

Marine Seismic Research Oversight Committee

Annual Meeting

Sunday December 9, 2018

10:00 am to 5:00 pm

Washington Marriott @ Metro Center

775 – 12th St. NW

Salon E

Washington D.C.

Summary

On Sunday, 9 December 2018, the UNOLS Marine Seismic Research Oversight Committee (MSROC) held their annual meeting in Washington DC. The meeting was well attended by MSROC committee members, federal agency representatives, researchers, and students of marine sciences. Jon Alberts/UNOLS facilitated the meeting and provided these minutes.

Minutes

Introduction and MSROC Update/Pat Hart

Pat Hart/USGS and MSROC Chair opened the meeting with welcome remarks, an overview of today's agenda, Chair report and introduction around the room.

Chair Report- Membership

We currently have four committee members who will rotate off the MSROC committee. Pat Hart/USGS will step down as Chair in April 2019 with John Orcutt/SIO taking over as chair. Anne Trehu/OSU, Joann Stock/Caltech, and Warren Wood/NRL will also step down. Nathan Miller/USGS, Lindsay Lowe-Worthington/UNM and Robert Steinhaus/Steinhaus & Associates will join the committee.

The committee consists of nine members with 3-year terms. Pat thanked all members as well as ex-officios for their contributions to the committee and the breadth of experience they brought to many complex tasks. The membership changes now will prevent a complete turnover of members after 3 years. There was an effort to bring on early career scientists, maintain USGS participation, and add industry representation.

There are currently two subcommittees of the MSROC. There is the Seismic Working Group, SWG and the Workshop Planning Committee, (WPC). See chair report slides for membership lists.

Members of the SWG (Dan Lizarralde/WHOI, Sean Higgins/LDEO, Sean Gulick/UTIG and Bobby Reece/TAMU recently completed the document titled: *Broad Characteristics of an Academic Active Source Seismic Capability to Replace that Previously Provided by R/V Marcus G. Langseth*.

https://www.unols.org/sites/default/files/Replacement_Characteristics_Paper_V5_0.pdf

The SWG is working collaboratively with NSF on the Focused Workshop, which will be held in April 2019. A community wide workshop in early 2020 is also planned. The Workshop Planning Committee, (WPC) will assist in planning this community-wide workshop.

NSF Briefing/Candace Major

Candace provided the NSF report and highlighted the Focus Workshop, OBSIP, and NSF Staffing Changes.

Staffing

Dr. Terence Quinn is now the NSF Division Director for Ocean Sciences.

Nick Hayman is now an NSF/OCE Program Director.

Barbara Ransom has left MG & G, but is still at NSF.

Candace Major, Debbie Smith are still there, with Larry Peterson, but he will retire in the summer of 2019. A rotator position will be used to replace Barbara Ransom.

MG & G Science section head position is open now and will close on December 17, 2018.

Focused Workshop

The term "Ideas Lab" has been replaced by a "Focused Workshop" to be held in the early spring of 2019. The goal is to arrive at a set of sustainable options to provide seismic capability to the scientific community. To find an operational solution to fill the void when the *R/V Marcus Langseth* is divested from the NSF portfolio in 2020. The team for the workshop is Sandy Shor/UH as project manager, Larry Mayer/UNH as Chair and Andy Burnett/KNOW Innovation as workshop facilitator. Tentative dates were March 20-21, 2019 at NSF, but this has been changed to April 1-3, 2019 and will be held at NSF. There will be an application process to arrive at ~ 40 invited participants, to represent a broad swath of stakeholders. Successful outcome of the workshop will be a set of vetted recommendations with a viable list of options presented to NSF. All aimed at avoiding a gap in capability in 2021 after the *Langseth* is removed from service. They will take ten years of options and synthesize it down to a recommendation, which would allow the community to respond to an RFP.

Up to ten millions dollars of NSF funding for ship and technical support per year, to be awarded to support high priority, successfully reviewed proposals in areas such as seismic research, sea floor mapping and ocean bottom seismometer (OBSs) studies.

OBSIP Update

Woods Hole Oceanographic Institution was selected by NSF to provide the consolidated support of OBS management and operations. John Collins/WHOI will manage this. The transition from IRIS to WHOI has gone well and it will be a busy schedule the next few years.

OBSIC Oversight Committee- NSF had requested the oversight of the OBSIC be a subcommittee within MSROC. Pat Hart cautioned us that the lead for OBSIC not fall to the MSROC Chair.

There was also concern expressed that by moving the OBSIC Chair away from IRIS, that it might leave the land-based principal investigators without representation.

