
Interface

A UNOLS-RVTEC newsletter exploring the interface of Technology with Science at sea

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Update from the Chair

Rich Findley, RSMAS

In January, I represented RVTEC at the winter quarterly UNOLS Council meeting. At this meeting in San Diego, at Scripps Institute of Oceanography, I presented a summary of the proceedings of our October 1992 RVTEC organizational meeting. The UNOLS Council endorsed the mission of RVTEC and our goals for 1993.

Recently, Dave Epp, Associate Program Manager, Marine Geology & Geophysics at NSF-OCE, has requested that a Multibeam and Imaging Subcommittee be formed under the auspices of RVTEC. Bob Tyce from URI has consented to serve as Chairman of this sub-committee. Dave has provided a list of prospective members to participate in this activity. If you have an interest in this effort please contact me.

Another area of activity comes as a result of the Fleet Improvement Committee meeting held on April 28-29 and a workshop on "The Future Vessel And Facility Needs Of Coastal Marine Science" held in Williamsburg, Virginia on February 21-24. This activity is generally concerned with developments and improvements in technical support on UNOLS vessels, and specifically with data acquisition standards and data distribution. I am coining the acronym UDEF for UNOLS Data Exchange Format for discussion purposes.

Pursuant to this effort I have begun researching CDR (Recordable CD-ROM) and netCDF, a standard scientific data format developed with support from NSF. I will be posting some information to UNOLS.RVTEC about this

for discussion. I have been in contact with with Ken Prada of WHOI about a presentation on netCDF and C-link (C-link is a method of connecting the shipboard computers to the internet on a full-time basis) and with Ellen Kappel of JOI about a presentation on SeaNet. If you are an expert or know of an expert on CDR, netCDF, HDF or SeaNet or any other data standard please get in touch with me.

I will also be attending upcoming meetings of UNOLS Council on July 15 and 16 and The Fleet Improvement Committee on July 19 and 20. Both meetings will be in Oregon.

I am excited with the response of the group to postings on UNOLS.RVTEC. After only a few months since this group was formed, I have seen several bursts of activity concerning a desire among Research Vessel Technician Groups to share information openly. When you reply to one of these postings be sure to address your reply to UNOLS.RVTEC instead of just the party who started the discussion so that we may all benefit from the response.

Editor's Note: According to Annette DeSilva of the UNOLS Office, JOI would be pleased to coordinate the effort to introduce SeaNet to the UNOLS Fleet and JOI is preparing a proposal to be submitted in December. To get technical feedback prior to proposal submission, Ellen Kappel of JOI and/or others working on SeaNet will make a presentation at our September RVTEC meeting. If you have opinions or views in the meanwhile, please express yourself with a posting to UNOLS.RVTEC, or call Ellen at (202) 232-3900.

RVTEC Annual Meeting is coming up! 19-21 September at UCSD-SIO

Plan to fly to San Diego on Saturday 18 September to take advantage of the lower airfares available with Saturday-night layover. David Wirth has promised an informal get together on Sunday afternoon September 19 at Scripps, including a tour of the STS facilities. On Monday morning the 20th, we will start out with administrative business, but afternoon of the 20th and the morning of the 21st will be working sessions dedicated to ADCPs and CTDs. On the afternoon of the 21st, we will meet for summaries and subcommittee work but we plan to conclude by 3 PM in order to allow those participants who will be attending MTS '93 (22-24 September in Long Beach) to travel north to L.A. The theme for MTS '93 is "Technology Requirements in the Nineties"; Gene Edgerton of Western Instrument Corporation is this years MTS Chairman.

For our sessions 19-21 September, please bring a five minute or less show and tell of something that you feel is unique to your institution. This doesn't have to be elaborate: a picture, sketch, etc. is fine! Our idea is to get some cross pollination going.

We have mentioned to RD Instruments that there might be interest from some of our RVTEC members in a workshop or class to be held at RDI the week of 13 September, on the front end our RVTEC annual meeting at SIO on 19-21 September. Unless there is interest from six or more people, though, RDI probably will not be able to accommodate. By 23 July, please let us know if you have an interest in such a pre-meeting get together with RDI technical staff, and if so what you would like as content, OK? (post this to UNOLS.RVTEC)

Please send any changes in your mailing address, telemail address or internet address as well as suggestions for agenda items for the upcoming meeting to UNOLS.RVTEC.

