DeSSC report
December 1, 2016
UNOLS Council Meeting

- DeSSC membership update
- NDSF vehicle updates
  - HOV Alvin
  - Chief Sci training
  - ROV Jason
  - Jason on the RV Sally Ride
  - AUV Sentry
- Other activities
  - DESCEND2 report
  - Telepresence working group initiated
  - Education and outreach activities

DeSSC membership

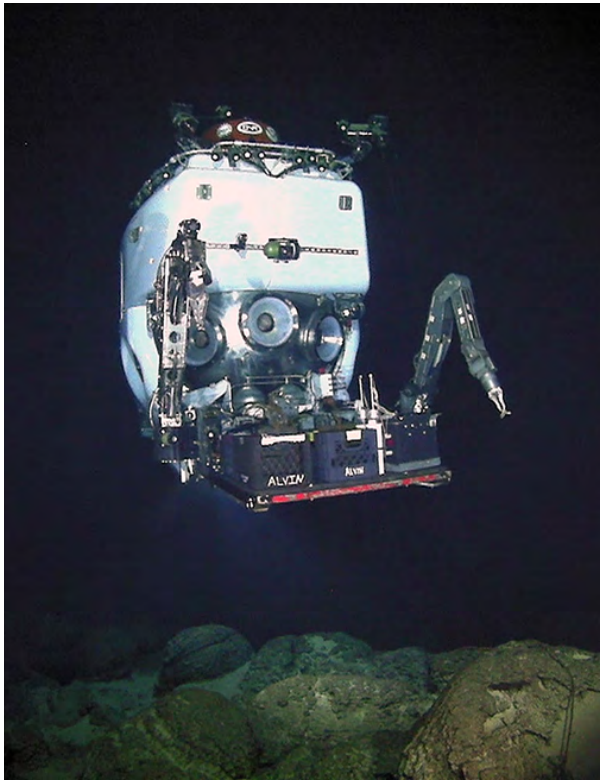
Current members

Craig Dawe (*MBARI*)***
Amanda Demopoulos (*USGS*)
Dave Emerson (*Bigelow*)
Brian Glazer (*Univ. Hawaii*)***
Nick Hayman (*UTIG*)
Laura Lapham (*Univ. Maryland*)
Anna-Louise Reysenbach, Chair
(*Portland State U*)
Cindy Van Dover (*Duke*)
Scott White (*Univ, SC*)***

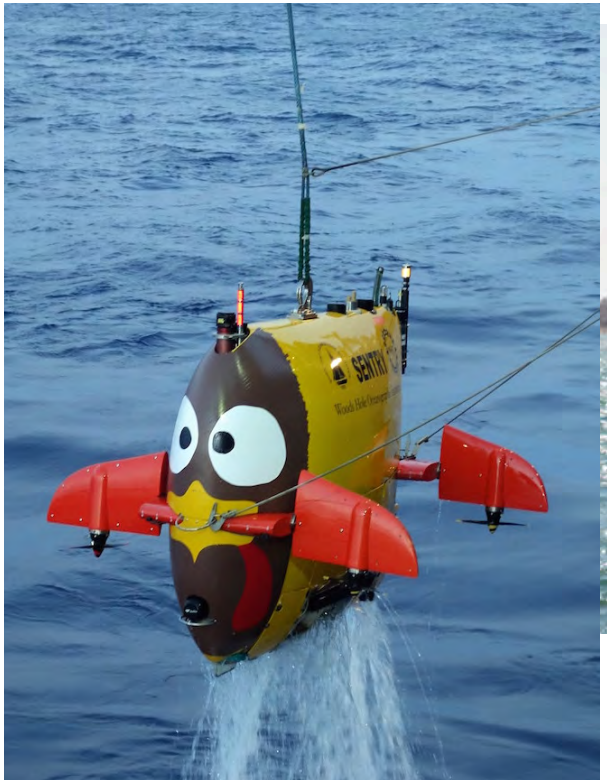
Peter Girguis, (*ex-officio, Harvard*)
Rob Munier (*ex-officio, WHOI*)
Tim Shank (ex-officio, *WHOI)*
Adam Soule (*ex-officio, WHOI*)

Changes to Terms of Reference- Vice Chair

NDSF Vehicle Updates



HOV *Alvin* on the seafloor at the 8˚20’N seamount chain on the EPR. Image courtesy of P. Gregg & D. Fornari.

