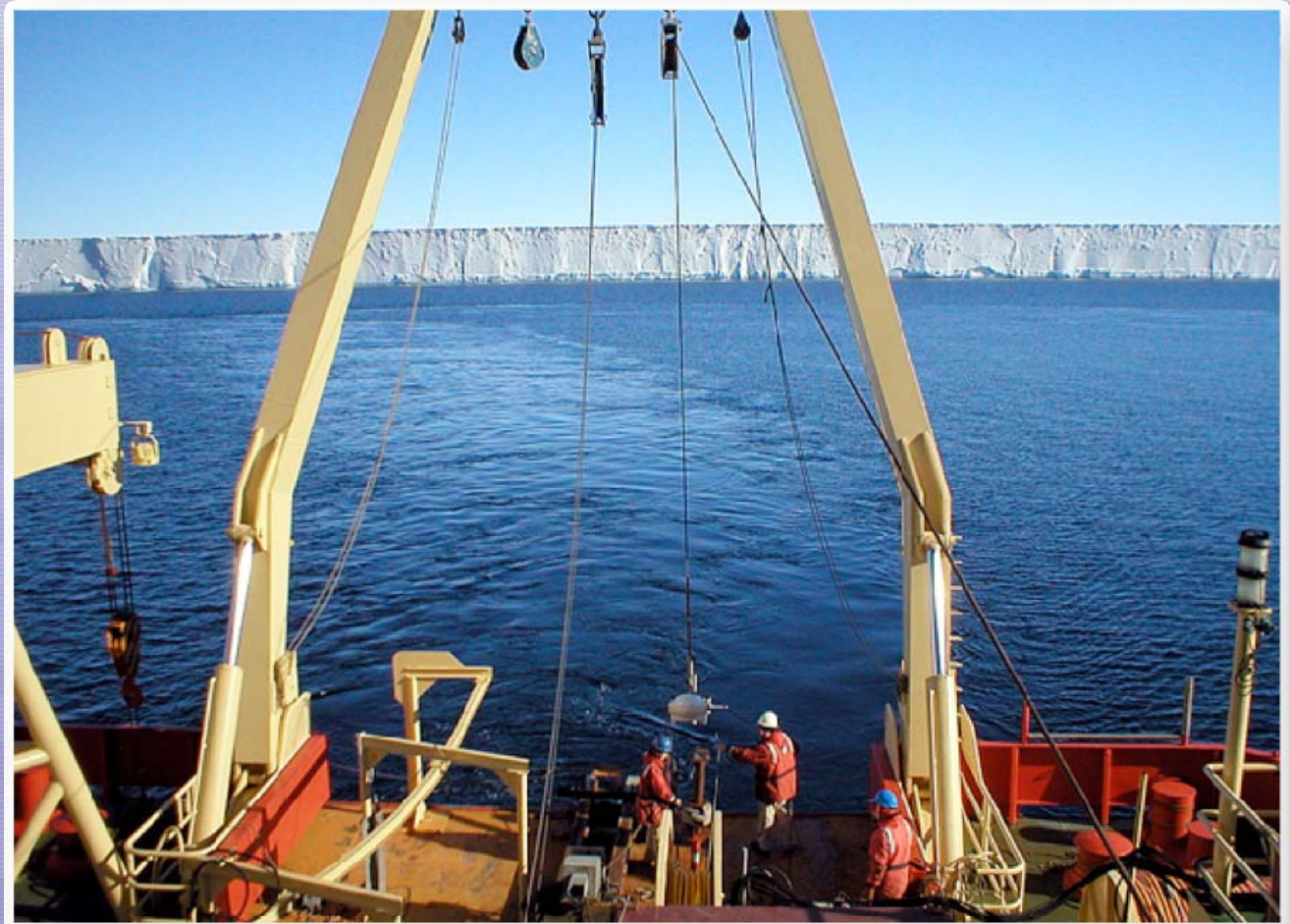


Access to the Polar Ocean

Vessel Capabilities to Meet National Research Needs



UNOLS Fleet Improvement Committee

October 13th 2010

Southern Ocean Research: NSF Charters

LMG

- Charter expired June 2010
- RFP for vessel with similar capabilities released in early 2009
- ECO submitted the successful proposal
- LMG renewed for 5 yr (2010-2015) with possible 5 yr (2015-2020) option
- Greater than 20 years old in 2020

NBP

- Current charter expires March 2012
- RFP for vessel with similar capabilities will be released
- At end of current charter vessel will be 20 years old, need longer-term solution



Challenges and Opportunities

- **Need to retain polar marine research capabilities for the U.S. science community**
- **Need to increase ability of researchers to conduct investigations in multi-year ice**
- **Need to work closely with the research community through UNOLS to refine science requirements and continue planning for Polar Research Vessel**



PRV Requirements Study (2002-2006)

Over 270 individuals were
involved in the PRV effort

- Two Workshops – Requirements for Southern Ocean Science
- U.S. Maritime Administration and Science Technology Corporation contracted to explore vessel types
- ARVOC Created a 15-member Committee to assist process
- ARVOC hosted Town Hall meetings
- ARVOC surveyed the community for input on science requirements

PRV Requirements Study Documents

[http://www.usap.gov/usapgov/vessel
ScienceAndOperations/PRVSection.c
fm](http://www.usap.gov/usapgov/vesselScienceAndOperations/PRVSection.cfm)



Progress Update:

- NSB advised OPP to proceed with planning for the PRV
- OPP approached UNOLS to refresh Science Mission Requirements
- “We offer the experience base and the expertise of UNOLS and the academic fleet operators to assist OPP in further defining the new vessel...”



