmies¹ (rpedrosa@mbl.edu), M. Conte^{1,2}, JC Weber¹, R. Johnson²
(¹The Ecosystems Center – Marine Biological Laboratory; ²Bermuda Institute of Ocean Science)

relative change in a warming scenario 1860 – 2100



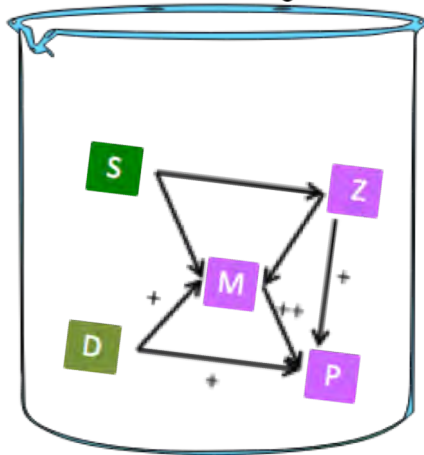
Fi Prowe

trait-based modelling

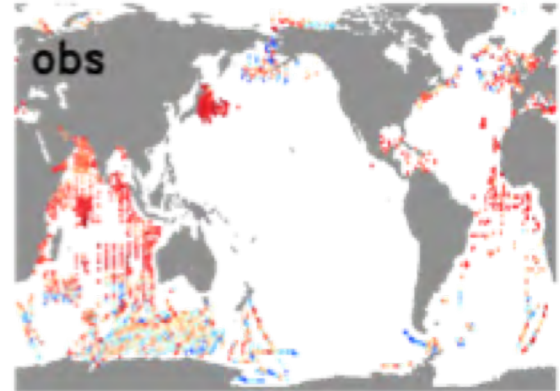
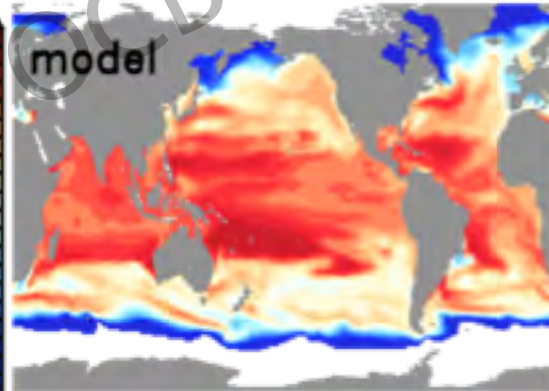
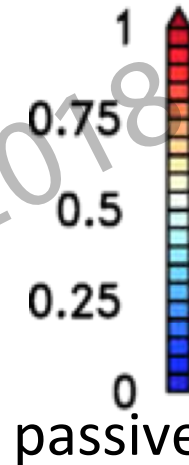


add ~~phytoplankton~~ diversity

model of zooplankton feeding strategies



active



Weiyi Tang

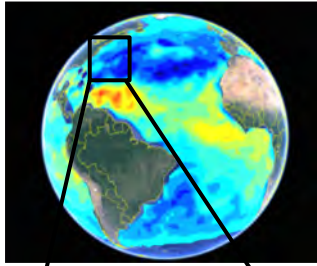
PhD student

Earth and Ocean Sciences

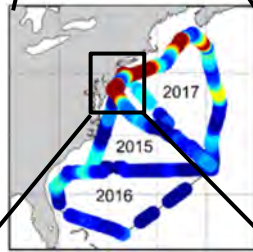
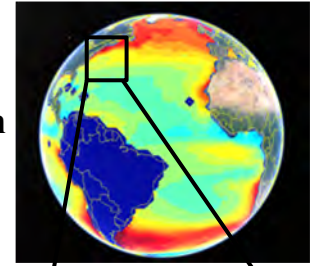
Duke University

Advisor: Prof. Nicolas Cassar

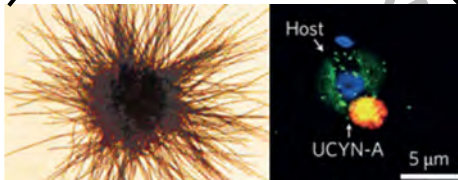
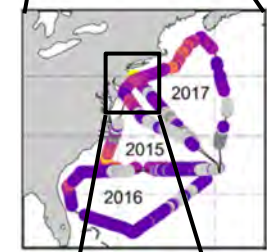
Explore marine nitrogen fixation and its connection to marine carbon cycle



Model the global distribution of marine nitrogen fixation using machine learning methods



