

OBSIC Operations subcommittee call
8 December 2020

Purpose: provide guidance for WHOI MSRI preproposal planning

John's introduction: SP fleet is main NSF concern

Implementation scale

40 CMG3T instruments are in bad shape -- replacing them would be community benefit in terms of performance, much more efficient in lab

100 SP -- fast, efficient, improved performance

100 BB -- 50 TC, 50 full bandwidth

SP instrument is still in prototype mode (at best)

Options with industry partners? In April and Fairfield

Reality is a build proposal for SP is not feasible? Really almost has to be a design proposal

Is the 100 BB fleet novel, or novel enough? Cost efficiencies of deployment, easier to operate - more science could be done. How to justify when the science is still technically possible with current instrumentation. Proposals are limited in # of instruments requested based on perceived "limit" on experiment costs.

- Improvements that can be made: data return, operational cost at the facility
- Goal of no technical staff needed on deployment? Not possible, but cut down staff like what was done on land. Risk is important to consider. But preparation is largely prior to dropping over the side - can an instrument be prepped enough onshore?
- Power is a huge cost - batteries that are rechargeable? Possible for short period, lower power instruments also help.
- Rapid response an angle to "novelty"? Easier to prep and deploy instruments, with fewer staff needed, deployable from a small ship - could still dedicate some subset of instruments

Active source deployment developments - rapid downloads, clock corrections, etc.

- NSF's SP need is immediate -- high cost
- Density of deployment will address new science - not currently possible
- Ease of instrument deployment (off smaller ships) can address longer deployment length by multiple deployments for near-shore environments

Current instrument requests coming into OBSIC - # and type of instruments

Prioritization

- ~1-year deployment okay if more instruments are deployed
- APG/DPG, strong motion - required? Option for PIs, will be balanced by power consumption and deployment duration
- Modularity - a possibility? Shielding may limit
- Currently at a plateau of tech development - low powered sensors, dataloggers, clocks - pressure housing big enough for 12-15 months

Science justification - can be drawn from existing text, Jim will begin and circulate

- Community experiment like Cascadia can be done in a more streamlined way with a pool like this, but data usage will be wide
- SZ4D tie from a “FlexArray” angle, not looking at the long-term OBS (which they could find partnerships in WGLTSS)
- Rapid response capability supported - reference white paper

Design proposal (initial) - NSF internal < make sure Candace’s concerns are addressed

Data usage stats - OBSIP data trend that was established w/ Cascadia, then more recent experiments (AACSE), entraining new OBS data users and then potential new PIs - Kasey will work on this

- 1) Should the proposal include co-PI(s) from outside WHOI?
- 2) How can we best articulate community support for this effort? Proposal pressure is one good indicator, but we also need to articulate the scientific and operational limitations to the current fleet, and why a modernization now would result in a quantum increase science, and not an incremental one.
- 3) How to best summarize (briefly) that scientific motivation?
- 4) The \$15M budget would enable 100 new BB instruments at roughly \$100k each (mix of Trillium compacts and full BB sensors), and 100 new SP active-source instruments at \$50k each. How can this be prioritized such that it can be effectively modularized if it is funded at < full budget?
- 5) How should we incorporate and build in existing resources (if at all): (a) 35 compacts in titanium housing; (b) Abalone frames; (c) TRM frames; (d) 28 compacts in aluminum housings and home-grown (LDEO) leveling system. (e) 15 Trillium T240 instruments of entirely new design (underway now)?