UNOLS
Fleet Improvement Plan
2005

PRELIMINARY

UNOLS Fleet Trends and Projections

February 17, 2005

UNOLS Fleet Improvement Plan Outline

- Executive Summary / Intro
- Identify Future Science Initiatives:
  - Physical - Dave
  - Biological - Terry
  - MG&G - Niall
  - Chemical – Jim B
  - Education – Clare
  - Ocean Engineering -
  - Cross cutting initiatives (Observatories (broad)) – Jim C
- Current Fleet Composition and Utilization Trends - Office
  - Current Fleet Description
  - Updated vessel retirement dates and SLEP costs
  - Fleet Trends
    - Geographical utilization

UNOLS Fleet Improvement Plan Outline

- Future Fleet Projections – Office and others
  - •UNOLS and FOFC Plan Fleet Projections -
  - •Ship Construction Plans and realistic timelines
  - •Addition of other facility projections (Ocean observatory, etc)
  - •Other Facilities – aircraft, deep submergence facilities
  - •Scheduling and operating modes
  - •Shortfalls:
    - •Differences between FOFC and UNOLS FIP
    - •Consequences of not carrying out SLEPs
    - •Tradeoffs between various scenarios - Peter
  - •Extensions and expansions beyond the FOFC Plan
  - •Future Fleet Composition
- Fleet Budget Projections and Requirements
  - •Ship Construction Cost
  - •Future Fleet operating cost estimates
- Recommendations

FIP 2005 Timeline

- Finalize outline and assignments– 15 November
- Coordinate with FOFC - winter
- Draft text and prepare projections – 28 Feb 05
- First Draft – March Council Meeting
- Community review – April 1-30, 2005
- Second draft – Spring/Summer Council Meeting
- Circulate second draft for comment – Sept 1
- Final draft – September 30, 2005

Current Fleet Description

The UNOLS Fleet (2005): Ship Characteristics

SHIP/CLASS	Operator	Owner	BUILT	CONV/ Mid-Life	LOA	Conv/ Mid-life LOA	ORIGINAL SCIENCE BUNKS	Conv/Mid-Life SCI. BUNKS
GLOBAL SHIPS								
MELVILLE	SIO	NAVY	1969	1991	245	279	25	38
KNORR	WHOI	NAVY	1970	1989	245	279	25	34
T.G. THOMPSON	UWASH	NAVY	1991		274		36	
ATLANTIS	WHOI	Navy	1997		274		22	
R. REVELLE	SIO	NAVY	1996		274		37	
EWING	LDEO	NSF	1983	1990	239		32	
*** MARCUS LANGSETH**	LDEO			2005	235		34	
INTERMEDIATE/Ocean SHIPS								
SEWARD JOHNSON	HBOI	HBOI	1985	1994	170	204	20	29
KILO MOANA	UHAWAII	NAVY	2002		186		30	
WECOMA	OSU	NSF	1976	1994	177	185	16	20
ENDEAVOR	URI	NSF	1977	1993	177	184	16	18
GYRE	TAMU	TAMU	1973	1980	174	182	11	23
OCEANUS	WHOI	NSF	1976	1994	177		12	18
NEW HORIZON	SIO	SIO	1978	1996	170		13	19
SEWARD JOHNSON II	HBOI	HBOI	1982	1988	168		20	
Regional Ships								
POINT SUR	MLML	NSF	1981		135		12	
CAPE HATTERAS	DUKE	NSF	1981	2004	135		12	
ALPHA HELIX	SIO/UAK	UAK	1966	1984	133		12	15
LOCAL/NEAR-SHORE SHIPS								
R. SPROUL	SIO	SIO	1981	1985	125		12	
CAPE HENLOPEN	UDEL	UDEL	1976		120		12	
WEATHERBIRD II	BBSR	BBSR	1981	1993	115		10	12
PELICAN	LUMCON	LUMCON	1985	2003	105		15	
LONGHORN	UT	UT	1971	1986	80	105	10	12
WALTON SMITH	UMIAMI	UMIAMI	2000		96		16	
URRACA	STRI	STRI	1986	1994	96		10	
SAVANNAH	SKID/UG	SKID/UG	2001		92		20	
BLUE HERON	UMINN	UMINN	1985	1999	86		5	
BARNES	UWASH	NSF	1966	1984	66		6	

Updated Vessel Retirement Dates and Service Life Extension Program (SLEP) Estimates

UNOLS Vessel Retirement Dates and Service Life Extension Program (SLEP) Estimates

Vessel	Year Built / Refit	Length (ft)	FOFC Retirement Date	Revised Retirement Date (1)	5-year estimated SLEP Cost ($M) (2)	10-year estimated SLEP cost ($M) (3)	Notes
Vessels > 40 m							
ALPHA HELIX	1996	133	2005	2008	--	--	
GYRE	1973	182	2006	2011	$1.335	$3.235	
ENDEAVOR	1976	184	2008	2018	$1.025	$1.5	
OCEANUS	1976	177	2009	2019	$1.175	$1.98	
WECOMA	1976	185	2010	2020	$1.5	$2	
CAPE HATTERAS	1981	135	2011	2016	$2	$5	
POINT SUR	1981	135	2011	2016	$2.125	$5	
SEWARD JOHNSON II	1982	161	2012	2017	$5	$8.5	
MELVILLE	1969 / 1991	279	2014	2019	$3.745	$5.295	
KNORR	1970 / 1989	279	2015	--	--	--	(4)
SEWARD JOHNSON	1985	204	2015	2020	$5	$7.5	
NEW HORIZON	1978	170	2016	2021	$1.150	$1.70	
EWING	1983 / 1990	239	2018	2005	--	--	(5)
EWING Replacement	1996/2006	235	xx	2025	--	--	
T.G. THOMPSON	1991	274	2021	--	--	--	(6)
R. REVELLE	1996	274	2026	--	--	--	(6)
ATLANTIS	1997	274	2027	--	--	--	(6)
KILO MOANA	2002	186	2032	--	$7.5	$12.5	
Vessels <40 m							
BARNES	1966	66	2005	--	--	--	
CAPE HENLOPEN	1976	120	2005	--	--	--	
LONGHORN	1971	105	2011	--	$4 - $5	$6 - $8	
WEATHERBIRD II	1981	115	2013	--	--	--	
PELICAN	1985	105	2013	--	$2	--	
SPROUL	1981	125	2015	2020	$0.625	$1.395	
BLUE HERON	1985	86	2015	--	--	--	
URRACA	1986	96	2016				
WALTON SMITH	2000	96	2031	--	--	--	
SAVANNAH	2001	91	2032	--	--	--	

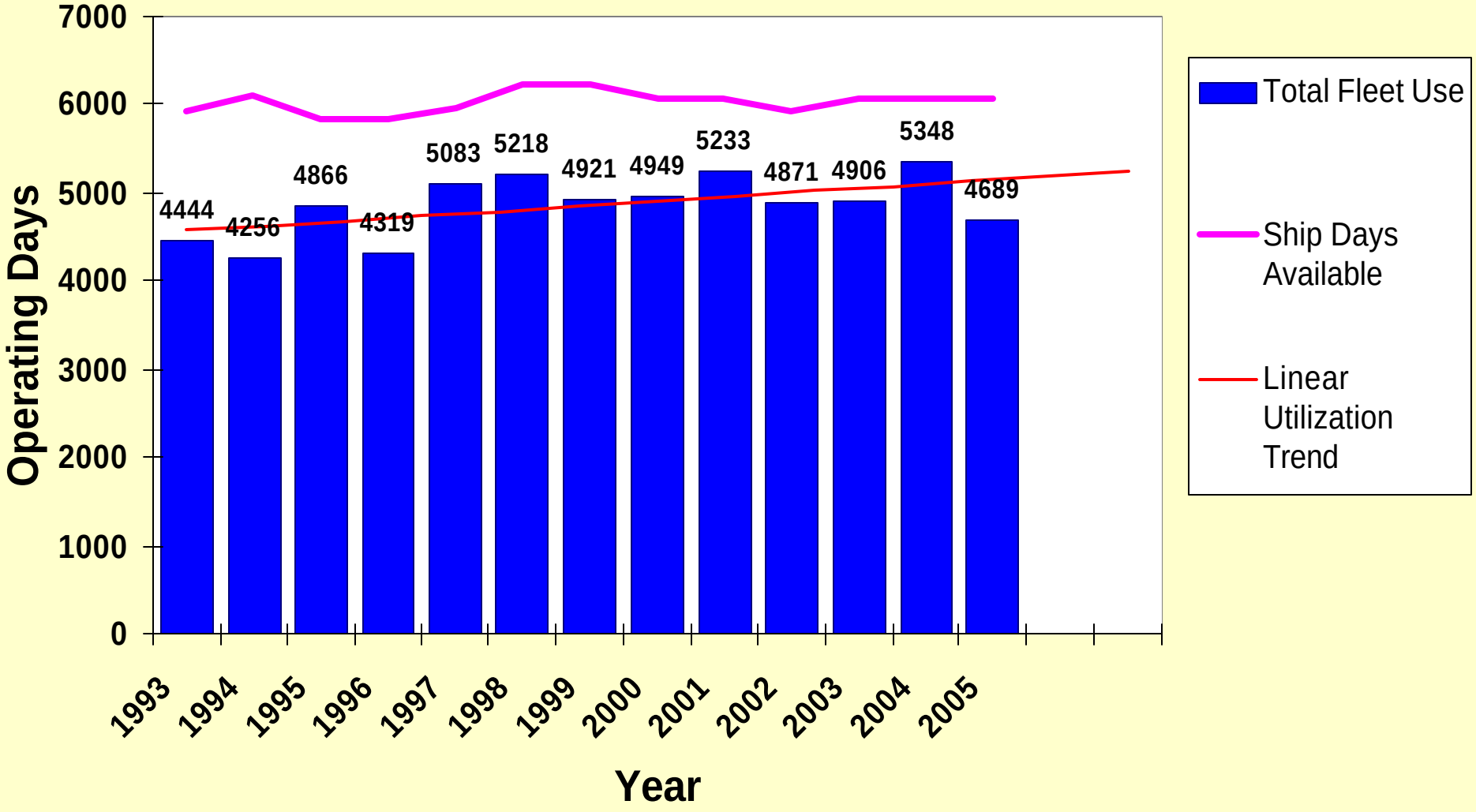
NOTES FOR SLEP ESTIMATES

(1) Revised retirement dates are based on the premise that SLEPs will be funded and carried out prior to the original retirement date.
(2) SLEPs are in addition to shipyard maintenance requirements
(3) 10-year SLEP costs include all 5-year SLEP work items and associated costs.
(4) 1-2 year life extension if needed
(5) EWING to be replaced with new Seismic Vessel
(6) Initial focus will be on mid-life planning - prior to predicting SLEP needs.

