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# **The Future of the United States Academic Research Fleet**

**Larry P. Atkinson  
Old Dominion University  
UNOLS Fleet Improvement Committee Chair**

**John F. Bash and Annette M. DeSilva  
University-National Oceanographic Laboratory System  
University of Rhode Island**

**Kenneth S. Johnson  
Moss Landing Marine Laboratories  
UNOLS, Past Chair**

# The Future of the United States Academic Research Fleet

John F. Johnson  
Old Dominion University  
UNCLES Fleet Study Report Committee Chair

John F. Bassett and Annette M. DelValle  
University-National Oceanographic Laboratory System  
University of Rhode Island

Kenneth S. Johnson  
Woods and Marine Laboratory  
UNCLES Fleet Chair

# Topics

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- I. **What is UNOLS?** *Brief description of UNOLS*
- II. **Status of the Fleet** *History of Fleet to present*
- III. **Changing Requirements** *HISTORY where we*
- IV. **Planning for the Future**
- V. **Conclusions**

# Topics

1. What is DNA?

2. Status of the field

3. Changing Requirements

4. Planning for the Future

5. Conclusions

# UNOLS

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University National Oceanographic Laboratory Systems (UNOLS) institutions are joined for the purpose of coordinating oceanographic ships' schedules and research facilities. Primary functions of UNOLS are twofold:

- 1) » Facilitate the efficient and cost effective scheduling and operation of the 28 UNOLS research vessels in support of seagoing science;
- 2 » Plan for the development of a research fleet, deep-submergence facilities and shore facilities that will meet the sea-going needs of scientists at academic institutions and National Laboratories.

Ultimately, all decisions reside with funding agencies and the role of UNOLS is to provide input to those decision making processes.

UNOLS is not a funding agency

was formed  
for ~~to~~ to  
support  
2 primary  
functions:

# UNOLS



University National Oceanographic and Limnology Systems (UNOLS) institutions are joined in the purpose of conducting oceanographic and limnology research and education facilities. UNOLS are

facilitate the efficient and cost-effective scheduling and operation of UNOLS research vessels in support of

Plan for the development of a research fleet of submersibles, facilities and shore facilities that will meet the ongoing needs of scientists of academic institutions and

University National Oceanographic and Limnology Systems (UNOLS) institutions are joined in the purpose of conducting oceanographic and limnology research and education facilities. UNOLS are



# UNOLS Institutions and Vessels

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## UNOLS Institutions

Membership in UNOLS is open to those institutions which use or operate and use sea-going facilities and maintain an academic program in marine science.

## Operator Institutions

UNOLS Institutions that operate UNOLS vessels or National Oceanographic Facilities.

## UNOLS Vessels

U.S. research vessels generally operated in support of national oceanographic research programs, by academic institutions. Agencies that have provided major support include the National Science Foundation, Office of Naval Research and the National Oceanic and Atmospheric Administration. UNOLS vessels are regularly available to users outside of the operator institution.

# UNOLS Institutional Review Board

## and / or

### UNOLS Institutions

Membership in UNOLS is open to those institutions which use of operators of UNOLS facilities and maintain an active program in the sciences

### Operator Institutions

UNOLS Institutions that operate UNOLS facilities and maintain an active program in the sciences

### UNOLS Visitors

UNOLS visitors are those individuals who are invited to UNOLS facilities for research purposes by UNOLS Institutions. UNOLS Institutions are responsible for the safety and security of UNOLS facilities and for the protection of UNOLS visitors. UNOLS Institutions are responsible for the safety and security of UNOLS facilities and for the protection of UNOLS visitors.



# UNOLS Today

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**There are 59 UNOLS Institutions:**

- **20 Operator Institutions**
- **39 Non-operator Institutions**

**There are 28 UNOLS Vessels:**

- **6 Navy Ships (5 Class I, 1 Class II)**
- **8 NSF Ships (1 Class II, 3 Class III, 3 Class IV, and 1 Class V)**
- **14 State or Private Ships (4 Class III, 6 Class IV, 4 Class V)**

*The Federally owned vessels are operated under Charter Party Agreements with their respective UNOLS Operator Institution*

# UNIVERSITY



There are 15 UNCLAS (U) categories:

- 10 Operator Information
- 13 Non-operator Information

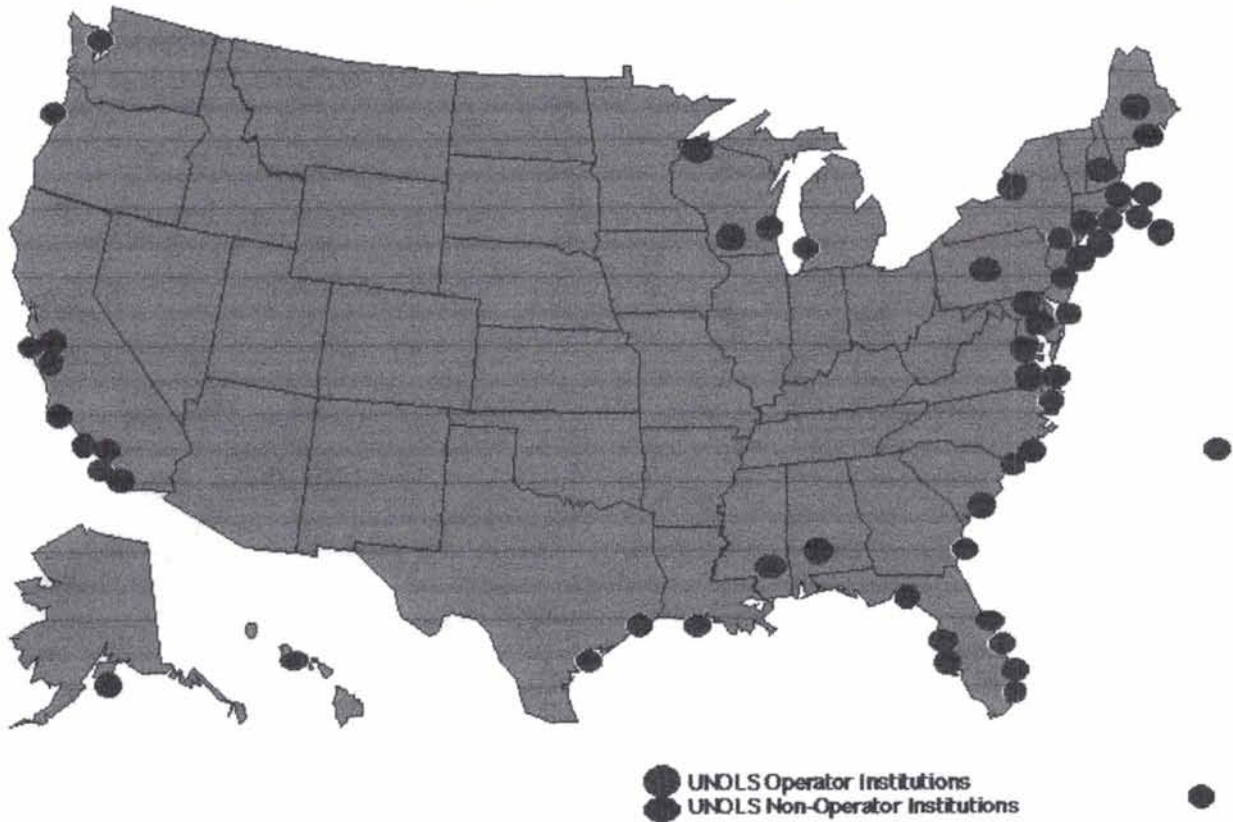
There are 18 UNCLAS (S) categories:

- 6 Navy Shipyard (Class II, Class III)
- 8 WSP Shipyard (Class II, Class III, Class IV, and Class V)
- 14 State of Puerto Rico Shipyard (Class II, Class III, Class IV, and Class V)

The Federal Government is responsible for the classification and declassification of information. The Federal Government will not declassify information until it is determined that the information is no longer sensitive.

