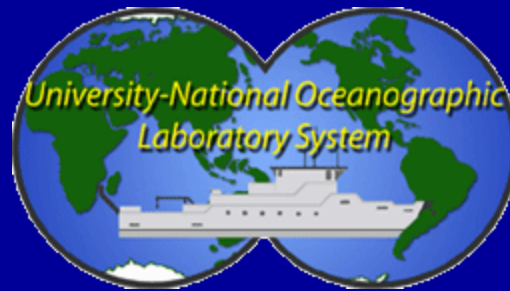


University-National Oceanographic Laboratory System ~UNOLS~

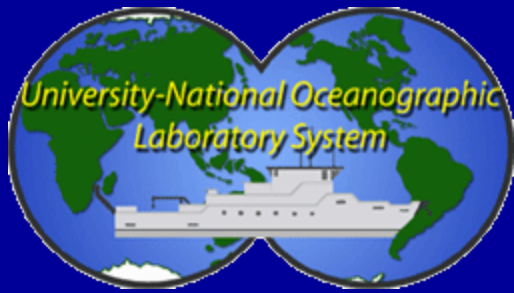


A presentation by Tim Askew

at the

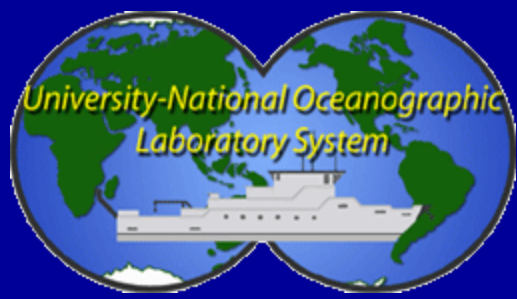
Fourth International Port Meteorological Officer Conference (PMO-IV)
Support to Global Ocean Observations using Ship Logistics

December 2010

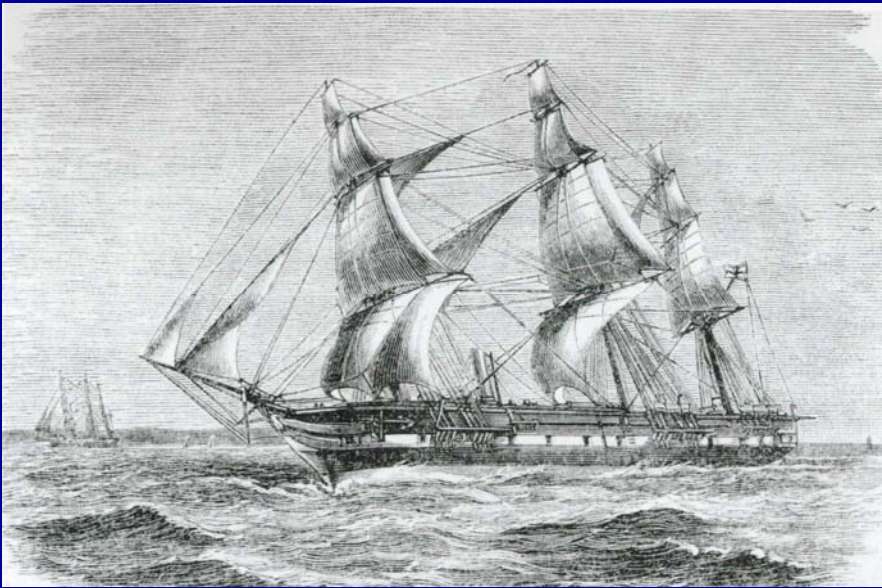


UNOLS and the Academic Research Fleet

- History - the Early Days
- UNOLS is formed - the organization
- The Academic Research Fleet
- National Oceanographic Facilities
- Science at Sea
- 2009/2010 Fleet Operations
- The Future



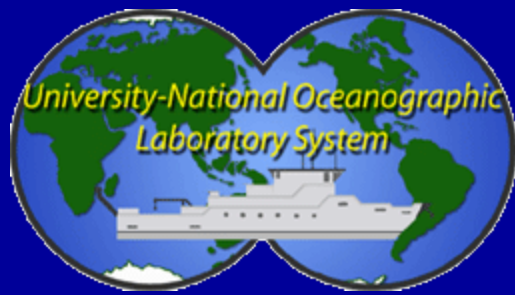
The Early Days



HMS Challenger, 1870s



Atlantis, 1931-1964




UNOLS in a Nutshell


UNOLS: Founded in 1971 with 33 ships operated by 17 laboratories


UNOLS today is an organization of 60 U.S. institutions with ocean science programs

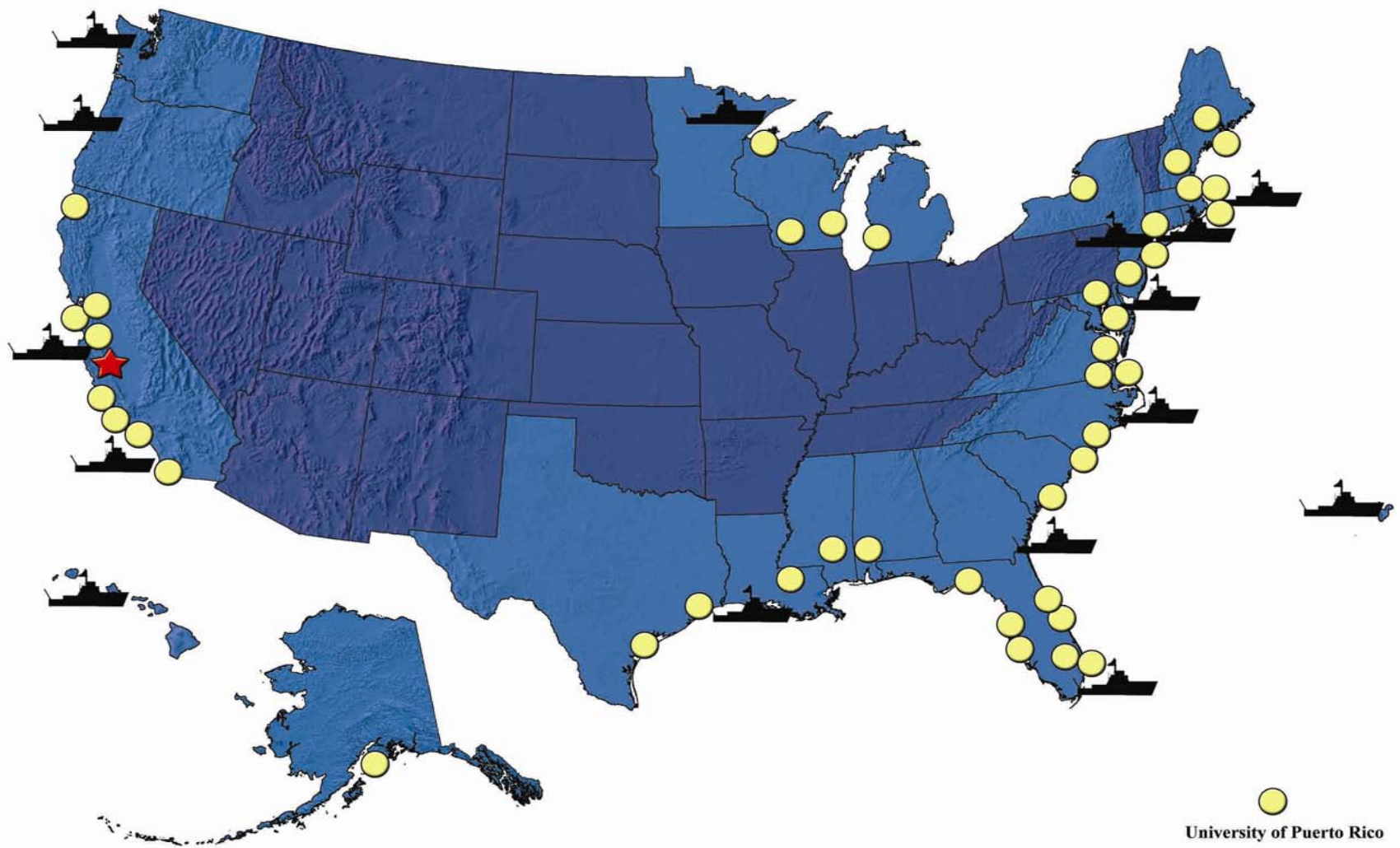
- 16 of the UNOLS institutions are facility operators that include:
 - 21 Research vessels,
 - a National Deep Submergence Facility,
 - a National Oceanographic Aircraft Facility, and
 - a National Oceanographic Seismic Facility.
- Facilities are either owned by one of the Federal agencies or by individual institutions.
- Elected Council & 8 major committees (volunteers)
- UNOLS Office

