

**POGO/SCOR Meeting on
International Research Cruise Database and Web Site
Silver Spring, Maryland, USA
13 December 2005**

Objective: To improve access to information on past and future research cruises by establishing a comprehensive and user-friendly database and searchable web site with information on cruise tracks, types of observations, chief scientist contact information, metadata (for past cruises), project identifier, and berths available

Rationale:

1. To share information on types of data available from past cruises, to maximise use of existing data
2. To share information on future cruises to facilitate co-ordination and optimisation of cruise opportunities and ship time

Participants:

Mike Johnson (NOAA)	mike.johnson@noaa.gov
Ed Urban (SCOR)	scor@jhu.edu
Marieke Rietveld (ISOM)	rietveld@nioz.nl
Doug White (University of Delaware)	dw@cms.udel.edu
Etienne Charpentier (IOC/JCOMM)	charpentier@jcommops.org
Shubha Sathyendranath (POGO)	shubha@dal.ca
Ferris Webster	ferris@udel.edu

Background:

At the POGO-6 meeting, the members recognised the need to improve on information sharing on pre-planned, planned, current and past cruises and related databases to enhance awareness of opportunities, to improve cost-effectiveness of cruises and to improve data mining. With respect to cruise planning and information sharing, it was recognised that the following steps had to be undertaken to improve cruise efficiency:

- Identify features needed in an ideal database of research cruises
- Determine how well existing databases fit the ideal, and how they would need to be changed to meet the needs of scientists
- Estimate the cost of modifying an existing database or creating a new one
- Request support from appropriate agencies to augment an existing database
- Work with existing efforts in the area, rather than re-invent the wheel

At a meeting sponsored by the Scientific Committee on Oceanic Research (SCOR) in September 2004, representatives of international marine research projects concluded that major benefits would be available to the research projects if a database of research cruises were available to them. The meeting recommended that SCOR investigate the available options.

Since the POGO and SCOR activities had the same goals, POGO suggested that a working group consisting of Marieke Rietveld (POGO, Royal NIOZ, Netherlands), Douglas White (U. Delaware), Ed Urban (SCOR), and Shubha Sathyendranath (POGO) investigate ways and means to implement these improvements. It was also suggested that Laurent D'Ozouville (Euroceans) and someone from IOC dealing with the VOS system be included in this working group, if possible. The timeframe for the operations of this group is one year, and the group is to report on actions and recommendations at POGO-7. Mike Johnson (NOAA) has also been included in these discussions. The group initiated discussions by e-mail, and Marieke Rietveld, Jan de Leeuw and Shubha Sathyendranath also met in NIOZ on the occasion of the N&I Planning Meeting, to discuss possible actions.

The present situation is that the University of Delaware already maintains a site that provides cruise information (past, present and future) and information about ship capabilities. Ideally, one would build on this, rather than start a new process. The following issues have been identified: (1) the financial support that UofD was getting to maintain work on international aspects of their web site has not been renewed; so there is a need to identify a new source of funding. Doug White, who is in charge of this site, has been requested to make a proposal identifying the additional funding required for maintaining and improving the site. (2) The site as it exists, is not very user friendly, and there is a need to improve on the user interface. Doug White has reported that he has already started working on improving the site. (3) The third and major problem remains the lack of information flow from ship operators and research projects to the University of Delaware. Without adequate information, the usefulness of the site would be limited. This is an area where POGO members and SCOR projects can play a major role in ensuring that information on past and future cruises can be provided to the web manager, for periodic and timely updates. (4) It has also been brought to the attention of the working group that some organisations are reluctant to provide information on future cruises to a public domain, because of security concerns. Ways to address this problem that are being discussed include password protecting the site (not an attractive solution to those who would like to see free and easy flow of information among scientists), and degrading the information on location and time sufficiently to satisfy security concerns. Once a firm proposal is received from the University of Delaware, and a clear idea of the funding requirements emerge, POGO will work with partners to identify funding sources.

