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! (July-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](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
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
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](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