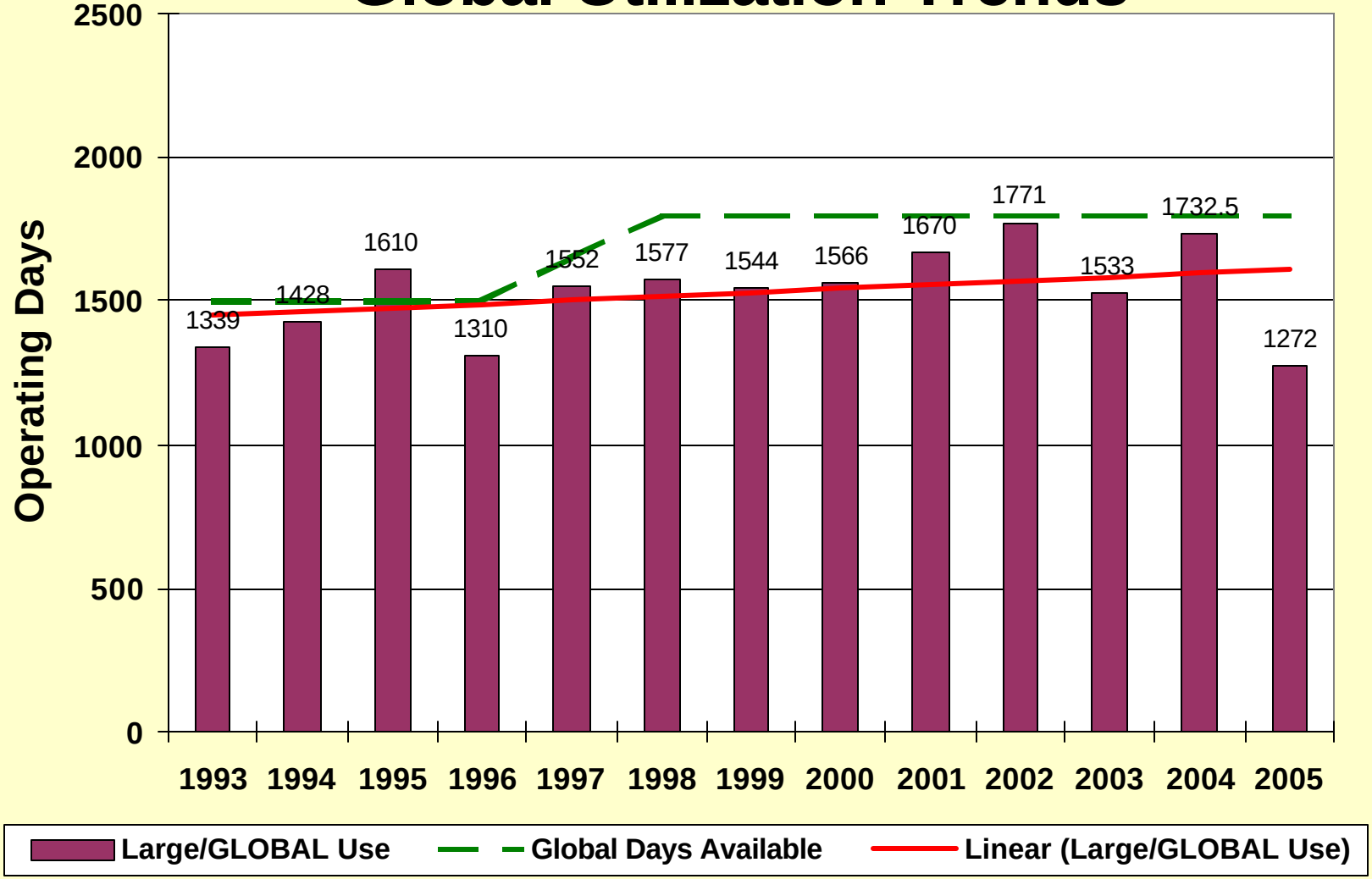
Fleet Trends

- Utilization – Total and by Class
- Geographic Utilization Trends
- Agency Support