# UNOLS Member Institutions

## UNOLS Member Institutions



UNOLS Member

UNOLS Member

Institutional



UNOLS Member



UNOLS Member

# UNOLS Organization

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## **UNOLS Council**

**The UNOLS Council acts on behalf of the UNOLS Membership as the operating and governing body of UNOLS.**

- **Chair - Bob Knox, Scripps Institution of Oceanography**
- **9 Elected representatives from the UNOLS Institutions**
- **6 Ex-officio members (Standing Committee Chairs)**

## **UNOLS Office**

- **Hosted at the University of Rhode Island**

## **Six Standing Committees**

- **Ship Scheduling Committee (SSC)**
- **Research Vessel Operators' Committee (RVOC)**
- **Fleet Improvement Committee (FIC)**
- **DEep Submergence Science Committee (DESSC)**
- **Research Vessel Technical Enhancement Committee (RVTEC)**
- **Arctic Icebreaker Coordinating Committee (AICC)**

# UNOLS Organization

## UNOLS Council

The UNOLS Council acts on behalf of the UNOLS Membership as the operating and governing body of UNOLS.

- Chair: Bob Knox, College of William and Mary
- 6 Elected representatives from the UNOLS Institutions
- 6 Ex-officio members (Standing Committee Chairs)

## UNOLS Office

located at the University of Florida

## Six Standing Committees

- Ship Scheduling Committee (SSC)
- Research Vessel Operations Committee (RVOC)
- Fleet Improvement Committee (FIC)
- Deep Submergence Science Committee (DSSC)
- Research Vessel Technical Enhancement Committee (RVTEC)
- Arctic Research Coordinating Committee (ARCC)



# Fleet Capabilities

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**The UNOLS Fleet offers access to a widely distributed set of ships with a variety of capabilities.**

- **General Purpose Ships**
  - » Global/Expeditionary Ships
  - » Intermediate/Regional Ships
  - » Local/Near-shore Ships
  
- **Specialized Capabilities**
  - » Submersible Science
  - » Multichannel Seismics
  - » Other Specialized Facilities

# Fleet Capabilities



The UNOLS fleet offers a wide variety of capabilities to support your research needs.

- General Purpose Ships
  - » Global/Expeditionary Ships
  - » Intermediate/Regional Ships
  - » Local/Year-around Ships
- Specialized Capabilities
  - » Submarine Science
  - » Multichannel Seismic
  - » Other Specialized Capabilities



# UNOLS Fleet

## Large and Intermediate Ships

SHIP	OPERATING INSTITUTION	OWNER	BUILT/ CONV. or M-L	SCIENCE BERTHS	LENGTH
<b>CLASS III</b>					
MELVILLE	Scripps Institution of Oceanography	Navy	1969/1990	38	279 ft. <i>Class I = 7-200'</i>
KNORR	Woods Hole Oceanographic Inst.	Navy	1970/1989	34	279 ft. <i>Class I Navy</i>
THOMAS G. THOMPSON	University of Washington	Navy	1991	36	274 ft. <i>110 (5)</i>
ROGER REVELLE	Scripps Institution of Oceanography	Navy	1996	37	274 ft. <i>Global</i>
ATLANTIS	Woods Hole Oceanographic Inst.	Navy	1997	24	274 ft. <i>Class II = 200-240</i>
MAURICE EWING	Lamont-Doherty Earth Observatory	NSF	1983/1990	32	239 ft. <i>2 Navy/NSF</i>
MOANA WAVE	University of Hawaii	Navy	1973/1984	19	210ft.
<b>Class III</b>					
SEWARD JOHNSON	Harbor Branch Ocean. Inst.	HBOI	1984/1994	29	204 ft. <i>no GYRE exception</i>
WECOMA	Oregon State University	NSF	1976/1994	20	185 ft. <i>Class III =</i>
ENDEAVOR	University of Rhode Island	NSF	1977/1993	18	184 ft. <i>150-200'</i>
GYRE	Texas A&M University	TAMU	1973/1980	23	182 ft. <i>(7)</i>
OCEANUS	Woods Hole Ocean. Inst.	NSF	1976/1994	18	177 ft. <i>3 NSF</i>
NEW HORIZON	Scripps Inst. of Oceanography	SIO	1978/1996	19	170 ft. <i>10 years</i>
EDWIN LINK	Harbor Branch Ocean. Inst.	HBOI	1982/1988	20	168 ft. <i>Regional</i>

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# UNOLS Fleet: Class IV & V Ships

SHIP	OPERATING INSTITUTION	OWNER	BUILT/ CONV. or M-L	SCIENCE BUNKS	LENGTH
<b>Class IV</b>					
POINT SUR	Moss Landing Marine Lab.	NSF	1981	12	135 ft.
CAPE HATTERAS	Duke University/UNC	NSF	1981	12	135 ft.
ALPHA HELIX	University of Alaska	NSF	1966	15	133 ft.
ROBERT G. SPROUL	Scripps Inst. of Oceanography	SIO	1981/1985	12	125 ft.
CAPE HENLOPEN	University of Delaware	UD	1976	12	120 ft.
WEATHERBIRD II	Bermuda Biological Stat. for Res.	BBSR	1981/1993	12	115 ft.
SEA DIVER	Harbor Branch Oceanographic Inst.	HBOI	1959/1992	12	113 ft.
PELICAN	Louisiana Universities Marine Cons.	LUMCON	1985	15	105 ft.
LONGHORN	University of Texas	UT	1971/1986	12	105 ft.
<b>Class V</b>					
URRACA	Smithsonian Tropical Research Inst.	Smith.	1986/1994	10	96 ft.
LAURENTIAN	University of Michigan	UM	1974	8	80 ft.
BLUE FIN	University System of Georgia	UG	1972/1975	8	72 ft.
CALANUS	University of Miami	UM	1971	6	68 ft.
CLIFFORD A. BARNES	University of Washington	NSF	1966/1984	6	66 ft.

(9) Class IV = 100-145 ft  
 3 NSF  
 Regional  
 Local  
 Class V  
 < 100'  
 1 NSF  
 Local

1. **DATE:** 10/10/2023  
 2. **TO:** Mr. A. J. Smith  
 3. **FROM:** Mr. B. C. Jones  
 4. **SUBJECT:** Business Meeting  
 5. **REFERENCE:** File No. 12345

I am writing to inform you of the results of our meeting on the 10th of October. The meeting was held at the office of Mr. A. J. Smith and was attended by Mr. B. C. Jones, Mr. A. J. Smith, and Mr. D. E. Brown. The main items discussed were the proposed changes to the company policy and the budget for the next financial year. It was agreed that the proposed changes to the company policy are acceptable and that the budget for the next financial year is within the limits of the approved budget. The meeting was held in a friendly and cooperative atmosphere and all participants were given the opportunity to express their views. The meeting was held at the office of Mr. A. J. Smith and was attended by Mr. B. C. Jones, Mr. A. J. Smith, and Mr. D. E. Brown. The main items discussed were the proposed changes to the company policy and the budget for the next financial year. It was agreed that the proposed changes to the company policy are acceptable and that the budget for the next financial year is within the limits of the approved budget.

