



Current and Upcoming in 2023

Smith Lab - VIMS

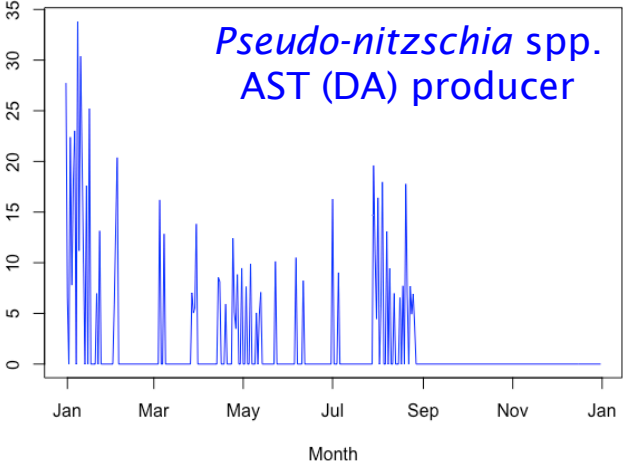
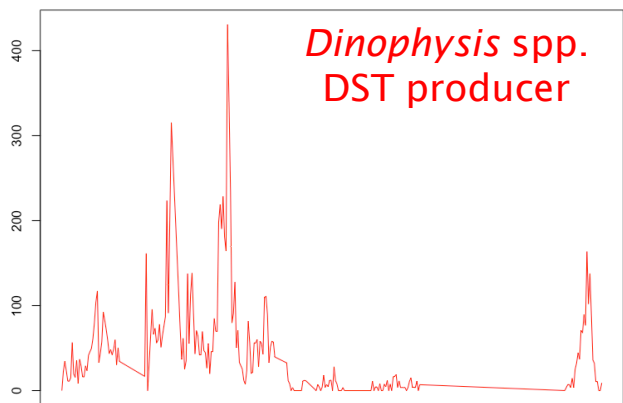
- IFCB HAB + toxin monitoring
- New passive sampler (improved MCs and DA)
- Toxicity of phytoplankton biochemicals

Juliette L. Smith
Associate Professor
jlsmith@vims.edu
Virginia Institute of Marine Science
William & Mary