We're looking forward to getting together in September, and in the meantime to hearing additional ideas on E-mail.

Regards, Rich Findley and Doug Biggs

Performance Review: The General Oceanics Model 1016 Intelligent Sampling System

David Wirth, SIO-STS

We have used the first GO 36-place pylon purchased by J. Bullister at PMEL on P19C, Lynne Talley's cruise, 22 Feb - 15 Apr 1993. We also had a backup unit from GO on loan. During the cruise we used both pylons. The PMEL package developed a problem in the deck unit which we were able to repair at sea with email help from GO engineers.

When the loaner developed a problem in the underwater package, we switched back to the one owned by John Bullister and finished the cruise. At the end of the cruise both systems were returned to GO for rehabilitation.

We have just finished P17N, Dave Musgrave's cruise on R/V Thompson, with the repaired loaner pylon from GO. This one we have purchased and it will continue on G. Roden's cruise, P14N. WHOI has also purchased a system which just arrived as a back-up unit on P14N. Both units will then be used on P10 in the Fall, Mindy Hall's cruise, by the WHOI CTD group.

Our experience has been very positive. Users especially like the positive confirm trip information and the ability to return the tripping arm to home position or back to a non-confirmation point and then retrip the bottle in that position.

The problem with the sticky release pins has been rectified by changing from SS to Teflon.

The main thing that remains to be developed is the software integration of the pylon with the CTD data. The intelligent pylon communicates via the deck unit with a PC and there is no software to provide bottle trip data on the CTD data stream. ODF uses it's own software on Sun work stations and the pylon-communicating computer becomes a window on the Sun system.

The support by GO has been excellent for this product and each successive system has incorporated improvements. The long WOCE lines in the Pacific should test the long-term reliability of the system. We'll keep everybody informed of continued developments.

Planning for JGOFS Arabian Sea Work

Sharon Smith, Lou Codispoti, John Morrison, and Charlie Flagg have submitted a proposal to NSF-OCE for "Management and Scientific Services in Support of the US JGOFS Arabian Sea Process Study". To coordinate the details of core program sampling that will be carried out by personnel from many different institutions, Sharon et al plan a series of meetings to set up standards for calibration/ intercomparison among the various institutional groups before field work begins in Fall 1994. For further information, contact S.SMITH.SHARON.

New Multiple Corer

The R/V Alpha Helix recently received funding from the National Science Foundation to add a "multiple corer" to her shared-use shipboard equipment pool. The corer has been ordered from Ocean Instruments, Inc. of San Diego, California and will be essentially identical to a corer recently delivered to Moss Landing Marine Laboratory. The following articles by Dr. Susan Henrichs and by Dr. Ken Johnson describe the system and discuss its performance at sea.

Description of Sampler

Susan Henrichs, U Alaska

The "multiple corer" design is based on that of P.R.O. Barnett, J. Watson, and D. Connelly (1984, *Oceanologica Acta* 7: 399-408). In principle, its operation resembles that of the Craib corer, but the "multiple corer" is larger and heavier. An eight-legged, conical supporting framework supports a hydraulic damper at the apex. This controls the vertical movement of the assembly which carries the 8 coring tubes. When the corer reaches the sea floor, the supporting framework rests on the bottom and the coring tube assembly is held in the raised position. As the wire slackens, the hydraulic damper slowly lowers the coring

with minimal disturbance. When the wire is drawn taut, a mechanism closes valves at the top of each tube, then releases bottom "core catchers" which swing down to rest on the sediment surface. As the coring tubes are pulled out of the sediment, the "core catchers" swing into place beneath the tubes. The height, fully extended, of the "multiple corer" is 3.6 m, its diameter at the base is 2.5 m, and it weighs 780 kg without its lead weights. The coring tubes are 10 cm in diameter and 70 cm long, and are easily removed from the support framework.

