

Deep Submergence Science Committee

Updated: June 27, 2017

On-Going DeSSC Activities and New Action Items Break-out Session Notes

Action	Assignment	Status
<p>InterRidge:</p> <ul style="list-style-type: none"> • Contact the individuals selected for the US Steering Committee - Peter Michael and Milene Cormier • Compile information for the US StCom presentation at the InterRidge meeting. • The StCom should come back to NSF and report out on the meeting and explain the value of US membership. 	<p>Annette, Anna-Louise, Adam Soule, Dan Fornari, Peter Michael, Milene Cormier</p>	<p>Peter and Milene have been contacted. Milene has contacted NSF for airfare funds.</p>
<p>Draft a paper providing justification for deep submergence access that is greater than 4500m.</p>	<p>Adam Soule and DeSSC members</p>	
<p>DESSC interest in Deep-Sea Mining/ISA initiative - Monitor the potential impacts of deep-sea mining</p>	<p>Cindy Van Dover, Pete Girguis, Adam Soule, Andy Bowen, Carl Kaiser, Tim Shank, Nick Hayman, Anna Louise, and Scott White</p>	
<p>Winter DESSC Meeting – Revise the agenda format to optimize time for community discussion sessions. [Note 1: See suggestions below the action items.]</p>	<p>Anna-Louise and Annette</p>	
<p>NDSF Debrief Process: continue Debriefs</p> <ul style="list-style-type: none"> • <i>Sentry, Jason, and Alvin</i> Friends: <ul style="list-style-type: none"> ○ <i>Sentry</i> - Scott White ○ <i>Alvin</i> - Amanda Demopoulos ○ <i>Jason</i> - Dave Emerson • Annette Schedules debriefs • Evaluate the NDSF vehicle post cruise assessment report (PCAR) form and how it is used. Determine if it should be converted to a Survey Monkey form. 	<p>Scott White, Amanda Demopoulos, Dave Emerson, Adam Soule, Annette DeSilva</p> <p>PCAR task – Adam Soule</p>	<p>Debriefs are on-going</p>
<p>DESCEND2 Workshop Report – Complete</p>	<p>Pete Girguis</p>	
<p>Summarize suggestions from the June DeSSC meeting brainstorming sessions and recirculate. [Notes 2 & 3 - See suggestions below the action items.]</p>	<p>Anna-Louise and Annette</p>	
<p>Draft a paper/Eos Article on Telepresence-enabled science missions</p> <p>Issues to include:</p> <ul style="list-style-type: none"> • Modes of operations • Operational perspective – looking at reduced berths. 	<p>Chris German, Chair Carl Kaiser, Matt Heintz, Dave Emerson, Nick Haymon,</p>	<p>Have held three meetings. On-going</p>

<ul style="list-style-type: none"> • Limitations • Products • Time management considerations • Logistical considerations • Recommendations on the usefulness of this technology would be very useful 	Amanda Demopoulos, Amanda Netburn, Dwight Coleman, Jon Howland	
Polar Deep Submergence – Work to engage the polar research community	Masako Tominaga, Laura Lapham	
DeSSC New User Program: December workshop on Saturday and Sunday before AGU [<i>Note 2 - See suggestions for changes to the NUP program</i>]	Program leaders: <ul style="list-style-type: none"> • Karyn Rogers • Vicki Ferrini • Brian Glazer 	
Identify DeSSC Vice chair	Anna Louise	Will consider after more time on DeSSC
DeSSC Social Media Lead – Update the DeSSC Facebook page and other social media	Nick Hayman	
Report on income from NDSF image use – make report at Spring DeSSC Meeting	NDSF	
Determine how <i>Alvin's</i> use be optimized and then convey that to the community. Suggested strategies <ul style="list-style-type: none"> • Publish an Eos Article. • Develop the programs that need Alvin. Engage the community. • Create a users guide that compares the capabilities of the platforms so users will understand what vehicle is optimal for their research operations. 	No assignment.	More discussion at next DeSSC meetings.
<p>USBLs on UNOLS Vessels</p> <p>USBL is a critical capability for NDSF operations, but is increasingly becoming routinely used by all sorts of seagoing operations (e.g., towed vehicles, heat-flow surveys, coring, non-NDSF ROVs, etc.). Many ships have a permanent USBL system installed, but they are all operated in slightly different ways and sometimes are hardware from different providers.</p> <p>Full details are outline below the action items. [<i>See Note 4</i>]</p> <p>The problem: The variety of flavors of USBL on various UNOLS platforms is problematic for the use of those systems by NDSF and other facilities.</p> <p>Action item: These systems are supported by both RVTEC and RVOC and the ultimate responsibility is unclear. A discussion should take place between NDSF, the marine sups, and the tech managers. The ship operators include: WHOI, UW, UAF, UH, SIO,</p>	Annette will initiate a discussion between Andy Bowen, Adam Soule, Tech managers, and Marine Sups.	

