

OC 652

Week 1 Lecture 2

Understanding the US Oceanographic Fleet and how to use it

Today's topics

- UNOLS
- UNOLS vessels and other facilities
- Ship time requests and the scheduling process
- Projections for the future

The materials presented in this lecture are from a draft UNOLS Fleet Improvement Plan and should not be distributed without permission of the UNOLS Office.

Getting to sea

- In spite of the increasing use of sensor platforms such as LOBO most chemical oceanography begins at sea.
- Avenues to vessel use in the US: **UNOLS**; through an institution operating a non-UNOLS vessel (e.g., Elakha); NOAA (mostly for NOAA scientists); US Coast Guard Ice Breakers; private charter.
- UNOLS vessels are supported with federal funds, but they must meet specific safety, operations and reporting requirements.



UNOLS in a Nutshell

The University-National Oceanographic Laboratory System is an organization of 61 U. S. institutions that have academic research and education programs in the ocean sciences and an interest in promoting the best possible national shared use facilities to support these programs. UNOLS was founded in 1971.

- Eighteen of the UNOLS institutions are operators of major shared use facilities, including:
 - Research vessels (23)
 - A National Deep Submergence Facility (*Alvin*, ROV *Jason*, and AUV *ABE*)
 - A National Oceanographic Aircraft Facility at CIRPAS/NPS
 - A National Oceanographic Seismic Facility (*R/V Marcus Langseth*)
- Facilities are either owned by one of the Federal agencies or by individual institutions.
- UNOLS is not a funding agency or a facility operator.
- UNOLS serves in an advisory role to facility operators and to supporting Federal agencies.
- UNOLS is governed by an elected Council & major committees (volunteers); and maintained by a small secretariat
- UNOLS is a coordinator or facilitator of community-wide efforts with these goals:
 - *Promote broad, coordinated access to oceanographic research facilities*
 - *Support continuous improvement of existing facilities*
 - ***Plan for and foster support for the oceanographic facilities of the future***

Visit : <http://www.unols.org/>

Other UNOLS Facilities



Figure 20. DSV *Alvin*

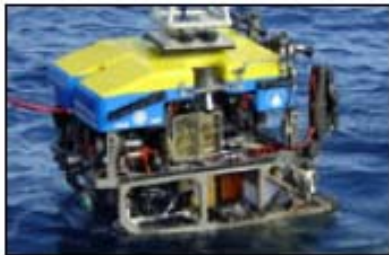


Figure 21. ROV
Jason/Medea



Figure 23. R/V *Marcus G. Langseth* (Photo
by: Lamont-Doherty Earth Observatory)



