OBSIC OS Virtual Meeting
22 October, 2021, 13:00-17:00 Eastern Time

In attendance: Jim Gaherty (chair), Ross Parnell-Turner, Helen Janiszewski, Emilie Hooft, Lindsay Lowe Worthington, Kasey Aderhold, Susan Schwartz, John Collins (facility), Andrew Barclay (facility), Nicole Mantopoulos (facility), Deborah Smith (NSF)

Agenda
13:20-13:30 Arrivals, greetings, organization (all)
13:30-14:00 MSRI funding, Midterm review, and plans for new instrumentation (Collins)

- MSRI Proposal and Award
    - April 2021 - proposal submitted to MSRI-1 for 50 wideband OBS, 50 broadband OBS and 100 active-source nodes - total $20M
    - Goal: Increased efficiency and capacity - do more with less
        - Less engineering support at sea and lab - easier to deploy systems and leveraging shore-side support
        - Standardization, COTS when possible for manufacturer repairs, simplification of deployment/recovery, incorporate recent developments of oil-exploration industry for short-period OBS
    - Design of wide/broadband OBS: Shielded, ~24 per shipping container, compatible with either Trillium sensor (T-compact, T240)
    - Design of active-source OBS nodes (not as mature as wide/broadband): “live” on the Langseth, ideally industry datalogger due to data management system and cost and size/weight, rechargeable and easy to handle
    - Specifically budgeted for testing of prototype and time+money for adjustments
    - August/September 2021 - Awarded $6.5M for ~35+ wide/broadband OBS, funded entirely from MGG and OCE (not MRSI)
    - Reasoning for wide/broadband only decision: felt couldn’t do both so focused on one design, shortening the wait-time on the broadband OBS requests, short-period design is less mature and will continue to be advanced with ongoing and shared efforts with the USGS
    - Two industry systems (InApril and Sercel) currently being evaluated for implementation into the latest active-source design for future funding opportunities
    - $6M is a tipping point for inclusion in MSRI (even though MSRI not the source of funding) - will increase oversight on that award
- USGS-Funded Rapid Response Capability
    - fully USGS funded - Coastal and Marine Hazards and Resources Program, contact is Nathan Miller
    - 10 Sercel MicrObs have been ordered (fully COTS) and to be delivered in mid-December 2021/mid-January 2022
    - Only rapid response, not to be used for other standard experiments
    - No concrete use agreements or guidelines between USGS and NSF (or others) yet in place

    - **AI(Committee): Provide guidance on broader/community usage of USGS-funded Rapid Response OBS pool, in particular with relationship with UNOLS**
- Mid-Term Review
    - Panel recommends a renewal of OBSIC at WHOI
    - Instrumentation recommendations – establish priorities, cost estimates and a timeline for recapitalization of the fleet with community input; initiate testing program for evaluating commercially available OBS against existing fleet
    - Personnel recommendations - fill remaining open positions and increase staffing if needed; continue to engage local technical schools; continue training marine tech pool and other technicians
    - Data Quality recommendations addressed in following discussion

14:00-15:00 Data Products (Barclay)

- NSF Mid-Term Review Data Recommendations from Panel
    - Develop agreed-upon set of data return and data quality metrics, with consultation with community
    - Expand content/resources in experiment specific web pages - e.g. documenting changes and peculiarities of OBS data set (as part of reaching more data users)
- Stakeholder and Use Case Matrix of OBS data
    - Identified requirements and priorities on metric evaluation - decision to go with a new metric tracking service in order to address OBS specific and OBSIC specific needs
    - Dynamically produced metrics organized in an experiment-SNCL (experiment/network, station, channel/location) structure
    - Publicly available directly from WHOI via the OBSIC website
- Establish metric to distill “good versus bad” stations - microseism peak energy at 0.2 Hz - classified by hour, so some transients and clock issues won’t be captured and false “bads” during earthquakes
    - Density-based clustering of applications with noise (DBSCAN) - unsupervised learning - clustering of a single station’s data
    - Designate the cluster that touches -120dB, -100db as the “good” data
    - Tested on WHOI stations from Alaska Community (AACSE) deployment
    - Next steps: expand to other instruments in AACSE (LDEO OBS), expand to other open experiments (Pacific Array), deploy on public server, testing, release, revise in Phase 2 with suggestions from users
- Orientations – DLOPy methodology, documented within the data folder at DMC.
    - In the future, will discuss possibility of putting directly in header of the data
- Locations - comparison with GEBCO 15” data illuminated several inaccuracies in past OBS experiments, primarily transcription errors in lat/lon
- Fishing risk - proposed use for Global Fishing Watch (GFW, globalfishingwatch.org) to incorporate spatial variability of activity into risk assessment
    - previously using deployment depth only to determine this at OBSIC
    - can now generate a map of GFW data to use at proposal site planning stages
    - WHOI now includes map-based relative risk estimate in informational budget