IFCB HAB monitoring

2021 Mean daily cell concentration

Cells/L



I. Wade Huang
ORISE Postdoc Fellow (US FDA)



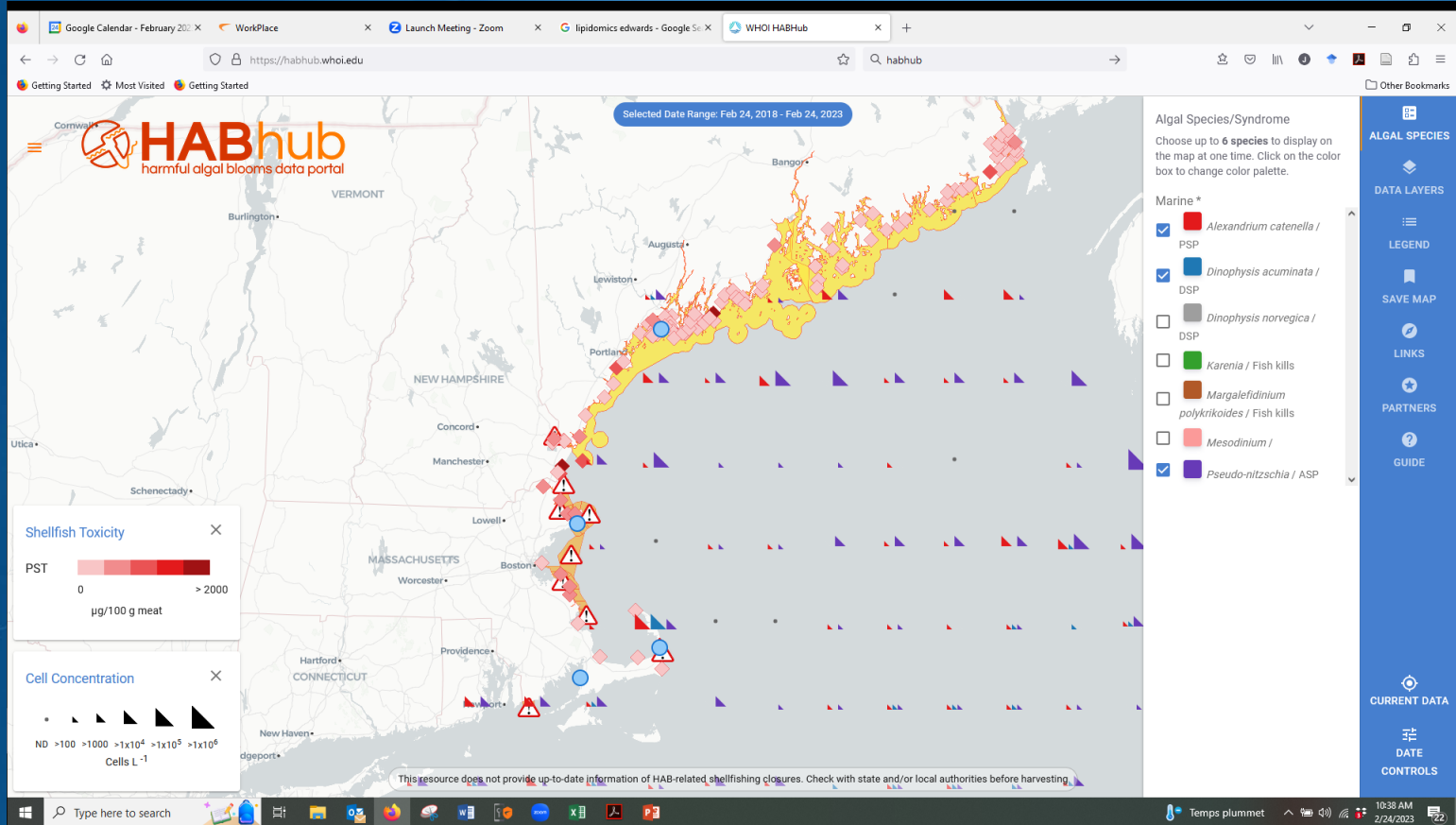
Marta Sanderson
Marine Scientist



Vanessa Strohm
Master's Candidate

- 2017 – present, IFCB data displayed on HABhub (WHOI) for VIMS Pier by May 1
- Convolutional neural network (CNN) classifiers focused on season and species of interest
- Happy to share all training images used to generate classes – please email Juliette
- Ecological modeling and networking coming this year...

WHOI HABhub





New passive sampler

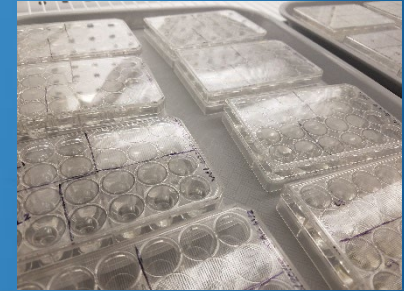


Josh Garber
PhD Student

- Detection of microcystins and domoic acid in oyster tissue (Pease 2021) – below advisory threshold
- New evidence suggests polar toxins, e.g., microcystins and domoic acid **desorb within a day** from SPATT resin (Kudela et al., US HAB symposium) – **snapshot vs. time-integrated**
- Josh to trial a new passive sampler (patented mixed-phase polymer) - **better retention of polar toxins**, ≥ 28 days
- Possible collaboration with VDH and MDE to trial in field!!! (CA + FL)
- Test stability of these toxins in water and on the new passive sampler (e.g., light, pH, temperature, hydrolysis)

Toxicity of phytoplankton biochemicals

- Toxins (e.g., PTXs, YTX, AZAs)
- Bioactive chemicals (e.g., PUAs, oxylipins – oxidized products of PUFAs)
- Oyster larvae and shrimp
- Within hatcheries: *Characterizing the role of toxic phytoplankton byproducts in shellfish hatchery failures*



VIMS (Smith, Carnegie), University of California – Berkeley (Edwards), Mook Sea Farm, Oyster Seed Holdings, Fishers Island Oyster Farm



Nour Ayache
Assist. Research Sci.



Josh Garber
PhD Student



Marta Sanderson
Marine Scientist