

**RESEARCH VESSEL TECHNICAL  
ENHANCEMENT  
COMMITTEE  
(RVTEC)**

**MEETING MINUTES**

**October 20-22, 1999**

**The University of Texas Marine Science Institute  
Port Aransas, TX**



**Research Vessel Technical Enhancement Committee (RVTEC)  
The University of Texas Marine Science Institute  
Port Aransas, TX  
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**1999 Annual Meeting Minutes  
Compiled by Tony Amos from notes taken by Tony Amos and Annette DeSilva**

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**DAY 1, October 20, 1999**

**Meeting Called to Order** - The 1999 Annual RVTEC meeting was called to order on October 20<sup>th</sup> at 9:14 am in the Auditorium of the University of Texas Marine Science Institute's Visitor's Center. The Vice-Chair's new RVTEC Minute-Taking laptop immediately failed and notes of the first part of the meeting were scribbled by hand. Notes made by Annette DeSilva were used to augment the scribble. After the usual informal networking the meeting was called to order with a welcome and information on meeting logistics by Vice Chair Tony Amos of UTMSI followed by Chairman John Freitag's introductory remarks. The meeting agenda (*Appendix I*) was followed as reported below.

**Participant Introductions** - Meeting participants introduced themselves around the table and were asked to fill in a participant information form, see *Appendix II*.

**Acceptance of Minutes** - The minutes from the 1998 RVTEC meeting were presented for acceptance. Woody Sutherland (SIO) referred to several typographic errors in the 1998 Minutes. Amos reminded the meeting that his affiliation is UTMSI, not TAMU, a point that carries weight in this State. Woody made a motion to accept with the proviso that the typos be corrected, seconded by Dale Chayes (LDEO) and the motion was carried. The corrected 1998 minutes can be accessed at: <http://www.gso.uri.edu/unols/rvtc1098/rvtmin1098.htm>.

**UNOLS Reports**

**RVTEC Liaisons with UNOLS Subcommittees**



**Fleet Improvement Committee (FIC)** - John Freitag reported on the last FIC meeting. The meeting included reports on new vessels. The new NOAA Fisheries Research Vessels (FRVs) will emphasize fish-stock assessment in their work. Funds have been allocated and the design will concentrate on ship noise, to produce acoustically quiet ships. Fish catches are affected by the noise levels of the fishing vessels and it is therefore necessary to cross correlate the catch effectiveness of two vessels to each other in order to be able effectively compare catches. Hydrophones will be located on centerboard and the calibration is expected to take two years. FRVs 1, 2, and 3 will be located in Alaska, the Northwest coast, and the Northeast coast, respectively. FRV4 (Gulf of Mexico) is to be 2,500 tons, have 38 berths, and spend 270 days at sea yearly. A status report was given on the new AGOR26 Swath vessel for University of Hawaii. The estimated cost for construction of the vessel has increased higher than the original appropriation of \$45 million. Also discussed was a new vessel for Alaska to replace the aging ALPHA HELIX but no reports were made. R/V WALTON G SMITH, to replace R/V CALANUS, is expected to be delivered in early 2000. The future direction of the FIC was discussed.

Annette DeSilva (UNOLS) reported on the FIC document, The UNOLS Biennial Review of Sea Going Oceanographic Facilities. The goal of this report is to inform the research community, funding agencies and operators on the state of sea going oceanographic facilities and how these facilities may meet future research needs. This document is being prepared as a living document. FIC members as well as volunteers from the community are providing input to the report. It will be updated periodically as additional input or revisions are received. The document can be viewed at, <http://www.unols.org/fic/authship.html>. The report includes a chapter on ship and shore side tech support. Anyone interested in providing input to the report should contact the UNOLS Office.

**Research Vessel Operators Committee (RVOC)** - Annette DeSilva then reported on the 1998 RVOC meeting that emphasized updating Research Vessel Safety Standards and Training manual. The International Safety Management (ISM) code for watch keeping was discussed. The Portable Van Study was also discussed. Many vans used on research vessels are old and substandard and there is a need for standardization in the design of future R/V vans. The RVOC will meet in November 1999. One subject on the agenda is computerization of ship maintenance records.

**UNOLS Activities** - Next, Annette gave the **Summary of UNOLS Activities**. In the past year the UNOLS Council met three times. Future fleet evolution is a high priority. She presented charts showing the entire fleet and their expected retirement dates. There will be a sharp decline in the number of vessels in the coming 20 years if we don't start the replacement of vessels. All Class IV vessels will be retired in the next 15 years with only two intermediate vessels still on-line. For additional information on fleet planning, see <http://www.unols.org/fic/planning/fltplan.htm>. Other items reported were on a web document on how to get access to the UNOLS fleet and the need to improve cruise assessment feedback from scientists on UNOLS vessels. The University of Minnesota's R/V BLUE HERON entered the UNOLS fleet this year. Annette then presented the ship utilization projected for the year 2000. NSF utilization has increased while the Navy usage has slightly decreased. The UNOLS office is to transfer to Moss Landing Marine Labs in May 2000. The UNOLS office selection is made on the basis of proposals submitted to the NSF.

**Arctic Icebreaker Coordinating Committee (AICC)** - John Freitag reported on the AICC meeting held on 24-25 March 1999. The USCGC HEALY trials have been delayed until October 1999, consequently, changes in the schedule now have warm water testing to take place in Jan/Feb 2000 followed by the ship's Baltimore public outreach visit. John then proceeded to reporting on Arctic Ice & Science trials. Kelly Faulkner is preparing a proposal for Teacher participation in ice trials. The continuation of science of opportunity plans for the USCG Polar Class ships are underway with a six month yard period followed by one-year cruises. The next AICC meeting will take place later this fall (1999). Tony Amos asked questions regarding HEALY ice trials (to be answered later in the meeting).

## **Agency Reports**

**National Science Foundation (NSF)** - Sandy Shor reported with viewgraphs (see *Appendix III*) that Dolly Dieter is now doing shipboard scientific support proposals. There is presently no assistant program manager to assist her. Holly Smith (attending RVTEC) has been appointed Science Assistant for OCFS (Oceanographic Centers and Facilities Section). She will be attending meetings and will assist Dolly and Sandy in the management of the OCFS programs. OCFS Head, Don Heinrichs, will retire in 2000. Mike Reeve will most likely replace Don. NSF is recruiting personnel for various positions. Sandy gave the "Good News/Bad News" report on funding. "We got what we asked for - but didn't ask for very much." Biocomplexity programs will require a large amount of ship time support in 2000. Tony Amos wondered about the effect replacement of the South Pole Station would have on our budgets.

On the Ship Inspection Program, RFPs are being prepared for continuation of the program. The last round of inspections has just finished. The new program will remain similar to the past program. On OCFS program Guidelines, Sandy reminded the meeting of extensive revisions of the Oceanographic Technical Services guidelines and the necessity of submitting proposals via FastLane (NSF will require FastLane submittal starting in 10/1/2000). Rich Findley asked about the use of Adobe Acrobat 3 and how to deal with attachments. (working on this). Sandy said use "NSF94-124" guidelines on all proposals. Remember the key buzzwords - training, and "customer support". Sandy urged all groups to update their information on shared-use instrumentation on institution web sites. Dale also reminded us that only three proposals per institution are allowed. What kind of equipment requires 30% institutional matching? Items in the range of >\$100,00 <\$2,000,000, such as ADCP outfitting, Catamaran Multi-channel seismic systems for example.

In general, NSF is "pretty optimistic" and "quite pleased." They have made adjustments to allow more use of ships. On the down side, a new regulation may restrict seismic research by eliminating use of air guns due to potential acoustic impacts on marine mammals. A ship cannot operate air guns if a whale is sighted, or if it is in fog, and may only operate air guns in daylight. This promoted some questions and comments: a questioner asked, "Is there a counter response to these regulations from scientists who know about dolphin problems?" A comment was made that every eardrum of every beached whale is damaged. The Navy is required to be environmentally sensitive. A comment was made regarding the Navy's extensive use of XBTs

(putting miles of copper wire in the ocean). The Navy has made efforts to comply with these regulations.

**Office of Naval Research (ONR)** - The Navy use of UNOLS ships was reported by Tim Pfeiffer, ONR, (see *Appendix IV*). Tim noted that the Navy is concerned with the acoustic restrictions. Tim provided the Navy budget. It is down by approximately \$6M since last year. The biggest change is within the NAVO use. NAVO use of UNOLS is approximately at the \$3M level as opposed to the \$7.5 M level in 1999.

	1999	2000 (x \$1,000)
ONR	9,175	8,646
NRL	775	1,003
NAVO	7,260	2,404
NOPP	962	105
Other	200	206
Total	18,372	12,364

There was a question about ship time for the Littoral Warfare Advanced Development (LWAD) program. Jerry Gathoff is the contact in NAVO. Tim gave an AGOR 26 update: Lockheed Martin is the prime contractor and Atlantic Marine is the subcontractor for construction. R&D money, not ship construction money, will be used to support the program. Sandy asked if the time frame for construction was 22 months from contract award? Tim answered, yes. Tim told the meeting of the Defense University Research Instrumentation Program (DURIP). The program seeks proposals from Universities for equipment in the cost range of >\$50,000 and <\$1,000,000. There is no specific amount. Cost sharing is required. For this year they received requests totaling just over two times the amount budgeted. Tim noted that the Navy is interested in electronic proposals, too. ONR would like copies of technician proposals also--via e-mail if submitted by Fastlane. On ship inspections, the Navy inspects Navy ships under the INSURV program. Hull and Machinery will be inspected on a 5-year basis. Science inspections will be done on a two-year basis.

**Naval Oceanographic Office (NAVO)** - The NAVO report was given by Rick Enkoji (NAVO). NAVO is converting their CTDs from Falmouth Scientific Instruments (FSI) to Sea-Birds (Sea-Bird Electronics, Inc.). He reported that the SIO ADCP data processing is going along very smoothly.

**US Coast Guard (USCG)** - Commander George Dupree, USCG, gave the Coast Guard report. He saw the AICC as being “very valuable”, and said that their relationship would “continue indefinitely.” He said that they are close on delivery of HEALY - most likely it will be in November. Requesting ship time for HEALY would be done using UNOLS request forms. HEALY will be operating in the Arctic 180 days per year. An evening session at the 1999 American Geophysical Union (AGU) winter meeting will be held regarding long-term scientific planning for the Arctic. They have had requests for high Arctic work with two ship operations and are looking into it.

**USCGC HEALY Science Systems Testing** - Following Commander Dupree's report, John Freitag informed the meeting on **Healy Science Testing**. He has seen some of the ship's finished spaces. He has reservations about the scientific winch system. It has incredibly complex fair leading to sheaves with 90 degree turns in many places. The reaving is "Very complex." He asked, "Is the system going to be operable?" This is a question to be answered during ice trials. The winches also have "highly complex electronic controls." There is a low overhead in the labs. The Coast Guard is looking into raising the headroom. HEALY has fiber optic connections to scientific spaces. They made it fiber because of the unknown level of EMI generated by the AC Cycloconverter propulsion. The Coast Guard is to provide adaptors in rooms. At the moment they are improving incubation drainage and XBT launching. The ship will transit to Pensacola after delivery where the Navy has a facility to video HEALY from underwater. They will look at propeller cavitation while the ship is doing 15kt. It will proceed from there to Puerto Rico where Phase I of Warm Water Trials will test the multibeam and coring systems. Possibly, they may test the CTD winch and ADCP. Then the plan is for the ship to go to Baltimore, then to St Johns, Newfoundland, and Nuuk (ex Gothab), Greenland. Finally, a four-week science trial will commence, ending in June. HEALY will then transit to Seattle, its homeport. HEALY will be available for scientific use in January 2001.