The working group met on December 13, 2005 at the NOAA Office of Global Programs in Silver Spring, Maryland. The participants reviewed the need for the web site from various perspectives, including those of POGO, JCOMM and SCOR. Many potential benefits from an international cruise database were identified:

- Helps scientists from different countries coordinate future funded research through information about research vessels of opportunity
- Aids in retrospective ability to find data in regions of interest
- Makes it possible for projects to conduct joint work and to fill empty berths
- Creates capacity-building and training opportunities
- Would aid in tracking and distributing data

- Would provide information to evaluate the benefit of observations from ships as part of GOOS
- Would make it possible for scientists and operational users from other projects to get instruments deployed and/or samples taken in hard-to-reach areas of the ocean (e.g. drifters, profiling floats, moored buoy servicing)
- Would allow cost sharing among institutions, projects, and nations
- Would make possible intercomparisons, intercalibrations, validation among different data types (CTD vs. Argo, in situ vs. remote sensing)

Discussion of the potential database benefits was followed by a presentation of the existing “Oceanic” web site by Doug White from the University of Delaware. All the participants provided feedback on the existing system, and discussed the desirable features of a redesigned web site, which will build on the existing web site, taking into account responses that had been sent in by the community to earlier enquiries. The members of the working group were unanimous that the site needed redesigning to make it more user-friendly. The participants were also in agreement that the best strategy would be to keep the first phase of the redesign simple, with minimum information essential to serve the applications envisaged. Further features may be added to the site at a later date, depending on user feedback and availability of funds. Again, in the interest of keeping the task manageable, it was decided that the initial effort will focus on ship with global and basin-scale capabilities (defined as ships with lengths of 60 m or greater). The following features were identified as essential for a first version of the redesigned web site:

Ideal Characteristics of Data Base and Web Site

1. The site will have free and easy access
2. Will contain information on past cruises and future cruises (location, time and types of observations made or planned, berths available, contact points for further information, links to research vessel’s home page, and other relevant web sites, if any)
3. Searchable and user-friendly: The starting point for any search for cruises on the web site would be a world map (standard JCOMM format: equidistant, cylindrical projection, broken at 30 deg. E), see Fig. 1. Users should be able to search for cruises in selected areas on the map, by clicking and defining an area, and by selecting a time frame of interest (time resolution would be one month). The design will be versatile and flexible enough to allow for addition of more features in the future.
4. The ship location will be identified using a Marsden square grids (10 by 10 degree squares). All contributors to the web site will be requested to provide information on ship locations in a Marsden squares. Note that this coarse resolution is deemed sufficient for most applications envisaged, and will address security concerns. The choice was based on the fact that (a) JCOMM uses such grids to report the status of observing systems; and (b) IOC member nations are required to use Marsden squares when they make Cruise Summary Reports (CSR), formerly known as ROSCOP (Report of Observations/Samples collected by Oceanographic Programmes).

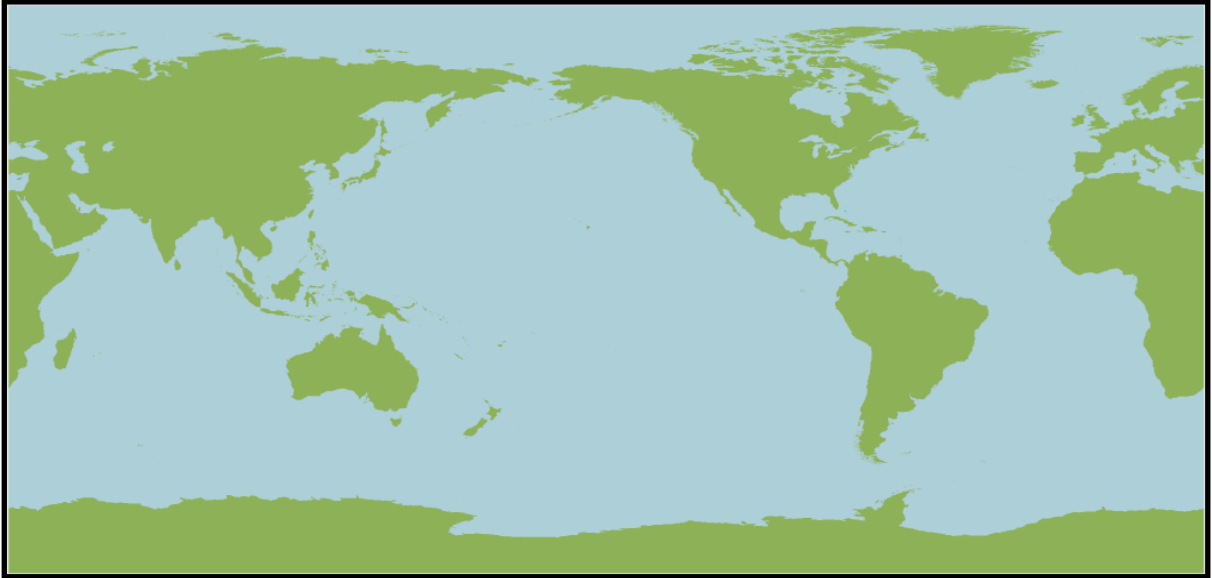


Fig. 1: Starting point for cruise information search. JCOMM format.

