

Marine Seismic Research Oversight Committee
July 12-13, 2017
University of
Washington Ocean
Sciences Building,
Room OSB-425 - 4th
Northeast Boat Street
Seattle WA

DRAFT MINUTES- dated 16Aug2017

Summary

The Marine Seismic Research Oversight Committee, (MSROC) met on July 12 & 13, 2017 at the Univ. of Washington in Seattle, WA. The meeting was hosted by Dr. Emily Roland/UW as a member of the MSROC. This was the first in-person meeting of the MSROC since the committee was transitioned from the *Marcus Langseth* Science Oversight Committee, (MLSOC). The meeting was attended by members of the MSROC, NSF funding agency representatives and was facilitated by the UNOLS Office. The presentations and attendance list are on the MSROC committee page.

Minutes

Pat Hart/USGS/MSROC Chair opened the meeting with welcome remarks, introductions, and a meeting overview. The topics that will be covered in the next day and a half include:

- A review of the MSROC Terms of Reference and associated tasks
- Discussion on how we define seismic research and the related marine seismic assets
- Transitioning from the MLSOC into the MSROC
- How will “bumps along the way be handled”
- Strategy for getting a good start and a sound path forward
- Work to identify what are the problems facing the community. What are the challenges for doing marine seismic research and then developing a list of priorities for the committee?
- Set realistic goals for each of the five tasks for this meeting and the committee’s work over the next year.

MSROC Chair Comments

Pat would like to align the work of the committee along the 5 tasks in the Terms of Reference with a member of the committee taking the lead on their particular task. Pat is open to suggestions on how this is set up. On the following items, Pat offered:

Membership-

We have a full membership roster at present. There will need to be some thought on how rotations of committee members are handled so that we don't have the entire committee rotating off after the 3 years. At present we are lacking industry representation, though we should wait until the new operating model is in place before recruiting an industry –ex-officio member. For the OBSIP ties to MSROC, Del Bohnenstiehl/NCSU is a good choice for maintaining ties to OBSIP. This might need to wait as the OBSIP is currently being re-competed and the solicitation may be several months away.

For the IODP connection, Pat recommends that Sean Gulick/UTIG as an ex-officio member of the MSROC can fill this role.

For the Research Vessel Operators Committee (RVOC) and the Research Vessel Technical Enhancement Committee, (RVTEC), it doesn't appear that MSROC needs a member from these two groups at this time.

We would like to add an early career scientist to MSROC member when we have our first committee vacancy.

NSF Briefing

Candace Major/NSF-MGG program manager presented the NSF report. The NSF solicitation to maintain the marine seismic capability is currently posted. Over the past several years there has been an opportunity for community input on the sustainability of the *R/V Marcus Langseth*.

NSF remains committed to maintaining access to marine seismic capability. This may require decoupling from a particular platform.

NSF is looking for creative proposals to come in and thus far there has been interest from industry as well as non-commercial interests. Currently there are many conversations taking place and NSF is encouraged that they will get solid proposals.

The deadline for proposals is 21 August 2017 at 5 pm and historically NSF proposal deadlines are firm. The proposals must stand on their own with some room for negotiation after the closing.

A standard NSF panel will be set up to review the proposals. A member (s) of the MSROC would be allowed to sit on the review panel as long as the individuals are un-conflicted. The entire process may take approximately 6 months.

NSF will maintain and keep the environmental permitting oversight.

Changes in Model of Support for Marine Seismic Operations-

The NSF has stated they can support the *Langseth* at 10 million per year for ship and technical support. This 10M amount does not include the funding for NSF science funding. There may be some science funding support from other Divisions within NSF (e.g., EAR and OPP).

Within the 10 M, a portion of this is for base support of the ship to keep the platform crewed and ready to go to sea. The 75 to 150 day range falls within the 10 M and NSF has historically funded to 2 large seismic programs per year.

IODP funding has not gone into supporting the *Langseth*. Site Survey proposals have to stand on their own and we haven't been able to come to IODP for site survey funding.

Question asked: Where are the drop in funds for the *Langseth* happening? There was a drop in IODP dedicated funds as well by other federal agencies such as USGS.

Regional Framework Plan-

Candace thanked the committee for their work on the latest revision of the regional plan map. NSF is looking at proposals now for the Northwest Pacific for 2019. NSF cannot commit to any additional work in 2018. NSF does hope there isn't a gap in service or access to capabilities during the transition. External Users are encouraged to use the *R/V Marcus Langseth* to support the ship from March 2018 to early 2019. If a program comes forward, it would likely be part of the transitioning operating model. NSF anticipates the new operational model will be in place in early 2019.