The meeting took a **Break** at 11:00 and reconvened at 11:25

**Winch and Wire Symposium** - Following the break, discussion of the upcoming **Winch and Wire (W&W) Symposium** ensued. One of the reasons for convening the Symposium is because the Winch and Wire book "Yellow Book" is getting out of date and supplies are very low. It will take place from 30 Nov - 1 Dec 1999. Mike Webb of NOAA Pacific Marine Center (PMC) which provides tech support for the NOAA Pacific fleet reported that the meeting is set for New Orleans during the Work Boat Show. He said that the input from technical folks has been good, but not so good from the scientists. A show of hands for attendees was requested and approximately 30 hands were raised. An e-mail blast to the science community was recommended to let them know of the importance of the meeting. There will not be many NSF science program managers present. Last week, Dale urged the Lamont science community to participate. They were completely unaware of this meeting. Rich Findley recommended that someone from the Ship Inspection group should attend. He brought up the subject of Safe Working Load of wire and hoped that it would be addressed at the Symposium. Dale mentioned that the British "Curley Wurly" winch, which will be the subject of a talk at the W&W Symposium, was the most amazing thing that he had ever seen. He related that "Curly Wurly" was an awe inspiring mechanical device that married an external electrical conducting cable to a stress member as it was paid out and unwound them as the package was retrieved.

In summary, some suggestions for the meeting are:

- Make a video for people who cannot attend.
- Have the report and handbook put on a CD.
- Have someone like a JMS (Jamestown Marine Services, the current UNOLS inspection contractor) representative attend to provide regulatory guidance.

**SeaNet Update** - Dale Chayes gave the **SeaNet Update**. The SeaNet website is <http://www.seanet.int> (WHOI) or <http://www.seanet.com> (General). Dale gave the SeaNet

Collaborative list and then provided the history of SeaNet. Ships systems are presently installed on ATLANTIS, EWING, MELVILLE, PELICAN and SEWARD JOHNSON. There is SeaNet shore side support, NIC/NOC (Network Information Center/Network Operations Center). SeaNet is moving to "24x7" coverage (24 hours, seven days a week), developing an off-site backup, and improving billing/accounting procedures. Lamont has a Hardware Test Site. They're debugging the NERA Bm interfaces and trying to track down the R/V EWING low Signal-to-Noise Ratio (SNR) issue. WHOI has a software test site that is doing software integration testing and implementing alternate NIC. Other SeaNet uses are the SEAS educational program and Jason. The Jason Project has three shoreside web sites and a shore based investigator. Dale reported on the future prospect for SeaNet. It still has some available funding and can consider funding science opportunities for special projects. It is also looking for methods to expand.

There was a question regarding the collaboration with OMNET. It is not yet in place. Some operators are not willing to change their present system. Rich Findley gave an example of a good use the system. he sent the ADCP manual to the ship using SeaNet as a PDF file. This would have been a \$750 e-mail charge. He thinks it should be fleet wide and that billing through OMNET, independent of the ship, is a great idea. John Freitag thought it would be better if there was a central "phone company". The consensus was that a billing through, say, OMNET would be acceptable immediately. Rich posed a question to the meeting: "How many people feel wedded to their system? If someone came along and said 'here is a POP mail server' would you take it?" Antarctic Services Associates (ASA) had a recent meeting largely of scientists who wanted the ability to send large files and were willing to pay for it. Sandy gave an example of "two end members" 1) Lamont - NSF pays all their e-mail bills and 2) Miami, who charges for all usage. Between these two is a "spectrum of people" doing a bit of both. The usual lively discussion regarding e-mail billing ensued. Steve Poulos (U Hawaii) would like to see SeaNet as a "black box" that would go on each ship and require little input from the technicians. Rich asked Dale, "Are we headed for full-time connectivity?" The reply was a guarded yes.

The meeting took a **Break** for lunch 12:30 and reconvened at 13:45

**CODA Technologies Presentation** - After the lunch break, Robert Gauer, of **CODA Technologies** gave a presentation on Side Scan sonar and shallow-water seismic methods. Discussion ensued on compatibility. He provided a list of questions to ask your supplier when in the acquisition phase. His viewgraphs are included as *Appendix V*.

Tony Amos made an announcement about the Aransas Lighthouse and dinner plans. The Lighthouse, built in 1853, is now privately owned and a registered Texas Historic Landmark.

**NSF Academic Fleet Review** - Sandy Shor gave the **NSF Report on Academic Fleet Review**, see *Appendix VI*. Sandy reported at length on the Academic Fleet Review as relevant to RVTEC.

The review recommendations include:

- A need for a continued program of technology update and a systematic approach to safety, equipment upgrades, maintenance and development.

- Even higher standards for shared use facilities.
- Continue the UNOLS system
- A trial use of some commercial entities as UNOLS non-member operators.

See <http://www.geo.nsf.gov/oce/fleetrev.html> for more information.

Sandy warned that the Academic fleet needs to be prepared for new non-vessel bound technologies (ROV's, AUV's, multibeam, multi-channel sonars). Tim Deering has generated an HTML document on methodologies. Rich Findlay opined that "Surveys need to be designed by people who know how to do surveys"

**SCICEX Report** - Dale Chayes next gave a **SCICEX (use of navy submarines for science in the Arctic) report**. Goals of the program are to understand the Arctic; figure out how to use a sub for research, and obtain unclassified data. Dale detailed the differences between a Memorandum of Agreement (MOA) versus Memorandum of Understanding (MOU) (SCICEX was defined by a MOA). He outlined the advantages of using a submarine for under-ice research: the sub can transit 18-20 knots independent of weather. In Dale's opinion, submarines are the only effective underway platform (for underway survey) in ice-covered water. Conventional icebreakers cannot adequately get you to the areas needed. A RAND study showed that the cost of operating a nuclear submarine is not much different than for a conventional icebreaker. (Probably not full time, but maybe a half-time use). However, the maintenance/overhaul cost is about \$120M -\$160M for a sub, which cannot be supported by current budgets. He cited the oceanography/biology versus swath - mapping conflict on conventional vessels which are not a problem on the sub. Improvements to the submarine for use in the SCICEX cruise included navigation systems, magnetometer, and a flow-through water system. Tony Amos asked about operating procedures and it was noted that you don't have to be a rider to get data from submarine cruises. There is a science opportunity in the fall 2000 and possible year 2000-2008 operations. This depends on operational extension of the submarine, MENDEL RIVERS.

The meeting took a **Break** at 15:30 and reconvened at 15:50

**Guidelines for Marine Technology Technicians, Internships, Training and MATE** - Sandy Shor asked for a delay on discussion of the **Guidelines for Marine Technology Technicians, Internships, Training and MATE** until RVTEC had an opportunity to look at results of the MATE survey. He reviewed the MATE abstract and asked that the guidelines be examined overnight. Sandy would like to get feed back from RVTEC on the guidelines, both pro and con. There is an intern program associated with MATE. They plan to send 20 interns out to sea for 6-week periods on UNOLS ships over the next two years. Last summer three interns were sent out. The MATE program is broader than just the academic marine technicians. A question was posed "How many institutes offer Marine Technology Courses?" Cape Fear Technical Institute has had one for several years, also Maine. Dale said that we should recognize that this is a thing of the future and not tend to "shrug it off" (a Certified Marine Technician). Sandy Shor gave a brief update on the revisions to the Shipboard Technical Support Proposal guidelines (**Appendix VI**).

The meeting then moved on to:

### **Show and Tell/New instrumentation Presentations from Members**

Rich Findley reported on automated nutrient analyzers and distributed handouts. He also reported on the 38Khz Phased Array ADCPs. They are phased array to minimize size of the low-frequency transducer. There was a statement that "We need the 'Eric Firings of the world' to evaluate this system". Texas A&M shock-mounted their system (Desmond Rolf reported). Rich has talked with Eric about these systems. He then asked if "Anyone wants a millennium cruise?" to check out 38Khz. A discussion followed on the merits of using DVD-R (cost around \$5,000) vs. CDR and asked the meeting to think about it. (Recordable DVD's as compared to recordable CDs).

The day's meeting was **adjourned at 17:01**

**Dinner was held at the historic Aransas Lighthouse, Harbor Island**, replete with a bagpipe serenade by Lighthouse keeper Rick Pratt. Members were transported to the lighthouse by the crew of R/V LONGHORN and R/V KATY aboard the UTMSI fleet of small boats.

### **DAY 2 - 21 October 1999**

After Informal Networking at the UTMSI Auditorium, the meeting convened at 09:09.

**Network Common Data Form (NetCDF)** - A presentation on NetCDF was made by Randy Zager, Tim Deering, and Steve Poulos. Randy Zager's (University of Delaware) viewgraphs are included as *Appendix VII*.

Randy gave a little history. In the past he had to rewrite programs to read data from different formats, data was lost, as were time zones and other critical information (documentation, files misplaced, etc.) in data sets. He quoted from the NetCDF manual to describe what it is:

" The purpose of the Network Common Data Form (NetCDF) interface is to allow you to create, access and share array-oriented data in a form that is self describing and network-transparent."

In other data forms, one must know the dimension of the file. NetCDF can specify unlimited dimension, a file can have attributes, and variables can have attributes (units, etc.). He then gave an example of data from CAPE HENLOPEN's CTD. NetCDF Tools are in the public domain. He found it could compile on Win95/98/NT. Compilation on any UNIX is easy. The NetCDF Toolbox can be obtained at: [www.crusty.cr.usgs.gov](http://www.crusty.cr.usgs.gov). Also commercial software such as MATLAB (Contact WHOI Field Office - Chuck Denham), IDL, or PV-Wave are options for further information. A comment was made about the annual expense of MATLAB.

A repository of NetCDF conventions is maintained at  
<ftp://ftp.unidata.ucar.edu/pub/netcdf/Conventions>

Conventions for Oceanographic data have been formulated at Cooperative Ocean/ Atmospheric Research Data Service (COARDS) and at PMEL-EPIC (NOAA). Steve Poulos asked a question regarding the use of the above conventions. For RVTEC, does Randy advocate using them? Some groups are using them extensively. A case study was presented using shipboard meteorological data (courtesy of Steve Poulos, SOEST, U. Hawaii) for a calculation of true wind speed & direction.

The meeting took a **Break** at 10:30 and reconvened at 11:10 for more detailed Q&A and more NetCDF description from Randy Zager. He showed a MATLAB demo with plots of S4 current meter data. Tim Pfeiffer (ONR) asked to see an ASCII dump. This was provided and showed a "Header" followed by blocks of data (Time, U-velocity, etc.). A lively discussion followed: A comment was made by Dale regarding utility of Excel (what he called "lightweight data analysis"). It makes sense to store say weather data but not seismic data. There was a question from Rich regarding transportability of data between ships by scientist on, say multi disciplinary, cruises. Dale says its up to the ship operators (you) to "give 'em what they want." Randy says this is beyond the scope of one institution without a team of developers to design their data. Rich's data system has one file per sensor. There was discussion regarding ASCII comma delimited files v/s NetCDF. Who wants NetCDF when scientists and technicians are perfectly happy with ASCII? Steve Poulos is trying to establish some sort of standard. It is an original mandate of RVTEC. Shawn Smith (FSU) said that it is a problem with documentation in one place and data in another. NetCDF marries the two. Marc Willis (OSU) remarked that "we've been having this discussion for years. Either dump it or move on. Standard data native format should be preserved". Also, if we need to accept this, we need to proceed and implement. Steve Poulos pointed out that this demo was to demonstrate how to implement NetCDF. Randy shows example of every variable RDI uses put in to a NetCDF file. Sandy Shor is prepared to send money to get this thing rolling. Question: do we want to separate say underway data from CTD data, in NetCDF? Bill Martin (UW) said he would be willing to work with Shawn Smith to put together a proposal. Sandy said we must demonstrate that data goes in and out and can be accessed by a scientist. There followed much "Discussion ... discussion". Someone said that NetCDF has to satisfy people still using Cobol and paper tape. A Question: are there tools to extract NetCDF data? Yes but they're fairly primitive. Only recently has there been tools for Windows. A question was asked on how to handle data that comes from special equipment. Sandy said that this would not be a shared use piece of equipment. Another question was asked if this can convert data back to ASCII text file, since that is what most PIs want when they leave the ship.