Progress Update:

UNOLS Polar Research Vessel Committee

Science Mission Requirements Refresh Project

Membership

- **Nominations solicited from the research community and other relevant groups**
- **8-9 members from the research community (international, disciplinary balance)**
- **3-4 Technical/Operational Experts (naval architects, R/V operators, R/V technical support personnel)**

Activities

- **Three Meetings**
- **Community Workshop**

Outcomes

- **Internal OPP/NSF discussion of interim findings**
- **Interim input to NRC committee “Review of the US Antarctic Program: Future Science Opportunities in the Antarctic and Southern Ocean”**
- **Report to NSF in early June 2011**



Progress Update:

UNOLS Polar Research Vessel Committee

Science Mission Requirements Refresh Project

PRV Committee Charge

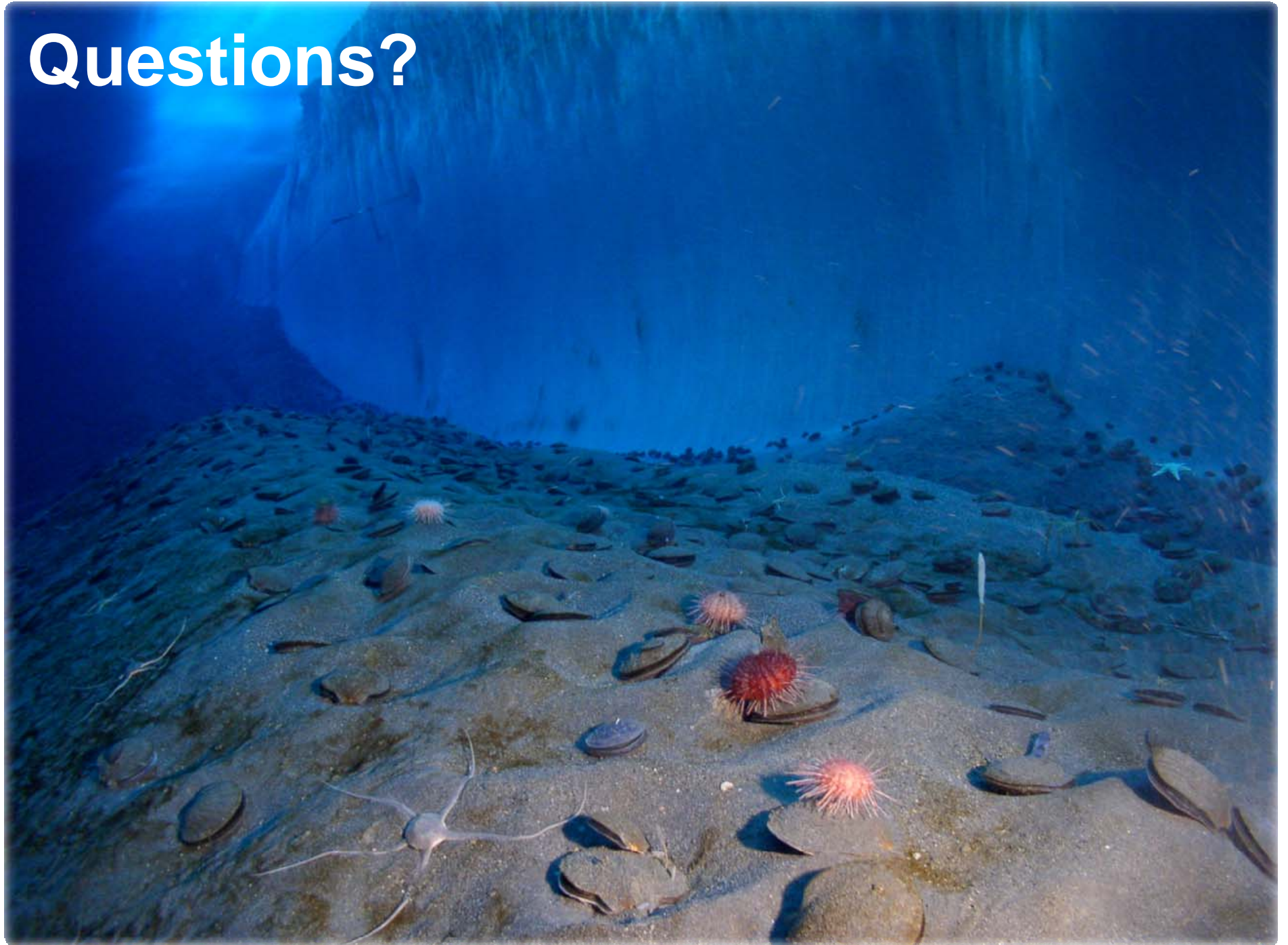
- **Review and refresh SMRs identified during the PRV Study completed in 2006;**
- **Develop and publish a survey to gather input from polar researchers on SMRs required for a PRV;**
- **Plan and hold a community workshop to discuss:**
 - **Mission scenarios,**
 - **Review community input to the PRV SMR survey, and**
 - **Gather community feedback;**
- **Prepare a report to NSF showing connection between science questions and the SMRs needed to address them.**
- **Format of the final report will be consistent with available UNOLS SMR documents.**