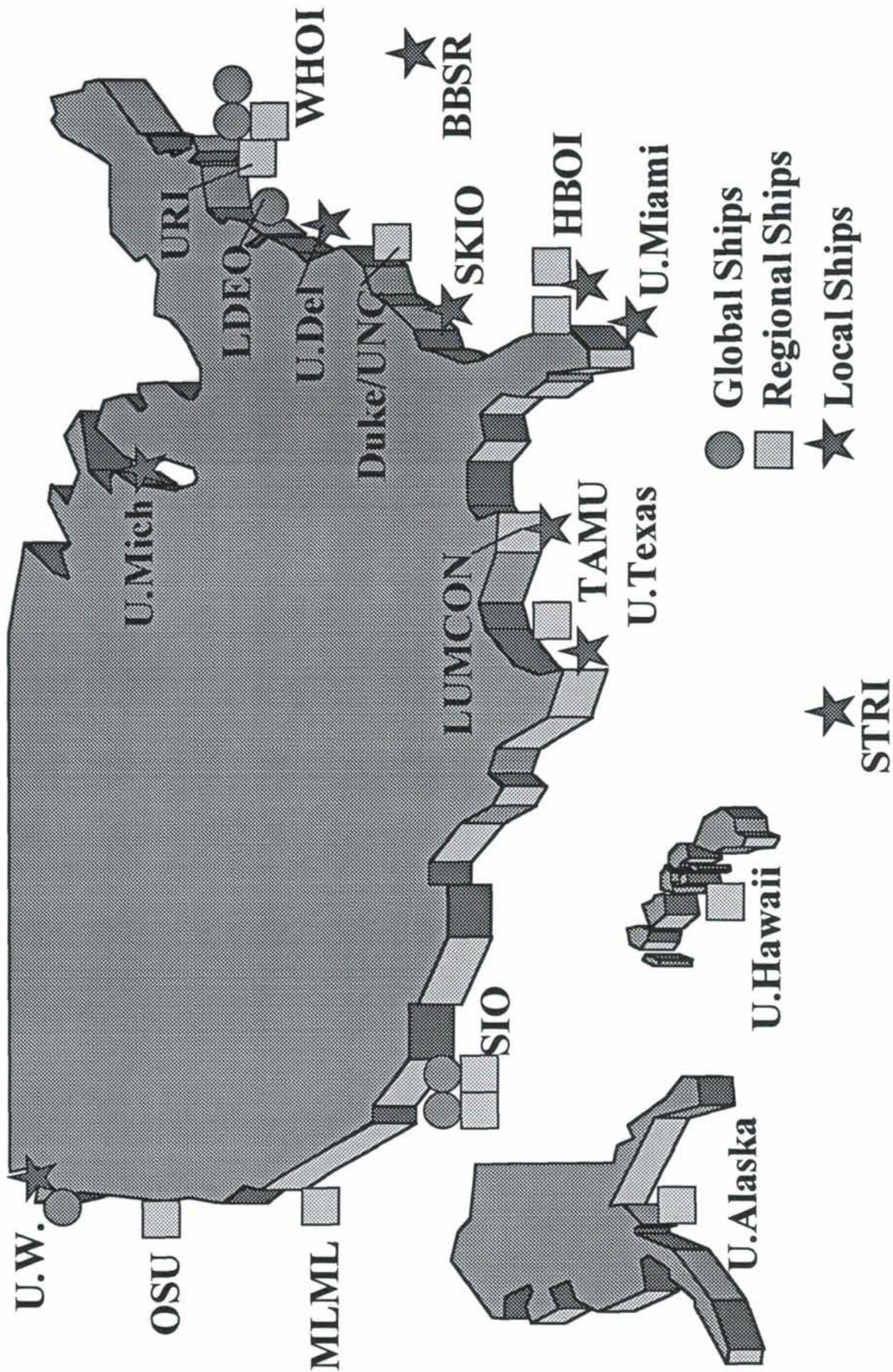
Yours faithfully,  
 Mr. B. C. Jones

Mr. A. J. Smith  
 123 Main Street  
 London, E.C. 1

Mr. D. E. Brown  
 456 High Street  
 London, W. 1

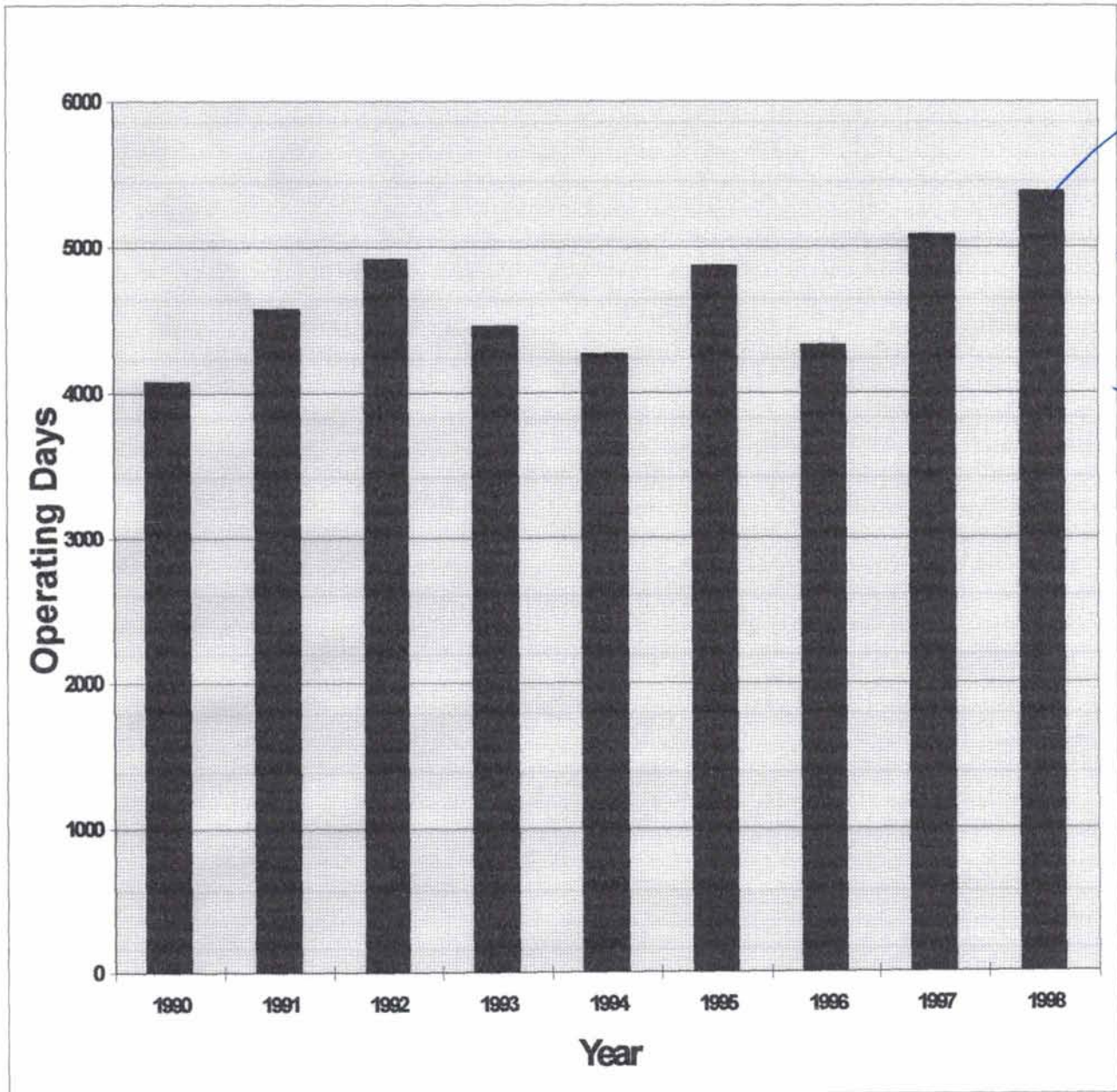


# UNOLS Home Port Locations





# Fleet Utilization



near record high  
in 1990's operated roughly 4000-5000 days.

# Fleet Management



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# History of UNOLS

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## 1960's

- Robust Growth in Marine Science & Facilities

## 1969

- President's Commission on Marine Science (Stratton Commission) Recommends National Oceanographic Laboratory System (NOLS)

## 1972 - UNOLS is Formed

- Initial Thrusts

- » Investigator Placement
- » Cooperative Ship Scheduling

→ Provide Access to sea for all funded academic scientists  
↳ Coordinate the scheduling

- Early Efforts

- » Uniform Cost Accounting & Cruise Reporting
- » Information Services & Equipment Pools
- » Technical Services
- » Foreign Clearance Procedures
- » Specialized Facilities
- » Safety Standards
- » Fleet Replacement Planning

# History of UNOLS

1960's

- Robust Growth in Marine Science & Facilities

1969

- President's Committee on the Marine Sciences (Stratton Commission) recommends National Oceanographic Laboratory System (NOLS)

1972 UNOLS is Formed

- Initial Thrusts
  - Investigator Ship Program
  - Cooperative Ship Sharing
- Early Efforts
  - Uniform Cost Accounting & Control System
  - Information Services & Training Programs
  - Technical Services
  - Foreign Classroom Exchanges
  - Specialized Facilities
  - Safety Standards
  - Fleet Registration - 1978



# UNOLS Fleet: Past and Present

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## 1972

9 Class II

6 Class III

7 Class IV

13 Class V

35 Total Ships

*no Class I*

## 1998

5 Class I

2 Class II

7 Class III

9 Class IV

5 Class V

28 Total Ships

- By 1973, five of the smaller ships dropped out of the fleet leaving 30 ships.
- The total number of ships over the years has not varied much.
- Significant turnover - 63 ships have been designated as UNOLS ships since 1972
- Only four ships of the original Fleet Remain:
  - » KNORR & MELVILLE - Major Refit 1989-1991
  - » ALPHA HELIX - SMR development in progress
  - » CALANUS - U.Miami has selected replacement design.

