

Welcome to the workshop on  
Experiments with Portable Ocean Bottom Seismographs

Notes for all meeting participants

The purpose of this workshop is to look to the future of experiments with portable ocean bottom seismographs. Our specific objectives are:

- Summarize recent experiments highlighting the science objectives and technical capabilities for both current and future users of the facility
- Explore emerging technologies and alternative models for experiment deployments
- Develop ways to expand the number of PIs using the instrument pool, and the number of investigators using the data
- Look to future science objectives and define the technological and facility capabilities necessary to achieve them

We hope to achieve these objectives through a series of plenary talks, posters, breakout groups, and broad community discussions. The final breakout groups will synthesize the outcomes of our discussions and provide recommendations for the future. These recommendations will then be captured in a workshop report.

Your participation in the workshop is greatly appreciated. The purpose of this note is to prime the pump. Please consider what future experiments you would like to see, and how new technologies and modes of operation could facilitate them. In addition to bringing them to the breakout session discussions, there is also time scheduled for five-minute nuggets from the floor.

See you at Snowbird

- the workshop conveners

Notes for speakers, discussion leaders and scribes

Thank you for agreeing to be a speaker, discussion leader or scribe at the upcoming workshop on Experiments with Portable Ocean Bottom Seismographs. This is an important meeting for the future of our community and your contribution will help to make the meeting successful.

Below we provide some guidelines for your consideration. The agenda has been set up to touch on several complementary issues, so hopefully these guidelines will help ensure that the different parts of the agenda work well together.

DAY 1, AM

Overview of Current OBSIP Facility

**Speaker: John Collins**

**Length: 15 minutes plus 5 minutes for questions**

Suggested topics to discuss include types and numbers of instruments, existing capabilities, standard operations at sea (e.g., typical deployment/recovery issues) and data availability.

Also, see comments below regarding Jeff's presentation and how best to split the material.

Report from User's Retreat:

**Speaker: Anne Trehu**

**Length: 10 minutes plus 5 minutes for questions**

OBS Primer

**Speaker: Jeff Babcock**

**Length: 10 minutes plus 5 minutes for questions**

Some potential users have expressed interest in talk(s) that present a summary of the basics that one needs to know to design and propose an offshore experiment, including:

useful data bandwidth

noise levels compared to onshore environments

what techniques can be applied offshore and which ones cannot

access to instrumentation

who can use instruments?

what experience does the PI need?

how many instruments are available?

what is the wait time?

what is the process to request?

Jeff, it is probably not possible to cover all of these since some are difficult questions. Would it be possible for you and John to coordinate and cover as many as you see fit?

Highlights of OBSIP Experiments

**Speakers: John Collins (QDG), Garrett Ito (PLUME), Nicholas Harmon (GLIMPSE), Gail Christeson/Harm vanAvendonk (MARGINS/CD Active Source)**

**Length: Each is allotted 15 minutes plus 5-7 minutes for questions**

The intent of these talks is to showcase results from successful experiments and, of course, to motivate the community to want to do their own. In addition, it would be useful if the presenter described the experimental design (number and types of instruments), useful data bandwidth, noise levels (if relevant), etc. Recommendations for future facility capabilities and experiments are also encouraged.

We have tried to choose a set of talks that represent different science targets as well as using different methodologies for analyzing the data.

DAY 1, PM

Emerging Technologies

**Speakers: John Orcutt, Industry split, Jon Berger, Spahr Webb, Satoru Tanaka**

**Length: Each is allotted 15 minutes plus 5-7 minutes for questions**

The success and future growth of our field is clearly dependent on technological development of OBSs. The purpose of this session is to bring out some of the emerging technologies that will improve our observational capabilities and thus advance our science. Each speaker is encouraged to look ahead at the next decade and predict what emerging technologies are likely to come on line.

Industry representatives will be splitting a time slot. We ask that their presentation be limited to a single slide that gives a preview of what is presented at their poster, that way participants will be enticed to come by and talk with you personally.

Breakout Session #1: Expanding Access and Impact

**Discussion Leaders and Scribes: Francis Wu, Jacqueline Floyd, Donna Shillington, Jay Pulliam, Alan Levander, David Okaya, Anne Sheehan, Robert Weekly**

A central goal of the meeting is to ensure that in the future more data is getting into the hands of more investigators. Our science is necessarily expensive and thus challenging to fund in today's climate. To ensure growth and impact of our field we need to consider how to attract more young investigators as well as scientists who have not previously used OBS data.

