

APPENDIX XI

University of Miami

From: Prof. Chris Mooers
To: Prof. Ken Johnson Dr. Don Heinrichs Mr. Jack Bash
Subj: Regional workshops

Date: 25-Sep-95

1. Enclosed are draft guidelines for the regional workshops which we plan to ask the regional consortia to organize. I broadened the focus to include regional as well as coastal oceanography.

2. I think there was enough positive discussion (including from Dick Pittenger and Bob Knox in the aftermath) at the UNOLS Annual Meeting that it is important to follow-up promptly. It appears that we are heading for six workshops:

- NECOR
- MARCO
- SECOR
- Scripps plus CENCAL
 - (With Ken's blessing, I have approached Bob Knox on this.)
- NORCOR
 - (I plan to ask them to include Hawaii due to Alaska's affinity for them.)
- Great Lakes

Scheduling will be a problem so they don't occur simultaneously and so that an ad hoc subcommittee of FIC can attend.

3. Thus, I would appreciate your comments on any of this, especially the guidelines, by ***COB FRI, 19 SEP 95***.

DRAFT

Guidelines for UNOLS Regional Consortia Workshops on Coastal and Regional Oceanography

(Prepared by Prof. Chris Mooers, FIC Chair/25 SEP 95)

1. The goal of these workshops is to seek community input, on a regional basis, for defining national facility needs for coastal and regional oceanography. This planning effort is a follow-up to the Williamsburg Workshop of February 1993, for which an UNOLS report exists.
2. The results will be organized into a UNOLS/FIC report, which, in turn, will feed into the 1997 UNOLS Fleet Improvement Plan.
3. The facilities focus should include regional observing systems (e.g., telemetering moored and drifting buoys), research vessels, special platforms (e.g., barges, piers, jack-up rigs, AUVs), information management systems, etc.
4. The workshop participants should include representatives from ship-operating institutions *and* non-

ship-operating academic institutions, plus appropriate federal and state organizations.

5. *As a minimum*, each workshop report should include an assessment of the following

- a. existing facilities
- b. scientific topic areas and likely research programs
 - over the short-term (next 5 to 10 years)
 - over the long-term (next 10 to 40 years)
- c. by comparing a. and b., define facility needs, especially for research vessels

6. An ad hoc committee of UNOLS/FIC will attend each of the regional workshops as observers to seek and offer cross-fertilization opportunities.

7. Each regional consortium is encouraged to follow the lead of MARCO and submit a modest proposal to NSF for workshop support.

8. The aim is to complete a series of six regional workshops by the autumn of 1996.

17 August 1995

University of Miami

Dear Colleague:

As Chair of UNOLS FIC, I have been charged by the Council to prepare a white paper (a recently revised version of which is enclosed) on the role of regional research vessel consortia in UNOLS.

At our July FIC meeting, I was asked to extend the white paper to include : (1) a historical perspective on each consortium; (2) their present status, including members; (3) your perspective on the pros and cons of such consortia; and (4) your perspective on their capabilities and limitations. Hence, I would appreciate receiving a response from you on these topics by *31 August*. To compare how the various consortia are constituted and structured, I would also appreciate receiving a copy of your charter, MOU, or equivalent founding document. Of course, your comments on any aspect of the white paper would be welcomed, too.

You may be interested to know that FIC is conducting an analysis of the so called "Coastal Zone Research Vessel" topic, including existing and prospective capabilities and needs. Part of our planned approach is to work with regional consortia (where they exist) to create a national perspective over the course of the next year or so.

Christopher N.K. Mooers

Chair, UNOLS FIC

cc: Dr. Ken Johnson, UNOLS Chair
Mr. Jack Bash, UNOLS Executive Secretary

Enc.

P.S. I have (perhaps) arbitrarily designated a POC for each consortium on the enclosed mailing list. If this is misdirected, please rectify among yourselves. While I hope each designated POC will accept the burden of a detailed response, others are welcome to offer comments, too.