Figure 19.
UV-18A
Twin Otter.
Photo
provided by:
CIRPAS

UNOLS: Council, Committees, and Federal Sponsors

**UNOLS Member Institutions
Oceanographic Community**

**Supporting Federal Agencies
Navy (ONR), NSF, NOAA, USGS, MMS, USCG**

UNOLS Office

**UNOLS Ship and Facility Operators
Research Vessels, Aircraft, Submersibles**

UNOLS Council

*Ship Scheduling Committee
(SSC)*

*Research Vessel Operators' Committee
(RVOC)*

*Research Vessel Technical Enhancement Committee
(RVTEC)*

*Fleet Improvement Committee
(FIC)*

*Arctic Icebreaker Coordinating Committee
(AICC)*

*DEep Submergence Science Committee
(DESSC)*

*Scientific Committee for Oceanographic Aircraft Research
(SCOAR)*

*Marcus Langseth Science Oversight Committee
(MLSOC)*

*U.S. Coast Guard (USCG) Polar
Icebreakers (Healy, Polar Star, Polar Sea)*

*Woods Hole Oceanographic Institution (WHOI)
NDSF – Alvin, Jason, ABE/Sentry*

*Naval Postgraduate School (NPS)
CIRPAS – Twin Otter and Pelican Aircraft*

*Lamont-Doherty Earth Observatory (LDEO)
R/V Marcus Langseth*

The UNOLS Fleet – 2008

SHIP/CLASS	Operator	Owner	BUILT	Conv/Mid-Life	LOA m (ft)	Science Berths
Global Class						
<i>Melville</i>	SIO	NAVY	1969	1991	85 (279)	38
<i>Knorr</i>	WHOI	NAVY	1970	1989	85 (279)	34
<i>Thomas G. Thompson</i>	UWASH	NAVY	1991		84 (274)	36
<i>Roger Revelle</i>	SIO	NAVY	1996		84 (274)	37
<i>Atlantis (Submersible Support Ship)</i>	WHOI	NAVY	1997		84 (274)	37
<i>Marcus G. Langseth (Seismic Ship)</i>	LDEO	NSF	1991	2005-2007	71 (235)	35
Ocean Class						
<i>Kilo Moana</i>	UHAWAII	NAVY	2002		57 (186)	29
Intermediate Class						
<i>Seward Johnson</i>	HBOI	HBOI	1985	1994	63 (204)	29
<i>Wecoma</i>	OSU	NSF	1976	1994	56 (185)	18
<i>Endeavor</i>	URI	NSF	1977	1993	56 (184)	18
<i>Oceanus</i>	WHOI	NSF	1976	1994	54 (177)	19
<i>New Horizon</i>	SIO	SIO	1978	1996	52 (170)	19
Regional Class						
<i>Point Sur</i>	MLML	NSF	1981		41 (135)	12
<i>Cape Hatteras</i>	DUKE	NSF	1981	2004	41 (135)	14
<i>Atlantic Explorer</i>	BIOS	BIOS	1982	2006	51 (168)	20
Regional/Coastal Class						
<i>Robert Gordon Sproul</i>	SIO	SIO	1981	1985	38 (125)	12
<i>Pelican</i>	LUMCON	LUMCON	1985	2003	32 (105)	14
<i>Walton Smith</i>	UMIAMI	UMIAMI	2000		30 (96)	16
<i>Hugh R. Sharp</i>	UDEL	UDEL	2005		44 (146)	14
Local Class						
<i>Urraca</i>	STRI	STRI	1986	1994	30 (96)	10
<i>Savannah</i>	SKID/UG	SKID/UG	2001		28 (92)	19
<i>Blue Heron</i>	UMINN	UMINN	1985	1999	26 (86)	6
<i>Clifford Barnes</i>	UWASH	NSF	1966	1984	20 (66)	6

23 ships
Various
sizes and
capabilities

Table 2. The 2008 UNOLS Fleet

What else comes with a UNOLS vessel

- Ship's equipment- cranes, winches, wires, navigation, communications
- Lab space, berths, meals
- Shared use equipment (on request)– vans, CTD/rosette, Niskin bottles, corers, freezers, salinometer, etc
- Marine technician(s)

The fleet changes: old vessels are retired, new vessels built

Table 1. Comparison of the 1995 UNOLS Fleet with the 2008 UNOLS Fleet

Class of Vessel	1995	2008
Global/Large	5	6
Ocean Class		1
Intermediate	8	5
Regional	3	3
Regional/Coastal	5	4
Local	5	4
Total Ships	26	23

