

#PROTATAX23

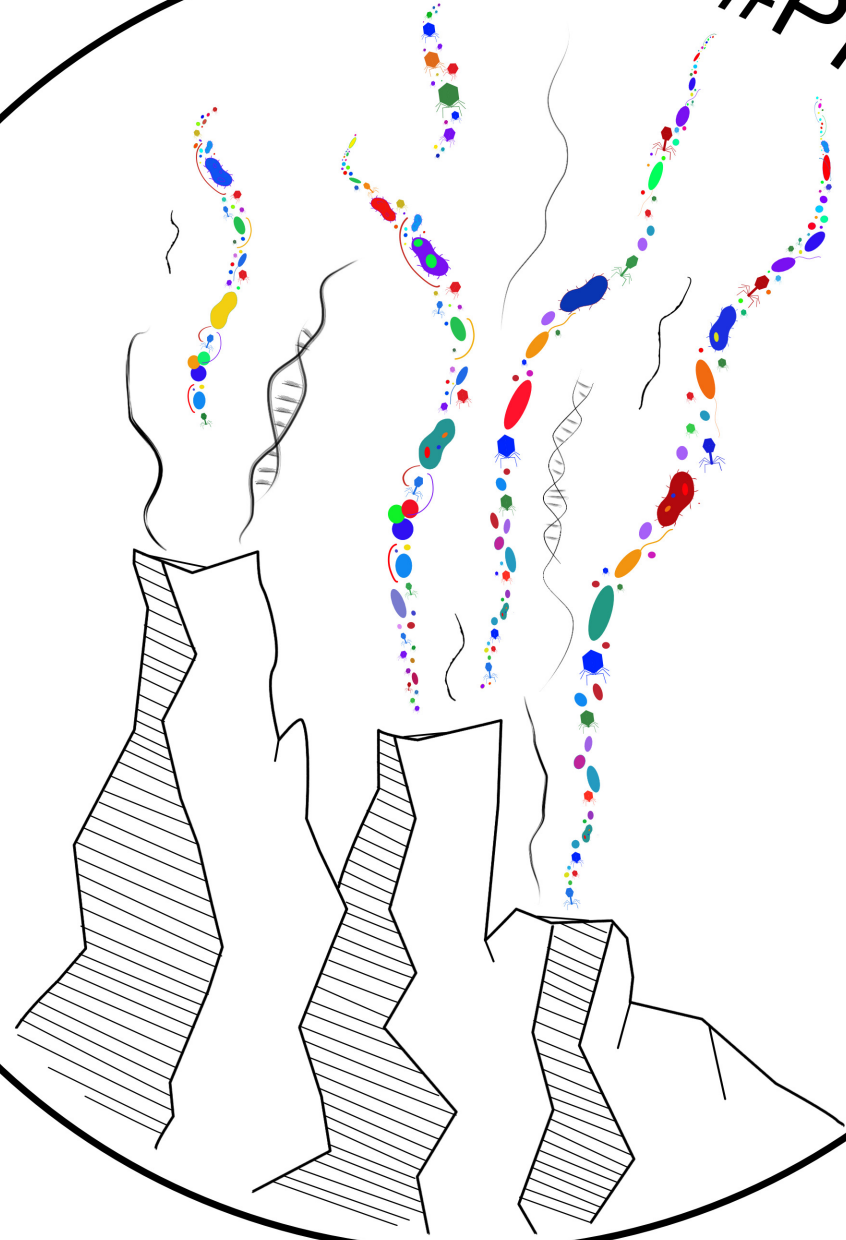
(Aka #COVIDREDO)

Characterizing and quantifying
the impact of phagotrophic
protists at hot spots of primary
production at Axial Seamount












R/V Thompson ROV Jason

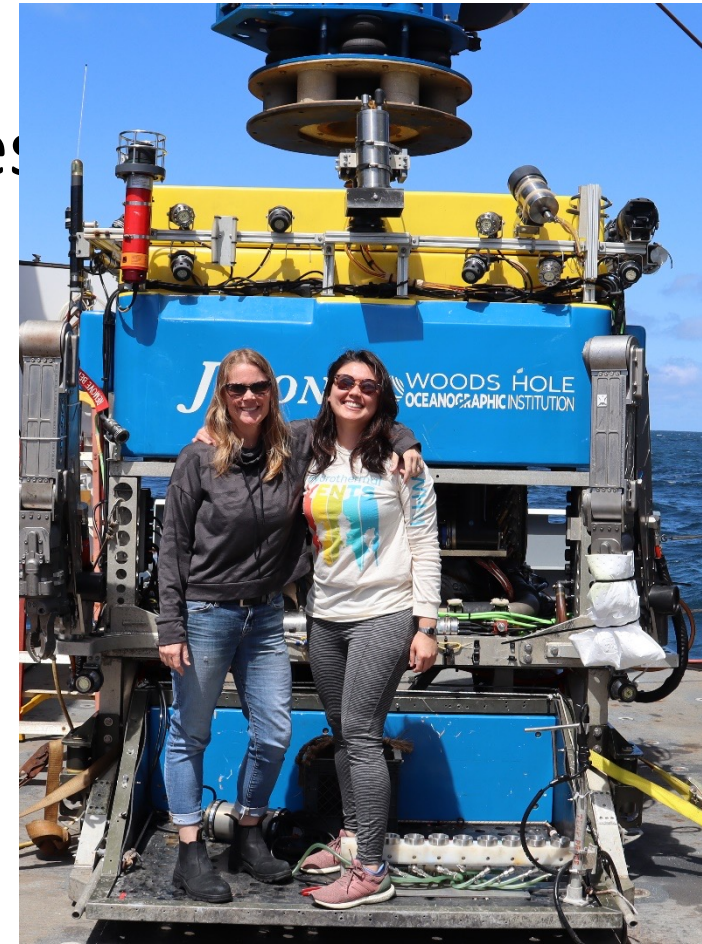
#PROTATAX—July 2023



Protistan grazing impacts microbial communities and carbon cycling at deep-sea hydrothermal vents