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REVISED DRAFT

White Paper on UNOLS Regional Research Vessel Consortia
Chris Mooers, FIC Chair
16 AUG 95

Background. Recently, UNOLS has suddenly entered an era of rapid change: no-growth funding levels at NSF, etc., with possibilities of downsizing and realignment on the horizon. In the same era, the US Navy has decommissioned its research vessels and NOAA may be following suit. Furthermore, the character of ocean science is changing with major themes in global and coastal ocean science emerging, with new satellite and other autonomous observing systems, an enlarged research populace, and the emergence of computer modeling.

This is an era when the concept of shared resources (ships, instrumentation, marine technicians, etc.) may have new meaning and urgency, especially when considering the needs for expensive technology and the more competitive research funding situation. The shared-resource approach is timely with the trend for the scientific user-base being evermore dispersed institutionally and the rise of non-ship operating institutions.

There may also be new opportunities in regional ocean science and coastal ocean science, especially if improved, coordinated efforts can be engendered and maintained. On the regional and coastal ocean scales, research vessel inventories need to encompass a spectrum of vessel sizes and types.

Historically, the UNOLS community has seen regional consortia develop, mainly in association with efforts to acquire a new research vessel. None of the present consortia (see Appendix) can be said to be fully functional. Remarkably, a 1972 UNOLS study (enclosed) outlined the need and potential for regional consortia for coastal ocean research; the concepts articulated then seem very relevant today.

Vision. Now is the time to cultivate a new stage of development for the existing (and largely moribund) regional consortia. They should be based on well-rationalized geographical domains and cover the full spectrum of research vessels. Their major attributes could include:

1. One or more ship-operating institutions involved as principals
2. One or more academic institutions involved as principals
3. A non-exclusionary nature by offering associate membership to non-ship operating regional institutions.
4. A level of 'jointness' associated with the ship operations; e.g.,
 - regional scheduling
 - pooling of instrumentation
 - pooling of marine techs
 - coordinating shore support (i.e., maintenance and repair)
 - long range planning of vessel and facility requirements, design, upgrading, equipage, training, regional telemetered data, data processing, etc.
 - proposal preparation
5. Regional faculty (user) oversight
6. Regional management (administrative) coordination
7. A possible focus on intermediate and small R/Vs; however, large R/V's, specialized platforms, and other facilities could be included

Note: Items 1 to 6 are considered highly desirable conditions; large R/Vs may need special consideration.

New management mechanisms need to be evolved and codified. For example, past consortia may have remained embryonic because member institutional commitment was lacking. A system of membership dues (to defray costs of meetings, etc.) might make the difference. (It may be best for UNOLS to propose a template for consortia.) Clearly, there must be a balance between the needed management controls of ship-operating institutions and the oversight required by the regional community of scientists served.

Another need is for NSF, ONR, NOAA, and other agencies to provide moral support of regional consortia, which needs to be backed with financial inducements.

Plan-of-Action. Several steps need to be taken. First, the UNOLS Council needs to discuss and possibly endorse this regional consortia concept, and modify it as necessary. Second, UNOLS needs to consider possible guidelines for the formation and operation of consortia. Third, agency moral and financial support must be obtained. Fourth, one or more consortia should be encouraged to "step out" with revitalization. Fifth, their progress should be monitored, the guidelines modified, and the overall UNOLS community should be kept informed of progress and problems.

APPENDIX

Existing Regional Consortia and Other Institutions Shown in Regional Group

<u>NAME</u>	<u>MEMBERS</u>	<u>STATUS</u>	<u>R/Vs</u>
NECOR	WHOI URI LDEO		Atlantis II, Knorr, Oceanus Endeavor Ewing
MARCO	ODU VMS U. Delaware U. Maryland Rutgers U. Bermuda Biological Station Duke U.	starting up	Ridgely Cape Henlopen Weatherbird II Cape Hatteras
SECOR	TAMU UT (Austin)	MOU '87 revitalization under way	Gyre
	RSMAS		(Iselin), Calanus
	LUMCON		Pelican
	UT (Galveston)		Longhorn
	Skidaway		Blue Fin
NORCOR	HBOI U. Washington OSU U. Alaska		Seaward Johnson, Link, Sea Diver Thompson, Barnes Wecoma Alpha Helix
CENCAL	MLML NPS	operating since '85	Point Sur

	UCSC	
	USC	
"SOCAL"	SIO	Melville, New Horizon,
	U. Hawaii	Moana Wave
"Great Lakes"	U. Michigan	Laurentian
	U. Wisconsin	
	??	

