Report of the Working Group on Marine Data Management (WGMDM)

8-10 May 2006

ICES Headquarters, Copenhagen

International Council for the Exploration of the Sea
Conseil International pour l'Exploration de la Mer

International Council for the Exploration of the Sea
Conseil International pour l'Exploration de la Mer

H.C. Andersens Boulevard 44-46
DK-1553 Copenhagen V
Denmark
Telephone (+45) 33 38 67 00
Telefax (+45) 33 93 42 15
www.ices.dk
info@ices.dk

Contents

Executive summary

Highlights

Liaise with PICES TCODE

Developing liaisons between ICES and PICES data management groups. The ICES WGMDM (Marine Data Management) group has a comparative working group PICES TCODE (Technical Committee On Data Exchange). The Chair of TCODE was invited to the WGMDM meeting, but was represented by another member. The co-chairs of WGMDM are invited to join the ASC of PICES in 2006.

Data management in IPY 2007/2008

Co-Chair of the IPY Subcommittee on Data Policy and Management and Chair of the Joint SCAR/COMNAP Committee on Data Management (JCADM), gave a presentation on the International Polar Year 2007/2008 (IPY) and on data management requirements for IPY. The IPY 2007/2008 is an intense, interdisciplinary, and internationally coordinated campaign of research and observations in the polar regions, including the Arctic and Southern Oceans, which will deepen our understanding of polar processes and their global linkages. The IPY data infrastructure will use existing structures as much as possible. The MDM members were invited to participate at a national level in data management activities for the oceanographic IPY projects. The ensuing discussion resulted in a series of recommendations by the ICES WGMDM on data management for the International Polar Year.

Merged working group WGDIM

WGMDM and SGMID should be merged into one group with its main focus on all aspects of data management to provide ICES with solicited and unsolicited advice called WGDIM, Working Group on Data and Information Management. SGMID is terminated, due to being a study group, after the 2006 Annual Science Conference. The co-chair of WGMDM suggests to invite all members of SGMID to join the WGMDM group and change the name of the new joint group into WGDIM with a new set of ToRs reflecting the work of both groups. The new group will have a wide range of members including data managers, senior scientists and users of research data. From WGMDM the Co-Chair Helge Sagen is nominated as one of the two new Co-Chairs of WGDIM.

Summary of ToRs

Quality assurance/control procedures

Work has been carried out to investigate problems in the gathering of hydrographical data and the integration of nutrients samples. The results from a questionnaire regarding CTD data collection must be communicated to related groups in ICES. WGMDM will make a list of best data collection guidelines which will be available to others on their new website.

Data type guidelines

The Guidelines were developed to provide consistent advice for managing and exchanging data, including provision of services to users. The present guidelines are complete and consistent and have been revised and are ready to be promoted. WGMDM will work together with GE-BICH on biological matters, and seek to collaborate with the IODE quality control project to be able to provide guidelines on biodiversity.

Taxonomy

ITIS is the largest, most well organised list of Taxonomic codes and thus has become a de facto standard, a contributor to the Global Biodiversity Information Facility (GBIF) and recommended by ICES, IOC/IODE and GE-BICH. One of the main advantages of using ITIS was to have a standard list of well-researched names, but it has a North American, non-marine taxa focus. The speed with which non-North American names are added is hampering the use of ITIS as a reference list of names. One of the solutions could be for ITIS to accept lists from other organizations, like the European Register of Marine Species (ERMS) and the North West Atlantic Register of Marine Species (NWARMS). Together, these two lists cover the areas of interest for ICES. A concept paper has been developed to set up community based ITIS input centres that deal with specific geographical areas on taxonomic groups.

Operational oceanography

As operational oceanography becomes increasingly important, WGMDM recommends that well known and recommended data management procedures are implemented. WGMDM will examine currently available procedures and recommend best practice for operational oceanography in the coastal ocean. In addition, WGMDM will provide links to relevant data and products produced by their centres. WGMDM will investigate the quality control procedures used in established Operational Oceanography projects.

Future directions using XML in marine data management

The ICES/IOC Study Group on the Development of Marine Data Exchange Systems Using XML (SGXML) during its three-year existence concentrated its efforts on metadata standards, parameter dictionaries and generic data structures for use in an XML-based language. XML is an excellent tool for metadata, but not for distributing high volume data. At the IODE XVIII meeting, it was decided that future XML work and development would continue through the establishment of a MarineXML Steering Group. Members of WGMDM will participate in the work and keep the rest of the group updated.

GIS - Geographical Information Systems

WGMDM recognises the multiple benefits of using GIS, but acknowledge the need to investigate Open Source software focusing on web applications to look into existing standards before making further specific recommendations. However, WGMDM can already recommend the use of standards such as ISO-19115 for the Metadata and OpenGIS for the diffusion of geographic objects (WMS = Web Map Service, WFS = Web Feature Service).

1 Opening of the meeting

The meeting which was hosted by ICES Headquarters, Copenhagen, Denmark was opened by H. Sagen at 09:00 am on 8 May 2006. The participants were welcomed by the Co-Chair and the Head of the ICES Data Centre, J. Gillin. V. Piil of the ICES Secretariat explained the local arrangements.

Members of the Working Group present were: P. Alenius (Finland), T. de Bruin (Netherlands), G. Dawson (United Kingdom), G. Evans (United Kingdom), L. Fyrberg (Sweden), M-J. Garcia (Spain), R. Gelfeld (USA), J. Gillin (ICES Data centre), S. Jans (Belgium), A. Joyce (United Kingdom), H. L. Krasemann (Germany), C. Maillard (France), G. Moiseenko (Russia), E. Mortensen (Faroe Islands), F. Nast (Germany), T. O'Brien (USA), R. Olsonen (Finland), H. Parner (Denmark), H. Sagen (Norway), J. Szaron (Sweden), M. Wichorowski (Poland).

In addition E. J. Green and S. Reimert participated as observers from the ICES Data Centre.

Apologies for absence were received from S. Almeida (Portugal), M. Danielsen (Iceland), R. Eisner (Canada), S. Feistel (Germany), L. Fernand (UK), M. Fichaut (France, Co-Chair), D. Gregory (Canada), K. Larsen (Faroes), M-D Lilover (Tallinn), S. Neuvonen (Finland), H. Rees (UK), L. Rickards (UK), S. Sagan (Poland), A. M. Santos (Portugal), I. Shevchenko (Russia), G. Slesser (UK), S. Tomlinson (Canada), H. Valdimarsson (Iceland), E. van den Berghe (Belgium).

A complete list of names, addresses and contact points of participants is listed in Annex 1.

2 Adoption of the agenda

The agenda (see Annex 2 for the agenda, Annex 3 for current Terms of Reference) for the WGMDM (see Annex 5 for a list of acronyms) meeting was adopted as a resolution of the 93rd ICES Statutory Meeting in Aberdeen, United Kingdom (C.Res. 2005/2/OCC10).

H. Sagen reviewed the Action Items from the 2005 meeting.

There were 34 action items to fulfil; six of which concerned ToR a (quality assurance/control procedures), six related to ToR b (data type guidelines), 0 concerned ToR c (taxonomy), five dealt with ToR d (operational oceanography), five were attached to ToR e (XML eXtended Markup Language), one concerned ToR f (GIS – Geographic Information Systems), and five related to ToR g (future of WGMDM and SGMID). Six action items were not related to a specific TOR. Only two actions were not started, other were either completed or in progress. The actions were discussed under the relevant Agenda Items.

It was agreed that results of the ICES user survey would be evaluated by SGMID.

3 Presentation of the external WGMDM webpage

Gaynor Evans (BODC) presented a draft version of WGMDM website using Yahoo-group pages. The WGMDM link will be available through the ICES website and supported and maintained by BODC. The general response of the members was that the website was useful and informative. Other comments included that more web pages should be included on the website, which links to related websites, and the WGMDM website should be available at the ICES website. If appropriate one should consider to use more colours on the web page. It was also suggested to move the BODC logo one level down. Data products listed on the navigation screen should be expanded to not only include CDROM products but other products as well. The WGMDM agreed there should be links to online databases and portals. A

recommendation was suggested to contact IODE to see what web portals and on-line databases they have. The website should have a search function.

It was concluded that direct e-mail was the best way to communicate. An e-mail list of WGMDM was discussed and there are problems with members using old e-mail lists. Members agreed to continue work on the WGMDM website by BODC – online completion date mid June 2006. The website should have a pointer to WGMDM guidelines. Members were asked to comment on content and information contained in website. A private section and draft information was discussed. It was suggested that it would be valuable to know the number of visits to the website and that there should be a summary section on the website. The presentation is attached in annex 7.

Action 4: *Tidy up the Yahoo-group pages, and get the photos from there (G. Evans)*

The discussion on the action point:

Completed.

Action 5: *Set up the local MDM pages at BODC Web pages (G. Evans, B. Gelfeld, M. Fichaut, S. Almeida)*

The discussion on the action point:

Ongoing.

Action 6: *Synthesize the result of the list of CD-ROMs and products and put it on MDM website (G. Evans)*

The discussion on the action point:

The list is updated and will be put on the WGMDM webpage.

Action 7: *Give comments on the MDM pages that will be set up at BODC (All)*

The discussion on the action point:

The members commented on the proposed layout of the web pages.

Proposed new actions for 2006/2007:

Action 1: Investigate what IOC/IODE does in publishing online databases and Webportals on the Internet, (e.g. OceanPortal) (G. Evans).

Action 2: Investigate different solutions to facilitate a search engine on the WGMDM website (G. Evans).

4   Presentation of the work carried out by PICES, Pacific ICES

Georgiy Moiseenko presented the work of PICES - TCODE (Technical Committee On Data Exchange) on behalf of the chair of PICES TCODE, Igor Schevchenko. Members of PICES were proposed to work with IOC/IODE. G. Moiseenko invited the members of WGMDM to go to the Annual Science Conference of PICES to be held in Yokohama in Japan from 13 – 22 October 2006. The Co-Chairs have also been invited to present the work of WGMDM on the appropriate session at the conference. The presentation is attached in annex 8.

Proposed new actions for 2006/2007:

Action 3:   *Contact IODE to set up a link with PICES (R. Gelfeld).*

Action 4:   *Chair of the WGMDM asked to attend PICES general meeting in Japan to form link between the two groups and to promote the work of the WGMDM and report back (Co-chairs).*

Action 5:   *Promote international metadata and cruise summary report systems to the PICES community (F. Nast).*

5   Quality assurance/control procedures – ToR a)

Identify and compare existing quality control and quality assurance procedures for integration of physical, chemical and biological data in use at WGMDM member organizations, and recommend common standards and procedures to ICES and IOC/IODE.

Report on 2005/2006 actions

Action 17:   *Produce a summary of the results of the CTD questionnaire (T. De Bruin, M. Wichorowski)*

The discussion on the action point:

The CTD rosette frames may cause contamination by water dragged by the frame and there may be inadequate flushing of the bottles at the time of firing. Taco was asked to discuss results of questionnaire, firstly with national institutes, physical oceanographers and then with the other WGMDM member institutes. WGMDM members are requested to supply opinions and suggestions on the CTD questionnaire. The members discussed whether CTD data collection practices contributed to significant differences in data. Taco was asked whether the TOR required rephrasing. A decision on which topics to highlight in the summary was discussed as it is being read by the Oceanography Committee.

Action 18:   *Produce a new poster presenting the results from the CTD questionnaire and present it at the ASC either in 2006 or 2007 (T. de Bruin, M. Wichorowski)*

The discussion on the action point:

Members were asked to contribute to a poster – none responded.

Action 19:   *Request comments from the Oceanic Hydrography WG and the OCC (Oceanography Committee) on the summary of the CTD questionnaire on merging CTD and water sample (chairs)*

The discussion resulted in creation of a new action point, number 5.

Action 20:   *Request IODE-GE-BICH to cooperate on identifying guidelines on biodiversity (E. Vanden Berghe)*

Action 21:   *Check that everything in the guidelines has a place in XML structure (E. Vanden Berghe, M. Wichorowski, R. Gelfeld)*

Action 22:   *Develop an accurate list of best data collection guidelines building on the work of the 'other guidelines list' and the list of MDM guidelines and keep the list updated and available through internet access (T. de Bruin, E. Vanden Berghe, G. Evans)*

The discussion resulted in creation of three new action points, number 6, 7 and 8.

Proposed actions for 2006/2007

Action 6:   *Check the optimum time you need to wait before firing the water bottles on CTD rosettes (C. Maillard, T. de Bruin).*

Action 7:   *Summit results of questionnaire to member institutes, oceanographers (physical, chemical and biological), and report back to WGMDM (All).*

Action 8:   *Communicate results of questionnaire to the Oceanic Hydrography Working Group (T. de Bruin, Co-Chairs).*

Action 9:   *Place an accurate list of best data collection guidelines on webpage and keep the list updated (H. Sagen, G. Evans, M-J, Garcia and T. de Bruin).*

Action 10:   *Request IODE-GE-BICH to co-operate on identifying guidelines on biodiversity by writing a letter from the WGMDM to IODE (E. vanden Berghe, Co-Chairs).*

6   Data type guidelines – ToR b)

Assess the continuous development and updating of an accurate list of best data collection guidelines and to recommend on encouraging the use of the guidelines by the scientific community.

Report on 2005/2006 actions

Action 11:   *Continue to promote the MDM guidelines and ensure all MDM members have links to the MDM guidelines (all)*

Action 12:   *Revise the MDM guidelines: Moored ADCP (H. Sagen), Moored current meters (G. Slesser), Ship borne ADCP (M. Fichaut), SeaSoar (G. Dawson), Surface underway (M. Fichaut), Water Level (M.J Garcia), Xbt (G. Dawson), Net tow (G. Evans), Surface Drifting Buoy (S. Tomlinson), Profiling Float and Drifting Buoy (S. Tomlinson and M. Fichaut). When merging CTD and Discrete water sample guidelines one must take into account the results of the CTD questionnaire (L. Fyrberg, G. Dawson, T. de Bruin)*

The discussion on the action point:

Web addresses should be kept current and reviewed every two years. Garry Dawson (UKHO) has offered to provide an editor overview on any changes to the guidelines. All guidelines are to be reviewed by 30. June 2006. The discussion resulted in creation of four new action points.

Action 13:   *Request ICES Secretariat and Working Groups to make links to the guidelines on other relevant ICES web pages (i.e. Fisheries, oceanography) (Chairs)*

Action 14:   *Request ICES Secretariat to make available the list of identified guidelines provided by WGMDM (chairs)*

Action 15:   *Monitor the Internet access to the guidelines at the ICES web site and report back (ICES)*

The discussion on the action point:

Should guidelines only be available in pdf format? Problems exist when converting pdf format to word format. It was agreed that the guidelines should be available both in pdf and word format. The outcome of the discussion is reflected in new action points.

Action 16:   *Update the poster on MDM guidelines for the Theme Session on Data Management of the ASC in 2006 and write an abstract for the guidelines poster (G. Evans, R. Gelfeld)*

The discussion on the action point:

A poster is to be submitted to the ASC in 2006.