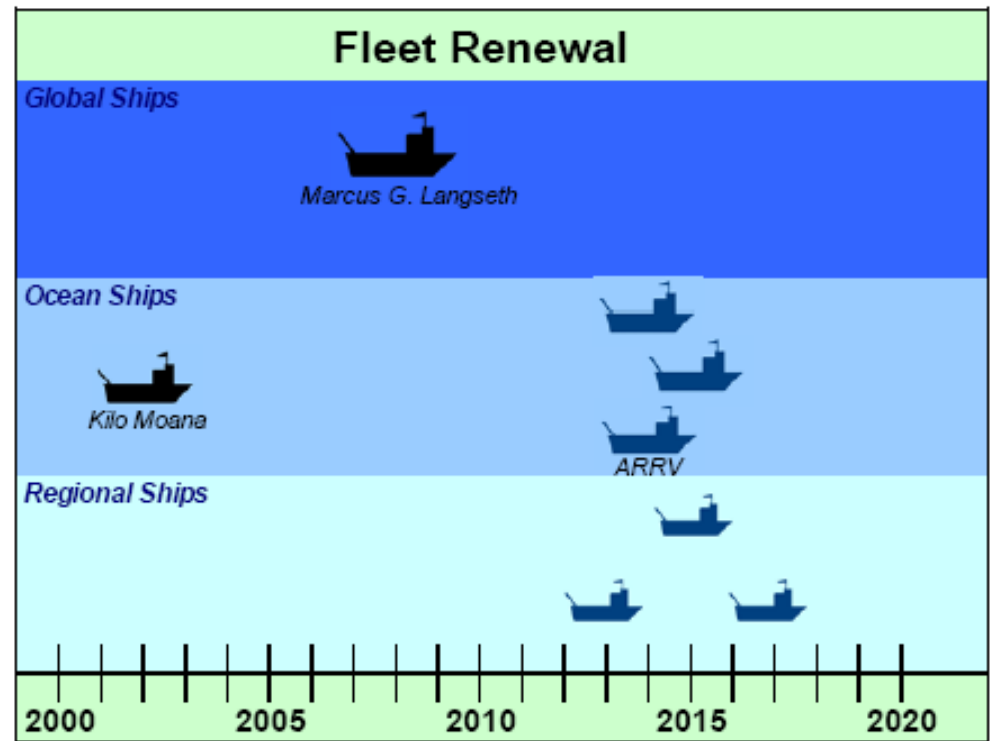
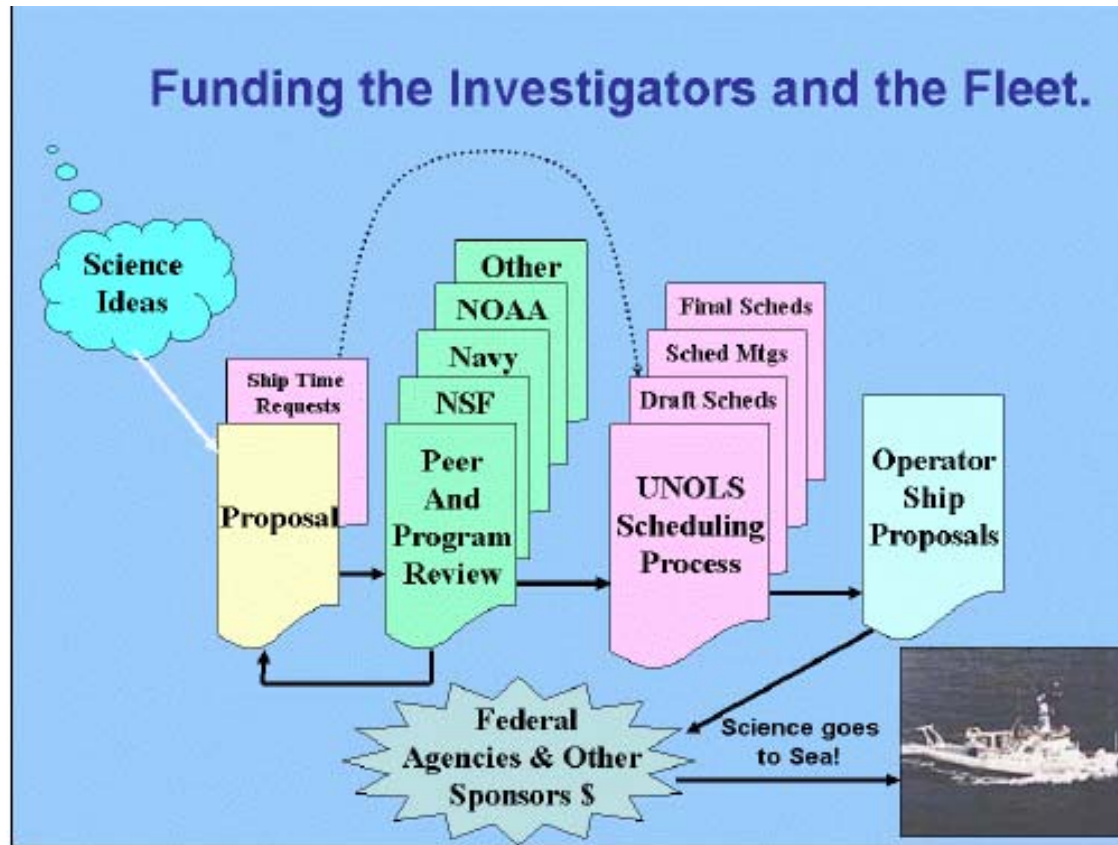