*Replacement  
Planning has  
begun*



# UNION MILITARY HISTORY

## POST AND PRESENT

THE FOLLOWING TABLES SHOW THE NUMBER OF SHIPS IN THE FLEET OF THE UNITED STATES NAVY FROM 1800 TO 1900.

Year	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900
Class I	1	1	1	1	1	1	1	1	1	1	1
Class II	1	1	1	1	1	1	1	1	1	1	1
Class III	1	1	1	1	1	1	1	1	1	1	1
Class IV	1	1	1	1	1	1	1	1	1	1	1
Class V	1	1	1	1	1	1	1	1	1	1	1
Total Ships	5	5	5	5	5	5	5	5	5	5	5

- By 1875, five of the original ships were scrapped out of the fleet leaving 10 ships.
- The total number of ships over the years has not varied much.
- Significant turnover - 15 ships have been designated as UNCLAS ships since 1875.
- Only four ships of the original fleet remain.

- KNORR & WELLS - 1875 (1875-1875)
  - ALPHA HELIX - 1875 (1875-1875)
  - CALANUS - 1875 (1875-1875)
- design

# UNOLS Fleet: Past and Present

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## 1972

9 Class II

6 Class III

7 Class IV

13 Class V

35 Total Ships

## 1998

5 Class I

2 Class II

7 Class III

9 Class IV

5 Class V

28 Total Ships

## Only four ships of the original Fleet Remain:

- » KNORR & MELVILLE - Major Refit 1989-1991
- » ALPHA HELIX - SMR development in progress
- » CALANUS - U.Miami has selected replacement design.

# UNION Fleet Pass and Present



1998	1997
Class I	Class II
Class II	Class III
Class III	Class IV
Class IV	Class V
Class V	35 Total Ships
35 Total Ships	

Only four ships of the original  
Fleet Remain

ALPHA HELIX - SBR development in  
1991

BETA HELIX - SBR development in  
progress

GAMMA HELIX - SBR development in  
replacement program

# Fleet Capabilities

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The following spreadsheets give a comparative inventory of science and navigational equipment aboard UNOLS ships over a twenty six year period, 1972 to present.

Three "Global" ships, GILLISS, pre-stretched KNORR and the newest AGOR general purpose ship, REVELLE; are compared.

For the Intermediate class, TRIDENT, KANA KEOKI and post-overhaul WECOMA provide the comparative views.

- » Not only has there been a dramatic increase in the technology aboard these ships through the years but the number of scientists verse the number of crew persons has shown a marked improvement.
- » The combination of these two advancements have resulted in more efficient use of the platforms and a quantitative and qualitative increase in the data stream available to the scientific community.

# Fleet Capabilities

The following summarizes the current capabilities of the fleet of scientific equipment owned by UNOLS and the anticipated equipment for the next five years.

The Global Shipboard Library (GSL) provides a central repository for the raw data and the processed data from the various UNOLS programs.

For the intermediate class, the intermediate class (KAPPA) and post-overhaul (KAPPA) provide a comparative analysis.

Not only has there been a dramatic increase in the technology aboard these ships through the years but the number of scientists using the number of crew persons has shown a marked improvement. The combination of these two advancements has resulted in more efficient use of the platform and a quantitative and qualitative increase in the data stream available to the scientific community.



<b>Global/Expeditionary Ships</b>	<b>1972-1980</b>	<b>1981-1989</b>	<b>1990-1998</b>
<b>Average Number of Ships</b>	7	6	6
<b>Typical Ship of the Class</b>	<b>GILLISS</b>	<b>KNORR</b>	<b>REVELLE</b>
<b>Length</b>	209ft	245ft	274ft
<b>Cruising Speed</b>	11kts	10kts	13.5kts
<b>Crew/Scientists ratio</b>	1.16	1	0.59
<b>Navigation</b>			
LORAN	Y	Y	
TRANSIT Satellite		Y	
GPS			Y
GPS - Differential			Y
GPS P-CODE			Y
3-Axis GPS			Y
Electronic Charting			Y
Dynamic Positioning			Y
Dual axis speed log			Y
<b>Communications</b>			
H F Radio	Y	Y	Y
INMARSAT A		Y	Y
INMARSAT C			Y
INMARSAT M			
INMARSAT B			Y
SEANET			
M-SAT			
<b>Scientific Equipment</b>			
CTD		Y	Y
SEA SOAR/SCAN FISH			Y
Gravity meters			Y
Multi-Beam Sonar			Y
Chirp Sonar			Y
ADCP			Y
<b>Bottom Sampling</b>			
Coring		Y	Y
Coring 30 meter			Y
<b>Wire/Ropes/Cables</b>			
1/4"	Y		Y
1/2"	Y		
9/16"		Y	Y
.322 Conductor		Y	Y
.680 Conductor			Y
ROV Handling			Y
<b>Other</b>			
Hi spd computer network			Y
CD Rom Data Distribution			Y
Inkjet Hi Res. Color printer			Y

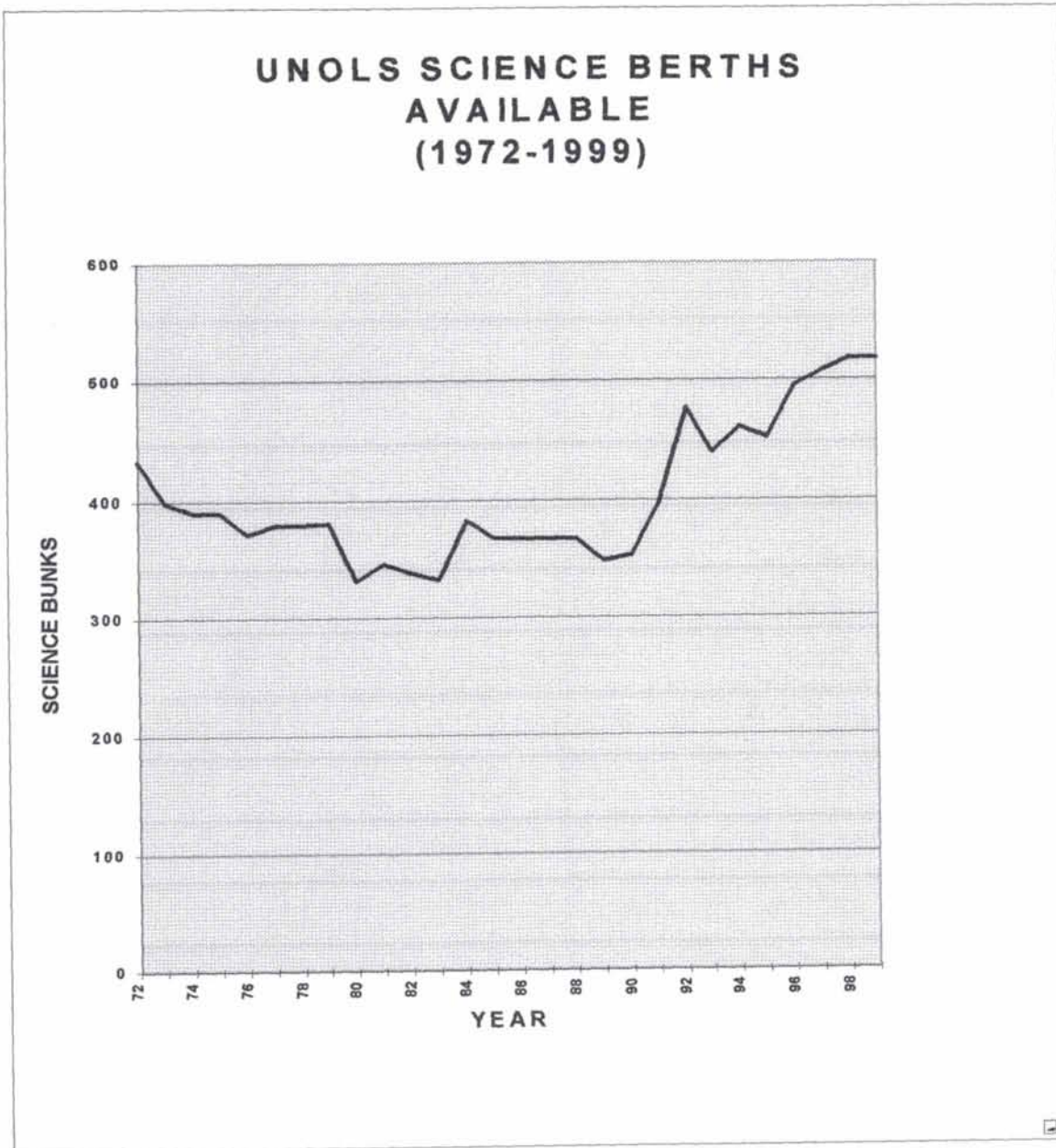
Year	Population	Area	Notes
1950	1,000,000	100,000	Initial data point
1955	1,100,000	110,000	Population growth
1960	1,200,000	120,000	Continued growth
1965	1,300,000	130,000	Steady increase
1970	1,400,000	140,000	Significant growth
1975	1,500,000	150,000	Population surge
1980	1,600,000	160,000	High growth rate
1985	1,700,000	170,000	Accelerating growth
1990	1,800,000	180,000	Population peak
1995	1,900,000	190,000	Stabilizing growth
2000	2,000,000	200,000	Current population

