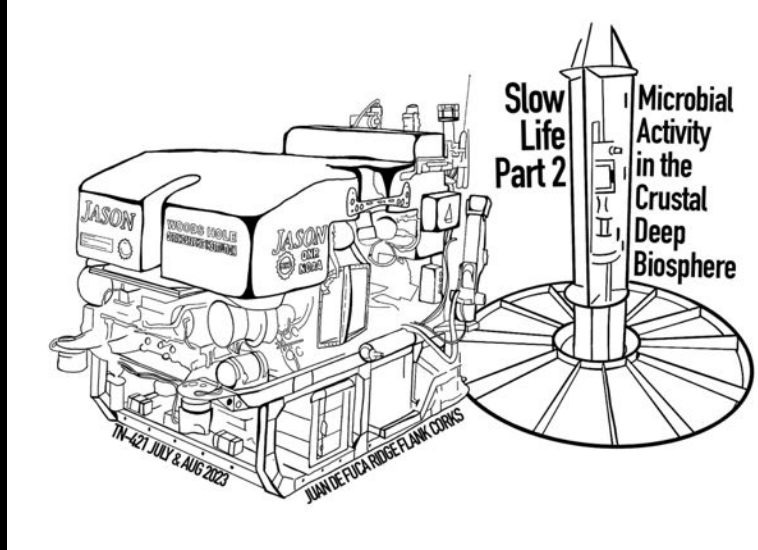


TN421 update

Slow Life in the Fast Line part 2

repeat of 2019 cruise to make up for loss of 50% of operational time for weather



Co-chief scientists: Stephanie Carr + Beth Orcutt

July 29 – August 8 2023

Mob/Demob: Newport, OR

RV Thompson + ROV Jason



Science funding: NSF OCE-1737017 (Orcutt) + NSF OCE-1851582 & linked (Rappé, Nigro, Carr) + NSF OIA-1826734 (Stepanauskas, Orcutt et al.) + NASA 80NSSC19K0466 (Orcutt)

WHERE did this the expedition go?

