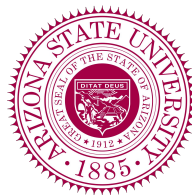


Quantifying the response of microscopic calcifying marine organisms to ocean acidification and alkalization

Emily Osborne (OCED), Gabriella Lirio (CIMAS/OCED)

Laura Haynes (Vassar College), Jennifer Ferenbacher (Oregon State University), Laura Gemery (USGS), Tom Cronin (USGS), Julie Richey (USGS), Caitlin Reynolds (USGS), Chris Melrose (NOAA Northeast Fisheries Science Center), Amy Maas (Arizona State University), Katsunori Kimoto (JAMSTEC)



Tiny Organisms that Play an Outsized Role:

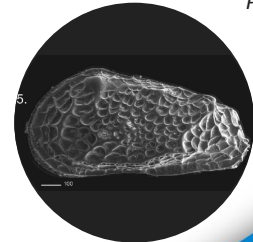
Ocean Carbon Cycling and Climate Indicators



Foraminifera

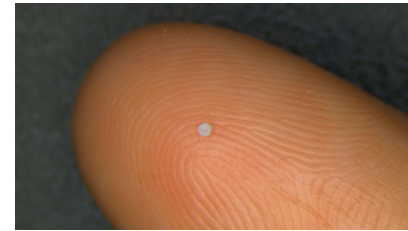
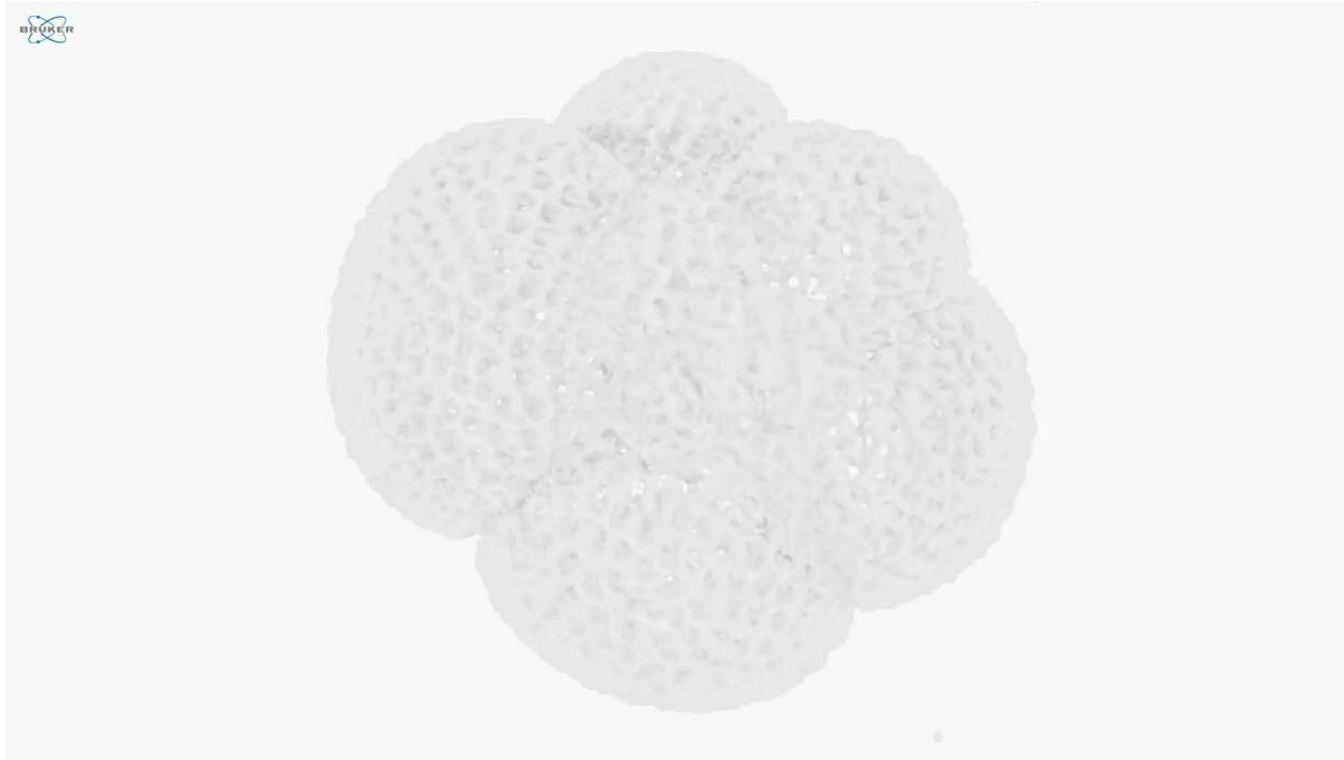