NOAA		
NDSF Boot-camp - here will be an extended period of down time for <i>Alvin</i> . Additionally there is interest in training form <i>Jason</i> and <i>Sentry</i> . There should be a broader mentorship base (beyond WHOI). A webinar on STRS could be added.	Adam Soule - lead	

Additional details pertaining to action items:

Note 1: Winter DESSC Meeting – Revise the agenda to optimize time for community brainstorming and breakout sessions. Suggestions on how the agenda can be streamlined are provided below:

- Post “Update” reports -on the Web or Slack before the meeting
- Some reports can be in the form of posters
- Lightning talks from PIs
- The DeSSC meeting is the premier meeting. Reduce redundancy, keep science highlights
- Develop a template for the PI reports that must be adhered to
- Have a deadline for PIs to submit slides. If they don’t get papers ahead of time, they can provide a poster.
- NDSF debriefs - Report on the major issues and say that the other stuff is being addressed. Tighten up the effort.

Note 2: Brainstorm Session 1: Future New User Programs, Outreach, and Community Engagement/Collaborations:

Carl Kaiser’s Notes:

Is there a community of users we are not reaching?

- There are potential new users that we don’t even know...how do we reach new users who have never heard of the facility? Where are the missed opportunities?
- What outreach avenues are we not exploring? Speaking tours, sending glossy information, mailing lists, websites, videos?
- Should we include one-on-one (scheduled time) at NUP so people can ask their directed questions?
- Should NDSF/DeSSC have a booth at AGU, ASLO, Ocean Sciences to potentially engage people who don’t know about us?
- Do relevant non-users know about vehicle capability and the ease of access? (e.g., success rates, no budget line-item for NSF proposals).

How do we in-reach

- Should we have long-term expeditionary plans for vehicle positions in the to enable locations deemed otherwise difficult to get funded and to drive proposal pressure?
- Need the community-building capacity that we used to have with Ridge to drive collaborative proposals and just to help get people writing their proposals.

One-offs

- What are reliability standards & metrics? (Community engagement)

- How do we get feedback from the community on specific questions on an ad hoc basis? What are the next large-scale integrative programs that deep submergence to?
- What information do new users want to have accessible (on the web and elsewhere)? Can we utilize engineering programs at our users institutions to recruit junior engineering talent?

Pete Girguis’s Notes:

Keep new user programs? - Yes

Should they be expanded?

- Person #1 = There’s a lot more to deep sea research than the NDSF. We are exposing a major subset of the users to the opportunities in the NDSF. So, in Brian’s opinion, perhaps try a “fair”-style opportunities with NOAA, Schmidt, OceanGate, and the UH ROV and the Scripps ROV, etc.
- Person #2 = Agrees with Person 1’s point, but notes that there wasn’t a lot of time to REALLY get engaged with the science. Lots of info about the machinations, logistics, etc. BUT they may not see the immediate applicability of these vehicles.
- Person #1 = We need to define *a priori* our metrics for success. We didn’t do that. What is our metric?
- Person #2 = Diversification of users is one metric.
- Person #3 = Is there a mismatch in the early career activities, when you’re serving undergrads to postdocs?
- Person #4 = Starting a project with Schmidt to help them develop a way of engaging new users, and it starts with webinars and PDFs to get them WELL INFORMED before an in-person Q&A.
- Person #1 = Roxie, what’s the problem we are trying to solve?
- Person #5 = I’m not sure, because I was going to be writing proposals anyway so I could use pointers on HOW to best write proposals.
- Person #1 = You are one audience, there are other “audiences” as well. There are others like undergraduates, graduate students,
- Person #2 = There is still differences in the way people do their science, and I value the cross-disciplinary conversations that advance the ability of new users, etc. to field a good proposal. For example, there’s a bunch of folks who are retiring, and the next generation may not be pursuing the fields the same way.
- Person #3 = What about assigned “matched” mentoring? At Ocean Sciences, you are asked if you want a mentor and then
- Person #6 = Another idea is to increase opportunities for “deeper” engagement and learning. One idea would be, for example, to expand user training to “embedding” new users within the ALVIN vehicle ops group. There are some pros and cons to this model. For example,

