

Arctic Icebreaker Coordinating Committee (AICC) Meeting January 14 & 15, 2014

Executive Summary

The AICC held their winter 2014 meeting in Arlington, VA at the Marine Acoustic Inc. offices on January 14-15, 2014. A quorum of the AICC members were in attendance as well as representatives from NSF, ONR, NOAA, BOEM, U.S. Arctic Research Commission, National Ice Center, U.S Coast Guard and others. We also had several people join by webex and a complete attendance sheet is in the appendices.

Minutes

Lee Cooper/UMCES and AICC Chair opened the meeting with a welcome and introductions. Minutes for the AICC meeting from June 2013 are accepted.

Chair report-Lee Cooper.

Our last meeting was a teleconference meeting on June 18, 2013. This format worked pretty well, but we want to keep meeting in person at least once a year.

New issues that came up since the last meeting:

- New Berthing policy, giving guidelines for accommodating scientists, artists, writers, teachers, new media, and others on a not-to-interfere basis. e.g., an artist in residence (Bob Selby) participated with Coast Guard sponsorship on Healy 13-01.
- Lee participates into the UNOLS council meetings as AICC chair. There wasn't been an in-person meeting in the Fall of 2013, but lots of electronic activity, including response to Nature editorial criticizing ship building (including the Sikuliaq). Response was published last month.
- Debriefs for the 3 Healy cruises planned as part of this meeting; 4th cruise for demonstrating unmanned underwater vehicles for oil spill technology applications, supported by the CG, NOAA, Bureau of Safety and Environmental Enforcement, Dept. of Interior
- Polar Star is in Antarctica, high visibility in the media.

AGENCY REPORTS

UNOLS report- Jon Alberts

- UNOLS Chair is Peter Ortner/RSMAS and attended this meeting. Chris Measure (UH) is the chair-elect and will become chair in October 2014.
- R/V Knorr and R/V Melville will be retiring sometime this year. 2 new Ocean Class (Neil Armstrong and Sally Ride) will be delivered in 2014 and 2015.
- National Research Council of the National Academies is conducting a Decadal Survey. Need to provide feedback at nas-sites.org/dsos.

NSF report- Renee Crane

Renee opened by saying what a great season they had on Healy. She also thanked the STARC group for supporting these cruises.

- Budget: outlook is "as good as could be". We don't know what 2014 budget will be yet. Likely similar to 2013, but that means a cut relative to 2012. Not all bad, but not as great. Typically, \$40M per year, supporting all logistics in Arctic across all disciplines. The ship use demand (\$7-

8M/year) is staying about constant, proposal driven. They make efforts to support the proposals that are funded through the peer-review process.

- STARC is going strong, they are happy with it.
- Nothing scheduled on the R/V Sikuliaq yet in her program.
- Nothing currently scheduled on the Polar Class icebreakers, proposals can be coming in requesting Polar Class vessels. Healy (more berths), Sikuliaq (25 berths available for science) will be used as appropriate depending in the science.
- Funding foreign vessels (e.g. NABOS every 2 years)
- Oden: Sweden has approached NSF about bringing Oden to the Arctic every year, but they want to see a non-EU investment. It is on the table to buy into the Oden, but this would be a different model than the prevailing notion that successful proposals should drive icebreaker deployment. This model is to invest in the platform, then find science to fill in that time. Because budget is very tight, that creates a debate about what model makes more sense. It does make sense to provide access to a location that no other ships can get to.
 - Kathy Crane: This could be a nice interagency model. Could be interesting.
 - Other comments: This is not really a new model.
 - UNOLS is downsizing the fleet due to a lack of funds. This does not open more funds for the Arctic. There is a lot of funding pressure everywhere.
 - It is a potentially positive development, opening very interesting opportunities for new science.
- Workshop on logistics; watch for report on Arctic list servers
- An upcoming workshop in February 2014 is planned on safety & risk management in the Arctic. It was held in Arlington also, with NSF sponsorship.

Coast Guard Report on Polar Icebreaker Replacement Project

Neil Meister presented a Power Point presentation on the Polar Icebreaker replacement project that is in an early part of the acquisition process.

- CG has recently completed the "Need Phase", where they identify how the capabilities of a heavy icebreaker would satisfy the CG mission and objectives. It appears that supporting science is not one of them, but more focused on National Security.
- Next phase (3/5) is the Analyze and Select Phase: stable set of requirement, define Trade Space (alternative analysis), and detailed lifecycle cost estimates.
- They are working with Canada, where the Diefenbaker is scheduled to be built in 2019 in Vancouver. Canadians were ahead by about 5 years, but their project is on hold for a few years. US timing might be aligned with them. There is also engagement with Finland.
- Notional timeline: fuzzy by design.
- NSF is represented in the process. NOAA is also present. Agency input is better represented than end-users, such as scientists.

