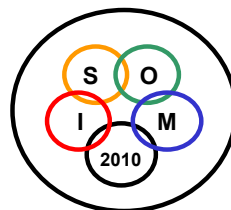




Twenty-third International Research Ship Operators Meeting (ISOM)

19 – 21 March 2010

Leibniz Institute of Marine Sciences at the Christian-Albrechts University of Kiel
IFM-GEOMAR,
Kiel, Germany



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Nation	First name	Last name	Organisation	Position
Australia	Graeme	Bridges	P&O Maritime Services Pty Ltd	Operations Manager
	Rob	Bryson	Australian Antarctic Division	Shipping Manager
	Toni	Moate	CSIRO Marine & Atmospheric Research	Deputy Chief Business
	Ronald	Plaschke	CSIRO Marine Research	Ship Manager
Belgium	André	Pollentier	Royal Belgian Institute for Natural Sciences, MUMM-UGMM	Head of Ostend Office and Co-ordinator, R/V Belgica
Canada	Yves	Perron	Defence Research and Development Canada	Manager/ Technical Services
Chile	Enrique Aranda	Orrego	Instituto de Fomento PesQuero	Marine Operations Department
China	Li	Tiegang	Institute of Oceanology, Chinese Academy of Sciences	Vice Director
	Zhu	Xuan	Institute of Oceanology, Chinese Academy of Sciences	Captain
Denmark	Hans-Erik	Mahnfeldt	DTU Aqua	Marine Superintendent
	Helge A.	Thomsen	DTU Aqua	Vice Director
France	Jacques	Binot	IFREMER	Co-ordinator, Eurofleets
	Sébastien	DuPont	IFREMER	Naval Architect, Eurofleets
	Olivier	Lefort	IFREMER	Director of Naval Facilities
Germany	Roland	Berger	Rf Forschungsschiffahrt GmbH	Projects / Logistics
	Klaus	Bergmann	Briese Schifffahrts GmbH&Co KG, Abt. Forschungsschiffahrt	
	Martin	Boche	Reederei F. Laeisz	Operations Manager
	Klaus	Bröckel von	IFM-geomar	
	Michael	Ippich	Rf Forschungsschiffahrt GmbH	Managing Director
	Klaus	Küper	Briese Schifffahrts GmbH&Co KG, Abt. Forschungsschiffahrt	
	Klas	Lackschewitz	IFM-geomar	
	Thomas	Liebe	Rf Forschungsschiffahrt GmbH	Superintendent
	Andreas	Martin	Rf Forschungsschiffahrt GmbH	Superintendent
	Lothar	Meinders	Briese Schifffahrts GmbH&Co KG, Abt. Forschungsschiffahrt	Superintendent
	Hinrich	Mohr	Reederei F. Laeisz	Technical Superintendent
	Thomas	Müller	IFM-geomar	
	Johannes	Rogenhagen	Reederei F. Laeisz	Superintendent
Iceland	Vignir	Thoroddsen	Marine Research Institute	Deputy Director, Finance
Ireland	John	Breslin	P&O Maritime Services	Business Manager
	Aodhán	Fitzgerald	Marine Institute	Team Leader, Research Vessel Operations
	Mick	Gillooly	Marine Institute	Director Ocean Science Services
Japan	Yoshifumi	Kuroda	Japan Agency for Marine-Earth Science and Technology	Director, Research Vessel Management and Operations Department
	Shinichi	Kusaka	Nippon Marine Enterprises LTD.	Deputy General Manager
NATO	Ian	Sage	North Atlantic Treaty Organisation	Head of Ship Management
Netherlands	Erica	Koning	NIOZ Institute for Sea Research	Co-ordinator. Marine Research Facilities
New Zealand	Greg	Foothed	NIWA, National Institute of Water and Atmospheric Research Ltd	Engineering Manager
	Fred	Smits	NIWA, National Institute of Water and Atmospheric Research Ltd	General Manager

Nation	First name	Last name	Organisation	Position
Norway	Hans Petter	Knudsen	Institute of Marine Research	Head of Electronic Instrument Division
	Per Wilhelm	Nieuwejaar	Institute of Marine Research	Director RV Department
Spain	Arturo Castellón	Masalles	UTM.CSIC	Ships Manager
U.K.	David	Blake	British Antarctic Survey	Head, Technology & Engineering
	Edward	Cooper	National Oceanography Centre	Discovery Replacement Project Council
	David	Lewis	National Oceanography Centre	Assistant Director/Head, National Marine Facilities Division
	Roland	Rogers	National Oceanography Centre	Marine Legal and Environmental Advisor
	Geraint	West	National Oceanography Centre	Head, Sea Systems
U.S.A	Timothy	Gates	ManTech	Vice President/Acoustic Engineer
	Bauke (Bob)	Houtman	National Science Foundation	Head, Integrative Programs Section
	Joseph	Mackes	U.S. Navy, Office of Naval Research	Ocean AGOR Ship Design Manager
	Dennis	Nixon	UNOLS/University of Rhode Island Oceanography	Legal Advisor/Associate Dean
	Mike	Prince	U.S. Navy, Office of Naval Research	Research Facilities Program-Ocean Class Research Vessels
	Daniel	Rolland	Alion Science	Program Manager Oceanographic Ships
	Tim	Schnoor	Office of Naval Research	Research Facilities Manager

A. Proceedings

A.1. Opening Session

The Opening Session was chaired by Mr Fred Smits.

A.1.1. Opening

Fred welcomed 56 participants from 19 countries to the 23rd ISOM being hosted by IFM Geomar.

A.1.2. Administrative Matters

A.1.3. Introduction of Participants

A.1.4. Official Welcome & Introduction of IFM GEOMAR – (IFM)

Andreas Villwock welcomed ISOM participants to IFM-GEOMAR on behalf of the Director, Peter Herzig who had unfortunately been called away on business. The Leibniz Institute of Marine Sciences (IFM-GEOMAR) was founded 1 January 2004 through the merger of the Institute for Marine Research (IfM) and the GEOMAR Research Centre, and is a member of the Leibniz Association (WGL) jointly funded through the federal governments and the state of Schleswig-Holstein. IFM-GEOMAR has an overall budget of about € 57M and employs about 720 people at 2 locations, although these will be amalgamated on to 1 site in the future.

Its mission is to understand the physical, chemical, biological, and geological processes in the oceans and their interaction with the seafloor and the atmosphere. Under its ‘Marine Research Agenda 2020’ there are 4 main foci:

- Role of the Oceans in Climate Change
- Human Impact on Marine Ecosystems
- Marine Resources
- Plate Tectonics and Geological Hazards

IFM-GEOMAR also has applied research interest in gas hydrate technology, marine substances, marine aquaculture and ocean observatories, all of which were outlined.

The German research vessel fleet was outlined (but see B.10) and in discussion it was stated that the fleet is funded mainly through governmental money, but also receives some funding for charter with industry partners. IFM-GEOMAR’s interest in offshore wind turbines was queried, but it was emphasised that the institute is focussed on the deep ocean, with coastal interests coming under the coastal research institute and the Alfred Wegner Institute (AWI).

A.1.5. Adoption of Agenda

Comments on the agenda were invited, which was adopted with minor additions.

A.1.6. Membership Rules – Fred Smits (Chair)

Due to the continuing enlargement of ISOM, there were a number of issues which needed to be considered by ISOM members. These included membership, nominated country representatives, management committee, succession, sub-committee and financial contributions. Three levels of membership were proposed: Full, Associate and Invitee as there are occasions when government funded ship operators wished to discuss commercially sensitive issues. It was agreed that 2 working groups would be formed to consider these issues and make recommendations to members during the final session of the meeting:

- Membership Rules
 - Evaluate and modify recommendations made;
 - Draft a short document outlining membership rules to be placed on the ISOM website;
 - The following agreed to join the working group:
 - John Breslin
 - Bob Houtman
 - Dennis Nixon
 - Geraint West

- INMARTECH
 - Draft programme for Wellington 2011 to be produced.
 - The following agreed to join the working group:
 - Fred Smits
 - Sebastian Dupont
 - Hans Petter Knudsen
 - Aodhán Fitzgerald

In addition, the delegates were invited to consider the following issues with a view to making decisions during the final session of the meeting:

- Country Representative - it was requested that each delegation advise the Chair of its nomination;
- Vice Chair – nominations supported by 3 Country Representatives were invited;
- Financial Contribution - delegates were asked to consider the recommendation to increase the financial contribution for ISOM attendance

A.1.7. Review of the Minutes of Twenty-Second Meeting

The minutes of the 22nd ISOM were then introduced and ISOM members thanked for the contributions made. The minutes were adopted without modifications as a true record of the meeting held at the National Institute Water and Atmosphere, Wellington, New Zealand 20 – 23 Jan 2008. The final version of these minutes is available on the ISOM web site, <http://www.isom-info.org>.

A.2. Theme 1 Delegates Reports of Activities

The outline of information presented in delegates' reports can be found in Part B; only the discussions are recorded here.

A.2.1. Australia – Ron Plaschke (CSIRO, Marine Research)

See B.1 for report.

It was stated that the reason why the *Southern Surveyor* is limited to 180 days, despite ship time being oversubscribed is that the Marine National Facility is only funded for one full crew for 6 months; other additional work is predominantly charter funded. Notwithstanding this, the replacement will be a multi-purpose vessel funded for full year operations.

A.2.2. Belgium – Andre Pollentier (Belgium Federal Science Office, Royal Belgium Institute for Natural Sciences Department MUMM)

See B.2 for report.

There was considerable discussion regarding the large numbers of wind turbines being erected in Belgium's coastal regions (5 zones each with 4 - 500 turbines). In particular, it was noted that although wind turbine companies are obliged to fund monitoring, they are not required to contribute to costs of the new vessel.

The *Belgica* replacement is currently only at a feasibility study stage, and has not yet been developed into a design. The anticipated timeline is for tendering to be completed in 2011, with the new ship entering service by 2014. There was also discussion concerning the complexity of commercial insurance since the *Belgica* is classified as an auxiliary with a Navy crew and a military flag.

A.2.3. Canada – Ron Grady (Canadian Coast Guard)

Ron was unable to attend the meeting, but his report is included at B.3

A.2.4. Canada – Yves Perron (Defence Research and Development Canada)

See B.4 for report.

A background brief on Defence Research and Development Canada was also presented (see presentations), including a short outline of Project Cornerstone, which is using 2 AUVs for seabed mapping under ice in the Arctic.

A.2.5. Chile – Enrique Aranda Orrego (Instituto de Fomento Pesquero)

See B.5 for report.

Following the presentation, it was stated that a day prior to the launch of the *Cabo de Hornos*, the ship yard was destroyed by a tsunami and the ship was washed ashore. It was stated that plans to refloat the ship are still to be fully developed, but there was considerable discussion concerning insurance coverage for an event of this nature.

A.2.6. China – Li Tiegang (IOCAS)

See B.6 for report.

A.2.7. Denmark – Helge Thomsen (DTU Aqua)

See B.7 for report.

In discussion it was stated that a board of 8 members from a variety of universities and institutes, as well as the navy, is responsible for fleet coordination, while funding comes via the Dansk Center for Havforskning (DCH) (Danish Center for Marine Research).

A.2.8. Finland – Juha Flinkman (SYKE)

Juha was unable to attend the meeting, but his report is included at B.8.

A.2.9. France – Olivier Lefort (IFREMER)

See presentation for 2010 report; last year's report is also included at B.9 for information.

It was confirmed in discussion that IFREMER's vessels are self insured by the state.

A.2.10. Germany – Dr. Klaus von Broeckel (Leibniz-Institute für Meereswissenschaften)

See B.10 for report.

There was considerable discussion regarding the event in Limassol when a Greek ferry collided with the *Maria S. Merian*. It was stated that the insurance situation was still being resolved and that arrest of the Greek vessel had been considered. A particular issue in this situation is valuing the science lost, especially if consequential losses are being considered in the absence of a charter party agreement. *Dennis Nixon undertook to provide advice to Klaus von Broeckel on consequential losses of science.*

A.2.11. Iceland – Vignir Thoroddsen (Marine Research Institute)

See B.11 for report.

A.2.12. Ireland - Aodhán Fitzgerald (Marine Institute)

See B.12 for report.

In discussion it was confirmed that the Survey Planning System was developed in-house.

A.2.13. Italy – Giuseppe Magnifico (CNR)

Giuseppe was unable to attend the meeting, but his report is included at B.13.

A.2.14. Japan - Yoshifumi Kuroda (JAMSTEC)

See B.14 for report.

A.2.15. NATO – Ian Sage (NURC)

See B.15 for report.

In discussion it was stated that although optimal days at sea are 180 for *Leonardo*, actual operational days had only been 120 due to funding constraints.

A.2.16. Netherlands – Erica Koning (NIOZ)

See B.16 for report.

A.2.17. New Zealand - Greg Foothead (NIWA)

See B.17 for report.

There was a discussion regarding the *Ikatere* 13.9m Coastal Research Vessel which has been designed by Technicraft and built in New Zealand. It is planned to generally employ the vessel for day running, although it may be relocated around the country. The vessel has the handling characteristics of a jet boat and is highly manoeuvrable with the Blue Arrow control system. The

very shallow draught of 700mm allows the vessel to operate in shallow waters right into the surf zone.

A.2.18. Norway - Per Nieuwejaar (IMR)

See B.18 for report.

In discussion, other delegates echoed the issues that IMR has experienced with the supply of a new Mocness system.

A.2.19. Spain – Arturo Castellon (UTM/CSIC)

See B.21 for report.

A.2.20. Spain – Jose Diaz (IEO)

Jose was unable to attend the meeting, but see B.20 for his report.

A.2.21. UK – David Blake (BAS)

See B.22 for report.

A.2.22. UK – Geraint West (NOCS)

See B.23 for report.

A.2.23. UK CEFAS – John Breslin (P&O Maritime Services)

See B.24 for report.

A.2.24. USA– Tim Schnoor (ONR/UNOLS)

See B.25 for report.