Pros	Cons
Intimate training for those who have had little or no experience in working with the sub could benefit from this program	Berth availability
	Maybe they won’t see the “full spectrum” of what happens to take place IF this is the only element of this program

Scott' Notes

Laura, Dave, Andy, Scott, Anna-Louise

- Define community engagement: Who are we missing? How do we find out who are potential users that we are not aware of?
- How do we build programs that are relevant to the use of NDSF assets?
- Is it important to have a major initiative with an identifiable theme? What are the themes that engage users? Promote the development of themes and initiatives. Themes as unfunded plans to bring assets to different areas, initiatives are typically funded for problems that cross program boundaries.
- Near-term initiatives: user guides, understanding the process, the capabilities, and an EOS article, flowchart of capabilities or capability matrix with intent of guide proposers and giving them a way to make informed decisions and defensible.
- Streaming or podcast/YouTube the lectures and the products from the New User Workshop. Enabling the attendees to write a proposal, coming in with prior ideas for proposals and then enabling.
- Is there a role for DESSC to guide scheduling of NDSF assets? Is there a role to influence the schedule process? How does DESSC give feedback or voice a concern in the report about what's going on in the schedule of assets to DESSC? Schedule for Alvin last year is a case in point, and the committee should note when schedules are less than ideal and recommend changes.
- Longer-term initiatives, similar to OOI or GeoTraces.

Note 3: Brainstorm Session 2: Deep Submergence Science – the next 5 years.

One comment/question from each DeSSC meeting participant:

- Bruce Strickrott – There are some misconceptions or impediments of getting proposals funded. We can ask people if they have experienced these. What are the hurdles to getting successful proposals accepted?
- Matt Heintz – Promote a better pipeline for proposal writing. Provide easier access to NDSF contacts. Let potential PIs know how to reach the NDSF team. This results in a more productive proposal and cruise planning.
- Brian Midson – The winter DeSSC meeting is the showcase event for demonstrating and promoting enthusiasm deep submerge science. Facilitate discussions on how to enhance facility access and science. What are the perceived and real obstacles to deep submergence science? This is an important question to ask the community.
- Andy Bowen – There is value in building on the initiative to reaching out to new users. It is important to bolster this. It is important to identify opportunities to use the deep submergence capabilities for research that we don't presently pursue (seafloor mining, mesopelagic zone, arctic initiatives, etc.). Footnote: The DeSSC should consider a return to the past where the committee took a more visceral role in facility scheduling. We want to avoid the gap in vehicle schedules.
- Alan Leonardi – Would there be benefit for the deep sub facility to provide documentation/pamphlets on what the NDSF vehicles have accomplished? The community could be interrogated on what has not be done and why. Examples of use cases.