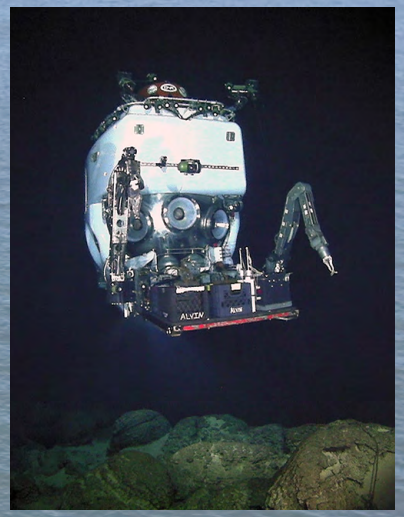


AUV *Sentry* in a holiday mood with a turkey face by J. Fujii. Image courtesy of D. Yoerger.

ROV *Jason*

HOV *Alvin*

- Usage: 127 days (46 days in 2015)
- Running really well
- integration of acoustic communications package for enhanced sub-to-ship comms (text messages, images).
- Transitions between downtime can be a bit of a challenge- additional engineering dives helps smooth out the wrinkles
- Featured vehicle in UNOLS Chief-Sci Training cruise sponsored by NSF (along with AUV *Sentry*).



Chief Sci training cruise included 24 young scientists with ship and shore parties supported by telepresence.

Deep submergence chief scientist training program

- 24 asst. professors, senior postdocs and grad students with ~56 remotely signed up! (Juiy-Aug 2016
- planning and executing collaborative, interdisciplinary research
- leadership in cruise and dive/mission planning and execution
- integration of instrumentation with *Alvin/ Sentry/*other deep-submergence assets
- telepresence-enabled data acquisition and seafloor-to-ship-to-shore communications data management, sharing, reporting
- science communication and outreach to broader audience(s)
- Cindy Van Dover, Donna Blackman, Adam Soule, Dan Fornari and Karl Bates

Phronima sp. (hyperiid amphipod) and its salp house from mid-water *Alvin* sampling. Photo by ECS Laura Bagge.