ONR Report and ONR Arctic Field Work

Tim Schoor gave the ONR program report opening up with details on the R/V Knorr mission with Norwegians in February 2014.

Scott Harper/ONR reported on the ONR Environment Arctic Research Program. He gave a Power Point presentation on the core objectives of the 2 DRIs happening in 2014 and 2015.

Mike Prince/ONR gave the report on new ship construction activities:

- R/V Neil Armstrong is being "lowered" in the water... Ship is 75% complete now. March 29th is going to be the christening date. Oct 2014 is the delivery date.
- R/V Sally Ride: Christening ceremony will be in summer or early fall sometime. About 50% complete (hull is all done). Expected delivery date is April 2015.

NOAA Report

Kathy Crane/NOAA presented an update on NOAA's Arctic Research Program. Main points of her report included:

- Arctic EIS 2013 (Ecosystem Integrated Survey), in Northern Bering Sea / Chukchi Sea.
- ACES 2013 (Arctic Coastal Ecosystem Survey), north of Barrow. Repeat in July/August 2014.
- ARCWEST (Arctic Whale Ecology Study), with BOEM
- CHAOZ (Chukchi Acoustics, Oceanography, and Zooplankton Study II: FY10-15).
- RUSALCA, Bering Strait moorings.
- US-Canada collaboration, as part of C3O and DBO efforts. Pacific-Arctic network
- RUSALCA 2014, from Anadyr to Anadyr to put the moorings on the Russian side of the Bering Strait.
- Plans to carry RUSALCA on through 2015-2020, with work by national and international entities. Plans to extend monitoring lines all the way to Wrangel Island. Move RUSALCA investigations to the north as well (NW of Wrangel Island, East Siberian Sea, East of the Chukchi Borderlands), following the ice edge... Go where nobody else is going. NOAA sees it responsibility to support work there and to identify biological communities. Participating countries include US, Korea, China, Japan, Russia.

BOEM

Guillermo Auad/BOEM gave this report.

- BOEM is funding about 50 studies in the Chukchi Sea area. BOEM manages development of the nation's offshore resources.
- Characterization of the circulation on the continental shelf area of the NE Chukchi Sea: 2012, 2013, 2014. Moorings, gliders, towed surveys.
- Application for mapping spilled oil in Arctic waters. In 2014/2015 Peter Winsor from Univ. of Alaska-Fairbanks will lead a dye study project in the water, sample with gliders. The dye won't behave like oil, so they are developing a new dye that would improve upon these methods.
- Hanna Shoal ecosystem study: mooring retrieval in 2014. Ecological hotspot, likely to be set aside as a protected area with no oil and gas exploration and development.
- 2 upcoming experiments: 1) Enhanced verification and interpretation of Arctic ice break-up and freeze-up field seasons: Operational forecasts, remote sensing in 2015 and 2016, in the Beaufort and Chukchi Seas. 2) MARES (Ecosystem dynamics and monitoring) in the Chukchi Sea. 2015 and 2016.

National Ice Center

Tom Holden brought us up to date on the National Ice Center, (NIC).

NIC does daily MIZ analysis, and regular (weekly) ice concentration and ice type analyses.

- Ice forecast outlooks. Annotated images.
- Tuesday: concentration analysis for Northern Hemisphere Analysis.
- Thursday, detailed (type) analysis for Northern Analysis.
- They are very accommodating in terms of formats: kmz, kHx, ESRI shapefile, graphics.

- For Healy: ftp imagery from MDA.
- There are some issues about SAR funding after April 1, 2014.
- NIC orders typically weeks in advance. Up to 72h they can change.
- There is little money for ice analysts to travel to the ship. In some cases, it might be worth to ask Renee if there are any funds to bring an ice analyst on board. Generally speaking, NIC is short in personnel.

US Arctic Research Commission (USARC)

John Farrell presented the news from USARC and introduced to the AICC Dr. Fran Ulmer, chair of the USARC, where she has served since being appointed by President Obama in March 2011. IARPC had a high-level meeting yesterday. IARPC has now a staff position in the White House, which represents a significant and meaningful interagency engagement.

USARC released an Arctic Strategy document in Feb. 2013. Since then, there has been an effort for releasing implementation plan for the National Strategy for the Arctic Region. This includes research, but is much broader.