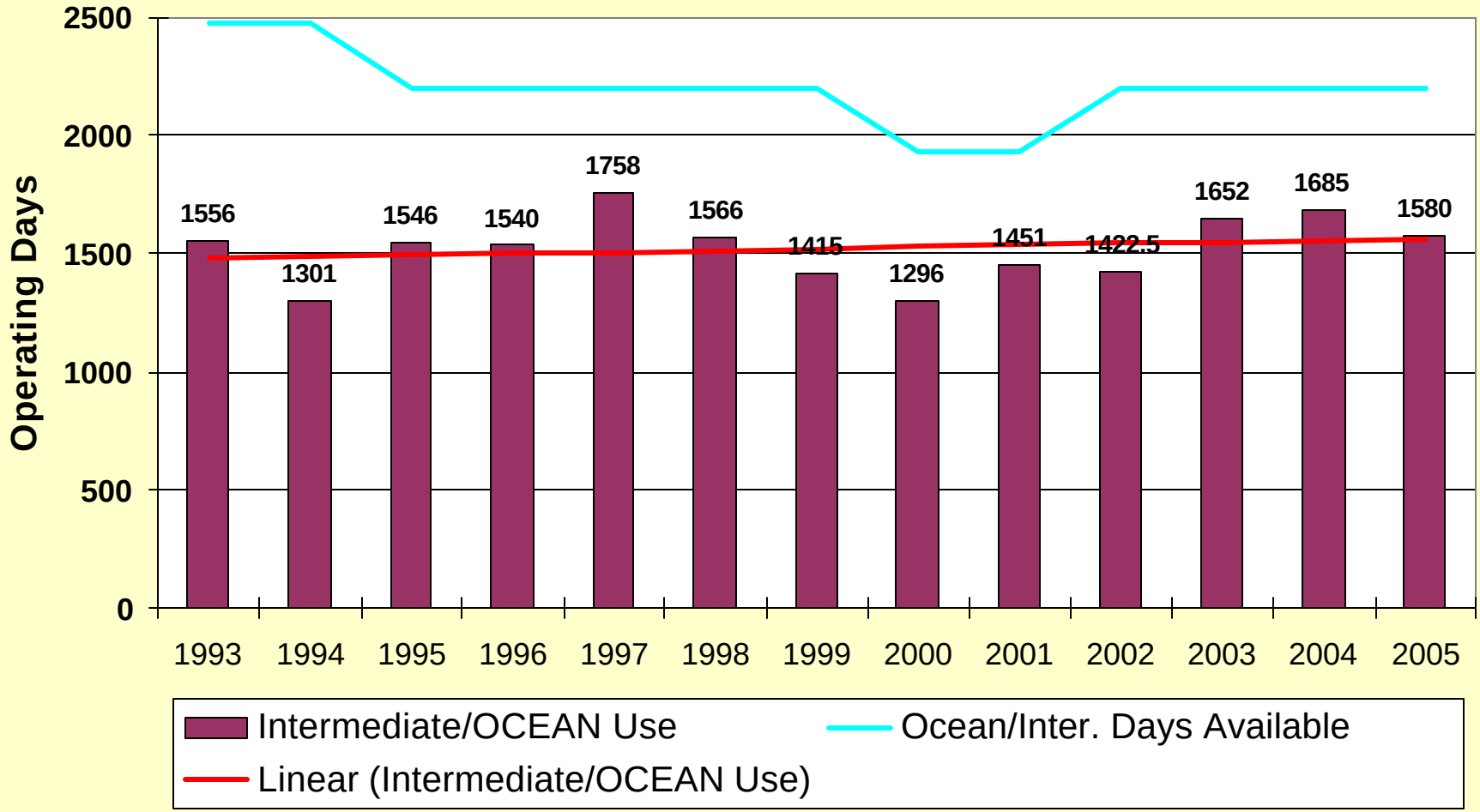
Fleet Utilization Trends: 1993 - 2005



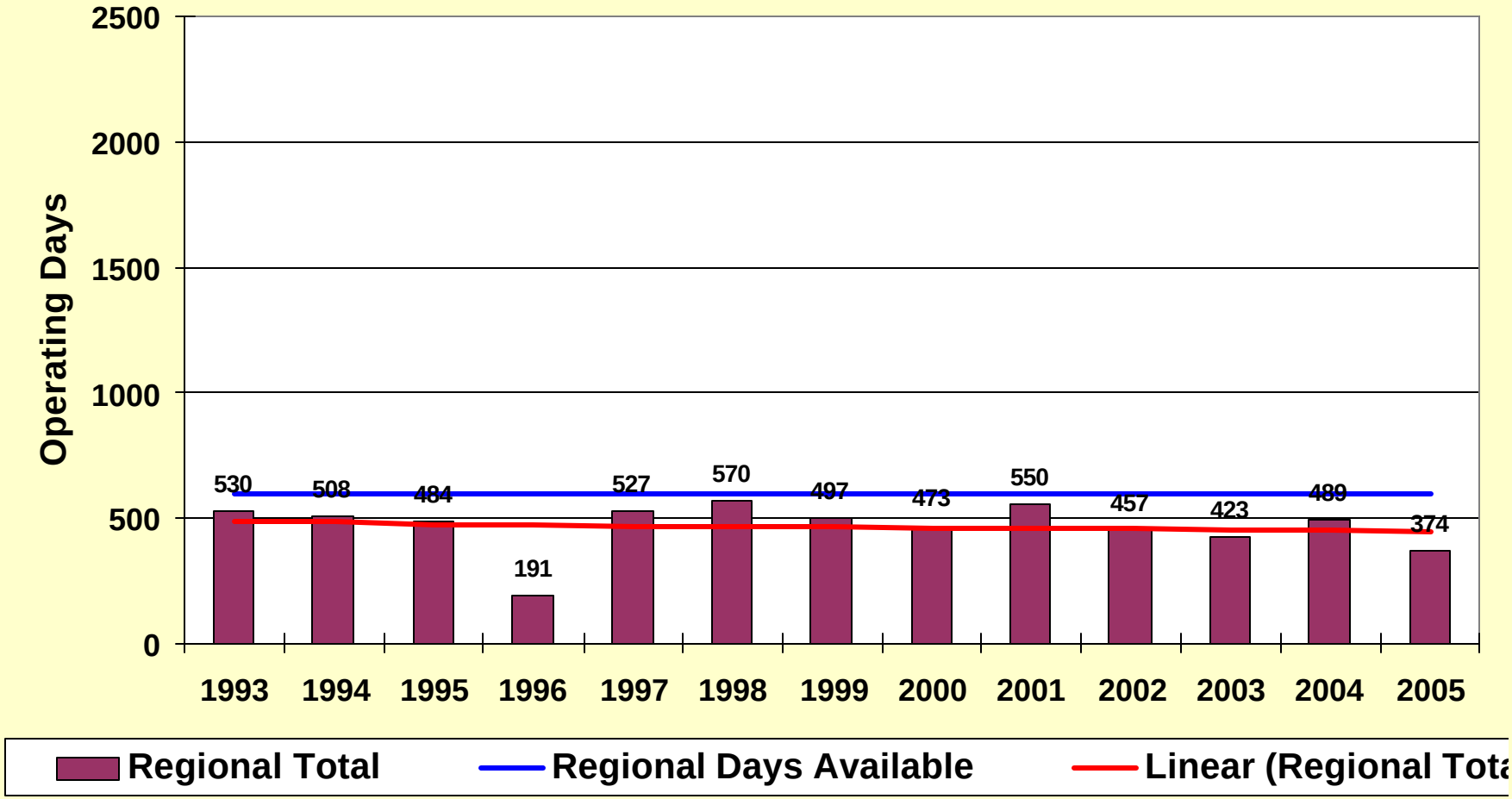
Global Utilization Trends

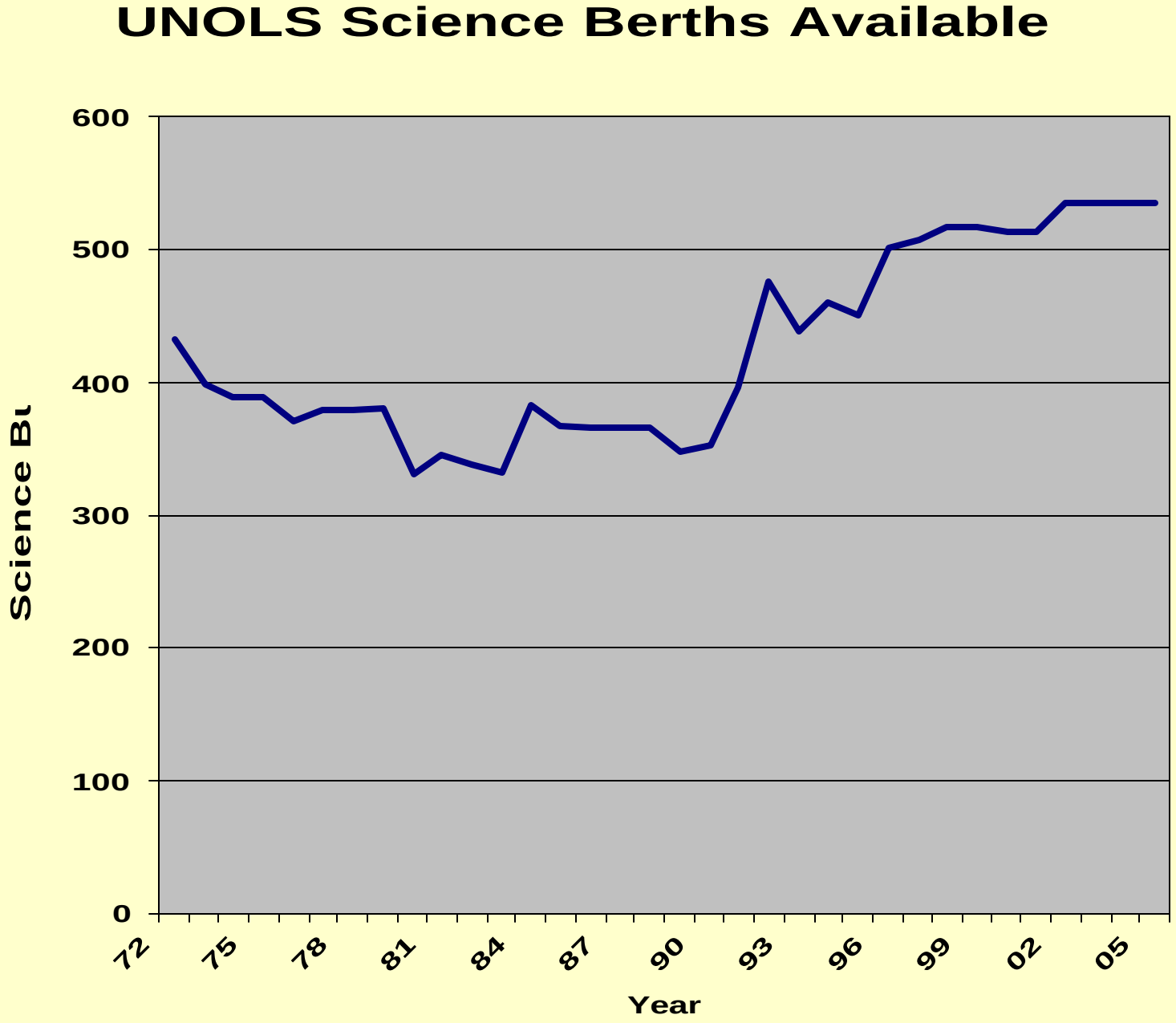


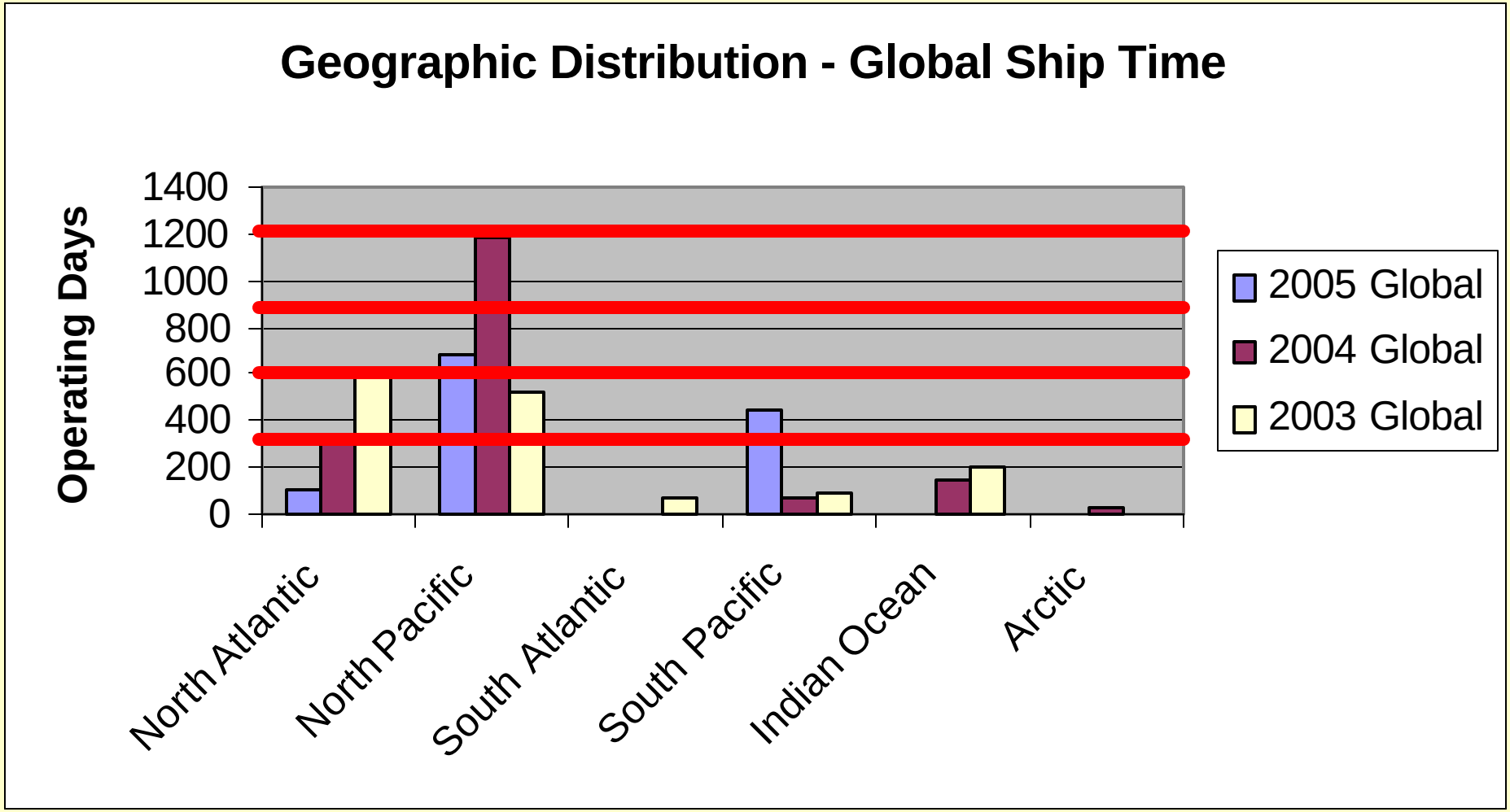
Intermediate/Ocean Class Utilization

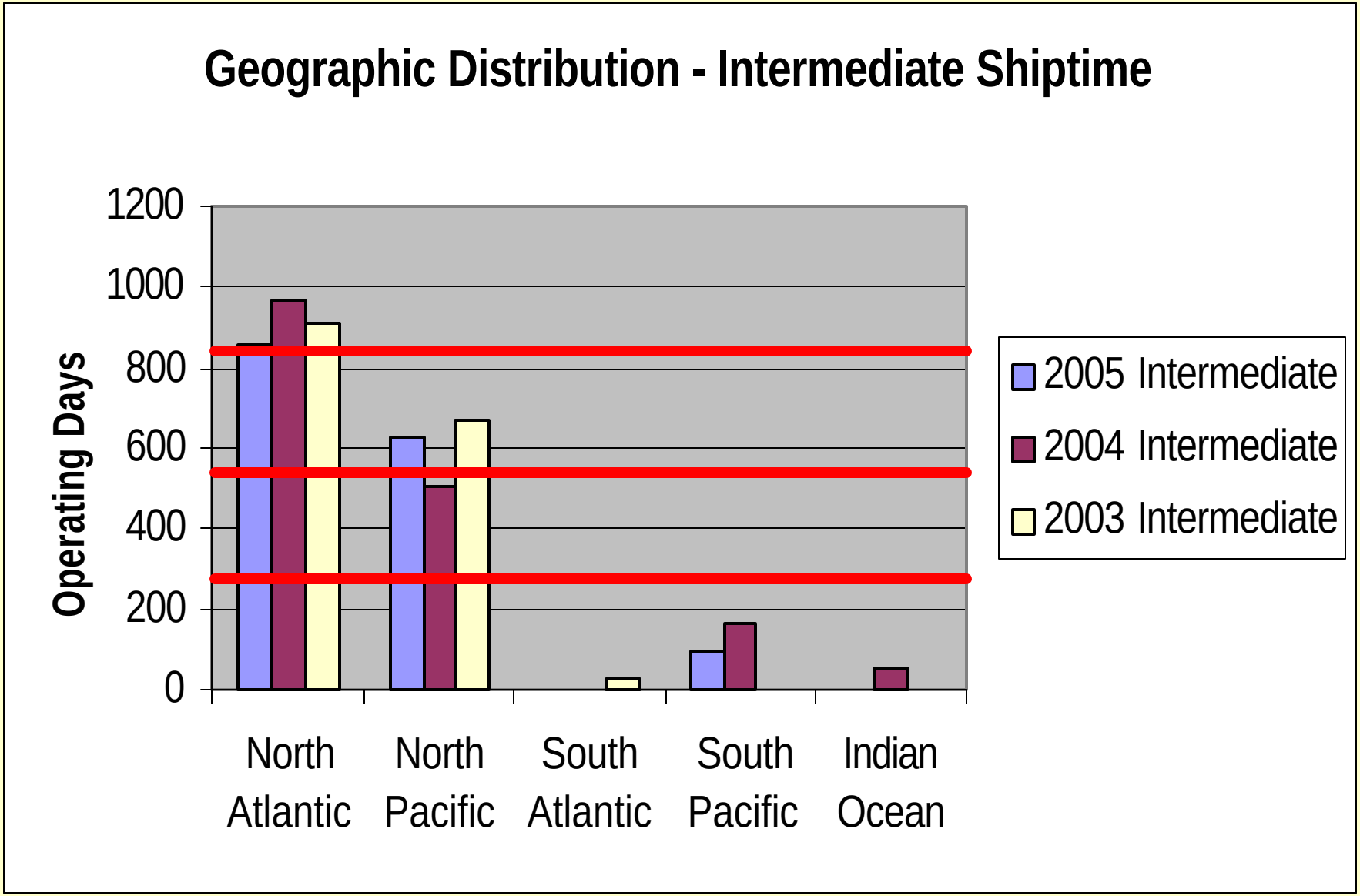


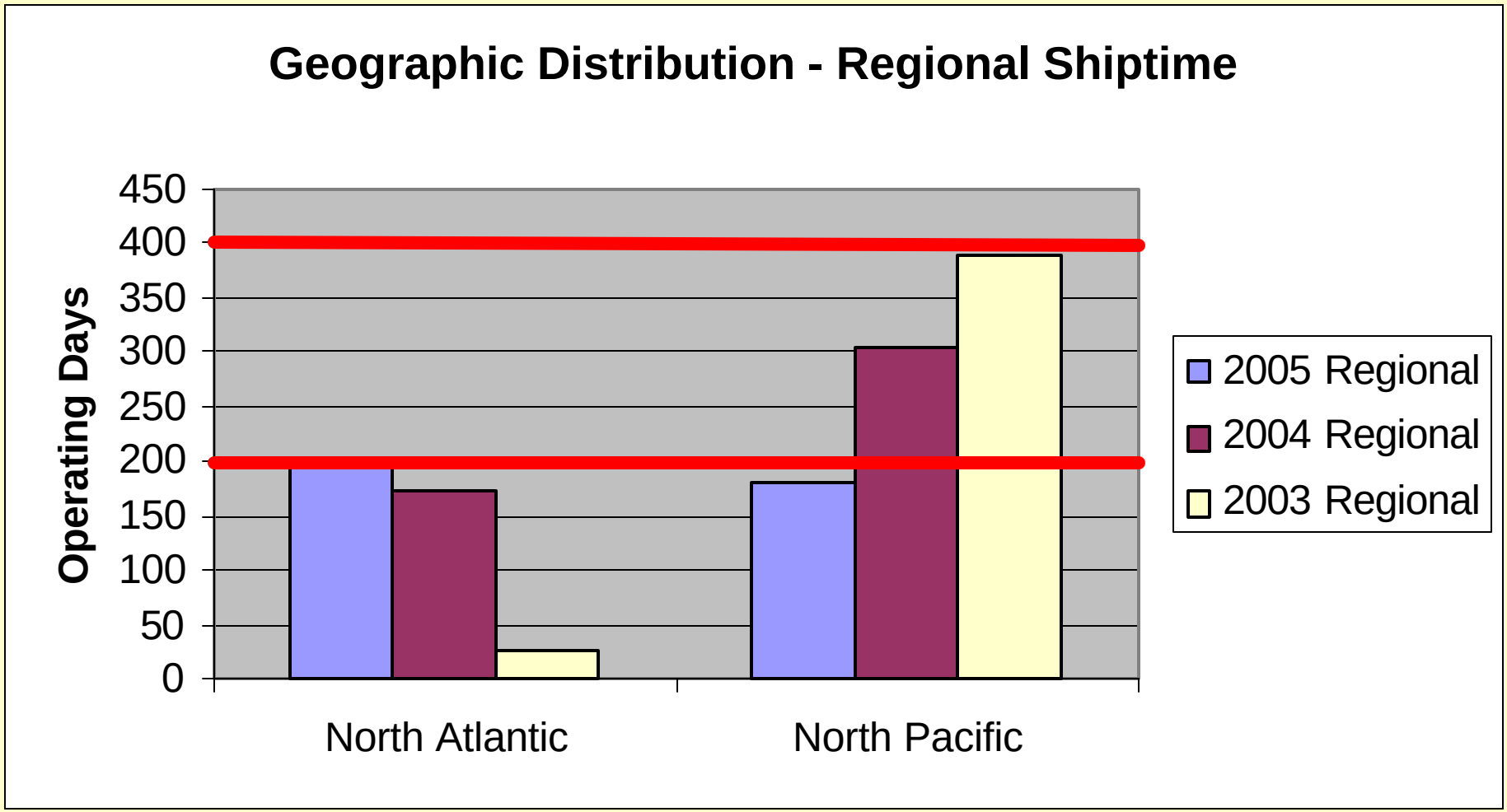