Proposed actions for 2006/2007

Action 11:   *Complete the revision of the MDM guidelines by 30. June 2006*

Revise the ADCP guidelines (H. Sagen)

Revise moored meters guidelines (update due to new instrumentation) (G. Slesser)

Review the guidelines for CTD/Discrete water samples, include the results of CTD questionnaire into the guideline and decide whether to include moored CTDs (A. Joyce and T. de Bruin)

Action 12:   *Report back to WGMDM if any new guidelines are required (All)*

Action 13:   *Draft a new guideline on multi-beam data. (G. Dawson)*

Action 14:   *Communicate with the chair of the IOC/IODE to promote the adoption of the WGMDM guidelines as the IOC/IODE's official guidelines (Co-Chairs).*

Action 15:   *ICES Data Centre to supply WGMDM with exact web statistics on WGMDM guidelines (J. Gillin).*

Action 16:   *ICES Data Centre to supply improved access to WGMDM guidelines. A suggestion was that they should be placed on home page (J. Gillin).*

Action 17:   *Ask the ICES Data Centre to promote the WGMDM guidelines within ICES and ensure all members have links to the guidelines (T. de Bruin, J. Gillin, all).*

Action 18:   *Make the WGMDM guidelines available in both PDF and Word format on the website (G. Evans)*

7   Taxonomy issues - ToR c)

Improve usefulness of the Integrated Taxonomic Information System (ITIS) to the marine community and actively promote ITIS within the ICES and IOC community.

Report on 2005/2006 actions

No action items were identified in 2005/2006.

The discussion on the terms of reference:

NOAA promotes a common system approach on taxonomic names. NOAA could resolve ITIS response issues. A concept paper was developed to set up community based ITIS input centres that deal with specific geographical areas on taxonomic groups. EDIT is a network of excellence on taxonomy in Europe and NARMS is the North Atlantic Register of Marine Species.

ICES are working on how to receive species lists; it accepts multiple lists from both ITIS and ERMS. ICES have recommended a second taxonomy system – ERMS. There will be a new

TOR developed to report on status in 2006/7. Todd O Brien to keep track of what is happening on taxonomy issues and to write and supply any actions on NARMS.

T. O'Brien suggested to compile a list of observed taxonomic species currently in use in ICES member databases to focus only on the oceanographic taxa (e.g. plankton, benthos, fish) caught and identified and being stored in the ICES databases. ERMS may have 55.000 names not currently in ITIS but 50.000 of those may be land animals and butterflies (and thus not immediately needed for the ICES oceanographic databases).

Proposed actions for 2006/2007

Action 19: *Generate a summary of taxonomic information systems (e.g., ITIS, NODC, BODC, ERMS, Rubin) actively in use in ICES member country databases (T. O'Brien, all).*

Action 20: *Compile a list of all observed taxonomic species currently in use in ICES member databases (e.g. BODC, NOAA, BSH, FIMR), with indication of each species presence or absence in the ERMS and ITIS databases (T. O'Brien, all)*

Action 21: *Submit the BODC not-in-ITIS taxa listing to the ERMS "taxonomic input centre" and report on ERMS progress in the pre-reviewing and sending these to ITIS, and report on any ITIS response (T. O'Brien, E. vanden Berghe).*

8 Operational Oceanography issues – ToR d)

Identify existing technology available to submit data in real-time to the GTS system. Develop practical guidelines to assist institutes who are not currently submitting their data in this way, including a description of the equipment required and the procedures for data quality control.

Report on 2005/2006 actions

Action 23: *Continue to submit links to web site where member institutes makes OO data and products available and send it to J. Szaron before July 1st, 2005. He will review the list and send it to G. Evans for the MDM Web site (Members that didn't send their list, J. Szaron, G. Evans)*

The discussion on the action point:

Continue to extend the portal (main) list and submit the links to J. Szaron. There is no information on Operational Oceanography on the ICES front website. J. Gillin was confronted about the fact. Need to check whether GOSUD has guidelines for underway data and if they are included in the other guidelines list.

Action 24: *Contact WGOH (Sheldon Bacon) to inform them on the list of OO that MDM is producing (Chairs)*

The discussion on the action point:

This action is pending; once complete contact WGOH.

Action 25: *Investigate the QC procedures used in OO like in ARGO, COOP, GOSUD (L. Rickards, G. Evans, M. Fichaut, M. J. Garcia)*

The discussion on the action point:

Raise an action point to promote that WGMDM strongly encourages the use of established QC procedures and encourage the use of international standards.

Action 30:   *Report on WGMDM member contribution of underway data to the GOSUD project (All)*

The discussion on the action point:

Data type guidelines could be completed with (investigate missing equipment):

- Moored CTD and thermistor chains time series
- Moored and Drifting sediment traps (downwards fluxes of suspended particles mater SPM) -> see JGOFS literature, if synthetic enough, the agreed procedures to compute the organic and inorganic fraction etc…
- pCO2
- surface meteorological data

The guidelines

- at the data collection level (to get the data with the expected accuracy), which should be edited by recognized experts; and
- at the data management level (adding quality flags).

The data management should know if the data collection has been made according to the common agreed procedures or with simplified procedures. It has impact on the accuracy and on the possible use of the data, in particular to follow the changes in the deep layers.

Moreover, it would be appreciated that ICES contribute to make the WGMDM guidelines available at one common reference site, as possible common with IOC/IODE and shared with other possible similar initiatives like PICES, POGO or major international program under their auspices like WOCE, JGOFS. It would be better to update one electronic document rather than to remake a synthesis any time we start a new project.

Action 31:   *Overview of ongoing projects in which MDM members could participate as GOSUD, ARGO (T. De Bruin)*

The discussion on the action point:

Investigate the possibility of members contributing underway data to GOSUD projects. There is also a call to bid on building and maintaining a database of planned research cruises announced at the IOC/IODE website for POGO.

Proposed actions for 2006/2007

Action 22:   *Update list of portals by sending information to J. Szaron (All)*

Action 23:   *Make latest report from GOSUD available to WGMDM members (R. Gelfeld).*

Action 24:   *Send details on POGO to ICES Data Centre to avoid duplication (T. de Bruin, J. Gillin).*

Action 25:   *Check whether GOSUD has guidelines for underway data and if they are included in the other guidelines list (G. Dawson).*

Action 26:   *Inform WGOH on the list of Operational Oceanography sites available on Internet (Chairs).*

Action 27:   *Promote to the ICES community that WGMDM strongly encourages the use of established QC procedures and the use of international standards in the field of Operational Oceanography (J. Szaron, Chairs).*

9   Presentation of International Polar Year (IPY) Subcommittee on Data Policy and Management

Taco de Bruin, Co-Chair of the IPY Subcommittee on Data Policy and Management and Chair of the Joint SCAR/COMNAP Committee on Data Management (JCADM), gave a presentation on the International Polar Year 2007/2008 (IPY) and on data management requirements for IPY.

He informed the meeting that the IPY 2007/2008 is an intense, interdisciplinary, and internationally coordinated campaign of research and observations in the polar regions, including the Arctic and Southern Oceans, which will deepen our understanding of polar processes and their global linkages. It is by far the largest international research programme the world has ever witnessed, with 1200 original research proposals, combined into more than 200 coordination proposals. It is estimated that more than 50,000 professionals (scientists, technicians, data managers, logistic staff, etc.) from over 60 nations around the globe will be involved.

The IPY Scientific themes are:

- Draw scientific & public attention to the polar regions:
- Define the current status of the region;
- Study past & future changes;
- Study linkages to global processes;
- Investigate frontiers of science in polar regions;
- Use the polar regions as a vantage point to earth history & to space;
- Study social & cultural dynamics & resiliency.

IPY knowledge and especially the observations upon which it is built are considered to be the lasting legacy of IPY. In the words of the Framework document for the International Polar Year 2007–2008:

- "In fifty years time the data resulting from IPY 2007–2008 may be seen as the most important single outcome of the programme."

And

- "These data … will act as benchmark data which can serve as a baseline against which global change is measured"

To achieve this, the IPY data must be effectively managed in order to ensure the greatest benefit in the future. IPY-generated data should be carefully and thoughtfully collected, used collaboratively, and adequately preserved.

IPY is sponsored by the International Council for Science (ICSU) and the World Meteorological Organization (WMO). IPY is coordinated by the ICSU-WMO Joint Committee on IPY. Funding of the individual IPY projects comes from national funding agencies.

The Joint Committee has established three Subcommittees:

- Subcommittee on Data Policy and Management;
- Subcommittee on Observing systems;
- Subcommittee on Education and Outreach.

The Subcommittee on Data Policy and Management has a membership of 12 scientists and data managers, with a member of the Joint Committee as liaison and the director of the IPY

International Programme Office ex officio. From these 14 people, 5 have a strong background in oceanography.

Currently, the IPY Subcommittee on Data Policy and Management is finalizing the IPY data policy. The IPY data policy is based on relevant WMO (Resolution 25 and 40) and ICSU (ICSU Assessment on Scientific Data and Information, 2004) documents and refers to the Antarctic Treaty (Article III-1c) and the Intergovernmental Oceanographic Commission (IOC) data policy.

The leading principle is free and open access to all IPY data, in support of and to meet the IPY objectives of:

- International collaboration;
- Interdisciplinary science;
- Building a legacy.

The only exceptions to this principle of free and open access are :

- where human subjects are involved, confidentiality must be protected;
- where local and traditional knowledge is concerned, rights of the knowledge holders shall not be compromised;
- where data release may cause harm, specific aspects of the data may need to be kept protected (for example, locations of nests of endangered birds or locations of sacred sites).

A model for the IPY data infrastructure and data flow, still under construction, was presented and discussed. The original plans for the IPY data infrastructure were based on the data management model for the World Ocean Circulation Experiment (WOCE).

The IPY data infrastructure will use existing structures as much as possible and be a system of systems approach.

The MDM members were invited to participate at a national level in data management activities for the oceanographic IPY projects. The ensuing discussion resulted in a series of recommendations by the ICES WGMDM on data management for the International Polar Year.

H. Sagen is involved in the national IPY Committee on data management in Norway. All members are encouraged to take a proactive role in taking contact with the National IPY Committees and identify themselves/ourselves as data managers. T. de Bruin will send a list of IPY data management participants to all partners and establish contact between WGMDM members and their representatives.

Proposed actions for 2006/2007

Action 28:   *Establish contact between WGMDM members and JCADM members to approach together national IPY committees to assist with organizing and providing national IPY data management (T. de Bruin, all).*

10   XML – extended Markup Language – ToR e)

Evaluate and develop future directions for oceanographic Marine Data Exchange Systems using XML at the national and international level.

Report on 2005/2006 actions

Action 21:   *Check that everything in the guidelines has a place in XML structure (E. Vanden Berghe, M. Wichorowski, R. Gelfeld)*

The discussion on the action point:

M. Wichorowski could not identify any problems concerning the WGMDM guidelines and XML. Everything has a place in the XML structure.

Action 26: *Report back to WGMDM the discussions of the IOC MarineXML Steering Group (M. Wichorowski, Chairs)*

The discussion on the action point:

The IOC/IODE steering group on XML has not yet been active. Roy Lowry of BODC was given the task to chair the group and organise activities. The group will probably undertake its work and report to the IOC/IODE XIX conference next year.

Action 27: *Evaluate and document XML work at the national level as a mechanism for the efficient exchange of oceanographic data (All Members)*

The discussion on the action point:

M. Wichorowski presented EU-projects working with XML; such as MMI, SeaDataNet, etc and also reported on Polish activities on XML.

Proposed actions for 2006/2007

Action 29: *Report back to WGMDM the discussions of the IOC MarineXML Steering Group (M. Wichorowski, Chairs)*

Action 30: *Publish XML guidance on the WGMDM website with links to MarineXML websites. (M. Wichorowski, G. Evans, M-J Garcia)*

11   GIS Geographical Information Systems – ToR f)

Critically examine the use of GIS in marine data systems in WGMDM member countries, especially to investigate the use of Open Source GIS as compared to commercial ones like ESRI.

Report on 2005/2006 actions

Action 29: *Investigate the use of Open source GIS as compared to commercial ones (ESRI) (S. Jans, M. Wichorowski, M. Fichaut, H. Sagen, E. Vanden Berghe)*

The discussion on the action point:

S. Jans presented her investigation on the use of GIS in the WGMDM group. Advantages/disadvantages of ESRI and Open Source GIS by giving two demonstrations on software used at her institute.

H. Sagen presented Open source GIS tools at IMR, used on different platforms, pointing at advantages/disadvantages like support, development, configuration, price, etc. ESRI is market leading but very expensive if you are not an academic institution.

His conclusion is that there are many good Open Source GIS solutions, but non are giving the same possibilities as commercial GIS systems. Open Source systems are freely available, but in reality it demands people working with it on a daily basis, thus not being as free as first thought. IMR has good experiences in using Manifold which is a non expensive GIS system and therefore recommend it. The freely available part of Google Earth was also demonstrated.

T. de Bruin demonstrated Google Earth as it is used at NIOZ.

The group discussed if we continue to investigate open source GIS? GIS for internal use or for Web applications? The answer is definitely YES; but we should only focus on web applications, to stay in our data manager role. S. Jans will investigate the tools, functionalities and features that are relevant and that should be available for marine researchers. To get a good overview of the different points of view, the assistance of MDM members is requested.

To the suggestion "To choose few GIS and try them concretely", the answer is NO. To be efficient, it needs too large investment (money, time, training…). S. Jans will collect information on existing systems: GRASS (Finland) and other projects developed in MDM countries/institutes. The Humboldt project is GIS-driven, based on land and marine environments; S. Jans will take contact with responsible persons and report to MDM the work/results of this project

Proposed actions for 2006/2007

Action 31:   *Investigate the use of Open source GIS focusing on web applications (S. Jans, M. Wichorowski, M. Fichaut, H. Sagen, E. Vanden Berghe)*

Action 32:   *Prepare a questionnaire on the use of Open Source GIS and distribute it in the ICES community to be able to give recommendations on the best use of GIS (S. Jans).*

Action 33:   *Investigate possibilities of the Open Source GIS system GRASS (P. Alenius, all)*

Action 34:   *Contact representatives of the EU Humboldt project to get their view on GIS systems and solutions useful to researchers and report back to WGMDM at the next meeting (S. Jans).*

12   Report on other 2005/2006 actions

Action 1:   *Distribute the ICES User Survey among the MDM members (J. Gillin)*

Completed.

Action 2:   *Fill in the ICES survey to test it and report about it (All)*

Completed.

Action 3:   *Report the results of the discussion between WDC and ICES on how they could cooperate more effectively (J. Gillin, R. Gelfeld)*

The discussion on the action point:

This action item is in progress and a full report will be given next year.

Action 32:   *Check if EUROGOOS and ICES have some agreement on EDIOS (M. Fichaut)*

The discussion on the action point:

The action item needs further clarification on how the memory of understanding between ICES and EuroGOOS ca be used to ensure updating and loading of information in the EDIOS database. Members of WGMDM can contribute to the EDIOS database through the EU SeaDataNet project that started 1. April 2006 and runs for 5 years.

Action 33:   *Send current meters inventory to BODC (H. Sagen, H. Parner, S. Jans, T. de Bruin, E. Vanden Berghe)*

The discussion on the action point:

The International current meter directory at BODC is for the moment offline, but a new and improved online inventory will be released later in 2006 at the BODC web pages.