UNOLS MEMBERSHIP

 **Operator Institution**
Note: Symbol indicates home port location. Multiple ships may operate from a single location.

 **Non-Operator Institution**

 **National Oceanographic Aircraft Facility Operator**



 Smithsonian Tropical Research Institute - Panama

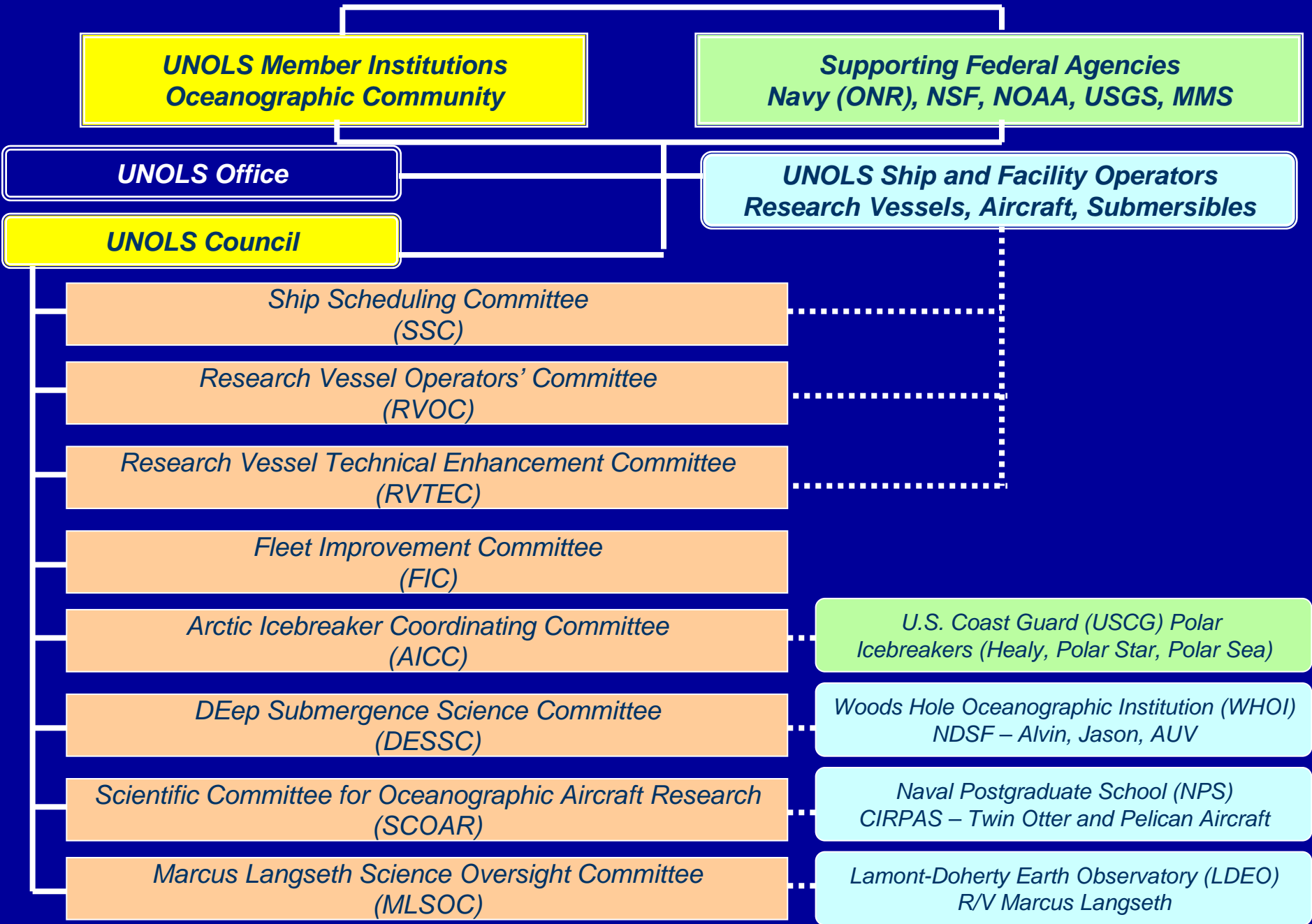
 University of Puerto Rico

UNOLS Goals

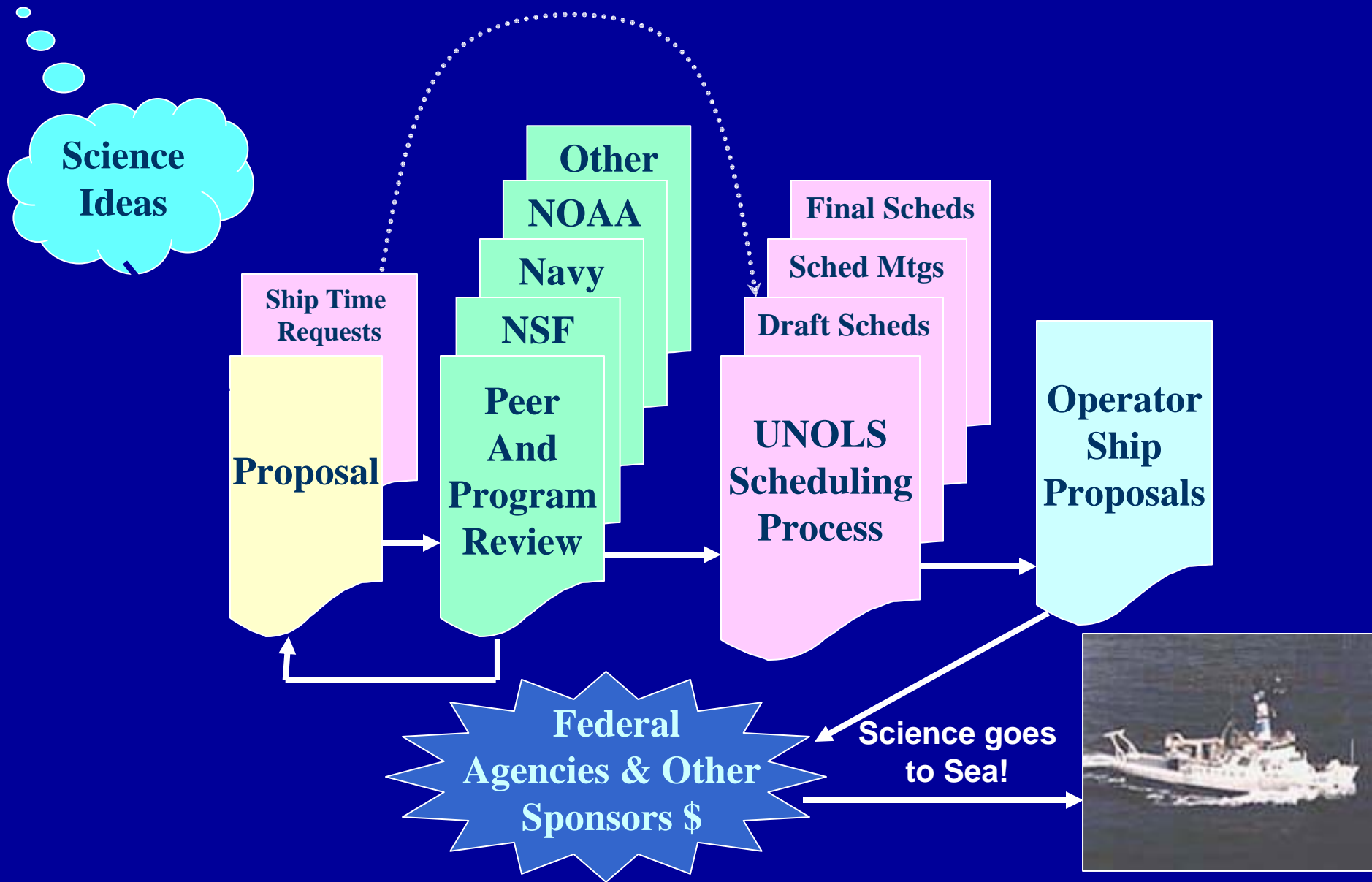
UNOLS is a coordinator or facilitator of community-wide efforts with these goals:

- ***Promote broad, coordinated access to oceanographic research facilities***
- ***Support continuous improvement of existing facilities***
- ***Plan for and foster support for the oceanographic facilities of the future***

UNOLS: Council, Committees, and Federal Sponsors



Science Investigators and the Fleet



The UNOLS Fleet – 2010

| SHIP/CLASS | Operator | Owner | BUILT | Conv/Mid-Life | LOA m (ft) | Science Berths | Ship Age |
|-------------------------------|----------|---------|-------|---------------|---------------|-------------------|-------------|
| Global Class | | | | | | | |
| <i>Melville</i> | SIO | NAVY | 1969 | 1991 | 85 (279) | 38 | 41 |
| <i>Knorr</i> | WHOI | NAVY | 1970 | 1989 | 85 (279) | 34 | 40 |
| <i>Thomas G. Thompson</i> | UWASH | NAVY | 1991 | | 84 (274) | 36 | 19 |
| <i>Roger Revelle</i> | SIO | NAVY | 1996 | | 84 (274) | 37 | 14 |
| <i>Atlantis</i> | WHOI | NAVY | 1997 | | 84 (274) | 37 | 13 |
| <i>Marcus G. Langseth</i> | LDEO | NSF | 1991 | 2005-2007 | 71 (235) | 35 | 18 |
| Ocean Class | | | | | | | |
| <i>Kilo Moana</i> | UHAWAII | NAVY | 2002 | | 57 (186) | 29 | 8 |
| Intermediate Class | | | | | | | |
| <i>Wecoma</i> | OSU | NSF | 1976 | 1994 | 56 (185) | 18 | 34 |
| <i>Endeavor</i> | URI | NSF | 1977 | 1993 | 56 (184) | 18 | 33 |
| <i>Oceanus</i> | WHOI | NSF | 1976 | 1994 | 54 (177) | 19 | 34 |
| <i>New Horizon</i> | SIO | SIO | 1978 | 1996 | 52 (170) | 19 | 32 |
| Regional Class | | | | | | | |
| <i>Point Sur</i> | MLML | NSF | 1981 | | 41 (135) | 12 | 29 |
| <i>Cape Hatteras</i> | DUKE | NSF | 1981 | 2004 | 41 (135) | 14 | 29 |
| <i>Atlantic Explorer</i> | BIOS | BIOS | 1982 | 2006 | 51 (168) | 20 | 28 |
| Regional/Coastal Class | | | | | | | |
| <i>Robert Gordon Sproul</i> | SIO | SIO | 1981 | 1985 | 38 (125) | 12 | 29 |
| <i>Pelican</i> | LUMCON | LUMCON | 1985 | 2003 | 32 (105) | 14 | 25 |
| <i>Walton Smith</i> | UMIAMI | UMIAMI | 2000 | | 30 (96) | 16 | 10 |
| <i>Hugh R. Sharp</i> | UDEL | UDEL | 2005 | | 44 (146) | 14 | 5 |
| Local Class | | | | | | | |
| <i>Savannah</i> | SKID/UG | SKID/UG | 2001 | | 28 (92) | 19 | 9 |
| <i>Blue Heron</i> | UMINN | UMINN | 1985 | 1999 | 26 (86) | 6 | 25 |
| <i>Clifford Barnes</i> | UWASH | NSF | 1966 | 1984 | 20 (66) | 6 | 44 |

Global Class



Marcus G. Langseth



Atlantis



Knorr



Roger Revelle



Melville



Thomas G. Thompson

Ocean Class



Kilo Moana

Intermediate Class



Wecoma



Endeavor



Oceanus



New Horizon

Regional Class



Atlantic Explorer



Point Sur



Cape Hatteras

Regional/Coastal Class



Pelican



Robert Gordon Sproul



F.G. Walton Smith



Hugh R. Sharp

Local Class



Clifford A. Barnes



Blue Heron



Savannah

National Deep Submergence Facility



AUV Sentry



DSRV Alvin (Photo credit: WHOI)



ROV Jason II (Photo credit: WHOI - <http://www.divediscover.who.edu/tools/jason.html>)

Center for Interdisciplinary Remotely-Piloted Aircraft Studies



Pelican OPV (Photo credit:
<http://cirpas.org/index.html>)



UV-18a Twin Otter

Seismic Vessel: *R/V Marcus G. Langseth*



Photo credit: Mutter, J. C., S. Carbotte, M. Nedimovic, J. P. Canales, and H. Carton (2009), Seismic imaging in three dimensions on the East Pacific Rise, *Eos Trans. AGU*, 90(42), 374–375. http://www.agu.org/pubs/eos-news/supplements/2009/mutter_90_42.shtml



The starboard paravane about to enter the water. The paravanes permit the streamers and other towed equipment to be widely separated.



← USCGC *Healy*

USCG Icebreakers



FLIP



CAPTION INFORMATION: Scripps Institution of Oceanography's Floating Instrument Platform (FLIP) is a 355-foot long non-propelled research platform. Built originally for bearing accuracy research related to a Navy submarine weapons program, FLIP has been used to support a variety of oceanographic research projects.

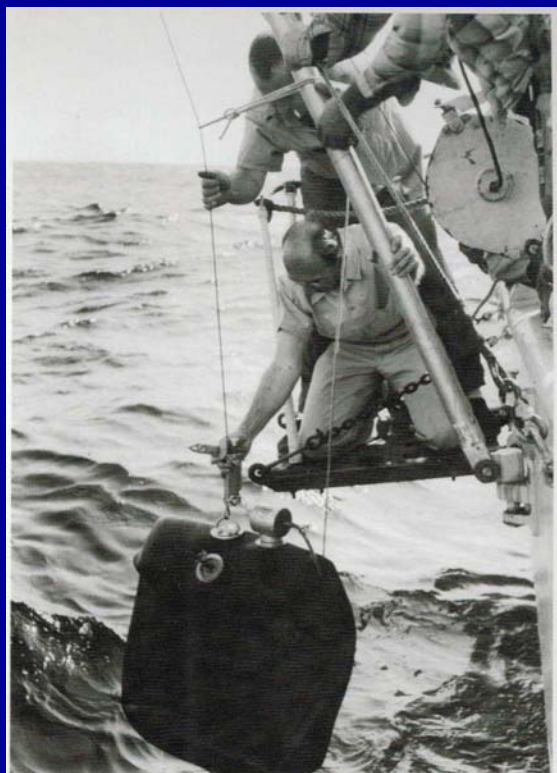
PHOTO CREDIT: Scripps Institution of Oceanography