Question was asked if a 3-year forecast is a useful plan? Yes, the regional plan is a rolling plan. For the transition we need to broaden the conversation beyond individual ships and tools. The *Langseth* capability is well understood and well documented, but NSF knows there are other tools out there. NSF needs help to prioritize other tools and platforms. What else is out there, what are the pools of equipment that can be part of an inventory?

We need an inventory of the data, software, technical support, access to metadata and the emerging technology.

For new instrumentation, the NSF OTIC program is a good program to propose to for funding. OTIC budgets ~ 10 million per year for instrument development. The OTIC web site is currently being revamped.

IODP and the MSROC

Sean Gulick/UTIG attended the meeting as a guest speaker and provided an extensive presentation on the International Ocean Discovery Program (IODP). As Co-Chair and on the IODP Science Evaluation Panel (SEP, Sean has extensive experience working with IODP. Part of the MSROC tasking is to work more closely with the IODP program and Sean's talk provided and excellent background for the MSROC members.

The new organizational structure of the IODP and the facilities was explained. See slides in appendices. Data on the proposal submission history was given with details on the numbers of proposals in each science theme.

The organization of the Science Support Office was given. The SEP review procedures and the criteria of the types of science questions that need to be met for a successful proposal were outlined. Details on the organizational chart of members, the number of proposals that are active at present and how the proposal process works were all explained in detail.

Site Survey data need to be submitted within a month or an ability to get the site survey data must be outlined. This requirement varies at each stage of the proposal levels. Pre-proposals may not have site survey data but full proposals must have site survey data. They use a

Watchdog Preparation of Proposal Reviews process which guides the entire review process through 5 steps of a proposal along a path.

An external review panel may raise issues that need to be addressed in a proposal but has not declined any.

The planned ship track of the *Joides Resolution* from 2018 to 2023 was shown and the current outlook is that the *Joides Resolution* will be in the North Pacific in 2023. The Earth in Motion and Earth in Connections program will require a high resolution seismic survey data.

The Environmental Protection and Safety Panel checks every site for any concerns

In 2015, the SEP issued a consensus statement:

“The SEP wishes to convey concern regarding the increased pressures on the acquisition of academic active-source seismic data, some of which by design is conducted in support of scientific ocean drilling. 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. The SEP consensus is that the IODP should stress the importance, both to member country funding agencies and environmental permit organizations worldwide, of high-quality subsurface images for science and safety in connection with expected continuation of IODP...”

Conclusions-

Sean left us with comments that the *Langseth* is “twice as good as any other ship for 3D and long-offset 2D seismic data collection. The international use of the *Langseth* has not been an easy path, but perhaps the new operational model will remove some of these barriers. Some of these barrier include environmental permitting as the laws in each country are different.

The Science Evaluation Panel is a good place to start as the seismic experts meet in person twice a year. Usually on January 10th and then the last week in June. The meetings are open and it was suggested that the IODP could take a role in helping to lower some of the barriers to the use of the *Langseth*.

OBSIP and NOBSIP

Donna Blackman/UCSD shared with the committee some details on the Ocean Bottom Seismology Instrument Pool (OBSIP) and the new National Ocean Bottom Seismometer Instrument Pool, (NOBSIP)

The terms of reference for the MSROC state that: MSROC will provide high-level input on scientific needs and guidance on prioritization for implementation of upgrades and deployment of new marine seismic capability. It is expected that the OBSIP liaison on the MSROC will serve as the conduit for information to/from the OBSIP advisory committee. This term of reference

was written when IRIS was in place and IRIS had an oversight committee. This new structure of OBSIP/NOBSIP is to be determined and MSROC will need to watch how this develops.

On May 3, 2017, NSF Issued a Dear Colleague letter that stated:

A new NSF Dear Colleague Letter (DCL) has been posted: Management and Operation of a National Ocean Bottom Seismometer Instrument Pool (NSF 17-080), https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf17080.

The Ocean Sciences Division of the Geosciences Directorate (NSF-GEO-OCE) intends to issue a solicitation in the near future (FY17) to establish, manage, and operate a National Ocean Bottom Seismometer Instrument Pool (NOBSIP) through a competitive, merit-based external peer-review process. This initiative is expected to result in the award of a five to ten-year Cooperative Agreement (CA) for this activity.

This DCL stated that “the Awardee will be required to establish and maintain a strong interface with the University National Oceanographic Laboratory System (UNOLS) to assist in cruise scheduling for the at-sea deployment and recovery of OBS instrumentation. Collaboration with the UNOLS Marine Seismic Research Oversight Committee will be required to establish an OBS Oversight Subcommittee that will serve to assess NOBSIP operations and provide advice concerning future needs.”