Outcomes: Highlights

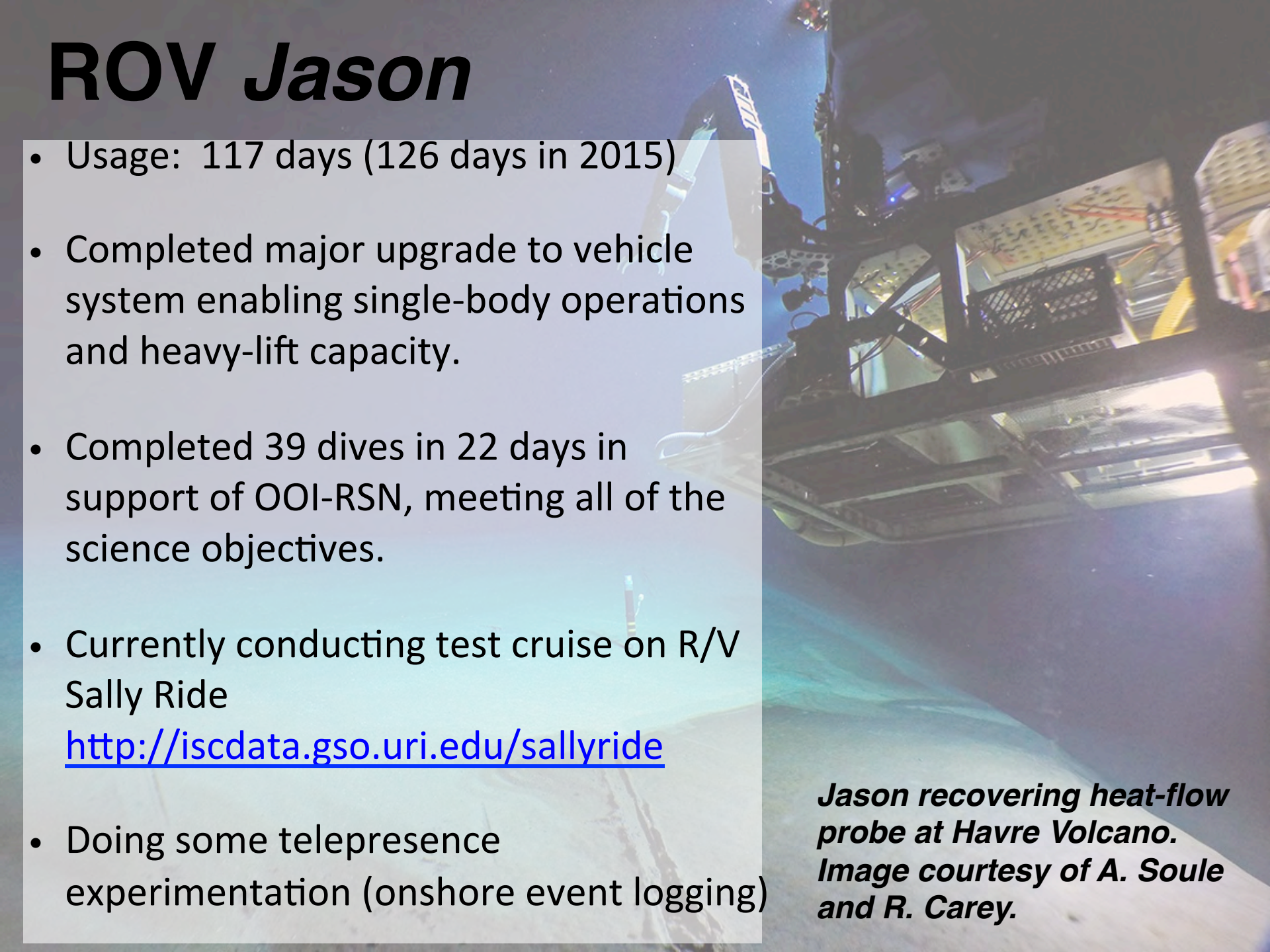
- Overall very successful and well received
- Report on DeSSC site
- Although 75% of participants had seagoing experience, 42% had no previous experience with NDSF. Most first time with Alvin
- 67% likely to submit proposals to use NDSF in next 2 years, all but 2 would in next 5 years
- 88% expect to continue these collaborations
- Numerous recommendations in the report such as: “Chief sci shadowing” opportunities

- “What is fun to see is that they continue to work together - a network is in place”.. Cindy Lee Van Dover –Chief Sci

- Clearly building capacity- user base, an endeavor I hope we can continue to support

ROV *Jason*

- Usage: 117 days (126 days in 2015)
- Completed major upgrade to vehicle system enabling single-body operations and heavy-lift capacity.
- Completed 39 dives in 22 days in support of OOI-RSN, meeting all of the science objectives.
- Currently conducting test cruise on R/V Sally Ride http://iscdata.gso.uri.edu/sallyride
- Doing some telepresence experimentation (onshore event logging)

