

**POGO/SCOR Meeting on  
International Research Cruise Database and Website  
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 website 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:**

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Shubha Sathyendranath (POGO)	<a href="mailto:shubha@dal.ca">shubha@dal.ca</a>
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**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 website 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 website 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 (eg. CTD vs. Argo, in situ vs. remote sensing)

Discussion of the potential database benefits was followed by a presentation of the existing “Oceanic” website 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 website, which will build on the existing website, 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 participants recognised that this was an arbitrary definition, and they agreed that information from smaller ships with capabilities for large-scale ocean observations should also be included in the database. The following features were identified as essential for a first version of the redesigned website:

### **Ideal Characteristics of Database and Website**

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 websites, if any).
3. Searchable and user-friendly: The starting point for any search for cruises on the website 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 website 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 website will be retained in the U.S. Navy grid; but the new website 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 websites

## Notes

7. Initially, the database will focus on ships of length 60 m or greater (see list of ships from Oceanic website 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 website 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 website, 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 website, 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	<a href="#">Capitan Oca Balda</a>	Inidep Playa Grande	65 m	Argentina		
1	<a href="#">Dr. Eduardo Holmberg</a>	Inidep Playa Grande	62 m	Argentina		
1	<a href="#">Puerto Deseado</a>	Conicet	77 m	Argentina		
1	<a href="#">Aurora Australis</a>	P&O Polar Australia Pty Ltd	95 m	Australia		
1	<a href="#">Leeuwin</a>	Hydrographic Service	71 m	Australia	since 2000	<a href="http://www.hydro.gov.au/aboutus/our-ships.htm">http://www.hydro.gov.au/aboutus/our-ships.htm</a>
1	<a href="#">Melville</a>	Hydrographic Service	72 m	Australia	since 2001	<a href="http://www.hydro.gov.au/aboutus/our-ships.htm">http://www.hydro.gov.au/aboutus/our-ships.htm</a>
1	<a href="#">Southern Surveyor</a>	CSIRO Marine Research	66 m	Australia		
1	<a href="#">Wyuna</a>	Australian Maritime College (AMC)	64 m	Australia		training vessel
1	<a href="#">Vidal Gormaz</a>	Servicio Hidrografico Y Oceanografico De La Armada De Chile	63 m	Chile		
1	<a href="#">Dong Fang Hong 2</a>	Oceanic Research Centre, Ocean University of QingDao	96 m	China	8/15/2000	
1	<a href="#">Science 1</a>	Institute of Oceanology	104 m	China		
1	<a href="#">Venus 2</a>	Institute of Oceanology (IOCAS)		China		not in OCEANIC database
1	<a href="#">Xiang Yang Hong No. 14</a>	South China Sea Branch S.O.A.	111 m	China		
1	<a href="#">XueLong</a>	Polar Research Institute of China	167 m	China	3/8/2005	icebreaker
1	<a href="#">Dana</a>	DFU	78 m	Denmark	9/26/2003	
1	<a href="#">Beautemps-Beaupré</a>	Unknown	81 m	France	4/21/2005	S.H.O.M. operator
1	<a href="#">L'Astrolabe</a>	Compagnie Morbihannaise de Navigation	65 m	France	4/28/2003	
1	<a href="#">L'Atalante</a>	Genavir	85 m	France	1/9/2004	
1	<a href="#">Marion Dufresne</a>	Compagnie Générale Maritime (CGM)	120 m	France	3/31/2003	
1	Pourquoi pas?	Unknown	105 m	France		Genavir operator <a href="http://www.ifremer.fr/genavir/navires/P">http://www.ifremer.fr/genavir/navires/P</a>
1	<a href="#">Thalassa</a>	Genavir	74 m	France & Spain	3/2/2004	

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

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



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

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

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

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

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

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