Note: North Carolina (Duke U. plus state universities) operate Cape Hatteras and Louisiana (LUMCON: state universities plus Tulane U. operate Pelican. However, these consortas are not included above because they are state-based rather than regional in nature.

April 12, 1972

REPORT OF UNOLS WORKING GROUP ON COASTAL ZONE RESEARCH VESSELS

1. Purpose of Report

The purpose of this report is to inform the UNOLS Members and Advisory Council of the effects and recommendations of the Working Group for discussion and further guidance at the UNOLS Meetings. May 3-5. 1972

2. Background

The need for coastal zone research vessel to meet the needs of academic research institutions was raised at the first UNOLS Meeting In November 1971 at La Jolla, California. Such Vessel, it was envisioned, should be more capable than those presently used in the growing efforts of institutions responding to the existing and documented needs of coastal zone research, At subsequent meetings the UNOLS Advisory Council directed that a Working Group be formed to examine the needs for Coastal Zone research facilities, and ships in particular, and to develop a plan to implement those needs.

3. Members of the Working. Group

- Dr. R. J. Wold, University of Wisconsin-Milwaukee, Chairman
- Dr. W. S. Gaither, University of Delaware
- Dr. M. Gilmartin, Stanford University
- Dr. D. W. Menzel, Skidaway Institute of Oceanography
- Dr. R. E. Smith, State University System of Florida
- Dr. G. H. Savage, University of New Hampshire
- Captain T. K. Treadwell, Texas A&M University
- Mr. John Dermod University of Washington
- Captain R. P. Dinsmore, Executive Secretary, UNOLS

4. Meeting

The Working Group has held two Meetings to date; the first on March 1415, 1972 at the- University of Delaware, Lewes; end the second at the University)r of Wisconsin at Milwaukee on April 12, 1972.

5. Goal of the Working Group

The Working Group considered that the recommendations should be directed principally to academic research needs, both basic and applied, including the role played by graduate research. Emphasis is to be placed on multi-institutional operational arrangements. Three major components are recognized, viz.:

vessels and other platforms, shore facilities and support systems.;. These components are further developed in Appendix II.

6. Requirements for Coastal Zone Research

In considering the needs for coastal research facilities the Group concurred that science as well as other socioeconomic requirements cannot be disassociated from facilities and currently are being documented by past and present efforts, and this group should not endeavor to "re-invent the wheel" in defining the research needs for the Coastal Zone. The Group compiled and reviewed a series of Federal, regional and industry reports on the problems and needs for coastal zone research and from this compiled a listing of facility requirements vis-à-vis academic research disciplines. A synopsis of requirements is given in Appendix I. A non-exhaustive but comprehensive list of reports is given in Appendix IV.

7. Concept of a Coastal Zone Research Vessel

In the course of its progress the Working Group established the following points of agreement.

- a. That coastal research vessels under consideration should be cooperative vessels to serve the research needs of a group of institutions. Institutional vessels operated for and by a -single laboratory, whether or not use is shared as determined by that laboratory, are not within the scope of this report. However, the numbers and availability of such vessels should be included as a factor in assessing the total facility needs of particular area. I
- b. That the general size (and inferred capability) of a coastal cooperative research vessel is somewhere between 70-ft and 120-ft. , and that it be specifically adapted for coastal applications.
- c. That the coastal cooperative research vessel should be of the modular-concept where standardized, transportable vans, labs, or other components would be equally adaptable to -shore use as well as shipboard.
- d. That ship operations be regional in concept. A regional approach would better respond to regional research needs as well as improve such matters as data -management, equipment standards, etc.
- e. That a regional cooperative research vessel (as well as associated facilities) should be managed and operated by a capable institution within the region,. but its use be controlled by a regional review group on behalf of the regional needs and scientific merit. Such regional facilities would be coordinated nationally through UNOLS.

8. Regional Concept for Facility operation

The Group considers that the regional approach for operating and controlling a coastal zone research vessel to be the optimum arrangement. Being responsive to a region would responsibly tie together many of the problems of the region into common efforts. As a regional responsibility portions of operating support could be more readily identified.

