

SCICEX Science Advisory Committee (SAC) Meeting Summary
Arctic Submarine Laboratory, San Diego, CA

Tuesday, 25 October 2016

Attending: Jackie Richter-Menge, Terry Tucker, Bill Smethie, Ray Sambrotto, Larry Mayer, Walt Meier, Jamie Morison, Travis King, Larry Estrada, George Newton, Paul Bienhoff, Scott Harper, John Farrell, Ann Windnagel, Will Ambrose, Axel Schweiger, Theo Goda

Welcome (Estrada)

Meeting objectives (Richter-Menge)

Advance SCICEX SAC objectives:

- Maximize the contribution of SCICEX in understanding the Arctic Ocean processes and their role in the Earth's climate system
- Provide guidance to ASL and SCICEX IAC
- Promote timely community access to SCICEX data
- Promote SCICEX program within military and scientific communities
- Support development of plan for sustaining SCICEX, including the collection and dissemination of data

State of SCICEX

- SAC perspective: Are we meeting the scientific goals for SCICEX (Richter-Menge)
 - 10 years since the SAC was charged with re-invigorating SCICEX
 - Major accomplishments in those 10 years:
 - SCICEX Science Plan: Published 2010
 - Proven to be an effective tool for ASL to use in planning SCICEX SAMs
 - SAMs conducted 2011, 2012, 2014 (2 subs), 2016 (2 subs)
 - Successful collection of bathy, XCTD/CTD, water chemistry, top sounder
 - Excellent coverage of the basin, within the data release area (DRA)
 - NSIDC SCICEX site established
 - General information
 - Data archive
 - SCICEX acknowledged in high level documents (e.g. USN Arctic Roadmap)
 - Some related presentations and publications
 - Significant accomplishments provide clear evidence of the re-invigoration of the SCICEX, achieving one of the primary goals of the SCICEX SAC
 - Progress is being made on the second primary goal: maximize the contribution of SCICEX in understanding the Arctic Ocean processes and their role in the Earth's climate system
 - Key challenge to making more progress on the second goal: Improve SCICEX data delivery to user community
 - Reviewed chart "SCICEX Data Availability", posted on NSIDC SCICEX web site
 - Only consistent 'green' box (indicating data is available to user community) is bathy data
 - XCTD data from 2014 SCICEX SAMS is only other 'green'
 - All others are 'yellow', meaning that a lot of useful data has yet to make it into the hands of the user community
 - Until new SCICEX data is being delivered to the user community in a timely manner, the second primary goal (maximizing the scientific benefits of SCICEX) cannot be achieved
 - Discussed the impact of delay in funding on processing and posting of SCICEX data
 - Harper (ONR) points out that is all about the 'value proposition', demonstrating that the resources to push boxes from 'yellow' to 'green' are warranted
 - Debated the 'chicken and egg' nature in determining the value proposition for SCICEX investments by SCICEX IAC participants (i.e. how can this determination be made until the new data makes it into the hands of the user community for scientific exploration?)

- IAC perspective (Harper)
 - Updates on efforts supported by ONR
 - JHL topsounder collection data platform
 - Tempalt is complete, but not in time to use on 2016 SCICEX SAMs
 - New configuration and processes on submarine may render the tempalt moot; a typical situation with a platform, like a sub, which is constantly being tweaked to improve performance
 - Processing of topsounder data
 - UW has data to proceed
 - Funds in place for UW to conduct work
 - Schedule complicated by availability of Wensnahan, who is now only available in summer
 - XCTDs
 - Funding provided to purchase XCTDs
 - Data collected during 2016 SCICEX SAMs
 - Data management and archiving
 - Planned funding for NSIDC has been delayed; expect to provide funding early in FY17
 - ONR does not have high need for nutrient data; welcomes opportunity for another IAC member to step up
 - NSF (Ambrose) indicated willingness to support PI for analysis of nutrient data, via traditional NSF proposal submission process
- ASL perspective (Estrada/King)
 - ICEX/SAM 2016: Brief summary
 - 2 submarines collected SCICEX data
 - 1 sub missed collection of data along part of one cruise track
 - More water samples taken than bottles that were available
 - 40% failure of XCTD probes; same failure rate experienced in 2014 SAMs
 - Future outlook for data collection opportunities
 - SCICEX SAMs planned in conjunction with ICEX2018; maybe 2 subs
- NSIDC perspective (Windnagel)
 - SCICEX web site
 - Average of 100-150 hits per month, with peak that appear associated with announcements related to SCICEX
 - 20 registered users; would like to increase
 - Bios of SCICEX SAC (minus Tucker and Morison) available on web site
 - Data availability and usage
 - Data flow: In general, ASL provides NSIDC with data, and NSIDC send out to designated PI (often a member of SCICEX SAC) for QA/QC
 - Working well for bathy and XCTD data
 - Still bumpy: water samples and top sounder data
 - Opportunity: Leverage SCICEX web site for posting/links to other related data
 - ICEX data (e.g. CTDs, ice thickness, etc.)
 - Link to UK sub data, if available
 - Establish cross links to other programs of interest (e.g. GEOTRACES, NICE, etc.)
 - In general, difficult to make a lot of progress on web site due to delay in resourcing