Candace Major/NSF is the current NSF program manager for OBSIP and she shared that more information on the OBSIP/NOBSIP will soon be released in a solicitation. Note: The re-competition for the active source and OBS facilities does not reflect an intention by NSF/MGG to change the general level of support for the science that uses these assets. The current OBSIP grant expires in January 2018. Since this MSROC meeting was held, NSF has released this.

Note: NSF released this on 29 July 2017:

Colleagues:

“The Division of Ocean Sciences (OCE) of the National Science Foundation (NSF) has recently issued a solicitation (NSF 17-587) inviting proposals for management and operations of a new Ocean Bottom Seismometer Instrument Center (OBSIC). The awardee will serve as the primary source of OBS instruments and field support for NSF-funded research programs. The award will be administered as a Cooperative Agreement over the five-year period of performance.

For additional information, please visit:

HTML: <https://www.nsf.gov/pubs/2017/nsf17587/nsf17587.htm>

PDF: <https://www.nsf.gov/pubs/2017/nsf17587/nsf17587.pdf>

The DCL calls out specific collaboration between the MSROC and the new OBSIP. Del Bohnenstiehl/NCSU sits on both the MSROC and the OBSIP and this will help keep MSROC engaged.

NSF supports (3) operators now which supply OBSs from each of these equipment pools. In the new model, NSF may lose some of these OBSs, but in the future there will be one operator with

one pool to pull from. This will prevent having extra techs to service many different types of instruments.

The MSROC has some concerns for the transition of these period from OBSIP to OBSIC. These are:

- Quality of the deployments and the recovery capability
- Quality control of the data
- Numbers of available OBSs maintained during the transition.

Wednesday 12 July 2017 Afternoon Session

Update on *Langseth* and Potential work/ Sean Higgins/LDEO

Sean Higgins joined the meeting via webex to give us an update on the *Langseth* schedule and some potential work that Lamont has been working on for the ship.

There is a potential outside-funded 2018 *Langseth* survey in the area near Java and we should hear more about funding in the next few months.

A New Zealand company has inquired about multibeam, small scale 3 D program between New Zealand, Australia and Indonesia for late 2018. Some of the initial permitting has been completed. The company has developed a proprietary marine vibrator for deep water research.

Another New Zealand company working with Sercel and CGG is interested in a system test of a marine mammal detection system.

Other news at LDEO.

A new marine technician has developed a new QA/QC program to improve data screening.

The *Langseth* completed a successful chemistry program for Ginger Armbrust/UW in the NW Hawaiian Islands. They completed 100 CTD casts at 17 stations.

Regional Framework Plan

The MSROC terms of reference include this task:

Implementation of the Regional Framework Plan

The Regional Framework Plan for marine seismic data acquisition is designed to reduce overall data acquisition costs, provide guidance to the community about when to submit proposals for research in a particular area, encourage investigators (both U.S. and potential international teams) with new ideas to submit proposals that could mesh geographically (e.g., modest transit),

and provide rotating access to all regions of scientific interest within a timeframe of several years.

Nathan Bangs/UTIG led this discussion on the *Langseth* Regional Framework Plan and reviewed the current map showing 2017 to 2022. At this time, it appears there will be programs along the Aleutian Arc in 2019. Nathan went on to show an overlay map of the *Joides Resolution* and the *Langseth* from 2018 to 2021. It was discussed how useful this map could be towards potential closer links between *Langseth* or replacement model operations and IODP. MSROC may post a combined map like this once questions regarding the current framework map are resolved.

Committee discussed: Does the regional plan serve a purpose? Will it convince PI's to write a proposal? While in the pending phase an NSF proposal is considered confidential. This limits what information can be graphically shown on a map. The discussion and group consensus was that NSF could do a better job of creating the map as they have more insight into programs. The current map doesn't have site survey proposals for IODP.

A long range map is difficult as 70 % of proposal have to be awarded within 6 months.

We discussed whether a regional plan for OBSs was necessary as OBS can be shipped anywhere. If the OBS's are tied to a specific *Langseth* program, such as an active source program, then a map would be helpful.

Candace Major/NSF suggested that NSF would discuss the regional framework map and advise MSROC as whether NSF could assume the responsibility for updating the regional framework map. In a few weeks, NSF and MSROC could do a tel-conference to review the best method for generating and keeping the regional map current. At this time MSROC may be in a better position to collect letters of interest and then NSF can use that information to create a more accurate map.