Date	Activity
10/12/10	Finalize the Statement of Task, Charge to the PRV committee, and Call for Nomination
10/12/10	Post Call for Nominations
10/28/10	Deadline for Submitting Nominations
11/4/10	PRVC Selection Group finalize membership and appoint Chair
11/30/10	Finalize PRV web survey
12/1/10	Open web survey for public comment
12/11/10	Committee Meeting 1 (tied to AGU) Plan Activity Plan Workshop Review PRV documents Develop mission scenarios with AICC/ARVOC input Strawman Science Mission Requirements Identify areas requiring additional information
12/20/10	Invite workshop participants
1/7/11	Close web survey
2/7/11	Workshop Present use case scenarios and web survey results Gather additional input
2/9/11	Committee Meeting 2 Draft Science Mission Requirements
4/4/11	Committee Meeting 3 Finalize Science Mission Requirements
4/11/11	Post Science Mission Requirements for public comment
5/16/11	Close public comments
6/3/11	Submit Final Science Mission Requirements to NSF



Questions?



Vessel capabilities needed by Polar marine researchers

- Year round access to ice covered seas
- Data and sample collection within seasonal and multi year ice
- Stable platform for work within and transit across the Southern Ocean

CAPABILITIES

- Geophysical Mapping (seismic, multibeam)
- Geological Sampling (coring, dredging)
- Biological Sampling (acoustically quiet, nets, trawls, etc)
- ROV/AUV deployments
- Water Sampling and Water Column Measurements (CTD, underway sampling, etc)
- Long endurance vessel, large science party for multidisciplinary research



Polar Marine Science: Priority Questions

- **How do polar oceans influence global change and how are they affected by environmental changes?**
- **How does polar ocean circulation influence atmospheric variability, ice sheet dynamics, and sea level?**
- **How is changing climate impacting polar ocean food webs and ecosystems?**
- **How has the climate and oceanography of the Polar regions changed over geologic time and how can these changes improve our ability to model future variability?**

Polar marine science is an excellent training ground for future researchers and for public outreach



Polar Research Vessel Fleet

	LMG	Sikuliaq	NBP	Healy	ODEN	Sea/Star
Length (ft)	230	254	308	420	353	399
Icebreaking (ft @ 3 knts)	1.25	2.5	3	4.5	5	6
Science/Crew Berths	28/16	26/20	39/26	52/75	50/26	30/155
Vessel Age (yr)	12	N/A	18	11	12	33
Endurance (days)	42	45	52	53	100	86



RV Laurence M. Gould



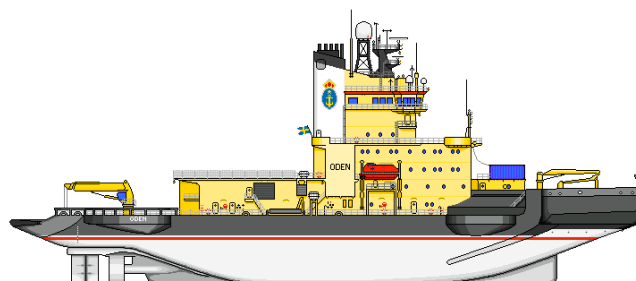
RV Sikuliaq



RVIB Nathaniel B. Palmer



USCGC Healy



IB Oden



USCGC Polar Sea/Star



Light Ice



RV Laurence M. Gould

Seasonal Ice



RVIB Nathaniel B. Palmer

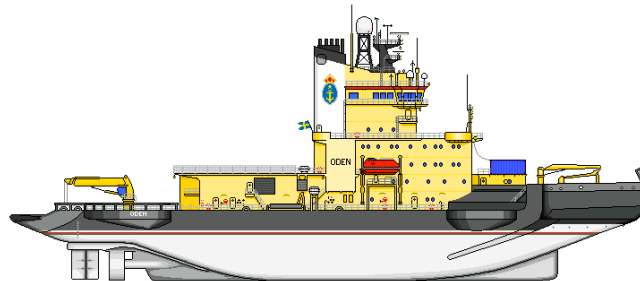


RV Sikuliaq

Multi Year Ice



USCGC Healy



IB Oden



USCGC Polar Sea/Star

