



UNOLS NEWS

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Summer 2001

UNOLS Council

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Message from the UNOLS Chair...

In the most recent newsletter I noted the state of academic fleet renewal planning under the aegis of the interagency Federal Oceanographic Facilities Committee (FOFC), in which UNOLS (which is not a federal agency) is a non-voting participant. Since then UNOLS has taken web-based soundings of community reactions to the initial FOFC draft plan. The Council and Fleet Improvement Committee (FIC) have prepared a response to this draft, basing it heavily on those community reactions, and have forwarded this response to FOFC. All of this interaction remains available on the UNOLS website - go to the UNOLS homepage and click on "FOFC Draft Academic Fleet Renewal Plan - UNOLS Response." The current status is that FOFC is considering the UNOLS feedback and working on a next draft.

In that newsletter I wrote "But the matter of fleet renewal will not be concluded with one draft or one survey. It is an ongoing topic for the future, and there will be other drafts, opportunities for comment, and needs for scientists to participate in a variety of planning efforts. Various UNOLS bodies, especially FIC, will need active new members as terms of current members expire. In all of these efforts the importance of thoughtful input and participation by knowledgeable seagoing members of the UNOLS community cannot be overemphasized. Please stay in contact with the fleet renewal issue in the months and years ahead, and lend a constructive hand when you can." At this point in time I would simply underscore that last sentence. We've only just begun.

By Bob Knox, UNOLS Chair

Highlights

- Comments from the Chair
- 2001 Annual Meeting
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- Dive and Discover
- UNOLS Calendar



UNOLS 2001 ANNUAL MEETING
8:30 A.M., Friday 14 September 2001
National Science Foundation, Room 1235
4201 Wilson Boulevard Arlington, VA
Keynote Speaker – Vice Admiral Lautenbacher, CORE President



UNOLS 2001 ANNUAL MEETING

Vice Admiral Lautenbacher, CORE President, to Provide Keynote Speech

The community is invited to attend the 2001 UNOLS Annual Meeting. Bob Knox, UNOLS Chair, will preside over the meeting and will present this year's accomplishments and ongoing UNOLS activities. He will outline the goals and priorities for the upcoming year. Additionally, reports will be provided by Committee Chairs and Federal Agency representatives. Meeting discussion items include long-range fleet planning, fleet renewal efforts, and UNOLS quality of service initiatives. Various other issues of interest will be addressed including ISM compliance, ocean observatories and their facility needs, next generation wires, new ship design and construction efforts, the UNOLS standard van design, and a SeaNet update.

Vice Admiral Conrad C. Lautenbacher, Jr., U.S. Navy (Retired), President of the Consortium for Oceanographic Research and Education (CORE), will provide this year's keynote address. Vice Admiral Lautenbacher became CORE President in March of this year. The mission of CORE, an association of 63 U.S. oceanographic research institutions, universities, laboratories and aquaria, is *"To promote, develop and support efforts to advance knowledge and learning in the science of oceanography and to disseminate such knowledge to the scientific community and to the public."* Vice Admiral Lautenbacher came to CORE with an extensive military career that included positions of leadership, command, high-level staff assignments as well as operational experience. Before retiring from the Department of the Navy, he served as Deputy Chief of Naval Operations in charge of resource allocation and requirements development for the Navy. Vice Admiral Lautenbacher attended Harvard University receiving M.S. and Ph. D. degrees in Applied Mathematics. He was selected as a Navy Federal Executive Fellow and served at the Brookings Institute.

The Annual Meeting will include membership votes for proposed Charter revisions, Council elections, and membership applications. Two institutions have applied for UNOLS membership, the Caribbean Marine Research Center (CMRC) <<http://www.cmrc.org>> and the Romberg Tiburon Center for Environmental Studies – San Francisco State University <<http://rtc.sfsu.edu>>. Information about each institution is contained on their website. A vote to accept them as members is required.

The full meeting agenda as well as additional information about Vice Admiral Lautenbacher is included on the UNOLS website at <http://www.unols.org/annual/anumt109/anuag109.html>.

Proposed Revisions to the UNOLS Charter for Membership Vote

A proposed revision to the UNOLS Charter will be presented for membership vote at the 2001 Annual Meeting. The revision contains recommended changes to accomplish the goal of creating a rotation from Vice Chair (Chair-Elect) to Chair to Immediate Past Chair (IPC). This is similar to systems used by other organizations such as the American Geological Union (AGU) and it is hoped that it will enhance UNOLS' ability to recruit good candidates for Vice Chair (Chair-Elect) and Chair in the future. The proposed plan is based on two-year terms as Vice Chair (Chair-Elect), Chair and IPC.

The second recommended change to the Charter is to include a section that clearly defines the procedure to be used in the situation of a run-off election when no candidate receives a majority of the votes in a Council election. The proposed procedure was used at last year's annual meeting. The proposed Charter revision can be found in its entirety on the UNOLS website at <http://www.unols.org/annual/anumt109/anuag109.htm#Encl1>.

Elections to be Held for UNOLS Council Positions

Elections will be held (in accordance with the UNOLS Charter) at the UNOLS Annual Meeting on 14 September to fill expiring Council terms. UNOLS Nominating Committee members Denis Wiesenburg (Chair), Dennis Hansell, and Curtis Collins have assembled a slate of candidates for the UNOLS Council positions to be filled. Additional information about each of the candidates can be found on the UNOLS website at: <<http://www.unols.org/annual/anumt109/slate01.htm>>.