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- Quantify protists & grazing in diffuse fluids, plumes and background seawater
- Do this on the seafloor with the miniSID as well as onboard with fluids
- Samples for RNA sequencing of protists
- TAMU, UW, NOAA, JPL+ UMass Amherst



PROTATAX23, By the Numbers

- 8 dives at Axial Seamount
- 19 hydrothermal vent sites visited
- 144 total samples taken with Jason
 - 1,540 meters deepest sample taken
 - 25 samples taken from vent fluids over 220°C
 - 320°C hottest sample taken
- 1,154 liters vent fluid and seawater collected via SUPR, UFO, + Niskins
- 16 shipboard grazing experiments
- 18 *in situ* experiments performed by the miniSID
- 109 times people requested for their on-ship data limit to be reset
- 2 pounds M&Ms consumed by the science party (plain, dark, peanut, and peanut butter)



The possibilities are endless

By Ken Kostel | July 21, 2023

ROV Jason first impressions with early career scientists

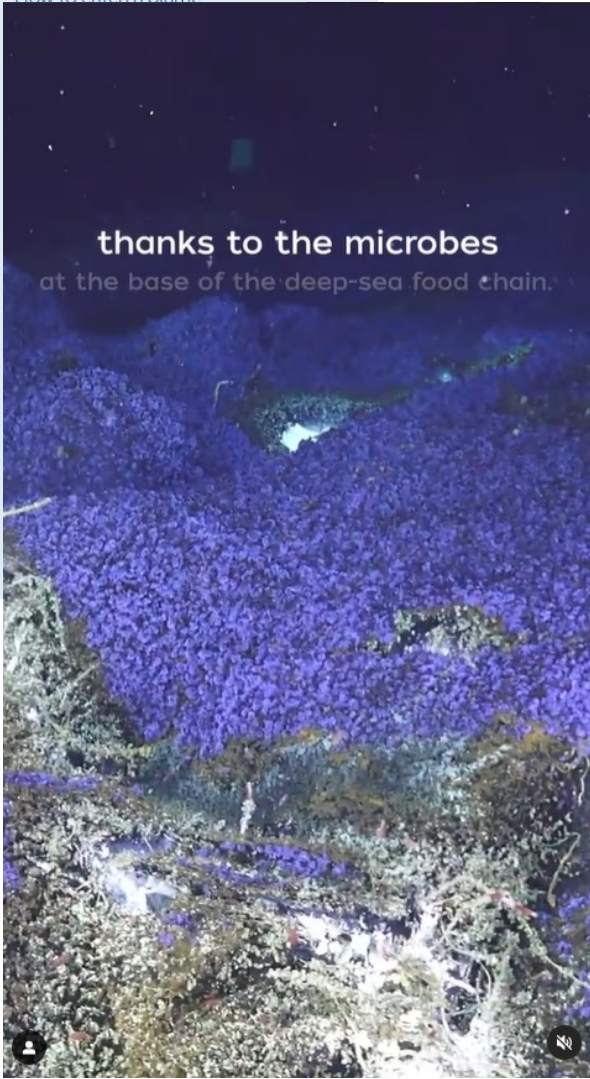


(Left to right): Texas A&M graduate student Kayla Nedd, WHOI Guest student and Scripps Institution of Oceanography postdoc Emilie Skoog, and Texas A&M graduate student Alexis Adams processing fluid samples just procured in the deep ocean. (Photo by Hannah Piecuch ©Woods Hole Oceanographic Institution)

RECENT NEWS

Science enabled by NDSF vehicles at Ocean Sciences

How to catch a plume



thanks to the microbes
at the base of the deep-sea food chain.

nsfgov and whoi.ocean Original audio

nsfgov An alien world exists right here on Earth. 🌍

In the Pacific Ocean, 300 miles off the Oregon coast, life thrives at the Axial Seamount. The seamount, or underwater mountain 🌋 is home to active hydrothermal vents — deep-sea hot springs that shoot scalding fluid from the Earth's interior into frigid seawater, creating the perfect cocktail for life.

Last summer, @whoiocean deep-sea microbiologist Julie Huber @julesdeep partnered scientists from #WHOI and @tamu to lead an expedition on the @rvthomasgthompson to this otherworldly environment. 📷

#ROVJason filmed the filamentous bacteria and purple microeukaryotic colonial mats you see in this video. Marine microbes, which convert chemicals in hydrothermal fluid into organic carbon, are responsible for these unearthly scenes. This process is called chemosynthesis, which is similar to photosynthesis but happens without sunlight and could be essential to the global carbon cycle.

"The whole ocean food web is driven by microbes," says Huber. "We understand that very well in the surface ocean. Now we're trying to understand how it works in the dark at the bottom of the ocean."

📷 Captured by ROV Jason as part of the #PROTAX23 expedition led by Julie Huber.

#microbes #womeninstem #AxialSeamount #STEM #deepsea #science #researchvessel

1d

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Thank you to NDSF, WHOI Comms, and Hannah Piecuch