Collecting Water and Taking Measurements



Water Sampling

Then



1950's, *Down to the Sea for Science*

...and Now



CTD work aboard Endeavor (Photo courtesy of Sam DeBow)

Rock Sampling

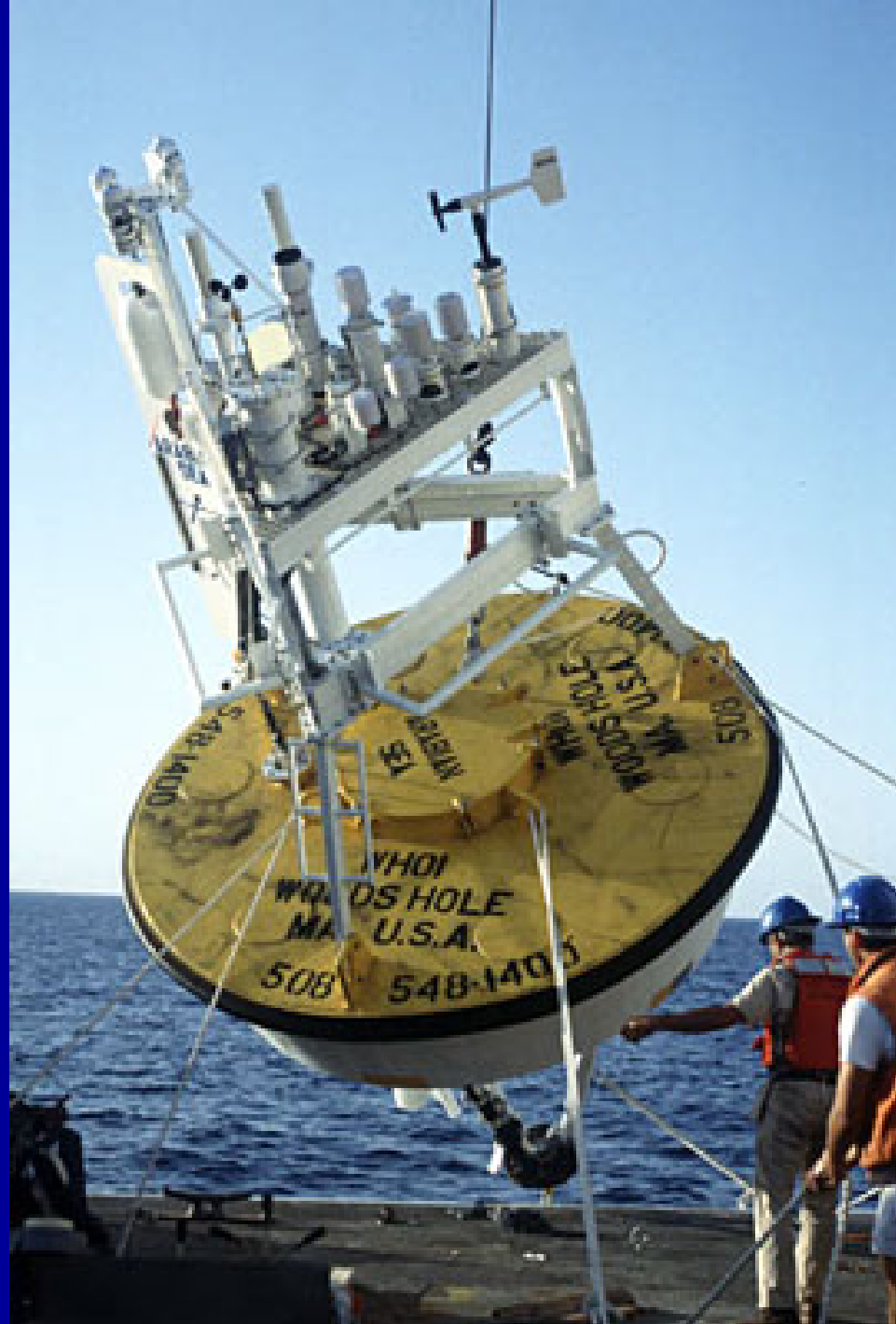


Collecting Mud