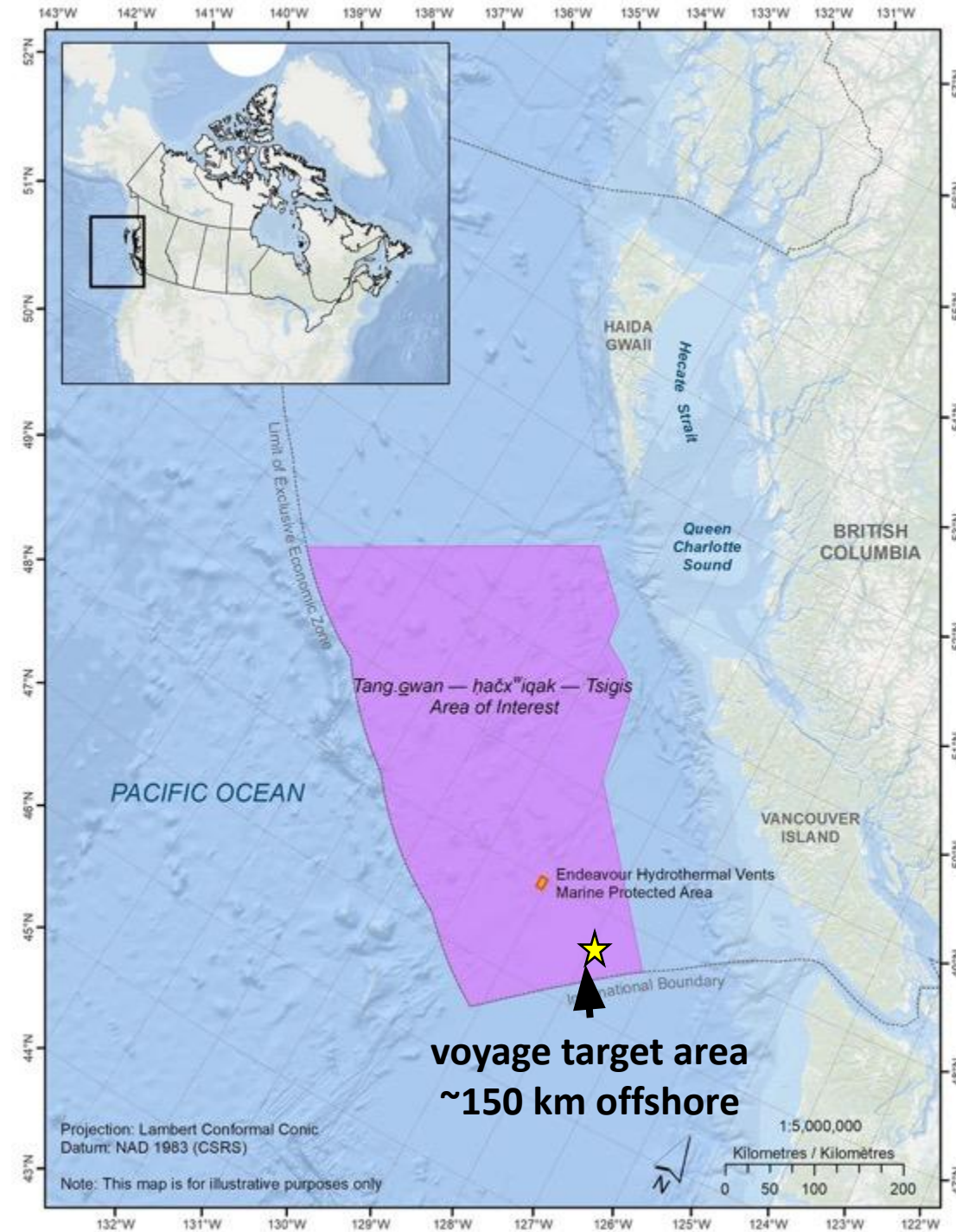
The voyage target is within Canada's Offshore Pacific Area of Interest, which is proposed as a new Marine Protected Area called "Tang.Gwan-ħačx^wiqak-Tsigis" (ThT)

The conservation objective of ThT is to conserve, protect and enhance understanding of unique seafloor features, including seamounts and hydrothermal vents, and the marine ecosystems they support in the proposed MPA

The Indigenous name of this proposed MPA consists of:

- a Haida word meaning deep ocean, Tang.gwan
- a Nuu-chah-nulth and Pacheedaht word meaning deepest part of the ocean- ħačx^wiqak
- a Quatsino word referring to a monster of the deep -Tsigis