A.3. Theme 2 Research Vessel Builds, Modifications & Performance

A.3.1. Canadian Coastguard Fleet Modernization – Ron Grady (DFO, CGS)

Although Ron was unable to attend the meeting, his presentation was given by the Chair. The following new build projects are in progress or completed:

- 1 x Air Cushion Vehicle (ACV):
 - *Mamilossa* – delivered
- 2 x Specialty Vessels (Scientific Research):
 - *Kelso* – delivered
 - *Davidson* – April 2010
- 5 x 47 Foot Motor Lifeboats (MLB) – 2011
- 3 x Inshore Fisheries Research Vessels – 2011
- 9 x Mid-Shore Patrol Vessels (MSPV) - 2011 – 2015
- 3 x Offshore Fisheries Science Vessel (OFSV) - 2013 – 2015
- 1 x Offshore Oceanographic Science Vessel (OOSV) – 2013
- 1 x Polar Icebreaker (Polar) – 2017

Subsequent projects in the Coast Guard Fleet Renewal Plan will include:

- Additional Polar Icebreaker
- Additional Offshore Oceanographic Science Vessel
- Medium Icebreaker(s)
- Medium-Endurance Multi-task Vessels
- High-Endurance Multi-task Vessels (Light Icebreakers)
- Offshore Patrol Vessels
- Helicopters

A.3.2. Southern Surveyor Replacement – Toni Moate (CSIRO)

The objective of the project is to provide a safe and technically advanced research platform which is able to operate from the tropics of Australia to the ice edge. Funding is being increased to enable operations to be expanded from the existing 180 days that the *Southern Surveyor* is available to a full year. The following are the outline specifications of the new vessel:

- Length: Approx 80m
- Beam: Approx 19m
- Draft: Approx 5.5m+
- Maximum Speed: 15kts thru SS5
- Optimum Speed: 12kts
- Range: 10,000 nautical miles
- At least DP1
- 30+ Science Berths, plus marine crew
- Hotel endurance >50days with full complement embarked
- 24hour/7day continuous operations.

Cost pressures after market research have led to the following adjustments to the functional requirements:

- DP1 be adopted with addition of some redundancy in two half power thrusters forward, but full DP 2 will not be adopted.
- Persons on-board capped to 60 (SOLAS requirements).

- ICES 209 compliance is essential for the long term capability of the vessel.
- A stern ramp will be provided along with a measure to cover or a simple method to infill the ramp for operations not requiring this feature.
- Requirement for a moonpool has been removed from the Functional requirements and will be replaced with a requirement for two drop keels.

A Request for Proposal was released in October 2009, with proposals received in January 2010. The evaluation process was being finalised with the intention to complete short listing in March.

Toni Moate asked for ISOM member support for support with the following issues:

- *Do any of the adjustments to Functional Requirements (see above) ring alarm bells?*
- *What laboratories have other agencies containerised, and can CSIRO access specifications?*
- *What models are other research agencies using to allocate vessel time?*
- *What are the traps for unwary players, and who in the ISOM community might be willing to mentor CSIRO through the process?*

A.3.3. DP2 on *Tangaroa* – Fred Smits (NIWA)

The project to install DP2 in *Tangaroa* was outlined at the last ISOM meeting (see ISOM 22 minutes), but is one of the major measures being taken to ‘future-proof’ the ship. In addition to the installation of DP, a new deep ocean winch is being installed, as well as increasing lab and deck space. As well as fitting new 800kW stern, 800kW retractable azimuth and 600kW tunnel bow thrusters, 2 new 1400kW diesel generators will be fitted.

The project has proved to be much more complicated than anticipated with many unexpected issues. It has taken 4 years instead of 2, with costs rising from NZ\$5.8M (€2.9M) in 2007 to NZ\$19.8M (€9.9M) in 2010. This has been mainly because the project management team proved to be too small, although highly detailed drawings and specifications have generated significant saving.

The project is being undertaken in 2 phases:

- Phase 1 was undertaken in Aug 2009 and incorporated modifications to the winch room and generator room, with the CTD winch being moved from the deck into part of the fish-hold, and the installation of a new 8000m deep coring winch. Phase 1B was completed in October 2009 and comprised re-ballasting the ship with 160 tonnes of pig iron; this was in part compensation for removal of 110 tonnes of sand removed from the hold.
- Phase 2 is now formally underway with the signing of a contract on 22 March. The DP installation work will be undertaken between July and October 2010, with trials on completion.

A.3.4. Norway’s New Polar 10 Ice Class Research Vessel – Per Nieuwejaar (IMR)

The basic design (Rolls Royce) and specifications of this vessel have been completed, but have not changed since the last meeting (see ISOM 22 minutes), while model tests in open water and ice have appeared very promising. There are currently 2 ministries competing to be the owner, so the decision now lies with the Prime Minister’s office. A decision from Parliament is expected in June 2010, which will enable pre-qualification of yards to be progressed in July/August.

A.3.5. ARKTOS Amphibious Utility Craft - Ron Grady (DFO, CGS)

Ron was unable to attend the meeting, but the Chair showed a presentation on this intriguing craft.

A.3.6. Discovery Replacement – Edward Cooper (NOCS)

At the last ISOM, NERC were in negotiation with the shipbuilder Astilleros Zamakona, Spain for a vessel designed by Skipsteknisk, with the aim of signing a contract prior to the end of March 2009. However, just prior to contract signing, the Minister blocked funding. Subsequently the Minister approved the reissue of the tender, resulting in 6 bids being received in January 2010. Following assessment of the tenders, Construcciones Navales P. Freire, S.A. have been appointed as preferred bidder, using a development of the pre-existing Skipsteknisk design. The aim was to sign a contract with the yard by the end of March (post meeting note: the contract was signed on 29 March), leading to delivery of the new vessel (to be named *Discovery*) to NERC in mid-2013 with first science cruises in 2014.

In discussion it was confirmed that the ship will be capable of Isis ROV operations.

A.3.7. Ocean Class Ship Development Programme – Mike Prince (NSF)

The Office of Naval Research is the owner of the AGORs (Global Class) vessels operated by NSF/UNOLS and has initiated a programme to build 2 mid-size (Ocean Class), general purpose, monohull research vessels. The notional design for internal requirements verification and requirements development was completed during 2008/2009, and Phase I design awarded to 2 shipyards on 27 January 2010 (Dakota Creek Industries and Marinette Marine Corporation). There is now a 14 month Phase I design competition including proposal preparation for Phase II, concluding with down-selection to 1 shipyard, with construction of the first ship expected to start in 2011. Delivery of both ships is planned for 2014.

- Accommodations: 20 scientists with additional berths possible, ~20 crew (USCG inspected vessel);
- Range/Endurance: 10,000 NM at sustained speed and 40 days at sea;
- Speed: 11kts sustained in calm seas, up to 9kts in SS4;
- Sea keeping: fully operable in SS4 (80% in SS5 & 50% SS6 desired);
- Science load: 150 long tons (152.4 tonnes) variable science stores and equipment;
- Acoustics: Capability for 2 degree multibeam sonar systems;
- Handling Systems: full suite of winches, cranes and overboard gear;
- Dynamic Positioning: trackline and station SS5, 35kt wind and 2kt current;
- Design: ABS classed, USCG inspected, SOLAS compliant;
- Laboratories: ~2,000 sq ft (186m²);
- Working Deck: 2,100 sq ft (195m²);
- Vans: Carry 2 standard 20 ft ISO container labs on working deck.

A.3.8. L'Atalante Modernisation, Sea Trials and First Feedbacks – Sebastian DuPont (IFREMER)

The modernisation of *L'Atalante* comprised 2 components:

- Replacement and improvement of all scientific equipment and scientific spaces, including:
 - Networks etc.;
 - New gondola with new MBES – bow wings for RX – aft array for TX – EM122 and EM170;
 - New SBP and
 - New scientific spaces and labs.
- Remedial and curative maintenance at mid-life of the vessel including:
 - Replacement of some auxiliary machinery;
 - New DP system and

- New VSat.

Trials of the new EM122 multibeam system have demonstrated clear improvements in performance over the previous EM12D system with increased resolution, and comparisons with the Reson systems on the *Pourquoi Pas?* have been favourable.

A.3.9. *Aurora Borealis* Update – Dr. Klaus von Broeckel (IFM)

The *Aurora Borealis* is now in the second of 2 phases:

- Phase 1 (2007 - 2009) Preparatory work funded by German Federal Ministry for Science and Education (BMBF) and carried out under coordination of the Alfred Wegener Institute for Marine and Polar Research (AWI). All technical specifications as well as general arrangement of the vessel and model tests are now complete.
- Phase 2 (2008 - 2012) Project is now under the European Polar Board (EPB) of the European Science Foundation (ESF) which provides the necessary financial resources and coordinates the **European Research Icebreaker Consortium - Aurora Borealis (ERICON - AB)**. This phase aims to implement the *Aurora Borealis* as a European Research Icebreaker.

It was noted that anticipated construction costs are now €800M – 1B, with running costs estimated at €30 - 50M pa. The project is currently under scrutiny as a commercial vessel *Stena DrillMax* with similar capability is currently under construction and chartering of this vessel is being considered as an alternative to building the *Aurora Borealis*. The *Stena DrillMax* also employs riser drilling which is more eco-friendly than the riser-less technology planned for *Aurora Borealis*.

A.3.10. *Renewal of the French Oceanographic Coastal and Regional Fleet* – Olivier Lefort (IFREMER)

There are currently 2 institutes in France who operate coastal and regional vessels:

- IFREMER :
 - *Le Suroît* (55m), multipurpose regional vessel, delivered in 1975 and modernized in 1999;
 - *L'Europe* (29.6m), general oceanography coastal vessel delivered in 1994;
 - *Thalia* (24.5m), general oceanography coastal vessel delivered in 1978 and
 - *Gwen-Drez* (24.5m), fishery coastal vessel delivered in 1976.
- INSU
 - *Côte d'Aquitaine*, general oceanography coastal vessel went out of service in 2009;
 - *Côtes de la Manche* (24.9m), general oceanography coastal vessel delivered in 1997 and
 - *Thétys* (24.9m), general oceanography coastal vessel delivered in 1993.

In response to the need to modernise this fleet, a national plan has been initiated to work within a limited budget to meet the European Maritime Strategy:

- Regional vessel (55m) to be built before 2015 as the first one of 3 vessels to meet demand of science, public service, and regional hydrography.
- Fishery research coastal vessel for the Atlantic coast
- Hybrid ROV to be developed by IFREMER during 2012/2013 and capable of operation from the above vessels. This will be deployable using a fibre-optic cable but also capable of operating without a tether as an AUV from non-DP as well as DP vessels. It will mainly be used for optical and acoustic mapping.

The budget for the first 2 vessels and ROV is €70-80M.

A.4. Theme 3: Manning, Safety and Training

A.4.1. Manning Questionnaire - Geraint West (NOCS)

The manning questionnaire has been updated by most ISOM members and will be reissued prior to the next meeting. In addition NSF has agreed to participate and it is hoped to receive completed questionnaires from UNOLS operators prior to the next ISOM (Post-meeting note: UNOLS has subsequently supplied completed questionnaires for the majority of its global and ocean/intermediate vessels).

A.4.2. Safety Training – round-table discussion led by Per Nieuwejaar (IMR)

Following a presentation outlining general safety issues and training for scientific personnel joining Norwegian research vessels, it was suggested that ISOM look at establishing a set of guidelines for both minimum requirements and best practice. In discussion, it was agreed that this was logically a good idea, but potentially presented a logistical nightmare as many scientists come from non-marine universities. At the one end of the spectrum it was noted that NIWA are required by Maritime New Zealand to send all scientists on a full 10 day STCW95 training course, while in the USA (among others) that scientists are not classed as crew, and are therefore not legally required to undertake training. Consequently, UNOLS has made embarkation training as thorough as possible, including a safety training video, while it has also regularly had to advise scientists on the safety training requirements of other operators, and in some cases arrange the training. It was noted that IFM has just started using a common 10-hr training course, while IFREMER ships are ‘Special Ships’ so scientists are not considered part of the crew, and therefore only receive a safety brief. Overall, it was noted this presents a very confusing picture to scientists working across ships of different nationalities and can, in some cases, be a source of friction; thus a statement of basic requirement was highly desirable. It was noted this could work to the advantage of some scientists who desire to be recognised as ‘card-carrying’ seagoing scientists, while it might also be used as ammunition to moderate the situation experienced by NIWA.

It was agreed to establish a Working Group with the following members to collate existing procedures in use by ISOM members and to draft a basic code:

- *Per Nieuwejaar (IMR)*
- *Geraint West (NOCS)*
- *Yves Perron (DRDC)*
- *Erica Koning (NIOZ)*
- *Dennis Nixon (UNOLS)*

A.4.3. Shipboard Scientific Technician Pool – Bob Houtman (NSF)

NSF/UNOLS has recognised that the issue of providing scientific technicians to support their marine research programme is becoming increasingly acute due to a range of factors:

- Ageing workforce;
- Increasingly complex work environment;
- Finding well suited personnel that have potential and desire to work at sea;
- Achieving a “common” standard level of training;
- Adding flexibility to SOP regarding providing high quality tech support at sea –sharing technicians and
- Increasing technical support footprint at sea.

Because of this, a 2 year programme has been initiated to look at how the technician support pool in the USA can be better managed, by mapping current capabilities, developing better mechanisms for increasing flexibility across the pool of expertise, and to develop a training programme.

Several ISOM delegates noted parallel issues in their own organisations and inquired about the possibility of interacting with the programme. One observation was that an organisation the size of NSF/UNOLS is probably better placed than anyone else to deploy its technical support flexibly. Other delegates were interested in how levels of service are set and which activities have to be supported by additional technicians above a basic level of service.

A.4.4. Fire Incident on *RV Yokosuka* – Shinichi Kusaka (JAMSTEC)

There was a serious fire onboard the *Yokosuka* on 12 February 2010 at Kobe, Japan while the ship was in dockyard for annual inspection and maintenance. Two crew cabins were destroyed, while there was extensive smoke damage to adjacent passageways and cables, which took 3 weeks at the expense of dockyard to repair. The cause of the fire was found to be welding in a passage and although a watchman was posted in the adjacent space, there was no-one posted above the compartment, nor was material cleared. The dockyard also stated that the quality of staff was decreasing.

Discussion centred on the liability and insurance issues, and it was observed that in the USA and most other nations, it is possible for the shipyard to escape liability, even if it causes a fire, because the ship has hull insurance cover. This is especially critical for government-owned ships that are self-insured and most shipyards would claim they have no liability. It was stated that IFREMER take out special insurance for major works, while others observed that liability lies with the shipyard up to an agreed value (e.g. twice value of contract) under a BIMCO contract. This might be of little comfort if major loss was incurred during minor works.

A.4.5. Medical Standards – round-table discussion led by Olivier Lefort (IFREMER)

IFREMER require scientists to complete a health questionnaire and provide a doctor's embarkation certificate when sailing on cruises which are beyond 150NM from a hospital. According to French law, only vessels with over 100 people onboard are required to carry a doctor and therefore the decision to embark a doctor is taken on the basis of non written internal procedures. Nevertheless, French scientists would like doctors onboard when cruises are 4-5 days from shore.

