Planning for a new California Coastal Research Vessel (CCRV)

Presentation to UNOLS Council
29 November 2017

Bruce Appelgate
Scripps Institution of Oceanography
California-based Intermediate Class & smaller ships

Research vessels able to carry out California’s local research and education needs have decreased from 3 to 1, with the last remaining ship approaching the end of its service life. **A new vessel is needed.**

**INTERMEDIATE**
R/V New Horizon
170 feet / 40-day endurance
12 crew / 19 scientists

**REGIONAL**
R/V Pt Sur
135 feet / 21-day endurance
8 crew / 12 scientists

**LOCAL / COASTAL**
R/V Robert Gordon Sproul
125 feet / 14-day endurance
5 crew / 12 scientists
California needs a dedicated research vessel

- California society and economy depend on the ocean for resources, commerce, defense, infrastructure, and quality of life.
- Growing need for undergraduate and graduate education involving instruction, research and practical training at sea.
- California economy, 6th largest in world, is strongly tied to the ocean and drives a growing demand for maritime research & development.
  - Roger Revelle and Sally Ride have worldwide research portfolios, and will not predictably be available in California waters
- Universities throughout California require an accessible, affordable, capable research vessel for classes and student research projects, operating on time frames tailored to academic calendars.
- California needs the ability to mount rapid response missions to ephemeral events, with quick access to a capable, well-outfitted, professionally-staffed vessel
Collaborating on a shared research vessel

**Vision:** establish a new kind of partnership within California, involving public and private universities, research institutions, state agencies and non-governmental organizations to support a new **California Coastal Research Vessel (CCRV)** for seagoing education and research.

**Efforts to date:**

- **Moss Landing Marine Laboratories** (California State University) and the **Scripps Institution of Oceanography** (University of California) have agreed to collaborate jointly on this effort.

- Directors of SIO & MLML, Chancellor of UC San Diego and President of San Jose State University all strongly endorsed this collaboration and approach March 2017

- Committed significant seed funding from each institution

- Assembled Scripps **Small Ship Task Force** to define institutional needs

- Sent *Dear Colleague* letter to 100+ ship users statewide to solicit input

- Scripps began a DOT-sponsored feasibility study (with Sandia National Labs) of a zero-emission research vessel (ZERo/V), including conceptual design
Yes: Zero Emission Research Vessel: ZERO/v

- Liquid hydrogen fuel cells
- No fossil fuels required
- Zero emissions
- General purpose capability
- 2400 nm range
- Dynamic positioning
- 18+ scientists, 11 crew
- Large lab spaces
- Large working deck
- Substantial over-the-side handling systems
- Very low radiated noise
- Excellent sonar performance
- Length: 170 feet
- Beam: 56 feet
- Draft: 12 feet

Full report to FIC at Fall UNOLS meeting
Zero-emission research vessel feasibility study: ZERo/V

- Design study funded by MARAD for a new coastal / local vessel
- Liquid hydrogen fuel
- Zero emissions: clean!
- Electric drives: quiet!
- Feasible: YES, using existing technology
- Hydrogen fuel cells
- Next: create affordable green design to replace Robert Gordon Sproul

The zero-emission research vessel (ZERo/V) concept vessel has a range of 2,400 nm with berths for 24 scientists, supporting general-purpose missions. Anticipated construction cost: $80 million.
CCRV: Goals for 2017

**Science mission requirements:** Consult with likely ship users and sponsors to develop SMRs, building on existing UNOLS products

**Develop management plan:** How will a single vessel be managed and operated such that it is able to support multiple institutions?

**State and local government:** Engage, educate, and build support.

**Conceptual vessel design:** Based on the foregoing, develop CCRV concept.

**Correspondence to:**
Bruce Appelgate <tba@ucsd.edu>
Mike Prince <prince@mlml.calstate.edu>

END