Intermediate/Regional Ships	1972-1980	1981-1989	1990-1998
Average Number of Ships	9	12	13
<b>Typical Ship of the Class (150-200 ft)</b>	<b>TRIDENT</b>	<b>KANA KEOKI</b>	<b>WECOMA</b>
Length	179 ft	156 ft	185 ft
Cruising Speed	11kts	11 kts	12
Crew/Scientists ratio	1.58	0.68	0.67
<b>Navigation</b>			
LORAN	Y	Y	Y
TRANSIT Satellite	Y	Y	
GPS			Y
GPS - Differential			Y
GPS P-CODE			Y
3-Axis GPS			Y
Electronic Charting			Y
Dynamic Positioning			
Dual axis speed log			Y
<b>Communications</b>			
H F Radio	Y	Y	Y
INMARSAT A			Y
INMARSAT C			Y
INMARSAT M			Y
INMARSAT B			
SEANET			
M-SAT			
<b>Scientific Equipment</b>			
CTD	Y	Y	Y
SEA SOAR/SCAN FISH			Y
Gravity meters		Y	
Multi-Beam Sonar			
Chirp Sonar			Y
ADCP			Y
Bottom Sampling			
Coring	Y	Y	Y
Coring 30 meter			
Wire/Ropes/Cables			
1/4"			Y
1/2"	Y		Y
9/16"		Y	Y
0.219 Conductor	Y		
.322 Conductor		Y	Y
.680 Conductor			Y
ROV Handling			
Other			
Hi spd computer network			Y
CD Rom Data Distribution			Y
Inkjet Hi Res. Color printer			

Year	Age Group	Sex	Marital Status	Education	Occupation	Income	Health Status	Living Arrangements	Other
1991	17-24	M	Married	High School	Unemployed	\$10,000	Good	Own Home	None
1992	25-34	F	Single	College	Teacher	\$20,000	Good	Own Home	None
1993	35-44	M	Married	High School	Unemployed	\$10,000	Good	Own Home	None
1994	45-54	F	Married	College	Teacher	\$20,000	Good	Own Home	None
1995	55-64	M	Married	High School	Unemployed	\$10,000	Good	Own Home	None
1996	65-74	F	Married	College	Teacher	\$20,000	Good	Own Home	None
1997	75-84	M	Married	High School	Unemployed	\$10,000	Good	Own Home	None
1998	85-94	F	Married	College	Teacher	\$20,000	Good	Own Home	None
1999	95-104	M	Married	High School	Unemployed	\$10,000	Good	Own Home	None



# Science Accommodations



# Science

## Accommodations



UNIVERSITY OF CALIFORNIA LIBRARY  
AVAILABLE  
FROM



UNIVERSITY OF CALIFORNIA LIBRARY

# Changing Requirements

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**The Fleet has Evolved over the years with Changing Science Needs and Technology Upgrades.**

**What role did FIC play?**

- **One of UNOLS' Initial tasks was to form a working group to study the needs for replacing the aging UNOLS ships.**
- **This working group became the ad-hoc Fleet Replacement Committee.**
  - » **It provided planning for three OCEANUS Class ships and two CAPE class ships.**
  - » **Laid groundwork for the series of AGORs starting with AGOR 23, THOMPSON.**
- **When Improvement became higher priority, the committee changed its focus and its name. It is now called the Fleet Improvement Committee (FIC) and became a standing committee of UNOLS in 1988.**

# Changing Requirements

The First has Evolved over the years with  
Changing Science Needs and Technology  
Upgrades

What role did FIC play?

One of UNOLS' initial tasks was to form a  
working group to study the needs for upgrading  
the aging UNOLS system.

This working group became the Action Plan  
Replacement Committee.

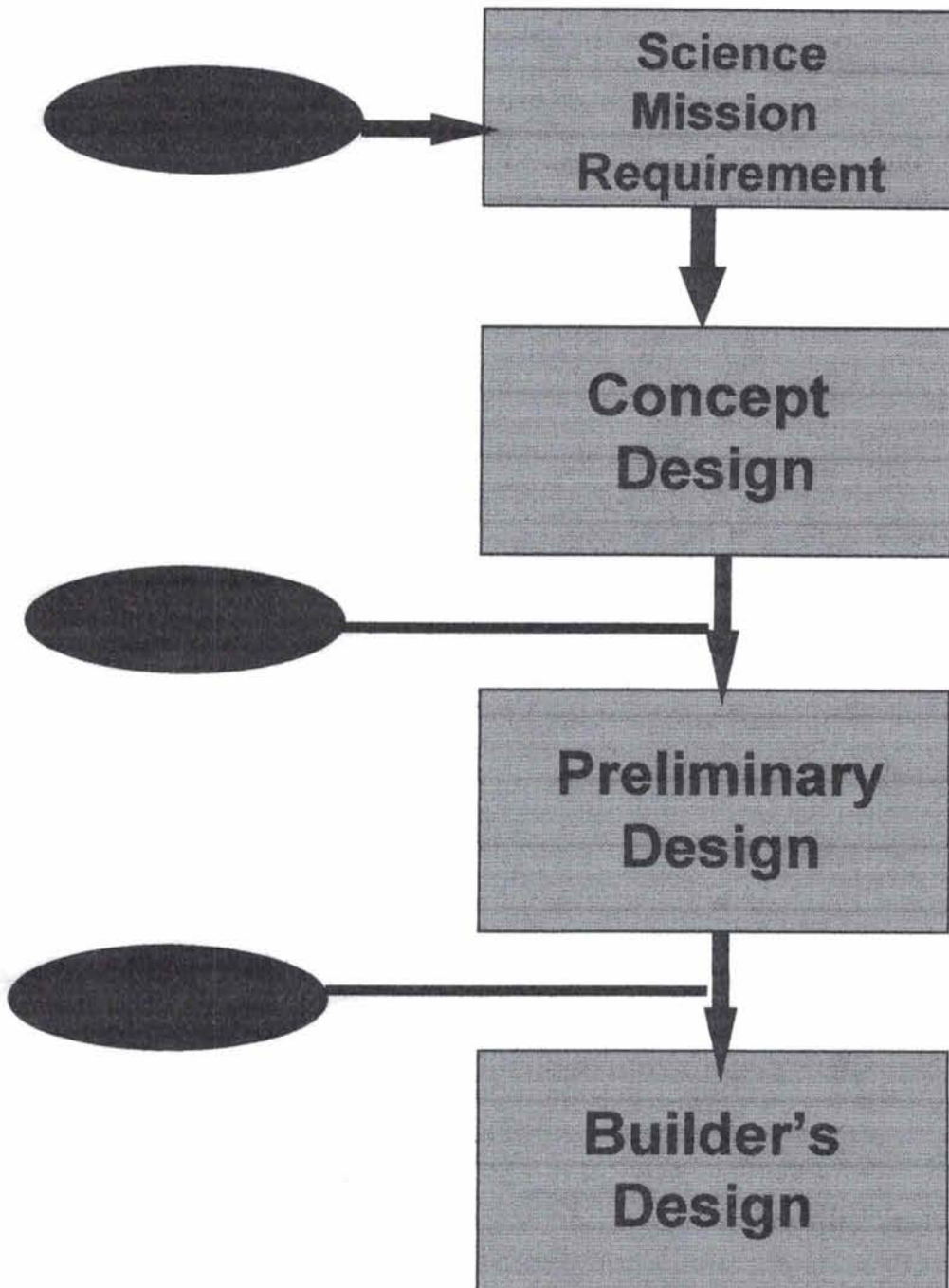
It provided planning for three OSCARUS  
class ships and two CARE class ships.  
A study group (later the names of OSCAR  
starting with OSCAR 1000) was formed.