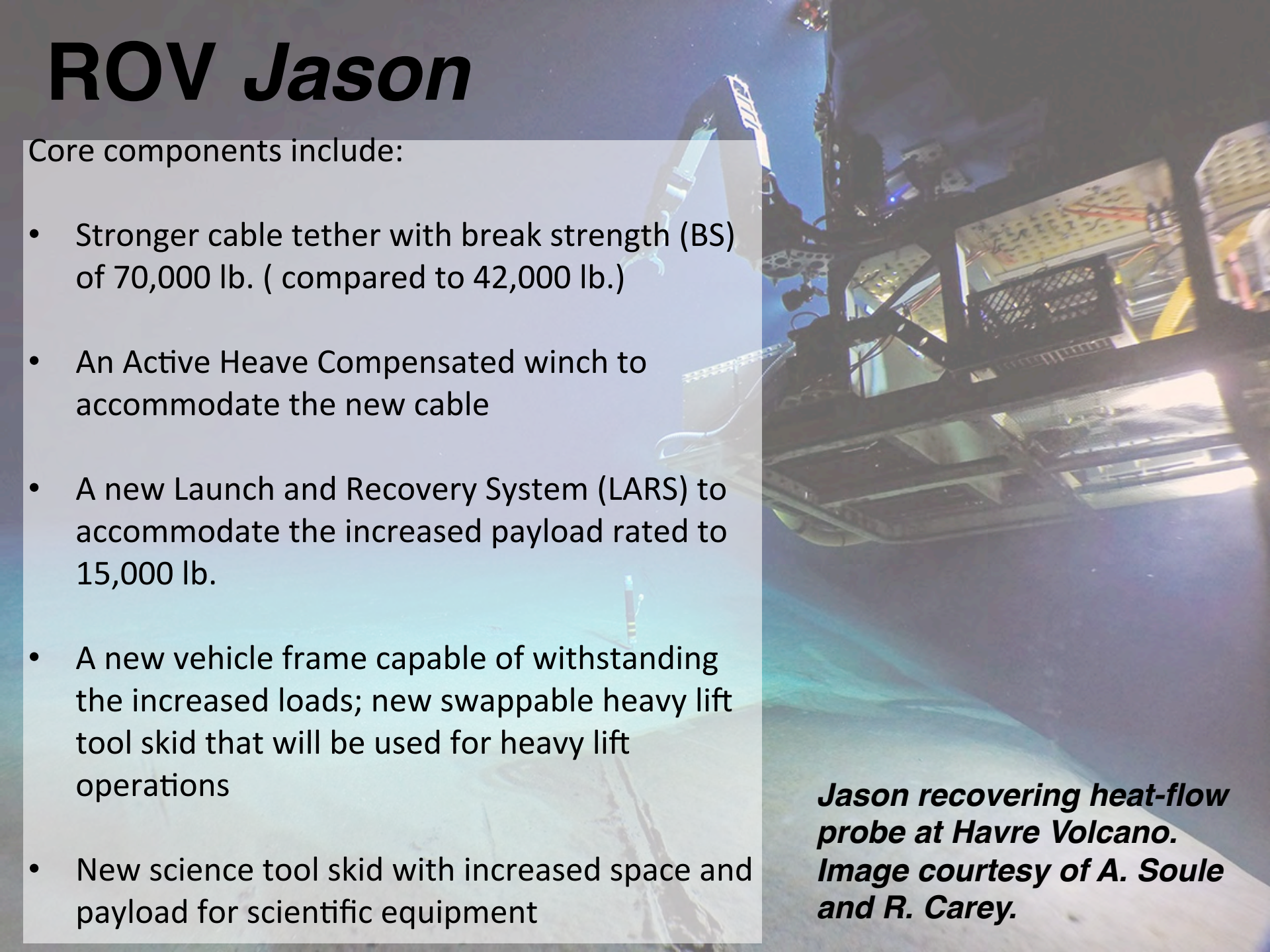


Jason recovering heat-flow probe at Havre Volcano. Image courtesy of A. Soule and R. Carey.

ROV *Jason*

Core components include:

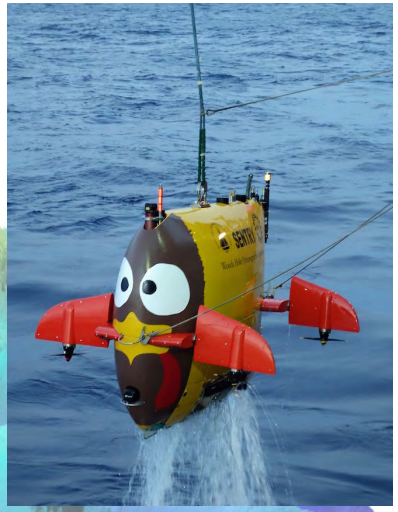
- Stronger cable tether with break strength (BS) of 70,000 lb. (compared to 42,000 lb.)
- An Active Heave Compensated winch to accommodate the new cable
- A new Launch and Recovery System (LARS) to accommodate the increased payload rated to 15,000 lb.
- A new vehicle frame capable of withstanding the increased loads; new swappable heavy lift tool skid that will be used for heavy lift operations
- New science tool skid with increased space and payload for scientific equipment



Jason recovering heat-flow probe at Havre Volcano. Image courtesy of A. Soule and R. Carey.

