Challenges and Opportunities in Academic Marine Seismology

Incline Village, NV, March 22-24, 2010

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- **What are the exciting science goals that, over the next decade, will require a healthy Langseth facility?**
- **How can the process of soliciting, evaluating, funding, and scheduling work on the Langseth be improved?**
- **What modes of data access might help put Langseth products into more scientists' and educators' labs and schools?**

Major Recommendations

Funding:

• We strongly endorse creation of a new program at NSF to stabilize funding for work using the Langseth facility.

Advanced Planning Cycle:

• We endorse an advanced planning cycle in which proposal calls are issued on a regional basis (e.g., North Atlantic, eastern Pacific) several years in advance. MLSOC should work with the user community and facility operator to determine the ship's projected areas of operation, possibly guided by pre-proposals (see below). The proposal review panel should be populated with appropriate scientific expertise according to the region.

Proposal Process:

• We endorse a separate panel for judging Langseth proposals against each other, especially in the context of a new NSF program to fund Langseth.

• We endorse adoption of a pre-proposal process for work proposing to use the Langseth facility. These pre-proposals would be judged by this new panel and confidential reviewers and would provide the information used for projecting the future areas of operation of the ship over the next ~3 years.

Major Recommendations

Training the Next Generation:

• We endorse recurring "training cruises" in which science berths are open to scientists wishing to gain at-sea experience on Langseth. These could initially be aimed at early-career scientists but should be broadened to all interested scientists.

• We endorse, wherever practical, reserving 1-2 berths on each Langseth cruise for early-career scientists via an open application process.

• We suggest lowering barriers to access through creation of a user "cookbook," at-sea training cruises, and a formal mentoring program to establish "junior leaders."

Data Processing:

• We endorse commercial processing (to post-stack depth migration) for all 3D cruises.

• A similar option for commercial processing of 2D data should be available, but not required.

• NSF should explore establishing a long-term contract with a commercial processing house to lower processing costs.

Major Recommendations

***Hybrid model of community-selected and PI-driven 3D and 2D programs*:**

• We endorse a system that allows for both "community" as well as PI-driven 3D and 2D programs:

• We propose to allow for community 3D datasets to be acquired, perhaps in concert with training cruises. Identification of targets for 3D community datasets would occur at workshops open to all scientists. Following acquisition, 3D data sets would be commercially processed to an initial interpretable volume and publicly released (e.g., 6 months post-cruise). These data would then be available for an open competition for data interpretation and analysis proposals. A similar model should also be available (but not required) for processing and release of 2D data. A key component of this model must be a cultural change within NSF (and the reviewer community) toward funding data-analysis proposals, rather than the currently perceived bias toward data acquisition proposals.

• We also strongly endorse retaining a component of PI-driven proposals for using the Langseth, with appropriate protections for PI's to conduct initial analysis under a data release moratorium of no more than two years.

Community vs. Community "Access" Experiments

Major Recommendations

Improving the Educational Footprint:

• We endorse (1) expansion of the Langseth website with a focus on public outreach and education, (2) K-12 presence through teacher workshops and teacher-at-sea programs, (3) a "Distinguished Ambassador" program to visit K-12 schools, (4) use of social networking sites to communicate Langseth activities and results to interested parties, (5) exploring use of Langseth transits for training/education cruises, and (6) training of undergraduate and graduate students in use of open-access 3D interpretation software to bring Langseth 3D data into college classrooms and graduate-level research programs.

Immediate Action:

• The workshop facilitated the formation of several self-organized groups to submit community-driven 3D proposals with open data access for the upcoming August 15 deadline. The development and implementation of a new model for community datasets will require time to design, fund and implement. However, there was support for testing this new model and an understanding that in order for any community-driven 3D proposal to take place in 2012, it would need to be proposed in 2010. These self-organized groups provide an opportunity to explore options for implementing open data access and strong training components in Langseth 3D programs.

Community Email, Sept. 16th, 2010

Dear All:

At its meeting next month, the Marcus Langseth Science Oversight Committee (MLSOC) will discuss an issue that follows on from March's Tahoe meeting: namely, "what constitutes a 'community' proposal for R/V Langseth?" This email solicits your input for that discussion. In addition, there will be an opportunity for further public discussion at the annual MLSOC public meeting on the Sunday prior to AGU (stay tuned for place and time details).

As a reminder, a strong consensus emerged from the Tahoe meeting in favor of fostering "community" projects for Langseth. The goals of such projects would be to effect rapid data dissemination, broader use of Langseth products by researchers and teachers, and creation of opportunities for students and early-career scientists to participate in the Langseth mission. The task before us now is to define exactly what the components of a community proposal are, and what mechanism will be used to vet them. The summary below represents one possible model for defining and handling community proposals. None of this is cast in stone, and community and NSF input will be a crucial part in defining any policy. Your comments/criticism/suggestions on any of the following would be most welcome:

1. Components of a "community" proposal.

At a minimum, community proposals for seismic work on R/V Langseth should include (1) rapid commercial processing of data, to a state that is geologically interpretable (e.g., a post-stack depth migration for a 3D volume); (2) full public release of all pre-stack data and commercially processed data within 6 months of the end of data acquisition; (3) PI's would receive funding for planning, data acquisition, processing oversight, and data QC, but not for data analysis. Data analysis and interpretation would be conducted via a separate round of proposals that would be open to any community member; (4) a well-defined Outreach and Broader Impact component; and (5) demonstration that the proposed survey would serve broader community interests (e.g., by linking into major initiatives or NSF science plans).

2. Procedure for proposing a community proposal.

MLSOC will make a public call for Letters of Intent (LOI) for community-based Langseth projects. Deadlines for LOI should be twice per year, scheduled in coordination with NSF deadlines, but LOI would be accepted at any time. LOI should be short (2-3 pages) and address all the items in #1 above. MLSOC (with conflict-of-interest PI's absent, and with consultation by appropriate outside experts) would judge and rate LOI's on their adherence to the criteria defined in #1 above. Proponents would then report this rating in their proposal, and MLSOC would provide ratings directly to relevant NSF programs.

Note that none of this precludes the standard PI-centric proposals from being submitted, and we anticipate that such proposals will continue to be part of the Langseth portfolio. The "community" proposals would be an additional activity, with the purpose of rapid data dissemination and boosting student and early-career scientist access to the unique capabilities of the Langseth.

Please weigh in on this important issue, so that MLSOC's deliberations next month can faithfully represent community opinion. The MLSOC meeting takes place in San Diego from Oct. 24-26; your thoughts would be most useful if received by October 20. And we hope to see you on Sunday, Dec. 12, in San Francisco.

Thanks,
Steve Holbrook and Graham Kent

—don't try to read, we'll send you the email—