Discussion followed on what users/scientists will actually want in terms of data.

Rich Findley asked, "What is the next step?" Dale suggested making a model. We need to have a collaboration of efforts to make the model for both users and operators. There was a question of how much (NetCDF) data is submitted to NODC. This is unknown.

Sandy Shor is willing to fund a lead person to put together a proposal for a NetCDF model. The data needs to be described. Once we have a known format, we need to be able to easily transform it to what the scientists want. This will need to be addressed in the proposal. Sandy stated that the system must be used.



The **Lunch Break** was taken at 12:33 and the meeting reconvened at 13:37.

**Continuation of NetCDF discussion** - Dale Chayes made a flowchart showing the data flow. He felt that a committee of no more than three people should be formed to attack this. He proposed a data exchange project using thermosalinograph data. He would be willing to participate, but he doesn't have time to do the programming. John Freitag proposed that we convene for further direction at the end of the meeting with the people who are interested in tackling the NetCDF issue.

**Importance and New Applications of Underway Surface Meteorological Data** - Shawn Smith (FSU) made a presentation on meteorological data collected for Comprehensive Atmospheric Data Sets (**COADS**) at the National Center for Atmospheric Research (NCAR), see *Appendix VIII*. Data were collected from WOCE (World Ocean Circulation Experiment) and other cruises, including the VOS (Volunteer Observer Fleet) program. He gave examples of data coverage (considerable). They are registering data formats in NetCDF. Data can be seen at: [www.coaps.fsu.edu/WOCE](http://www.coaps.fsu.edu/WOCE). A paper of interest is Smith *et al* 1999. J. Atmos. Oceanic Technol., 939-952. Shawn stressed the errors that can easily enter meteorological data sets, especially when calculating true wind speed and direction.

Question - Sandy wanted to know if there were standards for instruments. Shawn hasn't looked into it as yet.

The meeting took a **Break** at 14:43 and reconvened at 14:54.

**A Global Array of Profiling Floats** - Brian Guest (WHOI) gave an overview of the **Global Array of Floats** program. The ARGOS program will deploy about 3000 floats around the world in open water. They broadcast their position and employ various sensors. A question was asked regarding the stability of Sea-Bird sensors (good) and antifouling precautions (answer not recorded). There is no plan to recover them although they have recovered a few. One was detonated in Greenland as it was thought to be a bomb.

**MATE Program** - Next, Sandy Shor presented by the Marine Advanced Technology Education (**MATE**) program information for MATE who could not be present, see *Appendix IX*. They are asking to use the UNOLS logo on the cover of their guidelines. NSF is asking RVTEC for their input on this request. It was noted that more people come out of community colleges than 4-year colleges. As an example, a student might graduate community college as an ROV technician. Average age of students is 25-30. Continuation of discussion was deferred until later in the meeting.

**LabView, a Data Collection System with Platform Versatility** - Rich Findlay next gave an overview of **LabView, a data collection system with platform versatility**. LabView is a new network program he is using for data collection with modules. Rich spoke about using Smartlink (high speed data system). They plan to have the Virtual Instruments (VI's) available on an ftp site for use by the whole community. The Kiethly modules cost \$2,000 with fiberoptic interface.. Rich then introduced Doug Dieruff of Intech, Inc. who described the graphical software program

that lets you design panels and flow charts. It lets you see data progress through the loop. Tim Pfeiffer (ONR) asked the question of "How difficult is it to correct this code for something not working after five years?" Rich says he can do it after a little tutorial. He said you need a 19" monitor to view the whole code diagram. There followed a discussion on how to display more than one process simultaneously. The "bottom line" is that Rich would like to work with anybody else who would like to use it (LabView). How much is it? - at different levels price varies from \$900 -\$2,000. Information can be had at [www.ni.com/datasocket](http://www.ni.com/datasocket). The serial port is \$1700 for 32-port device. Information can be had at [labview-request@pica.army.mil](mailto:labview-request@pica.army.mil). This is a list server available for post only, or [info-labview@pica.army.mil](mailto:info-labview@pica.army.mil) (also a list server).

**The MATE Guidelines Discussion** - Annette explained that the UNOLS Office was looking for guidance on whether or not MATE should be allowed to use the UNOLS logo on the cover of their guidelines. The MATE guidelines are designed to be an educational tool. Sandy pointed out that this is a program for technicians not necessarily for the technicians in academia - it is for technicians in industry, recreation, etc. as well. Also Sandy pointed out that it is not acceptable to promote this program as a stepping stone into a four-year program. There was a lengthy discussion on whether not the UNOLS logo and the statement; "these knowledge and skills guidelines for Marine Technicians were developed in collaboration with UNOLS" should be used in the Guidelines. Most felt that a two-year degree was not adequate to be an academic marine technician on a UNOLS vessel. There was one RVTEC member who indicated that they had some success with 2-year technicians.

A motion was made by Dale Chayes and seconded by Bill Martin to forward this issue (endorsement of the UNOLS logo and UNOLS statement on the MATE Guidelines) to the UNOLS Council for consideration. The vote was taken by raise of hands: In favor: 9, Opposed: 7. The motion passed and will be forwarded to the UNOLS Council for consideration.

**Advanced Training for Marine Technicians** - There followed a discussion of **Advanced Training for Marine Technicians** among our own group. John Freitag introduced this topic and said that it is a direct recommendation from the Fleet Improvement Committee. Sandy is very receptive to any creative ways to carry out training. John mentioned that Marc Willis is having a salinometer training course. He has some seats available (can take ten total). Tim Pfeiffer pointed out that it is very difficult to get a large group together (if not impossible). Videos and manuals (written by our own technicians) can be acceptable ideas as Sandy pointed out. He would like some creative ideas. Rich has a lot of manuals that they have been generated - these can be put on the web - or perhaps made into a training video. Tim noted that ISM code might soon require that clear documentation of operations would be required. Tim explained that ISM doesn't care about salinity procedures but may want documentation on how you put CTD over the side. Sandy said that we should think about this on our own without consultant assistance for a year before we decide.

Woody Sutherland moved that we adjourn the meeting for the day. The motion was accepted at 1805.

**Adjourn Day Two**

Those interested in NetCDF convened after the official meeting.

### **DAY 3, 22 October 1999**

The meeting convened at 08:40.

#### **General RVTEC Business**

**Nominations and Election of Vice Chair** - The first order of business was the Nomination and Election of the RVTEC Vice-Chair. Rich Findley (Nominating Committee Chair) reported that one nomination for vice chair has been received, Tony Amos. RVTEC voted to reelect Tony Amos as Vice Chair.

**DVD-R** - Rich Findley made a motion that DVD-R be accepted as an additional supported media. After discussion, Dale Chayes seconded and the motion was passed unanimously.

**Salary Survey** - On the question of the Salary Survey, Chair John Freitag said he would entertain a motion to drop this after two years of trying. He said that after the past two years it has been received with little enthusiasm. There followed a discussion on why the salary survey was needed. Institutions use it to compare salaries. Dale Chayes moved to shelve the Salary Survey until a small group could be formed to discuss and resolve the issue with an alternative plan. Tony Amos seconded. Motion passed unanimously. Rich Findley then made a motion to make a few additional calls for salary input (with help from Annette DeSilva) to remind the community of the survey. Rich will then take the results of whatever is submitted. Rich motions that we continue Salary Survey for next two months. Rich Muller seconds. Motion carries.

**INMARTECH 2000** - Annette DeSilva said that the host (NIOZ) of INMARTECH 2000 is looking for topic suggestions for INMARTECH 2000. The meeting will be in the Netherlands in the fall. Dale Chayes recommended coordinating the RVTEC around the INMARTECH and holding it at Lamont (motioned by Rich Findley, seconded by Steve Poulos). Rich's motion is that we have next year's meeting at Lamont (New York), in conjunction with INMARTECH to make it easier to travel to Holland assuming the meeting is in the fall. However, if INMARTECH is held in the summer, we will keep our fall RVTEC meeting dates. We discussed the pros and cons of having the RVTEC meeting in the fall and summer. Assuming the meeting is in the fall, Lamont would be a convenient location for those planning to attend both meetings. Woody recommended that we hold RVTEC after the INMARTECH meeting and put up a second motion to do so. Steve Poulos seconded the motion and it passed unanimous.

#### **Subcommittee Reports :**

**Online Resources Subcommittee** - Tom Wilson (SUNY) was unable to attend RVTEC but submitted his subcommittee's report (see *Appendix X*) via fax & e-mail, along with a letter of greeting:

*To my colleagues at RVTEC:*

*I would like to apologize for an unfortunate combination of professional and personal commitments that has conspired this year to break my perfect attendance record at RVTEC meetings. I am sure that this annual meeting, like those before it, has been a combination of valuable professional and enjoyable personal interaction. I regret having missed out and plan to be back in the thick of things next year. In lieu of a personal appearance, I would like to offer this document to fulfill my responsibility of presenting an annual report as chair of the Online Resources Subcommittee.*

John Freitag read the report. A motion was made (Rich Findley) to accept the report and to commend Tom Wilson for his excellent work and recommend he be reappointed as the subcommittee chair. Seconded by Dale and approved.

A motion was made by Dale Chayes to register a UNOLS domain name. There was a second. It was approved. Dale recommended that we investigate this carefully. The commercial world has not been around very long--not much of a track record. Dale suggests that it can be done for free from a UNOLS institution. The issue of list servers was discussed. There was a lengthy discussion on options for the UNOLS Office website and the transfer. The server does not have to be in the UNOLS Office; however, the day-to-day web maintenance should be handled by the UNOLS Office. Woody and Dale offered their support. It should be carefully thought out. Dale even suggested that another institution could support the UNOLS webserver and list server (as a separate organization). Woody noted that the infrastructure at SIO should be able to support this. A discussion ensued of the UNOLS Office move to Moss Landing. Mike Prince, the new UNOLS Executive Secretary, will need to be consulted on this issue. John will bring Tom up to speed on this.

**Data Interchange Subcommittee** - Steve Poulos, subcommittee chair provided the report. Steve would like each Institution to experiment with NetCDF. He would like a description of any body's Command Description Language. At the moment the subcommittee is limiting its scope to converting thermosalinograph data. Woody asked a question regarding NOAA's underway data format. Anyone interested in submitting thermosalinograph data should send John an e-mail.

**Wire & Cable Specifications Review Subcommittee** - Rich Findlay, subcommittee chair reported. He reported that he is on the Steering Committee for the Winch & Wire Symposium. A major problem with the much used .322 wire is that it is approaching Safe Working Loads (SWL). There followed considerable discussion of wire problems. The SWL is 5x breaking strength. This amounts to 2,000 lb for .322 cable. The discussion turned to whether we need 3-conductors in our cables and a brief history of this requirement ensued. Dale is looking forward to years ahead when a combination fiber-optic /copper conductor will be in .322 cable. Instrument packages used on research vessels are getting bigger and will not get smaller. Bandwidth desires will continue to grow. The community would sacrifice multi-conductors for added strength and increased bandwidth. The subcommittee voiced concern about safe working loads. A question was asked whether anyone saw a problem with using .68 cable for (long) coring for added strength. Dale said it would be OK (to use) if you've already fried the conductor. He pointed out that these cables are relatively fragile and that you will crush the

electrical wires. It is not recommended. Also, they (.68 cables) are very expensive and should not be abused without careful consideration.-

## **New Business**

**Technical Support Training.** The use of hazardous materials (HAZMATs) on research vessels was discussed. George White (UW) asked who is involved with the HAZMAT material? It appears that many of the technicians take this on. George suggested that training in this area might be helpful. ISM might force everyone to become up-to-speed on HAZMAT handling. There was a discussion on the way HAZMATs are handled. Who deals with them? Who deals with training? Occasionally, scientists simply defy the regulations. What do we do? They are supposed to follow the rules and can get funding pulled if they refuse. Do we swab before and after each cruise (when using C-14)? NSF provides swabbing service. Moss Landing Marine Laboratory (MLML) requires a swab test before and after each cruise. Do we want to develop recommended procedures? Woody said Scripps is comfortable with C14 etc. but is getting more worried about the hazards of Lasers. Maybe we need a list of training available or what we should be doing in regard to training requirements.