When improvement became higher priority, the  
committee changed its focus and name. It is  
now called the First Improvement Committee  
(FIC) and became a standing committee of  
UNOLS in 1983.

# UNOLS Fleet Replacement/Improvement Process

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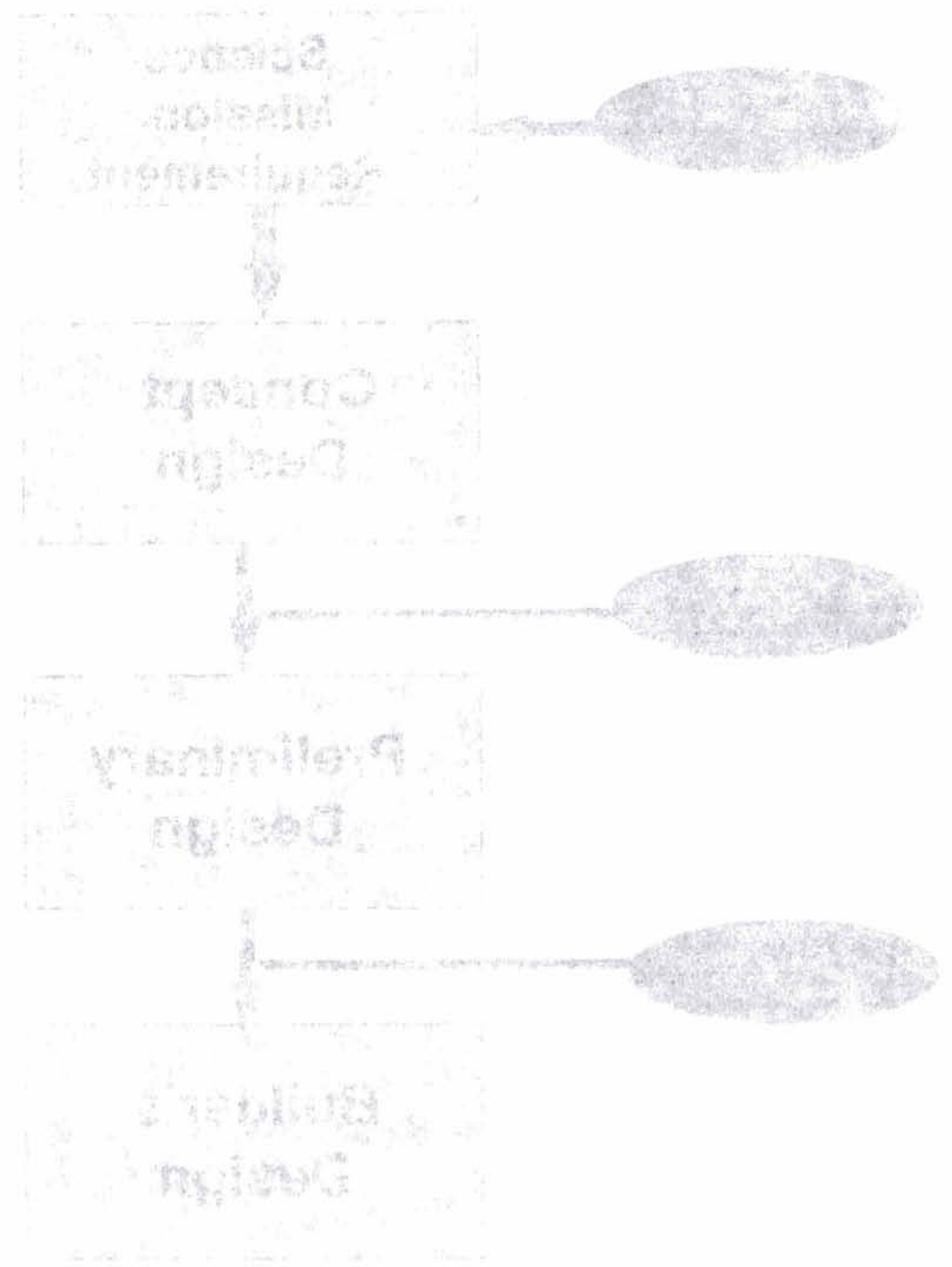


UNIVERSITY OF CALIFORNIA

# UNIVERSITY OF CALIFORNIA

## Department of Architecture

### Program



# Components of an SMR Document

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- - Endurance
- - Accommodations
- - Speed
- - Seakeeping
- - Station Keeping
- - Ice Strengthening
- - Deck Working Area
- - Cranes and Winches
- - Overside Handling
- - Towing
- - Laboratories
- - Special Facilities
- - Vans, Workboat, Science Storage
- - Acoustical Systems
- - Navigation / Positioning
- - Communications
- - Satellite Monitoring
- - Ship Control

# COMPONENTS OF A STEEL STRUCTURE

STEEL STRUCTURES ARE USED IN A WIDE RANGE OF APPLICATIONS AND ARE CHARACTERIZED BY THEIR HIGH STRENGTH AND DURABILITY.

- Columns
- Beams
- Girders
- Joists
- Decking
- Bracing
- Connections
- Foundations
- Roofing
- Cladding
- Insulation
- Finishes
- Maintenance
- Safety
- Fire Protection
- Seismic Design
- Wind Load
- Snow Load
- Corrosion Protection
- Accessories
- Fasteners
- Welding
- Painting
- Inspection
- Repair
- Replacement
- Demolition
- Recycling
- Sustainability
- Innovation
- Research
- Development
- Education
- Training
- Certification
- Regulation
- Standards
- Codes
- Specifications
- Drawings
- Contracts
- Agreements
- Licenses
- Permits
- Approvals
- Certifications
- Registrations
- Memberships
- Associations
- Unions
- Guilds
- Societies
- Clubs
- Organizations
- Institutions
- Organizations
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- Organizations
- Institutions

# SMR Library

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## **Large Ships: Class I & II**

- **Large High-endurance, General- purpose Research Ships**
- **Large Medium endurance, General-Purpose**
- **Large High Performance, General-Purpose, SWATH**

## **Intermediate Ships: Class III**

- **Intermediate General-Purpose**
- **Intermediate General-Purpose SWATH**
- **Intermediate Ice-capable General-Purpose**

## **Small Ships: Class IV**

- **Small General-Purpose**
- **Small General-Purpose SWATH**
- **Manned Spar Buoy (FLIP)**

# SWAMPY LAKE



## Large Ship: Class I

- Large High-Endurance General Purpose Research Ship
- Large Medium Endurance General Purpose Research Ship
- Large High Performance General Purpose Research Ship

## Intermediate Ship: Class II

- Intermediate General Purpose Research Ship
- Intermediate General Purpose Research Ship
- Intermediate General Purpose Research Ship

## Small Ship: Class III

- Small General Purpose Research Ship
- Small General Purpose Research Ship
- Small General Purpose Research Ship



# SMR Applications

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- **Development of plans for mid-life of OCEANUS Class**
- **Used to evaluate need for improvements to the CAPE class R/Vs**
- **Provided groundwork for development of conceptual designs and studies for:**
  - » **Large Oceanographic Research Ships**
  - » **SWATH vessels**
  - » **Arctic Research Vessels**
- **Used as templates for future SMR.**

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  - SWATH vessels
  - Arctic Research Vessels
- Used as templates for future SMR's.

