Planning for the next US Global Class Research Vessel Town Hall

13 December 2018
Fall AGU Meeting, Washington, DC
Fleet Improvement Committee of UNOLS is charged with assuring that the number, mix and overall capability of ships in the UNOLS fleet match the science requirements of academic oceanography in the U.S.
Establishing Science Mission Requirements (SMRs) is key at the initial steps of Research Vessel Design and Construction. SMRs lead to Design Specifications. “If it’s not in the specifications, it’s not in the ship.”
Science Mission Requirements

Overview

• The purpose of SMRs is to set down mission capabilities to be used as guidelines during the various design phases for a vessel class.

• A key concept is that ship systems are completely integrated with the science mission for these vessels.
Sample mission profiles should be defined that will provide examples of how new vessels might be used.

   e.g., size of moorings deployed, cruise durations...

It is possible that not all requirements can be fully realized in any one design. During later design phases priorities may be refined.
Vessel designs are largely defined by:
- PAYLOAD
- SPEED
- ENDURANCE
- HULL SHAPE
- PROPULSION

SMR Elements

- Accommodations and habitability:
  - Accommodations
  - Habitability
- Operational characteristics
  - Endurance & Range
  - Speed
  - Sea keeping
  - Station keeping
  - Track line following
  - Ship control
  - Ice strengthening
- Over-the-side and weight handling
  - Over the side handling
  - Winches & Wire
  - Cranes
  - Towing
SMR Elements

- Science working spaces
  - Working deck area
  - Laboratories
- Vans
- Storage
- Science load
- Workboats
- Masts
- On deck incubations
- Marine mammal & bird observations, etc.
Other SMR Considerations

- Cost
- Energy Efficiency
- On the Horizon Technologies
- Operation & Maintenance
- Regulatory Requirements and Classifications
  - Polar code requirements
  - Air emissions
Committee for Global Class Vessel Planning – Science Mission Requirements (SMR)

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- Suzanne Carbotte, Lamont-Doherty
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- Clare Reimers, Oregon State U.
- Ethan Roth, U. Alaska
- Jim Swift, Scripps Institution of Ocean.
Committee Charge: Develop a “Living” (easily modified) SMR for the next US Global Class Vessel

- Tasks: Define Science Drivers
  - Evaluation of existing fleet – service life, scheduling, costs
  - Existing and future individual PI to large program needs (Community Surveys, Town Halls, etc.)
  - Agency needs and funding
SMR Tasks: Data gathering

- Examine existing SMRs for US Global and Ocean Classes
- Gather information on international Global fleet – size, endurance, berthing, deck/lab facilities, build and maintenance costs, etc.

R/V Thompson, 1991
R/V Sikuliaq, 2015
R/V Revelle, 1996
R/V Atlantis, 1997
R/V Langseth, 2004
International Global Examples

UK: Discovery (2013), 327’, 28 scientists

Australia: Investigator, 308’, 40 scientists
Germany: Meteor, 320’, 30 scientists

France: Pourquoi Pas, 351’, 40 scientists

China (Xiamen): Tan Kah Kee:,255’, 36 scientists
SMR Tasks: Data gathering (cont.)

- Survey existing Global Class users, and captains, engineers, marine operators, and technicians.
- Survey the community and have open discussions via Town Halls such as this one.
SMR Timeline

- **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
- **Feb. 2019**: Draft SMR Ver. 1 and circulate to FIC
- **Mar. 2019**: Circulate SMR Ver. 1.1 to UNOLS Council
- **Apr-Jun 2019**: Compile all inputs and create “living” SMR Ver. 2.0
We’re done talking, now we’re listening and taking notes. Thanks!