

Science Mission Requirements for Global Class Vessel(s)

FIC Meeting, 26 March 2019

Committee

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Tasks – Establish/define science drivers

- Fleet Improvement Plan
- Evaluation of existing fleet – service life, scheduling, costs
- Existing and future large-individual program needs
- Agency needs and funding

Tasks – Data gathering

- Examine existing/previous SMRs for Global and Ocean Classes - DONE
- Gather information on international Global fleet – DONE

Examples: Discovery 2013 (UK; 327', 28 scientists)

Investigator (Australia; 308', 40 scientists)

Meteor (Germany; 320', 30 scientists)

Pourquois Pas (France; 351', 40 scientists)

Sonne (Germany; 389', 40 scientists)*

Tan Kah Kee (China; 255', 36 scientists)

Tasks – Data gathering *continued*

- Survey the community and open discussions like having Town Halls

Survey last 5 years of Global Class users – DONE

41 responses; 70% senior scientists; 41% PO, 29% MG&G, 20% BO, 12% CO; mainly specific detailed comments (e.g., cable trays, ROV ops), but deck apportionment (foredeck vs. fantail) was notable and aerial vehicles handling mentioned

Town Hall at 2018 Ocean Science Meeting – DONE

Room was full, so 75+ attendees (had signup list); presentations covered SMR process, overview of this committee's tasks and time line; open discussion thereafter – acoustics (bubbles, drop keel), get agencies involved, involve early career, telepresence/bandwidth, coring ops, berths, lab container placement, keep process open and accessible

Tasks – Data gathering *continued*

- Survey the community *continued*

Survey entire community – DONE

118 responses, with some highlights:

- 44% responses from senior scientists, 19% mid career, 17% early career, and rest were graduate students and technicians
- 92% have used globals and will need to in the future
- Discipline breakdown (broadly defined) for respondents: 12% biological oceanography, 17% chemical, 10% physical, 9% climate, and 36% seismology/geophysics. NOTE: this breakdown is rather surprising, but it seems the retirement of the Langseth resulted in a disproportionate response from its community of users
- Berthing for 36 scientists sufficient: 88% yes
- Existing lab and deck space sufficient: 75% yes
- Existing scientific support instrumentation and systems (sensors, ADCP, CTD, etc.) sufficient: 50% yes, 36% no

Tasks – Data gathering *continued*

- Survey the community *continued*

Survey entire community – DONE

118 responses, with some highlights:

- What else is needed for broad support? Lots of varied responses, but majority asking for the facilities like those on Langseth, plus long coring, and better/quieter hull sensors; some requests for better ROV systems
- Are network and technical systems (e.g., broad band) on existing ships sufficient now and into future: 52% yes, 36% no NOTE: these responses are surprising, everyone complains about networks and high seas broadband
- Are overboarding systems (A frames, etc) sufficient: 71% yes, 26% no. Written comments regarding long coring systems
- Are handling characteristics of existing ships (e.g., dynamic positioning; operations as a function of sea state) sufficient: 72% yes, 13% no

Tasks – Data gathering *continued*

- Survey the community *continued*

Survey Captains, engineers, technicians, etc. – just DONE

Note that this was a very technical and specific survey, with 25 questions about specific issues like vestibules, sonar installations, etc.

15 responses, with some highlights:

- 1 Master, 1 Port Engineer, 1 Superintendent, 12 Technicians (marine, IT, electronic)
- Almost all said science was the main driver on design and ops
- More bandwidth, include in design
- Lots of comments on sonar installations to minimize bubble sweep down, most discussing gondolas, one on retractable keels, several comments on ease of sensor repairs/maintenance with gondolas
- Concerns about size of ship to accommodate “portable” seismic systems
- Have IT, sonar and other committees who are on for the design to build stages to ensure less issues after it’s built

Tasks – Data gathering *continued*

- Survey the community *continued*

Town Hall at 2018 AGU Fall Meeting – DONE

Low attendance, ca. 25 (had signup list); presentations covered SMR process, overview of this committee's tasks and time line; open discussion thereafter – Updated AGOR-23 would be good starting point; discussions about gondola vs. retracting keel for acoustics; look at Sonne with international fleet; no comments on seismic facilities; need to get early career scientists involved; accommodate all types of autonomous vehicles; shipboard measurements should start to see the use of very sophisticated analytical systems (e.g.,. Mass spectrs) and therefore change the clean power requirements; more bandwidth and consider telepresence

SMR Timeline, Ver. 4.0

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| June 2017 | Start process – define science drivers and gather data |
| Dec. 2017 | Survey past Global users |
| Jan. 2018 | Compile survey results |
| Feb. 2018 | Town Hall at 2018 Ocean Sciences Meeting |
| Mar. 2018 | Survey community (Link on UNOLS web site and sent to UNOLS email list) |
| Jun-Jul 2018 | Compile survey results |
| Oct. 2018 | Survey current Global captains, engineers |
| Nov. 2018 | Compile survey results |
| Dec. 2018 | Town Hall at 2018 Fall AGU Meeting |
| Apr. 2019 | Draft SMR Ver. 1 (use Ocean template) and circulate to FIC |
| May 2019 | Circulate SMR Ver. 1.1 to UNOLS Council |
| Jun-Jul 2019 | Compile all inputs and create “living” SMR Ver. 2.0 |