The "multiple corer" is by reputation very reliable, and should be useful for sampling from continental shelf to abyssal depths. The multicorer is projected to be available for use aboard the Alpha Helix in September, 1993, to supplement its present benthic sampling inventory of Soutar corer, a MK-III 0.25 m² box corer, and a piston corer.

Field Performance

Ken Johnson, MLML

An Ocean Instruments Multicorer was tested from the R/V Pt. Sur on June 15 and 16 by Ken Johnson of MLML and Will Berelson of USC. John Hedrick of OI was present



Photo of a 1/2 scale prototype of the OI multicorer, by Andy Heard (MLML) during manufacturer's field tests earlier in 1993. The prototype version has four tubes, while the production version will hold 8 tubes. The production version is 3.6 m tall, 2.5 m in diameter and weighs 780 kg.

to observe the operation. This cruise was the first deployment of the full-size OI Multicorer, which deploys 8 core tubes.

The Multicorer consists of an outside frame of galvanized pipe, and an weight frame on which a set of 4 inch diameter core tubes are mounted. The inner frame, which is constructed of stainless steel, is hydraulically damped. After the inner weight frame is dropped, each tube top is sealed. Tube bottoms are sealed by a shovel type arrangement after the corer is pulled out of the bottom. Our initial impressions of the OI Multicorer were that it collected subcores of excellent quality. The sediment-water interface was well preserved, with no sign of disturbance. Analyses of oxygen in the overlying water indicated no leakage in the cores. Deployments occurred in sea conditions from relatively calm to 6' to 7' seas and 30 kt winds. No problems with pre-tripping occurred. However, in one case, we apparently bounced the corer on the bottom, when the ship pitched on a large swell, while coring in shallow water (100 m). This caused some damage to the corer, but OI sees a clear solution to this problem.

In summary, we collected more cores, faster and of higher quality that we have ever achieved with a 0.25 m² Soutar corer. MLML has since acquired this corer and after refurbishment by the manufacturer it will be used in an NSF sponsored study of metal fluxes on the continental margin by Johnson and Berelson on several cruises during the course of the next two years. Interstitial waters from cores collected with the Multicorer will be analyzed for nutrients, organic and inorganic carbon and a suite of trace metals. Subcoring is not necessary. Individual core tubes were removed from the corer and easily carried to a cold room for sectioning. Core tubes can also be placed directly in a whole core squeezer for extraction of pore waters.

(The First?) Vessel-Mounted Broadband ADCP

GERG, the Geochemical and Environmental Research Group at Texas A&M University, has ordered a 150 kHz-BB ADCP from RD Instruments for installation aboard their 50 m applied research vessel J D Powell. This Broadband ADCP system will be a direct reading unit with 300 beam angle. Installation will be in a transducer well through the ship's hull and decks like that recently described by Murphy et al. (MTS Journal, 26: 34-38; 1992). Delivery is expected in mid-July. For more information contact Frank Kelly (409-690-0095; fax 409-690-0059).

Technician Exchanges: Our Experience

John Freitag, URI

At the RVTEC organizational meeting last October, Lisa Rom invited discussion of the topic of Technician sharing between UNOLS institutions. In the past there have been significant obstacles to overcome in considering any such program. The various institutions have different concepts of allocating the indirect costs referred to as overhead, the Technicians at the various institutions are paid under wildly differing compensation schemes, some institutions are under Unions whose bargaining agreements must be considered and the list goes on (i.e., on to the point where any sane person might consider it wise to drop the matter entirely!).

However, because R/V Endeavor was facing a 15-month inactive period in connection with the Oceanus-class Mid-life program, I was facing a significant shortfall in gainful employment for my Technician staff during the period. Lisa and I had initial discussions subsequent to the October meeting about possible exchange scenarios. Lisa removed a major stumbling block by authorizing payment of the tech through the OCFS Technician grant at the institution loaning the Technician. We used the scheme on an experimental basis to support cruises of the Bermuda Biological Station's R/V Weatherbird in November and December of 1992 and later on in the spring of 1993 to support the R/V Cape Hatteras during the period she was standing in for Weatherbird. In both instances, the program was supported without financial snags or the necessity of resorting to sub-contracts.