UNOLS COUNCIL SLATE- 2001

NON-OPERATOR REPRESENTATIVE (3 year term):

Dr. Greg Cutter	Old Dominion University
Dr. Charles Flagg	Brookhaven National Lab.
Dr. J. Val Klump	U. of Wisconsin-Milwaukee

AT-LARGE (3 year term) - individual affiliated with any UNOLS Member Institution:

Dr. Bruce Corliss	Duke University
Dr. Daniel Fornari	Woods Hole Oceanographic Inst
Dr. Dana Kester	University of Rhode Island



Arctic Icebreaker Coordinating Committee (AICC) News

By Dr. Lisa Clough, AICC Chair

The 2001 field season is turning out to be a busy one for the Coast Guard icebreakers (HEALY, POLAR SEA, and POLAR STAR). The POLAR STAR completed a successful cruise to the St. Lawrence Island polynya in early spring. HEALY finished up science trials in May with continuing support from the UNOLS community, and is currently engaged north of Norway on the first of two funded science missions that will take place in July to November 2001. With the increasing demand for funded science on the POLARs, and the beginning of funded science missions for HEALY, it has become clear that there is a role for the AICC to play in evaluating the scientific success of the missions. We will work with NSF, the Coast Guard (CG) and ARVOC (the Antarctic counterpart to the AICC) to develop post-cruise assessment procedures.

The AICC receives updates during funded Arctic cruises, and continues regular e-mail communication between meetings. We held a full meeting in January on board HEALY, which included presentations from Terry Tucker concerning the ice trials portion of HEALY testing, and POPDIV—the division of the Coast Guard which provides helicopter support for all polar missions. We were also able to complete our series of icebreaker tours with a trip to the POLAR STAR. In February several AICC members and Coast Guard personnel attended a Shelf Basin Interactions (SBI) workshop where we learned a bit more about

the anticipated science requirements for SBI Phase II works which will begin in spring 2002. SBI Phase II is just one component of what looks to be a full schedule for all three icebreakers in 2002.

The Coast Guard continues to modify and improve all three ships, and is working to standardize equipment across all the icebreakers (e.g., the same autosals, debubblers, and CTDs are currently in use on all the ships). The CG has also obtained new LCVPs and an Arctic survey boat to be shared between all three icebreakers.

With regards to HEALY-specific science testing concerns, the AICC continues to work on a synopsis of the 2000 and 2001 HEALY testing program from a science perspective, and we are pleased to announce that the HEALY cruise-planning document is now on-line at the UNOLS website:

<http://www.uscg.mil/pacarea/iceops/cpmanual/cpmanual.htm>.

The planning manual includes a wide range of material, everything from a glossary of nautical terminology to detailed systems information. We hope to have similar planning manuals for the POLAR-class breakers available soon.

Continuing specific concerns for the AICC that were again discussed at the January meeting included oversight of technical and equipment requirements for upcoming icebreaker cruises. For example the shipboard ADCPs were not needed for the planned 2001 science, but we

anticipate they will get heavy use in 2002, so determining what options are available for upgrading the ADCPs is now a high priority. We are also considering what types of underway measurements might productively and reliably take place whenever one of the icebreakers is underway. And we continue to work towards refining the AICC's role in long-term use planning, including use of websites

<http://www.unols.org/aicc/healyuse.pdf> and community meetings at AGU. With regards to the short-term icebreaker scheduling process, Mike Prince (UNOLS Executive Secretary) and Dave Forcucci (Science and Logistics Coordinator for HEALY) volunteered (or is that *were* volunteered?) to attend the annual scheduling meeting on AICC's behalf.

That sums up the winter and spring 2001 AICC highlights. We wish to acknowledge the contributions of the three AICC members who are cycling off the committee- Joe Coburn (Woods Hole Oceanographic Institution), Glenn Cota (Old Dominion University), and Dan Lubin (Scripps Institution of Oceanography). We look forward to the contributions of the new AICC members who will come on board in September 2001 for our next meeting in Arlington, VA on September 10th and 11th. The new members are Robert Bourke (Naval Post Graduate School), Margo Edwards (U. Hawaii), and Peter Minnett (U. Miami, RSMAS).



News from the DEep Submergence Science Committee (DESSC)

By Dr. Patricia Fryer, DESSC Chair

This spring the DESSC pursued efforts to follow-up on the technology recommendations of the Developing Submergence Science for the Next Decade (DESCEND) workshop. An evening meeting held at the Oceanology Conference in mid-April helped define directions for more detailed discussions. The meeting (coordinated by Jim Bellingham, Annette DeSilva and Dan Schwartz) consisted of an introduction and free flowing exchange on submergence facility needs and issues. Submergence technology needs and problems were identified. These are listed in the meeting report posted on the UNOLS website at <http://www.unols.org/dessc/descend/followon/april04.htm>. Access and funding of assets were also discussed at the meeting. This continues to be a concern within the community.

Further pursuit of this follow-up activity is continuing. DESSC is currently engaged in synthesizing the efforts of various technology workshops that have been held over the last few months and is pursuing linkages with groups planning technology workshops in the near future. DESSC is interested in providing a means by which the submergence aspects of these meetings may be explored in greater detail and by which a roadmap for future directions in technology development may be defined.

DESSC held its summer meeting at Woods Hole Oceanographic Institution (WHOI) at the end of May. At this meeting a summary of operations of other deep submergence activities was presented for MBARI, MPL, NURP, ROPOS and the US Navy. The agencies reported on recent activities and trends including the establishment of the NOAA Ocean Exploration program. The National Deep Submergence Facility (NDSF) report included an update on the overhaul of ALVIN, which was completed in early June. The ALVIN passed recertification in mid-June

and is currently at work in the Atlantic. Upgrades to the NDSF ROVs continue on schedule and are expected to be complete by mid 2002.

DESSC is committed to providing the community of marine biologists with a higher level of interaction with the National Deep Submergence Facility. To this end DESSC has applied to hold and has been granted a Special Session at the ASLO/AGU meeting in Honolulu in 2001. The Special Session description is as follows:

"Recent advances in understanding submarine biosystems: Submergence Research"

Session Description: The use of submersibles and remotely operated vehicles provides a mechanism by which the marine biologist and geochemist can perform field work in extreme environments, collect samples, run experiments, and establish observatories on the sea floor and in the water column. This session will highlight recent advances in marine biology and geochemistry as pertains to systems investigated with these submergence vehicles including ridge crest studies, convergent and passive margin studies and research in the water column. Presentations on upgrades to existing vehicles and projected uses for the future will provide attendees with up to date information on the state of the art in submergence vehicles and systems. There will also be an opportunity for scientists to exchange feedback with other users of these vehicles and systems and with facility operators.