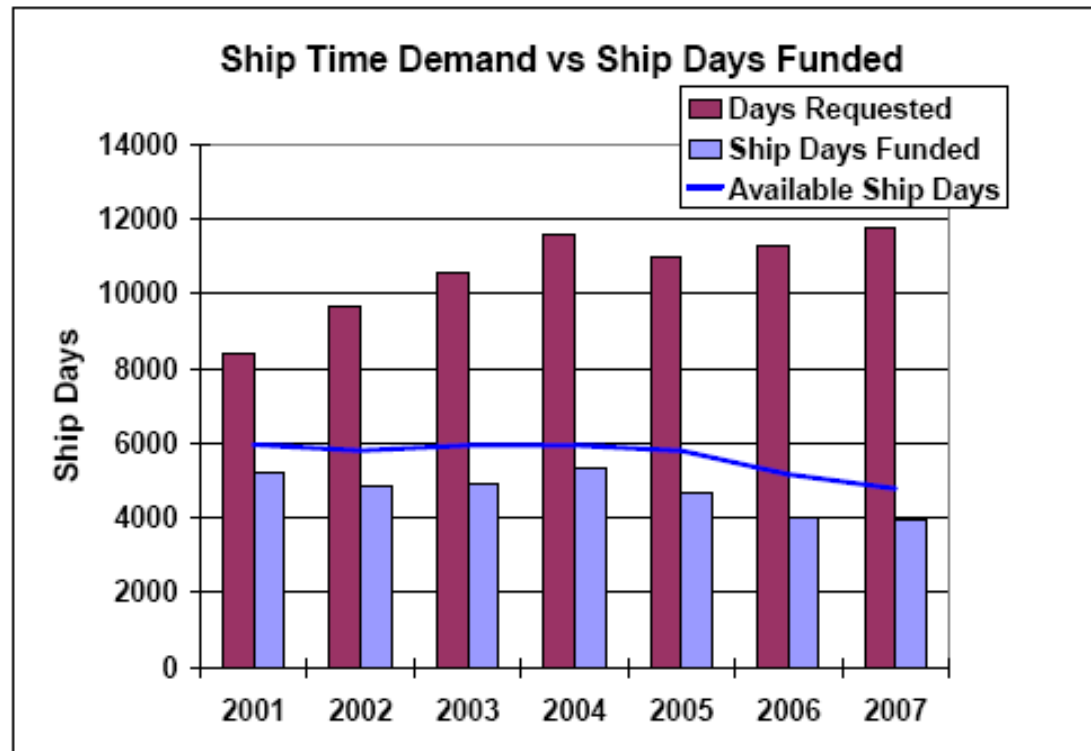