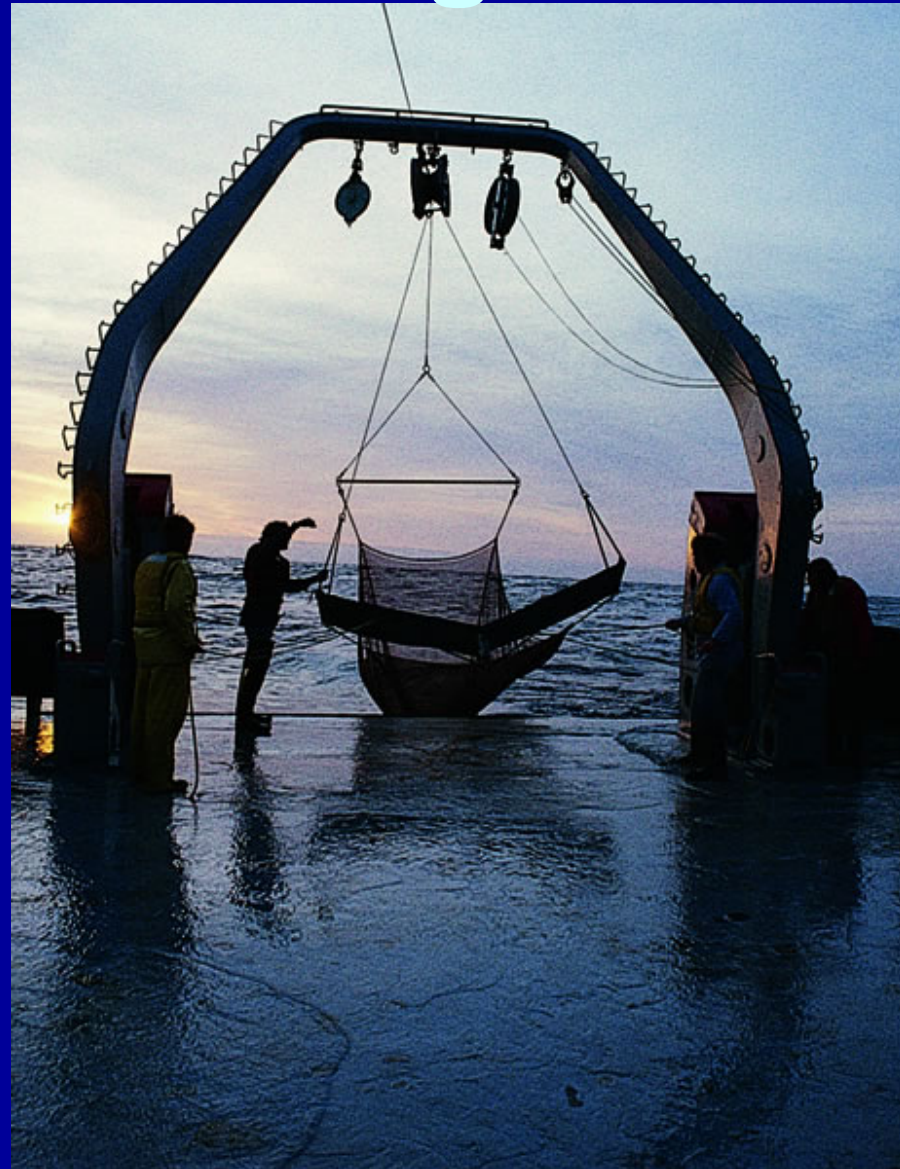


**A piston
corer that
contains 24
feet of
samples
from the
upper
seafloor
sediments**



Mooring Deployment

Towing nets

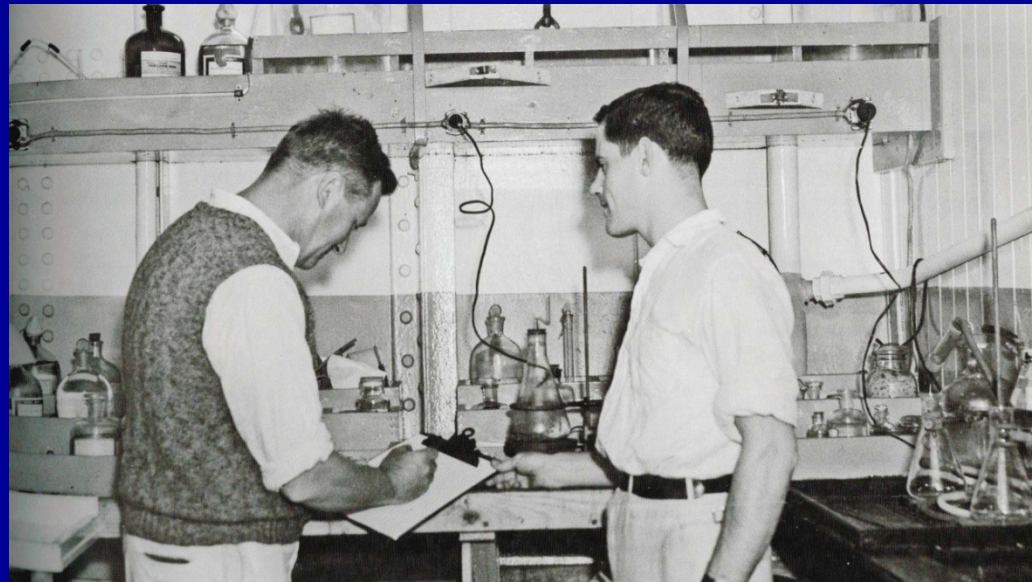


Sediment Trap



Shipboard Laboratories

Then



...and Now