DESSC also discussed the status of archiving of data at the NDSF and discussed scheduling issues for both 2002 and beyond. Minutes for the DESSC meetings will be available soon at the UNOLS web site at the following URL: <http://www.unols.org/dessc/>.

Ship Scheduling Committee (SSC) News

By Dr. Joe Ustach, SSC Chair

The Ship Scheduling Committee met at NSF on July 19, 2001 to begin the formal scheduling process for CY 2002. A goodly number of schedulers were present, including Scheduler Emeritus, Mike Rawson. Most of the NSF funding decisions were completed which made scheduling those cruises somewhat cut and dried. However, as always, there were questions, such as, which ship was needed, transits, and competing time slots for assets. Both the Navy and NOAA are waiting for Congress to get appropriations resolved; so neither has made many funding decisions. That left many schedules with pending cruises. Until those come through, we won't know what the schedules will look like with any certainty. What does look certain, although I hope I'm wrong, is that there will be fewer science days in 2002 than in 2001. I hope my next report, after the September meeting, will have a more quantitative flavor than this one.



Research Vessel Operators' Committee (RVOC) Plans for 2001 Annual Meeting

By Mr. Steve Rabalais, RVOC Chair

Plans are underway for the 2001 RVOC/RVTEC meeting at the University of Rhode Island on 23-25 October 2001. This will be the first time that both groups meet together to discuss issues of mutual interest. On the first day, October 23rd, both groups will gather in the Corless Auditorium on the University of Rhode Island, Narragansett campus to hear welcoming remarks from representatives of the host institution. UNOLS and Agency (NSF, ONR, NOAA, NAVO, USCG, etc.) reports will follow. The remainder of the day will be dedicated to discussion topics of interest to both groups.

Recent developments with the Quality of Service Initiative (QSI) will be presented as the first discussion topic item along with changes to the Post Cruise Assessment forms, which represent a major component of the QSI. A Quality of Service Program for the fleet was recommended by the Academic Fleet Review which was completed 1999. It is likely that UNOLS operators (RVOC) and marine technicians (RVTEC) will be the two groups most affected by this program. This is the first time that both committees will be given the opportunity to participate in joint discussions about the new QSI.

An increase in the number of large over the side scientific payloads on UNOLS vessels has generated interest in the development of new standards for

load handling equipment in the fleet. Two wire standards working groups have been formed and will give updates on their progress at the meeting. Tom Althouse (SIO) will discuss his group's work toward the development of safe working loads for E/M cable and Jon Alberts (WHOI) will review efforts to develop Science Mission Requirements (SMRs) for the new generation of UNOLS wire ropes and cables. James Stasny, Dynacon Inc. will introduce their state-of-the-art handling equipment (cranes and winches).

The final joint meeting discussion topic will be the International Ship Management (ISM) Code and how various groups within the community have implemented the new standards. Currently only UNOLS Class I vessels are required to comply with ISM standards. Morgan Terrell (University of Washington) will represent the Class I operators and give an overview of their programs. Paul Stone, Southampton Oceanography Centre, Southampton, U.K. will cover ISM compliance from the foreign operators perspective and Doug Friske, NOAA, will provide information on compliance in the U.S. public vessel fleet.

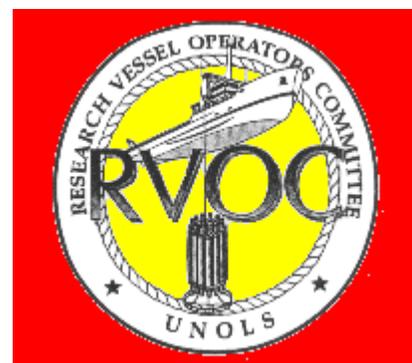
A joint RVOC/RVTEC social event is planned after the close of the first day of business.

On days two and three RVOC will meet in Newport, R.I. and RVTEC will continue their meeting

agenda at the URI campus. Regular business items, including Ship Operations Cooperative Program (SOCP) updates, pay compensation on small UNOLS vessels, reviews of personnel and buyers conferences, along with special reports by operators building or refitting vessels and operators with issues of special concern to RVOC will be presented during the day two RVOC morning session. Special presentations on Human Factors in Ship Design, the new Medical Advisory Service (MAS) contract, Insurance and Admiralty Law, and fuel cells will complete the final component of the open admissions segment of the 2001 RVOC meeting. As in the past, day three will be reserved for Marine Superintendents only, to discuss issues impacting fleet operations.

The agenda for the RVOC Meeting can be seen on the UNOLS website at:

<http://www.unols.org/rvoc/rvomt10/rvoag10.html>.



Research Vessel Technical Enhancement Committee (RVTEC) News

Current activities of the RVTEC are focusing on plans for their 2001 Annual Meeting to be held on October 23-25 at the University of Rhode Island. As reported in the RVOC article by Steve Rabalais (page 5), this year's RVTEC meeting will include a joint one-day session with RVOC. The details of that session are included in the RVOC article. Day-two of the RVTEC meeting will start with a discussion on base levels of technician/instrumentation support that should be provided on UNOLS vessels. This will be followed by various technical breakout sessions. A few of the topics being considered for the sessions include, wireless data communication, data acquisition/LabView, onboard ultra-pure water systems, and debubbling systems.

The third day of the meeting will provide updates on ADCP, SeaNet and the MATE program. There will be a "show and tell" opportunity. RVTEC Subcommittee reports will be provided. The agenda for the RVTEC meeting is posted on the UNOLS website at <http://www.unols.org/rvtec/rvtmt110/rvtag110.html>.