Pteropod



Ostracode

Micro-computed Tomography (microCT)



Planktonic foraminifera
shell on a fingertip
for scale

Culture Experimentation:

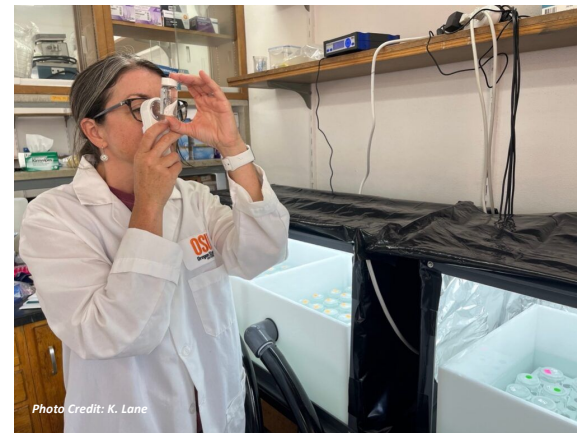
Ocean Alkalinity Enhancement & Calcification Response



Capturing live foraminifera for experimentation at BATs



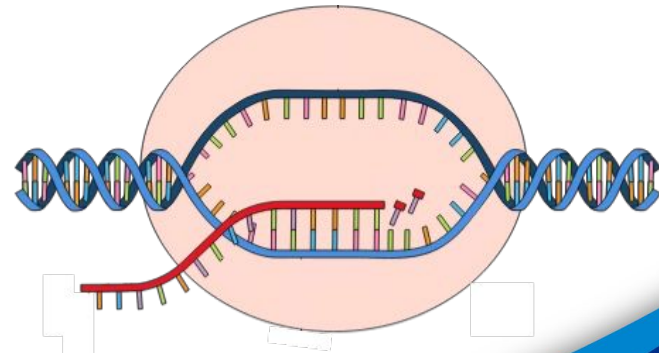
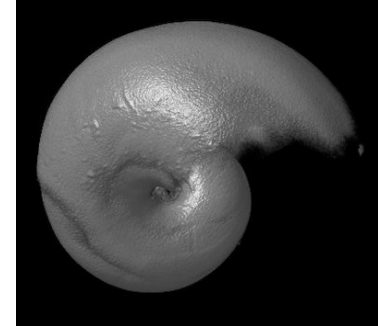
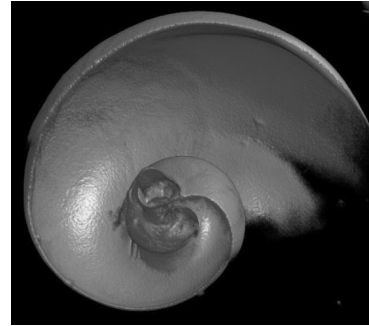
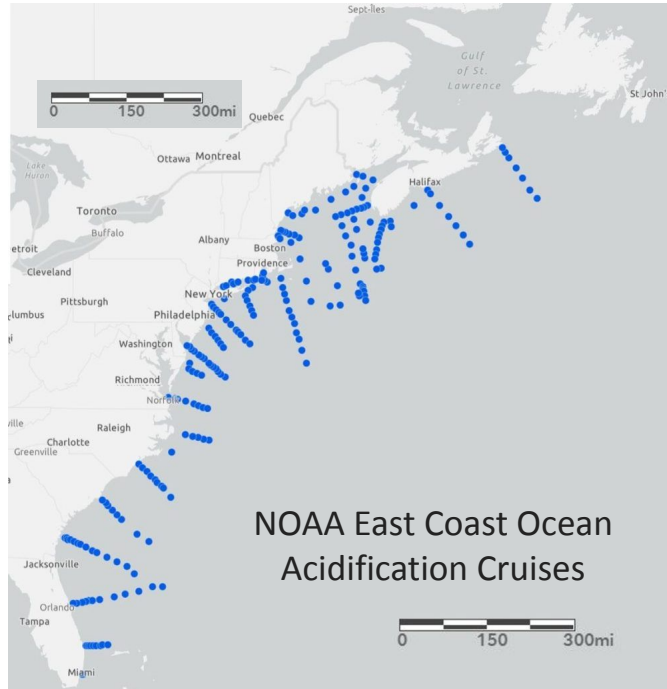
Addition of OAE Minerals (forms of carbonate & olivine)



Analysis of post-culture shell condition and geochemistry



Integrating approaches to develop Atlantic pteropods as OA bioindicators





Thank you