**Computer
Lab**





Studying the Mud

In the Lab



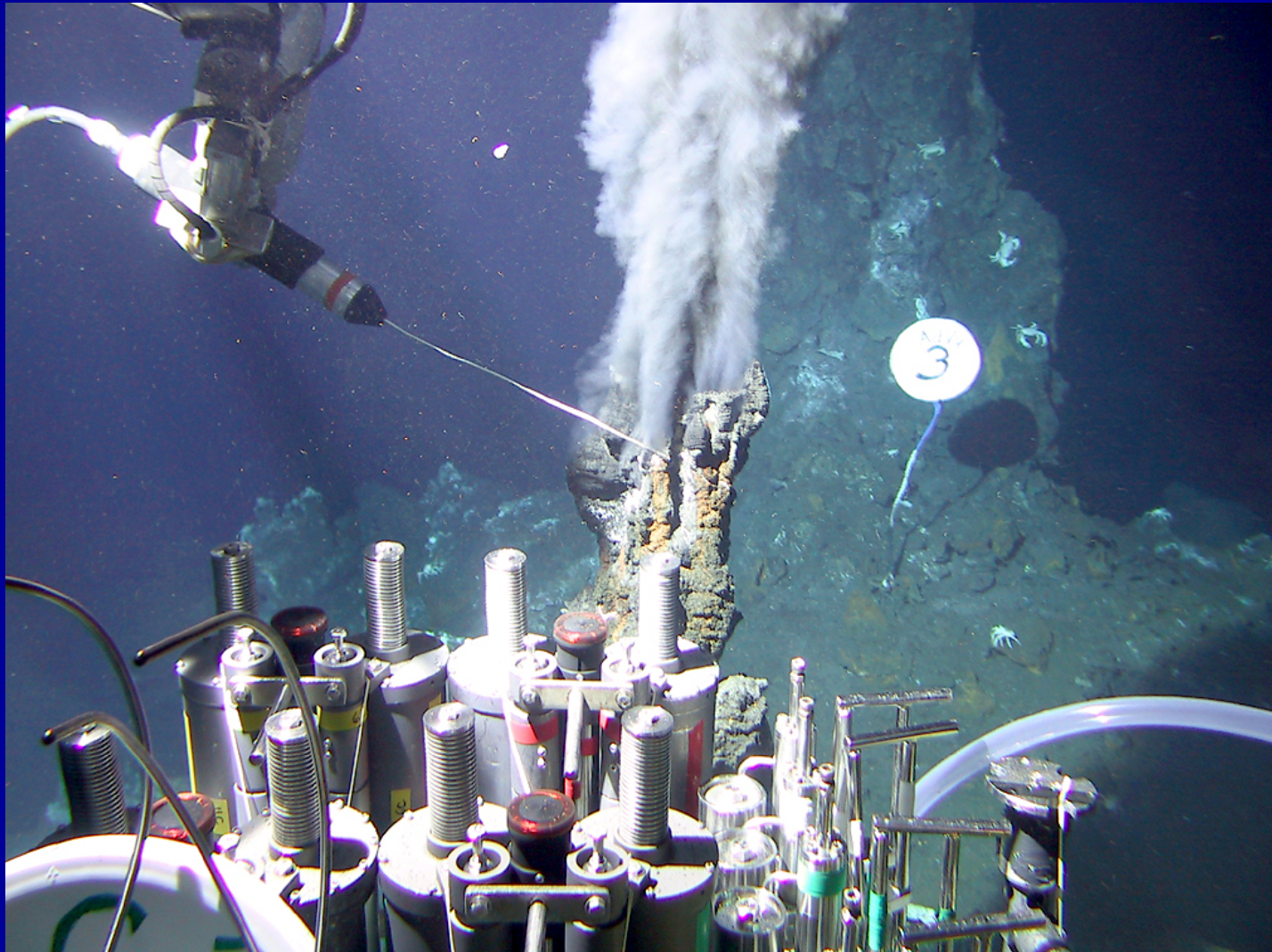


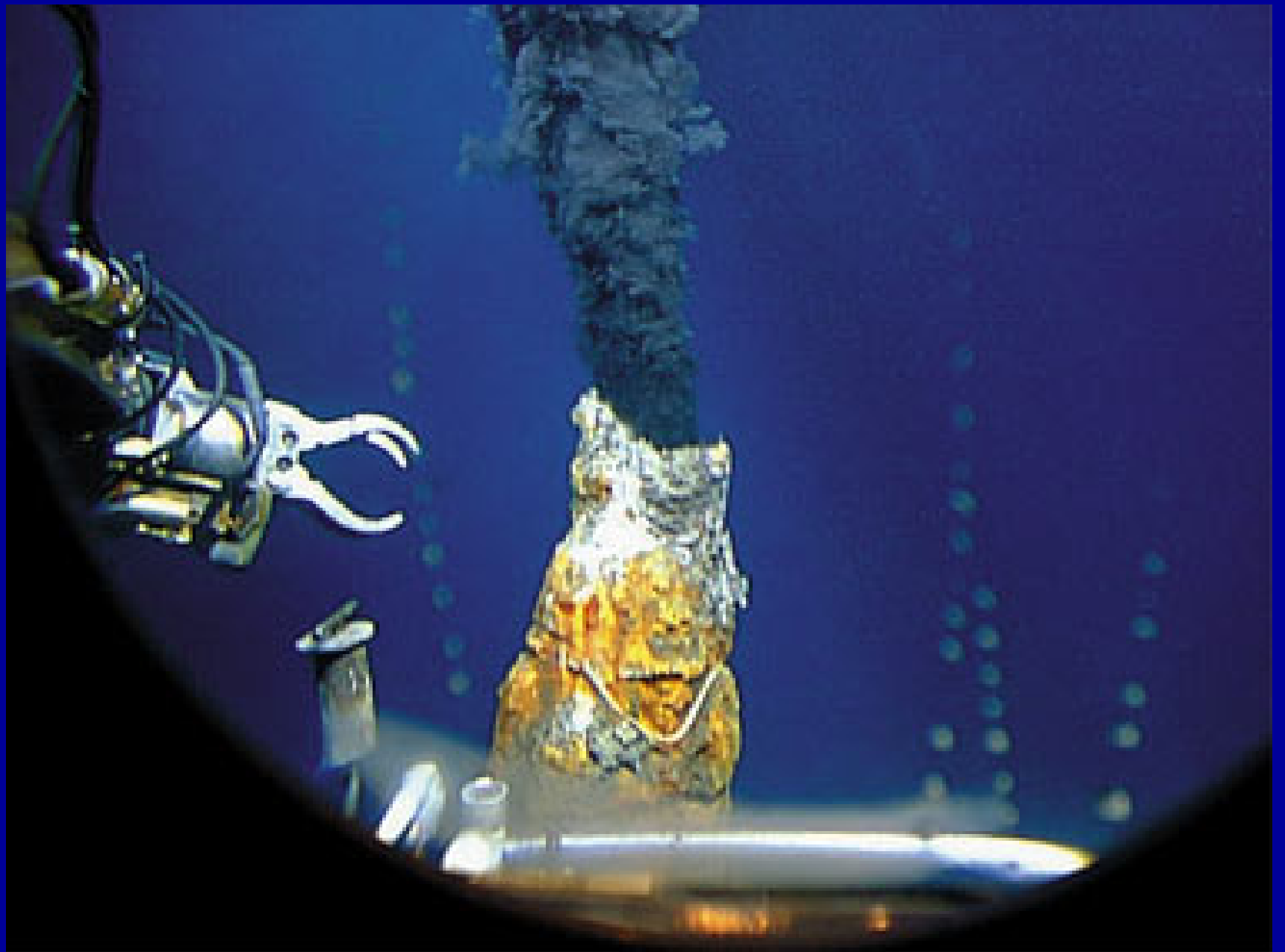
Deep
Submergence
Vehicle
Alvin





Collecting Samples from ALVIN



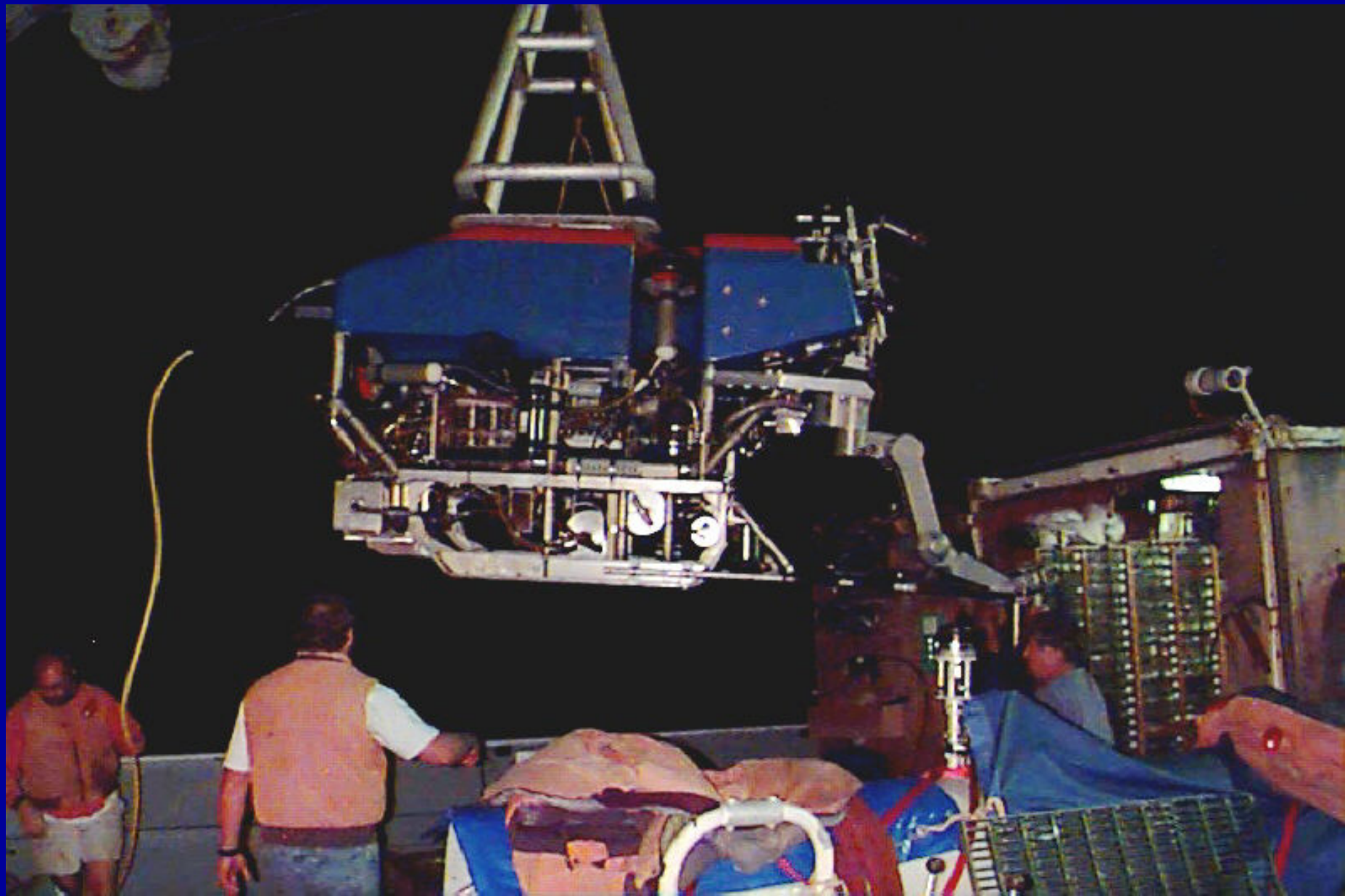


Cup Crushing!