Long Range Planning for the UNOLS Fleet – FIC's Role

The Fleet Improvement Committee (FIC) activities are focused on long-range planning for the UNOLS Fleet. Associated with this effort is the need for the Committee to provide suitable materials (Science Mission Requirements, white papers, etc) to the agencies, and other organizations such as NOPP and FOFC. At the FIC fall meeting, utilization projections will be examined as well as the estimated retirement dates for UNOLS vessels. The new classification of research vessels as defined by the FOFC draft long-range fleet plan will be examined. Observatory facility needs will also be considered. Based on all of these factors, the Committee will identify fleet renewal efforts that must be initiated now. The FIC plans to keep the community involved in these activities via letters to EOS and other appropriate medias.

Quality of Service Initiative (QSI) Update

UNOLS and the federal agencies continue in their efforts to improve the Quality of Service for the UNOLS fleet. Various efforts are underway. NSF has been funding fleet improvements, as well as training efforts. UNOLS will strive for increased feedback as well as improved constructive criticism from the users. The current assessment form will be reexamined to improve its design and questions. Methods for submittal will also be examined. A subcommittee has been identified to oversee this effort.

Ship Inspection Program to Resume in the Fall

In July, the National Science Foundation signed a contract with Jamestown Marine Inc. for the UNOLS ship inspection program. The first inspections will likely begin in September with the ships that have gone the longest without an inspection. The inspections will be conducted in much the same manner as in previous years but with an added emphasis on the science capability of the ship. The NSF Ship Inspection Program Guidelines and the UNOLS Research Vessel Safety Standards remain the backbone of the inspection. Reporting requirements for both the ship operators and the inspectors will be shifting to an electronic format.

Updated Winch and Wire Handbook to be Distributed in Early Fall

The update to the Winch and Wire Handbook (also known as the Yellow Book) is near completion. The updated book will have a blue cover so it will probably be referred to as the "Blue Book". In addition to hardcopy editions, the handbook will also be available on CD-ROM. Distribution of the handbook is planned for September. If you wish to receive a copy, please contact the UNOLS Office, office@unols.org.



The US Academic-Navy/NAVOCEANO Gravimeter Shared Use Program: Opportunities for Utilization of High Precision Gyro-stabilized Gravimeters for Science

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In 1995, a Memorandum of Understanding (MOU) was established between The National Science Foundation (NSF), The US Navy's Naval Oceanographic Office (NAVOCEANO), and The US Navy's Office of Naval Research (ONR). The MOU provides guidelines for use of available NAVOCEANO gravimeters for U.S. academic scientific research. The MOU was renewed last summer for an additional five-year period to 2005.

The high cost of purchasing gyro-stabilized gravimeters, and the increasing need for scientists to have access to these instruments to solve important geological and geophysical

research problems has led to a collaboration between the NSF, ONR and NAVOCEANO for the shared-use of available NAVOCEANO gravimeters for scientific research. The MOU defines a coordination process between the federal agencies and academic institutions to effectively and efficiently utilize Navy owned gravimeters for academic research.

This shared use program has provided an exceptional opportunity for U.S. scientists to have access to high-quality gravimeters for research programs requiring operations in remote areas and using innovative platform installations (Table 1).

NAVO gravimeters have been used to acquire high-resolution geophysical data in the research submersible ALVIN (Cochran et al., 1999; Pruis and Johnson, 1998; Gilbert and Johnson, 1999; Yoerger et al., 2001), on US Navy nuclear submarines transiting the Arctic Ocean basin (SCICEX Program- Coakley et al., 1999; Edwards, 2000; Cochran et al., 2000; Edwards et al., 2001), on a research vessel in the Southeast Indian Ocean (e.g. Grindlay et al., 1996; 1998), and on a Twin-Otter aircraft for aerogravity surveys around Antarctica (e.g. Bell, Blankenship, Richter, & Studinger citations noted in publications list).

Table 1: ACADEMIC USE OF NAVOCEANO GRAVIMETERS

Date	Institution	PI	Ship	Field Area
APR 1994	WOODS HOLE	FORNARI	ALVIN	E. PACIFIC RISE
OCT 1995	LAMONT	BELL	SOAR	ANTARCTICA
JAN 1995	LAMONT	COAKLEY	SCICEX	ARCTIC
AUG 1995	WASHINGTON	JOHNSON	ALVIN	JUAN DE FUCA
NOV 1996	LAMONT	BELL	SOAR	ANTARCTICA
FEB 1996	PUERTO RICO	GRINDLAY	KNORR	S.ATL/INDIAN O.
MAR 1996	TULSA	MICHAELS	KNORR	S. AFRICA / S.ATL
JUN 1996	LAMONT	COAKLEY	SCICEX	ARCTIC
NOV 1997	LAMONT	BELL	SOAR	ANTARCTICA
JUL 1997	LAMONT	COAKLEY	SCICEX	ARCTIC
AUG 1997	WOODS HOLE	MCNUTT	REVELLE	HAWAII
OCT 1997	NOAA	FOX	R. BROWN	W. COAST US
JUL 1998	WASHINGTON	JOHNSON	ALVIN	JUAN DE FUCA
NOV 1998	LAMONT	BELL	SOAR	ANTARCTICA
JAN 1999	LAMONT	COAKLEY	SCICEX	ARCTIC
OCT 1999	LAMONT	BELL	SOAR	ANTARCTICA
JAN 2000	WOODS HOLE	FORNARI	ALVIN	E.PACIFIC RISE
SEP 2000*	WOODS HOLE	LIN	KNORR	S.ATL/INDIAN O.
OCT 2000	LAMONT	BELL	SOAR	ANTARCTICA
MAY 2000*	SCRIPPS/WHOI	VARIOUS	REVELLE	SOUTH PACIFIC

(* Long Term Deployments on these ships)



Investigators using the NAVO shared use gravimeters have made significant contributions to our understanding of both regional gravity in remote regions (Arctic, Antarctic and Southern Atlantic and Indian Oceans), as well as detailed gravity studies from the submersible ALVIN on the East Pacific Rise and the Juan de Fuca Ridge. Figure 1 is a map showing coverage of SOAR aerogravity data acquisition using the NAVO Bell BGM-3 gravimeter in Antarctica. Nearly two million gravity data points have been furnished to the NAVO archives as a result of share use programs carried out over the past six years. Research funding for these field programs has been largely provided by several programs within the

National Science Foundation. Figure 2 includes photographs showing examples of installations of NAVO BGM-3 gravimeters in support of US academic science. A list of publications resulting from academic use of NAVO gravimeters is appended to this article.