CPS/Polar Field Services

Karl Newyear/ UMIAQ and Anna Schemper/ PFS Science Project Manager provided the report covering Arctic logistical support.

UMIAQ and Polar Field Services (part of CPS, CH2MHill) this past season supported the following efforts in Barrow.

- 2 logistic stopovers in Barrow.
- Hired 2 community observers for 2 Healy cruises. Questions included how community observers report back. They do not typically generate a report, and it is not a requirement. Feedback would be good, but difficult to enforce. If it goes well, we don't hear about it.
- Facilitated delivery of critical science supplies to HLY1303 (Pickart).
- Help prior to the cruise reaching out to communities.
- Provided ground support for group disembarking from the Laurier.
- Lodging is a challenge (Top of the World Hotel is out of commission due to fire at adjoining restaurant)

Communication with foreign vessels is a challenge. For example: In 2013, the Korean Research Icebreaker Araon's helicopter were not communicating with the air traffic control in Barrow. Shore side logistics is getting more complicated as activity increases each season.

Question was asked by AICC if there was concern about seal hunters and helo ops. Has this been an issue? Karl reported that not that he has heard. During the ice season it would be an issue, but lately helo ops have been all over open water so it hasn't presented a problem. But it is an important aspect to coordinate.

Karl reported we have had great communication with Healy. Especially with LCDR Jacob Cass. Local entities have been very accommodating.

"Bowhead" (NUNANIQ) is a sister company, providing barges to Barrow. They were able to find time to run a shuttle for Cooper group (offload of Healy 13-01) and a partial onload of the Keigwin cruise. This served as a logistical proof of concept. However, this might not be practical, since Bowhead has a very limited time to bring supplies to Barrow. Hourly rate is about \$1500 for the barges. In the end, it ended up

costing 2 days, which was more expensive than the equivalent helo ops (\$35K). However, barges are more reliable in changing weather. The real issue is that they will not commit to a schedule. Bowhead is hoping to put a boat there for the whole season, starting in 2015.

Question was asked: What is the status of helicopter support for Healy. Answer: The crew and deck are certified, but there is no plan to keep helicopters on Healy. Polar Operation Division does not have helicopters. Search and Rescue helicopter operations are not going to be from Healy, but are shore-based. Renee Crain offered that civilian helicopters have some advantages.

R/V Sikuliaq Update

Steve Roberts, having recently joined the Univ. of Alaska as an employee provided an update on the progress of the newest UNOLS vessel. UAK was currently planning on delivery by February of 2014 (this has been delayed) Then in May 2014 with trials in Baffin Bay, then onto Woods Hole in June 2014. Day rates are still being set but it is expected to be like the other global class vessels.

Lee Cooper then presented a plaque to Steve Roberts to thank him for all the work he has done over the years on the Healy, e.g. MapServer, and all of the other improvements and his dedication to continuous improvement of cruise support.

US Coast Guard Report

LCDR Michael Krause provided an update on recent events within the Coast Guard. CG recently released their Arctic strategy, very similar to that of the Arctic Research Commission. There are 3 missions on the books in the 2014 for Healy.

USCGC Polar Star now supporting Deep Freeze (McMurdo). Encountering some very heavy wind. No work was done on the science system. The ship's mission is considered by the Coast Guard to be ice breaking, not science. Science improvements will be considered after it comes back to Seattle. Question was asked if there is a strong demand for science on Polar Star? She will not be available for winter Arctic ops. Polar Star will be primarily focusing on Antarctic summer for Operation Deep Freeze.

USCGC Polar Sea remains in caretaker status. According to the Coast Guard business case analysis requested by Congress, it does not appear to be cost effective to try to resurrect it and the CG is now focusing on process for acquisition of a new USCG/National Polar Icebreaker.

Healy Engineering.

Ryan Young reported on recent Healy engineering projects.

They are in the process of planning the mid-life refit. The timeframe is 5-6 years out, or maybe 2020. At this point in the planning it is not known how long Healy be offline. It is expected that we will lose at least part of one science season, perhaps one year. One project being planned is to acquire new boats (rigid hull boats).

USCG PACAREA Icebreaker Overview. (District 17

LCDR Doug Wyatt/Pac Area gave the report. The CG plans to continue the C-130 flights. Arctic Shield 2014 will be like 2 years ago and will focus on education, outreach, safety training, medical and dental screening, veterinary support. Not necessarily supported by Healy. USCG continues to develop assets for the response to oil spill deployments (AUVs, UAVs - from Healy).