More information: <https://www.dfo-mpo.gc.ca/oceans/aoi-si/tht-eng.html>

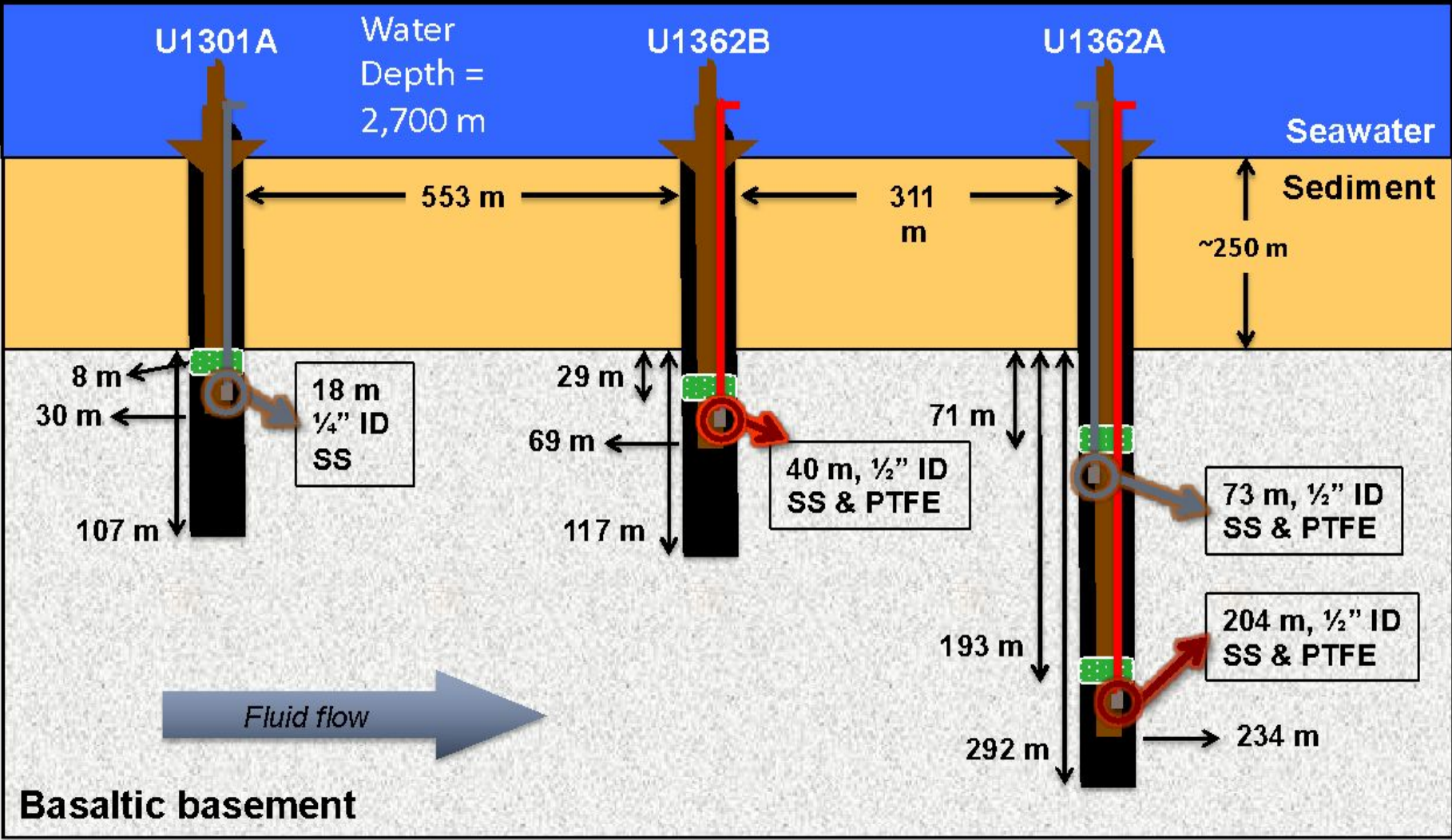


WHERE did this expedition go?

The target area is around the Cascadia Basin node of the NEPTUNE cabled observatory operated by ONC