Utilization of NAVOCEANO gravimeters for science entails a government approved overhead charge tied to the length of time that a gravimeter is used in the field. Currently, this charge is \$8000./month of use. This charge rate has determined by the participating federal funding agencies and NAVOCEANO, and is normally supported within the context of a Principal Investigator’s (PIs) science research proposal.

Funds derived from this charge to academic programs are used to support gravimeter operations, repair instruments and purchase needed replacement parts. All data acquired using the NAVOCEANO gravimeters are shared with the U.S. Navy and placed in their database.

Scientists interested in finding out more about how they can propose to utilize NAVOCEANO gravimeters in their research and the current charge fee for using these instruments should contact Randy Herr (NAVOCEANO) or Dan Fornari (WHOI) at the following email addresses: R. Herr (herr@navo.navy.mil), D. Fornari (dfornari@whoi.edu).

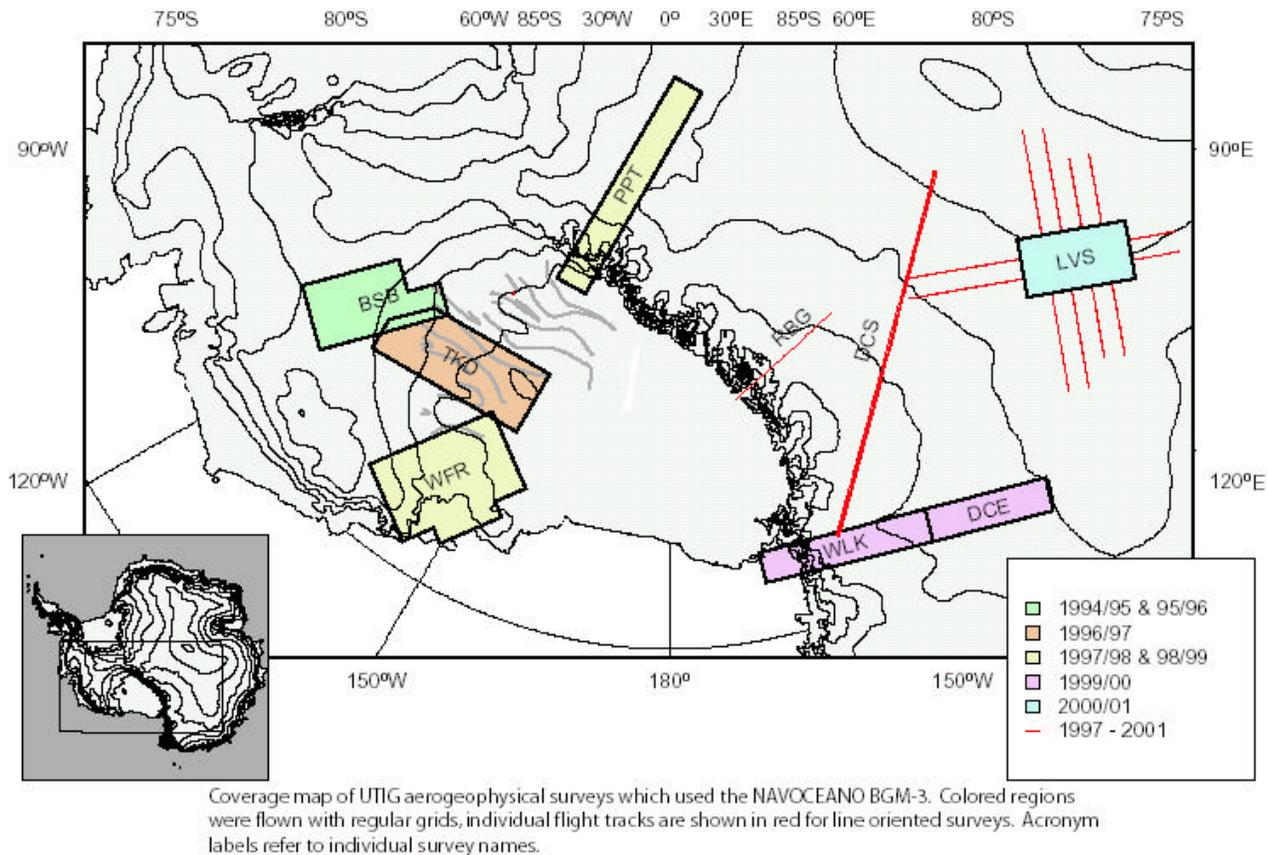


Figure 1- Map showing coverage of SOAR aerogravity data acquisition using the NAVO Bell BGM-3 gravimeter in Antarctica from Tom Richter, UTIG





a



b



c



d



e

Figure 2 - Photographs showing examples of installations of NAVO BGM-3 gravimeters in support of U.S. academic science. a) Randy Herr (right) and Dave Olds of the ALVIN group preparing to install the NAVO meter in the submersible ALVIN. b) Dave Olds getting ready to pass the gyrostabilized table down through ALVIN's hatch (a & b photos by D. Fornari- WHOI). c) Moving the NAVO meter from the hut into the Twin-Otter plane in support of SOAR programs. d) Passing cables and electronics into the plane (c & d photos from T. Richter, UTIG). e) view of the NAVO BGM-3 meter installed in the USS HAWKBILL in support of SCICEX research (photo by M. Edwards - UH-SOEST).