Coastal zone facility scheduling requires considerable flexibility. Projects tend to be short in duration and sometimes have very short lead times.

A regional -policy group should be, made up of individual users, This regional association will determine overall scheduling policies based on regional needs; and/or scientific merit. Direct operations and maintenance would be assigned to a participating institution or institutions within the region who would operate the facility on behalf of the region.

The size and scope of regions tend to become arbitrary matters and -precise lines are usually difficult to fix. A certain amount of overlap probably is both necessary and good and therefore. regional lines should not be drawn too strictly. The Group concurred generally that regions might comprise New England (Maine to Block Island), Mid-Atlantic (Block Island to Cape Hatteras), Southeast (Cape Hatteras to

Florida), Gulf of Mexico, Great Lakes, Pacific Southwest and the Pacific Northwest. Additionally, because of the intensity or focus of problems "mini" or "sub-regions" may emerge. The several major regions are portrayed as Appendix III.

Within a region the plans for ship acquisition and operation based on cooperative multi-institutional use should be developed as a coherent effort on the part of the region based on a needs, analysis. Once established, a regional arrangement could serve as a focus for the development and support for other kinds of research facilities.

9. Conclusions

In response to its charge the Working Group concluded

- (a) That capable multi-purpose ships are a fundamental need for coastal research, However,, it is often institution arrangements and not ships which are lacking.
- (b) That interest of the scientific and regional community, within given geographical regions, can best be served by a multi-institutional, cooperative ship facility.
- (c) That Coastal -Facility needs should include more than ships alone and that ships, even though of principal concern, must also include associated elements of laboratory interfaces as well as instrument standards, calibration and repair, as well as data processing and techniques. Furthermore there is a need to consider specialized coastal facilities such as coastal drilling rigs, habitats, submersibles. and even large, low-cost mobile barges.
- (d) That there be a strong recommendation whereby the acquisition of, and support for, regional cooperative coastal research vessel systems be assigned a singularly high priority; and that operational funding for such vessel systems be established from a broader base than the usual NSF-ONR sources and that assured funding be sought from additional Federal, regional and state sources.

Attachments

Tentative Recommendations

Appendix I Development of Academic Research Requirements for Coastal Zone Vessels
Appendix II Component Listing of Regional Cooperative Coastal Zone Research Facilities
Appendix III Map--Proposed Coastal Research Regions for Cooperative Coastal Research Facilities
Appendix IV (Separate Distribution -- limited) Compilation of References Documenting Research Requirements in the Coastal Zone.

April 12 1972

RECOMMENDATIONS OF UNOLS WORKING GROUP ON COASTAL ZONE RESEARCH VESSELS

The Working Group recommends:

1. That there be established within UNOLS a category designated Regional-Cooperative Coastal Zone Research Facility, hereinafter designated Cooperative Coastal Research Facilities. Cooperative Coastal Research Facilities may be either multipurpose or specialized ships or platforms,
2. That Cooperative Coastal Research Facilities shall be multi-institution facilities operated within designated geographic regions serving the research requirements of academic and related institutions conducting basic and applied research in response to regional needs.
3. That Coastal Research Regions be established along geographic line a approximately as follows:

- New England Region (Maine to Block Island)
- Mid-Atlantic Region (Block Island to Cape Hatteras)
- Southeast Region (Cape Hatteras to Florida)
- Gulf of Mexico Region
- Great Lakes Region
- Pacific Southwest Region
- Pacific Northwest Region

4. That within a stated geographic region the community of academic research users be represented by a regional organization which shall seek to identify the regional research requirements and develop a system approach to the acquisition and operation of regional facilities. Within a region facilities may be operated on behalf of participating users to meet regional needs by one or more member institutions.

5. That priority attention at the outset should be directed not only to multi-purpose ships which should have a capability inferred within an approximate size range from 70 to 120 feet, but also to specialized vessels such as coastal drilling rigs, undersea habitat systems and floating laboratories.