5. Old data in the Oceanic web site will be retained in the U.S. Navy grid; but the new web site will be flexible enough to deal with data in both Marsden squares and U.S. Navy grid cells.
6. All contributors will be requested to submit the following information in a simple spreadsheet format:

Vessel Name (linked to ship's web page)
Call Sign of Vessel
Country
Departure Port
Arrival Port
Departure Date
Arrival Date
Specific Area
General Area (Pull down menu)
Marsden Squares covered by cruise
Specific Experiment
General Discipline (Pull Down Menu)
Chief Scientist (Pull Down Menu, additions possible)
Funding Agency
Proposal ID
Major Project/s (Pull Down Menu, additions possible)
Berths Available (Yes/No)
Links to other relevant web sites
Notes

7. Initially, the database will focus on ships of length 60 m or greater (see list of ships from Oceanic web site in Appendix 1). Information from other ships will be included if submitted, but initial efforts will be focused on collecting information on cruises of large ships.

Once the desired characteristics of the web site were agreed upon, the participants then discussed the way forward. It was agreed that the tasks at hand could be divided into four parts:

1. Design of the new improved web page
2. Approach cruise planners (institutional and project) to provide information to the University of Delaware on cruises of large ships, starting with future cruises, and extending to past cruises wherever possible
3. Periodically update information on the web site, to keep it current as new information on cruises become available
4. Actively search, transform and input additional information from other sources, where voluntary contributions are lacking.

The committee decided that the initial effort will focus on steps 1 to 3. Step 4 will be time consuming and costly, and is to be contemplated only as a last resort, after reviewing the results from steps 1 to 3.

Actions Required:

1. University of Delaware (Doug White) to prepare and submit a two-page letter of intent, outlining the work to be carried out to design the new web site, and providing a budget estimate for Steps 2 and 3. This is required on or before Dec 20. Action completed. Proposed budget is attached as appendix to this document.
2. POGO to solicit members to provide a contact person who will be responsible for passing on cruise information to the University of Delaware, for each of the ships in Appendix 1 (Note: it is recognised that the ship list in Appendix 1 may not be up to date. Help from POGO members is also requested to update this information). SCOR, JCOMM and ISOM will also help to obtain information on appropriate contact persons. SCOR will contact project representatives for information about their cruises.
3. NOAA, POGO, JCOMM and SCOR to work together to raise the funds essential for carrying out steps 1 and 3.

**Appendix 1:
List of Research Vessels of Length 60 m or greater**

Please note that these are all the ships of length 60 m or greater that are in the Oceanic Database, and have been updated recently. Some of them may not be research vessels; some of them may be decommissioned; some new ones may not have made it to the database. We welcome inputs to update this list. Number 1 in first column indicates that they have been verified by Marieke Rietveld as being operational lately. But the verification process has to be completed, especially for non-European vessels. Help is required with updating the ship information, in addition to cruise updating.

	Name of vessel	Operator	Length	Country	Updated	information/url
1	Capitan Oca Balda	Inidep Playa Grande	65 m	Argentina		
1	Dr. Eduardo Holmberg	Inidep Playa Grande	62 m	Argentina		
1	Puerto Deseado	Conicet	77 m	Argentina		
1	Aurora Australis	P&O Polar Australia Pty Ltd	95 m	Australia		
1	Leeuwin	Hydrographic Service	71 m	Australia	since 2000	http://www.hydro.gov.au/aboutus/our-ships.htm
1	Melville	Hydrographic Service	72 m	Australia	since 2001	http://www.hydro.gov.au/aboutus/our-ships.htm
1	Southern Surveyor	CSIRO Marine Research	66 m	Australia		
1	Wyuna	Australian Maritime College (AMC)	64 m	Australia		training vessel
1	Vidal Gormaz	Servicio Hidrografico Y Oceanografico De La Armada De Chile	63 m	Chile		
1	Dong Fang Hong 2	Oceanic Research Centre, Ocean University of QingDao	96 m	China	8/15/2000	
1	Science 1	Institute of Oceanology	104 m	China		
1	Venus 2	Institute of Oceanology (IOCAS)		China		not in OCEANIC database
1	Xiang Yang Hong No. 14	South China Sea Branch S.O.A.	111 m	China		
1	XueLong	Polar Research Institute of China	167 m	China	3/8/2005	icebreaker
1	Dana	DFU	78 m	Denmark	9/26/2003	
1	Beautemps-Beaupré	Unknown	81 m	France	4/21/2005	S.H.O.M. operator
1	L'Astrolabe	Compagnie Morbihannaise de Navigation	65 m	France	4/28/2003	
1	L'Atalante	Genavir	85 m	France	1/9/2004	
1	Marion Dufresne	Compagnie Générale Maritime (CGM)	120 m	France	3/31/2003	
1	Pourquoi pas?	Unknown	105 m	France		Genavir operator http://www.ifremer.fr/genavir/navires/P
1	Thalassa	Genavir	74 m	France & Spain	3/2/2004	