ISM will be in-place by 2002. Large ships will not sail without it after then. Everyone should network regarding training. If someone is holding a workshop they should let the rest of the group know that it is going on. Also, if you attended a good workshop, let the gang know about it. George suggested that a checklist be compiled with suggested training courses. 2002 is the deadline for new ISM regulations and the training will be required. Dennis Donahue (U Mich) suggested we take the same approach as the merchant marine community (manuals, web-based, and video training), since it is so difficult to get technicians to sea. Chris Riffe (LUMCON) said that this is important if, say ISM can shut us down. Bill Martin volunteered to be the training committee chair. Dale suggested that the chair develop a plan and pass it along to RVTEC. Rich made a motion to establish a training subcommittee. George White seconded. It was passed. Training is for both compliance with ISM and technical training. Annette said that RVOC is going to get a consultant on this soon. It was recommended that Bill Martin get in touch with the RVOC Safety committee. The University of Washington has already hired someone to deal with this problem. The Rich Findley charge: Assess training methods and requirements and develop a plan. The goal is to have the plan on a website or circulated for approval. The motion was seconded by Dale Chayes. Motion made and seconded (White/Chayes) to nominate Bill Martin for training chair. It passed unanimously.

**Ocean Data View 4.0 Software** - Tony Amos described the Ocean Data View 4.0 software that allows for rapid visualization of oceanographic data during a cruise that can help both scientists to get a quick look at the data and the technicians by quickly pointing to instrument problems. It was developed by Reiner Schlitzer at the Alfred Wegener Institut (AWI) and is available free at [www.awi-bremerhaven.de](http://www.awi-bremerhaven.de).

**Phased Array ADCP** - Rich Findley said he had received the 38kHz phased array ADCP report by FedEx and will look it over.

A motion was made to adjourn the meeting by Dale Chayes, seconded by Woody Sutherland, and approved by all.

**Adjourn at 11:20 am.**

# APPENDIX I

18 October 1999

## *Tentative Agenda*

**RESEARCH VESSEL TECHNICAL ENHANCEMENT COMMITTEE  
OCTOBER 20-22, 1999  
The University of Texas at Austin  
MARINE SCIENCE INSTITUTE  
Port Aransas, Texas**

### ***Wednesday, October 20, 1999:***

8:30 am **Informal Networking**

9:00 am **Meeting Called to Order**

Welcome by Tony Amos (U. Texas)

Introductory Remarks by John Freitag, Chair

9:15 am **Participant Introductions**

9:30 am **UNOLS Reports**

Summary of UNOLS Activities

RVTEC liaisons with UNOLS Subcommittees:

FIC

AICC

RVOC

10:00 am **Agency Reports:**

NSF (Academic Fleet Review recommendations to be discussed later)

ONR

NOAA

NAVO

USCG

11:00 am Break

11:15 am **USCGC HEALY Science Systems Testing** - John Freitag will report on the status of science system test programs for USCGC HEALY.

11:30 am **Winch and Wire Symposium** - Plans for the upcoming Winch and Wire Symposium will be discussed.

11:50 am **SeaNet Update** - Discussion on the installation and use of SeaNet Systems on UNOLS vessels.

12:30 pm Lunch

1:30 pm **Presentation by Robert Gauer, CODA Technologies**

2:00 pm **NSF Academic Fleet Review** - Sandy Shor will report on the recommendations from the NSF Academic Fleet review and its potential impact on shipboard technical support.

2:30 pm **Shipboard Technical Support Proposal** - Sandy Shor will provide a review of the revised procedures for writing the Tech Support proposals which were implemented in the past year.

3:00 pm Break

3:15 pm **Guidelines for Marine Technicians, Internships, Training and MATE**

Review of MATE/CORE meeting in September - John Freitag

Discussion of Training guidelines and training - Sandy Shor

3:30 pm **Discussion of Status of Salary Survey**

There have been few responses to the salary survey which we have discussed the past two years. We should decide whether to pursue this further or let it die.

3:40 pm **International Marine Technician Symposium 2000 (INMARTECH '00)** - Plans for INMARTECH '00 are underway. Organizers are requesting suggestions for technical sessions.

4:00 pm **Show and Tell / New Instrumentation Presentations from Members:**

Report on Automated Nutrient Analyzer - R. Findley

Report on 38 kHz Phased Array ADCP - R. Findley

5:00 pm *Adjourn Day 1 Business*

**Thursday, October 21,**



**1999:**

8:30 am **Informal**

**Networking**

9:00 am **Net-CDF Presentation** - Randy Zager, Tim Deering, and Steve Poulos

10:30 am Break

10:45 am **Program continuation...**

12:30 pm Lunch

1:30 pm **Importance and New Applications of Underway Surface Meteorological Data (e.g., IMET) Presentation** - Shawn Smith, Florida State University

2:00 pm **Argo - A Global Array of Profiling Floats** - Brian Guest, WHOI

2:45 pm Break

3:00 pm **LabView, a data collection system with platform versatility** - Doug Dieruff, Intech Inc., introduced by Rich Findley

4:30 pm **Discussion of Advanced Training for Marine Techs**

5:00 pm *Adjourn Day 2 Business*

**Friday, October 22, 1999:**

8:30 am **Informal Networking**

9:00 am **General Business**

Nominations and election of Vice-Chair

Updating of Action Plans



9:45 am **Subcommittee Reports**

Online Resources Subcommittee - Tom Wilson

Data Interchange Subcommittee - Steve Poulos

Wire and Cable Specifications Review Subcommittee - Rich Findley

10:15 am **New Business**

*Adjournment*

# APPENDIX II

## Meeting Participants

Amos	Tony	UTMSI	750 Channel View Drive	Port Aransas	TX	78373-5015	361/7496720
Arrants	Dwight	Duke U	135 Duke Marine Lab Rd.	Beaufort	NC	28516	252/5047587
Brawn	Joseph	USCGC Polar Sea	FPO AP			96698-3919	206/2176273
Caison	James	BBSR	Ferry Reach	St Georges	BA		441/2971880
Cantu	Noe	UTMSI	750 Channel View Drive	Port Aransas	TX		361/7496735
Car	Martial	NOO	Stennis Space Ctr	Stennis Space Ctr	MS	39520	228/6884242
Carow	Steven	NSWCDD COASTSYST A CODE A42	6703 w Hwy 98	Panama Cty	FL	32407-7001	850/2307256
Chayes	Dale	LDEO/CU	61 Rt 9W	Palisades	NY	10964	914/3658434
Deering	Tim	UDEL	700 Pilottown Rd	Lewes	DE	19981	302/6454338
Donahue	Dennis	UMICH	126 B. West Hall	Ann Arbor	MI	48109-1092	734/7649432
DuPree	George	USCG	2100 2nd St SW	Washington	DC	20593	202/2671456
Enkoji	Rick	NOO	Stennis Space Ctr	Stennis Space Ctr	MS	39520	228/6885116
Fanning	Bill	URI	Tech Srv, URI-GSO	Narragansett	RI	02882	401/8746590
Farmer	Joe	NSWCDD COASTSYST A CODE A42	6703 W Hwy 98	Panama Cty	FL	32407-7001	850/2307593
Findley	Richard	U Miami	5600 US 1 North	Ft Pierce	FL	34946	561/4652400
Freitag	John	URI	URI-GSO	Narragansett	RI	02882	401/8746579
Gauer	Robert	CODA-TECH	9800 Richmond #480	Houston	TX		713/7803223
Geffert	Laura	WHOI	WHOI	Woods Hole	MA	02543	508/4572000
Guest	Brian	WHOI	MS 30	Woods Hole	MA	02543	508/2893271
Hartz	Steven J	U Alaska	P.O. Box 730	Seward	AK	99664	907/2245261
Hendrickson	Glen	USCGC Healy	FPO AP			9667-3918	504/4365750
Holik	Jim	ASA	61 Inverness Dr E	Englewood	CO		303/7050725
Hutchinson	David	USCGC Healy	FPO AP			9667-3918	504/4365710
Kelley	Jason M	USCGC Polar Sea	FPO AP			96698-3919	206/2176270
Kelly	W. Craig	NOO	Stennis Space Ctr	Stennis Space Ctr	MS	39520	228/6885627
Martin	Bill	UWA	Marine Science Bldg, Box 357940	Seattle	WA		206/6163998
McPhilamy	Sean	USCGC Polar Sea	FPO AP			96698-3919	206/2176270
Muller	Richard	MLML	2700 Sandholdt	Moss Landing	CA	95039	851/6333534

			Rd. Bldg D				
Parsons	Bob	USCGC Healy	1600 184 Ave NE	Bellevue	WA		425/4019414
Pfeiffer	Tim	ONR	900 N. Quincy	Arlington	VA		703/6966999
Poulos	Steve	U Hawaii	2525 Correa Rd	Honolulu	HI	96786	808/9566650
Riffe	Chris	LUMCON	8124 Hwy 56	Chauvin	LA		504/8512813
Rolf	Desmond	TAMU	Marine Ops, P.O. Box 1675	Galveston	TX		409/7404469
Rowe	Chuck	UTMSI	750 Channel View Drive	Port Aransas	TX	78373- 5015	361/7496735
Shor	Alexander	NSF	4201 Wilson Blvd	Arlington	VA	22230	703/3061585
Smith	Shawn R	FSU	COAPS	Tallahassee	FL	32306- 2048	850/6446918
Smith	Holly	NSF	4201 Wilson Blvd	Arlington	VA	22203	703/3061576
Sullivan	Jim	Harbor Branch	5600 US1 North	Ft Pierce	FL		561/4562400
Sutherland	Woody	SIO	UCSD/SIO	La Jolla	CA	92093- 0214	858/5344425
Tustin	Jay	Romberg- Tiburon Ctr, SFSU	3152 Paradise Dr	Tiburon	CA	94920	415/4357123
Walker	Robert	FIO	830 1st State St	St Petersburg	FL	33701	727/5531100
Webb	Eddie	TAMU	Oceanography	College Stn	TX		409/8457237
Webb	Mike	PMC NOAA	1801 Fairview Ave	Seattle	WA		206/5530192
White	George	UWA	Marine Science Bldg, Box 357940	Seattle	WA		206/5435648
Willis	Marc	OSU	104 Ocean Adm Bldg	Corvallis	OR	97331	541/7374622

# APENDIX III

## UNOLS RVTEC Meeting, 1999 NSF Report

### Staff Changes, Oceanographic Centers and Facilities Section

#### New in 1999:

Ms. Holly Smith, Science Assistant for OCFS  
CDR Elizabeth White, NOAA, assisting OCFS in Ship  
Operations and SSSE on part-time basis.

#### Retiring in 2000:

Dr. Donald Heinrichs, Head, OCFS, 12/31/99

#### New in 2000:

Dr. Margaret Leinen, URI, to become Assistant Director  
for Geosciences at NSF 1/1/00  
?????????????, to become Head OCFS 1/1/00

#### Recruitment underway:

Associate Program Director, Ship Operations

#### Program and Management issues

FY 2000 budget status  
Academic Fleet Review findings relevant to RVTEC  
Recompetition of award for Ship Inspection Program  
Updated/electronic submission guidelines for proposals FY  
2001 and beyond

#### Planning issues:

1. Articulate broadly-based vision for future of ocean science  
and technology  
Develop robust, multi-agency plan for modernization and  
composition of academic research fleet that responds to  
realistic science and funding visions

## FY2000 Budget Request

<b>OCEAN SCIENCES</b>	<b>FY1998</b>	<b>FY1999</b>	<b>FY2000</b>	<b>Increase</b>	<b>Percent</b>
Ocean Sciences Research					
Support	\$112.2M	121.7M	125.0M	3.3M	2.70%
Oceanographic Centers					
and Facilities	46.1M	47.3M	48.5M	1.2M	2.50%
Ocean Drilling Program	40.7M	45.6M	46.8M	1.2M	2.60%
	\$199.1M	\$214.6M	\$220.3M	\$5.7M	2.60%

**NOTES:**

2. Major emphases in NSF budget request:
  - Information Technology (IT<sup>2</sup>)-\$146 million increment
  - Biocomplexity in the Environment (BE) - \$70 million increment
  - "Disciplinary" programs proposed for "cost-of-living increases" only
3. No budget yet, but getting close
  - House/Senate conference markup close to NSF FY2000 request level
  - House approved conference, Senate to consider week of 10/18.
  - Operating under continuing resolution for October 1-22.