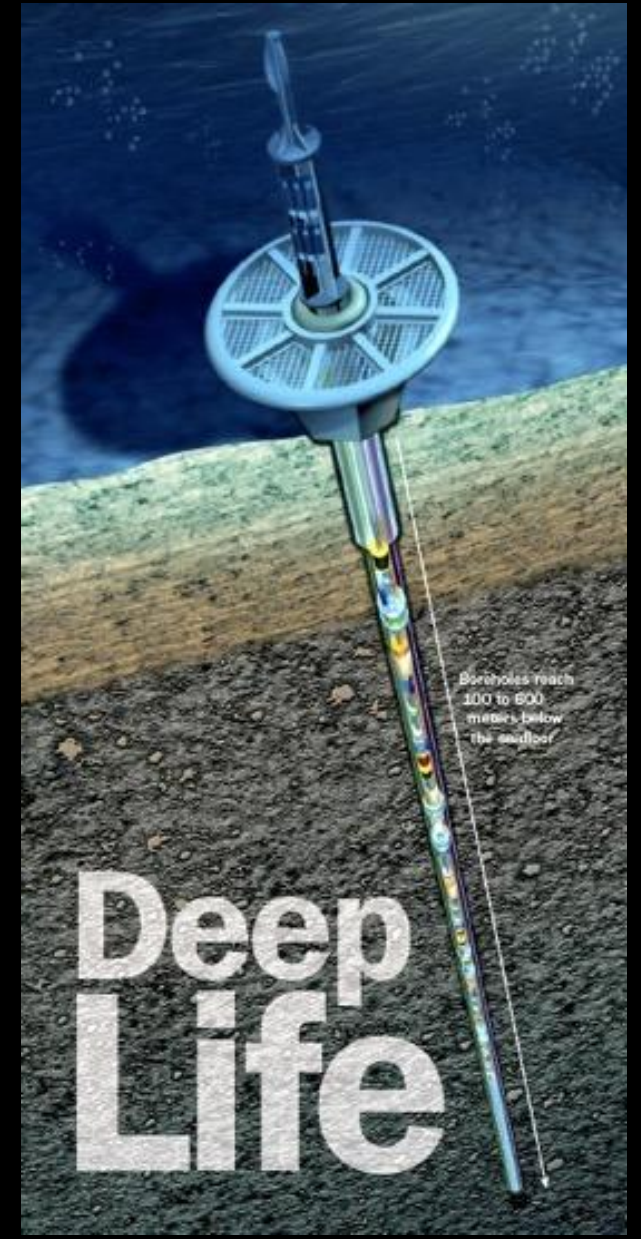


CORK Borehole Observatories



Site Name	Lat (N)	Lon (W)	Water depth (m)
Hole U1362A	47° 45.662	127° 45.674	2658
Hole U1362B	47° 45.499	127° 45.733	2658

Image courtesy of M. Rappe



Respecting that the field work was taking place in Canadian waters, the science party included several scientists and students from Canada, as well as First Nations participants

Also two ROV interns for NDSF!



1° Objectives

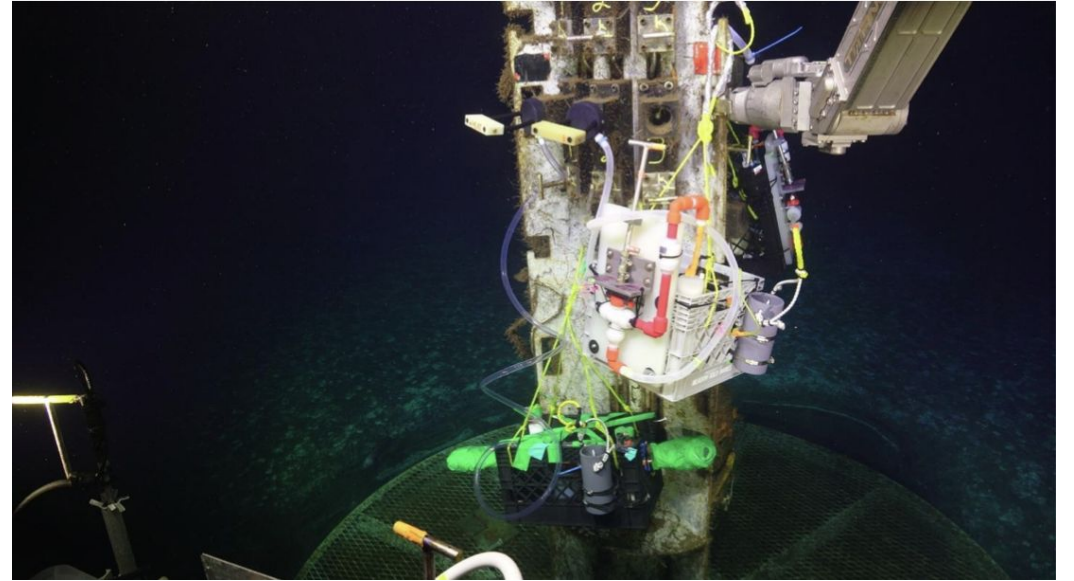
- Shipboard incubations of crustal fluids to measure rates of microbial activity and identify active members of population
- Collect & filter large volumes of crustal fluid for analysis of microbial ecogenomics, viral-host interactions, and physiology