Regional Class Utilization



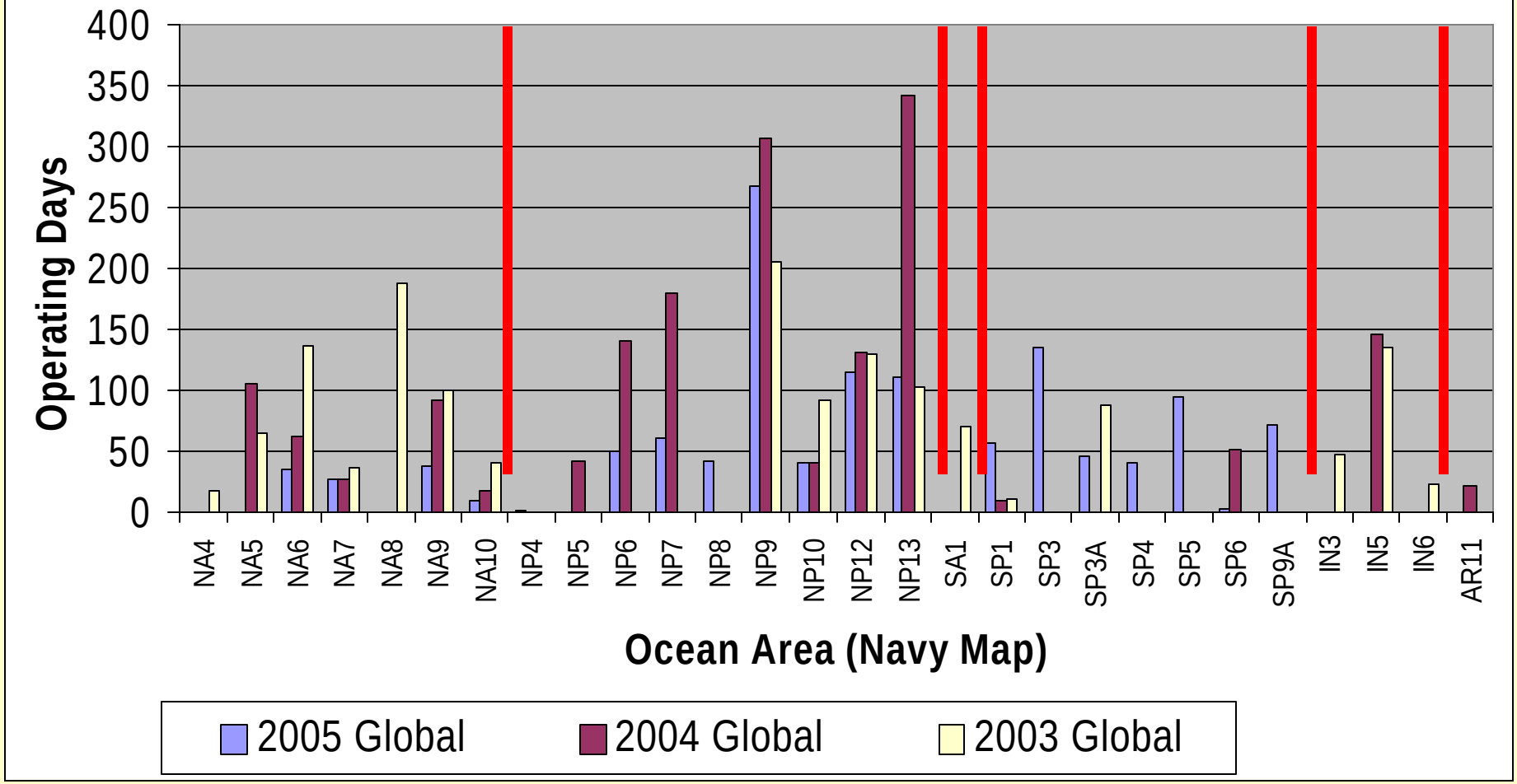

UNOLS Science Berths Available
Science Bt
600
500
400
300
200
100
0
72
75
78
81
84
87
90
93
96
99
02
05
Year

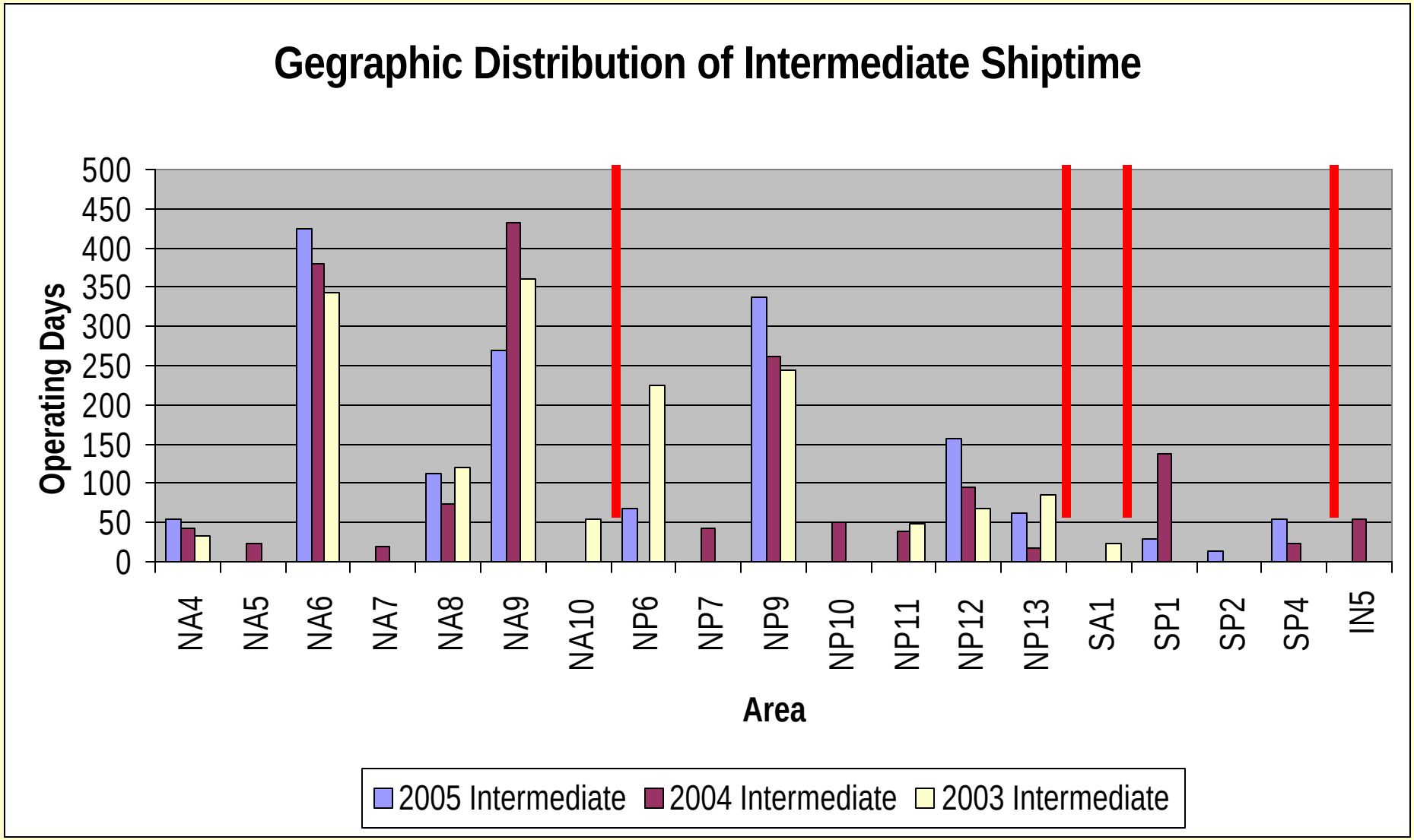

Geographic Distribution - Global Ship Time
Operating Days
1400
1200
1000
800
600
400
200
0
North Atlantic
North Pacific