ROV Jason





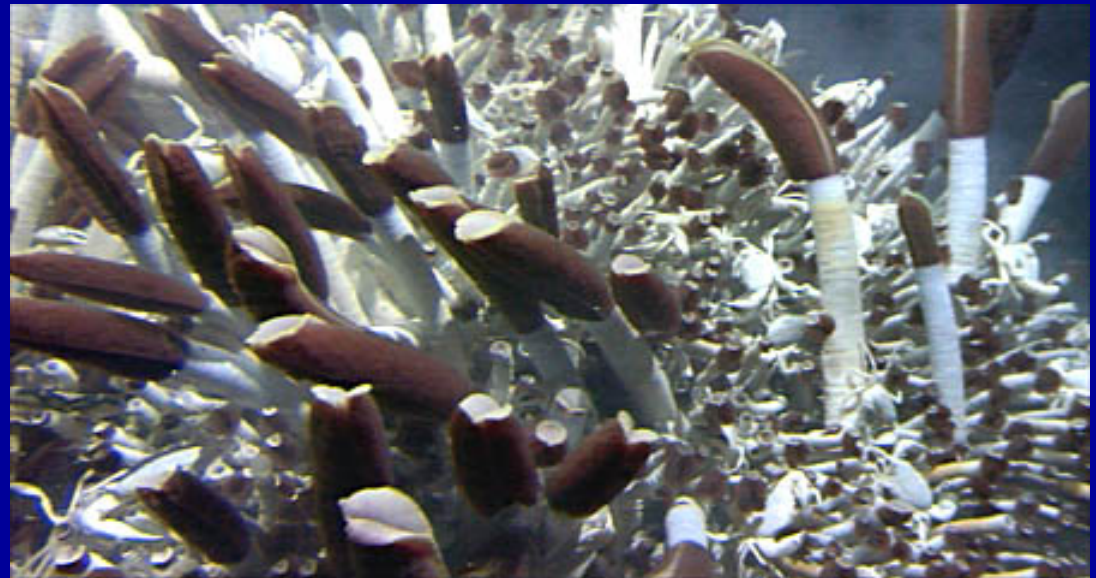
Specimens from the deep

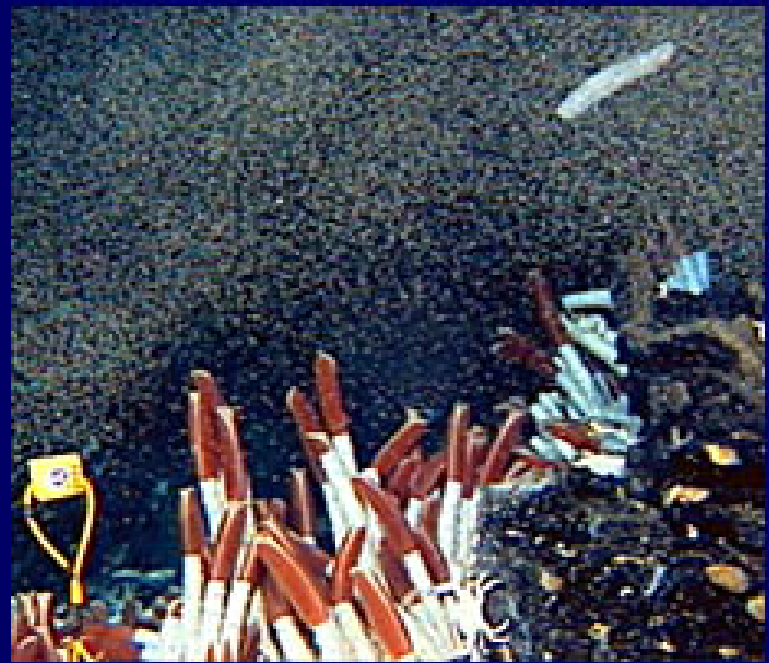


Rocks
from the
Seafloor



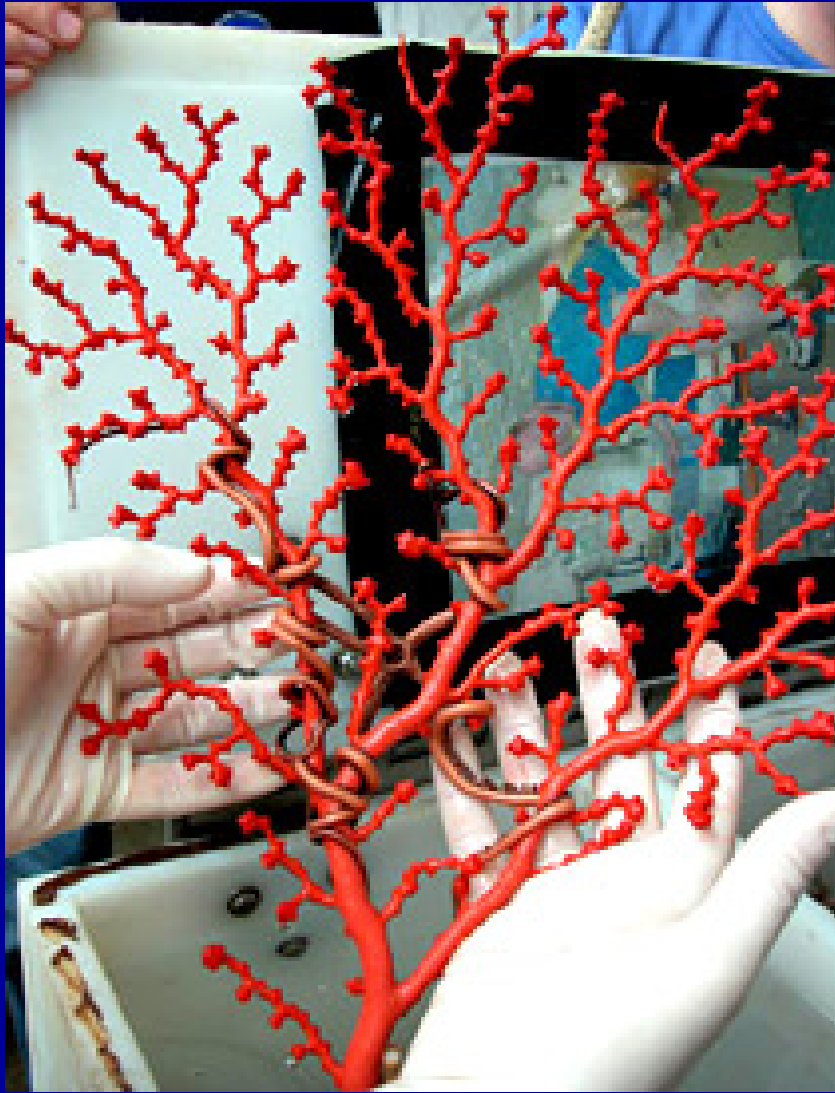
Zoarcid Fish











Life Aboard a Ship



Staterooms





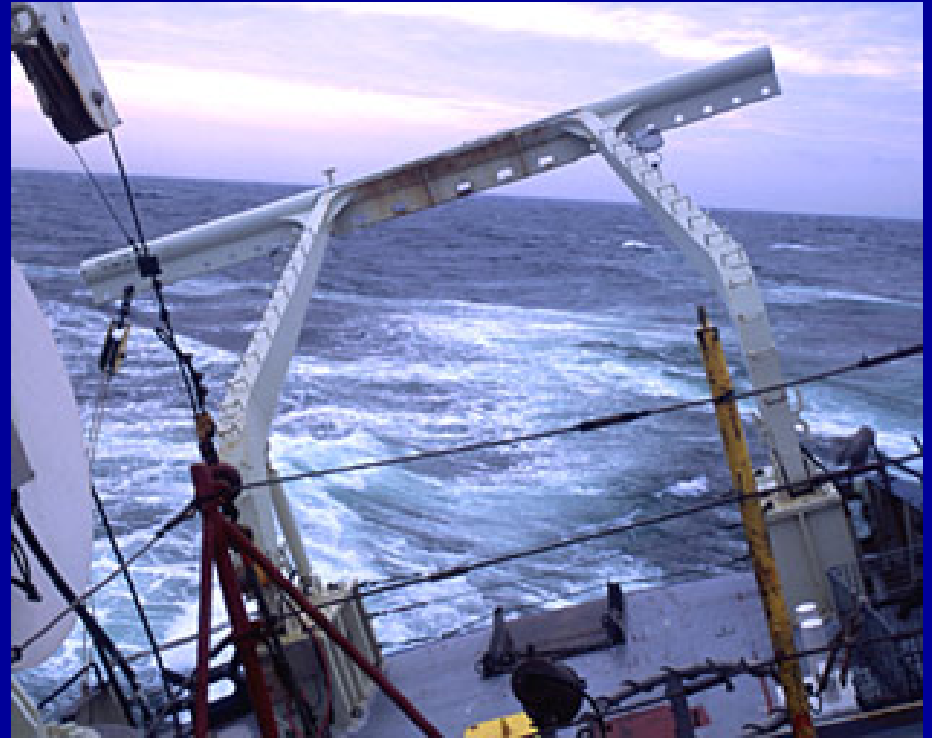
Exercising and Games



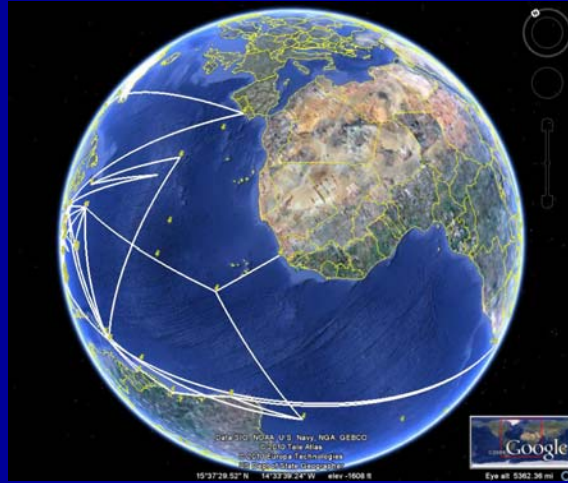
Rough Seas



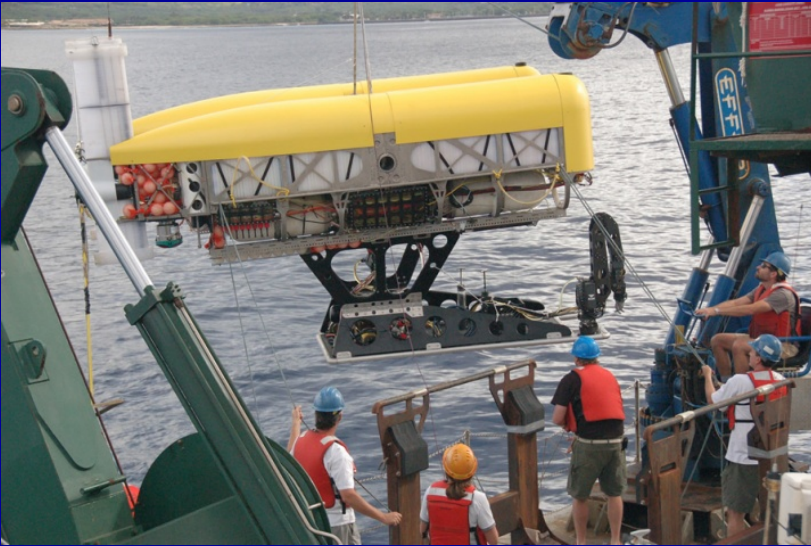
More Rough Seas



Where are the ships in 2010?



Nereus: Mariana Trench



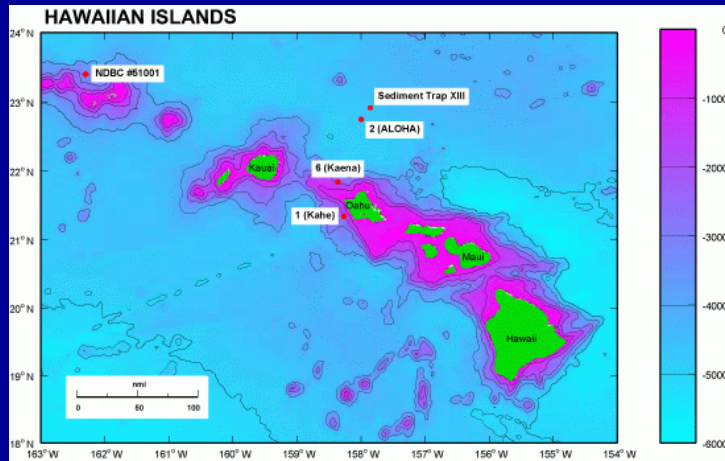
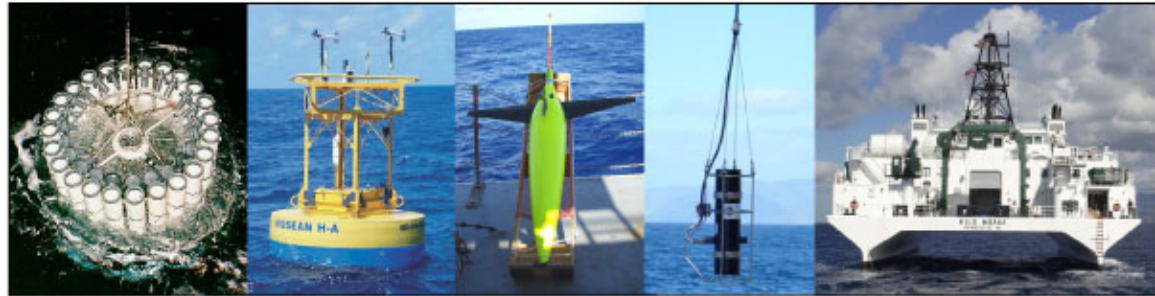
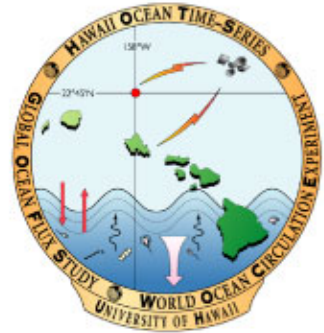
Nereus at launch (photo credit: WHOI)



Collecting sediment from the
bottom of the Mariana Trench
(photo credit: WHOI)

There are lots of videos here: <http://www.whoi.edu/page.do?pid=33775> if you want to show them.

Hawaii Ocean Time-series (HOT)



Long Core



Long core being deployed off the Knorr (photo credit: WHOI)



The 150 ft long core barrel (photo credit: WHOI)



Recovered sediment (photo credit: WHOI)

California Cooperative Oceanic Fisheries Investigations (CalCOFI) – New Horizon



Rough Seas



Launching the work boat



Manta recovery



Multicorer