To expand access and impact of our field the topics to be discussed include:

- Data access and availability
- Expanding OBSIP user base
- Improving Educational Footprint
- Community and PI experiments

- Priorities in Technological/Facility Development

This is a particularly important breakout session; consequently we are going to have 4 breakout groups that each will discuss the topics above. In this way we hope to obtain a broad cross-section of community input.

DAY 2, AM

Science Opportunities for EPOBS

**Speakers: Yang Shen, Alan Levander, Jochen Braunmiller, Don Forsyth, Barbara Romanowicz, Geoff Abers, William Wilcock, Bob Woodward**

**Length: Each is allotted 10 minutes plus 5 minutes for questions**

The goals of these talks are to look toward the future of our field from several perspectives, including exciting, new/improved approaches, possible community experiments and coordination with other programs. Speakers are encouraged to think broadly about science goals as well as the scale and scope of experiments to achieve those goals. It is our hope that these topics will get the community energized/motivated to discuss ambitious science opportunities that can be attained over the next decade.

Breakout Session #2: Science Opportunities

**Discussion Leaders and Scribes: Dan Lizarralde, Dayanthie Weeraratne, Rob Dunn, Maya Tolstoy, Steve McNutt, James Conder, Barbara Romanowicz, Colleen Dalton, Pablo Canales, Yang Shen**

Breakout groups are separated thematically and will be given the following charges:

- What are the high priority scientific challenges for future portable OBS experiments for this tectonic setting?
- Are there problems of such scale or cost that they would be best addressed with a coordinated community experiment?
- What are the instrument, facility and organizational requirements to meet these challenges?

DAY 2, PM

Instrument Development Opportunities and New Strategies for Deployment

**Speakers: Andrew Barclay, John Orcutt, Tim Richardson, Satish Singh**

**Length: Each is allotted 15 minutes plus 5 minutes for questions**

Instrument development is required to both replace aging facilities and to push the frontiers of observational capabilities. Many of the instruments in the current facility are aging, thus maintaining current capabilities will require development of replacement instruments. With regards to pushing the frontiers of observational capabilities the OBSIP facility is currently developing trawl resistant packages that allow deployment in shallow water (<1000 m water depth) and also beginning to shield the seismometer sensor from ocean currents (thus improving the quality of long period data). Autonomous instruments are also under development and may provide new observational opportunities.

This session will also include a presentation on EU plans for portable OBS experiments, as it is likely that increased international cooperation will allow our field to undertake more ambitious experiments while also sharing the cost. There is an opportunity for 5-minute nuggets from the floor that address any aspect of instrument development or deployment strategies.

Lastly, during this session we anticipate discussing how best to secure funds for instrument development.

Breakout Session #3: Instrument Development and Deployment Opportunities

**Discussion Leaders and Scribes: Harm vanArendonk, Rob Sohn, Adam Schultz, Mark Zumberge, Alistair Harding, Frederik Simons, Andrew Barclay, Ralph Stephen**

An OBS facility represents a considerable investment of NSF funds, including to build the facility, to maintain its capabilities and to advance its technology. Community support of the facility is thus vital to its continued health. Similarly, a community-supported facility should provide resources and support that matches what the community

wants. This breakout session will allow discussion of a range of issues related to future priorities for instrument development and deployment.

Workshop participants will be divided into 4 groups. Each group is charged with discussing the following topics:

- What are the instrumental requirements of the community? For example
  - Signal characteristics (e.g., bandwidth, components, timing accuracy, duration of records)
  - Technical requirements (e.g., sensor types, power needs, packaging, emplacement on seafloor)
  - Types and number of instruments/sensors required in the next decade
  - Deployment durations
- What types of new/alternative models should we consider for deployment?
- What are the facility requirements?
  - Data requirements (e.g., metadata, data archiving, data distribution)
  - Logistical requirements, including support services such as engineering, operation and maintenance, deployment/recoveries, post-cruise data processing.
- Organizational and management models of community experiments and facilities.

Day 3, AM

**Report of Langseth meeting - Graham Kent 10 minutes + 5 for discussion.** A somewhat similar meeting was held last spring to discuss experiments involving the Langseth and its 3-D imaging capabilities. What were their conclusions about conducting community experiments, etc.?

**Discussion Leaders and Scribes: Geoff Abers, Harold Vincent, Donna Blackman, Yevginiy Kontar, Doug Wiens, Aibing Li, Graham Kent, Lanbo Liu**

Breakout session 4 will synthesize several of the primary outcomes of the workshop and develop recommendations for the future. Participants will be divided into four groups that will each discuss common topics related to requirements for community and individual PI-driven projects as outlined in the Agenda.