Action 34:   *Send IBTS data as soon as possible to ICES to support NORSEPP program (H. Sagen, J. Szaron, M. Fichaut, A. Joyce, T. de Bruin)*

The discussion on the action point:

The members stressed the importance of sending data to the ICES data centre and this action item is continued for next year.

B. Chemnitz, ICES secretariat, demonstrated the SHAREPOINT system used by different WGs to share documents, exchange mails, etc. For the moment about 10 groups are using the system. The user only needs an internet browser, (several browsers are supported). The WG Chair is in charge/responsible of the group's web page. If WGMDM is interested it can be one of the pilot users. A disadvantage is that it is not publicly available, which MDM wants. An advantage of the system is that it sits on the ICES web server and could possibly take over the external web pages developed for WGMDM at the BODC web server.

F. Nast presented the status of CSR (se Annex 11). The directory currently holds more than 37 000 entries, including the entries transferred from ICES. About 25 000 – 30 000 entries have been transferred from ICES, but no "ICES created forms". J. Gillin pointed out that in fact there has not been a decline in the growth of the ICES' CSR database despite BSH/DODs CSR online system.

ICES agreed during the EU SeaSearch project to perform a Beta test of the CSR online system and were promised to get the CSR system and put it on the ICES web. This is one of the reasons why ICES have not developed/upgraded their system. F. Nast was asked by the chair to submit a copy of the CSR online system including documentation to the ICES data centre to make it possible to set up a local system at ICES.

ICES must derive ROSCOP information from reviewed data if no CSR is available, because the ICES database requires a ROSCOP entry before the data set can be loaded. Having two systems introduces the possibilities of duplicates. It is not adequate to exchange information between the two databases on a yearly basis only. ICES and F. Nast agreed to exchange more often and at least monthly.

Proposed actions for 2006/2007

Action 35:   *Report the results of the discussion between WDC and ICES on how they could cooperate more effectively (J. Gillin, R. Gelfeld)*

Action 36:   *Request WMDM members to contribute to updating and loading of information in the EDIOS database (L. Fyrberg)*

Action 37:   *Send current meters inventory to BODC (H. Sagen, H. Parner, S. Jans, T. de Bruin, E. Vanden Berghe)*

Action 38:   *Provide a link from the WGMDM web pages to the BODC International current meter inventory (G. Evans).*

Action 39:   *Send IBTS data as soon as possible to ICES to support EuroGOOS and NORSEPP program (H. Sagen, J. Szaron, M. Fichaut, A. Joyce, G. Slesser, H. Parner, F. Nast)*

Action 40:   *Further investigate the SharePoint system used to share information between the group members at ICES (G. Evans).*

Action 41:   *Send a copy of the CSR online system to ICES data centre including documentation and all lists (F. Nast).*

Action 42:   *Circulate the XML schema within WGMDM concerning CSRs (F. Nast, M. Fichaut)*

Action 43:   *Compare the lists of ship codes used at ICES data centre and SeaSearch/SeaDataNet (J. Gillin).*

13   Jointly with SGMID – ToR g)

Future structure – Merge the WGMDM with the SGMID into a new group of data managers, users and scientists called the Working Group on ICES Data and Information Management.

    i)   prepare for merging WGMDM and SGMID activities into a new group of data managers, users and scientists called the **Working Group on ICES Data and Information Management (WGDIM).**

    ii)   organize the 2006 ASC Theme session on Environmental and Fisheries Data Management, Access, and Integration.

    iii)   review the suggested tasks for WGDIM:

- to advise ICES on data management issues;
- to promote good data management practice within ICES;
- to give guidance to the ICES Data Centre;
- to liaise with relevant international data management bodies and programmes (IODE, GOOS, SeaSearch/SeaDataNet, etc.).

Report on 2005/2006 actions

Action 8:   *Circulate the information on the theme session on Data Management of the ASC in the WGMDM as soon as it will be available on ICES Web site (Chairs)*

The discussion on the action point:

Completed.

Action 9:   *Prepare contribution to the theme session on Data Management at the ASC in September 2006 (All)*

The discussion on the action point:

All members have read through the theme session information and those who wanted to present their work have sent an abstract to ICES Secretariat.

Action 10:   *Prepare a new poster on MDM activities and submit it to the WGMDM (Chairs)*

The discussion on the action point:

Action 16:   *Update the poster on MDM guidelines for the Theme Session on Data Management of the ASC in 2006 and write an abstract for the guidelines poster (G. Evans, R. Gelfeld)*

The discussion on the action point:

Action 28:   *Contact SGMID for back to back meeting next year - or contact them for possible merge WGMDM and SGMID*

The discussion on the action point:

Completed.

The discussion within the WGMDM preparing for the joint meeting

Between 09:00 and 11:00 hours, both groups met separately, in preparation of the joint meeting starting at 11:00. The WGMDM drafted a ToR for the new group and series of action points. These are:

Proposed Term of Reference for new group:

ICES Data management – Provide ICES with solicited and unsolicited advice on all aspects of data management including technical, policy and user-oriented guidance

Proposed action points:

- *Liaise with relevant international data management bodies and programmes like PICES, IOC/IODE, GOOS, SeaDataNet, IPY (International Polar Year) [Chairs]*
- *Clarify what ICES expects from the group [Chairs]*
- *Give guidance to the ICES Data Centre on data policy and data strategy*
- *Coordinate with IOC/IODE to avoid duplicate work [Chairs]*

WGMDM welcomes the notion of having one working group within ICES responsible for data management advice to all of ICES and considers this to be very important for clarity within ICES.

The meeting continued to discuss membership, chairmanship, name and place in the ICES structure for the new group.

MDM suggests that

- *members (of the new group) should come from the two original groups, with one data manager and one data user per country. Additional experts may be invited by the Co-Chairs to avoid losing current expertise.*
- *there will be two co-chairs, with one from each original group during the first term of the new group. WGMDM nominates Helge Sagen to continue as Co-Chair.*
- *the new group be called the ICES Working Group on Data and Information Management (WGDIM), to reflect the new mission and status of the group.*
- *the new group be placed either at the level of ConC and MCAP or, alternatively, at the level of the committees, in order to reflect the ICES wide mission and task of the new group. The new group should report to the three advisory committees and to the Oceanography Committee, in order to maintain close linkages with both the scientific and the advisory parts of the ICES structure.*

A tentative schedule (also depending on the outcome of the merging process with SGMID) for the coming annual meetings is:

- 2007: Madrid - Spain
- 2008: Thornton - UK
- 2009: Silver Spring - USA
- 2010: Copenhagen - Danmark

The discussion at the joint meeting WGMDM and SGMID

The joint meeting started with all attendants introducing themselves.

Chris Zimmermann (Co-Chair SGMID) gave a short history of the SGMID and highlighted its achievements. One of the major achievements of the SGMID is the development and implementation of the new ICES data policy

An ICES Study Group has a lifetime of 3 years and the question now (at the end of the three years) is how to avoid that the expertise of the SGMID is lost. The two options for SGMID are:

- continue as a new, separate group
- merge with MDM into a new group

Helge Sagen (Co-Chair WGMDM) then gave a short history of the WGMDM and highlighted its achievements. Among these are: the development of the ICES data collection guidelines, the promotion of good data management practices within ICES, the activities in data quality and quality control, etc. The WGMDM membership is a mixture of scientists, data specialists and IT professionals. MDM covers physical, chemical and biological oceanographic data.

Helge Sagen continued to present the proposed MDM ToRs for 2006/2007, including the suggested text (or mission statement) for the new group (see above).

Since the SGMID is at the end of its existence, there are no new ToRs. Peter Wiebe (Co-Chair SGMID) presented a series of recommendations of SGMID for the future.

ICES is now charged to provide ecosystem based advice and develop ecosystem management concepts, especially with respect to fishery assessments. To do this, requires the most effective use of data. The new data policy serves to enhance this possibility.

1) *Data availability: There are major gaps in the ecosystem assessments apparently caused by lack of data. However, more data are likely available for use than currently perceived either inside the ICES system or externally. Thus, groups developing the advice may not be aware of the existence of relevant data sets either because of a lack of communication or the fact that data not being delivered on a timely basis. In addition, those environmental assessments that are now being produced by some ICES working groups are not being effectively utilized by other groups making assessments where environmental data should be considered (NORSEP, WGRED).*

Within the ICES working group reports, trends and other kinds of information are s and tables, but not available electronically. This makes it difficult to be useful in assessments.

Conclusions:

i) *Communication between ICES expert groups needs to be improved*
ii) *Data contributors need to be encouraged to submit data when they are useful, not when they are completely quality controlled. [this leads to quality flags and data updates]*

Action for conclusion i)

- *A group (or someone - the ICES Data Centre) should be charged to produce a data availability and usage map.*

Action for conclusion ii)

- *There is a need for proposed technical solutions to assist the ICES Data Centre to handle this issue.*

2) *Transparency: Much of the data that are being used to make the environmental assessments do not reside within the ICES and little effort is being expended to track the data used to make the assessments. If the external data are being used to formulate advice, it is often difficult to later re-establish the data sets and thus the basis for the advice.*

3)   *Products based on ICES data holdings: Trend plots and gridded data products are desired by ICES Annual meeting attendees. These would serve as an incentive to the data contributors.*

4)   *Monitoring of Data Policy Implementation:*

   Action for 2, 3, and 4:

- *Identify areas of concern and give guidance to the ICES Data Centre for scientific approaches and technical solutions.*

5)   *The data centre needs to develop strategies that enable it to be a focal point for data storage and distribution to the ICES community. The strategy should be user driven.*

   Action for 5:

- *Ultimately want to develop means for user feedback about the ICES data centre and its effectiveness for example by developing an online user survey. There needs to be an independent group to evaluate the survey information.*

The meeting then decided to discuss the mission statement and ToRs of the new group first, before discussing whether these tasks can best be handled by one (merged) group or by two separate groups (meeting back-to-back) or discussing practicalities like membership, chairmanship and place in the ICES structure of the new group.

The meeting drafted the following mission statement:

Mission

Provide ICES with solicited and unsolicited advice on all aspects of data management including technical, data policy and strategy, and user oriented guidance. Identify problems in a timely manner that interfere with ICES' ability to assess and advice.

- *Identify major gaps in data availability or data accessibility*
- *Resolve issues related to transparency and traceability in relation to ICES output*
- *Advise on products based on ICES data holdings*
- *Avoid duplicate work by coordinating and liaising with relevant international data management bodies and programmes like PICES, IOC/IODE, GOOS, SeaDataNet, IPY (International Polar Year)*

It was decided that the new group needs a new name, to reflect the new mission and tasks of the group. It was also decided that the new group needs two co-chairs, one from each group, to share the burden of the work and show the origin of both groups.

As the new name 'Working Group on Data and Information Management (WGDIM)' was proposed.

WGMDM nominated Helge Sagen as one of the two co-chairs. SGMID didn't nominate a co-chair at this stage.

Despite the cordial invitations expressed by several WGMDM members for the two groups to join and merge into a new group, with a new mission statement as agreed above, new tasks, a new name and new membership, the SGMID members did not express their willingness and/or intention to merge the two groups.

The Co-Chair of WGMDM concluded the discussions:

WGMDM and SGMID should be merged into one group with its main focus on all aspects of data management to provide ICES with solicited and unsolicited advice called WGDIM,

Working Group on Data and Information Management. SGMID is terminated, due to being a study group, after the 2006 Annual Science Conference. The co-chair of WGMDM suggests to invite all members of SGMID to join the WGMDM group and change the name of the new joint group into WGDIM with a new set of ToRs reflecting the view of both groups. The co-chair Helge Sagen of WGMDM is nominated as one of the two new co-chairs of WGDIM.

The Co-Chair, Peter Wiebe of SGMID, expressed his acknowledgment of the WGMDM co-chair's view, whereas the other co-chair of SGMID, Chris Zimmerman, expressed his view as to terminate both groups and leave it to CONC to decide what to do next.

14   Proposed terms of reference for 2007

a) Data type guidelines - Assess the continuous development and updating of WGMDM guidelines and the list of other data collection guidelines. Encourage the use of the WGMDM guidelines by the scientific community. (Action Plan 4.12, 6.4);

b) Taxonomy issues – Report on the progress of ITIS and ERMS in supporting ICES taxonomic needs. (Action Plan 6.4);

c) Operational Oceanography issues – Promote the use of established data management practices in Operational Oceanography to benefit and support ICES work. (Action Plan 5.13.4);

d) XML – extended Markup Language - Assess and promote XML at the national and international level to benefit and support ICES work. (Action Plan 5.13.4, 6.1);

e) GIS Geographical Information Systems - Investigate the use of GIS (Open Source and commercial) with emphasis on the web applications. (Action Plan 1.10, 6.1, 6.2);

f) Mission of the joint WGMDM and SGMID group WGDIM Working Group on Data and Information Management

Provide ICES with solicited and unsolicited advice on all aspects of data management including technical, data policy and strategy, and user oriented guidance. Identify problems in a timely manner that interfere with ICES' ability to assess and advice.

- Identify major gaps in data availability or data accessibility
- Resolve issues related to transparency and traceability in relation to ICES output
- Advise on products based on ICES data holdings
- Avoid duplicate work by coordinating and liaising with relevant international data management bodies and programmes like PICES, IOC/IODE, GOOS, SeaDataNet, IPY (International Polar Year)

15   Any other business

WGMDM recommends the continuation of ICES CSR processing and emphasizes that discussions and tuning are required between BSH/DOD and ICES to prevent a misunderstanding at national data centres in Europe concerning optimisation and harmonisation of ROSCOP/CSR databases. Both databases should be of equal content. ICES is a principal partner in the EU 6th Frame Work proposal SeaDataNet, and has agreed on the mirroring and constructive collaboration of the ROSCOP/CSR databases. The item should be kept under discussion at the next MDM meeting.

16   Concluding remarks

The WGMDM members were very pleased to have participation from the ICES Data Centre due to the important cooperation between the members and the data centre.

17   Next meeting

The WGMDM Chairs accepted the kind offer from M. Garcia on behalf of Spain to host the next meeting in Madrid from the second week of May 2007.

The WGMDM Co-Chair closed the meeting and thanked the participants for their contribution. On behalf of the WGMDM, the Chairs also thanked the ICES Secretariat for their warm hospitality.