Develop and apply the underway high-resolution method to observe nitrogen fixation



Characterize the community structure and gene expressions of diazotrophs

whole microbial community
(Prokaryote and Eukaryote)

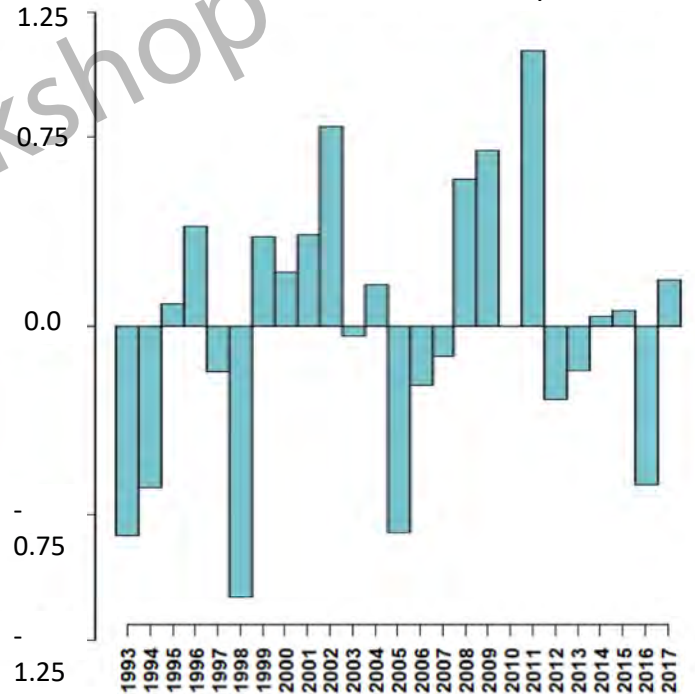
Environmental controls on 'p'teropod ecology and physiology along the Western Antarctic Peninsula

Patricia (Tricia) S. Thibodeau & Deborah K. Steinberg



Limacina helicina antarctica

L. antarctica abundance anomaly 1993-2017



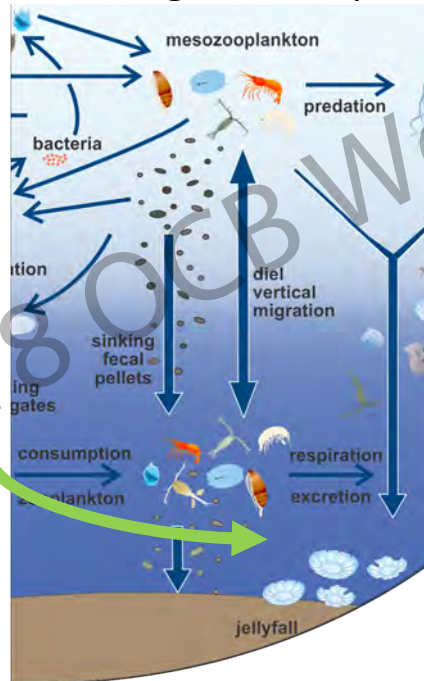
Thibodeau et al., *in review*, *Limnology & Oceanography*

Environmental controls on 'p'teropod ecology and physiology along the Western Antarctic Peninsula

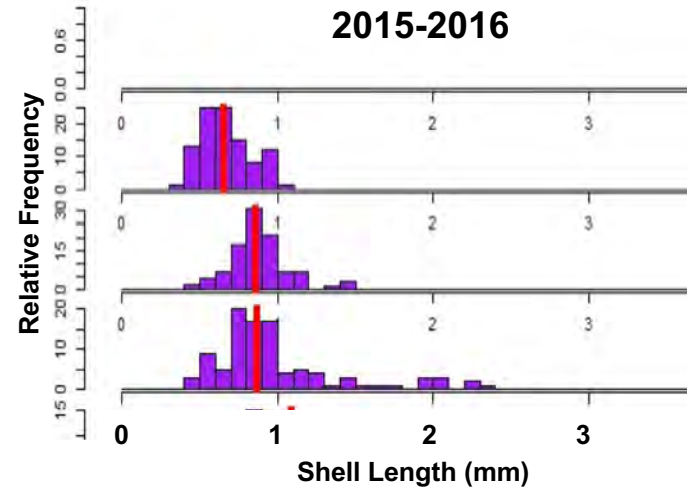
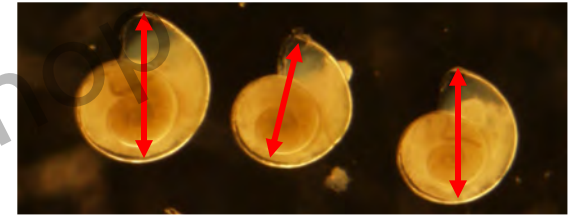
Patricia S. Thibodeau & Deborah K. Steinberg