South Atlantic
South Pacific
Indian Ocean
Arctic
2005 Global
2004 Global
2003 Global

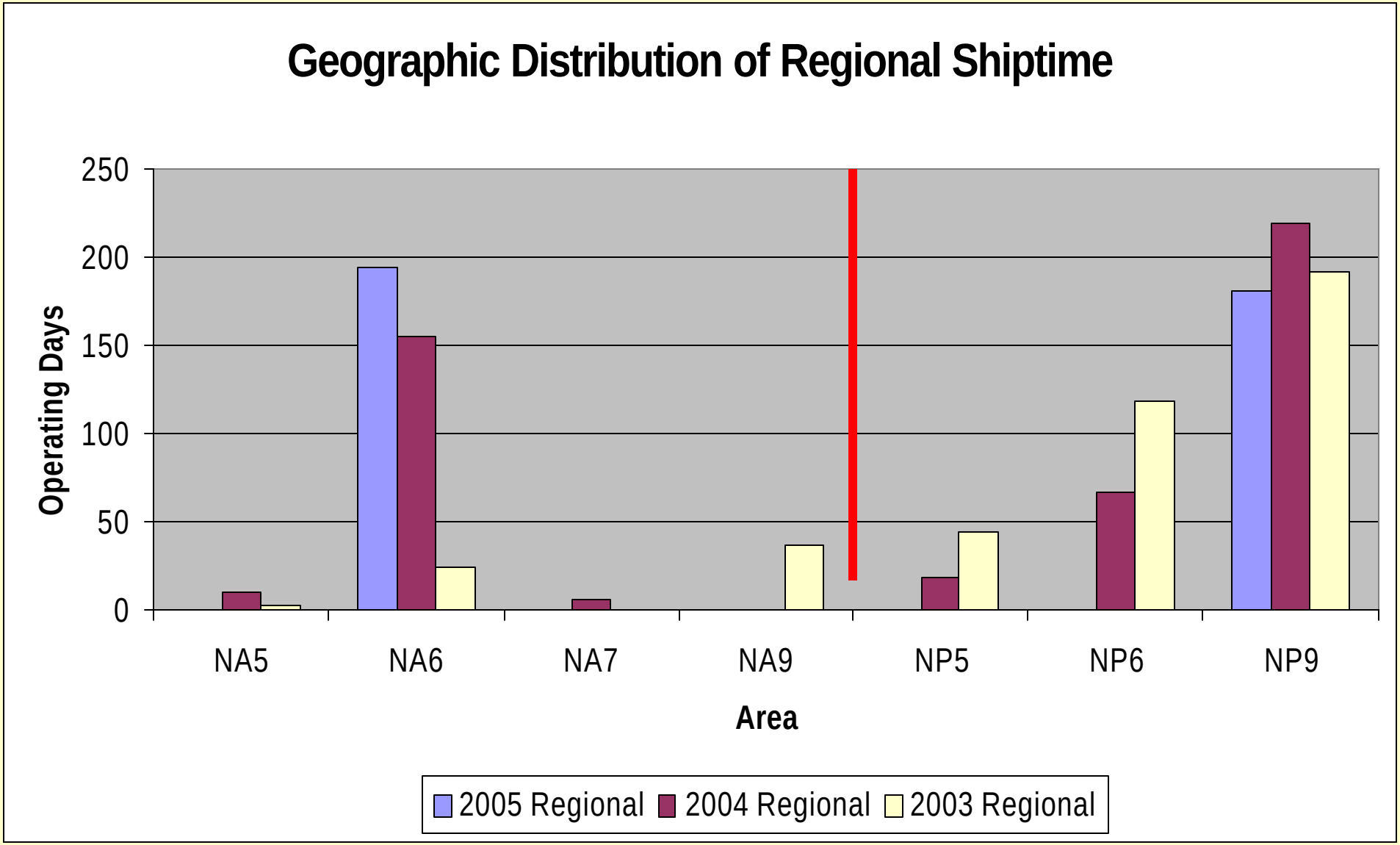

Geographic Distribution - Intermediate Shiptime
Operating Days
1200
1000
800
600
400
200
0
North Atlantic
North Pacific
South Atlantic
South Pacific
Indian Ocean
2005 Intermediate
2004 Intermediate
2003 Intermediate