Figure 46. Fleet Renewal Timeline through 2020

The process of getting time on a UNOLS vessel usually takes ~2 years



Scheduling goals are to get funded science to sea, minimize cost



Federal support for ship time is much less than demand

A Ship time Request

- **On line system** - usually submitted at time of proposal submission
- Data inputs include - PI Name and Institution, Proposal Title and Agency, Number of days needed (transit and on station), kinds of operation, vessel size (class), areas of operation, ports, special equipment, size of scientific party

Detailed cruise plans are submitted to the operator after scheduling.

Requests do cover the globe

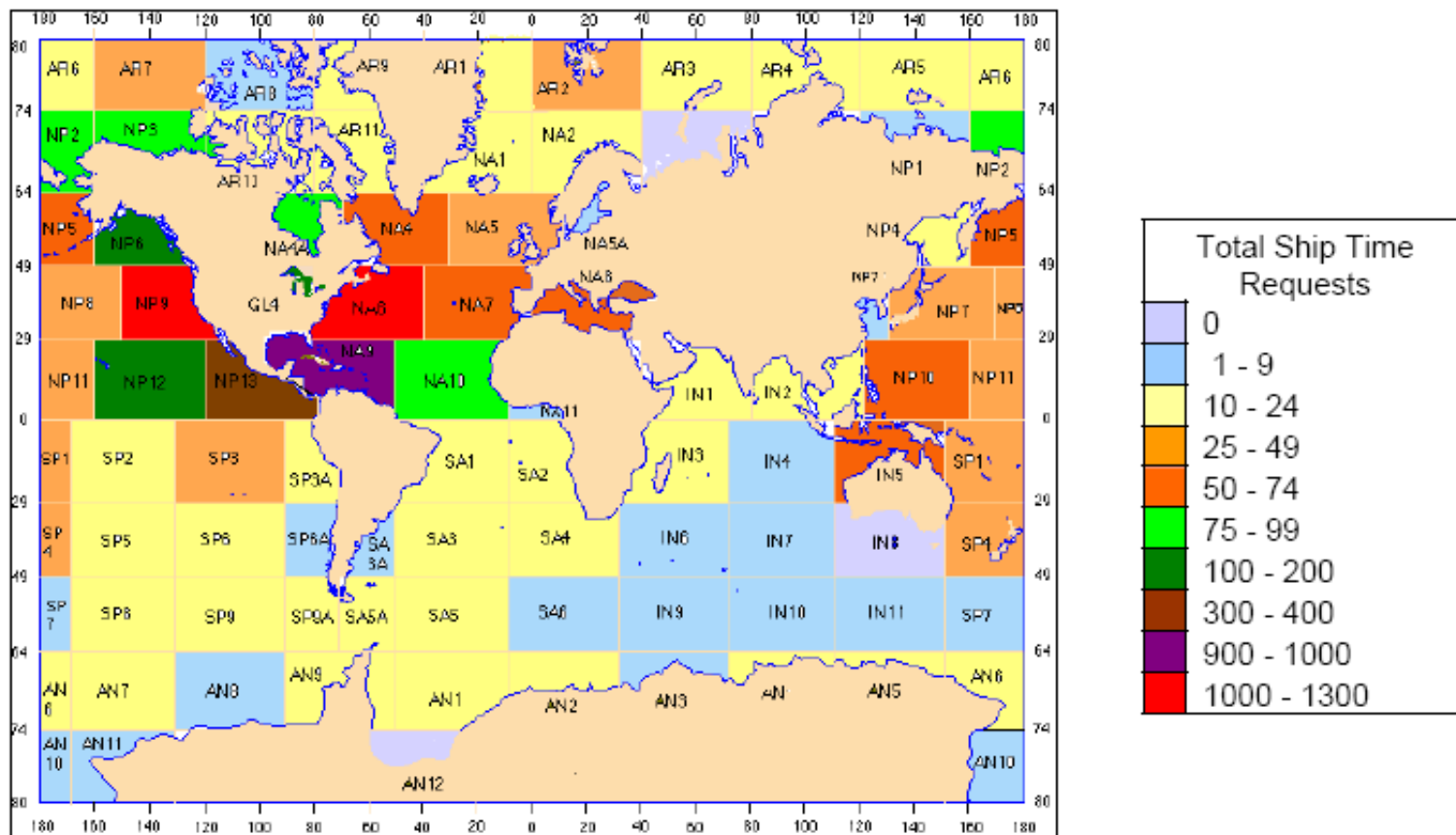


Figure 34. Geographic Distribution of Ship Time Requests (2000 to 2006)

And now the bad news...