In discussion it was clear that there is no uniform response to this issue partly because circumstances vary considerably: for example, in the German research fleet, the embarkation of a doctor is dependent on the particular cruise profile, and therefore because of her remote location, the *Meteor* carries a doctor most of the time. Nevertheless, the *Polarstern*, in common with other Antarctic operators like AAD and BAS carries a doctor on a permanent basis, while IMR did comment that sourcing doctors with maritime experience could be problematic.

The main body of the discussion, however, centred on other issues concerning medicals and pre-embarkation questionnaires. While many operators require or recommend questionnaires, the requirement for medicals is again more variable, principally because of the cost, although again, Antarctic operators such as AAD have dedicated medical units. Another issue raised concerned the need for technicians that might be required for special equipment to meet specific medical standards, but those operators who do have specific minimum standards noted that they wouldn't make any exceptions, and in some cases these were Flag State mandated in any case. In connection with this, NIWA commented that where such support was contracted in, the medical requirements were specified in the contract.

Other issues discussed included:

- Use of remote facilities such as video tele-conferencing for medical advice;
- Use of sealed envelopes with instructions for special cases e.g. AIDS;

- Training of ship staff in First Aid e.g. IMR train all catering staff and
- Medical facilities onboard such as defibrillators.

Olivier Lefort and Geraint West agreed to compile a short questionnaire and survey the medical provisions that ISOM members have in place.

A.5. Theme 4: Scientific Technology, AUVs and ROVs

A.5.1. Marion Dufresne – Olivier Lefort (IFREMER)

The *Marion Dufresne* is operated by the Institut Polaire Français, Paul Emile Victor (IPEV) and is chartered by IPEV for 217 days a year to undertake oceanography, with another 120 days on charter to TAFF for resupply of sub-Antarctic Islands. One of the main capabilities of the vessel is the Calypso giant piston corer with ability to core up to 65m in up to 4,500m of water and which incorporates a dedicated 30T SWL winch with 3 storage drums and a 30T A-frame. As well as the usual pipe cores, the system can also collect 9 or 12m box cores (25cm x 25cm). The ship is also fitted with a Thales SeaFalcon11 12 kHz MBES system, which is now quite old, while the IFREMER seismic system can also be embarked. The vessel was laid up for 2 months in 2009 due to budget constraints for the first time since her launch in 1995.

A.5.2. First Year of ROV Operations – Lessons Learned – Aodhan Fitzgerald (MI)

MI took delivery of their 3000m SMD Quasar ROV in August 2008 and completed Field Operations Acceptance Tests in January and April/May 2009. Unfortunately, during one of the trials, the umbilical was severed resulting in the vehicle and Tether Management System (TMS) falling to the seabed in 780m, but was subsequently recovered 3 days later by a commercial ROV support vessel. One of the main challenges is the 70T of equipment which comprise the system (winch 24T; A-frame 19T; control van 11T.) The system is supported by a team of 3 (+ trainee) for 12 hr operations, and is augmented to a team of 6 for 24 hr operations.

During 2009 the system undertook 2 full science surveys. 3 surveys (ca. 55 days) are planned for 2010, with a plan to develop shallow water, rapid deployment capability. Initial operations have revealed the Launch and Recovery System (LARS) position onboard the Celtic Explorer is sub-optimal with vulnerability to pitching and consequently over stern deployment may be trialled. There are similar issues with motion of the TMS and a trial without the TMS using floats will be undertaken in 2010.

It was stated in discussion that the ROV had been purchased through a special budget from the European Regional Development Fund, but the operation of the system is funded on a day-rate. The team of 3 are currently all external contractors, but this will eventually become 2 P&O personnel plus contractors.

A.5.3. Rolling Deck to Repository (R2R) Data Management Programme – Bob Houtman (NSF)

NSF receives large volumes of diverse scientific data from 21 oceanographic research vessels but these are handled differently by each ship operator. As a consequence, there is a need for a fundamental shift in data management in the US Academic Fleet in order to better leverage investment in public funds. A pilot project was started in 2008 and now a fleet-wide programme has been initiated to standardise data and documentation, as well as to improve quality through automated assessment, while making it more accessible. Under the system, operators submit data and documents to a central R2R repository; it is then inventoried in a unified catalogue and divided into discrete data sets with associated metadata, before delivery to the appropriate national data centre for archiving and dissemination. The system allows for QA on 2 levels: firstly, near real time QA of meteorology and thermosalinograph; and secondly, post cruise QA of routine and automated data. A Data Quality Assessment Certificate with a rating will be assigned to all data. For more information see www.rvdata.us.

It was stated that metadata is first captured onboard using a standard form which is submitted on-line in real-time. This is mainly for underway data.

A.5.4. RHOV Design Update – Bob Houtman (NSF)

Plans for the replacement of *Alvin* have been in development for some time, but after cost estimates for the new occupation sphere doubled, the project was put on hold and the Wood Hole Oceanographic Institute based project office undertook a re-evaluation. As a consequence of this, it has been decided to undertake a modified (Phase 1) project by building a new larger 6500m depth rated sphere and integrating this with existing *Alvin* (4500m) components. There are technological issues with both the syntactic foam density and battery power required for 6500m operations, but the projected time line now calls for a final design review in September 2010; sphere delivery in March 2011 and initial sea trials in early 2012.

A.5.5. NEREUS Hybrid ROV/AUV – Bob Houtman (NSF)

The Hybrid Remotely Operated Vehicle *Nereus* has been in development for a number of years and made its first successful dive in 2008 followed by other successful dives including Challenger Deep. The vehicle is designed with ceramic flotation spheres and pressure cases for operations down to 11,000m and employs a 40km fibre-optic tether derived from torpedo technology. Highly manoeuvrable, *Nereus* may be used for under ice missions and can be deployed from a moderate size ship.

It was stated that the tether is released (cut) when transitioning to an autonomous mode. Incorporation of a Reson type multibeam echo sounder is being investigated.

A.5.6. Ocean Observatories Initiative – Bob Houtman (NSF)

The Ocean Observatories Initiative is intended as an interactive ocean laboratory integrated by a leading-edge, multi-scalar cyber infrastructure. The programme was approved by the National Science Board in May 2009 and a cooperative agreement was signed in September 2009. Following a 5 year construction programme costing \$386M, it is intended to operate for 25-30 years. The programme incorporates the following elements:

- 4 Global scale sites employing both fixed and mobile assets:
 - Irminger Sea
 - Argentine Basin
 - Southern Ocean
 - Station PAPA*
- 3 Regional cabled (both power and bandwidth) sites in the NE Pacific:
 - Hydrate Ridge
 - Axial
 - Mid-plate (no science)
- Coastal scale arrays employing mobile platforms as well as moorings connected to a seafloor cable:
 - Mid-Atlantic Pioneer Array
 - Pacific North West Endurance Array

These arrays will all require large vessel support, while there are obviously concerns over fishing interference which is being mitigated by permitting and up-front liaison, as well as trawl resistant nodes.

A.5.7. NERC/CSIC Trans-national Seismic Facility – Geraint West (NOCS) / Arturo Castellon (CSIC)

NERC and CSIC signed an agreement in 2009 with the vision of developing a world class trans-national capability for marine geophysics. This initiative is underpinned by 3 elements:

- A joint pool of UK and Spanish geophysics equipment;

- A trans-national team capable of supporting about 100 seagoing days per year and
- A synchronized planning process.

A.5.8. INMARTECH 2011 – Fred Smits (NIWA)

The International Marine Technicians (INMARTECH) symposiums were initiated by ISOM in 1996 in order to establish a forum for international exchange of knowledge and experiences between marine technicians and to improve equipment performance during scientific cruises on research vessels. The next INMARTECH will be the 8th symposium and will be hosted by NIWA in Wellington, New Zealand between 26 - 28 January 2011. The theme will be ‘Technology on a Shoe-string’ (post-meeting note: now amended to ‘Marine Technology – Value for Money’). The proposed agenda themes will include:

- Underwater observations, still and video cameras, tripods and traps
- Coastal mapping and sampling techniques
- Shipboard handling, cable, strops and winch technology, handling heavy and large equipment, chemicals
- Equipment and instrumentation improvements
- Procedure innovations
- Buoys, moorings and long-term deployments
- Underway data collection, storage and archiving
- New vessels and vessel modifications
- Training and exchange of marine staff
- Green ships and energy saving
- Show and tell

A.6. Theme 5: Legal and Insurance

It was noted that the past year has been a significant, but unwelcome milestone in the history of ISOM, with 5 lives having been lost; 3 of them Masters. It is also worth noting from delegates' reports that while there is always a tendency to let one's guard down and relax safety standards in the 'comfort and security' of the shipyard, this is historically a much riskier environment than the High Seas. This situation is then compounded for those that don't have hull insurance, since they'll invariably find themselves liable in case of loss, and while BIMCO represents some extra protection, unless a higher level of cover can be agreed, the default is twice the value of the contract. Meanwhile other events around the ISOM community, including the devastating effect of the Chilean Tsunami on the *Cabo de Hornos*, CSIRO's tallow filled prop, 3 near catastrophic incidents in Norway, CEFAS' trawling of a sunken yacht and finally USA's 'Z' drive problems, all underline that most incidents are caused by external factors and are difficult to attribute to any form of negligence. ISOM's discussions concerning both medical and safety standards are therefore highly pertinent.

A.6.1. Marine Insurance - Prof. Dennis Nixon (UNOLS)

Following several years of sustained increases in insurance costs, the "Global Marine Insurers Report 2009," as prepared by Astrid Seltmann for the 2009 International Union of Marine Insurers (IUMI) Conference in Bruges, presents a more complex and uncertain situation, reflecting fluctuating pressures in the global economy. After sustained rises in the total of worldwide marine insurance premiums, 2008 saw a slight decline in all classes except hull insurance. Liability continues to be the smallest element of the total, while cargo remains the dominant class and consequently the main driver of rates. While the UK continues to be the primary player in the P&I market, insuring 90% of world's tonnage, distribution of hull market share is more diverse, and through 2009 and 2010, hull vessel values have fallen as business has plummeted, resulting in falling ship values. This is reflected in not only a somewhat flat trend in new-build prices, but has consequently also had an impact on the 'agreed value' (i.e. what the vessel could be sold for), meaning that the majority of hulls are insured for less than what has been invested.

In analysing trends it was noted that while the 2008 saw fewer major hull claims, the profitability of insurance companies is in part dependent on their ability to make money on lower premiums. Nevertheless, the broad picture is one of a slightly softening market which overall is probably going to stay flat for a few years. The UK P&I Clubs underline this view in observing that the 2009 policy year showed signs of lower levels of claims due to the economic recession, while February – August showed an overall improvement in claims reserves. Overall, there was a release of \$9 million with releases on recent policy years which were offset to an extent by slightly adverse development on older policy years. In summary, the view was that operators should not be experiencing an increase in premiums if they've had a loss-free year.

A.6.2. Marine Legal Issues - Prof. Dennis Nixon (UNOLS)

As usual, a range of shocking and wacky incidents were used to illustrate a sobering message of what can go badly wrong. Delegates were directed in particular to the reports of the UK's Marine Accident Investigation Board (MAIB - <http://www.maib.gov.uk>) which is an extremely valuable resource. One example which generated particular discussion was the *F/V Seaflower* which rolled over on to its side as the crew pumped fuel in order to compensate for a list while transferring ballast forward to alter its trim for entering doc. While IFREMER indicated that they conduct a stability experiment every 5 years for their vessels (and monitor during the interim with a stability book), UNOLS indicated that it conducts a weight survey every 5 years and only in cases of significant change conduct an inclining experiment. Both agreed that this could be a time-consuming task.

The following issues were highlighted in particular:

- Refugees at sea – the arrest of the captain and first officer of the *Cap Anamur*, after it landed Sudanese refugees in Sicily, was highlighted and although the officers were subsequently released, the incident potentially sets a worrying precedent.
- Person weight standards – after last year’s example of a small vessel capsizing due to being overloaded with overweight personnel, a further case of Canadian *Fireboat 08-448B* was highlighted: ISO standards specify the weight of the average person as 75kg, but this compared the average weight of a Canadian male being 81.5kg, while the actual weight of persons on this vessel averaged 94.5kg. ISOM delegates were encouraged to bear this issue in mind in respect of lifeboat capacities.
- Environment – exemplified by the Canadian Government being sued by NGOs to prevent a clearance being granted to the *Marcus G. Langseth* for a hydrothermal vent seismic survey related to a study on earthquakes and tsunamis. It was also observed that US pollution standards are now more stringent than ever and the *MV Theotokos* was recently prosecuted over ballast water requirements.
- Cutting corners – the example of the *RV Bay Hydro 2*, a new NOAA hydrographic catamaran, was highlighted; with a crew member completing installation of UPS to save money was electrocuted and almost died.
- Alcohol – continues to be a high-profile problem and 2 cases involving UK vessel masters were highlighted.
- Mooring (berthing and unberthing) – the UK P&I Club estimated that in the past 20 years, it has spent in excess of \$34M settling cases related to mooring operations, mostly involving the handling of ropes and wires, with 14% of accidents resulting in death.
- Fatigue.
- Complacency.
- Firearms.
- Language – with the increasing international nature of crews, delegates were invited to highlight any incidents in which miscommunication had been a factor.
- Lifeboat testing – continues to be a high-profile way of demonstrating how dangerous life-saving equipment can be.
- Drug testing.
- Personal Locator Beacons (PLB) – these have now become fairly standard equipment on racing yachts, but not, it was noted, on research vessels. UNOLS had estimated about \$15k to outfit one of their vessels, but other observations were that while some models provided reliable DF, they lacked a flashing light. This may be due to the fact that there is a tendency to make PLBs cheap for the yachting market, but the need for more reliability for RV ops could make them more expensive.
- Piracy – while there have been a higher number of incidents, less of these have been successful, added to which there is now an increasing array of non-lethal technologies and measures available to operators in order to deal with pirates. Most insurers have now therefore dismissed any piracy premium discounts they were previously offering.