Publications Resulting from Academic use of NAVO Gravimeters:

- Blankenship, D. D., D. L. Morse, C. A. Finn, R. E. Bell, M. E. Peters, S. D. Kempf, S. M. Hodge, M. Studinger, J. C. Behrendt, and J. M. Brozena. Geological controls on the initiation of rapid basal motion for West Antarctic ice streams: A geophysical perspective including new airborne radar sounding and laser altimetry results. In: Alley, R. B. and R. A. Bindschadler eds., The West Antarctic Ice Sheet: Behavior and Environment, American Geophysical Union, 105 – 121, 2000.
- Bell, R. E., V. A. Childers, R. A. Arko, D. D. Blankenship, and J. M. Brozena. Airborne gravity and precise positioning for geologic applications. *Journal of Geophysical Research*, 104, 15,281 – 15,292, 1999.
- Bell, R.E., D.D. Blankenship, C.A. Finn, D.L. Morse, T.A. Scambos, J.M. Brozena and S.M. Hodge. Influence of subglacial geology on the onset of a West Antarctic ice stream from aerogeophysical observations. *Nature*, 394, 58-62, 1998.
- Bell, R.E., D.D. Blankenship, C.A. Finn, D.L. Morse, T.A. Scambos, J.M. Brozena and S.M. Hodge. Aerogeophysical evidence for geologic control on the onset of a West Antarctic ice stream. Fourth West Antarctic Ice Sheet (WAIS) Science Workshop, Sterling, Virginia, September 10-13, 1997.
- Bell, R.E., D.D. Blankenship, C.A. Finn, D.L. Morse and T.A. Scambos. Aerogeophysical evidence for geologic controls on the onset of a West Antarctic ice stream. Third West Antarctic Ice Sheet (WAIS) Science Workshop, Sterling, Virginia, September 25-27, 1996.
- Bell, R.E., D.D. Blankenship and C.A. Finn. Aerogeophysical evidence for geologic control on ice streaming. VII International Symposium on Antarctic Earth Sciences, Siena, Italy, September, 10-15, 1995.
- Bell, R.E., V.A. Childers, J.M. Brozena and D.D. Blankenship. Airborne gravity and precise positioning from a research aircraft. VII International Symposium on Antarctic Earth Sciences, Siena, Italy, September, 10-15, 1995.
- Bell, R.E., M. Studinger, D.D. Blankenship and C.A. Finn. Linking the lithosphere, crustal structure and ice sheets, EOS, Transactions of the American Geophysical Union, 79, F215, 1998.
- Bell, R.E., D.D. Blankenship, C.A. Finn, D.L. Morse, T.A. Scambos, J.M. Brozena and S.M. Hodge. Linking basal geologic conditions to the onset of a West Antarctic ice stream, EOS, Transactions of the American Geophysical Union, 78, F243, 1997.
- Bell, R.E., D.D. Blankenship, C.A. Finn, D.L. Morse and T.A. Scambos. Evidence for geologic control on ice sheet behavior: The onset of streaming in West Antarctica, EOS, Transactions of the American Geophysical Union, 77, F140, 1996.
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Ships in the News

R/V SAVANNAH

R/V SAVANNAH was successfully launched at the Washburn & Doughty Yard in East Booth Bay, Maine on May 25, 2001. On the 31st of May the wheelhouse was set in place by a crane. Sea trials and stability tests will be conducted in August with SAVANNAH being turned over to Skidaway in East Booth Bay on August 31, 2001. Arrival at Skidaway is scheduled for September 4th. A gala celebration is being planned for R/V SAVANNAH on September 15th at the Skidaway campus with the Savannah Symphony playing as well as a military band.

KILO MOANA

Construction of KILO MOANA (AGOR 26) at American Marine Inc. continues. The ship is scheduled for launch in October 2001 with delivery scheduled for January 2002. The ship will then go through a shakedown period. The ship is included in the scheduling system for 2002. The exact date of when science operations will begin is to be determined. Ship specifications, construction updates and photos can be found on the web at <http://www.soest.hawaii.edu/agor26/>.

Alaska Research Vessel

The initial design for an Alaskan Research Vessel is being finalized. The design indicates a length of 226 feet with an 18-foot draft. The Naval architectural firm involved with the project is The Glostien Associates, Inc.

CAPE HENLOPEN Replacement Vessel

The design review meeting for the CAPE HENLOPEN replacement vessel was held in Lewes, DE on April 18th. The draft "Concept" ship design has been updated based on comments from the Delaware Research Vessel Committee (DRVC). The drawings were forwarded to FIC for review and comment. The target date for completion of the "concept" design is September 1, 2001 at which time the following will be available: Lines, general arrangement, outboard profile, typical midships section, preliminary deck, machinery/frames/towing, outline specification, preliminary cost estimates, preliminary tonnage, preliminary stability/trim/weights, preliminary speed/powering, preliminary power requirements, and ship's motion estimates. The vessel design is now 138-foot LOA, 33-feet in beam, with a 9-foot draft. The tonnage is approximately 490 tons (International) with two portable vans on deck.

GYRE Participates in Search and Rescue Ops

GYRE was returning from an East Coast cruise on August 1st when it was called to assist the U.S. Coast Guard in a search and rescue of Cubans from several overturned small boats about 20 miles south of Key West, Florida. GYRE's crew pulled one Cuban survivor from the water and assisted in the search for several hours. The crews of U.S. Coast Guard vessels and a freighter that was in the area rescued another 21 Cubans. As many as six others were listed as missing.

HEALY sets off on its First Science Operations

On July 31st, U.S. Coast Guard Icebreaker HEALY began its first official science operations. The cruise titled, the Arctic Mid-Ocean Ridge Expedition (AMORE) was funded by the NSF and will run through early October. Dr. Peter Michael (U. Tulsa) is the Principal Investigator for the cruise. HEALY will operate with the German research vessel POLARSTERN to sample and study the Gakkel Ridge. Dredges will be used from HEALY to collect rock samples from the ridge.

An added element to the cruise is participation by NSF's Teachers Experiencing the Arctic and Antarctic Program (TEA). Michele Adams, a 7th grade science teacher at Musselman Middle School in West Virginia, is aboard HEALY as part of the TEA program. Her experiences can be followed via the web at, http://tea.rice.edu/tea_adamsfrontpage.html.

For more information about the Healy, visit <http://www.uscg.mil/pacarea/Healy/>.