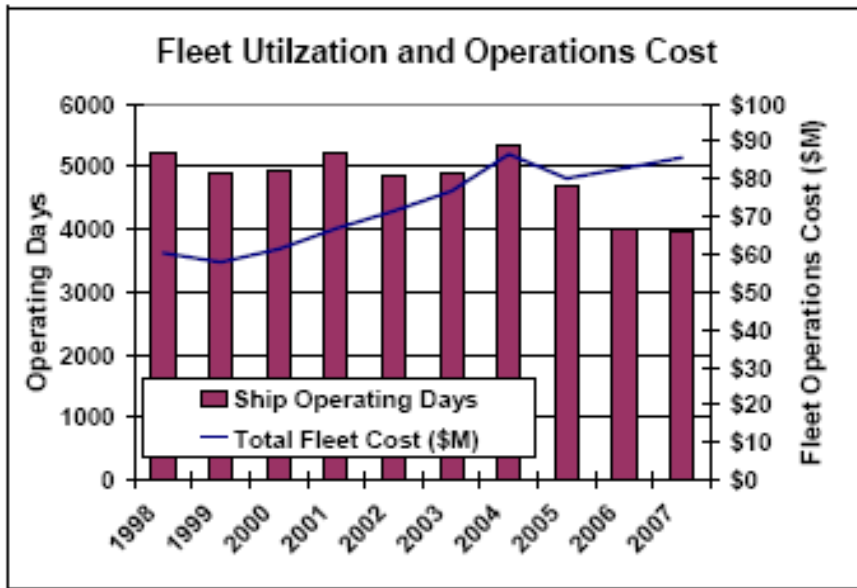


Figure 37. Fleet Utilization and Operation Costs (Total Fleet cost includes ship operations, technical services, and NDSF costs).

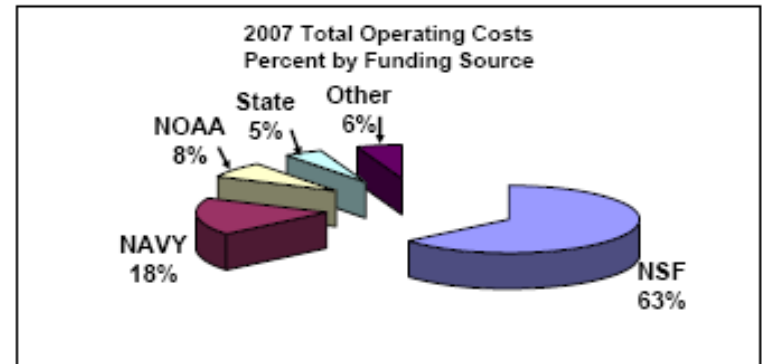


Figure 42. 2007 UNOLS Fleet Operations Cost -

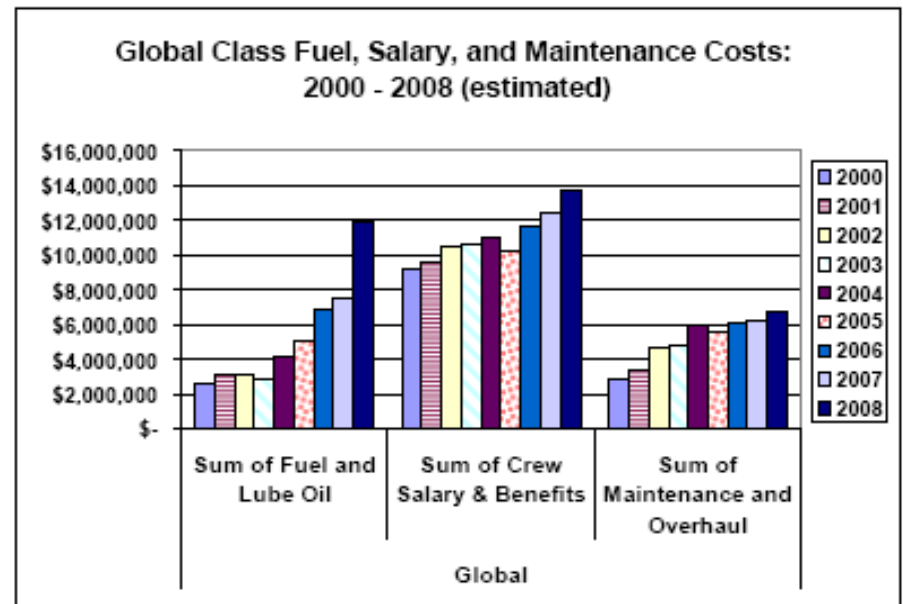


Figure 52. Global Class - Fuel, Salary, and Maintenance Costs

Unless there is a change in current funding and cost trends, getting to sea in the future will be more difficult