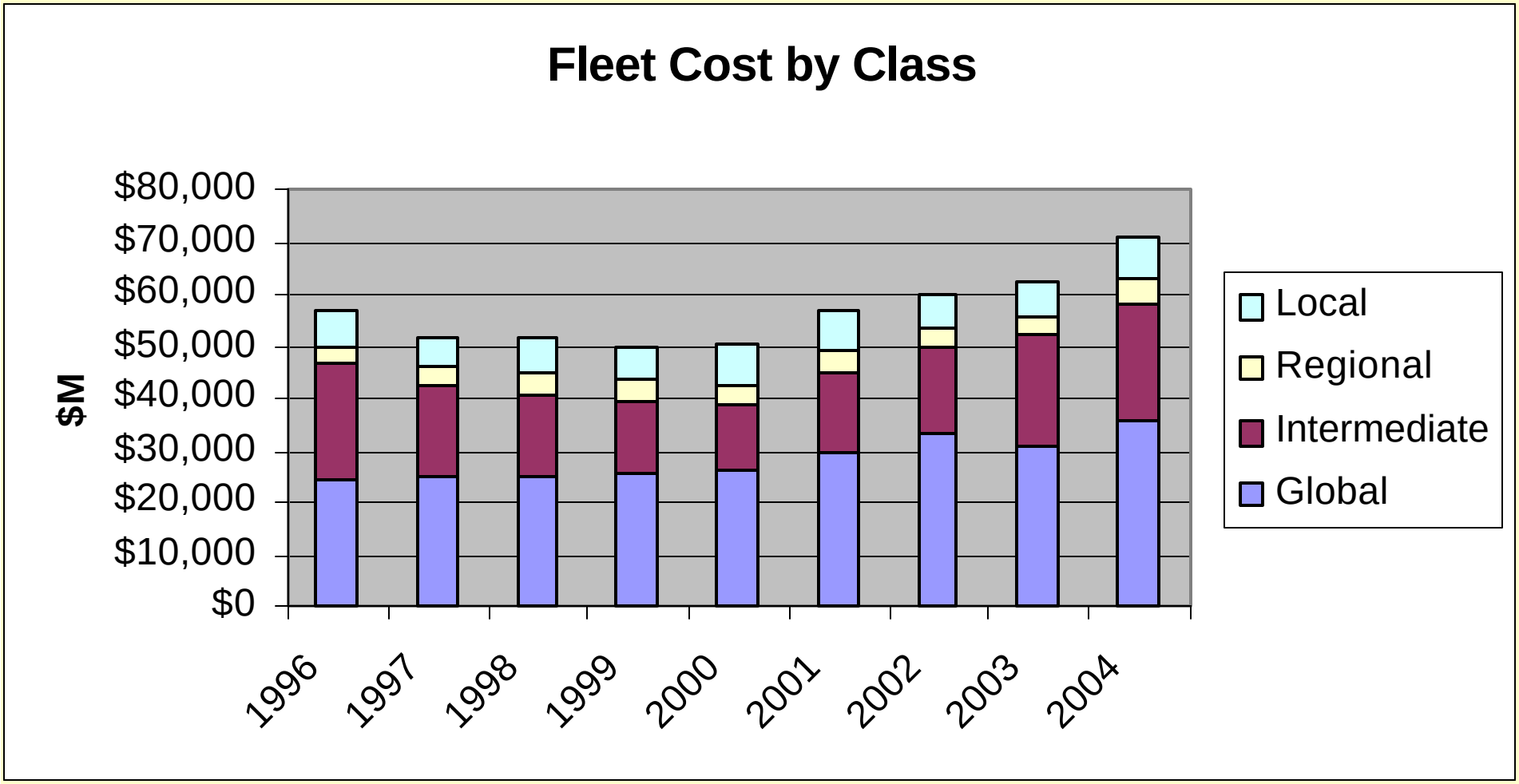

Geographic Distribution - Regional Shiptime
Operating Days
450
400
350
300
250
200
150
100
50
0
North Atlantic
North Pacific
2005 Regional
2004 Regional
2003 Regional

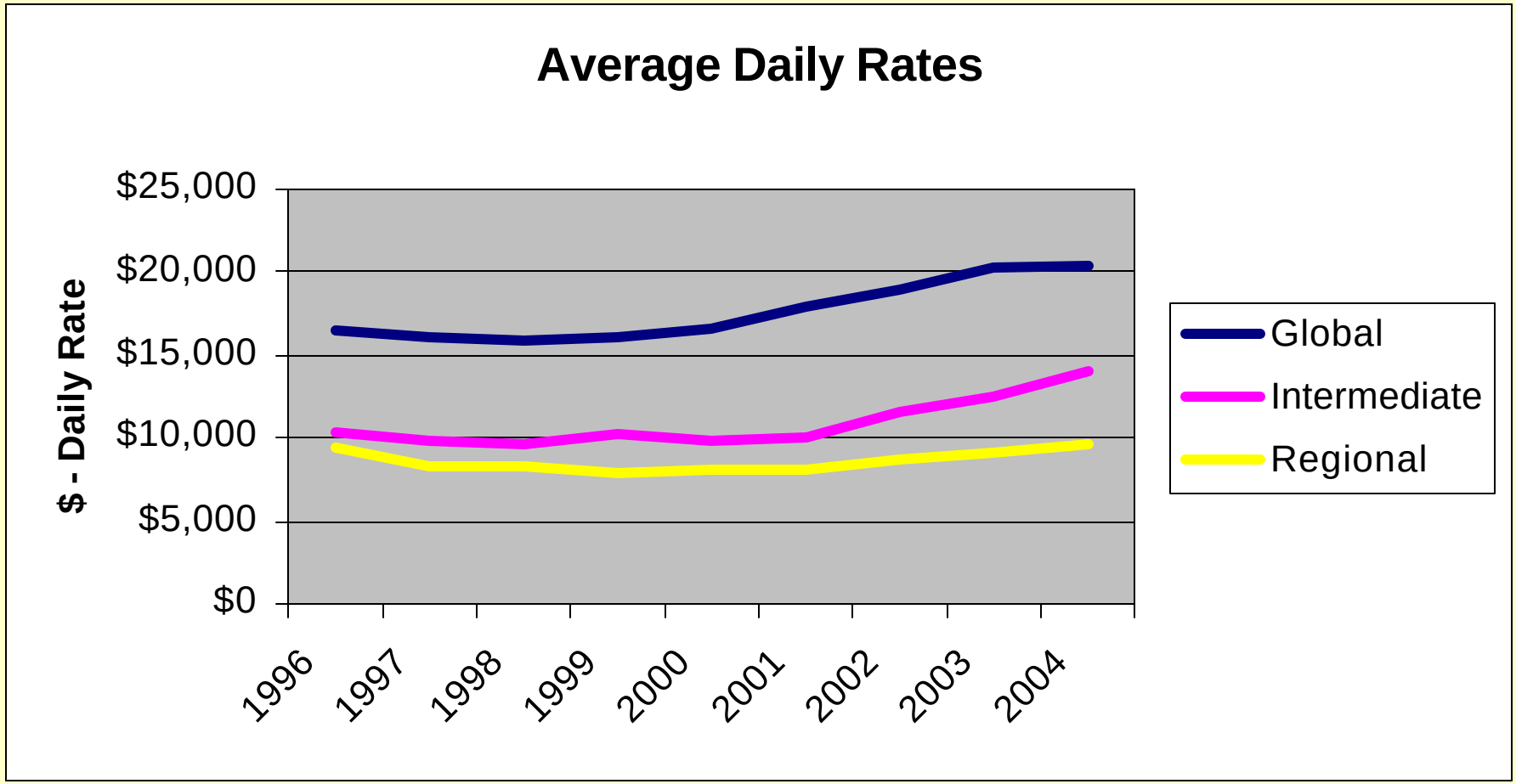
Geographic Distribution of Global Shiptime