# Alaskan SMR

Subcommittee:

- users of ALPHA H
- U. Alaska sci
- NOAA/Fisheries

## Operational Area:

### Oceanographic Research (including Fisheries) in:

- N. Pacific Ocean (year-round in open water)
  - » Gulf of Alaska & Bering Sea
- Chukchi & Beaufort (seasonally ice-covered) Seas

## Environmental Conditions:

- Open water requires a stable platform
- 90 F to -25 F
- Seasonal sea ice (up to 3')

Size: Class III - 180' loa, 1600 gross tons, 13' draft

Science Party: 18-20

Endurance: 45 days

Total Lab Areas: 2000 sq. ft

## Science Features:

- General Oceanographic
- Fisheries
- Ice strengthening

# Alaska

## Operational Area:

- Oceanographic Research (including Fisheries) in:
  - N. Pacific Ocean (year-round in open water)
  - Gulf of Alaska & Bering Sea
- Chukchi & Beaufort (seasonally in summer) Seas

## Environmental Conditions:

- Open water requires a stable platform
- 30 F to -28 F
- Seasonal sea ice (up to 2')

Size: Class III - 180' LOA, 1600 gross tonnage

Science Party: 18-20

Endurance: 45 days

Total Lab Area: 2000 sq. ft.

## Science Features:

- General Oceanographic
- Fisheries
- Ice strengthening

# Planning for the Future

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- **Another focus of FIC has been to develop a Fleet Improvement Plan (FIP).**
  - » **Trends in Oceanography and Facility Needs**
  - » **Trends and Issues Regarding the UNOLS Fleet**
- **The current plan was published in 1995 and is now in the process of being revised.**
- **The revision will offer an assessment of the UNOLS Fleet and will address:**
  - » **Ship-life projections**
  - » **Regulatory Requirements**
  - » **Agency science facility needs**
  - » **Fisheries Research**
  - » **ROV / AUV handling capability**
  - » **Long coring capability**
  - » **Coastal Facility Needs**
  - » **New technologies & support requirements**

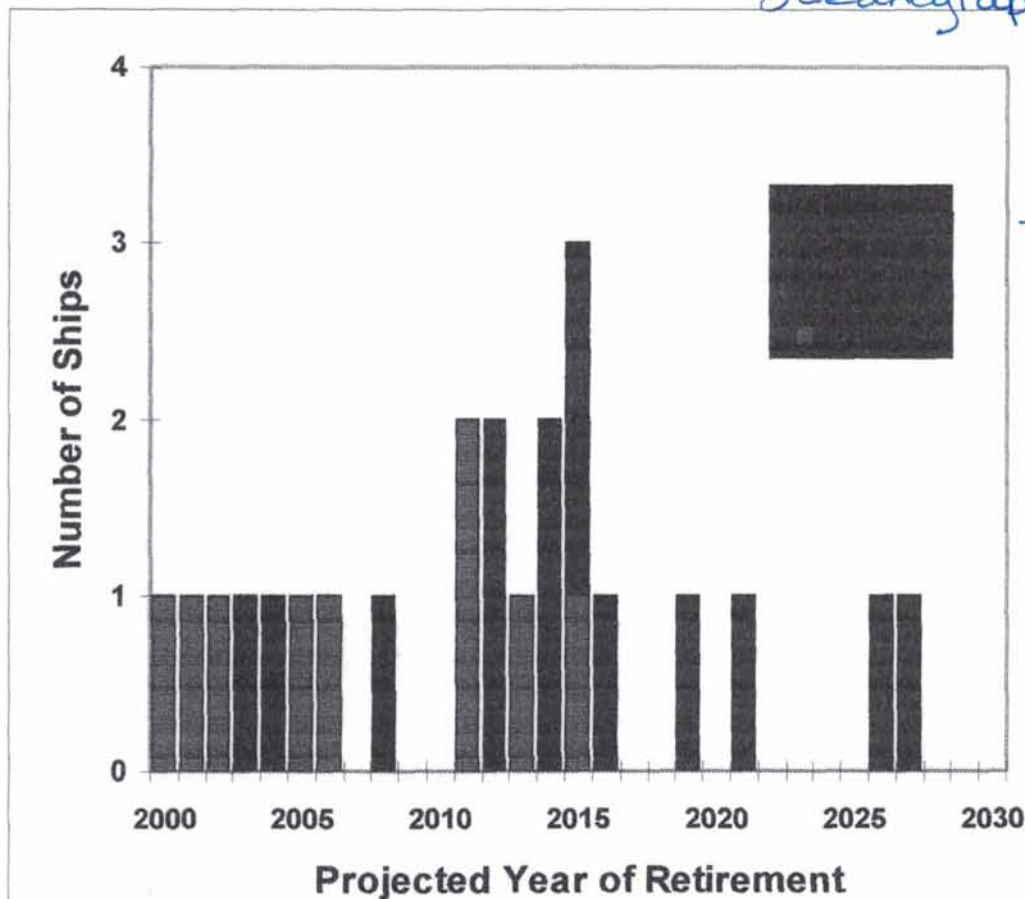


# Planning for the Future

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  - Regulatory Requirements
  - Agency Science Facility Needs
  - Fisheries Research
  - R/V AUV and other capabilities
  - Long range capability
  - Coastal Facility Needs
  - New technology & support of the fleet

# UNOLS Fleet Improvement and Planning

UNOLS must continue to ~~plan for new ships as many of the~~ *access the fleet to determine if it can meet* Class III and IV ships are nearing the end of their useful *future* life. *oceanographic research needs*



~~2015~~ 2005:  
 4 Class IV vessels reaching end of useful life  
 1 Class III  
 1 Class II

# UNOLS

## Improvement and Planning

UNOLS is a national organization of public university presidents and chancellors. It is the largest and most influential of the public university associations in the United States.

UNOLS is committed to the advancement of public higher education through leadership, advocacy, and collaboration. It provides a forum for the exchange of ideas and information among its members.

UNOLS is also committed to the improvement of public higher education through research, analysis, and the development of best practices.

UNOLS is a member of the Association of Public Higher Education Organizations (APHEO) and the Association of Public Higher Education Administrators (APHEA).

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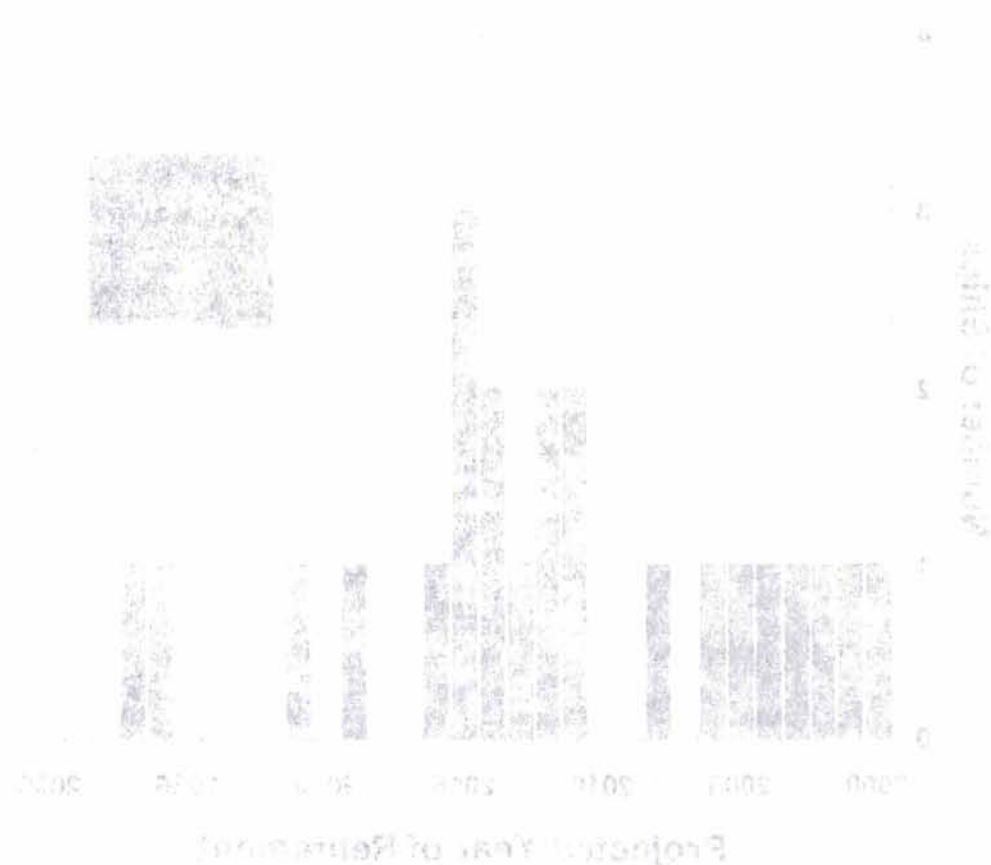
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# MAJOR UNOLS FLEET CHANGES IN THE NEAR FUTURE