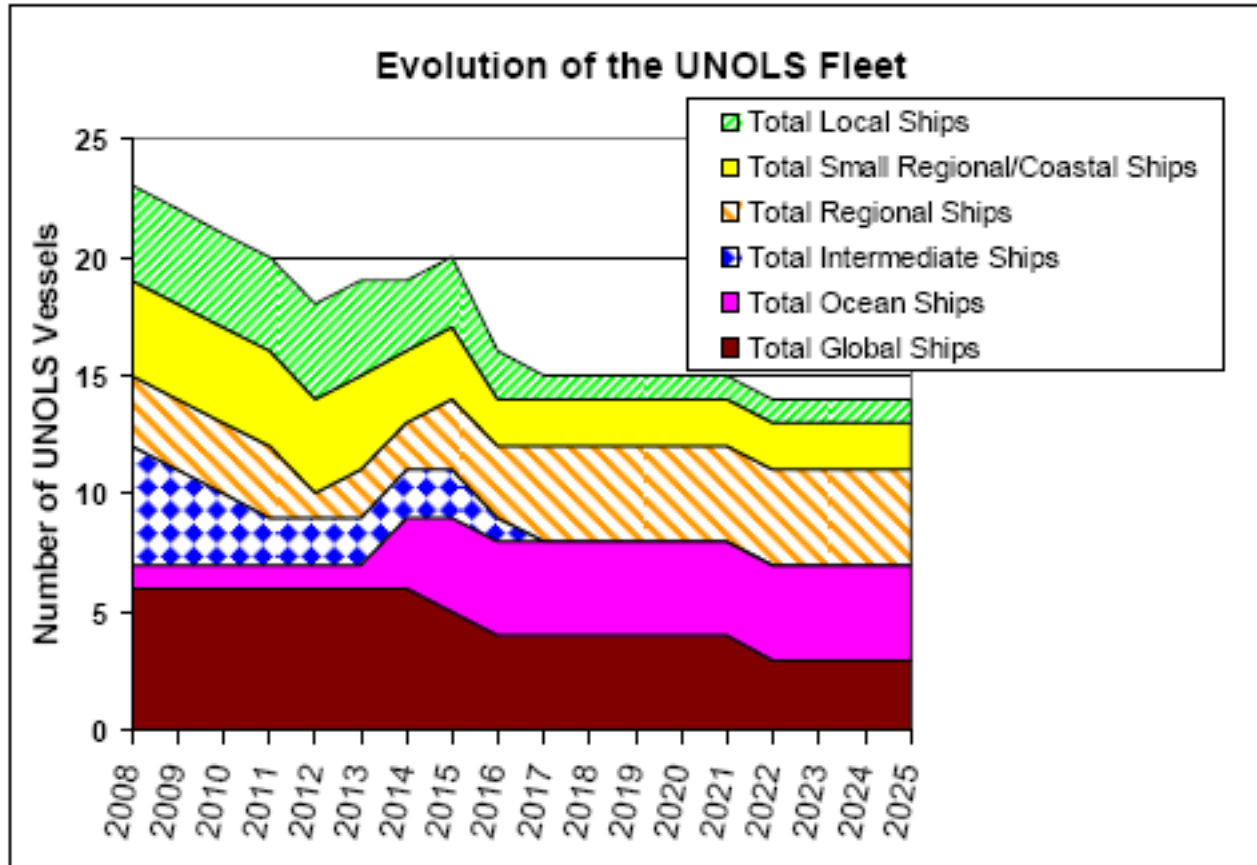


Figure 48. Evolution of the UNOLS Fleet