Healy schedule for 2014:

16 May - 19 June: (14-01) Algae bloom (from and to Dutch Harbor)

9-25 Jul: (14-02) North Slope moorings (from and to Dutch Harbor)

8-29 Aug: CGRDC equipment testing, mob in Seward, demob in Kodiak.

Polar Star: Now operating into Antarctica.

16 Apr - 24 June 2014: Dry docking is planned then limited operations around Seattle.

Dec 2014: sail to Deep Freeze 2015.

Polar Sea: No crew, no funding. Congress has been notified that while it is possible to reactive her, it doesn't make financial sense.

Dave Forcucci showed the planned cruise track for the Algae bloom cruise, which will be following very closely the track of Pickart 2012.

LCDR Jake Cass spoke on the white paper he has been working on "Current State and Recommended modifications to CGC Healy Scheduling process". Early season cruises need to be scheduled missions earlier (e.g. two years in advance), or only later in the season. How we do that while maintaining the whole suite of certifications and maintaining the necessary maintenance schedule is difficult. More discussions between the Coast Guard and NSF need to take place on this issue. This proposal was put together without NSF input. They want to figure out how the funding works, and if this can be a starting point for a discussion.

NSF works with CG during the proposal evaluation process. For the spring 2014 project, the program managers and CG worked together from the beginning so it was possible to keep track on the early season 2014 cruise.

Discussion ensued about when NSF might be able to advise the CG about the work likely to happen in the out years. Typically, NSF doesn't know until June or so which proposals are funded for the following year. That would be little too short if early spring departure is needed. Conversations need to be more frequent? NSF cannot discuss (publicly) pending proposal, but might be able to do it with the CG.

Mike Dombkowski,- Environmental Scientist with the CG

Mike works on Coast Guard permitting and NEPA compliance. He does the Programmatic Environmental Assessment: Covers all anticipated CG-sponsored activities (does not cover the NSF/University activities). Includes all the underway sensors as they relate to the Endangered Species Act and the Marine Mammal Protection Act.

Renee Crain/NSF: NSF has been doing the same Environment Assessments and Endangered Species Act. There is a new process at NSF (as of this month) for Environmental Assessment... 2-page checklist. For Renee, they take the checklist filled out by the researcher and ask CH2MHill to evaluate it and report. Still unclear at what stage this will be filled... Maybe everybody will have to have it filled at the proposal stage. The letter of the law says that NSF can't fund project until the EA is done.

STARC is talking with Tim Gates/Mantech about doing an underwater noise study of the Healy. They are trying to design that study to figure out how multibeam performance depends on noise. This is a current discussion.

Extended Continental Shelf Program- Eight Years in Review

Larry Mayer/UNH provided a review of "Eight Seasons of the Law of the Sea Mapping and Sampling Activities in the Arctic" which has now finished. This program was looking at extending the US sovereign right to the subsoil and the seabed over an extended continental shelf. Need to map the seabed. The law, as it is phrased, is a vague statement. The treaty has a lot of flexibility. Fantastic data has been collected. Foot of the slope has been completely redefined. New features discovered including unexplained bathymetric features and other very exciting discoveries.

Larry Mayer thanked the Coast Guard for all their support. Also thanks to Dale Chayes and Steve Roberts as well as Renee Crain and NSF for their support (not directly financial, but still very significant), and the AICC committee.

STARC Support, Science Modifications, infrastructure and equipment

STARC (Ship-based Technical Support in the Arctic, SIO & OSU)

Scott Hiller/UCSD provided an extensive presentation on recent upgrades and improvements to the science spaces on the Healy.

Since the last dry-dock period in 2013 they have upgraded the Knudsen and checked the EM122. The TSG- PCO2 relocation is complete. The computer lab renovation is nearly completed which involved completely gutting and rebuilding the lab. Electronics racks consolidated now with clean power. Photo lab renovation is complete as there is not a need any longer for film development. This is now a working space, but can still be used as a dark room.. Permanently installed a mooring release transducer 12kHz This was tested on Pickart's cruise with success. They plan on buying a Benthos deck to make it a completely self-contained system.

ADCPs - both are working (UHDAS, monitored by Jules Hummon.). Still a lot of noise, varying by year, but they are trying different grounds, different locations, etc. 2011 was the best year, then got worse, but it's improving.

For cruise support in 2013, STARC supported HLY 13-01 with Lee Cooper's and Jacqueline Grebmeier's cruise. Then HLY 13-02 which was Lloyd Keigwin's jumbo piston coring along the continental slope with the OSU coring group.