2° Objectives

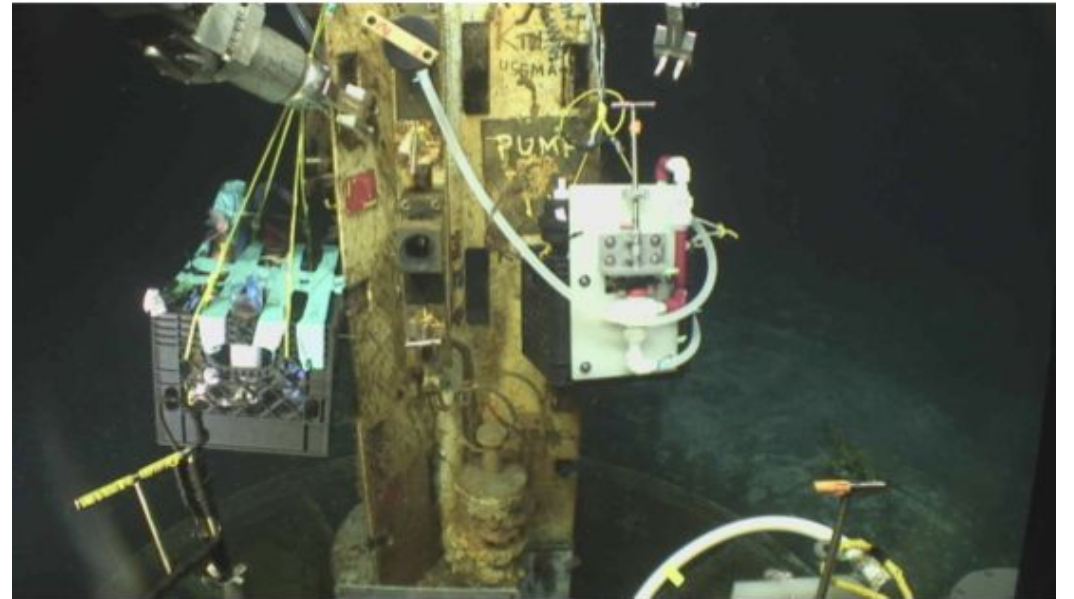
- Download pressure data, deploy OsmoSamplers for monitoring conditions before potential subseafloor carbon injection tests by SolidCarbon team, water column + sediment sampling, fauna surveys for Canada's DFO

Cruise Outcomes

- 5 ROV dives totaling 55.5 hours bottom time for science
- For the future - 13-year old CORKs installed on IODP Expedition 327 are still providing useful windows into the seafloor and can continue to be used !!!!