1	Maria S. Merian	Briese Schifffahrt GmbH & Co./Leitstelle Forschungsschiffe Universitaet Hbg	95 m	Germany		http://www.io-warnemuende.de/miscell/merian/daten.htm
1	Meteor	Leitstelle Forschungsschiffe, Universitaet Hamburg	98 m	Germany	4/30/2004	
1	Polarstern	Reederei F. Laeisz (Bremerhaven) GmbH	118 m	Germany	2/3/2004	
1	Poseidon	State of Schleswig-Holstein (Institute for Oceanography at Kiel University)	61 m	Germany	9/23/2003	
1	Sonne	RF Reedereigemeinschaft Forschungsschifffahrt GmbH	98 m	Germany	9/26/2003	
1	Aegaeo	Greek NCMR	62 m	Greece	5/21/2003	
1	Arni Fridriksson	Marine Research Institute, Reykjavik, Iceland	70 m	Iceland	7/9/2003	
1	Sagar Kanya	National Centre for Antarctic & Ocean Research (NCAOR)	100 m	India	5/13/2005	
1	Sagar Nidhi	National Institute of Ocean Technology	104 m	India	5/13/2005	
1	Sagar Sampada	Shipping Corporation of India Ltd.	72 m	India		
1	Sagar shakthi	National Institute of Ocean Technology	72 m	India		
1	Baruna Jaya III	UPT BARUNA JAYA - BPPT	60 m	Indonesia	4/6/2004	
1	Celtic Explorer	Marine Institute / Ocean Science Services	66 m	Ireland	11/5/2003	
1	Explora	Istituto Nazionale di Oceanografia e di Geofisica Sperimentale – OGS	73 m	Italy	10/3/2005	
1	Italica	Unknown	130 m	Italy	9/9/2003	icebreaker antarctic research http://www.italiantartide.it/spedizioni/xxi/default.asp
1	Urania	National Research Council of Italy (CNR)	61 m	Italy	9/6/2005	
1	Onnuri	korean Ocean Research and Development Institute (KORDI)	64 m	Korea	3/8/2005	
1	Alliance	NATO SACLANT Undersea Research Centre	93 m	NATO		
1	Pelagia	Nederlands Instituut voor Onderzoek der Zee (NIOZ)	66 m	Netherlands	6/22/2005	
1	Tridens	The Ministry of Agriculture, Nature Conservation and Fisheries	74 m	Netherlands	9/12/2003	Fisheries RV, mainly in North Sea
1	Tangaroa	NIWA Vessel Management Limited	70 m	New Zealand	8/15/2001	
1	G. O. Sars	Institute of Marine Research	78 m	Norway	5/6/2004	
1	Jan Mayen	Univeristy of Tromso/Norwegian College of Fisheries Science	64 m	Norway	3/4/2005	
1	Johan Hjort	Institute of Marine Research (IMR)	64 m	Norway	5/7/2004	
1	Lance	Troms Fylkes Dampskibsselskap	61 m	Norway	5/3/2001	