Coordination of International Participation

John Hopper/GEUS led the discussion on the next task for the committee on development of international collaborations. The task states:

“Act to engage and coordinate international participation in the regional framework planning process and to identify international resources that might be available to U.S. researchers. Regularly review the technological information available for use of assets and identify needed updates.”

Additionally, MSROC shall encourage and help facilitate the advancement of cooperative international programs for the enhancement of marine seismic research throughout the academic community.

In discussing international cooperation, two aspects need to be considered which are:

Does NSF get access to foreign research assets and do foreign researchers get access to US facilities.

For the *Langseth*, can we build a program where we can share our facilities with foreign facilities ? One problem is that we are asking a foreign government to use our ship which they may not be able to afford to due to scarce resources. Maybe the best we can do is to invite foreign scientists to join a cruise on the *Langseth*.

It could be worth pursuing opportunities through international efforts beyond research, e.g., foreign aid programs that include resource assessments of developing countries could potentially make use of the *Langseth*. It could also be used as an educational platform through such programs.

Technical capabilities of marine seismic Assets

Warren Wood/NRL

Warren Wood led the discussion on the task of the marine seismic assets which the community has access to or may need access to going forward. The tasking for the MSROC is to:

“(c) Regularly review the technical capabilities of existing marine seismic assets to ensure they meet the needs of the scientific community, and advocate for upgrades when compelling needs for new capabilities are identified.

The MSROC will provide high-level input on scientific needs and guidance on prioritization for implementation of upgrades and deployment of new marine seismic capability. It is expected that the OBSIP liaison on the MSROC will serve as the conduit for information to/from the OBSIP advisory committee. Additional ad hoc groups will be formed as needed to address other marine seismic technical and operational issues.”

The concept of developing a Memorandum of Understanding, (MOU) was discussed. This would help to facilitate equipment loans and to address the concerns around equipment insurance in the event of damage and/or loss.

The UNOLS equipment inventory web site was presented and could be a good starting place to collect and post this equipment lists. http://strs.unols.org/Public/Search/diu_equipment.aspx

We discussed the portable compressor issue and that the *R/V Roger Revelle* is the only UNOLS global ship with seismic compressors. This is an issue for MSROC and will need to be addressed.

Training-

Anne Trehu/OSU will have the lead on this effort but was unable to attend the meeting. Pat Hart covered this section. The terms of reference for MSROC states:

(d) Promote the engagement and training of the next generation of marine seismic researchers.

The MSROC will help to identify and develop opportunities to broaden participation in marine seismic research, including promotion of training opportunities to help grow the research community with expertise in these approaches (e.g. training cruises and/or data processing webinars, classes, and short courses).

MSROC will seek opportunities to promote marine seismic research and maintain the vibrancy of the field such as community workshops. It will also consider mechanisms to convey marine science research outcomes to the broader community and/or public.

In September, Masako Tominaga/TAMU and Anne Trehu/OSU will be leading an Early Career Seismic Cruise on the *Revelle*. In the spring of 2017, the UNOLS Office with Masako led (3) webinars to introduce the program and provide training to early career scientists.

Pat asked the committee if this is something the MSROC should continue. Pat suggested we consider a 2019 training cruise, possibly a high-resolution 3D P-cable survey. If the training cruise were to collect data useful to another agency such as BOEM or DOE perhaps we could get partial funding.

There have been several chief scientist training cruises over the past several years and having a repository of training materials, modules, curriculum, would be helpful for others setting up a program.

Outreach

Emily Roland/UW

Emily presented her initial work in the area of outreach for the MSROC tasking.

The task is to:

(e) Provide outreach tools and a feedback mechanism to the community, including a forum for input on emerging directions in marine seismic studies

The MSROC will establish mechanisms for feedback from and to the community regarding existing marine seismic research capabilities and emerging directions (for example, “how-to” guides, science user reports on recent expeditions, web sites and online bulletins).

Some initial thoughts and directions this can go are:

- Provide outreach tools and a feedback mechanism to the community, including a forum for input on emerging directions in marine seismic studies
- Solicit and keep track of community interest
- Establish an interactive/web infrastructure.
- Tie into existing marine seismic data portals.
- Cruise blogging
- Community outreach through lectures at community centers, webinars, and social media.

This was a brainstorming session of possible ideas and a good discussion. The MSROC committee needs to decide where to focus our efforts and what should the next steps be.

Thursday 13 July 2017

Day Two

Pat Hart opened up the day with a discussion on the steps and messaging that MSROC needs to take now that we are established as a new UNOLS committee.