The third cruise was HLY13-03 CG was an oil spill recovery and technology development cruise. They tested the Puma aircraft (unmanned) and underwater vehicle.

Unmanned aircraft operations from Healy (Puma): launched from the ship, 'land' in the water (bring them to a stall, crash land). Recover from a small boat. They had a clearance from the FAA, basically saying that flying operations in the prescribed area and specified altitudes could be done without any problem.

They could land on the ship, but since "ship" is not listed in the operation manual as somewhere they can land, CG was not giving permission. They are now working through that.

The last cruise for 2013 was HLY 13-04 which was a Bob Pickart mooring cruise departing out of Dutch Harbor then working east recovering moorings and doing over 200 CTD casts.

STARC Plans for 2014:

Scott Hiller/UCSD presented the list of projects for 2014, which will include adding an HMRG Seafloor Mosaic Display System which will enhance the display system for the EM122. This software is from Univ. of Hawaii for gridding the backscatter and bathymetry data from the multi beam data.

Installation of 2 UNOLS science lab vans on forward deck (02 Level). Actually needed to first get the ship drawings updated (done). Not enough time to be able to do construction before March 2014, so this will be a priority for the post-2014 season.

Main lab rearrangement. Originally taking advantage of the refinishing: the decks are currently being redone in the biochemistry lab, but not in the main lab. CG wants to get rid of wood product in the lab. Bench top has already been purchased by the CG. The plan is to rotate the benches 90deg to allow to bring pallets completely around the lab. Moving forward with this for the next year.

Update on MAPSERVER.

When STARC took over they looked at mapserver and it was decided to investigate a different GIS system. Google Earth was considered but it did not work out although Google did send a tech on Healy

(shakedown cruise). They spent one week but it still had some issues. The goal was to integrate all the underway data into Google Earth. Google uses server-client mentality. They do not use polar-stereographic projection. Now STARC has gone back to focusing on making (open-source) Mapserver work. Still need to integrate multibeam data into it. There is also GIS software development going on that is trying to re-build MapServer, document it, and make it portable for the rest of the UNOLS fleet. MapServer is running on Healy right now. Need to consolidate how it is run. Would like to put MapServer on shore as well.

NSF would be very interested in having a nice display of where ships have been... They have a video showing all the dots and cruise tracks from 2005... NSF wants to take that next step! It was mentioned that R2R, and NODC have displays of all the cruises...

USCG Seattle- Information Technology Division

Dave Cohoe/USCG-Seattle provided the science network update. No changes planned from this upcoming season.

Icefloe

Scott Hiller reported on the web site.

Generally great site, but need a few minor changes to organize it better. Native communities and community primers should be directly under Cruise planning, not in Foreign clearances.

Scott has built a framework for data that includes most meta-data. Most of the data seem to be posted on the web. Everything goes to R2R. AICC is encouraged to submit ideas on improving the web site.

Ice Imagery

Dave Forcucci reported that MDA, which is the company that runs the satellite acquisition posts the images directly to a ftp site and notifies the ship. Imagery was pretty expensive this year. We have to find a better way to post it into the GIS system on the ship. By the end of the last season, the images were showing up onto MapServer. NIC images were uploaded automatically. For the MDA images, images are pulled manually from the ftp site, and posted to MapServer.

AICC Committee Membership

Membership- Effective –January 2014

Lee Cooper/U. Maryland- AICC Chair - 9/2008 to 1/2013 to 9/2014

Karen Frey/Clark- 10/2009 to 10/2012 & 10/2012 to 10/2015

Bob Campbell/URI-1/2010 to 1/2013 & 1/2013 to 1/2016

Larry Mayer/UNH-11/2009 to 11/2012 & 11/2012 to 11/2015

Don Perovich/USACE-5/2008 to 5/2011, 5/2011 to 5/14

Luc Rainville/UW-11/2009 to 11/2012 & 11/2012 to 11/2015

Jeremy Mathis/NOAA-10/2009 to 10/2012, & 10/2012 to 10/2015

Robin Muench/ ESR- Immediate Past Chair 1/2007-12/2009 & 12/2009-1/2013

Steve Hartz/UAK- RVTEC Rep- 05/2007 to xxxx

Doug Russell/UW-RVOC Rep-9/2010 to xxxx

Lee Cooper stated that he would like to stay on as Chair for a second 3-year term as Chair.

Don Perovich's term expires May 2014 and a call for nominations need to sent to the UNOLS community. UNOLS Office will do this.

Next Meeting- A summer 2014 teleconference should be scheduled.

Meeting Adjourned- 12 noon on Wednesday 15 January 2014