A potential kink in such exchanges involves sea pay overtime. Again, institutions define overtime differently and some discussion between the institutions and the NSF is necessary to insure an equitable resolution for all parties concerned. We were able to maintain some control by having the Chief Scientist sign for any overtime over 8 hours as is the policy at our institution. This ensures that, even though he does not have to pay for the OT out of his funds, the Scientist is made aware that he is expending Overtime hours for the Technician.

In the final analysis our Technicians were able to broaden their horizons as to the methodology with which other institutions do business, while providing meaningful support to the projects involved. Primary support was given to the Bermuda-Atlantic Time Series (BATS) program, which includes a series of JGOFS programs that require field sampling biweekly or monthly. The work involved Sea Bird CTD systems, sediment traps, and an optical plankton sensor known as B-BOPS. The URI techs were able seamlessly move in and take over operation of the

program with only a few days of on site introduction. Other activities included support of a WHOI MET buoy deployment and support of a long term sediment trap study conducted by a WHOI scientist. Additionally, the Techs worked with the shipboard set up and were able to gain valuable insight into new ways of setting up as well as giving fresh ideas to the BBSR group.

I feel strongly that this program should be continued and expanded to fill temporary increases in workload and to help a technician group through a sudden or unexpected departure of a trained Technician. I also feel that the NSF's goal of transparency to the investigator has been accomplished.

Working Together: Wecoma Goes West!

Marc Willis, OSU

From October 1992 through April 1993, Wecoma participated in the TOGA-COARE experiment in the western Pacific (TOGA = Tropical Ocean-Global Atmosphere; COARE = Coupled Ocean-Atmosphere Response Experiment). COARE is a multinational, multidisciplinary experiment examining the effect of the western Pacific warm pool on Pacific climate. During the COARE intensive observation period, Wecoma towed a SeaSoar undulating vehicle over a butterfly pattern in the center of the COARE mooring array. SeaSoar carried a SeaBird 911plus CTD, and undulates between the surface and about 300 m on a cycle of about 10 minutes (surface to surface). We logged nearly 1500 hours towing in the 3 months of the IOP. Aside from a few problems with cable terminations, operations were smooth, and the data set is very good (and very big!). Simultaneous underway meteorological and ADCP data collection rounded out Wecoma's portion of the experiment. Wecoma carried scientists from OSU, Hawaii, WHOI, USF and L-DG (oops E)O. Other Wecoma COARE activities included mooring deployment and recoveries, and CTDs. Ships from countries including Australia, Japan, PRC, New Zealand, France, and the USA were involved, as well as aircraft from NCAR and Australia. R/V Franklin (CSIRO) delivered newspapers to us once -- after 3 weeks of SeaSoaring, even week-old Aussie classifieds were interesting! During our stay in the WestPac, Wecoma visited Hawaii, Guam, and Pohnpei. All-in-all, COARE was a titanic undertaking; let's hope that the PIs can make sense of all the data! Any questions about SeaSoar or the Wecoma portion of COARE can be directed

OSU Upgrades Temperature Calibration Facility

Dennis Barstow and Marc Willis, OSU

With 1993 Oceanographic Instrumentation funding from NSF, OSU will acquire an Automated Systems Laboratories AC bridge for temperature calibrations. The ASL bridge will replace a Mueller bridge of long service. Along with a general upgrade of our temperature calibration capability, the ASL bridge will eventually give OSU the capability to do calibrations in-house to (we hope) the 0.1 millidegree level. In addition to the bridge, OSU is also acquiring a gallium cell and melt apparatus, as well as a new platinum thermometer for the facility. The ASL bridge has complete computer interfacing capability, allowing automation of calibrations which must be done by hand at present. Complete integration of the new instrumentation into the calibration facility may take a while, but we hope to have it fully online in the fall. NIST is scheduled to launch a program of temperature calibration laboratory certification soon, and we are hoping to become a "Certified Facility" if and when that program gets going. Inquiries can be directed to Dennis (503/737-4013) or Marc (503/737-4622).

Technician Exchange: Draft of a Mission Statement

Steve Rabalais, LUMCON

There has been a healthy amount of swapping going on between UNOLS operators as of late, most of it involving techs from URI (see John Freitag's article, this issue). In addition, a LDGO tech was on the R/V Thompson this year lending a hand with that vessel's Multi-Beam system (see "Working Together" in Interface Vol 1, Number 1) and SIO, OSU and TAMU techs are cooperating to support autoanalyzer nutrient analyses for WOCE Hydrographic Program cruises on R/V Knorr and Thompson.