Quality control needs to be considered and maintained. There is also concern this might be moving back towards a "stove-pipe" organizational structure when there is a real need that land based and at sea based projects need to be closely linked. IRIS has made great strides forward.

John Collins commented that the NSF-owned OBS instruments be integrated into the pool. He also hopes there will be a recapitalization of new instruments into the pool.

UNOLS Update

Jon Alberts/UNOLS and Doug Russell/UW

Jon Alberts explained that the UNOLS charter requires that after two terms of 5 years each, the UNOLS office must be re-competed. This process was completed in August 2018. We received six proposals to host the next UNOLS Office. A UNOLS Council subcommittee was formed of un-conflicted members and the University of Washington was selected. The current UNOLS Office at the University of Rhode Island's Graduate School of Oceanography will complete its term on April 30, 2019 and UW will take over on May 1, 2019.

Doug Russell, current Manager of Marine operations, will become the next UNOLS Executive Secretary with Alice Doyle as Deputy Executive Secretary. Doug Russell explained the process of setting up the new office and accompanied this talk with slides. There will be no degradation of services to the UNOLS community.

Seismic Working Group

Dan Lizarralde/WHOI

Dan provided an overview of the process used to develop the new document. Members of the SWG (Dan Lizarralde/WHOI, Sean Higgins/LDEO, Sean Gulick/UTIG and Bobby Reece/TAMU in collaboration with NSF recently completed the document titled: *Broad Characteristics of an Academic Active Source Seismic Capability to Replace that Previously Provided by R/V Marcus G. Langseth*.

This document will help scope the workshop by keeping the focus on sustainability, capability, and commitment.

Workshop Planning Committee

Emily Roland/UW

Emily provided an overview of the Workshop Planning Committee with the list of committee members and affiliation. They were formed to complement the work of the Seismic Working Group and assist in planning a workshop in early 2020. Looking at January/February 2020. The outcome of the Focus workshop help form the agenda for the next Workshop.

Workshop focus will:

- Be on science drivers and challenges facing facilities under MSROC.
- Provide a venue for community, including early career scientists
- Build of output from Focus Workshop and SWG to replace seismic capabilities

Comments:

We should be looking at a science community workshops every two years.

The WPC is encouraged to focus on science and the new opportunities out there.

Accessing existing data sets needs to be understood.

Langseth Hawaii Cruises Donna Shillington/LDEO

Donna provided a report on the Hawaiian Seamount Cruises, overview of the cruise, and importance of seamounts. Nine early career students were on the cruise and it was a very positive experience. Data from cruise and preliminary results were showed. It was described enthusiastically as a perfect cruise, 40 days, no downtime, collected up to the limits of 9 km of transects. Great success, including recovery of OBS's. In the spring of 2019 another cruise at Emperor Seamount is scheduled.

Langseth Operations Sean Higgins/LDEO

Sean Higgins, Director of Marine Operations, gave an overview of recent vessel operations. In 2019, the *R/V Marcus Langseth* has a 144-day schedule. A regulatory dry-docking is required in October of 2019 and then a ship inspection by JMS and NSF is scheduled after the shipyard. Challenges include keeping the crew and technicians motivated during times of uncertainty, but LDEO has succeeded well in this area.

Other updates.

The *Langseth's* air compressors are some of the largest compressors ever built. They recently acquired a full backup of spares from a sister ship.

Operationally, the past 4 years has been excellent with little to no downtime caused by mechanical issues. In the past 18 months they have acquired ~ 2.5 million dollars' worth of equipment and spares through donations. Industrial companies have been very good to LDEO by donating parts and systems. Much of the credit goes to Jeff Rupert/LDEO and his team, which collectively bring 150 years of industry experience to the *Langseth* operation.

In the LDEO Office, in April 2018, Paul Ljunggren retired as marine superintendent. He was not replaced and Sean Higgins has taken over these duties. LDEO has been restructuring and 12 people with 20-25 years' experience each have retired.

The 2020 ship schedule is still "up in the air." LDEO has not started the process of divesting the ship. Industry might have some interest as a source or a workboat, although the industry is still in a down turn.

IODP Perspectives on Seismic Acquisition Capabilities Sean Gulick/TAMU & IODP SEP C-Chair

Sean highlighted the importance of marine seismic data and how critical it is to IODP. Every site drilled, cored, and logged within IODP requires high quality seismic data. A continued reduction in the international marine geoscience communities' ability to collect seismic data in areas of scientific interest is jeopardizing the scope and impact of IODP science. To help with this, the international marine seismic imaging community is looking at ways to be more cooperative, more efficient, and cost effective with the use of seismic imaging assets.