1	Fritjof Nansen	Unknown	82 m	Norway		Agency for foreign aid (NORAD)
1	Humboldt	Instituto del Mar del Peru (IMARPE)	76 m	Peru		
1	Nawigator XXI	Maritime University of Szczecin	60 m	Poland	10/25/2005	
1	NRP "D. Carlos I"	Instituto Hidrográfico	68 m	Portugal	8/29/2005	
1	Mare Nigrum	Geo Ecomar Bucharest	82 m	Romania	5/17/2005	
1	Gelendzhik	CGGE International	104 m	Russia	3/7/2005	
1	Professor Logachev	Polar Marine Geosurvey Expedition	105 m	Russia	3/4/2005	Floating University, Moscow State University - Unesco T http://www.pnige.ru/modules.php?name=Contenteng&pa
1	Yuzhmorgeologiya	CGGE International	104 m	Russia	3/7/2005	
1	Africana	Marine and Coastal Management	78 m	South Africa		
1	Agulhas	Marine and Coastal Management	112 m	South Africa		
1	Cornide de Saavedra	Instituto Espanol de Oceanografia (IEO)	67 m	Spain	5/3/2005	
1	Hesperides	Ministry for Science and Technology	82 m	Spain	10/28/2003	
1	Argos	Swedish National Board of Fisheries	61 m	Sweden	1/20/2004	
1	Oden	Swedish Maritime Administration	108 m	Sweden	3/8/2005	Ice breaker
1	Cesme	Department of the Hydrography, Oceanography and Navigation	87 m	Turkey	10/7/2004	
1	CEFAS Endeavour	Centre for Environment, Fisheries and Aquaculture Science (CEFAS)	73 m	UK	7/9/2003	
1	Charles Darwin	NERC Research Ship Unit	69 m	UK	3/5/2003	
1	Discovery	NERC Research Ship Unit	90 m	UK	3/5/2003	
1	Echo (HMS)	Vosper Thornycroft (UK) Ltd (VT)	91 m	UK	5/2/2005	
1	Endurance (HMS)	Hydrographic Surveying Squadron, MoD	91 m	UK	5/2/2005	
1	Enterprise (HMS)	Vosper Thornycroft (UK) Ltd (VT)	91 m	UK	5/3/2005	
1	Ernest Shackleton	NERC, British Antarctic Survey	80 m	UK	11/5/2003	
1	James Clark Ross	British Antarctic Survey	99 m	UK	11/5/2003	
1	Newton	MoD, Royal Maritime Auxiliary Service	99 m	UK	4/27/2005	
1	Ocean Endeavour	Gardline Geosurvey Limited	77 m	UK	4/29/2005	
1	Ocean Seeker	Gardline Geosurvey Limited	81 m	UK	4/29/2005	
1	Roebuck (HMS)	Hydrographic Surveying Squadron	64 m	UK	4/29/2005	
1	Scotia	FRS Marine Laboratory	69 m	UK	11/5/2003	
1	Scott (HMS)	Hydrographic Surveying Squadron, MoD	131 m	UK	5/2/2005	
1	Triton	Gardline Geosurvey Limited	99 m	UK	4/28/2005	

Ji Di	North China Sea Branch, SOA	152 m	China		
Amundsen (CCGS)	Fisheries and Oceans Canada (DFO)	98 m	Canada	3/8/2005	
Hudson (CCGS)	Bedford Institute of Oceanography (BIO)	90 m	Canada	2/24/2005	
John P. Tully (CCGS)	Fisheries and Oceans Canada	69 m	Canada	3/2/2005	
Parizeau (CCGS)	Bedford Institute of Oceanography (BIO)	64 m	Canada	2/28/2005	
Polar Prince	Star Line Inc.	73 m	Canada	4/22/2005	
Quest	Defence R and D Canada - Atlantic	77 m	Canada	11/30/2002	
Teleost (CCGS)	Canadian Coast Guard	63 m	Canada	2/28/2005	
Shi Yan No. 2	Unknown	68 m	China		
Shi Yan No. 3	Unknown	104 m	China		
Xiang Yang Hong No. 10	East China Sea Branch S.O.A.	156 m	China		
Xiang Yang Hong No. 5	South China Sea Branch S.O.A.	153 m	China		
Xiang Yang Hong No. 7	North China Sea Branch S.O.A.	74 m	China		
Xiang Yang Hong No. 8	North China Sea Branch S.O.A.	74 m	China		
Xiang Yang Hong No. 9	North China Sea Branch S.O.A.	112 m	China		
Orion (Ecuador)	Inocar	70 m	Ecuador		
Komet	Federal Ministry of Transport, Building and Housing	64 m	Germany	2/27/2004	
Walther Herwig III	Federal Agency of Agriculture and Food, Hamburg	64 m	Germany	9/26/2003	
Nautilus	Hellenic Navy Hydrographic Service	63 m	Greece	11/5/2003	
Chikyu	Global Ocean Development Inc. (GODI)	210 m	Japan		
Hakuho Maru	Ocean Research Institute, University of Tokyo	100 m	Japan	2/10/2005	
Hokusei Maru	Faculty of Fisheries, Hokkaido University	62 m	Japan		
Kagoshima Maru	Faculty of Fisheries, Kagoshima University	69 m	Japan		
Kairei	Nippon Marine Enterprises, Ltd	105 m	Japan	2/9/2005	
Kaiyo	Hydrographic and Oceanographic Department, JCG	60 m	Japan	2/14/2005	
Kaiyo (JAMSTEC)	Nippon Marine Enterprises, Ltd	62 m	Japan	2/11/2005	
Kaiyo Maru	Fisheries Agency	93 m	Japan		
Kakuyo Maru	Nagasaki University	64 m	Japan		
Keifu Maru	Kobe Marine Observatory	81 m	Japan	11/4/2003	
Keiten Maru	University of Kagoshima	62 m	Japan		
Koyo Maru	Shimonoseki University of Fisheries (SUF)	81 m	Japan		
Meiyo	Japan Coast Guard	60 m	Japan	2/14/2005	