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## Funded:

- *Construction of* AGOR 26, a Small Waterplane Area Twin Hull Ship (SWATH) at University of Hawaii.
- USCG Research Icebreaker MICHAEL HEALY

## Under Consideration:

- Coastal research vessels
  - » Small near-shore vessels:
    - BLUE FIN Replacement
    - CALANUS Replacement
  - » East Coast (Shelf to Slope) *FIG*
    - SMRs are under development: intermediate size ship with ability to carry large science parties
- ALPHA HELIX Replacement

*in process of developing SMRs for an East Coast Coastal vessel*

# MAJOR UNCLE TOM'S CABIN

1997

NEAR FUTURE

Funded:

- AGOR 28, a Small Vessel (also known as the Ship (SWAN) at University of Hawaii)
- USCG Research Vessel R/V HEALY

Under Consideration:

- Coastal research vessels
- Small near shore vessels
  - BLUE RIF Replacement
  - CALANUS Replacement
- East Coast (Shift to West)
  - SMRS are under development
  - Intermediate size ship with 2000 tons
  - early large scale parties
- ALPHA HELIX Replacement



# Summary

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- **UNOLS Fleet is in best condition ever.**
- **Nearing completion of a decade that will see nearly \$200 M in capital improvements to the Fleet.**
  - » **Class I are new or they have undergone major mid-life refits.**
  - » **Most Class III have undergone major mid-life refits during the past five years.**
  - » **Replacement, construction, and upgrade of several small, coastal vessels are under consideration.**

# Summary

- UNOLS Fleet is in best condition ever.
- Hearing completion of a decade that will see nearly \$200 M in capital improvements to the fleet.
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# Conclusions

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- The UNOLS Fleet has been effective in keeping abreast of accommodating modern research by providing new and updated platforms to perform needed studies.
- These seagoing facilities provide the platforms ~~in which the platforms~~ on which the bulk of American oceanographic research is performed.
- However, we must continue to plan for modernization and/ or new construction.
- The key ingredient in this process is the involvement of the user, sea-going scientist.

# Conclusions

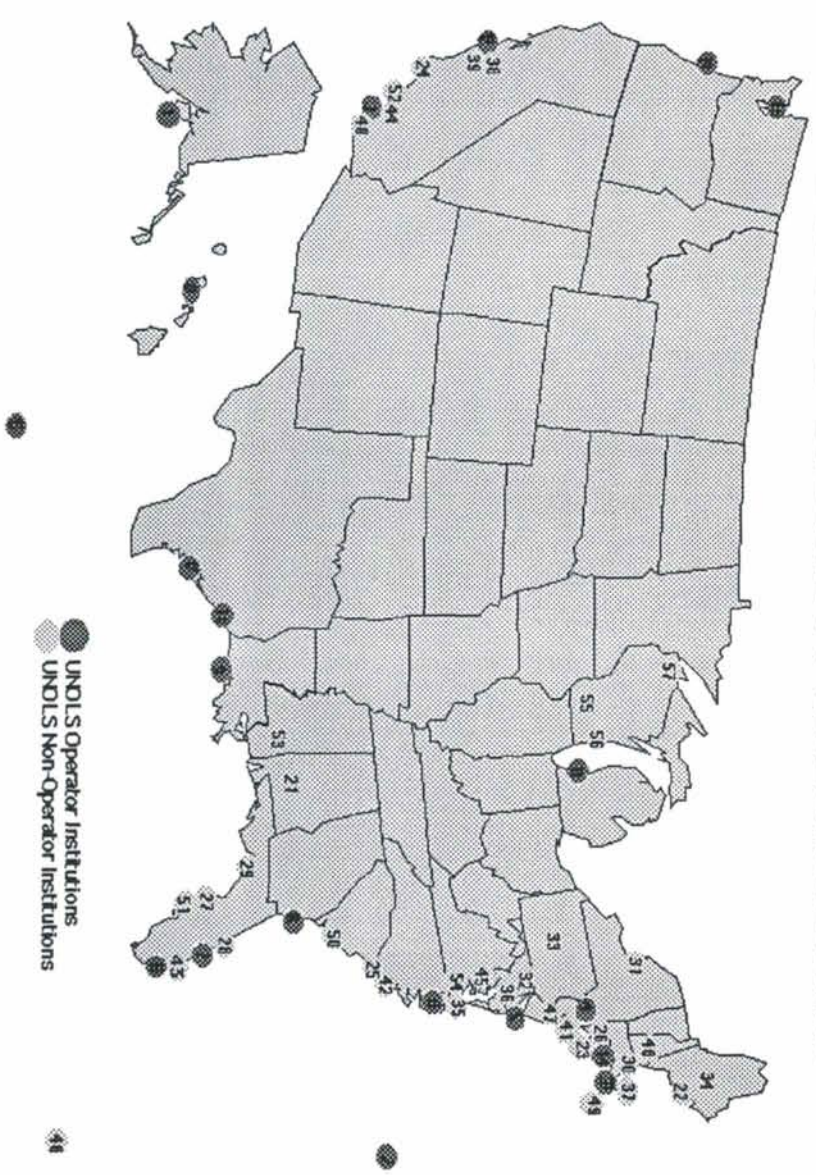


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# UNOLS Member Institutions

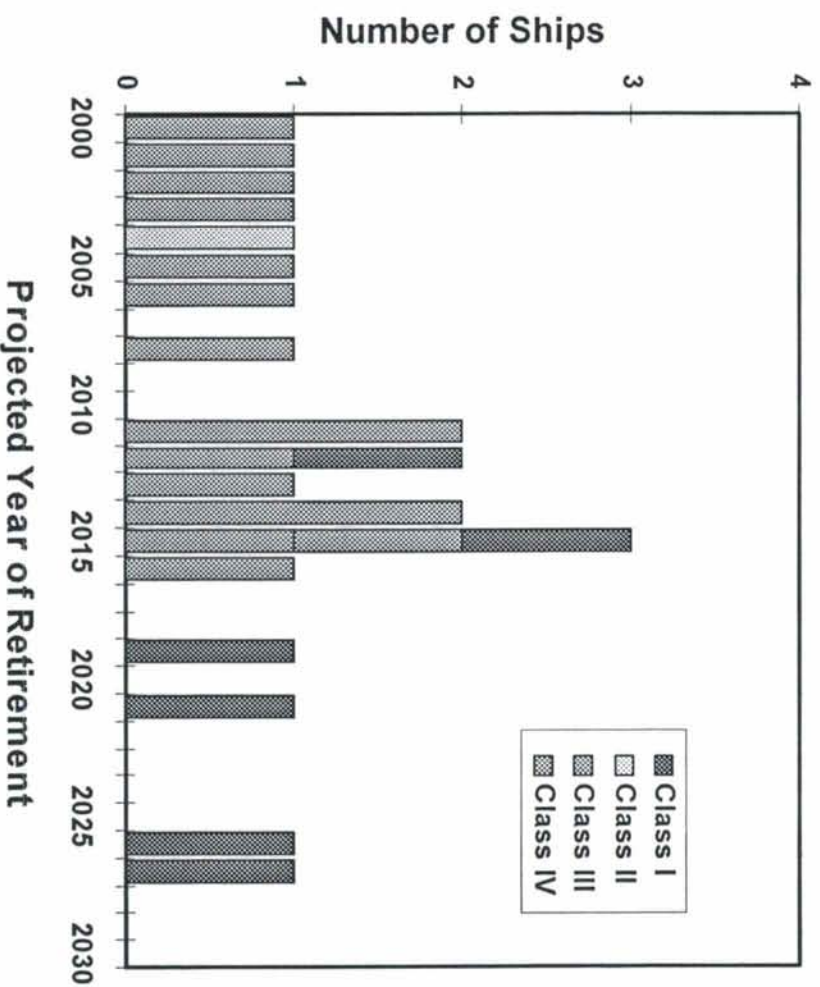
## UNOLS Member Institutions





# UNOLS Fleet Improvement and Planning

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# UNOLS Fleet Utilization