AUV *Sentry*

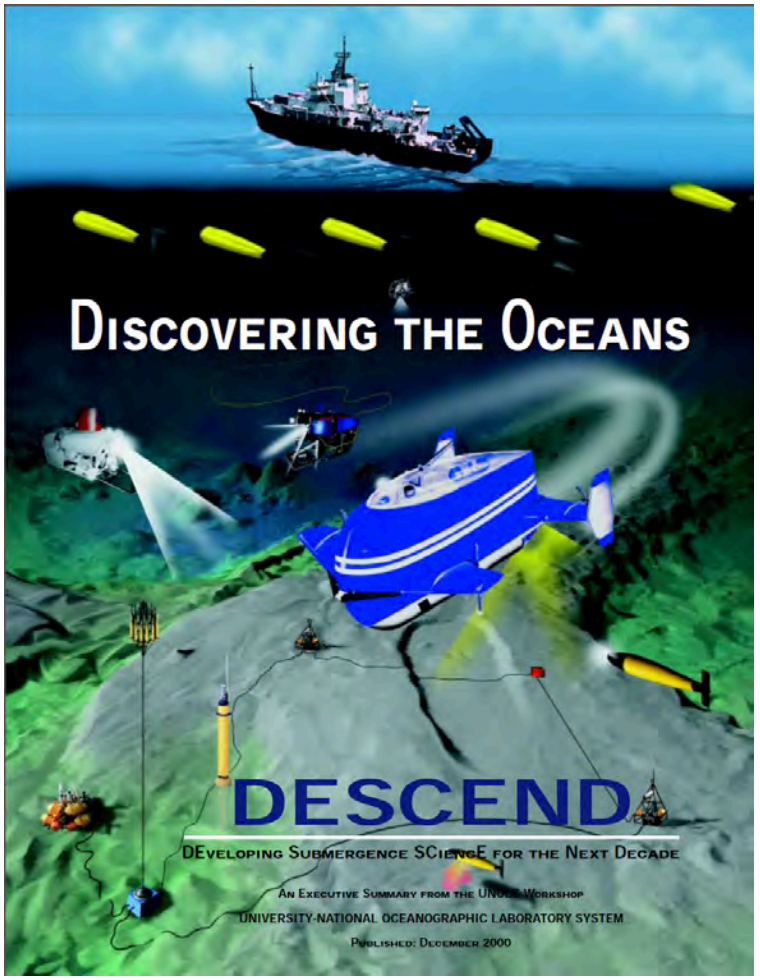
- Usage: 139 days (197 days in 2015)
- Battery upgrade significantly increased endurance (24h mapping, 36h photos) without increasing turnaround time.
- Upgrades have made it lighter, forward looking sonar= significant improvement
- Completed cruise in support of NTSB survey of El Faro wreckage and search for VDR. (broader impacts of the NDSF)
- Five of seven *Sentry* cruises were two-vehicle, supporting *Alvin* or *Jason* ops.



1-m resolution Sentry bathymetry of the axial valley of the Mid-Atlantic Ridge (14˚N), courtesy of M. Kurz - WHOI

OTHER activities:
DESCEND2 workshop (Jan 14-15, 2016)

- 74 participants
- To direct future strategies for upgrades to vehicles, sensors, sampling techniques, imaging capabilities
- critical questions and the technologies necessary to address them.
- Coastal, open ocean (benthic and pelagic), polar, physical oceanographic, ecological, biogeochemical summary reports
- website is live at the UNOLS DeSSC webpage and at https://descend2blog.wordpress.com/
- Pete Girguis is finalizing report



1999 DESCEND workshop report

Telepresence working group

- DeSSC has initiated a working group to:
  - draft a paper on Telepresence-enabled science missions
  - Will include
    - a review of ongoing activities (including those of the ECS)
    - Logistical limitations/considerations
    - Recommendations for usefulness of new technologies
    - Etc.

Education and Outreach

- AGU Fall -DeSSC meeting Dec 10-11

- With support from NSF, we've hosted 5 early career science programs, all of which were very well attended and received
  - ~28 attendees this Fall
  - Agenda https://www.unols.org/event/meeting/2016-dessc-winter-meeting

- We continue to develop and implement new activities (with the approval of DeSSC/UNOLS), and to assist UNOLS with E&O assessment activities
- As new DeSSC chair, I would like to explore additional ways to broaden our outreach activities.


Thank-you