### Updated OCFS Program Guidelines

All OCFS Program Guidelines have been revised, and revisions are being reviewed and will be issued during FY2000 for use. Draft guidelines are posted on OCE website <http://www.geo.nsf-gov/oce/facguide.html> and use this year is strongly recommended. NSF will require Fastlane (electronic) submittal of all proposals beginning 10/1/2000

A couple of points to note:

- Oceanographic Technical Services guidelines are extensively revised from NSF 94-124.
  - Reordered sections .
  - Specialized instrumentation support allowed
  - Emphasis on training and "Customer support"

Oceanographic Instrumentation guidelines have few changes from NSF 94-124.

For FY2000, use "NSF 94-124" as "Program Announcement" on cover page

## **General Information**

Please update inventory of shared-use instruments on your institution's RVTEC web site. 11.1. Link from NSF is up, but several sites are still inaccessible or outdated.

Deadline for Major Research Instrumentation Program for FY2000 is January 18, 2000, earlier than in past - this is a firm deadline, electronic submittal required. Guidelines found on NSF webs site

<http://www.nsf.gov/cgi-bin/getpub?nsf99168>

Winch and Wire Symposium in New Orleans November 30 - December 1. Important to get strong scientific and technical input on winch and Wire requirements looking into the future. Please spread word among technical and scientific groups at your home institutions. and encourage input and attendance.

## APPENDIX IV

### Navy Use of UNOLS

	CY 99	CY 00
ONR	\$9,175	\$8,646
NRL	\$ 775	\$1,003
NAVO	\$7,260	\$2,404
NOPP	\$ 962	\$ 105
Other	\$ 200	\$ 206
 Total	 \$18,372	 \$12,364

9/21/99

### Research Facilities

	CY 1999		CY 2000	
	Days	Funds (\$K)	Days	Funds (\$K)
4. Shiptime	1301	\$18,203	1067	\$11,662
5. FLIP	47	\$ 623	78	\$ 702
6. Upgrades/Equipment		\$ 1,658		\$ 500 +
7. Deep Submergence		\$ 500		\$ 300
8. Layups		\$ 816		-
 Total	 1348	 \$21,800	 1118	 \$13,164

9/21/99

# APPENDIX V



## Hydrographic Workstation Compatibility Concerns

by

Ceri S. Reid, Ph.D. and Robert C. Gauer, P.E.

Coda Technologies, Inc.  
Houston, Texas

RYTEC MEETING - Port Aransas, Texas - 20 October 1999

SLIDE 1

### Data Acquisition and Processing Workstations



Desktop, Rack-Mounted,  
and Portable Systems



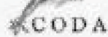
#### Specialized Software Modules

- Real-time Modeling
- Automated Pipeline Inspection
- GIS-Oriented Interpretation Tools



Sidescan Sonar & Shallow Seismic

SLIDE 2



SLIDE 3

### FACTORS AGAINST COMPATIBILITY

- Invites Competition
- Implementation Difficulties
- Sub-optimal Devices
- Out-of-Date Standards



SLIDE 4

### COMPATIBILITY

#### AREAS OF COMPATIBILITY

- Physical
- Electrical
- Data Format
- Medium Format
- File System
- File Format
- Interface
- Operating System



SLIDE 5

#### PHYSICAL:

- Connections
- Gender Benders
- Soldering Iron



SLIDE 5



COMPATIBILITY

ELECTRICAL:

- Voltage Inputs
- Signal output levels
- Correct Timings



SLIDE 7

COMPATIBILITY

DATA FORMAT:

- Never Assume Consistency
- Floating Point vs. Integer
- UNIX vs. IBM PC



SLIDE 8

COMPATIBILITY

STORAGE MEDIUM:

- DAT, CD, MO, ZIP. . .
- Variable Block Sizes
- Manufacturer Settings



SLIDE 9

COMPATIBILITY

FILE SYSTEM:

- FAT16, ntfs, vxfs, tar, etc.
- Tapes and disks have file systems over and above the data format being recorded



SLIDE 10

COMPATIBILITY

FILE FORMAT:

- SEG-Y, XTF, Q-MIPS, etc.
- Proprietary Formats
- Common or Shared Formats



SLIDE 11

COMPATIBILITY

USER INTERFACE:

- Windows Look and Feel
- Intuitive and Easy to Use
- Different User Ability Levels



SLIDE 12



COMPATIBILITY

OPERATING SYSTEM:

- DOS
- UNIX
- LINUX
- Windows NT/95/98



SLIDE 13

*Acquisition - Questions to ask your suppliers*

NAVIGATION SOFTWARE

- Which workstation systems do you have a proven link to ?

SONAR WORKSTATIONS

- Which sidescan and sub-bottom systems do you interface with ?
- Did you use a digital or analog interface ?



SLIDE 15

*Acquisition - Questions to ask your suppliers*

WORKSTATION, cont.

- What navigation variables are updated in the formats you support ?
- Who has read your SEG-Y, XTF, Coda, Q-MIPS data ?
- Is your data format freely available (web site + examples) ?
- Is your storage medium a standard, or supplier specific ?



SLIDE 17

*Acquisition*

*Questions to ask your suppliers*



SONAR SYSTEMS

- Which workstations can interface with this equipment ?
- Which workstation have you personally seen work ?
- Which workstation do you prefer ?
- Is your digital data format readily available ?



SLIDE 14

*Acquisition - Questions to ask your suppliers*

WORKSTATION, cont.

- Can you interpret a custom navigation string ?
- Which data formats can you write to ? (SEG-Y, Q-MIPS, XTF, CODA)
- Which data formats can you copy to ?
- Which versions of each of these ?
- Are these the latest versions ?



SLIDE 16

*Acquisition - Questions to ask your suppliers*

WORKSTATION, cont.

- What is the file system used on the disk or tape ?
- Are there block size limits for reading/writing to disk or tape ?
- Has anyone used this system for a similar purpose (reference) ?
- Is there anything from easily preventing me from interfacing with my proposed equipment spread ?



SLIDE 18

*Processing - Questions to ask your suppliers*

- Processed nav format? Is this a standard?
- Updating nav variables at playback?
- Supporting different output formats for interpretation?
- Fully flexible ASCII and DXF output? Give me example data
- What data can you output in a report? Will this satisfy my QC?



**SLIDE 19**

*Processing - Questions to ask your suppliers*

- Which charting and/or Geographic Information Systems (GIS) can read your interpretation?
- Which charting/GIS systems can read your tiff/Geotiff?
- Is the position information read accurately from your Geotiff?
- Will you guarantee compatibility with package XXXX? Will you commit your programmers to resolving this issue?



**SLIDE 20**

*Conclusion*

- Manufacturers should be responsive
- Implement and maintain standards
- Ask appropriate and informed questions of your suppliers
- Ensure your supplier is committed to solving your problems
- Nearly all interfacing problems are foreseeable
- Remember, you're not just purchasing equipment ...



... you're buying into a relationship

**SLIDE 21**



**SLIDE 22**



# APPENDIX VI

## UNOLS RVTEC Meeting, 1999 Academic Fleet Review

### Recommendations especially relevant to RVTEC

9. There is a need for a strong, continued program of new technology introduction; steady improvement of existing facilities and technologies; greater, continuing attention to quality control and safety; and a more systematic, standard approach to maintenance, renovation, upgrading and replacement.
10. The funding agencies and UNOLS need to support fleet improvements by enhancing quality control, expanding training of personnel in technical and safety procedures, and developing even higher standards for shared use facilities.
11. The UNOLS system should be retained. The NSF-UNOLS current practices, using institutional operators funded by NSF and other federal agencies with centralized scheduling through UNOLS, seems to provide excellent access to the sea for US investigators. To the extent the committee can assess, costs appear comparable to or better than government operators~ and not evidently different from costs of contracting commercial platforms.
12. We ask NSF to consider a trial which includes some commercial operators participating as UNOLS non-member operators to provide unique capabilities not otherwise available.

Additional recommendations by the Academic Research Fleet review committee, as well as supporting information, are available in hard copies of the report available at the meeting, as well as online:  
<http://www.geo.nsf.gov/oce/fleetrev.html>  
They can also be requested from the UNOLS Office.

## **Ship Inspection Program**

A request for proposals is in preparation at NSF, for publication this fall/winter, accepting bids for a new inspection program for UNOLS vessels. This will replace the existing program, which has been contracted through the UNOLS Office, with a program contracted directly from NSF. We do not envision significant changes in the inspection protocols at this time.

# APPENDIX VII

Fall 99 RVTEC Meeting  
Using NetCDF  
Randy Zagar

Graduate College of Marine Studies  
University of Delaware

## Table of Contents

A Little History  
What is NetCDF  
NetCDF Tools  
NetCDF Conventions  
Designing a NetCDF Data File  
Creating a NetCDF Data File  
Working Examples  
Discussion

## A Little History

- 13. My Experiences with Legacy Data
  - File Formats Change Over Time
  - Documentation Gets Lost
  - Raw Datafiles Get Misplaced
  - Continually re-writing software

## What is NetCDF

“ The purpose of the Network Common Data Form (NetCDF) interface is to allow you to create, access and share array-oriented data in a form that is self describing and network-transparent.”

NetCDF User's Guide  
Version 2.4  
February 1996

NetCDF is a library of routines for managing scientific datasets.

NetCDF files are useable on any computer, regardless of its architecture.

There's more to data than numbers.

## Components of a NetCDF File

- Dimensions
  - Length
  - Limited vs. Record
- Variables
  - Types
  - Scalar or Multi-Dimensional
- Attributes
  - Variables
  - Files

## Example

Dimensions:  
depth = 15., cast = 'UNLIMITED'

Variables:  
float time(cast)  
    units = "hours since 1997-03-27 15:271:00.0 +0:00"  
float temp(depth, cast)  
    long\_name = "CTD Temperature"  
    units = "degree\_Celsius"

Global Attribute:  
SHIP\_NAME = "R/V Cape Henlopen"  
CRUISE\_NAME = "HFA-97 #1"

## NetCDF Tools

### Several Options Are Available:

**Public-Domain Tools, or**

**Commercial Software**

**Matlab**

**IDL, or PV-Wave**

**Advantages & Disadvantages**

### Public-Domain Tools:

Free Code from Unidata  
NetCDF, NetCDF-Perl, Udunits

Supported Languages:

C, C++, Fortran, Perl, and others

Compiles Easily on *Any* Unix...

Win95/NT is harder, but this situation was improving rapidly.

### **Commercial Software:**

Matlab

NetCDF toolbox developed/supported by Chuck Denham at USGS, not by the vendor.

Nearly All Platforms Are Supported:

Win95/NT,, Unix, and Mac (v5.2)

Linux version of NetCDF toolbox is broken.

IDL, or PV-Wave:

NetCDF is directly supported by the vendor,

All Platforms Are Supported.

Win95/NT, Unix, Linux, and Macintosh

More Expensive than Matlab

### **Advantages & Disadvantages**

Perl-based NetCDF:

Excellent for dealing with difficult file formats,

Matlab:

Very easy to write programs, and

Good Graphics,

IDL/PV-Wave:

Your code will end up looking like Fortran...