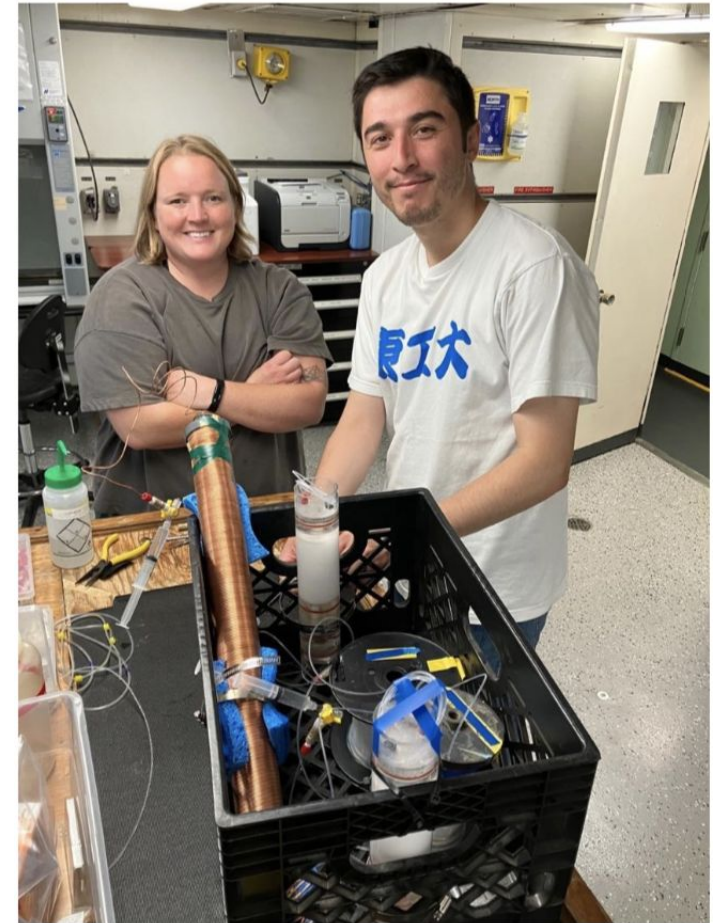
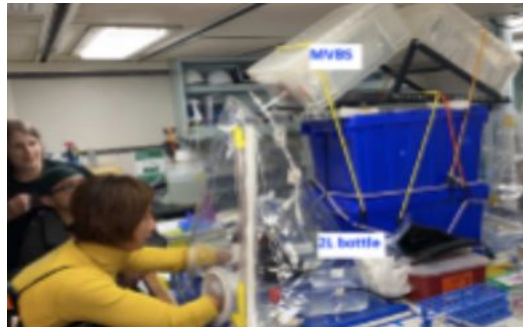
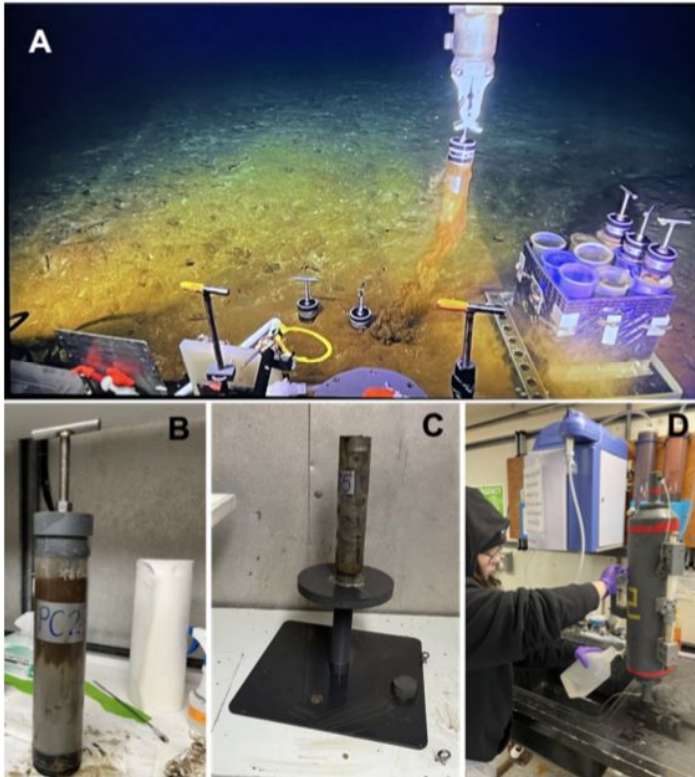
U1362A on August 6th 2023



U1362B on August 7, 2023

Cruise Outcomes: Secondary Goals

- 2° goals achieved - Water column & sediment samples, OsmoSamplers deployed, Pressure data downloaded (loggers are dead, though), CORKs left sealed



Performance assessment

- Overall ship and ROV operations went smoothly aided by good weather and great team
- Electrical and mechanical issues interrupted first dive + had to redo J-box cabling to wire third-party connector for power and comms (made challenging by loss of institutional knowledge in ROV team, on connectors and wiring used previously with same equipment, but aided by can-do spirit of team and ROV interns)
- Final dive ended early to LARS winch issues – shore decision that no chance to dive again so ROV team could focus on repairs necessary for next OOI cruise (understandable)