A.6.3. IMO regulations, Arctic and Antarctic Rules Update - Fred Smits (NIWA)

The sinking of the *MV Explorer* in Antarctica in 2007 (see:

<http://www.photobits.com/dl/Explorer%20-%20Final%20Report.PDF>) has been a major wake-up call concerning vessel operations in the region. As a consequence, the Antarctic Treaty Consultative Meeting (ATCM) XXI established a separate technical meeting, the Antarctic Treaty Meeting of Experts (ATME), to look at the risks of cruise vessels working in Antarctica. This met in Wellington, NZ, in December 2009 and highlighted that around 35-40,000 tourists visit the region each year, with a peak of 46,265 in 2007/8 on a variety of ships, many of which are old, not

ice-strengthened, burn heavy fuels and operate under flags of convenience. The recommendations of the ATME were:

- Development and implementation of “IMO Polar Code” - IMO started work in February 2010 on modifying the existing “Guidelines for Operating Ships in Ice-Covered Waters” into a mandatory code, with an aim to implement this in 2012. The code will include specific requirements on damage and intact stability.
- Training - formal training of ice navigators and crew is a priority as is better training for all onboard in the use of life saving equipment.
- Improved hydrographic charts and ice/weather information – this is a high priority while mandatory ship reporting and ship routing in congested areas is recommended.
- Heavy Fuels – spills of heavy fuels are particularly difficult in Antarctica, not only because of sparse resources, but also because it doesn’t disperse in the cold. An amendment to MARPOL was approved by MEPC in July 2009 prohibiting the carriage and use of heavy fuels (180); however, implementation of this is an issue.
- Annex V to MARPOL (Discharge of Garbage) – The main concern is lost/abandoned fishing gear such as toothfish long lines, but there are significant implications for scientific equipment such as XBTS, sonobuoys and moorings. It has been suggested that Antarctica should become a zero-discharge regime.
- Port State Control (PSC) – There needs to be closer cooperation between nations as this is the key to success of any existing and new measures.

It was stated in discussion that the report on the *MV Explorer’s* sinking indicates both a leaking watertight door and back-flooding through toilet system, and as a consequence, ABS would be seeking to tighten up class requirements in these areas.

Delegates were also referred to the Arctic Marine Shipping Report:

http://web.arcticportal.org/uploads/4v/cb/4vcbFSnnKFT8AB51XZ9_TQ/AMSA2009Report.pdf

A.6.4. Revision of MSR Guidelines – Roland Rogers (NOCS)

ISOM was invited to be represented at a meeting of the Group of Experts convened in April 2009 in New York under the auspices of the United Nations General Assembly to revise and finalise a new draft of the UN publication, “*Marine Scientific Research: Guide to the implementation of the Relevant Provisions of the United Nations Convention on the Law of the Sea*”. The short notice given made it impractical to consult with all ISOM members and it was agreed that since Roland Rogers was attending on behalf of UK interests, he would represent ISOM as well.

On the positive side, it was pleasing to see that the ISOM Code of Conduct was recognised as a key document in advising this process, but as the new document has developed since the meeting it has become clear that it has become more of a legal document than an operational guide. Consequently, informal discussions between Roland Rogers and Liz Tirpak have highlighted that the revised guidelines, due to be published during autumn 2010, could be further simplified to facilitate their use by ship operators and scientists. *ISOM Chair and Vice-Chair have therefore agreed that Roland Rogers and Liz Tirpak would draft a simplified guide, “ISOM Guide to the completion of an MSR Application” which will be circulated to members prior to the next ISOM meeting.*

A.6.5. Environmental Update – Roland Rogers (NOCS)

The regulatory environment is becoming more complex both nationally and internationally, and the Convention on Biological Diversity in particular is having an increased impact. Other developments which are impinging on ship operators include:

- Ship recycling requirements (so called ‘Green Passport’);
- MARPOL and grey water discharge;
- Low sulphur fuel – EC directive limiting marine fuels to 0.1% by mass came into force 1 January 2010;
- Polar Code – transition from a voluntary to a mandatory regime (see A.6.3);
- Acoustic disturbance and ocean noise – continues to be a high profile issue, particularly in respect to seismic surveys;
- National legislation – e.g. scientific moorings have previously been an exempted activity, but UK Marine and Coastal Access Bill 2009 suggests that it may be necessary to obtain licences for scientific activities carried out on waters outside UK jurisdiction and not already exempted.

A.6.6. Options for ISOM membership of IMO/MEPC – Roland Rogers (NOCS) on behalf of Fred Smits (Chair) & Geraint West (Vice-Chair)

Consultative status is a category of membership which is designed to enable the IMO to obtain information or expert advice from NGOs with specialist knowledge pertinent to particular IMO activities and to enable such NGOs to represent large interest groups to express their points of view to the IMO. On the face of it, this would suggest that ISOM membership would be entirely appropriate. However, it is clear that to be considered, such an organisation has to provide a number of documents which confirm not only its interests and heritage, but also its legal status. While ISOM could easily fulfil the former, it is obvious that as an ad-hoc group, ISOM would be unable to meet the later requirements. In view of this, it is self-evident that it is inappropriate to take this issue further. *It was agreed that ISOM members would seek to better educate their national delegations to IMO and MEPC, and that a small brochure/flyer outlining the activities and membership of ISOM should be produced. NERC agreed to take the lead in this.*

A.6.7. Chartered Vessels – Round-table led by Per Nieuwejaar (IMR)

Considerations to be borne in mind when chartering a vessel for a science cruise include:

- Scientific suitability of the vessel;
- Healthy working conditions;
- Ship, equipment and personnel safety;
- Protection of the environment and
- Fair wages and working conditions for the crew.

Having outlined these, it was suggested that ISOM might consider setting up a code that documented the following:

- Stated requirements for charter;
- Required documentations of compliance;
- Vessel inspection;
- Database with ”lessons learned” about ”non-member vessels” previously chartered by ISOM members;
- Cruise leader post-cruise evaluation report;
- Develop a ”Chartering” manual and
- Only rent pre-qualified vessels if possible.

It was also suggested that allied to the above, it would be worth documenting best practices for both the chartering of vessels for scientific work and when staff are embarked in another ”unknown” vessel.

The USA added that this situation is covered by Chapter 18 and Appendix C of its Research Vessel Safety Standards (http://www.unols.org/publications/manuals/saf_stand/contents.htm) which provides a procedure for a UNOLS superintendent or contractor to conduct an inspection of the vessel. The main problem, is that both scientists and contracting groups have a tendency to be oblivious of these, and in some cases are eager to press a case for being exempt, especially when this is tied to income. It was also noted that enforcing the requirements is especially problematic when the vessel in question is small and only being hired for day trips.

In further discussion, attention was drawn to the International Marine Contractors Association (IMCA) Common Marine Inspection Document (CMID) (www.imca-int.com/documents/divisions/marine/docs/IMCAM149.doc) and that it is now possible to register on a website and both upload and view CMIDs on the database (<http://www.imcacmid.com>) Several delegates from the commercial world confirmed that this is a fairly common industry standard. Further discussion centred on how ISOM might better disseminate useful information on different themes to members through its web portal. NIOZ currently host the website. *It was agreed that members would consider how the ISOM website could be improved.*

A.7. Theme 6: Cooperation and Outreach

A.7.1. Eurofleets – Jacques Binot (IFREMER)

Eurofleets (www.eurofleets.eu) is a ca. €9 M (€7.2M EU contribution) programme comprising 24 marine institutes, universities, foundations and SMEs, from 16 European countries. After a protracted negotiation period, the project commenced on 1 September 2009 and will last for 4 years. Immediate priorities are:

- Recruitment of Associated Partners such as IfM-GEOMAR, ESF Marine Board, BONUS;
- Establishment of its three advisory committees;
- Definition of indicators for the Quality Assurance Plan and
- Launch of an initiative for the renewal of European Regional fleets (including the ESFRI roadmap).

A.7.2. Ocean Facilities Exchange Group (OFEG) and OFEG-Tech – Erica Koning (NIOZ)

OFEG (www.ofeg.org) facilitates the exchange of ship time and major pieces of equipment based on the ‘bartering’ principle, including joint cruises. Its 6 member agencies (NERC, BMBF, IFREMER, NIOZ, CSIC and IMR) run multiple ship fleets (except NIOZ), comprising 70% Ocean and Global Class ships in Europe. OFEG –TECH has now been working for two years and is generating real benefits through increased information exchange, sharing of equipment, staff and technology.

Future OFEG-TECH meetings will rotate around the OFEG partner countries, covering topics based on specific areas of interest. The following topics have been identified as key items for future meetings:

- ROV technician exchange and interoperability;
- Ship software and data systems; networking, data acquisition;
- Post processing;
- Deep sea cable technology;
- Coring technology and development;
- Cross compatibility of equipment pools and
- Equipment loss, lessons learned, reasons, solutions & consequences.

The next meeting of OFEG will be in Bergen, Norway in Apr 2010, while OFEG-Tech will next meet in Kiel, Germany in Nov 2010,

A.7.3. European RV Operators (ERVO) Chair on behalf of Andre Catrijsse (VLIZ)

The 11th ERVO meeting (ERVO 2008) was hosted by Technical University of Denmark (DTU Aqua) in Copenhagen 14 – 15 May 2009, with 28 representatives from 20 organisations in 14 different countries. The main issues discussed during ERVO were:

- National updates & new builds;
- Ballast water treatment;
- Winch technology;
- Response to loss of lives at sea;
- Eurofleets and
- ESF Marine Board initiatives.

There was more general discussion at ERVO concerning apparent overlaps with ISOM and the consequent need to re-structure the meeting's format and define its relationships with other fora like ISOM, Marine Board and Eurofleets.

The 12th ERVO meeting will be hosted by the National Oceanography Centre in Southampton, UK, on 5 and 6 May 2010. It is aimed to make this more of an interactive workshop rather than presentations; however, the main agenda topics will be:

- ERVO way ahead and future;
- Eurofleets work packages and ERVO and
- National updates (as posters).

A.7.4. Oceanic (Ocean Information Center) Chair on behalf of Doug White (OCEANIC)
In 1991, the US Federal Oceanographic Fleet Coordination Council began using OCEANIC, maintained at the College of Marine Studies at the University of Delaware in Lewes, Delaware, to post their ship schedules and characteristics, anticipating the optimisation and planning of resources through the use of one co-ordinated online site. In 2002, OCEANIC began a collaborative data-gathering effort with the EurOcean Portal project to update specifications on the European fleet, but in 2005 the U.S. agencies that had been supporting the OCEANIC database decided they could no longer provide funding and oversight for the database. Since this had been OCEANIC's only source of funding, the site has been put into maintenance mode and little has changed regarding the International RV sites layout, design, and underlying data structure. OCEANIC are hopeful that support for continuing its activities can be found and requested that ISOM members discuss their needs and concerns in order for them to be taken into account if a reworking of OCEANIC takes place.

A.7.5. EurOcean Web Portal - Per Nieuwejaar (President, EurOcean)
EurOcean (www.eurocean.org) was created in 2002 as the result of a joint French-Portuguese initiative. It now has 12 full member organisations from 9 European member states and 3 co-operating member organisations. It has an office in Lisbon and receives financial and technical support from its member organisations and co-operating organisations. Its objectives are:

- To facilitate access to, and compile relevant information on, marine science and technology at national and European levels;
- To encourage communication and cooperation between the European organisations with activities within marine research and
- To initiate the preparation of analyses, reports and other products.

EurOcean supports a number of informational databases on research vessels, underwater vehicles, large exchangeable instruments and European marine research funded projects, as well as publishing a variety of items for public outreach and networking activities. It is also now a participant in several FP7 projects, and is also being linked to POGO.

A.8. Closing of 23rd ISOM

A.8.1. ISOM Governance Issues

Following on from the issues raised by the Chair in the opening session (see A.1.6), the following way ahead was agreed:

- ‘Membership Rules’ - *The Membership working group had made some progress, but wished to take more time to consider the issues and provide a report to ISOM members via email within the next couple of months.* Notwithstanding this, they recommended immediate adoption of:
 - Country Co-ordinators – some countries had internal political considerations which made election of ‘representatives’ problematic and possibly time-consuming; and
 - Increased contribution for attendance at meetings. In discussion with delegates it was agreed this should be set at €200 per delegate for the next meeting.
- INMARTECH - The working group had agreed an outline for the next meeting, but would continue their work in the interim before the next INMARTECH meeting.
- Title of ISOM – An item was raised from the floor observing that the inclusion of the word ‘Meeting’ in the title of ISOM was no longer appropriate since its activities were now becoming increasingly ongoing in nature. Furthermore it was suggested that the current title confuses outsiders since reference to ‘Research’ is missing. *It was therefore agreed that while members strongly wished to retain the heritage of ISOM, it was now appropriate to rename the group to the International Research Ship Operators (IRSO).*

A.8.2. Election of new Vice-Chair for 24th and 25th ISOMs

In the absence of any nominations at the meeting it was noted that Geraint West had conducted preliminary discussions with Ron Grady about taking on the role. ISOM members agreed that further consultations would be progressed by email over the next few months and that the election would be conducted by correspondence.

A.8.3. Suggestions and Topics for ISOM 24 - Fred Smits (Chair ISOM)

It was agreed the concept of shortening delegates’ country reports in order to make time for round-table discussion on other matters had broadly worked, and that, in principle, this structure should be followed for the next ISOM. It was also agreed that the workshop prior to the main meeting had been extremely useful and there was great benefit to be gained in planning another one in 2011. One suggestion was to focus on the theme of permitting, regulation and the legal provisions of MSR. However, it was agreed that a workshop looking at the role of research ships in the future in the context of changing technologies such as observatories and autonomous vehicles would be of more widespread appeal, with the USA in a good position to provide expert speakers on this issue.

A.8.4. Date, Place and Venue for 24th ISOM (2011) – Tim Schnoor (ONR)

Tim Schnoor, on behalf of Captain Dan Schwartz invited ISOM members to participate in the 24th ISOM which will be hosted by the University of Washington, School of Oceanography in Seattle, USA 25-27 May 2011.

A.8.5. Date, Place and Venue for 25th ISOM (2012) – Geraint West (NOC)

In view of the fact that the inaugural meeting of ISOM was hosted by the UK in 1987, Geraint West offered to host the 25th meeting at the National Oceanography Centre, Southampton, UK. The intention would be to move the meeting back to its historical autumn timing in October 2012.

A.9. Adjourn

Fred Smits thanked Klaus von Broeckel and his team for their excellent organisation and hosting of the meeting, after which it was adjourned.