Annex 1: List of participants

NAME	ADDRESS	PHONE/FAX	EMAIL
Alenius, Pekka	Finnish Institute of Marine Research, P.O. Box 32, (Erik Palménin aukio 1), 00561 Helsinki, Finland	+358 9 613 941 operator +358 9 613 94439 direct +358 9 323 2970 fax	pekka.alenius@fimr.fi www.fimr.fi
Bruin, Taco de Chair, National Oceanographic Data Committee	Royal Netherlands Institute for Sea Research (Royal NIOZ) P. O. Box 59 1790 AB Den Burg Netherlands	+31 222 369479 +31 222 319674	bruin@nioz.nl www.nioz.nl www.nodc.nl
Dawson, Garry	Maritime Environment Information Centre UK Hydrographic Office Admiralty Way Taunton Somerset TA1 2DN United Kingdom	+44 1823 337900 extn 3225 +44 1823 284077	garry.dawson@ukho.gov.uk www.ukho.gov.uk
Evans, Gaynor	British Oceanographic Data Centre (BODC) Joseph Proudman Building 6 Browlow street Liverpool L3 5DA United Kingdom	+44 151 795 4881 +44 151 795 4912	gaev@bodc.ac.uk www.bodc.ac.uk
Fyrberg, Lotta	SMHI, Oceanographic Unit Nya Varvet 31 SE- 426 71 Vastra Frolunda Sweden	+46 (0)31 751 8978 +46 (0)31 751 8980	www.smhi.se lotta.fyrberg@smhi.se
García, María-Jesús	Instituto Español de Oceanografía Corazón de María 8 28002 Madrid Spain	+34 91 3473612 +34 91 4135597	mjesus.garcia@md.ieo.es www.ieo.es/INDAMAR
Gelfeld , Robert D.	U.S. National Oceanographic Data Cen-ter 1315 East West Highway, Bldg 3, Room 4230 Silver Spring MD, 20910-3282, USA	+1 301 713 3295 extn 179 +1 301 713 3303 fax +1 240 676 3595 mob	robert.gelfeld@nodc.noaa.gov www.nodc.noaa.gov
Gillin, Julie	ICES H. C. Andersens Blvd 44-46 DK-1553 Copenhagen Denmark	+45 33 38 67 12 +45 33 93 42 15 fax	julie@ices.dk www.ices.dk
Jans, Siegrid	Management Unit of the Mathematical Modles of the North Sea (MUMM) Belgium Marine Data Centre (BMDC) Gulledelle 100 B-1200 Brussels Belgium	+32 2 773 21 44	S.Jans@mumm.ac.be www.mumm.ac.be or www.mumm.ac.be/datacentre
Joyce, Al	CEFAS Lowestoft Laboratory Pakefield road Lowestoft Suffolk NR33 Φ HT United Kingdom	+44 1502562244 (general) +44 1502524439 (direct)	a.e.joyce@cefas.co.uk www.cefas.co.uk

NAME	ADDRESS	PHONE/FAX	EMAIL
Krasemann, Hajo	Institute for Coastal Research GKSS Research Centre D 21502 Geesthacht Germany	+49 4152 87 2022 +49 4152 87 1596	krasemann@gkss.de http://www.gkss.de http://coast.gkss.de
Maillard, Catherine	IFREMER centre de Brest IDM/SISMER BP 70 29280 Plouzané France	+33 (0)2 98 22 42 79 +33 (0)2 98 22 46 44	catherine.maillard@ifremer.fr ww.ifremer.fr/sismer
Moiseenko, Georgiy	Information Systems Laboratory Russian Federal Research Institute of Fisheries & Oceanography (VNIRO) 17, Verkhne Krasnoselskaya Moscow 107140 Russia		georgem@vniroinfo.ru
Mortensen, Ebba	Faroese Fisheries Laboratory Noatun 1 P.O Box 3051 FO-110 Torshavn Faroe Islands	+298 35 39 00 +298 35 39 01(fax)	ebbam@frs.fo www.frs.fo
Nast, Friedrich	Deutsches Ozeanographisches Datenzentrum Bundesamt für Seeschiffahrt und Hydrographie (DOD/BSH) Bernhard-Nocht-Str. 78 D-20359 Hamburg Germany	+49 (0)40-3190-3420 +49 (0)40-3190-5000 (fax)	friedrich.nast@bsh.de www.bsh.de/Oceanography/DOD/htm
O'Brien, Todd	National Marine Fisheries Service (NMFS) F /ST7 #12503 1315 East-West Hwy Silver Spring, MD 20910 USA	+1 301 713 2363 x174	Todd.OBrien@noaa.gov http://www.st.nmfs.noaa.gov/plankton
Olsonen, Riitta	Finnish Institute of Marine Research, P.O. Box 32, (Erik Palménin aukio 1), 00561 Helsinki, Finland	+358 9 613 941 opr +358 9 613 94523 dir +358 9 323 2970 fax	riitta.olsonen@fimr.fi www.fimr.fi
Parner, Hjalte	Danish Institute for Fisheries Research Dept of Marine Ecology and Aquaculture Kavalergaarden 6 2920 Charlottenlund, Denmark		hp@dfu.min.dk
Sagen, Helge (co-chair)	Institute of Marine Research Norwegian Marine Data Centre PB 1870 Nordnes 5817, Bergen, Norway	+47 55 23 8447 dir +47 55 23 8555 fax	helge.sagen@imr.no www.imr.no
Szaron, Jan	SMHI, Oceanographic Unit Nya Varvet 31 SE - 426 71 Vastra Frolunda, Sweden	+46 (0)31 751 8971 +46 (0)31 751 8980	jan.szaron@smhi.se www.smhi.se
Wichorowski, Marcin	Institute of Oceanology Polish Academy of Sciences Powstancow Warszawy 55 81–712 Sopot Poland	+(48 58) 5517 283 +(48 58) 5512 130	wichor@iopan.gda.pl

NAME	ADDRESS	PHONE/FAX	EMAIL
Observers			
Green, Else Juul	ICES H. C. Andersens Blvd 44-46 DK-1553 Copenhagen Denmark	+45 33 38 67 12 +45 33 93 42 15	else@ices.dk www.ices.dk
Reimert, Susanne	ICES H. C. Andersens Blvd 44-46 DK-1553 Copenhagen Denmark	+45 33 38 67 16 +45 33 93 42 15	susanne@ices.dk www.ices.dk
Sørensen, Marilynn	ICES H. C. Andersens Blvd 44-46 DK-1553 Copenhagen Denmark	+45 33 38 67 20 +45 33 93 42 15	marilynn@ices.dk www.ices.dk
Excused members			
Almeida, Sara	Instituto Hidrografico, Oceanography Department, Rua das Trinas, 49, 1249–093 Lisboa, Portugal	+351 210943000 (general) +351 210943047 (direct) +351 210943299	sara.almeida@hidrografico.pt www.hidrografico.pt
Berghe, Edward vanden	Flanders Marine Data and Information Centre Flanders Marine Institute Vismijn, Pakhuizen 45-52 B-8400 Oostende Belgium	+32 59342130 +32 59342131	wardvdb@vliz.be www.vliz.be
Danielsen, Magnus	Marine Research Institute P.O. Box 1390 Skulagata 4 IS-121 Reykjavik Iceland		mdan@hafro.is
Eisner, Richard	Dept. Of Fisheries & Oceans Bedford Institute of Oceanography P.O. Box 1006 Dartmouth, NS B2Y 4A2 Canada		eisnerr@dfo-mpo.gc.ca
Feistel, Sabine	Insitituf für Ostseeforschung Seestrasse 15 D-18119 Warnemünde Germany		sabine.feistel@io-warnemuende.de
Fernand, Liam	CEFAS, Lowesoft Laboratory Lowesoft Suffolk NR33 Φ HT United Kingdom		l.j.fernand@cefas.co.uk
Fichaut, Michéle (co-chair)	IFREMER centre de Brest IDM/SISMER BP 70 29280 Plouzané France	+33 2 98 224643 +33 2 98 22 4644	michele.fichaut@ifremer.fr www.ifremer.fr/sismer
Gregory, Doug	Dept. Of Fisheries & Oceans Bedford Institute of Oceanography P.O. Box 1006 Dartmouth, NS B2Y 4A2 Canada		gregoryd@dfo-mpo.gc.ca
Grzebielec, Ryzard	Sea Fisheries Institute U. Kollataja 1 PL-81-322 Gdynia Poland	+48 586201720 ext 266 +48 586202831	ryseik@mir.gdynia.pl

NAME	ADDRESS	PHONE/FAX	EMAIL
Excused members (continued)			
Larsen, Karin M.H.	Faroese Fisheries Laboratory Noatun 1 P.O Box 3051 FO-110 Torshavn Faroe Island		Karinl@frs.fo www.frs.fo
Lilover, Madis-Jaak	Marine Systems Institute Tallinn Technical University Akadeemia tee 21 12618 Tallinn Estonia		madis@phys.sea.ee
Hubert, Rees	CEFAS Burham-on-Crouch Laboratory Remembrance Avenue Burham-on-Crouch Essex CM0 8HA United Kingdom		h.l.rees@cefas.co.uk
Rickards, Lesley	British Oceanographic Data Centre (BODC) Joseph Proudman Building 6, Brownlow Street Liverpool L3 5DA United Kingdom	+44 151 795 4897 +44 151 795 4912	ljr@bodc.ac.uk www.bodc.ac.uk
Sagan, Slawomir	Institute of Oceanology Polish Academy of Sciences Powstancow Warszawy 55 81–712 Sopot Poland	+(48 58) 5517 283 x211 +(48 58) 5512 130	sagan@iopan.gda.pl www.iopan.gda.pl
Slesser, George	Marine Laboratory Fisheries Research services (FRS) P.O Box 101 Victoria road Aberdeen, AB11 9DB Scotland United Kingdom	44 1224 876544 44 1224 295511	slesser@marlab.ac.uk www.frs-scotland.gov.uk
Tomlinson, Scott	Oceanographic Time Series Section Fisheries and Oceans Canada Data Management and Client Services Division 200 Kent Street Ottawa, Ontario K1A OE6 Canada		Tomlinson@meds-sdmm.dfo-mpo.gc.ca
Valdimarsson, Hedinn	Marine Research Institute P.O. Box 1390 Skulagata 4 IS-121 Reykjavik Iceland		hv@hafro.is

Annex 2: Agenda

Detail Meeting Agenda for WGMDM 2006 in Copenhagen (Denmark)

Monday 8 May – Rapporteur Al Joyce

0900-0945	Opening greetings by H. Sagen	[H. Sagen]
	Welcome by J. Gillin	[J. Gillin]
	Local arrangements by ICES V.Piil	[V. Piil]
	Review meeting schedule and items for discussion	[H. Sagen]
	Review action items from last year's meeting	[H. Sagen]
0945-1015	Presentation of the new website	[G. Evans]
	Action points 4,5,6,7	
1015-1030	Discussion on new website	
1030-1100	Presentation of PICES TCODE work	[G. Moiseenko]
1100-1130	Coffee break	
1130-1230	TOR A) Quality assurance	[T. de Bruin]
	Questionnaire; merging CTD and water sample data	[T. de Bruin]
	Action points 17, 18, 19	
	List of best data collection guidelines	[T. O'Brien]
	Action points 20, 21, 22	
1230-1400	Lunch	
1400-1500	TOR B) Guidelines	[G. Dawson]
	Promoting WGMDM guidelines	[H. Sagen]
	Action points 11, 13, 14, 15	
	Revised guidelines	[G. Dawson]
	Action point 12	
1500-1530	Coffee break	
1530-1600	TOR C) Taxonomy issues	[T. O'Brien]
	Implementation ITIS at member institutions	
	ICES recommending second taxonomy system, ERMS	
	Status of BODC missing codes in ITIS	[G. Evans]
1600-1700	TOR D) Operational oceanography	[J. Szaron]
	QC procedures in OO projets like ARGO, GOSUD	
	Action points 23, 24, 25, 30, 31	

Tuesday 9 May – Rapporteur Lotta Fyrberg

0900-0945	Presentation of IPY subcommittee data management	[T. de Bruin]
	Discussion on national activities in IPY Data Management	
0945-1015	TOR E) XML – future directions	[M. Wichorowski]
	Action points 21, 26,27	
1015-1100	TOR F) The use of GIS in marine data systems	[S. Jans]
	Investigations on open source software	[S. Jans/H. Sagen]
	Action point 29	
1100-1130	Coffee break	
1130-1230	Report on other action points not listed under TORs	[H.Sagen/C.Maillard]
	Action point 1, 2, 3, 32, 33, 34	
1230-1400	Lunch	
1400-1500	TOR G) Future structure – Merge the WGMDM	[H. Sagen]
	with the SGMID into a new group WGDIM	
	TORs at SGMID/WGMDM that fits WGDIM TORs	
	Presentation of SGMID TORs 2005/6	
1500-1530	Coffee break	
1530-1700	Discussion on the future structure before the joint	[H. Sagen]
	meeting of SGMID and WGMDM	
	Suggestion of co-chair from WGMDM to continue in WGDIM	
2000-	Get together WGMDM /SGMID (dinner at Bryggeriet)	

Wednesday 10 May – Rapporteur Taco de Bruin

0900-1100	Continued discussions on the merger	[H. Sagen]

Joint meeting of SGMID and WGMDM

1100-1115	Presentation of WGMDM TORs 2006/7	[H. Sagen]
1115-1130	Presentation of SGMID TORs 2006/7	[C. Zimmermann]
1130-1230	Future structure – next meeting- group photo	[Chairs]
1230-1400	Lunch	
1400-1500	Name change of WGMDM into WGDIM	[Chairs]
	Including members – new co-chairs	
1500-1530	Contribution to the theme session on DM at AS	
	Action point 8, 9, 10, 16, 28	
1530-1600	Other business – conclusions – next meeting	[Chairs]

Annex 3: WGMDM (WGDIM) Draft Terms of Reference 2007

The **Working Group on Marine Data Management** [WGMDM] (Chair: H. Sagen, Norway) will meet in Madrid, Spain from 7–9 May 2007 to:

a) Data type guidelines - Assess the continuous development and updating of WGMDM guidelines and the list of other data collection guidelines. Encourage the use of the WGMDM guidelines by the scientific community. (Action Plan 1.7, 4.12, 5.10, 6.4);

b) Taxonomy issues – Report on the progress of ITIS and ERMS in supporting ICES taxonomic needs. (Action Plan 6.4);

c) Operational Oceanography issues – Promote the use of established data management practices in Operational Oceanography to benefit and support ICES work. (Action Plan 1.7, 5.13.4, 6.4);

d) XML – extended Markup Language - Assess and promote XML at the national and international level to benefit and support ICES work. (Action Plan 5.13.4, 6.1);

e) GIS Geographical Information Systems - Investigate the use of GIS (Open Source and commercial) with emphasis on the web applications. (Action Plan 1.10, 6.1, 6.2);

f) Mission of the joint WGMDM and SGMID group WGDIM Working Group on Data and Information Management. (Action Plan 6.1, 6.4);

Provide ICES with solicited and unsolicited advice on all aspects of data management including technical, data policy and strategy, and user oriented guidance. Identify problems in a timely manner that interfere with ICES' ability to assess and advice.

- Identify major gaps in data availability or data accessibility
- Resolve issues related to transparency and traceability in relation to ICES output
- Advice on products based on ICES data holdings
- Avoid duplicate work by coordinating and liaising with relevant international data management bodies and programmes like PICES, IOC/IODE, GOOS, SeaDataNet, IPY (International Polar Year)

WGMDM (WGDIM) will report by DATE to the attention of the XXXXX Committee.