- utilized during Queen Charlotte experiment
- Risk differences of fishing types (e.g. long lining vs trawler) not accounted for

15:00-15:10 Break

15:10-16:10 Facility Update since Fall 2020 (Collins)

- Assimilation of NSF owned LDEO/SIO instruments
  - 15 Abalones -- have money for new data loggers, need money to replace battery tubes. Committee supports investing as necessary to get full fleet of Abalones into the OBSIC fleet
  - 8 LDEO deep -- glass balls, unique leveling system, old loggers. Replace loggers, leveling systems, or EOL
  - 19 LDEO TRMs -- only shells at WHOI. Only one request to date. Harvest parts and EOL?
  - Committee supports OBSIC exploring the repurposing of LDEO seismometers to replace failing WHOI BBOBS CMG3T
  - Still waiting on delivery of 6 SIO T-240's for the new build -- currently in use for OBSIC experiments
- Personnel
  - Masako Tominaga to move to scientific staff by end of October
  - Andrew Barclay hired December 2020 as staff seismologist
  - Opening in junior electronics technician
  - COVID-related restrictions on additional training of TechPool and WHOI/USGS
    i. Some experiment-enabled training of non-OBSIC staff during Cascadia cruises
- 2021 Operations - 4 experiments
  - COVID impacts - delays, port restrictions, and pre-cruise quarantines
- Data shipments - some recent deliveries to the DMC, some pending data due to Navy review
- Concerns with both shipping costs/delays and supply chain issues for batteries
- Instrument Requests
  - Much greater request pressure for broadband and short period for monitoring, little pressure for active source short period instrument use
- Upcoming Cruises (2021/2022)
  - Still impacted by port restrictions - U.S. only
  - Langseth is very booked up as are other large ships - still a backlog of delayed cruises/work and picking up of deployed instruments
  - SIO instrument use anticipated through 2022/23
    i. SIO short period were externally mounted for the first time – WHOI to check on the impact to noise performance (note that there is a recent article referencing 6Hz OBS noise: https://pubs.geoscienceworld.org/ssa/srl/article/92/5/3100/596478/Characteristics-of-Current-Induced-Harmonic-Tremor)
  - BB use: Galapagos currently Q1 2023-Q2 2024; Tonga-Samoa currently Q3 2023-Q4 2024
- Instrument needs follow-up discussion

- use of TRMs requires discussion at the proposal stage with PI, suggestion of including information/flags for PI and facility to trigger that conversation
- Shore-crossing experiments and evaluating the importance of shallow stations - need community input
- Determine the balance between facility support for shallow/shielded capabilities (either w/ current LDEO TRMs or future design) and the community/science need for this capability
- Learn from TRMs and Abalones in terms of trawl resistance and shielding to what kind of new instrument would allow for successful deployments in water <1000 m water depth. Important e.g. for SZ4D efforts.
    i. Abalones are good instruments (Nanometrics in titanium housing), but need to replace the dataloggers and some work required for acoustic release
    ii. Need to design a new TRM. Explore what has been learned about shielding and trawl resistance and develop a good design for a shell and deployment and recovery procedure. The long term goal is to be able to put seismometers below the seafloor (burial approaches).
    iii. Need to bear in mind the importance of efficient operations and more uniform designs

Comment [JC1]: Was not serios when I said that

16:10-17:00 Open discussion: MSRI followup questions, opportunities for refreshing active-source fleet, possible committee activities over next year (all)

- Current effort at SIO w/ Jeff Babcock and Ross Parnell-Turner to integrate Nanometrics Pegasus data logger on short period instrument - internally funded by UCSD, 4 instruments so far and training graduate students to deploy
- Short period design - would like to see development continue for a compact system, ~100-200 instruments, so must think about logistics of handling on deck, with data management considerations as well
    - Issues with industry-type nodal systems being deployed from academic vessel, data handling issues, etc. examples from 2021 experiments
- Incorporation of shallow water deployable capability into the timeline - may need proposal pressure (PI-requests and SZ4D)
- The committee can compile best practices for PI's on DEI at sea issues
    - UNOLS also working on this - https://www.unols.org/shipboard-civility
- OBSIC should try to document rapid-response requests, and maybe include in the summary of requests presented to the committee. Could help to document community interest in this capability. Possible role of MSROC for this effort.
    - Dedicated meeting for rapid response?
- Perhaps a need to engage with MSROC on the demand for active-source instruments as well and follow up on Langseth regional plan