SCICEX data collection, processing and distribution: How's it working?

(Discussion based largely on experiences associated with 2016 SCICEX SAMs)

- ASL: (King)
 - Science plan: Effective tool for critical guidance in planning of SAMs
 - Water samples
 - Provide directly to designated PI upon return of sub to port
 - Training important
 - Frozen samples obviously more difficult to transport
 - Topsounder
 - Acoustic data goes to NUWC for processing; ASL has to wait on this before providing ice draft data to designated PI
 - Quality of topsounder data is inconsistent
 - Implications for safe operation of vessel
 - Trying to set up experiment to evaluate

- XCTD
 - Continued concern over performance reliability of XCTDs
 - Noted that XCTDs do not record depth, instead depth derived from time after launch
 - Possible to use sail CTD to calibrate XCTD?
- Bathy (Mayer)
 - Re-emphasized the need for depth, along with position and time
 - ALS using calibration sites have been identified to assess accuracy of bathy data
 - Request being copied on messages associated with transfer of data from ASL to NSIDC, aiming to reduce time until data are in hands of community
 - 2016 SCICEX SAMs successfully addressed some holes in bathy data
- XCTD/CTD (Morison)
 - Re-emphasized problem of performance with XCTDs
 - Plan for Morison and ASL to jointly meet with Sippican to discuss problem and develop a plan to improve performance
 - 2011 XCTD data: Need to locate, evaluate and post
- Water Samples (Sambrotto)
 - Quality of data looks good; assessed via comparison with data from Switchyard project
 - Some bottle breakage experienced in conjunction with 2016 SCICEX SAMs, that can be avoided with better packing
 - ASL would like to get materials and logistics in place prior to Thanksgiving for ICEx-related SAMs
 - Will explore, with ASL, possibility of collecting samples closer to surface which could be used to evaluate freshwater budget
- Top sounder (Schweiger)
 - PIOMAS ice thickness model output verified largely with SCICEX data
 - Data processing:
 - 2011: Working to recover
 - 2012 and 2014: Work underway, now that NUWC has completed the processing and funds have been provided to UW. Completion of processing will be delayed until summer 2017 due to availability of Wensnahan (summer only)
 - 2016: No funding in place for processing
 - Question: Is it possible to get other thickness data released (e.g. collected outside of DRA)?
- Data access (Windnagel)
 - Eager to receive and post data, but need funding in place to dedicate time to work with ASL and PI is the transfer, QA/QC, and posting of data

SCICEX: Increasing awareness and impact (All)

- Communication to community: identified opportunities
 - EOS article
 - USARC Arctic Update
 - Fall 2017 AGU town hall, possibly in conjunction with ARCUS
 - Witness the Arctic
 - Impacts of Ice Diminished Arctic Symposium, July 2017
 - Presentation to IARPC groups
- Put together slide summarizing achievements
- Opportunities above best done when more 'yellow' boxes converted to 'green'
- Consider merging SCICEX and ICEx to expand interest
- Consider other uses for data collected on sub
 - Upward looking video for ice type and floe size distribution