Such swaps born of necessity and driven by economics took place without input from RVTEC. However, because "re-tooling" of an individual technician's skills often results from working interactions with personnel from another institution, we through RVTEC ought to develop a set of guide lines that could be adopted by our institutions that would promote and enhance short-term swaps as well as other types of exchanges. These guide lines could be a simple statement of intent, that each institution would strive to provide the opportunity for its technical staff to develop skills beyond their current collective capabilities. Opportunities could be provided informally by visiting other institutions and training with that organization(s) personnel, or

more formally by a sort of sabbatical exchange.

The following is my attempt at such a policy statement, directed at providing the impetus for member institutions to develop programs to guarantee training opportunities for their technical support personnel:

"In order to achieve the stated purpose of fostering activities that will lead to enhanced technical support for sea-going scientific programs, RVTEC recommends that all member institutions develop programs for training and skills enhancement of technical personnel. Each program should include at a minimum a statement of purpose, identify mechanisms for funding and fields of interest in which training will be focused, and provide time tables for personnel training.

Each program shall be structured around the particular fields of interest inherent to that institution's scientific goals and programs, and strive to develop expertise critical to the advancement of oceanographic science.

RVTEC shall act in an advisory capability in the development of each institution's program and review the final policy for redundancy of training efforts within RVTEC institutions, or programs that are not within the stated purpose of RVTEC."

Editor's Note: Steve and I urge you to post your comments on this Draft Statement of Policy to our electronic mailing list UNOLS.RVTEC. We hope that by working together to refine and expand it through such an exchange, we can have a more substantive discussion of the feasibility of "sabbatical" exchanges at our September meeting.

Meetings of Interest

RVTEC 2nd Annual Meeting UCSD-SIO San Diego, CA	19-21 Sep 93
MTS '93 Long Beach Convention Center Long Beach, CA	22-24 Sep 93
Oceans '93 Victoria, BC	18-21 Oct 93
RVOC TAMU at Galveston, TX	26-28 Oct 93
AGU Ocean Sciences Meeting San Diego, CA	21-25 Feb 94

Multibeam-Equipped Ships

Editor's Note: At the UNOLS Ship Scheduling-94 meeting held last month in Washington DC, Norman Cherkis of NRL said his Code 7420/Marine Physics group had recently compiled a list of vessels equipped with multibeam sonar. US vessels outfitted as of May 1993 are listed below; contact Cherkis (fax 202-767-0167) for additional itemization of some 5 dozen vessels around the world.

UNOLS Vessels

Atlantis-II	Seabeam
Ewing	Hydrosweep
Melville	Seabeam 2000
Moana Wave	Hydrosweep
Thompson	Hydrosweep

NOAA/NOS Vessels

Discoverer	Seabeam
Mt Mitchell	Seabeam
Surveyor	Seabeam
Whiting	Hydrochart II
Davidson	BS3 installed; Hydrochart II upgrade planned

Navv (NAVOCEANO) Vessels

Silas Bent	Seabeam
Harry Hess	SASS
Elisha Kane	Seabeam
M F Maury	SASS IV
Littlehales (TAGS-52)	Simrad EM-100
John McDonnell (TAGS-51)	Simrad EM-100
Albert J Meyer	Seabeam
Mizar	Seabeam
Neptune (retired 12/91)	Seabeam
Tanner	SASS IV
Waters	Seabeam
Wilkes	Seabeam
Wyman	BOTASS
Zeus	Simrad EM 12 (?)
TAGS-60 Class	(tenders due 3/93)

NATO Vessel

Alliance (LaSpezia)	Hydrosweep (contr 12/92)
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Other Research Vessels:

Conrad	Seabeam (retired 1989)
Washington	Seabeam (retired 1992; vessel was transferred to Chile)
Kaniloa (U Hawaii)	Seabeam (ex-Polarstern)
Palmer (NSF-DPP lease)	??multibeam postponed

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