A.10. Undertakings

1. A.2.10 *Dennis Nixon undertook to provide advice to Klaus von Broeckel on consequential losses of science.*
2. A.3.2 *Toni Moate asked for ISOM member support for support with the following issues:*
 - *Do any of the adjustments to Functional Requirements (see above) ring alarm bells?*
 - *What laboratories have other agencies containerised, and can CSIRO access specifications?*
 - *What models are other research agencies using to allocate vessel time?*
 - *What are the traps for unwary players, and who in the ISOM community might be willing to mentor CSIRO through the process?*
3. A.4.5 *Olivier Lefort and Geraint West agreed to compile a short questionnaire and survey the medical provisions that ISOM members have in place.*
4. A.6.4 *ISOM Chair and Vice-Chair have therefore been agreed that Roland Rogers and Liz Tirpak would draft a simplified guide, "ISOM Guide to the completion of an MSR Application" which will be circulated to members prior to the next ISOM meeting.*
5. A.6.6 *It was agreed that ISOM members would seek to better educate their national delegations to IMO and MEPC, and that a small brochure/flyer outlining the activities and membership of ISOM should be produced. NOCS agreed to take the lead in this.*
6. A.6.7 *It was agreed that members would consider how the ISOM website could be improved.*
7. A.8.1 *The Membership working group had made some progress, but wished to take more time to consider the issues and provide a report to ISOM members via email within the next couple of months.*
8. A.8.1 *It was therefore agreed that while members strongly wished to retain the heritage of ISOM, it was now appropriate to rename the group to the International Research Ship Operators (IRSO).*

B. Country Reports


B.1. Australia – Ron Plaschke (CSIRO)

B.1.1. Overview

CSIRO is currently assessing international proposals to build Australia's new Marine National Facility (MNF) research vessel, which is expected to be approximately 85m in length. The new vessel will be named *The Investigator* and commissioning is planned for 2012/13. Various business model options for the new vessel operation will be assessed before this time. A separate project will be undertaken to provide modular equipment for *The Investigator*.






Southern Surveyor will continue to serve as Australia's MNF until *The Investigator* arrives and a new enhanced maintenance project (CMAN2) has been established to maintain the reliability of the 39 year old vessel through this period.

B.1.2. CSIRO MNF Vessel

Name	Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Southern Surveyor 	Ocean	66	1972 (converted 1990, 2002)	168 days in 2008/09	Australia, NZ, Fiji in 2008/09	New enhance maintenance program CMAN2. Major dry-docking November 2009.	See A.3.1 above

Further information can be found at <http://www.marine.csiro.au/nationalfacility/>

Other Australian Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
RSV Aurora Australis		Polar Ocean	95	1990	184	Antarctic, Southern Ocean	Has provided Antarctic support, resupply and marine science services under charter from P&O Maritime Services to Australian Antarctic Division since 1990. 184 charter days in 2009/10 season.	Current charter ends in 2012.
Solander			36	2007		Tropical Australia	Australian Institute of Marine Science	
Cape Fergusson			22	2000		Tropical Australia		
Negerin			25	1985		South Australia	South Australian Research and Development Institute	
Naturaliste			23	2001		Western Australia	Western Australian Department of Fisheries	

B.1.3. Equipment**Loss of SeaSoar**

CSIRO's towed undulating CTD system "SeaSoar" was lost from *Southern Surveyor* in deep water east of Sydney in November 2009. The cause appears to be due to unexplained cable termination failure and/or striking a submerged object. SeaSoar had been developed over many years at CSIRO and information is now being gathered towards replacing this capability. During the interim, *Southern Surveyor* will slowly tow a modified CTD package behind the vessel (raising and lowering on the winch) to provide some capability for 3D CTD mapping on voyages where this is required.



Data Collection, Visualisation and Management System

During 2009 a new data system from IFREMER was commissioned on *Southern Surveyor* and has provided enhanced data management capability to CSIRO and MNF clients.

B.2. Belgium – Andre Pollentier (Belgium Federal Science Office, Royal Belgium Institute for Natural Sciences department MUMM)

B.2.1. Overview

B.2.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations	Notes	Plans for Replacement
Belgica		Regional	51	1984	180	32N-65N, 15W-15E. Mainly Southern Bight North Sea & regional area beyond (English Channel, Irish Sea, and eastern Atlantic continental margin)	Belgica, owned by the Federal Science Policy Office, is operated by the Belgian Navy on behalf/expense of RBINS - MUMM which manages the vessel. The RV is manned by only one fixed crew. Operating cost in 2009: 1.950 M€. In 2009, following EC regulations concerning the use of halogenous gases, the fire detection and extension system has been replaced. Three CASCO claims (incidents occurred in 2006-2007) have been settled satisfactory by the insurance company (franchise was 37.500 €, now 44.000 € each claim). No incidents since 2007.	<i>In 2009 a modest feasibility study either to do a midlife conversion or to replace the RV has taken place with a clear outcome : new built. In 2010, pending agreement of the Ministry Council, tendering for the design study of the new built ship will take place.</i>
Zeeleeuw		Regional (Refitted Pilot tender)	55	1977	150	Coastal Zone	Operated by VLIZ & Department Fleet (Flanders Min. Science & Public Works)	<i>In 2008 an agreement between the Ministry of Science & Public Works has been signed to substantiate the research facilities of the Flanders Marine Institute task through the funding for a new built coastal research vessel (length about 35 meters) & land based facilities.</i>
NEW		Coastal	ca. 35			Near coastal area Belgian Continental Shelf Hull - Le Havre - Bremerhaven	<p>Flanders Marine Institute</p> <ul style="list-style-type: none"> • Project started in 2005 • Complimentarily with Belgica • End 2006 : concept • Aug 2007 : allocation of 1.1 mil €/yr (ship scientific equipment + land based facilities) • 2009 budget available • 12.5m € (including vat & scientific equip) • Tender for the new built 2009. • Negotiations with two ship yards. 	

B.2.3. Equipment

B.2.4. Cooperation

Belgica and Zeeleeuw are complementary. Cruise schedules are tuned between the two ships and an agreement on exchange scientific equipment exists.

B.3. Canada - Captain Ron Grady (Department of Fisheries and Oceans, Canadian Coast Guard)

B.3.1. Overview

Of general interest, Canada has experienced the lightest ice conditions this winter on its east coast since 1969. Conditions on the Great Lakes however, were normal. The Arctic has significant coverage with a great deal of multi-year that has shifted further south into the regions of Baffin Bay. This southward movement of hard Arctic ice may precipitate over the coming years as natural ice boundaries (bridges) that typically help hold this ice back deteriorate with warmer overall temperatures.

To this end, the requirement for Canadian scientific research vessels to operate in areas where infusions of multi-year ice exist is seen as a requirement for many years to come. The assignment of ice class will be determined from a vigorous scenario based approach. This will require an analysis of the likelihood of damage during various manoeuvres in ice or ice infested waters. The results of the analysis will determine where on the hull extra strengthening will be required.

With respect to the specifics of ship building activity in Canada with respect to research vessels, one small 18 metre vessel was delivered to the Great Lakes for limnology studies in June 2009. One other such vessel (similar design) will be delivered to the east coast for fisheries research in June 2010.


Design for two 22 metre and one 25 metre vessel was completed in December, 2009. Construction began in March 2010 with delivery of all three vessels due in March 2011.

A complete review of both major projects, the Offshore Oceanographic Vessel and three Offshore Fisheries Science vessels, was completed over the past year. It is anticipated to be in full design contract by June with construction awarded by the middle of 2011.

The Polar project is in the project definition phase with each operational requirement undergoing a vigorous validation phase. It is anticipated that the Coast Guard will be ready to enter into a design contract by mid 2011.

All vessels mentioned below will be following a “design for build” process.

B.3.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Replacement for the CCGS HUDSON		Regional	90 M	1964	200 r	Eastern North Atlantic	Vessel is planned for replacement in 2014. Crew size is 30 + with 25 scientists Pengo winch with capability of 30 Metre piston cores. Two cranes and gallows. Most scientific work is done from the foredeck of this ship.	<i>Plans are to replace to the vessel in 2014. Design should be completed in 2011.</i>
Offshore Fisheries Research Fleet (4 vessels)		Regional	57 to 65 Metres	1977 to 1984	170	Eastern North Atlantic and Western Pacific		<i>Plans are currently underway to replace three of the OFSVs on the East coast with two new ones and the one vessel on the West Coast by 2014.</i>
Inshore Fisheries Research Fleet (5 vessels, three being replaced)		Coastal	18 to 30 Metres	1980 to 1992	150 to 200 days	Near coastal (ice free) waters of Canada's east and west coasts.		<i>Entering construction two replace three by March 31st, 2011.</i>
Specialty Vessels		Near Coastal	13 Metres +		200	Near coastal (ice free) waters of Canada's east and west coasts.		<i>Delivered the new 18 Metre CCGS KELSO to replace the 16 Metre CCGS SHARK on the Great Lakes for scientific research. 2nd vessel is near completion for the East Coast.</i>
Polar		Global	140 Metre		TBD	High Arctic	TBD	<i>Design to commence mid 2011. Delivery is planned for 2017.</i>

Addition to Fleet

B.3.3. Equipment**B.3.4.** Cooperation

Canada enjoyed some excellent cooperation from many members of ISOM with respect to concept development of the OFSV with respect to layout and type of deck used for the trawl deck. Further we have benefitted greatly by spending a great deal of time onboard the RV Maria S Merian thanks to efforts of Dr. Klaus von Broeckel who help secure connections.

B.4. Canada – Yves Perron (DRDC)


B.4.1. Overview

Defence Research & Development Canada is a special agency of the Department of National Defence in Canada. The Agency has seven research centres and employs approximately 1900 employees. The mandate of Defence R&D Canada - Atlantic is to conduct research and development in the areas of Underwater Sensing and Countermeasures, Naval Command & Control Information Systems, Naval Platforms, Air Platforms, Signature Management, Emerging Materials and Modelling and Simulation. These R&D activities support operations, acquisition, maintenance and requirements planning by Canada’s Navy and Air Force.

Within undersea warfare, DRDC Atlantic leads in sonar technology , mine countermeasures, and torpedo defence. We are expanding our expertise in naval command & control and information systems. We also lead in naval platform R&D, encompassing structural modelling, computational fluid dynamics, and operational effectiveness applied to ships and submarines. We manage air platform technology programs for the benefit of Air Force operations, including aeropropulsion, aerodynamics, flight mechanics, structures and materials. Our R&D in signature management investigates and reduces the vulnerability of military platforms to emissions and reflections of energy. Our emerging materials R&D supports a variety of Canadian Forces material requirements, from "functional" and "smart" materials to advanced power sources. We employ modelling and simulation to develop and integrate platform and combat systems models for acquisition, requirements, rehearsal and training.

CFAV QUEST is operated by the Canadian Navy Auxiliary Fleet Authority and tasked by DRDC Atlantic in support of the maritime R&D program.

B.4.2. Vessels

Name	Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
CFAV QUEST (AGOR 172) 	Ocean Research Vessel	77 m	1969 Mid-Life refit 1997-1999	125 sea days	Scotian Shelf, North Atlantic, East Coast North America, Gulf of Mexico	Crew: 23 Science Berths: 20 Electronics Radar: Racal-Decca Bridgemaster 2, "X" band and "S" band Communication: Full suite of modern communication equipment including Fleet Broadband Special: • Echo sounders	<i>Maritime S&T Experimentation Capability project is in its option analysis phase aims at re-capitalizing 3 main R&D assets including CFAV QUEST. The project is aiming to entre definition phase in 2012 and implementation phase in 2014 for a new vessel available for operation in 2016.</i>

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
							<ul style="list-style-type: none"> • Sub-bottom profile • Current profiler • Directional wave measurement system • Wave height meter • Environmental sensor • Bathymetry • Expendable bathythermograph launcher • Radio direction finder • Underwater telephone 	

http://www.atlantic.drdc-rddc.gc.ca/factsheets/TS0102/TS0102_eng.html

B.4.3. Equipment


DRDC Atlantic operates an Acoustic Calibration Barge. Details found at URL below.

http://www.atlantic.drdc-rddc.gc.ca/factsheets/TS0203/TS0203_eng.html

B.4.4. Cooperation

DRDC Atlantic contributes actively to activities of The Technical Cooperation Panel (TTCP) between Australia, Canada, New Zealand, United Kingdom and the United States of America. We worked closely with the NATO Undersea Research Centre for some programs and have bi-lateral agreements with the United States of America, United Kingdom, Australia, the Netherlands and Sweden.

B.5. Chile - (IFOP)**B.5.1. Overview****B.5.2. Vessels**






Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Cabo De Hornos		Ocean	74.1	In-build		SE Pacific	Displacement: +3000T Berths: 43 crew + 25 scientists	

B.5.3. Equipment**B.5.4. Cooperation**

B.6. China - (IOCAS)

B.6.1. Overview

B.6.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
"Ke Xue Yi Hao"		Ocean	104	1981.1	200	China sea, the north-west area of the Pacific Ocean	Displacement: 3300 ton	
"Ke Xue San Hao"		Ocean	73.9	2006.7	200	China sea	Displacement: 1224 ton	
R/V Shiyan 1		Ocean I	60.9	2009.4			Displacement: 2500 ton SWATH	
R/V Haiyang 6		Global	106.0	2009.10			Displacement: 4600 ton	
"KeXue" (Science)		Global	99.6	New Build			Displacement: ~5000 ton	

<http://159.226.158.218/vessels/index.asp>

B.6.3. Equipment

B.6.4. Cooperation

Ke Xue Yi Hao supplied 54 days ship time for free, for scientists from other institutes and universities in China, in 2009, and *Ke Xue San Hao* supplied 9 days ship time for free.

B.7. Denmark – DTU Aqua , by Helge A Thomsen / Steen Silberg / Hans-Erik Mahnfeldt**B.7.1. Overview**

Research vessels in Denmark are owned and managed separately by the Universities.

As main operator and owner of the only ocean going research vessel in Denmark, the Technical University of Denmark – National Institute of Aquatic Resources (DTU Aqua) is represented here.

Besides DTU Aqua, also Copenhagen University (KU), Greenland Institute of Nature, Aarhus University (AU) including national environmental research institute and Geological Survey of Denmark and Greenland (GEUS) are main operators within seagoing field work.

<http://www.aqua.dtu.dk/english.aspx>

DTU Aqua is operating the below mentioned vessels (plus a range of small inland water crafts).

The institute also have various land based facilities for research of live organisms.

The institute has a department responsible for the various research equipment, and performing mobilisation, calibration, general service and development.

Developments in 2009 include employing a dedicated vessel operator ashore (marine superintendent), implementing ISM/ISPS in DANA, investigating possibilities of building new vessels, and preparing Danish Centre for Marine Research (DCH).

A general cost adjustment process for the entire DTU Aqua institute has also taken place.

As of 1 January 2010, a new national centre has been established: the Danish Centre for Marine Research (DCH).

The purpose of this centre is to aid the Danish research society in general with funding to cover (fully or partly) the cost of chartering ships.





The board of DCH is compiled of members of the various Universities and research institutes in Denmark.

The daily operation of DCH is placed at DTU Aqua.