But With Good Graphics

### **NetCDF Conventions**

NetCDF provides a general API but a standard "look-and-feel" still has to be defined by the User Community.

Each User Community defines how their type of data is to be represented/described,



NetCDF Conventions are registered, and a  
Repository is maintained at:  
<ftp://ftp.unidata.ucar.edu/pub/netcdf/Conventions>

NetCDF Convention Docs Define:  
Variable naming standards  
Required attributes  
And coordinate systems

Oceanographic Conventions  
COARDS  
PMEL-EPIC

## COARDS Conventions

### Variable Names:

Starts with A-Z, followed by A-Z, 0-9, or “\_”

### Coordinate Variables

Variable names same as a dimension

### New Attributes:

positive = "up | down"

## COARDS Conventions

### Standard Variable Attributes:

long\_name

units

scale\_factor, add\_offset

valid range, valid\_min, valid\_max

\_FillValue, missing\_value

### New Attributes.

positive = "up | down"

## PMEL-EPIC Conventions:

Extension of the COARDS Conventions,. New Attributes (variable & global) to support large analysis/visualization package.

### New Attributes:

Global: CREATION\_DATE, Conventions

Variable: generic\_name, epic\_code, FORTRAN\_format

Axis Variables: type

## PMEL-EPIC Conventions:

### Additional Restrictions

- All variables are 4-dimensional (T,Z,Y,X),
- Longitude is "degrees \_ west".
- Depth-axis always positive-downward.
- Use two variables for time.
- Every variable has a specific numeric code and a generic\_name

## PMEL-EPIC Conventions:

### Conventions for Specific Data Types:

- CTD Casts: CTD, XBT, Bottle
- Track-Line Data: Towed or Hull-mounted instruments
- Time-Series Data
- Gridded Data
- ADCP Data

## UNOLS Conventions?

### Why Do We Need More Conventions?

- Not Designed for Raw Datasets

- No Provisions for Quality Assurance
  - No Instrument Configuration
  - No Maintenance/Calibration History

- Need Contact Information When Sharing Data Between Institutions

## **Designing a NetCDF Data File**

### NetCDF Design Goals:

- Minimizes Storage Requirements
- Preserves Resolution of Raw Measurements.
- Quality Assurance:
  - Instrument Configuration Data

- Maintenance / Calibration info.
- Other Considerations...
- Coordinate-System info...
- Integration with a Larger System

#### NetCDF Design Process:

- Asslgn Variables to Instruments and Sensors
  - Variable Type Determined By:
    - Range of Data Values
    - Resolution of the Instrument
- Asslgn Attriblutes to Variables As Needed
- The Dimensions are Usually Obvious
- Use Global Attributes for.
  - Configuration Maintenance Data
  - Other Fields Required by Conventions

#### Case Study.

- Shipboard Meteorological Data  
(courtesy of Steve Poulos, SOEST @ U. Hawaii)

- What Data is Being Collected?
  - Time, Temperature, Humidity,
  - Wind Speed & Direction
  - Precipitation and Solar Irradiance.
- Most Have Multiple Data Sources

#### SOEST Meteorological Data

- Two Types Of Time Are Recorded:
  - GPS Time (to the millisecond)
    - Year, Julian Day, Hour, Minute, Seconds, Milliseconds
  - Campbell Data Logger
    - Only the seconds are recorded. This is used to check for clock-drift on the logging computer

#### SOEST Met. Data: GPS Time

- GPS Time Needs Two Variables:
  - Time\_days: Just for the Julian day
  - Time\_msec: Just the milliseconds

- CDL Format for Time\_days
  - short time\_days(time) ;

```
long_name   = "time (days)"
units       = "days since 1999-01-0100 00:00:00 +0:00"
valid_range = 0s, 32767s;
_FillValue  = -32768s;
```

#### SOEST Met. Data, GPS T

The Second GPS Time Variable:  
Time\_msec: Just the milliseconds

#### CDL Format for Time\_msec

```
int time_msec(time):
  long_name   = "time (milliseconds)"
  units       = "msec since 00:00:00 +0:001"
  valid_range = 0,86400000
  _FillValue  = -2147483648
```

SOEST Meteorological Data:  
Time from the Campbell Data-logger

#### CDL Format for Camp\_sec

```
int camp__sec(time)
  long_name   = "seconds (Campbell Datalogger)"
  units       = "seconds"
  scale_factor = 0.001f
  add_offset  = 0.f
  valid_range = 0, 59999
  _FillValue  = -2147483648
  comment     = "used to gauge pc/sparc clock drift."
```

SOEST Meteorological Data:  
Three Different Temperatures Are Recorded:

RTD Platinum Probe  
Humidity Sensor  
"Panel" Sensor

CDL Formats Are All Similar...

SOEST Met. Data: Temperature  
CDL Format for RTD Platinum Probe:

```
float temp1(time)
  long_name   = "temperature (RTD platinum probe)"
```

```

units      = "degrees_Celsius"
valid_min  = -273.15f    // Absolute-zero
_FillValue = -999.f
comment    = "fastest response-time"

```

Using 'floating-point' variable because the instrument resolution is unknown.

#### SOEST Meteorological Data:

Two Wind Anemometers are in use:  
 Port, and Starboard  
 Recording Wind Speed & Direction

CDL Format for Wind Speed.

```

float wind_spd(time,nwind)
  long_name  = "wind speed"
  units      = "knots"
  valid_min  = 0.f
  comment    = "nwind: 1 is port, 2 is starboard."

```

#### SOEST Met. Data: Wind

CDL Format for Wind Direction:

```

short wind_hdg(time,nwind)
  long_name = "wind heading"
  units     = "degrees"
  scale_factor = 360.0/32768
  add_offset = 0.0
  valid_range = 0s, 32767s
  _FillValue = -32768s
  comment    = "clockwise from true north"

```

#### SOEST Met. Data:

Differential-GPS Latitude/ Longitude

CDL Format for D-GPS Longitude:

```

int lon(time)
  long_name  = "longitude (D-GPS)"
  units      = "degrees_east"
  scale_factor = 180.0 / 2147483647
  add_offset = 0.0

```

valid\_range = -2147483646, 2147483647  
\_FillValue = -2147483648  
comment = "provides centimeter resolution"

## Udel/CMS S4 Current Meter Data

### Global Attributes:

Created\_By  
Start\_Time, End Time  
Organization, Project, Experiment  
Contact\_Name, Phone, Addr., EMail  
Instrument\_Type, Serial\_Num, Calibration\_Date  
Original\_Filename

## Udel/CMS S4 Current Meter Data

### Scalar Variables:

Mooring Latitude, Longitude  
Averaging Interval and Duration  
Magnetic Offset

### Why not use Global Attributes?

These quantities have physical units, or  
Their orientation is ambiguous.

## **Creating A NetCDF Data File**

Once the design is complete, the rest is easy.

Open a new file  
Define your dimensions  
Define your variables along with their attributes  
Define your global attributes  
End define mode  
Write your data  
Close the file.



# APPENDIX VIII

*Note reasons for attendance:*

14. Thank UNOLS data providers for support over past 5 years

15. Present some current applications of UNOLS meteorological data

16. ...

## **Importance and New Application of Underway Surface Meteorology Data**

Shawn R. Smith, David M. Legler, Mark A. Bourassa, and James J. O'Brien

Center for Ocean-Atmospheric Prediction Studies, Florida State University

[www.coaps.fsu.edu/WOCE](http://www.coaps.fsu.edu/WOCE)

## **Who We Are**

Data center specializing in quality review of meteorology data collected on vessels equipped with automated measurement systems

We developed quality control procedures and employ them to create value added products

We distribute these products to the community and apply them to current scientific problems

*As a background for those unfamiliar w/FSU center, we are....*

*Through the WOCE and TOGA/COARE programs we developed...*

## **What We Do**

Collect data from research vessels performing WOCE cruises (1988 to 1998) and other select vessels

HOW? Mostly by request

WHAT? Tape, CD, electronic, paper – many formats!

Variables: air and sea temperatures, pressure, humidity, winds, radiation, and precipitation.

Metadata (instruments, installations, heights, etc.)

Recent focus has been on data measured at high time resolution (1-minute intervals) by automated systems

*Select vessels = Ships providing data for satellite work to be shown*

*Non-WOCE IMET equipped vessels*

*Metadata is key to making observed data useful to the scientific community*

### **Quality-Control**

All incoming data converted to common format (netCDF)

Automated flagging

VIDAT (Visual Data Assessment Tool, developed in-house software tool)

Multiple window system (IDL)

Visual multiple data streams

Map positions/climatologies

Check automated flagging

Visually add additional flags

Provide feedback to vessel operators

*Put in plug for morning speakers --we use netCDF format; --very nice, can easily include Metadata*

*Once in netCDF, our QC process involves two steps...*

*Feedback stories:*

*Found problem with R/V true winds – no heading in calculation. After contact with R/V the problem was resolved – now one of the best wind datasets*

### **SLIDE 1: WOCE research vessels**

*Overview of our current data coverage. All WOCE cruises*

*Note quantity of one-minute data*

*Show additional high-resolution data to process*

**SLIDE 2: Selected none-WOCE research vessels**

**SLIDE 3: Number of observations**

*Current coverage by year – publicly available. Most data 1991-1995*

**SLIDE 4: Knorr 4-31 March 1993**

*Coverage advantage of automated R/V meteorology*

*IMET coverage for Knorr vs. all COADS observations within 1\_ of Knorr track (Note: a data-*

*sparse region of globe)*  
*Comprehensive Ocean-Atmosphere Data Set (COADS)*

**SLIDE 5: Thompson 17-31 July 1995**

*Only 5 observations (COADS) per day vs. ~1400 IMET*  
*Some applications best done with high-resolution data: flow distortion studies, cal/val.*

**Data Distribution**

1. WWW, FTP
2. WOCE Global Data (Version 1.0-1998)
  - 13-CDROM volume of WOCE data
  - 2 additional CDROM's of satellite data
  - Over 5 GB of data and products
  - Surface meteorology data and fluxes (3 CD's)

*We wish to encourage all collectors of data to make them available (on line if possible)*  
*More data allows more good science = more funds*

**Data Applications**

3. Value to the WOCE program (local heat budgets and modeling efforts)
4. Feedback on measuring earth-relative (i.e., True) winds from automated systems (paper by Smith et al. 1999, J. Atmos. Ocean Technol., 939-952)
5. Satellite winds validation (Bourassa et al. 1997, EOS, 597-602)
6. Surface flux products evaluation (paper by Smith et al., 2000)

*Some cuurrent applications.*

*To visualize the confusion:*

*Typically ship relative winds are recorded using similar definitions. For example, oceanographers tend to record ship-relative winds, 180\_ out of phase to what meteorologists*

*expect:*

**SLIDE 6: Three figures based on True Wind..**

*The result of not reporting the direction convention used causes errors in True wind computation. Describe Figure:*

**SLIDE 7: Impact of 180 degree Error on True Wind Speed**

*(1) Note changes in ship speed. (2) Note ship relative winds. (3) Incorrect calculation (red) - ship motion should not be ?????? in true winds. (4) ????*

**SLIDE 8: R/V Knorr - 19 August 1995 (Fig 2)**

**SLIDE 9: Coverage of Tropics**

**SLIDE 10: Wind Speed - R/V Knorr, October 1996-March 1997)**

**SLIDE 11: Wind Direction Validation**

**SLIDE 12: Wind Speeds: QSCAT vs. R/V Atlantis**

**SLIDE 13: Data matches: 1990-1995**

**SLIDE 14: Sea-Level Pressure, Wind Speed**

*Ship standard error based upon R/V data*

*NCEP - standard error based upon the true natural variability*

*Small standard errors in regions of large differences show significance of result*