Biological Pump



Steinberg & Landry, 2017



Yuyuan Xie

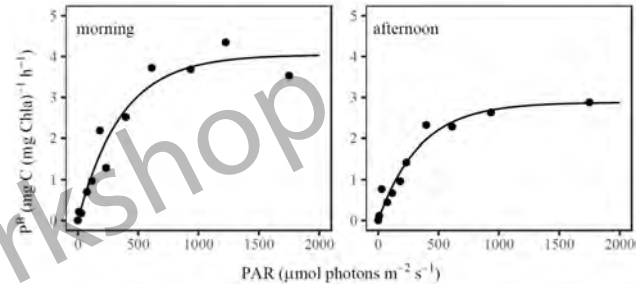
Postdoc

Xiamen University, China

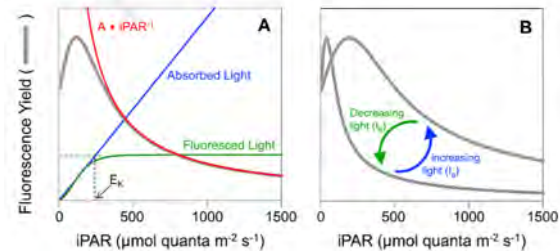
University of Massachusetts
Boston

Interests:

- ☐ Light utilization traits of phytoplankton

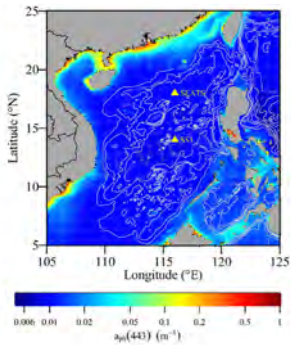


- ☐ Aph-based PP model (University of Massachusetts Boston)
- ☐ Photosynthetic energetic stoichiometry (NSF of China: 41706160)



O'Malley
et al. 2014

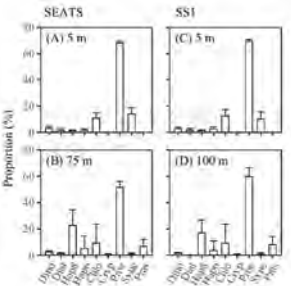
Diel patterns of variable fluorescence and carbon fixation of picocyanobacteria *Prochlorococcus*-dominated phytoplankton in the South China Sea basin



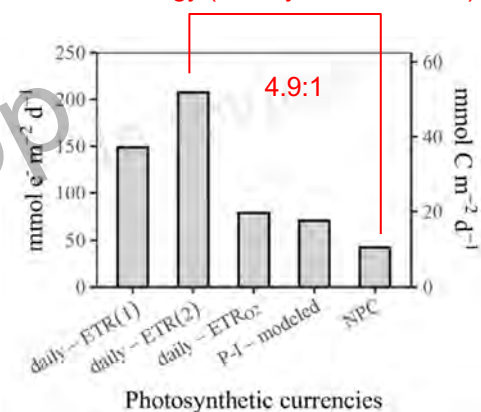
1. *Prochlorococcus*-dominated community in the basin during summer

2. Simultaneous measurements of Active chlorophyll a fluorescence & Carbon fixation

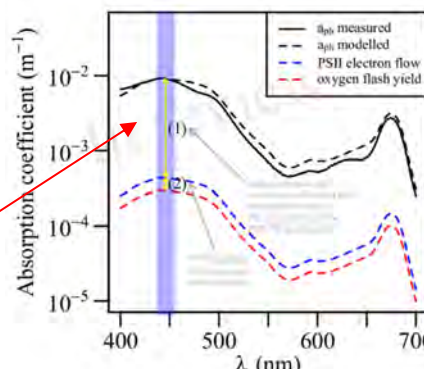
3. Featured diel patterns of Fv/Fm and carbon fixation of cyanobacteria



A common strategy (Halsey & Jones 2015)



4. Photosynthetic energetic stoichiometry



Substantially low maximum quantum yield of carbon fixation in the basin (Babin *et al.* 1996; Xie *et al.* 2015)