<http://www.danskhavforskning.net/English.aspx>

B.7.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Dana		Global	78,4	1981	150 days/year	North Sea, Baltic, North Atlantic, Greenland	Technical University of Denmark DTU Aqua	<i>A larger maintenance docking is being planned for autumn 2010. Ongoing application process to raise funding for a replacement vessel of approx same size, but truly multifunctional</i>
Havfisken		Local	13,7	1963	200 days/year	Danish waters	Technical University of Denmark DTU Aqua	<i>Planning to replace this vessel during 2010 with a 15 m fishing vessel (1-5 years old) including smaller modifications to accommodate larger crew and a variety of fishing related research</i>
Havkatten		Local	9,6	1988	Few days/year	Danish waters	Technical University of Denmark DTU Aqua	<i>Is due for an overhaul in 2010 and expect to have more days at sea hereafter</i>
Havtasken		Local	5	1989	Few days/year	Danish waters	Technical University of Denmark DTU Aqua	
Havmusen		Local	6,3	1996	Few days/year	Danish waters	Technical University of Denmark DTU Aqua	
Various Royal Danish Navy		Global					Various Royal Danish Navy vessels. These only on ad hoc / special mobilisation basis. Charter agreements possible through DCH for Danish research projects	
Paamiut		Regional	58,6	1971		Greenland waters	Greenland Institute of Nature Deep sea fishing	

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Adolf Jensen		Local	32	1967		Greenland inland waters	Greenland Institute of Nature Fishing and research	
Ophelia		Local	15,4	1958		Danish waters	Copenhagen University Education / research	
Genetica II		Local	14,8	1961		Danish waters	Aarhus University Education / research Has suffered a fire, and presently unknown if being rebuilt.	
New		Regional Danish waters	25	Est 2013			Aarhus University. New multipurpose research vessel. North Sea, internal Danish waters and the Baltic Sea.	
"		"	"				"	

B.7.3. Equipment

DTU Aqua has a department dedicated to performing mobilisation, calibration, general service and development of research equipment.

The focus area is smaller equipment and possibilities in cost reduction in how to retrieve quality data.

Plans in 2010 are to built up a catalogue of all available mobile equipment and display it via DCH, in order to support the general pool of research equipment.

DTU Aqua have a range of equipment such as smaller video ROV, towed platforms, Triaxus, core sampler, containerised mobile labs (Galathea 3), CTDs, buoys, acoustics', pressure tank etc.

DTU Aqua has recently initiated video surveillance of commercial fishing (discard), which has just been appraised by the EU.

Through the IT-development department various successful tools has been developed including fish stock databases, Quality Index Method Rating System, Seafood Spoilage and Safety Predictor, Fishframe, Ship Information System etc.

B.7.4. Cooperation


The future vision and strategy of DTU Aqua is to further enhance cooperation both the national research community and international cooperation both within the research and the usage of vessel platforms and equipment.

B.8. Finland


B.8.1. Overview

R/v Aranda operated since 1st Jan 2009 by Finnish Environment Institute/Marine Research Center (owner, 65%) and Finnish Meteorological Institute (35%). R/v Muikku operated since 1st Jan 2010 by Finnish Environment Institute/Marine Research Center, in co-operation with University of Eastern Finland

B.8.2. Vessels


Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
r/v Aranda		Regional/Ocean	59.2	built 1989, major refit completed May 2010	120-150 days/year	The Baltic Sea (occasionally Arctic Sea)	Major refit completed May 2010. Berths: scientists 24, crew 14.	No

http://www.itameriportaali.fi/en/aranda/aranda_matkat/en_GB/2010/

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
r/v Muikku		coastal	27,7	rebuilt as research vessel in 1989	60 days/year	Coastal areas of the Baltic Sea, large inland lakes	Berths: scientific 10, crew 5.	No

http://www.joensuu.fi/eti/suurjarvi/english/valikko/index_4.html

B.8.3. Equipment

Name		Type	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Aranda: Benthos Mini Rover		ROV	1990	No operations		ROV has been under repair at manufacturer	tentative plans for replacement or major refit

For other scientific instrumentation/equipment, as well as laboratory instrumentation and facilities onboard r/v Aranda and r/v Muikku, please cf. Respective websites given above.

B.8.4. Cooperation






Aranda:

- cruise Combine 2/Hyper, EU-funded research
- cruise GOF-IA, EU funded cruise together with r/v Walter Hervig (GER)


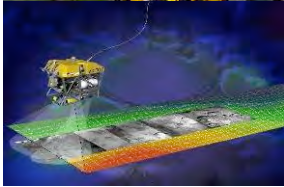
Muikku:

- 1 week cruise with FIN National Board of Antiquities/Marine Archaeology unit

B.9. France – NOT UPDATED – ISOM 22 INFORMATION**B.9.1. Overview****B.9.2. Vessels**

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Pourquoi Pas?		Global	108	2005		N. Atlantic, S. Atlantic, W. Mediterranean		
L'Atalante		Global	85	1990		N. Atlantic, S. Atlantic, W. Mediterranean	Modernisation : vessel has entered the Shipyard in November 2008. To be redelivered in may 2009 : Change of all scientific equipments including one EM 122 and one EM 710 multibeam echo sounders, rebuild of laboratories and scientific spaces, mid-life maintenance	
Thalassa						N. Atlantic and North Sea	Installation of a VSAT band Ku.	
Le Suroit			56	1975		N. Atlantic & W. Mediterranean		
Haliotis		work boat		2008			Entered service in for shallow waters mapping (<10m)	

B.9.3. Equipment

Name		Type	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Nautille							
Victor		ROV	1996			<p><i>Undergoing modernization including:</i></p> <ul style="list-style-type: none"> • <i>New power supply</i> • <i>New real time hardware and software :</i> <ul style="list-style-type: none"> ○ <i>Choice of compact industrial hardware (PCI)</i> ○ <i>New software delivered from ICE (also supplier of Ifremer AUVs real time software)</i> • <i>Implementation of 3 new work stations in a Gbit network</i> • <i>Adaptation of up to date software :</i> <ul style="list-style-type: none"> ○ <i>Techsas</i> ○ <i>Caraibes</i> ○ <i>Mimosa</i> • <i>New video HD camera for direct and vertical vision</i> • <i>Replacement of DVDs with hard disks for data storage: 8 hard disks of 750 GO for a campaign of 15 dives of 20 hours, instead of 300 DVDs!</i> • <i>New digital camera (APN 2)</i> • <i>Upgrade of navigation</i> • <i>New interface for ADCP</i> 	






B.9.4. Cooperation


B.10. Germany - Dr. Klaus von Broeckel (IFM-GEOMAR, Leibniz-Institute of Marine Sciences)

B.10.1. Overview

Different federal as well as state ministries run about 23 vessels of different sizes. In general, the fleet is ageing. Several replacements are under way (Sonne) and planned within the next few years (Poseidon, Polarstern and some smaller regional ones). For the oceanographic science community the important RVs belong to the Ministry of Education and Research (BMBF).





B.10.2. Vessels




Name	Type	LOA	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement	
Meteor		Global	98	1986	320	Mainly Atlantic Ocean	100% ownership by the Federal German Government run by shipping company Laeisz. 'Flagship' is now fulfilling its 80th expedition in the Southern Atlantic.	
Polarstern		Global (Polar)	118	1982	320	Arctic (Greenland Sea) and Antarctic (Atlantic Sector)	Belongs to Alfred-Wegener Institute in Bremerhaven: 100% ownership by the Federal German Government, run by shipping company Laeisz. Supplies regularly the German Antarctic stations.	<i>Design study for replacement is in preparation</i>
Maria S. Merian		Ocean	95	2006	320	Tropical and subtropical Atlantic, Mediterranean	100% ownership by the federal state of Mecklenburg Vorpommern run by shipping company Briese. Newest and most modern RV of fleet with excellent manoeuvrability and station keeping with pods, pump jet and DP.	
Sonne		Global	98	1969 (rebuilt 1977)	250 under BMBF charter	Pacific Ocean	100% private ownership by RF Forschungsschiffahrt GmbH. Project Management organization Juelich has a charter agreement over 250 days/ year.	<i>Will be replaced by government owned multidisciplinary Deep-Sea RV in 2013</i>
Poseidon		Ocean	61	1976	310	North and Subtropical Atlantic, Mediterranean	The 'old lady' of the Leibniz Institute of Ocean Sciences (IFM-GEOMAR) will complete her 400 th cruise in 2010	<i>Received a 3 Mill EUR refit 2009/2010 including new engines. To be replaced in 2015; discussions started 2009.</i>

Alkor		Regional	55	1990	300 each	ALKOR: Baltic & North Seas	Sister ships ALKOR (IFM-GEOMAR, Kiel): academic science; monitoring; student education HEINCKE (AWI, Bremerhaven): academic science, monitoring, student education	ALKOR receives a 3 Mill € general overhaul 2009/2010
Heincke						HEINCKE: North & Baltic Seas		HEINCKE will complete a 5 Mill e overhaul 2010

More information as well as the specific websites of most vessels can be found on Eurofleet website: <http://www.eurofleets.eu>. More information about METEOR and MARIA S. MERIAN under: <http://www.ifm.zmaw.de/de/leitstelle>.

B.10.3. Equipment

Name	Type	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement	
Kiel 6000		ROV (max. 6000 m)	2009	60	Atlantic, Pacific	Owner: IFM-GEOMAR see: http://www.ifm-geomar.de/index.php?id=3269&L=1	
Quest		ROV (max. 4000 m)	2003			Owner: MARUM see: http://www.marum.de/en/Remotely_operated_vehicle_ROV_QUEST_4000_m.html	
CHEROKEE		ROV (max. 1000 m)				Owner: MARUM see: http://www.marum.de/en/CHEROKEE_1000_m.html	
ABYSS		AUV (max. 6000 m)	2009	30	Atlantic	Owner: IFM-GEOMAR see: http://www.ifm-geomar.de/index.php?id=auv&L=1	

AUV		AUV (max. 5000 m)				Owner: MARUM see: http://www.marum.de/en/AUV.html	
MeBo		Sea Floor Drill Rig (max. 2000 m)				Owner: MARUM see: http://www.marum.de/en/Sea_floor_drill_rig_MeBo.html	
JAGO		manned submersi ble (2 pers) max. depth 400 m	1989	50	Norway, South Pacific	Owner: IFM-GEOMAR see: http://www.ifm-geomar.de/index.php?id=jago&L=1	
winch		transport able winch	2009			cable: 5000 m, 11 mm Ø, one conductor cable	
more instruments		grabs, cores, vehicles				see: www.MARUM.de www.IFM-GEOMAR.de www.AWI.de	

B.10.4. Cooperation



Mainly through Ocean Facilities Exchange Group (OFEG), SONNE cruise for NERC around Sumatra, German cruises on PELAGIA and THALASSA.

B.11. Iceland – Vignir Thoroddsen (MRI)

B.11.1. Overview

The Marine Research Institute in Iceland owns and operates 2 research vessels.

B.11.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
<i>Arni Fridriksson</i>		<i>Global</i>	70	2000	180	<i>N. Atlantic</i>		
<i>Bjarni Saemundsson</i>		<i>Regional</i>	55	1970 Partly rebuilt 2002	170	<i>Around Iceland</i>	<i>New equipment: Echosounder EK60 18,38,70,120kHz</i>	

For information on the vessels please visit our home page www.hafo.is

B.11.3. Cooperation


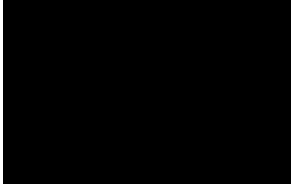
A joint survey in cooperation with Greenland Nature Institute on cod spawning in East Greenland waters. March 2009

B.12. Ireland – Mick Gillooly/Aodhan Fitzgerald (Marine Institute)


B.12.1. Overview

- The main changes to operation in the period was the addition of the Holland 1 ROV in 2009 and the ROV team being built up and developed during 2010.
- The tender process for vessel technical and operational services provision is being completed in 2010.

B.12.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Celtic Explorer:		Ocean	65.5	2002 Modified to accommodate Holland 1 ROV in 2008	330	Irish continental shelf and N. Atlantic, North Sea	Vessel completed 305 science days in 2009, including over 80 days ROV operations. Vessel accommodation modified to include 4 additional berths giving a total maximum of 22 scientific berths. 13- 15 crew berths.	No plans for replacement vessel is only 1/3 of the way through its life cycle.
Celtic Voyager		Regional	31.5	1997 Mid life refit including superstructure modifications in 2006	255	Irish coasts, Irish Continental shelf	Vessel fitted with em3002 d Multibeam, 104 days Bathymetric survey completed including Vibrocoring surveys .	No plans for replacement, vessel completed mid life refit in 2006.

B.12.3. Equipment

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Holland 1		work class ROV (SMD QUASAR)	3.1m	Delivered in August 2008	60	Irish continental shelf edge, Bay of Biscay, North Atlantic	3000m operating depth 100hp, Hydraulic Self contained portable launch and recovery system, workshop and control containers HDTV equipped. Reson Multibeam and INS navigation integration planned for 2010.	

- Losses: ROV Holland 1 detached from vessel in c. 700m of water offshore south of Ireland during FOAT. Vehicle and TMS recovered with little damage almost immediately.

B.12.4. Cooperation

- Marum ROV pilot took part in coral fish survey in May 2009.
- MI is Eurofleets partner.



B.13. Italy - CNR

B.13.1. Overview

National Research Council (CNR) operates two centralised Research Vessels by means of the Operative Programming Office, which manages CNR oceanographic infrastructures in terms of support to oceanographic research programmes carried out by CNR researchers. In particular it is in charge for the annual scheduling of the oceanographic cruise proposals for each centralised CNR research vessel (Urania and Dallaporta, owned and operated by private companies).

The arrangement of the scheduling involves both CNR researchers and a Marine Commission. Seven CNR members compose the Commission, appointed every three years by CNR Central Administration. The Office collects researchers' applications and submits them to the Marine Commission. Research items, ship time, methodology, instrumentation, expected results, funding and personnel involved are some of the information that researchers are due to provide in the application form. All the positively evaluated proposals are then scheduled for each vessel.

B.13.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
URANIA		OCEANIC	61.3	1992	326	MEDITERRANEAN SEA		
G. DALLAPORTA		REGIONAL	35.76	2000	303	MEDITERRANEAN SEA		



<http://www.cnr.it/sitocnr/UPO/gestione/infoce/UPOinfoce.html>

B.13.3. Equipment

B.13.4. Cooperation

B.14. Japan Dr. Yoshifumi Kuroda (JAMSTEC)**B.14.1. Overview****B.14.2. Vessels (JAMSTEC Fleet)**

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
NATSUSHIMA		Ocean	67	1981	285	Around Japan Mariana Area	Operated by NME	
YOKOSUKA		Ocean	105	1990	270	Indian Ocean Around Japan	“Operated by NME	
KAIYO		Ocean	62	1985	294	South Pacific Ocean Around Japan	“Operated by NME	
KAIREI		Ocean	105	1997	306	South Pacific Ocean Around Japan	“Operated by NME	
MIRAI		Global	129	1997	250	South Pacific Ocean Arctic Sea Western Pacific Ocean	Operated by GODI	
TANSEI MARU		Regional	51	1982	277	Around Japan	Operated by JAMSTEC	

HAKUHO MARU		Ocean	100	1989	258	Mariana Area North Pacific Ocean Indian Ocean	Operated by JAMSTEC	
CHIKYU		Global	210	2005	238	Nankai Trough (South of Japan)	Operated by MQJ	

Op. Days: Japanese FY 2009 (April 2009 –March 2010)
Further information can be obtained following web sites.