Mirai	Global Ocean Development Inc (GODI)	129 m	Japan	2/8/2005	
Natsushima	Nippon Marine Enterprises, Ltd.	67 m	Japan	2/11/2005	
Nippon Maru	Japan Marine Fishery Resource Research Center (JAMARC)	79 m	Japan		
Oshoro Maru	Faculty of Fisheries, Hokkaido University	73 m	Japan		
Ryofu Maru	Japan Meteorological Agency	82 m	Japan	10/30/2003	
Shinkai Maru	Japan Marine Fishery Resource Research Center (JAMARC)	101 m	Japan		
Shinyo Maru	Tokyo University of Fisheries	60 m	Japan		
Shoyo	Hydrographic and Oceanographic Department, JCG	98 m	Japan	2/14/2005	
Shoyo Maru	Fisheries Agency	72 m	Japan		
Soyo Maru	National Research Institute of Fisheries Science (NRIFS)	68 m	Japan	2/16/2005	
Syoyo Maru	Fisheries Agency	72 m	Japan		
Takuyo	Hydrographic and Oceanographic Department, JCG	96 m	Japan	2/14/2005	
Tokai Maru	Tokai University	88 m	Japan		
Umitaka Maru	Tokyo University of Fisheries	79 m	Japan		
Yokosuka	Nippon Marine Enterprises, Ltd.	105 m	Japan	2/9/2005	
Pusan 851	National Fisheries Research and Development Agency	70 m	Korea		
Sae Ba Da	National Fisheries University of Pusan	91 m	Korea		
Mutiara	Hydrographic Directorate, Ministry of Defence	71 m	Malaysia		
Altair	Secretaria De Marina	63 m	Mexico		
Antares	Direccion General De Oceanografia Naval	64 m	Mexico		
Polar Duke	Rieber Shipping AS	67 m	Norway		
Polar King	Rieber Shipping AS	103 m	Norway		
Behr Paima	Hydrographic Dept.	61 m	Pakistan		
Bin Hai 512	DWS International Inc	81 m	Panama		
Sea Profiler	Gardline Geosurvey Limited	66 m	Panama	4/29/2005	
NRP "Almirante Gago Coutinho"	Instituto Hidrográfico	68 m	Portugal	8/29/2005	
Academic Alexander Nesmeyanov	Department of Marine Research Fleet (DMRF)	111 m	Russia	5/3/2005	
Academik M. A. Lavrentiev	Department of Marine Research Fleet	76 m	Russia	5/4/2005	
Adjaria	Dept. of Navigation and Oceanography	124 m	Russia		
Akademik Alexander Vinogradov	Department of Marine Research Fleet (DMRF)	110 m	Russia	5/11/2005	
Akademik Boris	SCS Shipping Consulting & Service	76 m	Russia	5/12/2005	