6. That Cooperative Coastal Research Facilities be of a modular concept where standardized, transportable vans, labs or other components would be equally adaptable to shore use as well shipboard and also between vessels wherever possible. They should include such support systems as navigation, communications, data processing, technicians and technical standards. Where possible, uniform standards should be set which might apply not only to coastal research craft but to oceangoing ships. The role for developing such standards could be assigned to the Research Vessel Operators Council (RVOC)

7. That the scheduling and use of a Cooperative Coastal Research Facility be controlled by a regional organization. Facility use should be awarded on the basis of regional needs and scientific merit.

8. That funding for the support and operation of Cooperative Regional Research Facilities be developed taking into consideration the obligations Federal, State and Regional Agencies which have responsibilities and needs to support Coastal Zone Research.

9. That the aforementioned system be implemented effective in 1973. This should be accomplished in two ways,:

- a. By the commitment of funding by appropriate Federal, Regional and State Agencies for the operation of Regional-Cooperative Coastal Zone Research Facilities when such facilities are identified and a regional plan is approved
- b. By the acquisition of at least two ships (multi-purpose or- special purpose) from Federal FY-73 ship construction

APPENDIX I

DEVELOPMENT OF ACADEMIC RESEARCH REQUIREMENTS FOR COASTAL ZONE RESEARCH VESSELS AND OTHER FACILITIES

COMPARTMENT & DISCIPLINE

1. Bedrock and deep sediments

- Geology
- Geophysics
- geochemistry
- Rock mechanics
- Mineral Extraction

GENERAL & SPECIAL REQUIREMENTS

General requirements for accurate navigation, capability of towing and lowering survey instruments, and obtaining long (piston) cores.

Special requirements for deep drill with accurate station-keeping and heavy lifting capability,

2. Superficial sediments and Sediment/Water interface

Physics of sedimentation and compaction; boundary layer flow, bottom friction; density currents

Mechanical properties in situ and in samples; engineering measurements.

Chemistry, particularly of sediment/water exchanges and chemical history of the drainage basin.

Biology, bottom fauna, micro-biological conversions; biogeochemistry; demersal populations and fish.

GENERAL & SPECIAL REQUIREMENTS

General requirements as for 1, except that shorter cores are needed, with provision for keeping interface intact. The principal surveying instruments will be in the Sonar class; and, as for compartment 1 also, the data reduction and plotting requirements were extensive,

In addition to handling of special grabs, dredges, trawls, and suitable winches, a special requirement will be the placement on the bottom and recovery of in situ devices for short-term (e.g. cameras to observe animal behavior) or long-term observations (e. g. sediment/,water exchange of oxygen and other substances; near-bottom flow; sedimentation and re-suspension). Placement of such devices must be carried with minimum disturbance,

3. The water/shore interface-beach ,studies

Physics - sediment transport; wave action.

Engineering, see 7

Chemistry, sorting and exchange, placer deposits, calcareous deposits

Biology, attached algae; inshore fauna; fish spawning activities.

GENERAL & SPECIAL REQUIREMENTS

Placement and recovery of underwater habitats or diver stations is another possible special requirement.

Special platforms (e.g. towers, slalom draft boats) will be required for near-shore studies; and these may have to be carried either on road trailer or be carried or towed by a larger vessel. Divers and dive support will also be needed.

4. The Water Column

Physics: radiation fluxes; distribution of physical properties; water motions (periodic, "steady", turbulent) on space scales ranging from whole-basin dimensions to those of local turbulence and short waves, and short waves, and on time scales ranging from months to seconds; processes of stratification and destratifications; upwelling; internal wave generation and decay.

Chemistry : distribution and exchanges of dissolved materials; turbulent diffusion of conservative and non-conservative substances.

Biology.- growth, distribution, and decay of components of the food web, from micro-organisms to fish

Engineering, behavior of moored, towed, and self-propelled objects a research platforms,

GENERAL & SPECIAL REQUIREMENTS

General requirements are for (1) station keeping ability, in all but the roughest weather and winches for lowering and raising water bottles, sampling pumps, electronic probes, and plankton nets; (2) ability to tow probes and sampling pumps, nets and midwater trawls, at known constant or varying depths, sometimes at ship's cruising speed; and (3) ability to place and remove moored instruments buoys, and sampling gear--again in all but the roughest weather, and with mooring arrangements to stand exposure for several months. To match the data gathering capability of probes, towed sensor packages, and moored instruments, a data reduction system must be provided on ship, and on shore, and perhaps with ship-to-shore links.

