

DeSSC report November, 2020 UNOLS Meeting

- DeSSC membership
- NDSF vehicle updates
- Other activities



DeSSC Membership

Current members

Roxanne Beinart (*URI*), ***Friend of Alvin***

David Caress (*MBARI*)

Brian Glazer (*Univ. Hawaii*)

Leila Hamdan (*Univ S Miss*)

Jeff Marlow (*Boston U*)– (*Amanda Demopoulos (USGS)*)

Anna-Louise Reysenbach, Chair (*Portland State U*)

Andrew Thurber (*OSU*), ***Friend of Jason***

Dorsey Wanless (*Boise State U*), ***Vice Chair DeSSC***

Scott White (*Univ, SC*), ***Friend of Sentry***

Peter Girguis, (*ex-officio, Harvard*)

Rob Munier (*ex-officio, WHOI*)

Tim Shank (*ex-officio, WHOI*)

Adam Soule (*ex-officio, WHOI*)

ROV Jason 2020

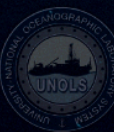
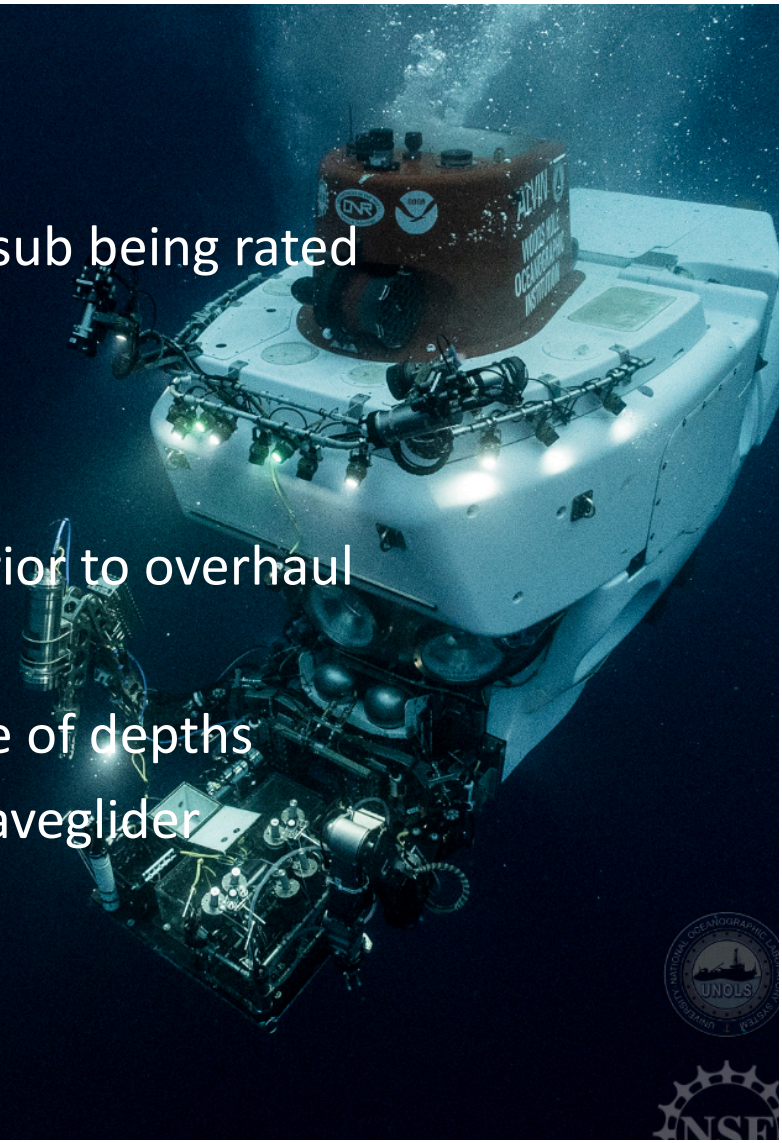
- Four cruises
- 3 cruises deferred due to COVID-19
- Jeff Seewald - *ROV Jason/RV Atlantis*
- David Schmidt - *ROV Jason/RV Thompson*
- Deborah Kelly - *ROV Jason/RV Thompson* (2 cruises)
- William Chadwick - *ROV Jason/ AUV Sentry/ RV Thompson*

- 2021 Very ambitious busy schedule



Alvin:

- Alvin overhaul going well, which will result in the sub being rated to 6500m with planning for science verification
- Were able to complete all three cruises in 2020 prior to overhaul
- 85 operating days
- Average bottom time was 5.5 hours at a multitude of depths
- Concurrent operations of Sentry and Alvin and Waveglider



Sentry

- Successful joint operation with Alvin and Sentry
- Lost 130 operating days due to COVID-19
- Recent Chadwick expedition with joint Jason and Sentry operations went well (5 days lost to weather)

Numerous upgrades have greatly improved and stabilized performance.