Petrov	GmbH				
Akademik Fedorov	SCS Shipping Consulting & Service GmbH	141 m	Russia	3/4/2005	
Akademik Golitsyn	SCS Shipping Consulting & Service GmbH	72 m	Russia	5/13/2005	
Akademik Ioffe	SCS Shipping Consulting & Service GmbH	117 m	Russia	5/12/2005	
Akademik Korolev	Far East Hydrometeorological Institute	124 m	Russia		
Akademik Kurchatov	P.P. Shirshov Institute of Oceanology	124 m	Russia		
Akademik Mstislav Keldysh	P.P. Shirshov Institute of Oceanology	122 m	Russia	5/10/2005	
Akademik Nikolaj Strakhov	Geological Institute	76 m	Russia		
Akademik Oparin	Department of Marine Research Fleet (DMRF)	76 m	Russia	5/11/2005	
Akademik Sergey Vavilov	P.P. Shirshov Institute of Oceanology	117 m	Russia		
Akademik Shirshov	Far Eastern Hydrometeorological Institute	124 m	Russia		
Akademik Shokalsky	Far Eastern Hydrometeorological Institute	72 m	Russia		
Akademik Shuleikin	The Arctic and Antarctic Research Institute	72 m	Russia		
Arktika	Murmansk Shipping Co.	148 m	Russia	3/4/2005	
Artemida	Unknown	82 m	Russia		
Atlantida	Zaprybpromrazvedka	62 m	Russia		
Atlantiro	Zaprybpromrazvedka	62 m	Russia		
Capitan Demidov	Unknown	83 m	Russia		
Capitan Oleynichuk	Turnif	114 m	Russia		
Dmitry Mendeleev	P.P. Shirshov Institute of Oceanology	124 m	Russia		
Efim Krivosheev	Unknown	94 m	Russia		
Geolog Dmitriy Nalivkin	SCS Shipping Consulting & Service GmbH	72 m	Russia	5/12/2005	
Ivan Kruzenshtern	Dept. of Navigation and Oceanography (HDNO)	147 m	Russia		
Kapitan Danitsyn	Murmansk Shipping Company	132 m	Russia	2/24/2005	
Komandor	Turnif	89 m	Russia		
Leonid Demin	Dept. of Navigation and Oceanography (HDNO)	147 m	Russia		
Mihail Verbitsky	Unknown	94 m	Russia		
Mikhail Somov	SCS Shipping Consulting & Service GmbH	133 m	Russia	5/12/2005	
Mlechny Put	Turnif	102 m	Russia		
Nicolay Matusevitch	Unknown	82 m	Russia		

Nikolai Kononov	Unknown	83 m	Russia		
Nikolai Kuropatkin	Unknown	94 m	Russia		
Obva	Unknown	62 m	Russia		
Ocean	Far East Hydrometeorological Institute	97 m	Russia		
Ocher	Unknown	62 m	Russia		
Pavel Kaikov	Unknown	94 m	Russia		
Pinro	Unknown	82 m	Russia		
Polyarное Syanie	Unknown	83 m	Russia		
Priboy	Far East Hydrometeorological Institute	96 m	Russia		
Priliv	Far East Hydrometeorological Institute	97 m	Russia		
Prof. Sergey Dorofeev	State Hydrometeorological Institute of Russian Federation	73 m	Russia		
Professor Bogorov	DMRF	69 m	Russia	5/3/2005	
Professor Kaganovsky	Pacific Dept. of Perspective Scientific Fisheries Research-Turnif	62 m	Russia		
Professor Khromov	Far East Hydrometeorological Institute (FERHRI)	72 m	Russia	3/7/2005	
Professor Kizivetter	Turnif	62 m	Russia		
Professor Kurentsov	SCS Shipping Consulting & Service GmbH	69 m	Russia	5/12/2005	
Professor Levanidov	Turnif	62 m	Russia		
Professor Marti	Npo Sevryboisk	62 m	Russia		
Professor Multanovskiy	SCS Shipping Consulting & Service GmbH	72 m	Russia	5/12/2005	
Professor Shtockman	P.P. Shirshov Institute of Oceanology	69 m	Russia		
Professor Soldatov	Pacific Dept. of Perspective Scientific Fisheries Research-Turnif	62 m	Russia		
Professor Viese	The Arctic & Antarctic Research Institute (DDNII)	124 m	Russia		
Professor Zubov	The Arctic & Antarctic Research institute (DDNII)	124 m	Russia		
Rossija	Murmansk Shipping Co.	148 m	Russia	3/7/2005	
Sibiryakov	Department of Navigation and Oceanography	86 m	Russia		
Slavgorod	Unknown	83 m	Russia		
Sovetskij Soyuz	Murmansk Shipping Co.	148 m	Russia	3/7/2005	
Suloi	Unknown	83 m	Russia		
Tinro	Turnif	62 m	Russia		
Vityaz	P.P. Shirshov Institute of Oceanology	111 m	Russia		
Yamal	Murmansk Shipping Co.	148 m	Russia	3/7/2005	