Supporting Information

PRIORITY:	This Group flies the flag for ICES in setting standards for global databases. It also provides an important interface for oceanographic and environmental data management in ICES, and promotes good data management practice. The group provides ICES with solicited and unsolicited advise on all aspects of data management including technical, data policy and strategy, and user oriented guidance.
SCIENTIFIC JUSTIFICATION AND RELATION TO ACTION PLAN:	a) Action Plan 1.7, 4.12, 5.10, 6.4 b) Action Plan 6.4 c) Action Plan 1.7, 5.13.4, 6.4 d) Action Plan 5.13.4, 6.1 e) Action Plan 1.10, 6.1, 6.2 f) Action Plan 6.1, 6.4 a) This will encourage standardization of approach in management and quality control across a broad spectrum of data types and to promote best practice in data management. It will include promoting and developing the WGMDM guidelines and also development of recommended practices for merging CTD and water bottle data. b) The ITIS can play a major role in standardization and improving the ease of data exchange. It is an evolving partnership which requires input from (new) collaborators whilst maintaining community standards. In particular, this will seek to improve coverage of non-North American marine species, encourage the development of remote data entry and implementation of a mirror site. The ITIS should be actively promoted with the communities and groups encouraged feed in their information. c) As GOOS activities develop it is essential that the modern marine data management systems are in place and utilized effectively. This will serve to assess established systems and recommend best practice for data management for operational oceanography. This item will examine various issues including metadata directories, developments for quality control, referral mechanisms, products (climatologies), data stewardship, etc. d) The data management community must evaluate the use of new technologies, such as XML, in a broader context. The WGMDM will attempt to integrate the efforts of SGXML into this broader context and develop possible directions for ocean data management in a distributed environment. The efforts of SGXML have potential implications and application to general data exchange procedures. These efforts should be followed within the broader context of general oceanographic data flow. e) The use of GIS is becoming increasingly important for the marine community. The potential benefits (and problems) of this technology will be examined and recommendations made on best practice and use of GIS. Open Source solutions will have to be investigated, but with emphasis on web applications. f) Establishing data integration is a step in developing the scientific basis for an ecosystem based approach to management. This is of high priority to ICES. Good data management practice is required to ensure the underpinning databases are as complete and as high quality as possible. Data management expertise from WGMDM will complement user requirements from SGMID.
RESOURCE REQUIREMENTS:	None.
PARTICIPANTS:	The Group is normally attended by some 20–25 members and guests. The new merged group would probably be around 30-35 members.
SECRETARIAT FACILITIES:	None, accept from preparation of material from the Data Centre Manager.
FINANCIAL:	The Data Centre Manager should attend these meetings and if possible also other employees at the data centre.
LINKAGES TO ADVISORY COMMITTEES:	Report is seen by ACE.
LINKAGES TO OTHER COMMITTEES OR GROUPS:	None, but links should be encouraged to broaden the scope of the group to more generic data management issues.
LINKAGES TO OTHER ORGANIZATIONS:	IOC, especially its Working Committee on International Oceanographic Data and Information Exchange (IODE).
SECRETARIAT MARGINAL COST SHARE:	

Annex 4: Recommendations

Recommendations made by the ICES WGMDM on International Polar Year (IPY) data management.

Introduction

The International Polar Year 2007/2008 is an intense, interdisciplinary, and internationally coordinated campaign of research and observations, which will deepen understanding of polar processes and their global linkages. Many of these IPY projects are oceanographic research projects, carried out in the Arctic and Southern Oceans. Others have an important marine component.

Rationale

IPY knowledge and the observations upon which it is built must be effectively managed to ensure the greatest benefit in the future. IPY-generated data should be carefully and thoughtfully collected, used collaboratively, and adequately preserved.

IPY aims to make the IPY data set into its lasting legacy.

In the words of the Framework document for the International Polar Year 2007-2008:

"In fifty years time the data resulting from IPY 2007-2008 may be seen as the most important single outcome of the programme."

And

"These data … will act as benchmark data which can serve as a baseline against which global change is measured"

The ICES WGMDM welcomes the IPY data policy, based amongst others on the IOC and CLIVAR data policies and urges (national) IPY programmes and projects to adhere to the data policy.

The ICES WGMDM makes the following recommendations:

Recommendations:

1. All data gathered under the auspices of the IPY 2007/2008 programme should be made available fully, freely and on the shortest feasible timescale to appropriate long-term archives and data centres, such as NODCs and WDCs for oceanographic data. Ultimately, all IPY data should be submitted to a relevant World Data Centre (WDC).

2. To ensure this in general and in a harmonized way, the WDC system should become a member of the IPY Data Policy and Management Subcommittee.

MDM members shall take a pro-active role in IPY data management, contacting, in close cooperation with their national polar counterparts, the national IPY committees and offering their expertise and services for data management.

Annex 5: List of acronyms and terms

Acronym or Term	Description
ACE	Advisory Committee on Ecosystems
ADCP	Acoustic Doppler Current Profiler
ARGO	The Array for Real-time Geostrophic Oceanography (profiling floats)
ASC	Annual Science Conference organised by ICES
BMDC	Belgian Marine Data Centre
BODC	British Oceanographic Data Centre
BSH	Bundesamt für Seeschifffahrt und Hydrography (Germany)
BWGDDP	Bureau Working Group for Data Development Project
CD-ROM	Compact Disk – Read Only Memory
CEFAS	Centre for Environment Fisheries and Aquaculture Science
COOP	Coastal Ocean Observations Panel (GOOS)
CSR	Cruise Summary Report (formerly known as ROSCOP)
CTD	Conductivity-Temperature-Depth
DOD	Deutsches Ozeanographisches Dataenzentrum
DOME	Database on Oceanography and Marine Ecosystems (Integrated ICES database)
EDIOS	European Directory of the Initial Ocean-observing System
EDMED	European Directory of Marine Environmental Data
ETDMP	JCOMM-IODE Expert Team on Data Management Practices
ERMS	European Register of Marine Species
ESRI	Environmental Systems Research Institute
EU	European Union
EUROGOOS	European Global Ocean Observing System
FIMR	Finnish Institute of Marine Research
FRS	Fisheries Research Services
GBIF	Global Biodiversity Information Facility
GE-BICH	IOC's Group of Experts on Biological and Chemical Data Management and Exchange Practices
GIS	Geographic Information System
GCMD	Global Change Master Directory (from NASA)
GOOS	Global Ocean Observing System
GOSUD	Global Ocean Surface Underway Data
IBTS	International Bottom Trawl Survey
ICES	International Council for the Exploration of the Sea
IEO	Instituto Español de Oceanografía
IMR	Institute of Marine Research (Norway)
IOC	Intergovernmental Oceanographic Commission
IODE	International Oceanographic Data and Information Exchange
IOPAS	Institute of Oceanology Polish Academy of Sciences
ISO	International Standards Organisation
ITIS	Integrated Taxonomic Information System
JCOMM	IOC-WMO Joint Technical Commission on Oceanography and Marine Meteorology
MASDEA	MArine Species Database of Eastern Africa
MDIP	Marine Data and Information Partnership (UK)

MODIS	MODerate resolution Imaging Spectroradiometer
MUMM	Management Unit of Mathematical Modelling for the North Sea
NARMS	North Atlantic Register of Marine Species
NERC	Natural Environment Research Council
NODC	U.S. National Oceanographic Data Center
NWARMS	North West Atlantic Register of Marine Species
OBIS	Ocean Biogeographic Information System
OO	Operational Oceanography
OOPC	Ocean Observations Panel for Climate (GOOS)
POGO	Partnerships for Observation of the Global Oceans
QC	Quality Control
ROSCOP	Report of Observations/Samples Collected by Oceanographic Programmes (now CSR)
SGMEDI	Study Group on the Marine Environmental Data Inventory
SGMID	ICES Study Group on the Management of Integrated Data
SGXML	ICES/IOC Study Group on the Development of Marine Data Exchange Systems using XML
SISMER	French National Oceanographic Data Centre
SMHI	Swedish Meteorological and Hydrological Institute
SOOP	Ship of Opportunity Programme
SQL	Structured Query Language
SST	Sea Surface Temperature
TSN	Taxonomic Serial Number
UKHO	UK Hydrographic Office
UNESCO	United Nations Educational, Scientific and Cultural Organisation
URMO	UNESCO Register of Marine Organisms
VLIZ	Flanders Marine Institute
WDC	World Data Centre
WGMDM	Working Group on Marine Data Management
WGOH	Working group on Oceanic Hydrography
WMO	World Meteorological Organisation
XBT	Expendable Bathythermograph
XML	Extensible Markup Language

Annex 6: WGMDM/WGDIM action list 2006/2007

No.	Action item	Who
1	Investigate what IOC/IODE does in publishing online databases and Webportals on the Internet, (e.g. OceanPortal)	G. Evans, B. Gelfeld
2	Investigate different solutions to facilitate a search engine on the WGMDMD website	G. Evans
3	Contact IODE to set up a link with PICES	R. Gelfeld
4	Chair of the WGMDM asked to attend PICES general meeting in Japan to form link between the two groups and to promote the work of the WGMDM and report back	Chairs
5	Promote international metadata and cruise summary report systems to the PICES community	F. Nast
6	Check the optimum time you need to wait before firing the water bottles on CTD rosettes	C. Maillard, T. de Bruin
7	Summit results of questionnaire to member institutes, oceanographers (physical, chemical and biological), and report back to WGMDM	All
8	Communicate results of questionnaire to the Oceanic Hydrography Working Group	T. de Bruin, Co-chairs
9	Place an accurate list of best data collection guidelines on webpage and keep the list updated	H. Sagen, G. Evans, M-J, Garcia and T. de Bruin
10	Request IODE-GE-BICH to co-operate on identifying guidelines on biodiversity by writing a letter from the WGMDM to IODE	E. vanden Berghe, co-chairs
11	Complete the revision of the MDM guidelines by 31. August 2006 Revise the ADCP guideline Update due to new instrumentation the moored meters guidelines Review the guidelines for CTD/Discrete water samples, include the results of CTD questionnaire into the guideline and decide whether to include moored CTDs	H. Sagen G. Slesser A. Joyce and T. de Bruin
12	Report back to WGMDM if any new guidelines are required	All
13	Draft a new guideline on multi-beam data	G. Dawson
14	Communicate with the chair of the IOC/IODE to promote the adoption of the WGMDM guidelines as the IOC/IODE' official guidelines	Co-chairs
15	ICES Data Centre to supply WGMDM with exact web statistics on WGMDM guidelines	J. Gillin
16	ICES Data Centre to supply improved access to WGMDM guidelines. A suggestion was that they should be placed on home page	J. Gillin
17	Ask the ICES Data Centre to promote the WGMDM guidelines within ICES and ensure all members have links to the guidelines	T. de Bruin, J. Gillin, all
18	Make the WGMDM guidelines available in both PDF and Word format on the website	G. Evans
19	Generate a summary of taxonomic information systmes (e.g. ITIS, NODC, BODC, ERMS, Rubin) actively in use in ICES member country databases	T. O'brien, All
20	Compile a list of all observed taxonomix species currently in use in ICES member databaes (e.g. BODC, NOAA, BSH, FIMR), with indication of each species presence or absence in the ERMS and ITIS databases	T. O'Brien, All
21	Submit the BODC not-in-ITIS taxa listing to ERMS "taxonomic input centre" and report on ERMS progress in the pre-reviewing and sending these to ITIS, and report on any ITIS response	T. O'Brien, E. vanden Berghe
22	Update list of portals by sending information to J. Szaron	All
23	Make latest report from GOSUD available to WGMDM members	R. Gelfeld
24	Send details on POGO to ICES Data Centre to avoid duplication of work especially concerning cruise databases	T. de Bruin, J. Gillin
25	Check whether GOSUD has guidelines for underway data and if they are included in the other guidelines list	G. Dawson
26	Inform WGOH on the list of Pperational Oceanography sites available on Internet	Chairs

27	Promote to the ICES community that WGMDM strongly encourages the use of established QC procedures and the use of international standards in the filed of Operational Oceanography	J. Szaron, Chairs
28	Establish contact between WGMDM members and JCADM members to approach together national IPY committees to assist with organizing and providing national IPY data management	T. de Bruin, All
29	Report back to WGMDM the discussions of the IOC MarineXML Steering Group	M. Wichorowski, Chairs
30	Publish XML guidance on the WGMDM website with links to MarineXML websites	M. Wichorowski, G. Evans, M-J Garcia
31	Investigate the use of Open source GIS focusing on web applications	S. Jans, M. Wichorowski, M. Fichaut, H. Sagen, E. Vanden Berghe
32	Prepare a questionnaire on the use of Open Source GIS and distribute it in the ICES community to be able to give recommendations on the best use of GIS	S. Jans
33	Investigate possibilities of the Open Source GIS system GRASS	P. Alenius, All
34	Contact representatives of the EU Humboldt project to get their view on GIS systems and solutions useful to researchers and report back to WGMDM at the next meeting	S. Jans
35	Report the results of the discussion between WDC and ICES on how they could cooperate more effectively	J. Gillin, R. Gelfeld
36	Request WMDM members to contribute to updating and loading of information in the EDIOS database	L. Fyrberg
37	Send current meters inventory to BODC	H. Sagen, H. Parner, S. Jans, T. de Bruin, E. Vanden Berghe
38	Provide a link from the WGMDM web pages to the BODC International current meter inventory	G. Evans
39	Send IBTS data as soon as possible to ICES to support EuroGOOS and NORSEPP program	H. Sagen, J. Szaron, M. Fichaut, A. Joyce, G. Slesser, H. Parner, F. Nast
40	Further investigate the SharePoint system used to share information between the group members at ICES	G. Evans
41	Send a copy of the CSR online system to ICES data centre including documentation and all lists	F. Nast
42	Circulate the XML schema within WGMDM conserning CSRs	F. Nast, M. Fichaut
43	Compare the lists of ship codes used at ICES data centre and SeaSearch/SeaDataNet	J. Gillin

Annex 7: Presentation of the WGMDM external web pages
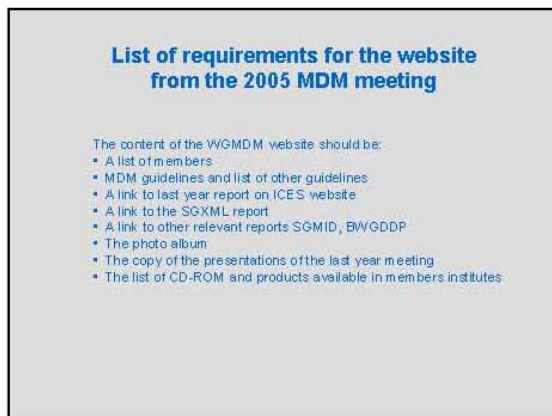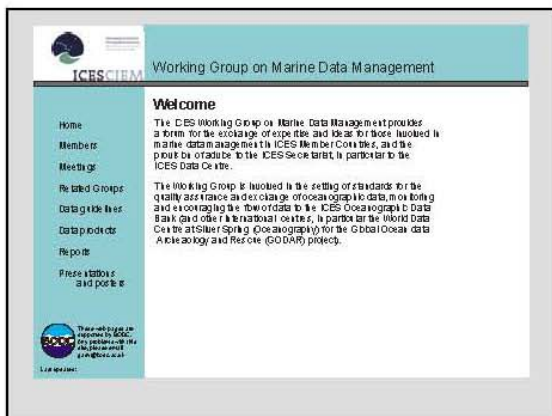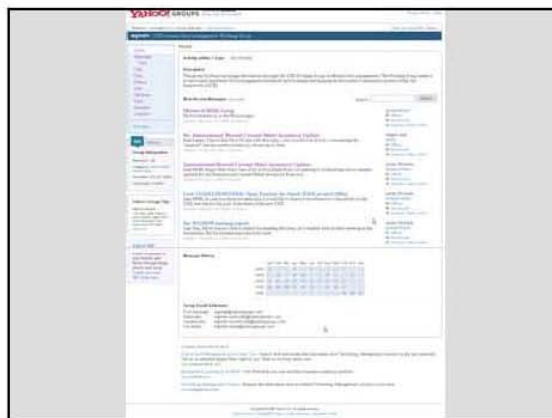
Web Page	Content of Web Page
Home	Introductory paragraphs taken from http://www.ices.dk/committe/occ/mdmhomepage.asp
Members	List of current members Photo album
Meetings	Next meeting information (agenda, local arrangements) Previous meeting information (action list for current inter-sessional period and meeting presentations)
Related Groups	ICES groups (SGMID, SGXML) IOC groups
Data Guidelines	ICES WGMDM Data Type Guidelines Word and PDF files Other Data Type Guidelines (Taco de Bruin)
Data Products	List of CDROM products from member organisations List and links to Operational Oceanography data and products
Reports	Link back to ICES MDM web page for report PDFs Links back to ICES web pages to include: 2004 SGXML report http://www.ices.dk/reports/OCC/2004/SGXML04.pdf 2005 SGMID report http://www.ices.dk/reports/ACE/2005/SGMID05.pdf BWGDDP report
Presentations and Posters	Presentations (given externally by MDM members or presentations that are relevant to MDM members) Poster ('ICES Data Type Guidelines –Data and Metadata')