SCICEX IAC: Review of Action items

- MOA: Time for an update?
 - Does current MOA address deliverables; should it?
- Increasing Agency members
 - Consider publishing implementation plan, demonstrating that SCICEX data are being actively collected, processed and posted, to pique interest of other agencies
- SAC Membership
 - Good to pull in some younger members of the science community
 - Possible area of representation: acoustics, AUVs, sensor/instrument development

Action items:

JR-M

- Push all to do their part in changing 'yellow' boxes to 'green'
- Consider value of publishing implementation plan, to include concepts of data usage that will appeal to wider range of agencies
- In conjunction with ASL, prepare EOS article once data is available (i.e. more 'green' than 'yellow' boxes)
- Clarify status of JHL topsounder tempalt (i.e. still useful and if so, available for 2018)
- Find out more about onboard system that measures ice thickness directly
- Can more data be released, outside of DRA?

Sambrotto/Smethie

- Water sample protocols: Provide to NSIDC for posting on SCICEX web site
- Provide link to new paper to Ann W., for posting on web site
- Provide all available water sample data to NSIDC for posting
- Make another go at accessing Whittedge data, via Dean at UAF
- In conjunction with IAC, identify support for collection of nutrients (i.e. water samples, including storage box for ASL), possibly USARC for equipment and NSF for analysis
- In conjunction with ASL, consider whether water samples can be collected at shallower depths to better assess freshwater budget

Tucker

- Provide brief bio and photo to NSIDC for posting on SCICEX web site

Morison

- Provide brief bio and photo to NSIDC for posting on SCICEX web site
- Work in coordination with ASL to address XCTD performance with Sippican; consider building case for improvement by investigating UNOLS use of XCTDs
- Locate and evaluate 2011 XCTD data, and hand off to NSIDC for posting

Schweiger

- Examine peak v. first return from 2012 to possibly correct the peak only data from 2011
- Complete processing and QA/QC of 2012 and 2014 topsounder data and deliver to NSIDC
- Document topsounder processing protocol and deliver to NSIDC

ASL

- Map summarizing cruise tracks of SCICEX SAMs since 2011: Provide to NSIDC
- Work in coordination with Morison to address XCTD performance with Sippican; consider building case for improvement by investigating UNOLS use of XCTDs
- Make consistent the practice of including depth data with navigation files, as this is key for bathy data
- Copy designated PI when sending new data to NSIDC, allowing them to work with Ann to decrease turnaround time
- In future, take more care in packaging of water samples to avoid breakage of bottles
- Future SAMs
 - o Surface casting out of ice camp
 - o Navigation data should always include depth
 - o Topsounder ice draft data should always be first return
 - o When possible, continue to cross identified calibrations sites for bathy
- Plan to address inconsistency in topsounder data
- In conjunction with Sabrotto/Smethie, consider whether water samples can be collected at shallower depths to better assess freshwater budget
- Review archives for complementary surface casting (e.g. out of ice camp)
- In conjunction with ONR and other members of the SCICEX IAC, review and draft a revised MOA

NSIDC

- Develop tool for tracking downloads of SCICEX data
- Provide IAC with names of registered users
- Implement a doi
- Revised summary chart to break out nutrients and tracers, under water samples

- Add 'open' box on summary chart in locations where we know data are out there, but have yet to be recovered
- Identify missing protocols on website and work with designated PI to resolve
- Post flow chart, illustrating the collection, processing and posting of data
- Update summary chart and add map of coverage (to be provided by ASL)
- Add links on web site to other programs of interest (e.g. GEOTRACE, NICE, etc.)
- Add navigation data to archive and note availability on summary chart
- In conjunction with JR-M, prepare EOS article once data is available (i.e. more 'green' than 'yellow' boxes)
- Update membership of IAC

IAC

- Plan for routinely providing NUWC with funds to process ice draft data on a timely basis (e.g. funds in place before data is delivered to NUWC)
- Identify FY17 funding for processing of 2016 topsounder data
- Identify FY17 funding for NSIDC SCICEX web site
- In conjunction with Sambrotto/Smethie, Identify support for collection of nutrients (i.e. water samples, including storage box for ASL), possibly USARC for equipment and NSF for analysis
- In conjunction with ASL and other members of the SCICEX IAC, review and draft a revised MOA

USARC

- Query broader community (i.e. ship based) on performance of XCTD, to determine how wide spread the problem may be