Zarnica	Unknown	83 m	Russia		
Chulabhorn	Exploratory Fisheries Division (EFD)	67 m	Thailand		
Seafdec	SEAFDEC/TD	65 m	Thailand		
Suk	Hydrographic Department	63 m	Thailand		
Akademik Vernadsky	Marine Hydrophysical Institute	124 m	Ukraine		
Dmitry Stefanov	Yugniro	62 m	Ukraine		
Ikhtiandr	Underwater Scientific Research Center	84 m	Ukraine		
Khronometr	Underwater Scientific Research Center	82 m	Ukraine		
Kolesnikov	Marine Hydrophysical Institute	64 m	Ukraine		
Lomonosov	Marine Hydrophysical Institute	102 m	Ukraine		
Oddissej	Underwater Scientific Research Center	84 m	Ukraine		
Pavluchenkov	Yugniro	62 m	Ukraine		
Professor Vodyanitskiy	Institute of Biology of the Southern Seas	6886 m	Ukraine	8/20/2004	
Alaska Region Research Vessel (ARRV)	Institute of Marine Science	72 m	USA	6/27/2005	
Atlantis	Woods Hole Oceanographic Institution (WHOI)	84 m	USA	1/25/2005	
Biolab	OSU, FT Stone Laboratory	1137 m	USA	4/1/2005	
Bowditch (USNS)	Military Sealift Command Pacific	100 m	USA	5/9/2005	
Bruce C. Heezen (USNS)	Military Sealift Command Atlantic	100 m	USA	5/10/2005	
Fairweather	NOAA Marine and Aviation Operations	70 m	USA	1/24/2005	
Flip (FLoating Platform)	Scripps Institution of Oceanography, Marine Physical Laboratory (UCSD)	108 m	USA	1/31/2005	
Gordon Gunter	Office of Marine and Aviation Operations (OMAO)	68 m	USA	1/24/2005	
Hayes (USNS)	Military Sealift Command	75 m	USA	5/5/2005	
Healy	U.S. Coast Guard	128 m	USA	1/26/2005	
Henson (USNS)	Military Sealift Command Atlantic	100 m	USA	5/9/2005	
Hi'lalakai	NOAA, Marine Operations Center, Pacific	68 m	USA	11/11/2004	
Independence	Mar Inc, Rockville, MD	61 m	USA	9/13/2001	
John McDonnell (USNS)	Military Sealift Command Atlantic	63 m	USA	5/5/2005	
JOIDES Resolution	Integrated Ocean Drilling program (IODP)	143 m	USA	2/4/2005	
Kaimikai-o-Kanalao	University of Hawaii	68 m	USA	1/31/2005	
Ka'Imimoana	Office of Marine and Aviation Operations (OMAO)	68 m	USA	1/25/2005	
Knorr	Woods Hole Oceanographic	85 m	USA	1/25/2005	

	Institution (WHOI)				
Laurence M. Gould	Raytheon Technical Services Company	70 m	USA	2/1/2005	
Lee	US Geological Survey	63 m	USA		
Littlehales (USNS)	Military Sealift Command	63 m	USA	5/9/2005	
Mary Sear (USNS)	Military Sealift Command Atlantic	100 m	USA	5/10/2005	
Maurice Ewing	Lamont-Doherty Earth Observatory	70 m	USA	1/27/2005	
McArthur II	NOAA Marine and Aviation Operations	68 m	USA	12/9/2004	
Melville	Scripps Institution of Oceanography (SIO)	85 m	USA	1/26/2005	
Miller Freeman	NOAA Marine and Aviation Operations	66 m	USA	1/24/2005	
Moana Wave	University of Hawaii	66 m	USA	1/26/2005	
Mt Mitchell	Mt. Mitchell, LLC	231 m	USA	1/6/2004	
Nathaniel B. Palmer	Antartic Support Associates (ASA)	94 m	USA	2/1/2005	
Odyssey Explorer	Odyssey Marine Exploration, Inc	77 m	USA	2/2/2005	
Oscar Dyson	NOAA, Pacific Marine Operations Centre	64 m	USA	11/11/2004	
Oscar Elton Sette	NOAA, Pacific Island Science Center	68 m	USA	12/7/2004	
Pathfinder (USNS)	Military Sealift Command Atlantic	100 m	USA	5/9/2005	
Polar Sea	US Coast Guard	122 m	USA	2/21/2005	
Polar Star	USCGC POLAR STAR (WAGB 10)	122 m	USA	1/27/2005	
Rainier	NOAA Marine and Aviation Operations	70 m	USA	1/25/2005	
Roger Revelle	Scripps Institution of Oceanography (SIO)	83 m	USA	2/21/2005	
Ronald H. Brown	NOAA's Office of Marine and Aviation Operations (OMAO)	84 m	USA	1/21/2005	
Seward Johnson	Harbor Branch Oceanographic Institution (HBOI)	62 m	USA	1/26/2005	
State of Maine T.V.	Maine Maritime Academy	152 m	USA	7/5/2005	
State of Michigan	Great Lakes Maritime Academy	68 m	USA	6/10/2005	
Sumner (USNS)	Military Sealift Command Pacific	100 m	USA	5/9/2005	
Thomas G. Thompson	School of Oceanography, University of Washington	84 m	USA	1/27/2005	
Thomas Jefferson	NOAA	63 m	USA	1/18/2005	