ICESCIEM — Working Group on Marine Data Management

Home
Members
Meetings
Related Groups
Data guidelines
Data products
Reports
Presentations and posters

Members
Click here for a list of current MDM members and their contact details

Photo Folder
Click here

These web pages are supported by BODC. Any problems with this site, please email gserv@bodc.ac.uk

Last updated:

ICESCIEM — Working Group on Marine Data Management

Home
Members
Meetings
Related Groups
Data guidelines
Data products
Reports
Presentations and posters

Data guidelines

MDM Guidelines

Other Guidelines

ICESCIEM — Working Group on Marine Data Management

Home
Members
Meetings
Related Groups
Data guidelines
Data products
Reports
Presentations and posters

Data products
Data CD-ROMs produced by MDM member organisations

Actions points 4, 5, 6, and 7

4. Tidy up the Yahoo-group pages, and get the photos from there

5. Set up the local MDM pages at BODC webpages

6. Synthetise the result of the list of CDROMs and products and put it on the MDM website

7. Give comments on the MDM pages that will be set up at BODC

Annex 8: Presentation of PICES TCODE

North Pacific Marine Science Organization

On PICES TCODE Activities

North Pacific Marine Science Organization

PICES area of concern

North Pacific Marine Science Organization

PICES history

• PICES was established and held its first meeting in 1992;

• ICES (Intl Council for the Exploration of the Sea) was a prototype (in the North Atlantic);

• Now PICES is a major focus for international cooperation in marine science in the northern North Pacific;

North Pacific Marine Science Organization

The PICES Mission

To promote and coordinate marine scientific research in the North Pacific Ocean in order to advance scientific knowledge of the area concerned and of its living resources.

North Pacific Marine Science Organization
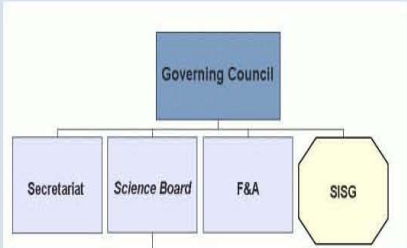
What does PICES do?

PICES brings together scientific expertise from the Contracting Parties to

• design appropriate *multinational research programs* in response to identified needs;

• develop an *integrated* (climate + anthropogenic + living resources) *understanding* about how the Pacific Ocean works.

Organization Structure 1/3

Governing Council

Secretariat | Science Board | F&A | SISG

Organization Structure 2/3

BIO	Biological Oceanography
FIS	Fishery Science
MEQ	Marine Environmental Quality
POC	Physical Oceanography and Climate

Organization Structure 3/3

CCCC	Climate Change and Carrying Capacity Implementation Panel
MONITOR	Monitor TC
TCODE	TC on Data Exchange
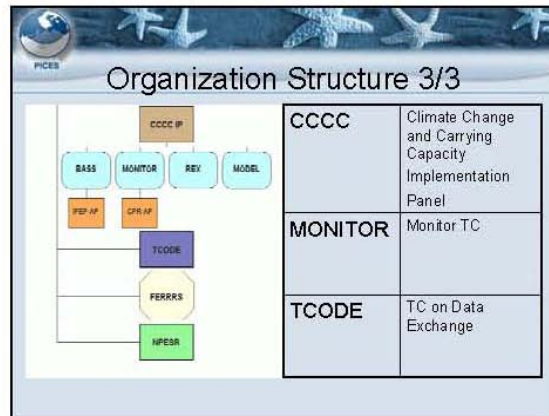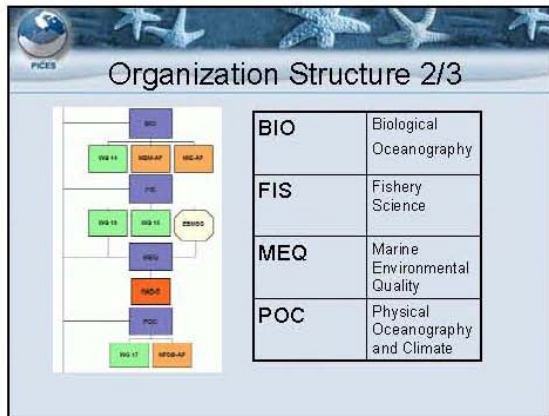
PICES 15th Annual Meeting

October 13-22, 2006, Yokohama, Japan
- Theme: "Boundary current ecosystems"
- Workshops:

W6: MONITOR/TCODE Workshop (Oct. 15, 1 day)
Data management, delivery and visualization of high-volume data products
Co-Convenors: David L. Mackas (Canada), Thomas C. Royer (U.S.A.) and Sei-Ichi Saitoh (Japan)

- Scientific Sessions
- Poster Sessions
- WG/SG/.../Committees Meetings

Inter-sessional Activities

Symposia
- PICES/GLOBEC Symposium on "Climate variability and ecosystem impacts on the North Pacific: A basin-scale synthesis", April 19-21, 2006,
- 4th International Zooplankton Production Symposium May 28-June 1, 2007, Hiroshima, Japan

Conferences, Workshops

PICES/ESSAS Workshop to develop comparative studies of the sub-Arctic seas, St. Petersburg, Russia

SB/GC Interim Meetings
committees' action plans, Future Integrative Science Program(s), how to include human dimensions, etc.

Themes for the Future Integrative Science Program(s)

- Ecosystem Based Fisheries Management and Sustainable Use
- North Pacific Marine Ecosystem Response to Global Change
- A New Integrative Scientific Program Built upon the Foundations of CCCC
- North Pacific Ocean Sustainability
- Coastal Ocean Ecosystems - The Human Dimension and Climate
- Status and Trends in Marine Biodiversity

Publications

- Annual Reports
- Scientific Reports
- Special Issues of
- Progress in Oceanography,
- Ecological Modeling,
- Deep Sea Research, etc.
- Books:
- Dynamics of the Bering Sea
- Historical Atlas of the North Pacific Ocean
- PICES Press
- Web page URL http://www.pices.int

PICES Special Publications

1. NP Ecosystem Status Report -to review and summarize the status and trends of the marine ecosystems in the North Pacific, and to consider the factors that are causing or are expected to cause change in the near future. MONITOR TC will update on a regular base
2. Fisheries and ecosystems responses to recent regime shifts (FERRRS) - advisory report formed to respond to The USA request
3. Marine Life in the North Pacific: The Known, Unknown, and Unknowable – overview of living marine resources in the North Pacific Ocean

Capacity Building Plan

- Strategy
- Intern Program
- Best paper award to Young Scientists
- Young Scientists Conference in Marine Science (with ICES)

Strategic Plan Themes

- Advancing scientific knowledge;
- Applying scientific knowledge;
- Fostering partnerships;
- Ensuring a modern organization in support of PICES activities; and
- Distributing PICES scientific knowledge.

Themes ->Goals ->Actions and activities

TCODE
PICES Technical Committee for Data Exchange

Terms of Reference

1. Identify the data management requirements of PICES;
2. Develop strategic plans to meet these requirements;
3. Recommend establishment of ad hoc task groups to deal with specific functions of TCODE;
4. Review the progress of task groups and provide Annual Reports to Science Board on the work of TCODE; and
5. Advise the PICES Secretariat on its data exchange activities.

TCODE
PICES Technical Committee for Data Exchange

Mission

The mission of the PICES Technical Committee on Data Exchange (TCODE) is to identify the data management requirements of the PICES scientific community and PICES Secretariat and provide advice and assistance on all matters affecting information technology in PICES.

TCODE
PICES Technical Committee for Data Exchange

Strategy of TCODE

To meet the mission of PICES, the PICES strategy for capacity building and the mission of TCODE, the committee will arrange its activity for the next several years based on the following directions:
· Maximize the usage of existing data throughout the PICES community through improved access, including searchable metadata inventories.
· Promote the development and use of contemporary technologies, standards, protocols, data analysis methods and software tools for studies of all components of the ecosystem.
· Assist and participate in the implementation of international data management programs and their regional components.
· Organize a virtual international TCODE community.

TCODE

PICES Technical Committee for Data Exchange

TCODE Metadata Inventory

(http://tcode.tinro.ru)

•Biological Oceanographic Time Series,

•Fisheries Time Series,

•Meteorological Time Series,

• Physical and Chemical Oceanographic Time Series

TCODE

PICES Technical Committee for Data Exchange

CO₂ PïCNïC

PICES Carbon Dioxide Related Data Integration for the North Pacific (PICNIC) web site

provides the list of cruises linked to opened data and/or metadata bases on the CO_2 observations made by the scientists of PICES countries. http://picnic.pices.jp/

TCODE

PICES Technical Committee for Data Exchange

North Pacific Ecosystem Metadatabase

The project's mission is to

-locate and assemble an inventory of the extensive biological and physical data collected on the North Pacific ecosystem,

-develop these into an indexed, annotated catalog (metadatabase), and

-make the metadatabase available through various mechanisms

TCODE

PICES Technical Committee for Data Exchange

Search for Geographic Data

The goal of a new TCODE initiative ("federating search") ultimately is to *connect PICES member nations' metadatabase systems into one integrated resource.*

http://pices.int/publications/pices_press/Volume14/v14_n1/pp_08_11_metada.pdf

PICES - NOAA NPEM (North Pacific Ecosystem Metadatabase)
PICES - KODC (Korea Oceanographic Data Center)
PICES-TINRO Metadata Node

Next — MIRC (Marine Information Research Center)-JODC

North Pacific Marine Science Organization

Useful links

http://www.pices.int

http://www.pices.int/meetings/annual/PICES15/background.aspx

http://tcode.tinro.ru

http://picnic.pices.jp

http://www.pmel.noaa.gov/np/mdb/index.html

http://pices.int/publications/pices_press/Volume14/v14_n1/pp_08_11_metada.pdf

All questions –> igor@tinro.ru

Annex 9: Presentation of IPY data subcommittee

Slide 1

Oceanographic data management for the
International Polar Year (IPY)

JCADM and the Southern Ocean database

Taco de Bruin

Chair – Joint Committee on Antarctic Data Management (JCADM)
Co-chair – IPY Subcommittee on Data Policy and Management

Co-sponsored by ICSU and WMO

ICSU

www.ipy.org

Slide 2

History IPY

First International Polar Year (1882-1883)
- Austrian naval officer Weyprecht
- 12 countries, 13 Arctic en 2 Antarctic expeditions
- Example of international scientific cooperation

Second International Polar Year (1932-1933)
- 40 countries

The International Geophysical Year (1957-58)
- Many important scientific discoveries
- Emphasis on tropics and Antarctica
  - Major outcomes
    - Antarctic Treaty
    - World Data Centre system

Fourth International Polar Year (2007-2008)

Slide 3

IPY 2007/2008:

By far the largest international scientific program
the planet has ever seen:

- 1200 IPY proposals
- 220 Coordination proposals
- > 50,000 participant
- from more than 60 nations

'Dazzling' science

Slide 4

IPY THEMES

Draw scientific & public attention to polar regions:
- Current status
- Past & future changes
- Linkages to global processes
- Investigate frontiers of science in polar regions
- Vantage point to earth history & to space
- Social & cultural dynamics & resiliency

Slide 5

IPY THEMES

Draw scientific & public attention to polar regions:
- Current status
- Past & future changes
- Linkages to global
- Investigate frontiers
- Vantage point to earth
- Social & cultural dynamics

Mind IPY Environmental Impact

Mind IPY legacy:
Data & Information
Systems & Infrastructure
Education
Science community

Social & Cultural
Responsibilities

Slide 6

A Framework for the International Polar
Year 2007-2008:

"In fifty years time the data resulting from IPY
2007-2008 may be seen as the most important
single outcome of the programme"

"These data ... will act as benchmark data
which can serve as a baseline against which
global change is measured"
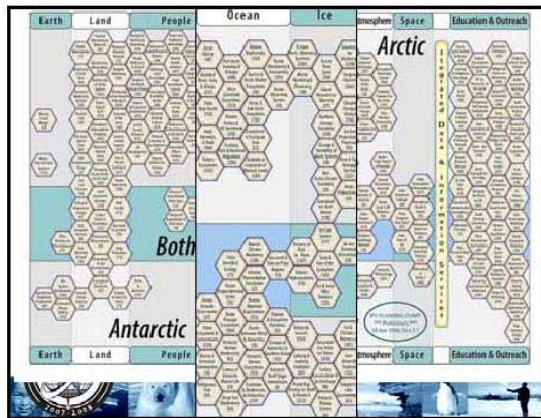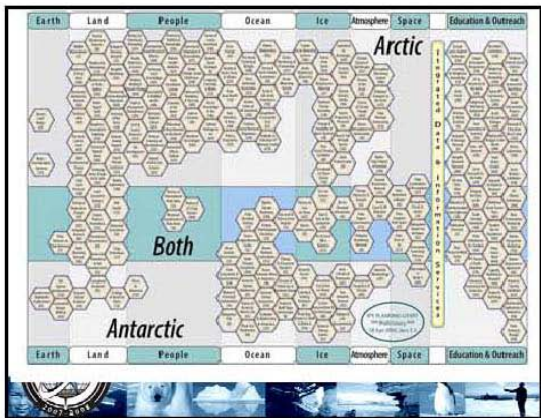
Examples of IPY projects in oceanography

(Just a few of the many data generating IPY ore IPY related projects!!)

CAML

Census of Antarctic Marine Life

www.caml.aq

One of 14 regional projects of Census of Marine Life (www.coml.org) - a 10-year international program, ending 2010, examining ocean health.