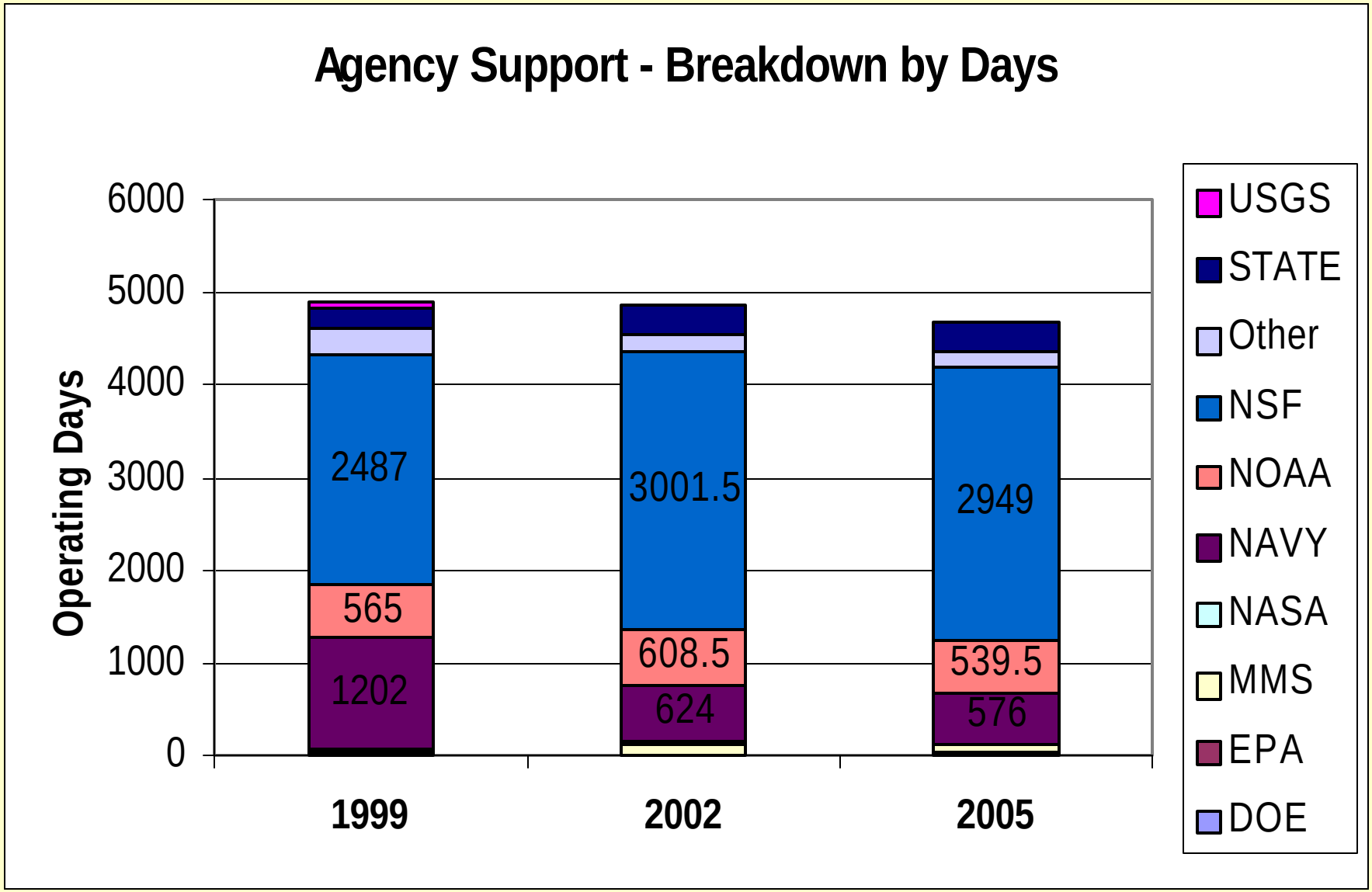


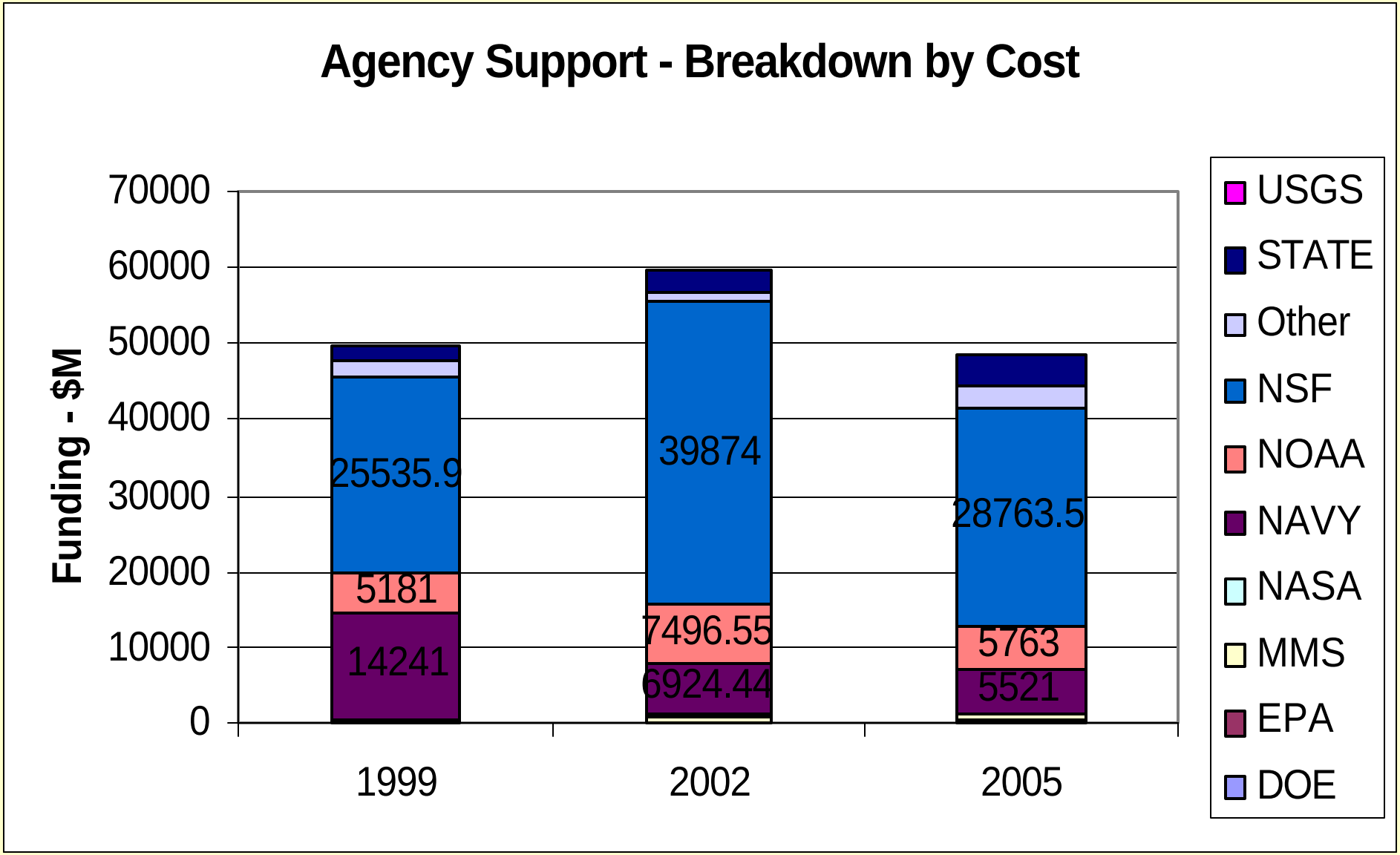

Gegraphic Distribution of Intermediate Shiptime
Operating Days
500
450
400
350
300
250
200
150
100
50
0
NA4
NA5
NA6
NA7
NA8
NA9
NA10
NP6
NP7
NP9
NP10
NP11
NP12
NP13
SA1
SP1
SP2
SP4
IN5
Area
2005 Intermediate
2004 Intermediate
2003 Intermediate


Geographic Distribution of Regional Shiptime
250
200
150
100
50
0
Operating Days
NA5
NA6
NA7
NA9
NP5
NP6
NP9
Area
2005 Regional
2004 Regional
2003 Regional


Fleet Cost by Class
$M
$80,000
$70,000
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0
1996
1997
1998
1999
2000
2001
2002
2003
2004
Local
Regional
Intermediate
Global


Average Daily Rates
$ - Daily Rate
$25,000
$20,000
$15,000
$10,000
$5,000
$0
1996
1997
1998
1999
2000
2001
2002
2003
2004
Global
Intermediate
Regional

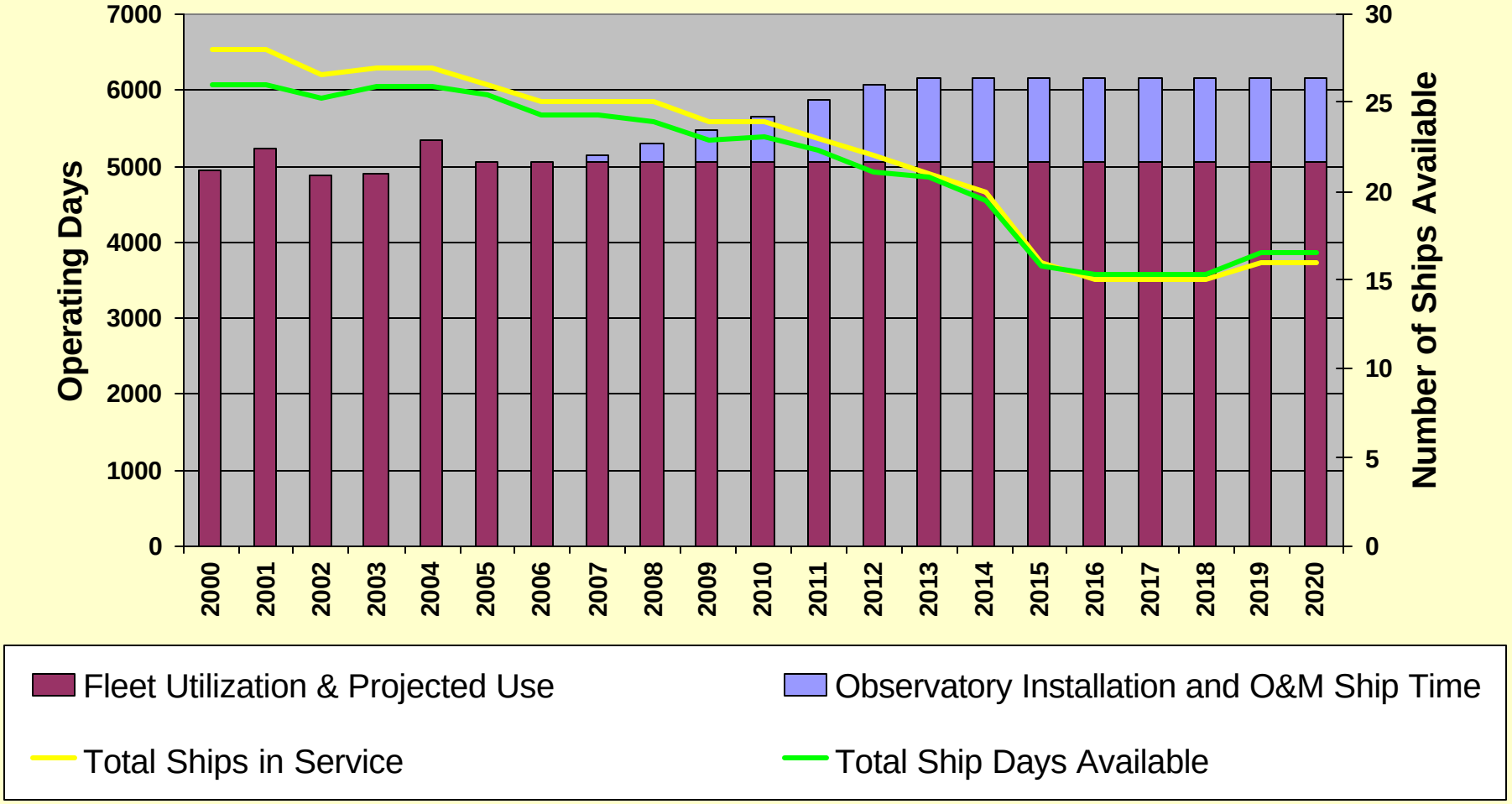

Agency Support - Breakdown by Days
Operating Days
6000
5000
4000
3000
2000
1000
0
2487
565
1202
3001.5
608.5
624
2949
539.5
576
1999
2002
2005
USGS
STATE
Other
NSF
NOAA
NAVY
NASA
MMS
EPA
DOE