Special requirements will be for synoptic or quasi-synoptic surveys, cooperatively with other vessels, with aircraft, and with satellite survey boats carried by a "mother" research ship. Communications between craft (air & water) and between craft and moored or drifting instruments will be needed.

Special craft or structures will be desired for some studies, i. e. stable towers or floating platforms (moored and unmoored) for offshore work, perhaps some with diver habitat facilities. Towing, placing, tracking, and recovering such structures will also be a required capability. Special sonars will be developed

5. The Air/Water Interface

As the site of exchange of radiation. energy, materials and momentum, this interface will receive increasing attention. Although the main emphasis will be on physical processes and exchanges, some attention will be paid to chemical (materials exchange) and biological aspects (neuston community) of this interface.

Engineering aspects will be concerned with wave and wave forecasting.

GENERAL & SPECIAL REQUIREMENTS

Many of the general requirements for 4 will apply to this compartment also, with the qualification that the sampling and measurements are required in the air also. To some extent, the research vessels and satellite survey boats can be instrumented, but much reliance will have to be placed on measurements on moored or drifting platforms, or on towers, or on free-fall devices.

Special requirements will be a ship-borne instrument and data-gathering system, in which the observations are not seriously influenced by the presence or motions of the vessel.

6. The Meso-Scale Region of Water Atmosphere Interaction

Studies of marine meteorology on scales of up to, say, ten times the basin dimensions; shore and like breeze phenomena; weather modification; structure of storm systems; including the basin responses to periodicity, divergence, and curl of the wind stress.

GENERAL & SPECIAL REQUIREMENTS

Although a large part of the observing network may be land based, measurements will also be made from craft (water and air) and from in water structures. Sonde measurements of the lower atmosphere (up to 1000m?) will be needed on synoptic measuring grids.

7. Engineering Studies

including coastal engineering and ice research. For improvement of navigation, port and marina development, and control of shorelines, research and engineering applications are needed in such subjects as ice breaking techniques, ice forecasting, dredging and landfill, shore erosion, wave forecasting and behavior of materials and structures in the lakes.

GENERAL & SPECIAL REQUIREMENTS

The general requirements are similar to those of Compartment 3, i.e., working platforms in shallow nearshore waters - also space on shore for pilot experiments, assembly of large structures or components and the ability to tow such to the sites being studied.

Special requirements will vary with the project, but could include large physical models (of ice breakers, shore protection structures, harbor marinas and airports).

April 12, 1972

APPENDIX II

COMPONENT LISTING OF REGIONAL COOPERATIVE COASTAL ZONE RESEARCH FACILITIES WITH THE SCOPE OF THE WORKING GROUP ON COASTAL ZONE RESEARCH VESSELS

A. Vessels and other platforms -

1. These should be multipurpose as far as reasonably possible.
2. Operating economy must be a major consideration in the design.
3. Containerized labs should account for the major portion of the lab space aboard a vessel or platform. These labs must be quickly interchangeable. They should be considered as a facility a particular investigator can use 12 months of the year. These labs must be no larger than what can be transported by truck without special permits.
4. The operating crew must be a minimal size.
5. The maximum duration at sea should be on the order of two weeks
6. Other platforms-
 - a. Spartan Barge Self-powered, A frame ability, capable of being moored in fast-running currents.
 - b. Submersible - Inexpensive with maximum depth capability of 800'
 - c. Semi-submersible - Mobile stable platform
 - d. Habitat - Mobile shallow water capability, 100-150' depth.
 - e. Jack-up units - Shallow water only
 - f. Aircraft

B. Shore Facility -

1. The shore facility should be completely compatible with vessels. It is a component of a total system,
2. Should have containerized handling capabilities.

C. Support Systems -

1. Navigation,
 2. Communications
 3. Data Processing including software
 4. Technicians
 5. Oceanographic equipment standards lab
-

April 12, 1972

APPENDIX III

**PROPOSED COASTAL RESEARCH REGIONS FOR
COOPERATIVE COASTAL RESEARCH FACILITIES**