Science coordination funds provided by the Alfred P Sloan Foundation to SCAR ($1.5M over 5 years)

14 nations: 12 EoIs
Lead: Australian Antarctic Division

Science Objectives

- To describe the distribution and abundance of marine fauna and flora at representative sites on the shelf, slope and deep ocean
- All regions, biomes and habitats (surface waters, pelagic, sea floor epifauna and infauna)
- All groups of organisms will be included

Current projected Continuous Plankton Recorder tracks for CAML

20,000+ n miles
4,000 plankton samples
At 5 n mile resolution

iAOOS

Integrated Arctic Ocean Observing System

Observing the Arctic Ocean from satellites to sea bed. Will build on
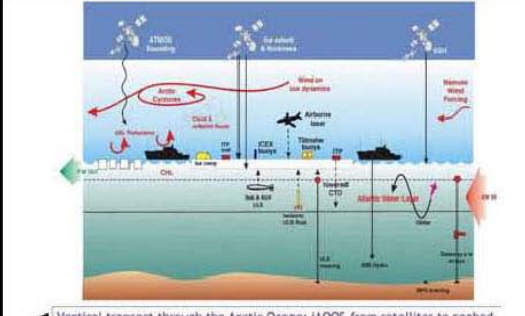
- EC-DAMOCLES (Developing Arctic Modelling and Observing Capabilities for Long-term Environmental Studies)
- marine components of SEARCH (Study of Environmental Arctic Change)

Other components might include:

- Shelf basin interactions
- Arctic boundary current arrays
- subarctic gateway moorings
- regional modelling

8 nations: 54 EoIs

Lead: International Study of Arctic Change (ISAC), Sweden

Vertical transect through the Arctic Ocean: iAOOS from satellites to seabed
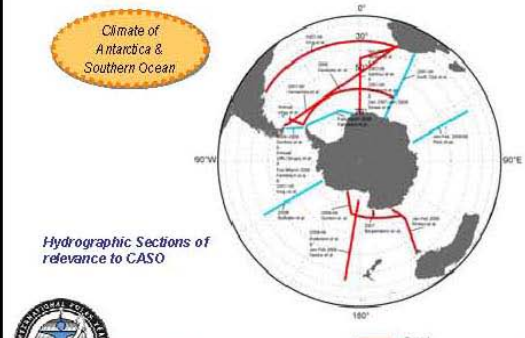
Climate of Antarctica & Southern Ocean

National Oceanography Centre, UK (S. Bacon)
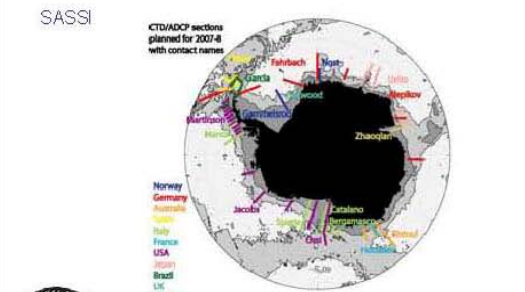
Climate of Antarctica & Southern Ocean

Hydrographic Sections of relevance to CASO

SASSI
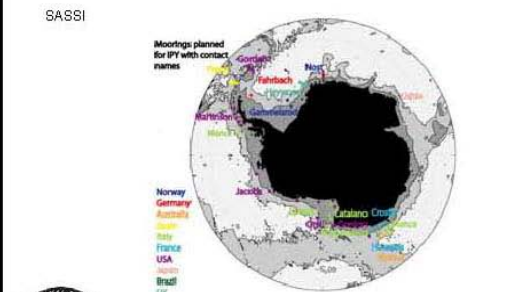
SASSI

Slide 1
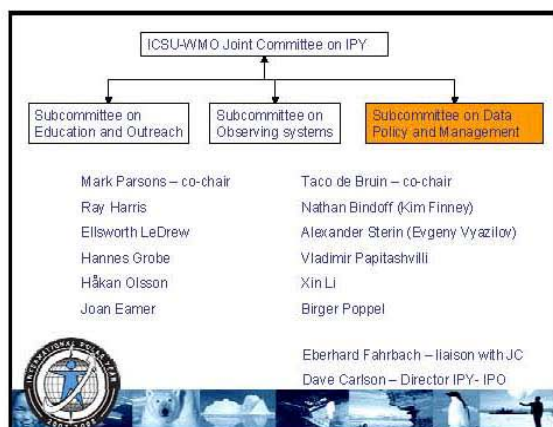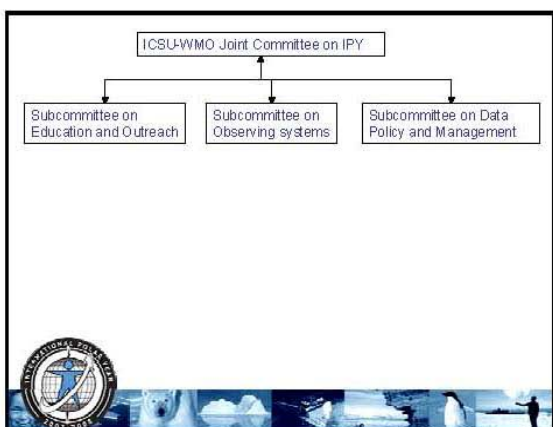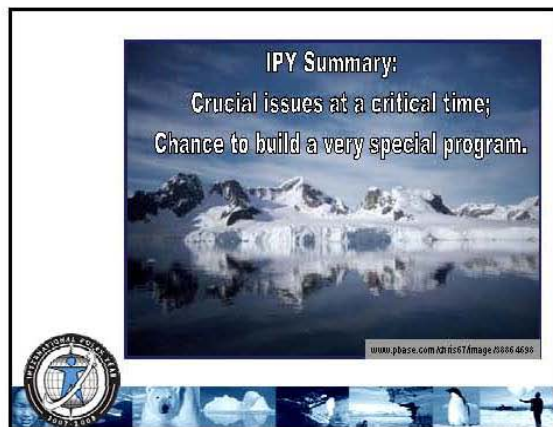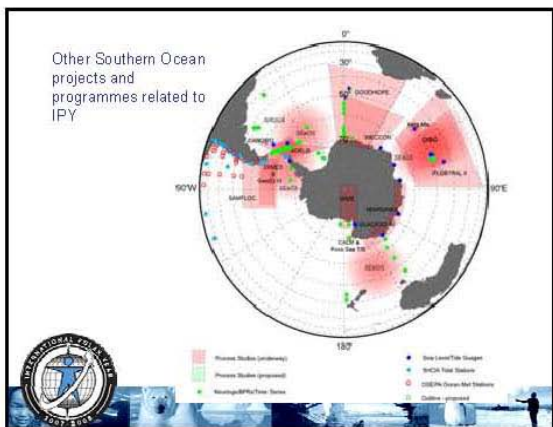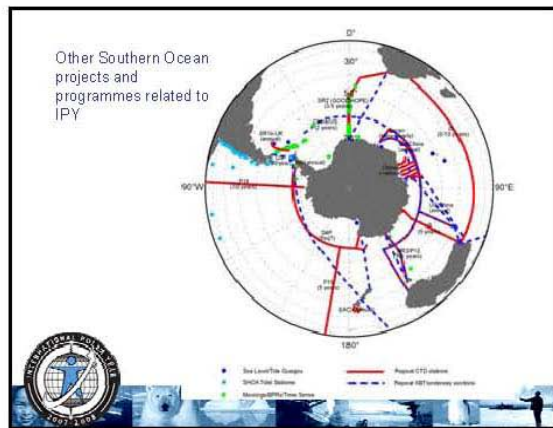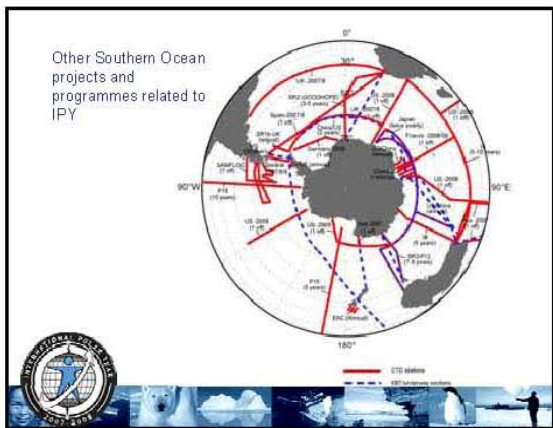
IPY Data Policy:

- Draft version based on CLIVAR Data Policy
- Aim high: Free and open access with as few exceptions as possible
- Aim high, visionary and idealistic: where do we want data management to be in the future (as part of the IPY legacy)

Special Cases:
- Human subjects
- Intellectual property
- Where data release may cause harm

Data generated by IPY

Data used by IPY

Slide 2

IPY Data Policy:

- Draft version based on CLIVAR Data Policy
- Aim high: Free and open access with as little exceptions as possible
- Aim high, visionary and idealistic: where do we want data management to be in the future (as part of the IPY legacy)
- Reference to ICSU and WMO statements
- Specifically address Intellectual Property Rights for indigenous people
- Create a data policy to meet IPY objectives
  - International collaboration
  - Interdisciplinary science
  - Building a legacy

- Free and open access to IPY data

Slide 3

IPY Data Policy:

Data Policy structure:

- Introduction
- Objective
- Data Definition
- Data Availability and Exchange
- Data Preservation
- Publications
- Data Acknowledgment
- References

Slide 4

IPY Data Policy:

In accordance with

- the Twelfth WMO Congress, Resolution 25 and 40 (Cg-XII, 1995)
- the ICSU 1996 General Assembly Resolution
- the ICSU Assessment on Scientific Data and Information (ICSU 2004b)
- Article III-1c from the Antarctic Treaty
- the Intergovernmental Oceanographic Commission Data Exchange Policy

and in order to maximize the benefit of data gathered under the auspices of the IPY, the IPY Joint Committee requires that IPY data, including operational data delivered in real time, are made available fully, freely and on the shortest feasible timescale.

Slide 5

IPY Data Policy:

The only exceptions to this principle are:

- where human subjects are involved, confidentiality must be protected

- where local and traditional knowledge is concerned, rights of the knowledge holders shall not be compromised

- where data release may cause harm, specific aspects of the data may need to be kept protected (for example, locations of nests of endangered birds or locations of sacred sites)

Slide 6

Original idea for IPY Data management architecture:

IPY Joint Committee

Data Policy & Management Subcommittee
- scientists
- data managers
- funding agencies

eGY

Programme Office

Data & Information Service

Users

Projects

Data Centers, Virtual Observatories, etc.
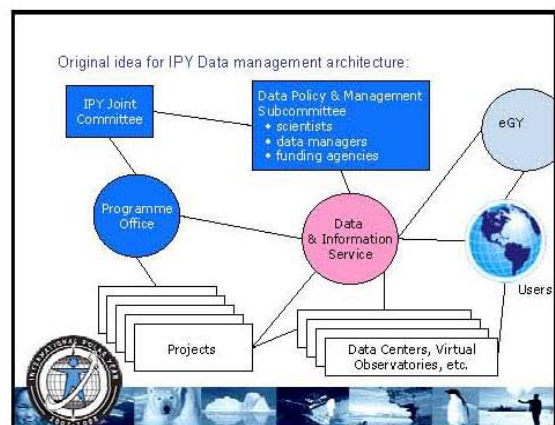
IPY Data Infrastructure:

- Use existing structures as much as possible
- System of systems approach
- Original model based on WOCE model
- No money available for DIS before the end of this year
- ICSU and WMO to sponsor a data coordinator
- Oceanography well organized compared to many other disciplines

IPY Data Infrastructure:

With 295 days to go before the official start of IPY, all three Subcommittees have a "daunting and almost impossible task" (Dave Carlson, IPY-IPO director),

for which we need all the help from the existing discipline based data management communities.

IPY Data Inf

With 295 da   all three
Subcommitt   ssible task"
(Dave Carls

for which we   cipline based
data manag

WE NEED YOU !!

Annex 10: Presentation of data type guidelines

"Best Data Collection Guidelines"

- **Action 20:** Request IODE-GE-BICH to cooperate on identifying guidelines on biodiversity (E. Vanden Berghe)

- **Action 21:** Check that everything in the guidelines has a place in XML structure (E. Vanden Berghe, M. Wichorowski, R. Gelfeld)

- **Action 22:** Develop an accurate list of best data collection guidelines building on the work of the 'other guidelines list' and the list of MDM guidelines and keep the list updated and available through internet access (T. de Bruin, E. Vanden Berghe, G. Evans)

Action 20

Request IODE-GE-BICH to cooperate on identifying guidelines on biodiversity.

- Edward: *"This action item should be pretty easy to complete: there should be a letter from MDM to IODE."*

Action 20 (related):

- IODE/GEBICH is also collecting information on QA/QC
  - for biological/biodiversity stuff this happens in collaboration with MarBEF;
  - the MarBEF results are made visible on http://www.marbef.org/qa/; for chemical data (which is also in the remit of GEBICH);
  - Sergey Konovalov of the IBSS in Sebastopol is taking the lead.
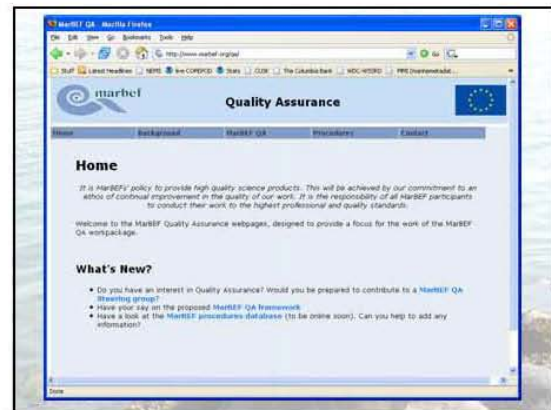
Action 21

Check that everything in the guidelines has a place in XML structure (E. Vanden Berghe, M. Wichorowski, R. Gelfeld)

Action 22

Develop an accurate list of best data collection guidelines building on the work of the 'other guidelines list' and the list of MDM guidelines and keep the list updated and available through internet access (T. de Bruin, E. Vanden Berghe, G. Evans)

TOR B : DATA GUIDELINES

GARRY DAWSON
UK HYDROGRAPHIC OFFICE

ICES WGMDM
COPENHAGEN MAY 2006

ICES WG MDM COPENHAGEN 2006   1

TOR B : MDM DATA GUIDELINES

Description of guidelines from Website

These Data Type Guidelines have been developed using the expertise of the **oceanographic data centres** of ICES Member Countries. They have been designed to describe the elements of data and metadata important to the ocean research community. These guidelines are targeted toward physical-chemical-biological data types collected on oceanographic research vessel cruises. Each guideline addresses the data and metadata requirements of a specific data type. They cover three main areas:

* What the data collector should provide to the data centre (e.g. collection information, processing, etc)
* How the data centre handles data supplied (e.g. value added, quality control, etc)
* What the data centre can provide in terms of data, referral services and expertise back to the data collector

ICES WG MDM COPENHAGEN 2006   2

TOR B : MDM DATA GUIDELINES

Guidelines list from Website – latest versions restored !