JAMSTEC:

<http://www.jamstec.go.jp/e/index.html>

JAMSTEC Fleet and Equipment:

<http://www.jamstec.go.jp/jamstec-e/maritec/rvm/index.html>

JAMSTEC Deep Sea Drilling Vessel CHIKYU:

<http://www.jamstec.go.jp/chikyuu/eng/index.html>

NME:

<http://www.nmeweb.jp/e/index.html>

GODI:

<http://www.godi.co.jp/>

MQJ:

<http://www.mqj.co.jp/english/index.html>

B.14.3. Equipment



B.14.4. Cooperation

B.15. NATO – Ian Sage (NURC)

B.15.1. Overview

Two research vessels operated in support of the NATO Undersea Research Centre (NURC) in La Spezia, Italy. NURC is a subordinate command to the Supreme Allied Commander Transformation based in Norfolk, VA, USA.

B.15.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
NRV ALLIANCE		Global	93m	1988	200	Mediterranean	2010 – Upgrade of davits and fast rescue boats 2010 – Upgrade of satellite comms system 25 Crew – 25 Science staff	
CRV LEONARDO		Regional	28.6m	2002	160	Mediterranean	5 Crew – 10 Science staff	

www.nurc.nato.int

B.15.3. Cooperation

Multiple joint research projects with other government and research laboratories. Ships are available for charter to other institutes.




B.16. Netherlands- Dr. Erica Koning (NIOZ)

B.16.1. Overview


In November a decision was made to start negotiations for a merger of NIOZ and CEME, the Center for Estuarine and Marine Ecology in Yerseke. CEME has its own ship, 34-m LUCTOR that mainly operates in the Schelde Estuary. Although CEME will stay in Yerseke, a merger will mean that the operation of LUCTOR is likely to become part of NIOZ shipping.

Pelagia is currently in dock for the Midlife Refit.

B.16.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Pelagia		Ocean	66	1991	323	Indian Ocean (Arabian Sea, Somali Basin, Mozambique Channel); Tropical and Northeast Atlantic Ocean, North Sea, Atlantic (Porcupine) Mediterranean.	1-4 2010: MID-LIFE REFIT including New data acquisition and data logging system. New TITAN Ultra Clean CTD system with Large Volume Samplers USBL system, New 9.6 km Kevlar Cable.	
Navicula			25	1981		Dutch, German and Danish Wadden Sea, Coastal North Sea		
Stern			15			Dutch Wadden Sea		

B.16.3. Equipment

Name		Type	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
MOVE		Mobile Lander	200		Mediterranean	First 9 months deployment is currently underway East of Menorca. Deployment ends 25 July 2010	

B.16.4. Cooperation

- Barter cruise Arabian Sea: Barter/charter for Hamburg University: 26 January – 9 February 2009
- Barter cruise Southern Indian Ocean: AWI team on board RV PELAGIA: 56 days 9 April – 1 June 2009.
- Mozambique Channel: NIOZ team onboard FRS ALGOA (South Africa): 11- 27 December 2009.
- Piston Core Test Cruise on RSS James Cook: 28 May – 5 June 2009.
- In 2009 NIOZ scientists have participated in cruises in the Russian Arctic, Gulf of Mexico, Amundsen Sea, Southern Ocean, Tropical south Pacific and Amazon River.

B.17. New Zealand – Greg Foothead NIWA (National Institute of Water and Atmospheric Research)

B.17.1. Overview

Tangaroa - Stage 1 of the DP modifications were completed in NZ, this included conversion of the existing freezer hold into a winch room and a new generator room and a new 10,000m (16mm wire) Deep Ocean winch installed along with two of the existing CTD winches from the forecastle deck. The wire from these below-deck winches are routed to the starboard side A-Frame via a cable riser. Foundations for the two new generator sets were installed and a second switchboard/control room fabricated. A new HiPAP trunk was fabricated and installed with the section through the double bottom tanks and hull penetration to be completed along with the upper 1/3 to the trawl deck. 160 tonnes of fixed ballast was installed in the double bottom tanks to maintain stability.

The balance of the DP refit, to be carried out between July and September, includes the installation of the generators and associated equipment, new switchboards, one tunnel and one retractable azimuth thruster in a new bow module, a new stern tunnel thruster, a bridge extension to the starboard side and installation of DP control gear. The ship will be in operation by mid October.



Kaharoa – Mainly working of the coast of NZ carrying out Marine Biodiversity and Oceanographic research. An ARGO deployment voyage was undertaken between November and February in which 99 buoys were deployed between NZ – Fremantle – Durban – NZ. No major modifications are planned for the ship in the short term.

Ikaterere – NIWA took delivery of a purpose built inshore research catamaran in December 2009. Design by Technicraft NZ, built by Qwest boat builders.





Principle specs:

Length:	13.9 metres
Beam:	4.85 metres
Draft:	0.7 metre
Gross tonnage:	14.9 tonnes
Engines:	Twin Cummins QSC8.3, Rated at 500hp
Propulsion:	322 Hamilton Water jets
Helm:	Hamilton Blue Arrow
Cruising speed:	25 knots+
Construction:	Marine grade aluminium catamaran with fixed foil between hulls
Power Generation:	DC/AC Inverter/Charger 4.0 kva output Onan AC Diesel Generator set - 11kva

The Ikaterere has completed one survey of the Bay of Islands in the north of NZ. The vessel is equipped with a large rear work deck with a hydraulic A-Frame for deploying and recovering equipment. We are in the process of installing a Simrad EM3000 multi beam system onto the vessel via a retractable pole through an access hatch mounted amidships between the hulls.



B.17.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Tangaroa			70	1991		NZ EEZ Antarctica	Upgrade to DP2 (DNV Dynpos AUTR) In 2010 Operational crew = 13 Scientific Staff = 30	None
Kaharoa			28	1981		NZ EEZ Tasman sea Indian Ocean	ARGO deployment voyage to Durban via Australia. Operational crew = 6 Scientific Staff = 6	None
Pelorus			10	1980		Coastal NZ	Operating crew = 2 Science staff = 2	None
Ikatere			13.9	2009		Coastal NZ	<i>New vessel launched Dec 2009</i> <i>2 x diesel/jet propulsion</i> <i>Cruise speed 27 knots</i> <i>Operational Crew = 2</i> <i>Science staff = 2 berths or up to 10 for day trips</i>	<i>New Vessel</i>

B.17.3. Equipment

B.17.4. Cooperation

Kaharoa – Charter to Scripps and University of Washington for ARGO 10 Voyage (82 day duration)
University of Aberdeen for benthic lander deployment (10 days)





Tangaroa – Joint charter with AAD (Australian Antarctic Division) and LINZ (Land Information NZ) for a non-lethal whale tagging survey
in the Ross Sea, Antarctica (44 days)




B.18. Norway - Per Nieuwejaar (IMR)

B.18.1. Overview

The Norwegian Institute of Marine Research (IMR) owns four vessels, operates two for other owners and rents another two vessels.

B.18.2. Vessels

Name	Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
G.O.Sars		77.5	2003	275	Norwegian Economical Zone including Spitsbergen and Jan Mayen. North and South Atlantic		
Johan Hjort		64.4	1990	275	Norwegian Economical Zone including Spitsbergen and Jan Mayen	HIPAP to be installed in 2010	
Håkon Mosby		47	1980	275	Norwegian Economical Zone including Spitsbergen and Jan Mayen		<i>Plans for replacement to be developed in 2010</i>
G.M.Dannevig		28	1979	180	Skagerrak	New main engines in 2010	

Dr Fridtjof Nansen			57	1993	310	West Africa	Owner: NORAD In 2009 the "Dr. Fridtjof Nansen" will work even further north on the East-African coast and in the Indian Ocean. More details, unfortunately only in Norwegian, can be found on www.imr.no or http://rederi.imr.no	
Hans Brattström			24.3	1992	200	Bergen area	Owner: University of Bergen	
Fangst			15	2000	180	Coast of Norway Bergen to Russian border	Rented	<i>Contract ends in 2011</i>
Jan Mayen			63,8	1988	75	Barents Sea	Rented.	<i>To be replaced by new Polar Icebreaker</i>
NEW Polar 10 Icebreaker			100	2012?	310	Arctic/Antarctica	See A.3.4 <ul style="list-style-type: none"> • Multifunctional (biology, oceanography, geology) • Icebreaker (DNV Polar 10) • Helicopter carrier • Logistics vessel • Training and education • Endurance • Clean ship 	

For more information about the vessels, please visit our website www.imr.no

Some cruise information for the oceangoing vessels can also be found on www.pogo-oceancruises.org

B.18.3. Equipment

- We have spent more than a year to acquire a new “Mocness” plankton sampler from the producer! So if you are going to buy one, make sure you order early!
- HIPAP to be installed on Johan Hjort in the summer of 2010.

B.18.4. Cooperation





With other agencies

The Norwegian Parliament allocated funding for concept definition for an ice going research vessel on 5 October 2007, and the IMR/RV department is the lead agency for the project. It is a joint project involving five different ministries and eight different research institutes and universities in Norway. We are currently waiting for the Parliament approval for the funding to build the vessel.

International cooperation

IMR became a full member of the Ocean Facilities Exchange Group (OFEG) in November 2006. IMR is the coordinating agency for “Networking activities” in the EUROFLEETS project and has currently the presidency in the EurOcean, the European information centre for marine science and technology. IMR/RV department is represented in the Finance Advisory Panel for the “Aurora Borealis” project.

B.19. South Africa – NOT UPDATED – ISOM 22 INFORMATION**B.19.1. Overview****B.19.2. Vessels**

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
SA Agulhas						Antarctica, Marion, Gough, Tristan da Cunha	Directorate: Antarctica & Islands Blue Water Research/Antarctic & Island Supply	See A.3.3
FRS Africana		Inshore Research					Fisheries Research	
FRS Algoa		Offshore Research					Fisheries Research	
<i>FRS Ellen Khuzwayo</i>		<i>Inshore Research</i>					<i>Fisheries Research Replaced FRS Sardinops</i>	

B.19.3. Equipment**B.19.4. Cooperation**

B.20. Spain – Mr Jose Diaz (IEO)




B.20.1. Overview






A major reorganisation of the fleet management in 2010 is considered after the retirement of the former person in charge.

The construction of the two regional vessels unfortunately is still in a stand-by situation, because all the legal issues are not cleared since we need to wait at least to the bankruptcy situation of the shipyard is legally accepted. However we are still keeping the project for two vessels and all the efforts are addressed to finish the first one in 2010.

Because of this situation and the uncertainty, a modernization plan for the local vessels F. de P. Navarro and Odon de Buen is planned in 2010.

B.20.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Cornide Saavedra		Regional Research Vessel (formerly oceanic class)	66,7	1972	320	Mediterranean Atlantic	New equipment: <ul style="list-style-type: none"> • Biol. Echosounder EK60 (18, 38, 70, 120, 200 kHz) • ADCP 75 kHz • ISO 20' Radio-isotope lab. • ISO 20' Flow-cam lab. • MDM 400 	2012 Global vessel Length 90 m, Diesel-electric: ICES 209 DP II VSAT Conceptual project ready
F.P. Navarro		Local Research Vessel	30.5	1987	220	Mediterranean Atlantic	Fish trawling, CTD Winch EA500, SCANMAR	MLU 2010 New winches and upgraded scientific capability New cabins VSAT
Odón de Buen		Local Research Vessel	24.0	1973		Mediterranean	MBES 3002D, TOPAS PS40, CTD Winch, EA500	Once new regional vessels comes into operation

José Rioja		Local Research Vessel	15.8	1984		Bay of Biscay	Coax and inox Winch	Not planned
J.M. Navaz		Local Research Vessel	15.8	1984		Bay of Biscay	Inox Winch	Not planned
Lura		Local Research Vessel	14.3	1981		Bay of Biscay	CTD Winch	Not planned
Ramón Margalef		Regional Research Vessel	46.70	2010		Mediterranean Atlantic	Fish trawling, CTD full capabilities Diesel/electric on silent block, Acoustic Isolation hull ROV, Dynamic Position, Acoustic position HiPAP 500. EA600 (12, 200kHz), EK60 (18,38,70,120,200,333 kHz) ME70, Net Sonar FS 20/25, Net Sonar ITI, SCANMAR MBES EM710, TOPASPS18 VMADCP 150 kHz.	
Ángeles Alvaríño		Regional Research Vessel	46.7	2011?		Mediterranean Atlantic	<i>Fish trawling, CTD full capabilities Diesel/electric on silent block, Acoustic Isolation hull ROV, Dynamic Position, Acoustic position HiPAP 500. EA600 (12, 200kHz), EK60 (18,38,70,120,200,333 kHz) MS70, Net Sonar FS 20/25, Net Sonar ITI, SCANMAR MBES EM710, TOPASPS18 VMADCP 150 kHz.</i>	

B.20.3. Equipment

The IEO has recently ordered an ROV with capability to operate up to 2000 m water depth. The system, that includes a LARS based on 20 feet container (as well as a second container for control) is a Sub-Atlantic **Super Mohawq II** scheduled for delivery in September 2010.





A rosette/911+ CTD was lost at 900 m water depth off Ebro Delta.

B.20.4. Cooperation

B.21. Spain – Arturo Castellón (UTM/CSIC)

B.21.1. Overview

B.21.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Sarmiento de Gamboa		Oceanic	70,5	2007	308	Iberian Peninsula Atlantic, Gulf of Biscay, Canary Islands, Mediterranean (Crete), Mallorca I.	DP Class 1 ROV scenario certification. Deployment of Ifremer's Victor 6000 Found origin of beam forming problem on EM120 at faulty Titanium ice window. Manufacturer is implementing a correction algorithm and a window replacement will be done in next dry docking	
Hesperides		Global Polar	82,5	1991	278	Antarctica, Spain & Portugal, Atlantic for Argentina Mediterranean	ICE-Class 1C <ul style="list-style-type: none"> VSAT High speed Satcomm (Internet, VoIP): Operator Hisdesat. X Band Piston corer (10 m) 	
Garcia del Cid		Regional	37	1977	205	Mediterranean, Canary Islands, Atlantic Iberian Peninsula	Multibeam echo sounder ELAC Sea Beam 1050D dual 50 kHz (3000 m) - 180 kHz (600 m). Octopus F-180 Inertial positioning and Attitude sensor (pitch, roll heading, heave)	<i>Project</i>
Las Palmas		Polar	41,2	1978		Antarctica	Supplier 2 containers	

<http://www.utm.csic.es>

B.21.3. Equipment

New Equipment:

- Multipurpose Winch 8000 m 13 mm cable (mobile).
- Seismic equipment frame, guns 20, umbilical, Streamer winch, Streamer 6 km.
- MOCNESS plankton net (x2).
- Acoustic Modem link quest.
- SeaCat.
- Spectroradiometer.
- Corer Logger.
- Workshop container.