The discussion led off with the 2015 Portable Seismic Workshop and Report which was full of good information. The committee needs to consider what to do with the recommendations that came out of the workshop. It was discussed that the former *Marcus Langseth* Science Oversight Committee, (MLSOC) made statements on the workshop and the MSROC doesn't need to repeat this messaging. However, it is important for MSROC to reaffirm our commitment as a new UNOLS committee for large seismic capability.

Should the MSROC provide input to NSF on how the new operational model for the marine seismic is structured? With the August deadline, a panel review will follow. NSF reported the

review will be an extensive external review process. MSROC can make a statement supporting the outcome.

An important piece in a recent House Appropriation report was discussed. In the House Appropriations report there was specific language on marine seismic capability. See quote below.

“Additionally, access to NSF-funded marine seismic research vessel capabilities is specifically called out.”

- Marine seismic research. -NSF-funded marine research vessels with unique seismic capabilities are used by the academic community to provide images of the Earth's structure miles below the seafloor and support a variety of important undersea research efforts. The Committee encourages NSF and its academic partners to ensure that the academic marine geology and geophysics community can continue to have access to NSF-funded marine seismic research vessel capabilities.

For more information, go to:

<https://blogs.mtu.edu/engineering-research/2017/07/14/federal-budget-update-from-federal-science-partners/>

MSROC- What are our Next Steps- Wrapping Up

Regional Framework Plan. We returned to our earlier discussion on the regional map and several points were made.

- Candace Major stated the community needs clarity on when to submit proposals for the North Pacific.
- Also make it clear on the regional map that a PI can propose to work in other areas
- The stars on the map should be removed. MSROC was all in favor.
- More discussion on whose responsibility it is to keep map up.
- Map should be updated on an annual cycle.
- Add statement at bottom of map that the ship is available for external users along arrow in 2018.
- Decision: Map will be called: “Long Term *Langseth* Regional Framework”

Letters of Intent for 2020 to 2022.

Some discussion on letters of interest/letters of intent raised these points for further consideration:

- Should we solicit new letters of intent? Should we revisit previous letters of interest.
- Make it clear to community why we are asking for these.

- Global letters of interest are encouraged
- Set a deadline for when letters are due, suggest: end of November 2017, prior to AGU in December.

MSROC- Members page:

It was recommended that the MSROC committee members e-mail addresses should be added to the UNOLS committee page. UNOLS will take care of this.

Outreach/Training-

We discussed that perhaps these should be combined and ask Emily and Anne do a report at AGU? Also consider a training cruise in the Gulf in 2019 and another in Pacific Northwest in 2019

Other Issues

The compressor availability and the current gap needs to be resolved.

Seismic asset task- add compressors to the asset list.

International Involvement – for large seismic research program, recruit international collaboration with outside users, such as Japan, Korea, Russia. And look to World Bank

The IODP model of an international consortium may be a good model for a marine seismic consortium.

Barter System- Is there a mechanism for a potential international barter system. Dan Lizarralde reached out to Rose. A barter system could lead to other funded work outside users. Comments included that there is effort required to set up a barter system. Other points made:

- Days on *Langseth*- how many days would this equate to on a foreign ship.
- Who will set this up?
- Bob Houtman/NSF reminded us that there is a barter system called OFEG in place. There are overhead costs, and there is barter debt to keep track of and each member must be willing to carry that debt. There have been times when the barter debt gets out of balance.

- Would need to determine a points system based on the kind of data that is being collected.
- There is no formal MOU, and the US enters it through the UK system at NERC.

AGU Meeting

The MSROC will hold a meeting on Sunday, December 10, 2017 in New Orleans. The previous meeting prior to AGU has been 6 hours and this format will work this year. We will not plan to fill the majority of the meeting time with science talks, but several possibilities for talks were discussed: P-Cable technology and case study; Fall 2017 *Revelle* training cruise; case study using integrated interpretation of high-resolution MCS and multibeam data; the Santorini *Langseth* project

Other Agenda Items for December 2017 are:

- Report out from the OBSIP Workshop on October 5th - ask Delwayne
- Agency report, MSROC update, seismic processing software and training tools would all be good agenda items.
- NMFS Acoustic Guidelines and any significant changes which may affect how marine seismic research is conducted is good. There is a meeting (date, tbd, but late summer for agencies to provide input to NMFS. Bob Houtman and Holly Smith will attend.

Meeting adjourned:

Pat Hart/USGS & MSROC Chair concluded the meeting by thanking all participants for their time and efforts. Consensus was that good progress was made and the MSROC is off and running. The meeting adjourned at 1130 on 13 July 2017.