*Describe Figs:*

*20\_ latitude band average for ship and NCEPR*

*Standard errors*

*Note: regions of underestimation*

**SLIDE 15: Pressure Bias, Wind Speed Bias**

*Wind Bias increases with increasing ship wind speed*

*Pressure differences split near 990hPa; NCEPR overestimates at low P, NCEPR underestimates at high P*

*Expect problem with NCEPR P gradients and underestimated winds (simplification)*

**SLIDE 16: Latent Heat Flux, Sensible Heat Flux, Wind Stress**

*Same plotting as earlier meteorological data*

*(1) Note NCEPR general overestimations of fluxes. (2) Stress is pretty good*

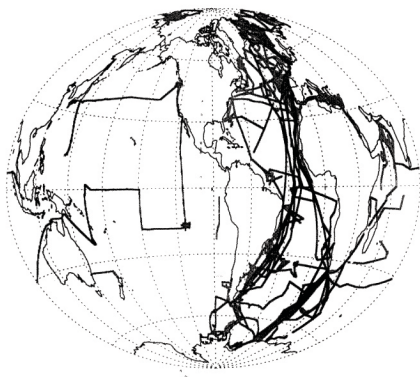
## **Future**

7. Expand scope of data collection and review efforts
  - Data already in archive (but not processed: non-WOCE)
  - Data from NOAA vessel *Ronald Brown* and R/V *Revelle*
  - Interested in collaboration with additional UNOLS vessels
8. Continue satellite validation work
9. Evaluate additional reanalysis products
10. VOS automated weather system initiative

*That is a brief overview of some current applications of R/V meteorology data. I cannot stress enough the importance of automated measurements and their potential for scientific research. Continued collection and improved accessibility will benefit both the science community and the R/V operators (UNOLS). Final note on future plans...*

Selected Non-WOCE Research Vessels

Data Coverage : 89-97



- R/V Knorr
- R/V Meteor
- R/V Polarstern
- R/V Thompson

No. records = 2956055

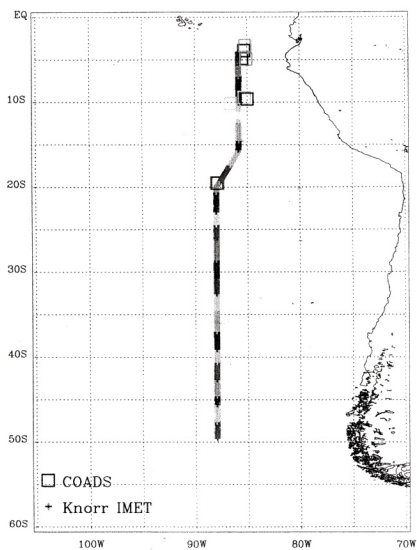
WOCE Research Vessels

Data Coverage : 88-98



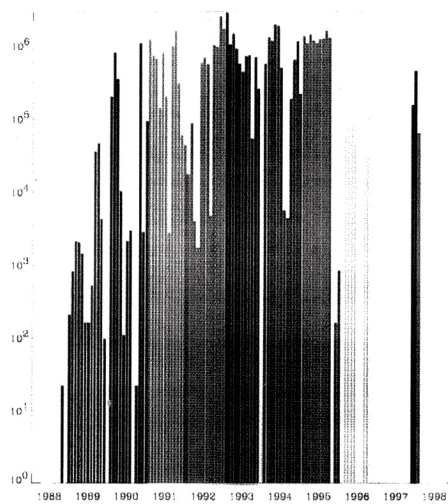
- Frequency = 1 min
  - Frequency <= 60 min
  - Frequency <= 180 min
  - Frequency > 180 min
- No. ships = 37  
No. records = 2670027

Knorr 4-31 March 1993



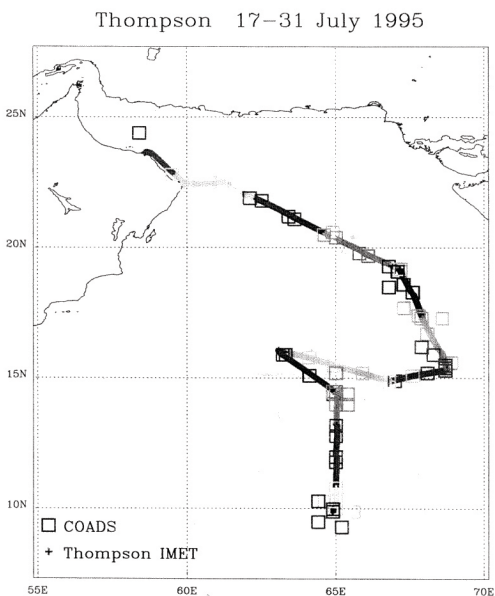
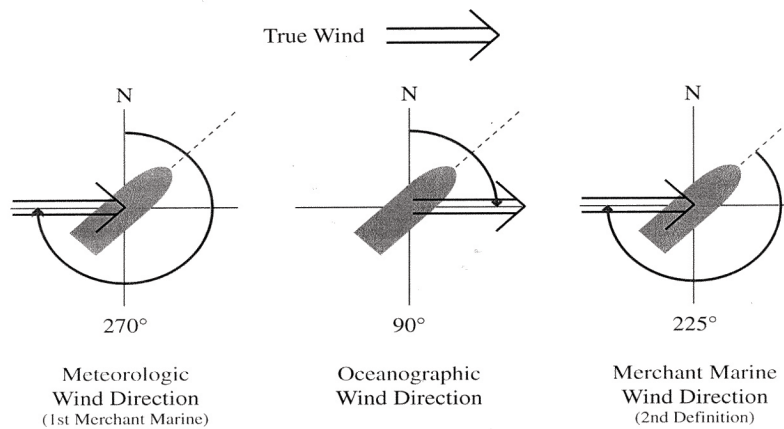
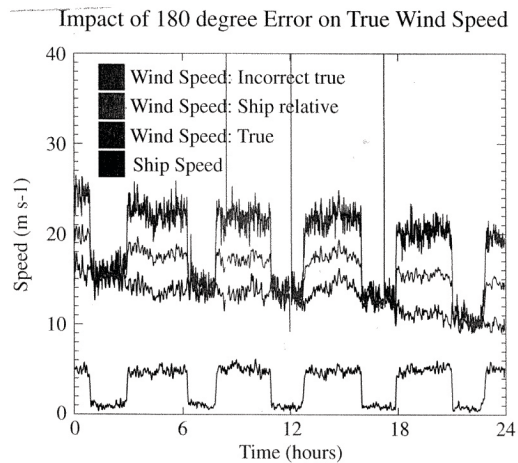
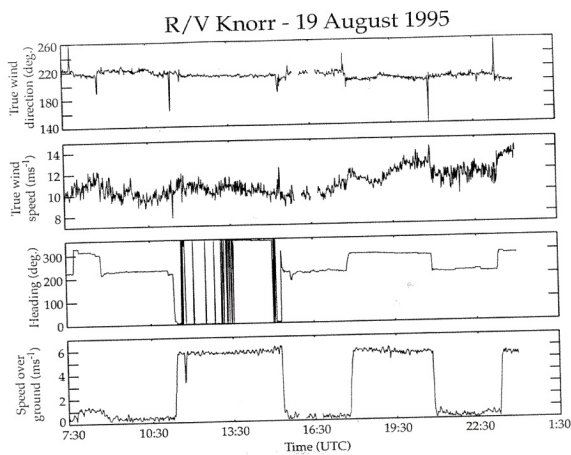
Number of Observations

WOCE One-Time and Repeat Lines : 88-98

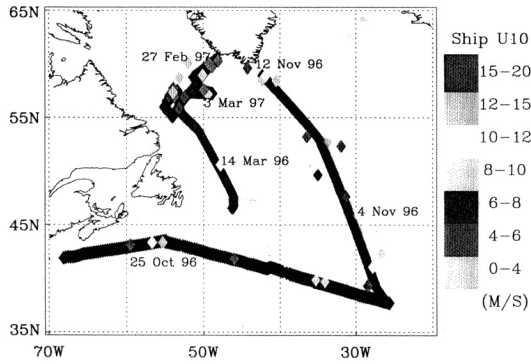


Total Observations = 49449524

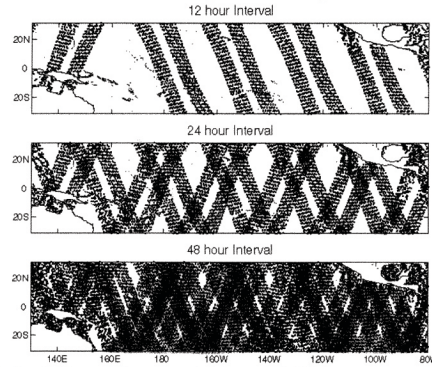




Wind Speed – R/V Knorr  
October 1996 – March 1997



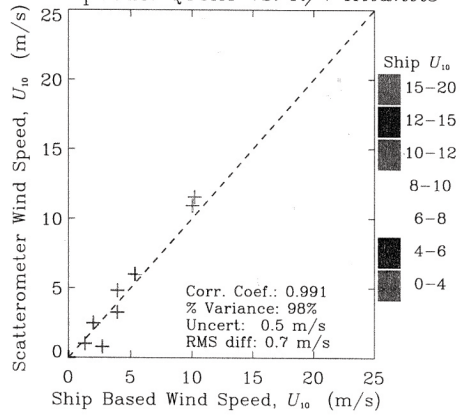
Coverage of Tropics



From Kathy Kelly and Suzanne Dickenson (APL)  
<http://ultrasat.apl.washington.edu/AIRS/thegroup/kkelly/gif/sampling.gif>

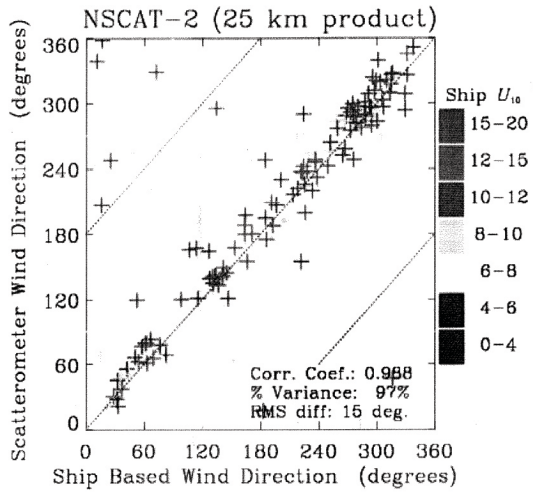
Center for Ocean-Atmospheric Prediction Studies  
The Florida State University