Thomas Cocke Retires

After many years of dedicated service, Tom Cocke has retired from the U.S. Department of State. Tom was with the Department for over seventeen years. By some calculations, that equates to 5125 research vessel clearances! Tom has been an invaluable resource to the UNOLS community. His many hours and determination spent dealing (battling) with foreign clearance problems and crises on behalf of UNOLS have truly been appreciated over the years. On behalf of UNOLS, THANK YOU! We wish Tom all the best in his retirement years.



UNOLS & MATE: Providing At-Sea Experience for Students

By Jill Zande, MATE Center Outreach Director

In 1999, UNOLS and the Marine Advanced Technology Education (MATE) Center teamed up to develop a Technical Internship Program designed to get students from educational institutions across the country out of the classroom and into the “real world” of marine technology with the ships, subs, and science of UNOLS.

The MATE Center, headquartered at Monterey Peninsula College in Monterey, California, with assistance from UNOLS developed the internship program with support from a grant from the National Science Foundation’s (NSF) Division of Undergraduate Education and Division of Ocean Sciences. The program is designed to provide students with hands-on work experience, an essential component to a well-rounded technical education. Students are placed in paid positions – the grant provides stipends as well as airfare – onboard UNOLS vessels or in its shore-based facilities. The grant also supports positions onboard the Ocean Drilling Program’s (ODP) fleet of research vessels.

With the UNOLS-MATE Technical Internship Program, everyone benefits: interns gain essential on-the-job experience and exposure to careers; host employers enjoy valuable, hard-working employees and have the opportunity to evaluate their preparedness and potential as future employees; and future employers of the interns benefit from the skills the interns have developed.

To date, thirty students from Maine to California have been placed in internships onboard sixteen UNOLS vessels, including R/V ATLANTIS, R/V POINT SUR, and R/V SEWARD JOHNSON. With positive feedback from students, supervisors, scientists, and crew, both the number of students and the number of vessels are likely to continue to increase in the future.

“Both MATE interns have been extremely valuable to our program and have exhibited both an eagerness to learn new skills and a positive attitude toward their experiences,” commented ALVIN Pilot and Expedition Leader Pat Hickey, who served as the supervisor of the two interns who worked with the ALVIN Group on board the R/V ATLANTIS.

Interns’ experiences have included deploying, retrieving, and maintaining CTDs; performing preliminary analysis and processing data; equipment monitoring and calibration; and assisting with trawl equipment. They have gained skills in the areas of electronics, data acquisition,

computer usage, and seamanship, as well as gotten a taste of what it’s like to work at sea.

“I’ve known for some time that I wanted to work in the marine environment and I knew I would like working onboard boats and ships, but I had never had the chance to experience it first-hand – until now,” said Diana Wellman after her internship aboard Moss Landing Marine Laboratories’ POINT SUR. “I highly recommend participating.”

With only ten to twelve positions funded per year, there is a limit to the number of students who can participate, not to mention that it is often difficult “to choose just two,” as the University of Miami’s Marine Technology Coordinator Aubri Steele remarked after reviewing student applications. And, with NSF funding gone after the 2001 summer cruise season, UNOLS and the MATE Center are concerned that the program won’t be able to continue without direct financial support from the individual UNOLS facilities and the scientists that use them.

If you’re interested in hosting a MATE intern during your next cruise or in your laboratory, or are interested in helping to support the UNOLS-MATE internship program, contact Sandra Butcher, MATE’s Internship Coordinator, at (831) 582-3008 or Sandra_Butcher@monterey.edu. You can learn more about the MATE Center by visiting its web site at www.marinetech.org.



In the UNOLS-MATE program, students get hands-on experiences with a variety of shipboard equipment, including CTDs. A MATE intern on board the R/V NEW HORIZON helps to prepare a CTD for deployment. (Photo courtesy of Maureen McEvoy)



Dive and Discover Bringing Oceanographic Research into the Classroom and to the General Public

<http://www.divediscover.whoi.edu>

Daniel J. Fornari, Susan E. Humphris, Danielle Fino, E. Paul Oberlander and Lonny Lippsett
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The role that scientists play in providing key social, economic, and technological stimuli for society as a whole, as well as mentors and role models for students throughout the educational process, has been firmly established. However, there is an urgent need for scientists to better and more frequently communicate the importance and relevance of their work to the general public. The growth of the Internet and global communications, and the ease with which text-based and visual information can be transmitted, has facilitated the means by which scientific experiences and data can be relayed from anywhere on the planet (or from space) into schools, libraries, and homes. However, harnessing the full capabilities of web-based communications, and providing effective, understandable and meaningful information to a lay audience about science and the quest for basic knowledge is often difficult for scientists and engineers. One example of a federal program that fosters the integration of research and education is the National Science Foundation's Awards to Facilitate Geoscience Education (NSF-AFGE). This program is intended to facilitate the initiation of highly innovative educational activities by research scientists, and assist them in developing new techniques and avenues for effective communication with students and the public.

With NSF-AFGE support and cost-sharing from our institution, we have been developing over the last year a web-based education and communications platform for providing near real-time access to ongoing

oceanographic research at sea. The *Dive and Discover* web site, <http://www.divediscover.whoi.edu>, is targeted at middle-school students (Grades 6-8) and the general public. It is structured to provide multiple layers and levels of information. The backbone of the site is a series of educational modules that address basic science concepts central to the research being conducted at sea. References and links are made throughout to provide the viewers with easy access to more detailed and related information. When a cruise is taking place, the site provides daily updates on the progress of the cruise. This includes: still and video images from the seafloor and of shipboard operations, graphical representations of a wide variety of oceanographic data, explanations about the technology being used, and general information about life at sea and the scientists, engineers, and mariners that make oceanographic research possible. In addition, a "Mail Buoy" allows students to communicate directly by email with scientists at sea.