Agency Support - Breakdown by Cost
Funding - $M
70000
60000
50000
40000
30000
20000
10000
0
1999
2002
2005
25535.9
5181
14241
39874
7496.55
6924.44
28763.5
5763
5521
USGS
STATE
Other
NSF
NOAA
NAVY
NASA
MMS
EPA
DOE

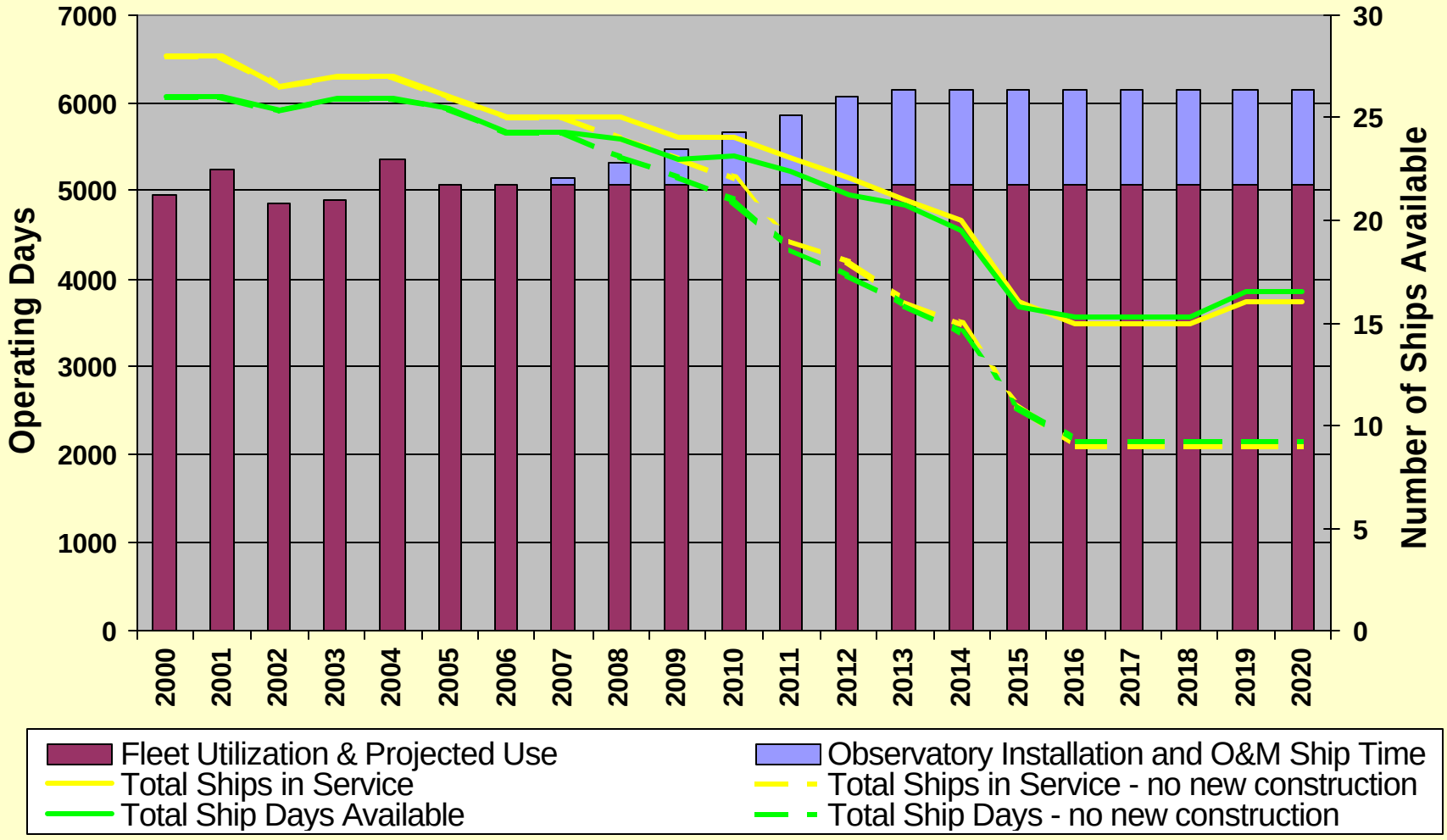
Fleet Projections

- UNOLS Fleet Projections with Observatories
- Estimated cost of operating Fleet in 2020
- Ship Construction Plans and realistic timelines
- Fleet Construction Costs with SLEPs as needed.

UNOLS Fleet Utilization and Projections (2000 - 2020)



UNOLS Fleet Utilization and Projections (2000 - 2020)



Note: Dashed lines represent available ship days and ships if there is no new construction of Regional Class (3) and Ocean Class (4) vessels. The ARRV, CHRV, and *Marcus Langseth* are included in the projections.

Notes about Projections

- Ocean Observatory facility needs:
  - Projections based on Chave Report estimates
  - Installation deferred one year from 2006 to 2007
- Global Ships: *Marcus Langseth* replaces *Ewing*
- Ocean Class:
  - ARRV deferred one year. Operations begin mid-2009.
  - 4 new Ocean Class Ships are built, but dates for entering service have been modified from those in FOFC plan. New dates are:
    - NE Atlantic = 2010
    - NW Pacific = 2013
    - SE Atlantic = 2016
    - SW Pacific = 2019

Notes – Continued…

- Regional Class > 40m:
  - *Alpha Helix* stays in service until ARRV comes on-line.
  - 3 new Regional Ships are built, but dates for entering service have been revised from FOFC Plan as follows:
    - RC ship 1 = 2008
    - RC ship 2 = 2010
    - RC ship 3 = 2012
- Regional Ships <40m and Local Ships:
  - CHRV replaces *Cape Henlopen* in 2006.
  - No other new construction for ships <40m is included.

Estimated Operating Costs

2004

class	ship	dayrate	total days	Total Cost
global	atlantis	$21,282	291	$6,193,062
global	ewing	$18,300	243.5	$4,456,050
global	knorr	$20,675	277	$5,726,975
global	melville	$20,338	299	$6,081,062
global	revelle	$20,652	311	$6,422,772
global	thompson	$21,586	311	$6,713,246
6 ships	2004 GLOBAL TOTAL		1732.5	$35,593,167

class	ship	dayrate	total days	Total Cost
ocean	endeavor	$10,979	233	$2,558,107
ocean	gyre	$11,500	89	$1,023,500
ocean	kilo moana	$18,000	309	$5,562,000
ocean	new horizon	$14,402	191	$2,750,782
ocean	oceanus	$12,214	231	$2,821,434
ocean	SJ I	$12,300	192	$2,361,600
ocean	SJ II	$12,300	223	$2,742,900
ocean	wecoma	$12,815	217	$2,780,855
8 ships	2004 OCEAN TOTAL		1685	$22,601,178

2020

FOFC 2020	Days	dayrate	Total Cost
atlantis	300	$21,282	$6,384,600
new seismic	300	$30,000	$9,000,000
			$0
			$0
revelle	300	$20,652	$6,195,600
thompson	300	$21,586	$6,475,800
4 ships	1200		$28,056,000

ship	total days	dayrate	Total Cost
NE Atlantic	275	$22,500	$6,187,500
			$0
kilo moana	275	$18,000	$4,950,000
SW Pacific	275	$22,500	$6,187,500
			$0
SE Atlantic	275	$22,500	$6,187,500
ARRV	275	$22,817	$6,274,675
NW Pacific	275	$22,500	$6,187,500
6 ships	1650		$35,974,675

Estimated Operating Costs

2004

class	ship	dayrate	total days	Total Cost
regional	alpha helix	$10,910	133	$1,451,030
regional	hatteras	$9,750	171	$1,667,250
regional	henlopen	$6,226	173	$1,077,098
regional	longhorn	$5,500	96	$528,000
regional	pelican	$4,665	235	$1,096,275
regional	pt sur	$8,115	185	$1,501,275
regional	sproul	$6,981	120	$837,720
regional	weatherbird	$8,491	159	$1,350,069
8 ships	2004 REGIONAL TOTAL		1272	$9,508,717

class	ship	dayrate	total days	Total Cost
local	blue heron	$4,400	42.5	$187,000
local	clif. Barnes	$2,262	113	$255,606
local	savannah	$4,600	155	$713,000
local	uracca	$3,701	132	$488,532
local	walton smith	$6,801	221	$1,503,021
5 ships	2004 LOCAL TOTAL		663.5	$3,147,159

2004 TOTALS	5353	$70,850,221

2020

ship	total days	dayrate	Total Cost
			$0
Atlantic	200	$10,000	$2,000,000
CHRV	180	$8,000	$1,440,000
			$0
Gulf of Mex	200	$10,000	$2,000,000
Pacific	200	$10,000	$2,000,000
			$0
			$0
4 ships	780		$7,440,000

ship	total days	dayrate	Total Cost
local	110	$4,000	$440,000
local	110	$4,000	$440,000
savannah	110	$4,600	$506,000
local	110	$4,000	$440,000
walton smith	110	$6,801	$748,110
5 ships	550		$2,574,110

2020 Totals	4180	$74,044,785

Project Design and Construction (Next 10 years)