All photos from the CalCOFI website:
<http://www.calcofi.net/sec-media/ccphotos.html>

R/V *Endeavor* – Haiti Cruise



Group shot on Haiti cruise



Sam debriefing



Chile Cruise - *Melville*



Science party (www.siosearch.com – cruise blog)



Melville – credit: SIO/UCSD



Ship Tracking Map from www.siosearch.com – epicenter circled.

GOM Oil Spill - *Pelican*

**Vernon Asper,
UNOLS Chair**



Vernon Asper onboard the *Pelican* assessing the oil spill (photo: PRIs The World, <http://www.theworld.org/2010/05/13/impact-of-oil-spill-on-marine-life/>)



The *Pelican* in the Gulf of Mexico (photo: PRIs The World, <http://www.theworld.org/2010/05/13/impact-of-oil-spill-on-marine-life/>)

The Future

New Research Vessels



R/V Sikuliaq: Sikuliaq is an Inupiaq name meaning "young sea ice" or "young sea ice that is safe to walk on."

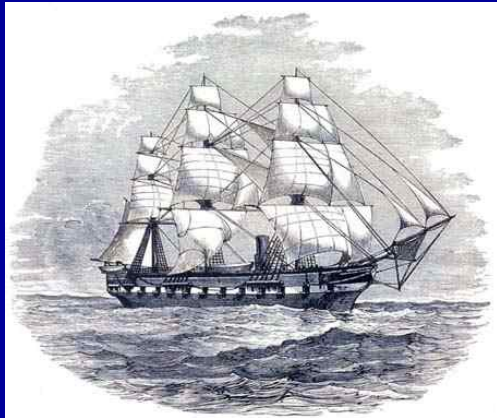
<http://www.sfos.uaf.edu/arrv/about/>

The Navy has recently awarded contracts for the design and construction of two new Ocean Class ships.



UNOLS 2010 Goal - GREEN SHIPS AND BLUE WATERS

GREENING THE UNOLS FLEET



Solar Sailor:
<http://www.solarsailor.com/>

<http://www.geology.19thcenturyscience.org/books/hmsc.jpg>





Thank you!