The *Joides Resolution* is now using a regional plan model for scheduling which has proved to be successful. In addition, the possibility of a new drill ship is being discussed.

Student Presentation

Brandon Shuck/UTIG

Brandon presented on the student experiences aboard the *Langseth* on South Island Subduction Initiation Experiment. His presentation provided an overview of how subductions zones are formed and differing types. Their study area was the Puysegur Trench around New Zealand. The cruise ran from February 17 to March 20, 2018 and they collected 1252 km of multichannel seismic data, two ocean-bottom seismometer lines, along with multibeam bathymetry, CHIRP sub-bottom profiles and gravity and magnetics data. Details on the various datasets were described. Ocean Bottom seismometers were prepared, programmed and launched. It was a full cruise with OBSs being recovered, students had hands-on work with seismic streamers, and airguns as well as standing watches, receiving MG & G class instructions, and data processing. Preliminary data results were shown. Cruise provided a very valuable learning opportunity for the students.

International Marine Seismic Facilities

John Hopper/GEUS

John Hopper/GEUS and Sean Gulick/UTIG have been working to create a compilation of seismic capabilities from around the world. The presentation slides highlighted some of these vessels which include the *R/V Sonne*, *R/V Hesperidess*, *R/V James Clark Ross*, *R/V Investigator* and their capabilities were described. The Ocean Facilities Exchange Group (OFEG), and the EurOcean InfoBase are all information sources. Details on the JAMSTEC fleet of ships was described with details on their seismic capabilities listed. John has created a table of countries, whether contact has been made, and if equipment lists are available. They have two categories of equipment. Fixed equipment and then portable equipment with John showing a table of fixed equipment.

Question was asked, where should this information be archived and a response was the UNOLS web site.

Scripps Portable High Resolution Seismic Acquisition System

Lee Ellett/SIO

Lee Ellett provided a thorough overview of the Scripps portable multi-channel streamer system. Scripps personnel working on this include Lee Ellett, Brendon Mendenhall, and Kolby Pedrie. The majority of activities are funded by NSF with a significant portion of the equipment funded by ONR. The list of equipment includes a GeoEel Solid streamer section purchased in 2018 that provides 6.25 m spacing and 48 channels. The Liquid GeoEel streamer was from 2005. The acoustic source is a Sercel GI 210. Equipment for protected species mitigation includes "Big Eyes" binoculars, night vision devices, and Reticule binoculars. The system also has a portable data acquisition system with seismic recorders, source controller, and navigation.

Lee's slides gave details on the ships that have deployed the system since 2002. They have been successful in adapting on these different ships as needed. There has also been good sharing of equipment between LDEO and Scripps.

In 2018 an IODP site survey cruise was conducted on the *R/V Atlantis*, (AT40-03) for Drs. Mitch Lyle and Greg Mountain. The cruise ran from Bermuda to Woods Hole. They used rented compressors from Stark Industries. They hired a compressor technician to accompany the compressors with good success, and only 10-12 hours of down time in a 37-day cruise. They used a 16-channel streamer arrangement at eight kts and then a 72-channel streamer arrangement at five kts. Lee showed some preliminary data results.

Scripps also supported a USGS program for Drs. Carolyn Ruppel/USGS and Nathan Miller/USGS. This was the MATRIX program on the *R/V Hugh Sharp* from August 8-28, 2018, from Lewes to Lewes, DE. Objectives were to evaluate gas hydrate and free gas resources off the U.S. East Coast.

2018 Mid-Atlantic Resource Imaging Experiment (MATRIX)
Nathan Miller/USGS

Nathan Miller/USGS presented an overview of the MATRIX cruise conducted on the *R/V Hugh Sharp* from Lewes, DE to Lewes, DE. from August 8-28, 2018. This was funded by USGS, BOEM, and the U.S. Department of Energy. Goal was to measure distribution of gas hydrates only the U.S. Atlantic Margin. Nathan shared some preliminary data. He also stressed the amount of time, labor, and costs in putting this all together. Deck layout, streamer geometry, and source details were described. For more information on this cruise, please contact Nathan Miller at Nathan Miller, Ph.D. at Woods Hole Coastal and Marine Science Center/U.S. Geological Survey
ncmiller@usgs.gov

Revisit Earlier Topics

Pat Hart/USGS and MSROC Chair offered an opportunity to revisit any topics for additional discussion.

Adjourned Meeting

Meeting adjourned at 5 pm on Sunday December 9, 2018.