- Nick Hayman – Scientists are reluctant to share hypothesis. They will share up to the hypothesis. “What are the grand challenges?” What are the new frontiers? Where would you like to go next?
- Allison Miller – Broadening the community of users of the facility.
- Pete – Looking back over 6 years, there are a lot of good things that DeSSC did, wanted to do, or never did. Some things worked and some did not. How do you frame an action item so that there is the maximal opportunity that it will be acted upon and completed? How do you organize these tasks?
- Anna-Louise – What does the community feel are the emerging areas of deep sea exploration and research and what are the gaps in deep sea science. How can we build capacity to address these big questions? What are the big questions in deep sea science.
- Tim Schnoor – How can UNOLS better support the NDSF. Example – USBL. The fall DeSSC meeting is more largely attended, and the message seems to be that the Navy doesn’t have requirements for deep sea research. Is someone thinking about that changing and convincing the Navy to do research?
- Kerry Strom– 1) How can I help new users with STRS and with scheduling their science programs? 2) How can we help with long term planning and forecasting for science?
- Rachel Shackelford – Highlight science, but showcase the facility capabilities to help stimulate science ideas. Knowing the capabilities of the available tools and resources might stimulate new science ideas. *Alvin* is more than a camera.
- Jon Howland – As an operator and developer, if we had a better idea of the science, we may have a better idea of the technologies and tools that are needed. How do we facilitate that?
- Adam Soule – What is the viability and benefit of long-range, expeditionary style planning for deep submergence vehicles? Should we explore models such of these for IODP and R/V *Langseth* planning?
- Anthony Tarantino – Are the facilities that are available capable of supporting the science that needs to be done? Can the users easily reach the operator? Do you want to discuss/outline some key future study areas that have been ignored, or under served over the years?
- Carl Kaiser – I would like to find a way to set up a better feedback mechanism for the community to tell us the future capabilities they need and for operators to pose questions about priorities or specifications of future capabilities. This should be addressed both in and out of phase with face-to-face DeSSC meetings.
- Scott White – If the fall DeSSC meeting is the showcase event, we should say that. If you need to plan a multi-disciplinary program, how would you do this? Come up with a grand challenge. Have breakout groups to self-organize around the question – if you were given a 3-year grant for deep submergence, but had to collaborate, what would you do if your group had to come up with an idea? What NDSF assets would you use? Where would you go? Individuals wouldn’t give up their individual ideas, but would put them together in group, so that they are with people they may have not met yet, and then formulate this as a 3-year thing. Give them a framework to come up with a concrete grand challenge.
- Dave Emerson – What do you want to accomplish with Telepresence in regard to science?
- Cindy Van Dover – She is interested in convergence research using deep submergence science. Put people together to get interdisciplinary/convergence. Use NDSF assets to tackle multi-disciplinary program for something completely new and different.

- Brian Midson– Brainstorming on Telepresence and different use models. Have a discussion that engages undergrads. It would be a way to entrain them. Philanthropic support could be explored.
 - Amanda Demopoulos – Try to better understand how we can improve the user base for *Alvin*. How do we reach untapped users?
 - Craig Dawe – Discussion on moving forward with 4K video - how to handle it and store it.
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Note 4: USBLs on UNOLS Vessels

Background: The discussion was initiated in response to a question from an *Alvin/Sentry* debrief about who has responsibility for maintaining and operating the USBL system on *Atlantis*. The discussion evolved from there to a broader discussion about USBL capabilities within the UNOLS fleet.

USBL is a critical capability for NDSF operations, but is increasingly becoming routinely used by all sorts of seagoing operations (e.g., towed vehicles, heat-flow surveys, coring, non-NDSF ROVs, etc.). Many ships have a permanent USBL system installed, but they are all operated in slightly different ways and sometimes are hardware from different providers. The case in point is the Sonardyne system on R/V *Neil Armstrong* and the Kongsberg system on R/V *Sally Ride*.

NDSF also maintains and operates its own fly-away USBL systems that are installed on a pole on ships without USBL or with incompatible USBL systems.

The problem: It was suggested that the variety of flavors of USBL on various UNOLS platforms is problematic for the use of those systems by NDSF and other facilities.

The solution(s): One class of solutions was to standardize USBL systems across the fleet. This seems unlikely if it requires replacement of functioning hardware, but there are likely gains to be made by standardizing how similar systems are operated on different vessels and developing guidelines that can be employed as USBL systems are updated and/or replaced. Alternatively, there is the possibility to enter into a service contract relationship with one of the providers wherein equipment is leased and there is some base level of capability/maintenance/etc. across the fleet. In this model, hardware is leased so that investment in hardware does not become an impediment to standardization.

Another potential solution is for the NDSF and other facilities to become more flexible in the USBL systems that they can operate with.