Wind Speeds: QSCAT vs. R/V Atlantis



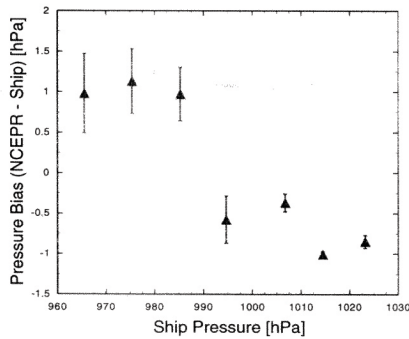
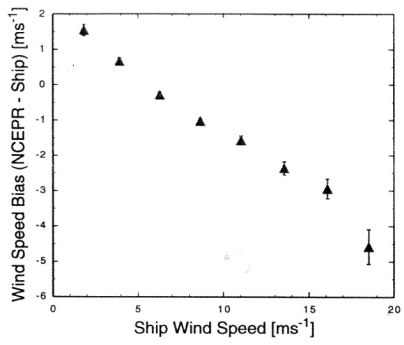
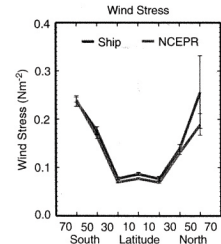
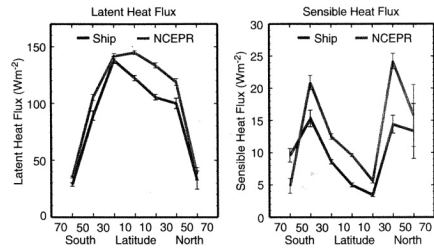
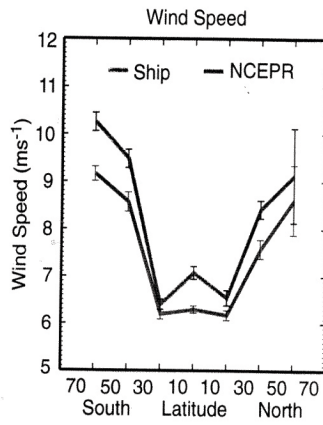
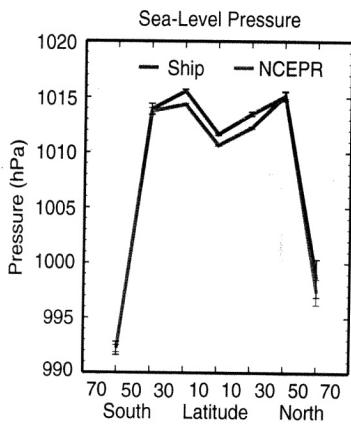
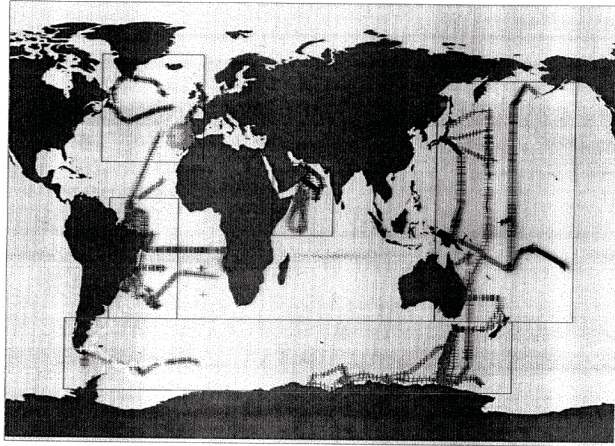
Mark A. Bourassa  
COAPS/FSU

Wind Direction Validation



Center for Ocean-Atmospheric Prediction Studies  
The Florida State University

Data matches: 1990-1995  
NCEPR vs. 8 select WOCE vessels



# APPENDIX IX

## Marine Advanced Technology Education (MATE) Center Education for a Marine Technical Workforce

Deidre E. Sullivan, Nicole L. Crane, Jill Zande, Jim Hall  
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### **ACTION ITEM:**

The MATE Center would like to include the words: "These Knowledge and Skill Guidelines for Marine Technicians were developed in collaboration with UNOLS" and the UNOLS logo on the cover of the guideline report.

### **BACKGROUND INFORMATION:**

On October 23, 1998 the MATE Center conducted a skills workshop in San Diego, CA to define the skills, knowledge, and abilities marine technicians need to work aboard research vessels. The workshop consisted of 11 marine technicians from 11 of the major marine research facilities that operate most UNOLS research vessels. During this workshop the technicians worked with a trained facilitator to define the job functions and tasks they perform as well as the technical knowledge and skills required to do their work. The outcome of this workshop was a draft of "Skills and Knowledge Guidelines for Marine Technicians."

After the draft guidelines were developed, a validation survey incorporating the key elements of these guidelines was sent to 300 marine technicians and supervisors at marine research facilities that host research vessels. An additional 25 surveys were sent to marine technicians at the United States Geological Survey. The validation process tested the range of applicability of the guidelines and measured the level of importance of specific job functions, tasks, technical knowledge, and skills to marine technicians. Technicians participating in this survey also had the opportunity to suggest additions or deletions to the guidelines. The Knowledge and Skill Guidelines for Marine Technicians is the consensus of 115 marine technicians and supervisors on what good marine technicians need to know and do.

The MATE Center has also developed Knowledge and Skill Guidelines for ROV Technicians and Hydrographic Survey Technicians and hopes to have Oceanographic Data Processing Technician Guidelines available in draft form this fall. The Knowledge and Skill Guidelines for Marine Technicians will be used in conjunction with the other three Guidelines (with more to come) to develop flexible academic programs that prepare students for entry level positions in a variety of related fields. The use of these guidelines is voluntary. The primary goals of Knowledge and Skill Guidelines are to allow educators to develop appropriate curriculums and programs that incorporate skills most in demand by employers and to empower students to make informed decisions about the skills they need to enter the marine technical workforce.

**APPENDIX X**  
UNOLS RVTEC  
ONLINE RESOURCES SUBCOMMITTEE  
1999 ANNUAL REPORT

Prepared by  
Thomas C, Wilson, Jr.  
Ocean Instrument Laboratory  
Marine Sciences Research Center  
State University of New York  
*Stony Brook NY 11794-5000 USA*

*To my colleagues at RVTEC:*

I would like to apologize for an unfortunate combination of professional and personal commitments that has conspired this year to break my perfect attendance record at RVTEC meetings. I am sure that this annual meeting, like those before it, has been a combination of valuable professional and enjoyable personal interaction. I regret having missed out and plan to be back in the thick of things next year. In lieu of a personal appearance, I would like to offer this document to fulfill my responsibility of presenting an annual report as chair of the Online Resources Subcommittee.

#### CURRENT STATUS OF THE RVTEC HOME PORT

Note to all -- In the following discussion I will mention methods and products that I am using to implement the RVTEC website, I mention *them by name* in the. hope they might prove useful to others. In general I choose tools that are reliable, reasonably economical and, most importantly, easy to learn and of value to the occasional user. I encourage others to recommend their personal picks both to myself and the RVTEC community--expertise sharing is one of the main reasons we exist after all.

The RVTEC website continues to function well. As discussed last year, the site has been moved from the UK web server to a SUNY server with automatic redirection from the old page URLs. Location on the SUNY server will give us more flexibility in implementing site enhancements and gives us immediate access to log files of visitors.

The home page of RVTEC is now located at: <http://kilroy.msrc.sunysb.edu/rvtec>

The SUNY server is a Dell Optiplex Pentium running Windows 95 and the Smartdesk Websuite web server. In addition to RVTEC, the server hosts web sites for a real time environmental data system and our research vessel *Onrust*. We have found the server to be quite stable and robust. During stormy weather the server gets several thousand hits a day with no perceptible degradation in performance.

Due to a mission-critical data system running on the server, we have installed a hardware watchdog card from Outsource Engineering that resets the system if it locks up. We also use

Automate Pro automation task software to reboot the system periodically and to send e-mail and pager messages in case of trouble. After the brouhaha at last year's RVTEC over reboot frequency, I went home and reprogrammed the system to automatically reboot once per week. I have experienced no problems as a result of this change, so my earlier overzealousness may have been unjustified, but it still adds to my comfort level to have the watchdog and an occasional scheduled reboot in place.

For those of you who use NT as your primary operating system, let me mention that all the software I am using appears to run fine under NT. We have in fact installed a Windows NT workstation and are in the process of shifting some functions from the kilroy server to the NT machine. At this point however I have no plans to move the RVTEC website to NT unless a good reason appears.

We are currently using SoftQuad's HoTMetaL Pro to work on the website. This is a fairly economical and easy to use website editor. I like it because it allows easy switching back and forth between an interpreted view of the page and the underlying HTML code, allowing easy tweaking of the code if needed. HoTMetaL also is not from any of the combatants in the browser wars, so it is easier to produce sites that are not biased toward any particular manufacturer. You can actually specify up to eight installed browsers on your machine so with a single click you can drop a page you are editing into Netscape, Explorer, etc. to see exactly how it will display.

The Center for Applied Special Technology (CAST) is a consortium that has developed software called Bobby that checks website content for accessibility to people with disabilities. If the content and presentation of the site meet guidelines, the Bobby seal of approval can be displayed on the site. I became aware of Bobby some months ago when there was a buzz about potentially requiring government websites to meet the Bobby guidelines. With some trepidation about Big Brother watching my computer, I investigated and found the rumors to be just talk (for now at least). However, CAST's guidelines are quite reasonable and intelligent suggestions for good website design. With a fix of one overlooked tag the RVTEC site met Bobby guidelines. I would therefore recommend the CAST website as a useful free resource to all of you who are maintaining local web pages.

We regularly check the site with Linkbot Pro which, when given a starting web page, exercises all the links and produces a list of problems. Unlike some competing tools, it works equally well for sites out on the web and for local files on disk during development. I would still ask for your help in giving me a heads up if you know that your website is undergoing major renovation, particularly during the busy summer field season when this type of maintenance tends to get deferred.

We have started to gather site usage statistics using the log files produced by the SUNY web server. I am using NetIntellect Lite, the free version of a more capable and expensive full commercial package. I found the Lite version quite sufficient for my needs and apparently am not alone, because the company recently removed the free version from its website. I of course responded by placing the free version on my anonymous ftp, site, from which you are welcome to retrieve it.

## PLANS FOR FUTURE WORK

While a search for UNOLS or RVTEC on the main Internet search engines will find our sites, I plan to increase the visibility of both the main UNOLS site and the RVTEC site by implicitly submitting information to the search engines. This can be done manually or automatically with a growing number of software titles. Expect a report on this at, the next meeting.

As always, I would solicit links or content from RVTEC members for the web site. This can range from reports on committee work to outstanding or unusual projects undertaken by RVTEC members.

I will be in contact with the UNOLS office regarding the possibility of our registration of the UNOLS.ORG domain name. I have recently located a particularly good deal from a national commercial Internet Service Provider that will register unols.org for us, host our domain and provide additional useful services for a \$200 setup fee plus \$25 per month. This would give us simple Web addresses like info@unols.org, [office@unols.org](mailto:office@unols.org), or [rvtec@unols.org](mailto:rvtec@unols.org). Control of these features is through a very simple password-protected web browser interface. We can initially set things up as automatic forwards so requests are routed to the email accounts and web servers we use now. Later on we can gracefully and incrementally move from forwarding to hosting as little or as much as desired on the commercial server. With the impending move of the UNOLS office, this might be a most propitious time to establish a permanent Internet home address.

To conclude, I would like to extend my appreciation to everyone who works to make RVTEC a valuable resource for the oceanographic community. I hope that my contributions have been useful, and would ask for the privilege of continuing to serve the organization as chair of the Online Resources Subcommittee. My wishes to all for continued success and I look forward to seeing you all again next year.

Best regards,

Torn Wilson

## RESOURCES MENTIONED IN REPORT

**SmartDesk Websuite** web server for Win95/98/NT, \$99.95, 15 day free trial,  
Available online (download is less than 1 Megabyte!!)  
[www.smartdesk.com](http://www.smartdesk.com)

**Hardware watchdog cards**- \$60.00 - \$150.00 depending on model and features.  
Outsource Engineering and Manufacturing  
3669 West 11987 South Salt Lake City UT 84104-4904  
Tel: 801-956-0000

Fax: 801-956-0750  
[www.outsrc-em.com](http://www.outsrc-em.com)



**HoTMetaL, Pro** website editor: about \$90.00 - \$100.00 at retail. Available atCompUSA, PCConnection, and directly from the manufacturer:

SoftQuad Software, Inc,  
161 Eglinton Ave, East, Suite 400  
Toronto M4P 1J5 CANADA  
Tel: 800-367-2777  
Fax: 410-544-0300  
[www.softquad.com](http://www.softquad.com)

**Center for Applied Special Technology (CAST) Bobby** website accessibility checker.

**LinkBot Pro** website checking software: \$295.00 (ouch - this was cheaper when I bought it!)

Watchfire  
135 Michael Cowpland Dr, Suite 400  
Kanata, Ontario K2M2E9  
Tel: 613 599-3888  
Fax: 613 599-3826  
[www.tetranetsoftware.com](http://www.tetranetsoftware.com)

**NetIntellect Lite logfile** analysis software: free but presumably unsupported.

Available by anonymous ftp to [kilroy.msrc.sunysb.edu/pub/win/nilitesetup.exe](ftp://kilroy.msrc.sunysb.edu/pub/win/nilitesetup.exe)