Other Activities: Abyss workshops

Committee: Adam Soule, AL Reysenbach, Tim Shank,
Jeff Marlow, Andreas Teske, Dorsey Wanless, Jeff Seewald,
Bruce Strickrott, Rika Anderson

- Synthesize community input into a publication describing science priorities at abyssal depths.
- Develop a white paper outlining science verification activities for 6500m HOV Alvin.

WORKSHOP- 'minilabs'

- Four online sessions. Participants watch pre-recorded presentations and spend 90 minutes in breakout group discussion on a common set of questions.

- Abyssal Plains & Seamounts
- Trenches & Transforms
- Technology & Societal Relevance
- DEI

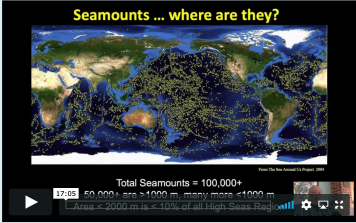
NDSF NATIONAL DEEP SUBMERGENCE FACILITY

HOVALVIN | ROV JASON | AUV SENTRY | DATA | PLAN AN EXPEDITION | NEWS & MEDIA

Pre-Workshop Materials

Peter Auster, UConn

Seamounts ... where are they?



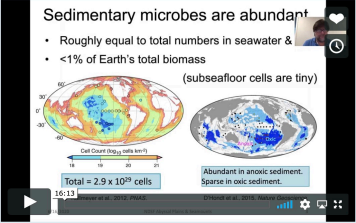
Total Seamounts = 100,000+
60,000+ are >1000 m, many more <1000 m
Area = 2000 m² = 10% of all High Seas Reefs

Steve D'Hondt, GSO URI

Sedimentary microbes are abundant

- Roughly equal to total numbers in seawater &
- <math><1\%</math> of Earth's total biomass

(subseafloor cells are tiny)

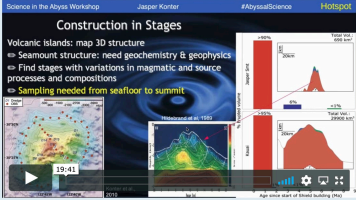


Total = 2.9×10^{21} cells
Abundant in anoxic sediment. Sparse in oxic sediment.

Jasper Konter, SOEST UH

Construction in Stages

Volcanic Islands: map 3D structure
Seamount structure: need geochemistry & geophysics
Find stages with variations in magmatic and source processes and compositions
Sampling needed from seafloor to summit



Ashadze-1, Aurora, and Piccard; slow to ultra-slow mid-ocean ridges

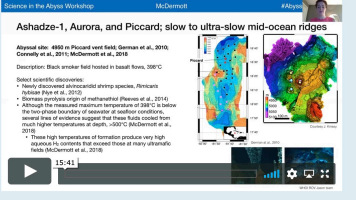
Abstract title: 4933 in Manus west field, Gorman et al., 2016; Connelly et al., 2011; McDermott et al., 2018

Description: Black smoker field located in basalt flows, 208°C

Seafloor hydrothermal vent systems

- Newly discovered hydrothermal vent systems, Manus
- Manus seafloor hydrothermal vent systems, Manus
- Manus seafloor hydrothermal vent systems, Manus

These high temperatures of formation produce very high sulfur fluxes that exceed those of many hydrothermal fields (McDermott et al., 2018)



>150 registered/workshop, each held twice at different time zones

Other Activities: Abyss workshops

- *In progress:* Synthesize community input into a publication describing science priorities at abyssal depths.
- *In progress:* Develop a white paper outlining science verification activities for 6500m HOV Alvin.

Other activities:

- Data streamlining between vehicles
- Imagery user (new and old) skills workshop (s) in collaboration with NDSF (Andy Bowen)
 - NDSF curriculum
 - to teach the basics and fundamentals of capturing
 - high quality video and underwater stills. This will be largely based on video and stills
 - examples of actual film and science missions over the past few decades
- Materials developed, can plan science workshops
 - Assembling a committee
 - Format scenarios
 - Tentative plan March 2021
- DeSSC Dec 2020, early Dec date TBD. Format will be adjusted because it's online
- New User meetings - AGU/ASLO
- Other thoughts : NDSF staffing and Covid impact on teams and science
- Thanks!