We have been working with the Center Of Science and Industry, Columbus, Ohio (COSI), teaching organizations, educational materials publishers, teachers and students around the U.S. to test and evaluate the web site during four cruises that have participated in *Dive and Discover* since its inception. Although not a direct measure of success, to date there have been greater than 4 million hits, and greater than 1 million accesses, with sustained hit rates of approximately 7000/day during each of the four cruises since the site was launched in January,

2000. *Dive and Discover* was recently nominated for a "Webby" award this Spring in the science category, having been selected from several thousands of submitted science web sites. Over the next year, we will continue to refine the *Dive and Discover* web site and add content during several multidisciplinary field programs. These cruises will focus on various problems associated with mid-ocean ridge volcanism, and the chemical, physical and biological processes associated with hydrothermal venting at the ridge axis and hotspot volcanism in the Galapagos Islands.

An important and unexpected ancillary benefit of providing daily web-based information is that families and friends of those on the cruise have first-hand access to their lives and work at sea. The net effect of this has been to profoundly further enfranchise the marine crews in the daily science operations and to better inform everyone on board about the myriad of daily activities that occur on oceanographic research vessels.

One key technological development that has been instrumental to the implementation of *Dive and Discover* has been SeaNet. Since 1998, SeaNet has provided relatively high-speed Internet service for five UNOLS ships: R/V ATLANTIS (Woods Hole Oceanographic Institution - WHOI), R/V EWING (Lamont-Doherty Earth Observatory - LDEO), R/V MELVILLE (Scripps Institution of Oceanography - SIO), R/V PELICAN (LUMCON), and R/V SEWARD JOHNSON (Harbor Branch Oceanographic Institution). A sixth ship, R/V KNORR of WHOI, has



recently had SeaNet installed. A pilot (SeaNet-Lite) version of SeaNet was originally developed in 1995 by engineers and marine technicians at WHOI and LDEO with a grant from NSF. A National Ocean Partnership Program (NOPP) grant in 1997 added Omnet, Inc., the Naval Postgraduate School (NPS) and Joint Oceanographic Institutions, Inc. (JOI) to the SeaNet partnership (Kappel et al., 1999). NSF recently funded a subset of the original NOPP SeaNet partners to continue SeaNet operations and expand the service to additional UNOLS vessels during 2000-2001. Research ship operators interested in adding SeaNet capabilities to their vessels can contact the SeaNet project via its main website: <http://seanet.whoi.edu>.

SeaNet takes advantage of high-speed satellite (INMARSAT B), cellular, and other communications technology, as well as specialized software and hardware tools, to provide affordable, high-speed (Internet-based) data transmission to and from shore. The key software development provided by SeaNet is an ingenious system of "Data Pipes". These Data Pipes allow files to be transferred easily and without errors between a research ship and any computer on shore connected to the Internet. Data files containing information or images are first batched and then compressed. When the operator initiates the link to shore, the compressed archives of data files are transmitted to and from the ship simultaneously at high speed - about 64,000 bytes per second. Once the link is severed (and no longer adding expense), the batched and compressed

files are unpacked on shore and on the ship and distributed to their final destinations on the ship and the Internet. A conservative estimate for transferring compressed data files over the link is \$20/megabyte. This assumes \$5.40 per minute (during an off-peak time period) and a throughput of 4000 bytes per second over the link. The larger the files the more efficient SeaNet is and the costs can drop to \$15 per megabyte or lower. Our experience on recent cruises indicates that data transmission costs averaged ~\$3000-5000 on a per cruise basis. The total amount of compressed data transmitted via SeaNet for the four *Dive and Discover* expeditions amounted to greater than 700 megabytes. While it is now possible to bring up a communication link and go "live" on the Internet using SeaNet for tasks such as web-browsing, "live" file transfers, and low quality video-conferencing, the transmission costs can be prohibitive for science programs. However, future speed and cost improvements will undoubtedly make this goal possible.

The ultimate goal of the *Dive and Discover* web site is to provide sea-going scientists with web-based templates they can easily adapt for use during their own scientific expeditions, thereby promoting ocean science education and public outreach at their institutions. Our intention is to provide this capability for use on all WHOI research vessels, and to make the templates available to all UNOLS ship operators. Realization of this goal will require that scientists include the costs of a science writer and SeaNet data

transmissions in future proposals for oceanographic research cruises.

The next *Dive and Discover* Expedition will take place between August 23 and September 24, 2001 onboard R/V REVELLE. It will be a multidisciplinary expedition to map and sample the submarine slopes of the active volcanoes of Fernandina and Isabela Islands in the western Galapagos Archipelago. The scientists will be using various multibeam and side-looking sonar systems, and a towed digital deep sea camera to map the seafloor terrain, and dredges and rock cores to sample the submarine lava. A CTD system will be used to explore for hydrothermal vents along the active submarine rift zone of Fernandina Volcano. We are actively soliciting comments on *Dive and Discover* - <http://www.divediscover.whoi.edu>, and interest in its application for oceanographic science outreach and education.

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<http://www.divediscover.whoi.edu>



Calendar for UNOLS Meetings

Meeting	Location	Dates
AICC	NSF, Arlington, VA	September 10–11, 2001 (M-T)
Schedule Review	NSF, Arlington, VA	September 12, 2001 (Wed)
FIC	NSF, Arlington, VA	September 12, 2001 (Wed)
UNOLS Council	NSF, Arlington, VA	September 13, 2001 (Thurs)
UNOLS Annual	NSF, Arlington, VA	September 14, 2000 (Fri)
RVTEC	Narragansett, RI (URI)	October 23-25, 2001 (T-Th)
RVOC	Newport, RI (URI)	October 23-25, 2001 (T-Th)
DESSC	San Francisco, CA (AGU)	December 9, 2001 (Sun)
DESSC	Honolulu, HI (AGU/ASLO)	Feb 11-15, 2002 (one day – Special Conference Session)

I would like to thank all who contributed information and articles for this issue of the Newsletter. Articles are always welcome and encouraged. Copy can be submitted via mail, FAX or e-mail. The next newsletter is planned for late Fall 2001. Thank you, Annette DeSilva - Editor, UNOLS News

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