B.21.4. Cooperation



- OFEG barter agreement Ifremer cruise FORCLIM *R/V Sarmiento de Gamboa* April 1st -20th.

B.22. UK - Mr David Blake (BAS)

B.22.1. Overview

Both vessels are operated without standby. Keeping the vessels maintained without extended refits is a significant challenge

B.22.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
James Clark Ross		Global Icebreaker	99	1991		During 2009 the JCR undertook 19 science cruises for BAS and NERC sponsored science. There were also commercial charters, barter work and offset cruises with other Antarctica operations. The ship worked in the Antarctica, Arctic and on passage between the UK and Antarctica.	<p>The role of the vessel is to undertake multi-disciplinary research and survey in the polar regions. The vessel also has the capability to undertake logistics work in support of polar programmes.</p> <p>The upkeep of the vessel continues with major refit items in 2010 to overhaul science gantries, cranes and the superstructure.</p>	The replacement of the JCR is currently scheduled for 2017. A later life refit is however being specified to extend the life of the vessel, funds permitting.
Ernest Shackleton		Global logistics	80	1995		During 2009 the ES supported a science cruise but was primarily focused on oilfield support work in the North Sea and delivering equipment to the new Antarctic Station being constructed at Halley.	Primarily used for logistics work but does mount several smaller science cruises in the Weddell Sea. On a long lease bare boat charter from Rieber Ship Management, the vessel is also used for 120 days per year in the North Sea.	The Ernest Shackleton is under a long-term charter which ends in 2014. There are options to extend the charter which are currently under review.

B.22.3. Equipment

B.22.4. Cooperation

JCR; 14 day exchange cruise with the Korean Antarctic Campaign. Exchange is for cruise on the new Korean polar class vessel.

B.23. UK - Mr Geraint West (NOCS)



B.23.1. Overview

Sea Systems which operates the 2 multidisciplinary global research vessels and National Marine Equipment Pool is part of the National Marine Facilities Division at NOCS. This is quite separate from NERC's other ship operation at BAS (see B22).

NERC initiated a Ship Management Review in August 2008 to examine whether changes to the arrangements for ship management were necessary, this reported in early 2009, concluding that, "the efficiency and effectiveness with which NERC currently manages its ship operations is on a par with industry standards." Consequently NERC has decided to retain its current organisation for delivery of research ships, but is looking to implement a range of measures for closer harmonisation and integration between BAS and NOCS. (see <http://www.nerc.ac.uk/research/sites/facilities/marine/shippreview.asp>)





It has recently been announced that a new National Oceanography Centre (NOC) will be formed by bringing together the NERC Proudman Oceanographic Laboratory (POL) in Liverpool and NERC-managed activity at the National Oceanography Centre, Southampton (NOCS) into a single institution. The new institution will come into being on 1 April 2010 (see <http://www.nerc.ac.uk/press/releases/2010/04-noc.asp> for press release). It is not currently anticipated that this will mean any immediate changes to how the NOCS ships and NMEP are managed.

B.23.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
James Cook		Global	90	2006	293	N. Atlantic, S. Atlantic.	Busy year with a large range of challenging cruises delivered. Problems with Odim winches during mid part of the year; most as a consequence of poor installation standards. Rectification work has now been completed and winches are fully operational again.	
Discovery		Global	90	1962 (rebuilt 1982)	254	N. Atlantic	Now 47 years old, but completed very busy programme in N. Atlantic following major refit works to keep ship in service until replacement. Following years of problems with ship's main winch suite, this supported all operations without any fault for first time since installation.	Replacement vessel, also to be named 'Discovery', planned to be delivered 2013 (See A.3.6): <ul style="list-style-type: none"> • 50 days endurance (L 99.7m, B 17.5m, D 6.5m) • Scientific Transit Speed – 12 knots maximum • 23 Officers & Crew • 28 Scientists & Technicians • DP Capable (DP2) SS6/7 • Multidisciplinary

Name	Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
							<ul style="list-style-type: none"> • Seismic capability – limited to high resolution studies • Multibeam(s) & Sub Bottom profiler • Minimal Ice Class – for hull life (Lloyds 1D) • Overside / over stern lifting - 20 tonnes • Drop Keels • Low URN but NOT ICES 209 • Propulsion <ul style="list-style-type: none"> • 2 x Azimuthing Units Aft • Azimuthing Thruster Fwd • Manoeuvring Thruster Fwd

B.23.3. Equipment

Name	Type	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Isis	 ROV	2002	50	Lisbon & Setubal Canyons	6500m depth capability – derivative of WHOI Jason II vehicle	
Autosub 3	 AUV	2005	50	Antarctica	1700m depth capability.	
Autosub 6000	 AUV	2007	30	Casablanca Seamount Trials	In October completed successful trials to an operating depth of 5600 m, and tested a new obstacle avoidance system, based on a scanning sonar, over the rugged terrain of the Casablanca seamount.	
Long Range AUV	 AUV	In development			<i>Range/Endurance: 6000 km & 6 months</i> <i>Max depth: 6000 m</i> <i>Speed: 0.4-1.5 m/s</i> <i>Hotel load: 1W</i> <i>Length/ Volume: 3m & 500 litres</i>	


B.23.4. Cooperation

- Final 2 cruises in the ‘super barter’ with Germany (46 days) onboard the Sonne off Sumatra.
- Moorings support for RAPID Climate Change array onboard US ship Ron Brown (20 days)
- Autosub3 cruise onboard US ship Nathaniel B Palmer in Amundsen (54 days) – highly successful under-ice missions.
- Agreement with CSIC for joint seismic facility signed.
- Eurofleets partner, leading work package on ship greening.
- Sea Systems Programme Manager Chairs OFEG Tech and is Vice-Chair OFEG.

B.24. UK – Mr John Breslin (P&O Maritime Services)**B.24.1. Overview**

CEFAS operates a sophisticated, purpose-built ocean-going research vessel to undertake estuarine, shelf seas and deep water oceanographic and fisheries surveys. On 24 March 2009 P&O Maritime Services took up the contract for the provision of future vessel and gear management services for the CEFAS Endeavour. Vessel management, technical and operational support is provided from our offices in Lowestoft, which include a net store and warehouse facility. During 2010 257.5 days are anticipated including a 40 day refit programme which will include a 40,000 hrs engine overhaul and replacement of the wooden deck on the main deck aft.

B.24.2. Vessels

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
CEFAS Endeavour		Ocean	90	2003	263	North Sea, Irish Sea, Celtic Sea	263 days at sea during 2009 engaged in a variety of fisheries, environmental and oceanographic surveys.	None

B.25. USA – Bob Houtman (NSF/UNOLS)

B.25.1. Overview

During the period January through December 2009, the U.S. Academic Research Fleet (see Section A.1.2) conducted approximately 4430 operational days at sea with cruises all around the world. Pressures on the federal funding agencies' budgets were somewhat reduced with lower fuel costs, however, other operating costs continued to rise at rates equal to or greater than the budgets.

The Academic Research Fleet of oceanographic research platforms participate in the University National Oceanographic Laboratory System (UNOLS) consortium, which serves to support and coordinate the scheduling, usage, maintenance, repair and outfitting of the member research facilities.


In planning for the 2010 schedules during the fall of 2009, the effects of a reduced number of science proposals for research ship-time, a reduced number of requests for use of the Fleet by other agencies and organisations, as well as level base budgets with increasing personnel costs indicated there would be a reduction in the number of total operating days. NSF was provided with American Recovery and Reinvestment Act (ARRA) funding which allowed an increase in the support of Fleet equipment maintenance and upgrades as well as a slight increase in the success rate for science proposals. The projection for 2010 is now approximately 3300 ship-days of work. The Global Class ships are at or slightly above capacity with nearly all scheduled for more than 300 days. The trend in recent years of a reduced demand for use of the Intermediate Class ships continues into 2010 and will result in partial layups and extended maintenance periods until the peak summer research season in the Atlantic when several ships will be needed to meet the requirements.








The National Research Council of the National Academies Committee on the Evolution of the National Oceanographic Research Fleet published its report in 2009 (<http://dels.nas.edu/osb/>). Their recommendations included the need for increased federal agency coordination and the production of a single, comprehensive Fleet Renewal Plan; the importance of science community involvement in ship acquisitions; and the need for larger, more capable general purpose Global and Regional Class ships.




B.25.2. Vessels

The US fleet consists of 21 ships with six Global Class, six Ocean/Intermediate Class, six Regional Class and the three Local Class ships.




Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Melville		Global	85	1969	199	Pacific	Owned by US Navy, operated by Scripps Institution of Oceanography	Possible retirement in 2014
Roger Revelle		Global	84	1996	335	Pacific/Atlantic	Owned by US Navy, operated by Scripps Institution of Oceanography	
Knorr		Global	85	1970	299	Pacific/Atlantic	Owned by US Navy, operated by Woods Hole Oceanographic Institution	Possible retirement in 2014
Atlantis		Global	84		281	Pacific	Owned by US Navy, operated by Woods Hole Oceanographic Institution	
Thomas G Thompson		Global	84	1991	297	Pacific	Owned by US Navy, operated by University of Washington	
Marcus G. Langseth		Global	72	1991 (rebuilt 2007)	260	Pacific	Owned by NSF, operated by Lamont-Doherty Earth Observatory. 2D and 3D seismic capable.	
Sikuliaq Alaska Region Research Vessel (ARRV)		Global					Contract with Marinette Marine Corp (Guido Perla and Associates Naval Architect) signed December 2009. Design Verification and Transfer in progress with construction start in Sep 2010.	Planned for Fleet entry in 2014


Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Kilo Moana		Ocean	57	2002	275	Pacific	Owned by US Navy, operated by University of Hawaii	
OCRV Ocean Class Research Vessel		Ocean					Acquisition Process underway with two Design Teams funded for a planned down-select to one design by late 2010. Lead ship with an option for a second ship. Selection process for Lead Ship operator is progress and will include selection of the second ship operator if option is exercised.	<i>Planned for Fleet entry in 2014</i>
Endeavor		Ocean Intermediate	56	1976 (rebuilt 1993)	137	Atlantic	Owned by NSF, operated by University of Rhode Island.	
Oceanus		Ocean Intermediate	54	1976 (rebuilt 1994)	112	Atlantic	Owned by NSF, operated by Woods Hole Oceanographic Institution	
Wecoma		Ocean Intermediate	56	1976 (rebuilt 1994)	180	Pacific	Owned by NSF, operated by Oregon State University	
New Horizon		Ocean Intermediate	52	1978 (rebuilt 1996)	177	Pacific	Owned and operated by Scripps Institution of Oceanography	
Point Sur		Regional	41	1981	135	Pacific	Owned by NSF, operated by Moss Landing Marine Laboratories	
Cape Hatteras		Regional	41	1981 (rebuilt 2004)	105	Atlantic	Owned by NSF, operated by Duke University/University of North Carolina	

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Atlantic Explorer		Regional	51	1982 (rebuilt 2004)	136	Atlantic	Owned by Bank of Bermuda, operated by Bermuda Institute for Ocean Sciences	
Robert Gordon Sproul		Regional Coastal	38	1981	86	Pacific	Owned and operated by Scripps Institution of Oceanography	
Pelican		Regional Coastal	35	1985 (rebuilt 2003)	241	Gulf of Mexico	Owned and operated by the Louisiana Universities Marine Consortium	
Walton Smith		Regional Coastal	29	2000	162	Atlantic	Owned and operated the University of Miami	
Hugh R Sharp		Regional Coastal	45	2005	181	Atlantic	Owned and operated by the University of Delaware	
RCRV Regional Class Research Vessel		Regional					Down-selection to one design complete. UNOLS to review several design issues and NSF to obtain an independent cost estimate to support request for construction funding.	
Savannah		Local	28	2001	77	Atlantic	Owned and operated by University System of Georgia	
Blue Heron		Local	26	1985 (rebuilt 1999)	69	Great Lakes	Owned and operated by the University of Minnesota-Duluth	

Name		Type	LOA (m)	Built	Op. Days	Main area of operations during year	Notes	Plans for Replacement
Clifford Barnes		Local	20	1966 (rebuilt 1984)	71	Pacific	Owned by NSF, operated by the University of Washington	
Joides Resolution		Scientific Ocean Drilling Vessel	143	1978			Owned by TransOcean and DSND Shipping AS.	
Flip		Research Platform (R/P)	108	1962			Owned by US Navy, operated by Scripps Institution of Oceanography Marine Physical Laboratory	

B.25.3. Equipment

Name		Type	Built	Op. Days	Main area of Operations during year	Notes	Plans for Replacement
Alvin		Deep Submergence Vessel (DSV)	1964	153	Pacific	Owned by US Navy, operated by Woods Hole Oceanographic Institution	<i>The hemispheres for the Replacement Human Occupied Vehicle (RHOV) have been successfully electron beam welded and welding of the view port inserts is in progress. Phase 1 Preliminary Design Review completed in December 2009 which validated the approach of integrating the new personnel sphere into a modified current ALVIN vehicle frame to deliver a 4500 meter capability by early FY2012. The upgrade to a fully capable 6500 meter vehicle will be an optional Phase 2, dependent on available funding levels.</i>
Hybrid Remotely Operated Vehicle		HROV	2008	45	Pacific	Successfully completed deep water sea trials to the bottom of the Mariana Trench in the summer of 2009.	
Jason		ROV	1988	160	Pacific		

Sentry		AUV	2007	38	Pacific	5000m depth capability, replaced the Autonomous Benthic Explorer (ABE) in the Deep Submergence Facility inventory. ABE was lost at sea on 5 March 2010 on its 222 nd dive.	
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B.25.4. Cooperation

The U.S. federal funding agencies cooperate on a national level through several organizations including the University National Laboratory System (UNOLS) and the Interagency Working Group on Facilities. On an international level the mechanisms for cooperation include the International Ship Operators Meeting and the European Ocean Facilities Exchange Group.