File Description	html	doc	pdf	zip
All Guidelines				X
CTD		X	X	
Moored ADCP		X	X	
Moored Current Meter		X	X	
Shipborne ADCP		X	X	
Seasoar (Batfish)		X	X	
Surface (Underway)		X	X	
Water Level		X	X	
XBT		X	X	
Net Tow (Plankton)		X	X	
Surface Drifting Buoy		X	X	
Profiling Float and Drifting Buoy		X	X	
Discrete water sample		X	X	

Page updated on 14 Feb 2006

ICES WG MDM COPENHAGEN 2006   3

TOR B : DATA GUIDELINES

TOR for 2005/6 : TOR B

Data type guidelines – assess the continuous development and updating of an accurate list of best data collection guidelines and to recommend on encouraging the use of the guidelines by the scientific community (Action Plan 4.12, 6.1)

TOR B covers a range of issues - Actions 2005/6
Action 11 : Promote MDM guidelines
Action 12 : Revise MDM guidelines
Action 13 : Links to guidelines on other ICES web pages
Action 14 : Secretariat make guideline list available
Action 15 : Monitor access to guidelines
Action 16 : Guideline poster at ASC 2006

Also relevant under TOR A – Actions 2005/6
Action 20 : IODE-GE-BICH identify guidelines on biodiversity
Action 21 : Everything in guidelines has a place in XML structure
Action 22 : Develop list of other guidelines

ICES WG MDM COPENHAGEN 2006   4

TOR B : MDM DATA GUIDELINES

Action # 12 2005/06 : Table of Review Actions 1

Guideline	Reviewer	Results	Conclusions
Moored ADCP	H Sagen		
Moored current meter	G Slesser	No changes required	FRS Meters now superseded so guideline may need update for more recent models
Shipborne ADCP	M Fichaut	Updated version ready for editor	
Seasoar	G Dawson	Rewritten; future additions planned	Reviewer at NOC not seen guideline before !
Surface underway	M Fichaut	Updated version ready for editor	
Water Level	M J Garcia		

ICES WG MDM COPENHAGEN 2006   5

TOR B : MDM DATA GUIDELINES

Action # 12 2005/06 : Table of Review Actions 2

Guideline	Reviewer	Results	Conclusions
XBT	G Dawson	Web address changes	Need to keep addresses current
Net Tow	G Evans	Complete and sound	No change needed
Surface Drifting Buoys	S Tomlinson		
Profiling float and drifting buoy	S Tomlinson and M Fichaut	Updated ready for editor	
CTD	?.		
Discrete water samples	?		

ICES WG MDM COPENHAGEN 2006   6

TOR B : DATA GUIDELINES

Guidelines - What to do for TOR ?

We have seen the results of the review (Action 12) but TOR B covers a range of related issues (some may be covered elsewhere in the agenda).
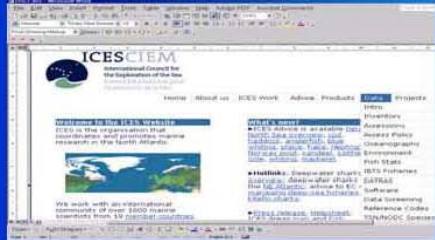
1. Encourage and Promote Use
2. Access and Maintenance
3. Issues from review
4. New guidelines
5. Other guidelines

ICES WGMDM COPENHAGEN 2006

TOR B : DATA GUIDELINES

Issues 1
Encourage and Promote Use

Use – hits on website ? Ref on ICES home page ?
Seasoar reviewer at NOC (S) had not heard of guidelines !
How to encourage use ?
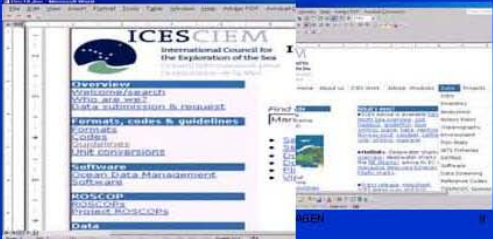
TOR B : DATA GUIDELINES

Issues 1
Encourage and Promote Use (Action 11)

Use – hits on website ? Ref on ICES home page ?
Seasoar reviewer at NOC (S) had not heard of guidelines !
How to encourage use ?

TOR B : DATA GUIDELINES

Issues 2
Access and Maintenance (Action 12)

Ref on home ICES page ?
Guidelines on website - version control required
Version numbers
Format - pdf only ?
Access for reviewer

ICES WG MDM COPENHAGEN 2006

TOR B : DATA GUIDELINES

Issues 3
Review results (Action 12)

CTD guideline review
Discrete Water bottle samples guideline review
How to keep Web addresses current
Recent current meter experiences
Do we need editorial review of changes ?
Editor needed (A. Isenor on website !) ?
Suggest supply revised text to ICES/ Editor by 30 June 2006

ICES WG MDM COPENHAGEN 2006

TOR B : DATA GUIDELINES

Issues 4
New MDM guidelines ? (Action 12)

Is MDM guidelines set complete ?

Multi-beam echo sounder
Sub-bottom profiler
Others ???

Existing Guidelines
CTD
Moored ADCP
Moored Current Meter
Shipborne ADCP
Seasoar (Batfish)
Surface (Underway)
Water Level
XBT
Net Tow(Plankton)
Surface Drifting Buoy
Profiling Float and Drifting Buoy
Discrete water sample

ICES WG MDM COPENHAGEN 2006

TOR B : DATA GUIDELINES

Issues 5

Other (Non-MDM) guidelines :
Issues from 2005 Meeting
List of other guidelines subject to change
Make MDM Guidelines poster downloadable
ICES website confusing – 3 pages with guidelines
Collaborate where no MDM knowledge of datatype

2005 Meeting decided:
Keep list of other guidelines updated – TOR
Place list of other guidelines on ICES site and MDM page

ICES WG MDM COPENHAGEN
2006

TOR B : DATA GUIDELINES

Issues 5
Other (Non-MDM) guidelines

Action # 22 2005/6
Develop an accurate list of best data collection guidelines building on the work of the "other guidelines list" and the list of MDM guidelines and keep the list updated and available through internet access.

Future Action ?
Propose reword TOR to clearly indicate MDM and non-MDM guidelines
Big question ; Is it possible to work towards one set of guidelines for community ?
How ?

Almost the end !

ICES WG MDM COPENHAGEN
2006

TOR B : DATA GUIDELINES
In conclusion we have been discussing guidelines for some time !

ICES WG MDM COPENHAGEN
2006

TOR B : DATA GUIDELINES
In conclusion we have been discussing guidelines for some time !

ICES WG MDM COPENHAGEN
2006

TOR B : DATA GUIDELINES
In conclusion we have been discussing guidelines for some time !!

ICES WG MDM COPENHAGEN
2006

TOR B : DATA GUIDELINES
In conclusion we have been discussing guidelines for some time !!

ICES WG MDM COPENHAGEN
2006

Annex 11: Presentation of Cruise Summary Report CSR

Status Cruise Summary Reports CSR (1)

Some years ago ICES WGMDM Report had a section on CSRs. It showed a decline of submissions to ICES in the 1990s. In contrast CSRs where heavily used in Germany as part of the data tracking system. Germany was asked to develop an online system within the EU funded **Sea-Search** project. The system was stepwise developed and is now characterized by:

Status Cruise Summary Reports CSR (2)

- broad European coverage (as far as from Iceland via Italy to Israel)
- covers cruises from 1873 till today, in total more than 37 000 cruises from 30 coastal states in Europe, included are the ICES based CSRs
- is populated by provision of historic data
- the entry is password protected, the retrieval public
- is mirrored/aligned with the ICES CSR content and vice versa
- is increasingly visited by European scientists to locate data
- is lively used by the public

Data input
- online Entry
- as XML- files
- Bulk loading from ICES

Status Cruise Summary Reports CSR (3)

In May 2006 1451 CSRs were submitted to ICES, which was the fourth submission of CSRs coming in online. Problems lead to a delayed submission to ICES were
- institute names, (is a night mare)
- ship names, (up to four spellings of same ship)
- scientist names and
- project names

which all had to be harmonized before entered into the database.

Status Cruise Summary Reports CSR (4)

Once entered, it becomes much easier by the interactive nature of the entry system. **It is supported by code-lists for parameter groups, geographic areas and others for standardisation and to enable later retrieval. This reduces erroneous typing to a minimum, as well as unnecessary editorial work at the database.**

Status Cruise Summary Reports CSR (5)

As both ICES and BSH/DOD are principal partners in the EU 6th Frame Work SeaDataNet-project, mirroring and constructive collaboration with the aim of equal content in the databases will be assured. A frequency of weekly or monthly matching is planned. In the final interoperable system developed during **SeaDataNet**, the system will be fully dynamic and any request will get updated information from the interconnected databases.

Submissions to ICES by May 2006

Country	# CSRs	Country	# CSRs
Bulgaria	10	Italy	1
Cyprus	44	Morocco	4
Denmark	20	Norway	59
Finland	20	Poland	11
GDR	32	Romania	11
Georgia	46	Russian Federation	6
Germany	435	Sweden	2
Greece	11	Turkey	633
Iceland	6	United Kingdom	1
Ireland	90	unknown	2
Israel	7		

Total			1451

Annex 12: Presentation on Taxonomy

TOR C: Taxonomy Issues

ITIS: *ISIT or ITISn't*

Old News

- ITIS *in use* at US-NODC since 1996
- BSH is using ITIS (co-code)
- BODC is considering ITIS (co-code)
- ICES is considering ITIS, but
  - concerned about missing codes
  - concerned about response times
- Anyone else?

Breaking News

NOAA is now considering adopting ITIS as the official NOAA-wide taxonomic system.

Currently, various NOAA labs are using individual altered copies of old (dead) NODC or NMFS taxonomic codes.

NOAA taxonomy: coastal surveys (phytoplankton & benthos), fisheries (zooplankton, fish, marine mammals, sea birds, endangered species), and the data centers.

ICES and NOAA

The decision of adopting ITIS is based on how much effort needed to update ITIS?

How bad is the problem, and how much to fix it?

ITIS' largest problem is insufficient funds and staff.

If NOAA adopts ITIS, and if it adequately funds it, this could fix much of the ITIS response issues.

ICES and ITIS

There was a concept paper that was developed, after initial discussions in Hamburg ("OBI meeting"), attended by:
- Tom O'Reilley (ITIS)
- Mark Costello and Rainer Froese (OBIS)
- Jim Edwards (GBIF)
- M. Hughes (representative from BODC)

Concept Paper

To set up community-based ITIS input centers that deal with specific geographic areas or taxonomic groups.

These input centers will follow the ITIS business rules and provide ITIS with input that will not have to be re-reviewed by ITIS before uploading in the main ITIS database.

Concept Proposal

Initial Proposal- create an input centre for marine organisms, concentrating on European biota and selected global marine taxa, to be operated by the Flemish Marine Institute (VLIZ) as the MarBEF Data Centre, in collaboration with GBIF, ICES, IODE/IOC and OBIS.

I believe this is ERMS (?).

ICES and ITIS

Since that first meeting and concept paper, nothing much has happened with this proposal; but Adi and Edward are both in the same meeting (MarBEF GA) this week, where they will discuss how to take this further.

Edward hopes he'll be able to formulate some concrete actions with Adi.

Other Related Issues

There will be a major initiative in Europe, EDIT, a network of excellence on taxonomy:

- EDIT is much more than just the taxonomic information systems, also collections... and not restricted to marine organisms.

- Edward expects that this will be a platform where new technologies will be developed, including setting up distributed taxonomic registers.

ICES and ERMS

The data management team at ICES has requested and received a copy of ERMS; *Edward has not had formal feedback on this.*

In the mean time, ERMS is now also part of Species 2000 Europe, and will through there become part of the Catalogue of Life. ERMS has combined with NWARMS to make NARMS - North Atlantic Register of Marine Species; now officially visible on www.vliz.be/vmdcdata/narms.

Annex 13: Presentation on Operational Oceanography

Operational Oceanography
Jan Szaron MDM May 2006

- **In ICES the accepted definition of "Operational Oceanography" is the EuroGOOS one:**

- **Operational Oceanography can be defined as the activity of systematic and long-term routine measurements of the seas and oceans and atmosphere, and their rapid interpretation and dissemination. Important products derived from operational oceanography are:**

OO products

- nowcasts providing the most usefully accurate description of the present state of the
- sea including living resources
- forecasts providing continuous forecasts of the future condition of the sea for as far
- ahead as possible
- hindcasts assembling long term data sets which will provide data for description of
- past states, and time series showing trends and changes

OO at ICES website (1)

At the ICES OCC web site I found two relevant reports:
- **ICES-IOC Steering Group on GOOS**
  http://www.ices.dk/iceswork/wgdetail.asp?wg=SGGOOS
- **ICES-EuroGOOS Planning Group on the North Sea Pilot Project NORSEPP**
  http://www.ices.dk/iceswork/wgdetail.asp?wg=PGNSP

OO at ICES website (2)

I also found a "leaflet" under Projects/GOOS with the paragraphs
1) The Global and Regional Linkage
2) The ICES Ocean Observing System
3) A regional ICES GOOS Programme component for the North Sea
http://www.ices.dk/projects/goos.asp

OO at ICES website (3)

- **Of great relevance is also the ppt-presentation "Implementing the Coastal Module of GOOS - A Case for ICES' Leadership"**
  http://www.ioc.unesco.org/GOOS/Presentations/ICES-talk.ppt

OO at ICES website (4)

However
There is nothing on "Operational Oceanography" on the ICES front web site

Questions to MDM

**I also asked MDM to consider the following questions:
Are your Institute/Centre/Laboratory involved in
operational oceanography? If so**
- **what kind of operational products do you produce**
- **how and where are they published**
- **do you use established QC-procedures (Guidelines
  listed on the IODE OceanPortal site, ARGO, COOP,
  GOSUD...)**
- **are your centre active in (Euro)GOOS, ARGO,
  NOOS, BOOS, PAPA, EDIOS, GOSUD...**

Example list of OO websites

COUNTRY	INSTITUTE	WEBSITE OO DATA	PRODUCT OO DATA	COMMENTS
BE	MUMM	http://...	Operational models	Production
CA	MEDS	http://...	Profiling floats	Global
ES	ESEOO	http://...	Webportal Spanish OO	In Spanish
FI	FIMR	http://...	Baltic Sea Portal	
FO	FFL	http://...	Faroese coastal OO	In Faroese

Real-time Oceanographic Data Exchange demonstration within EuroGOOS

- The exchange of real time data is a basic requirement for operational oceanography and is a pre-requisite for the development of integrated oceanographic products.
- To satisfy an increased global and pan-European requirement for exchange of data and for interoperability, the EU project SEPRISE (Sustained Efficient Production of Required Information and Services within Europe), co-ordinated by EuroGOOS, includes a target to demonstrate the capability of agencies in Europe to exchange real time data in an efficient and operational way.

OO Data exchange in SEPRISE

To demonstrate data exchange within the SEPRISE project it is proposed:
- that regional collecting centres set up FTP servers where they will maintain a sliding window of two months of recent real-time data;
- IFREMER sets up an FTP server at the Coriolis Data Centre that will regularly harvest the publicly available data from the different regional servers and make them available to the wider European user community.
- Data are shared only in real-time which implies that we don't replace a data by an updated one that is available within the sliding window period; we assume that European delayed mode data exchange will be built by SeaDatanet project.

Parameters demo phase

The following parameters, acquired by time series, vessels, drifters and Argo, have been selected for the demonstration phase:
- Salinity and Temperature (surface and subsurface)
- Current
- Waves (significant wave height, storm surges)
- Sea level (with ESEAS)

The Seprise Data Exchange network
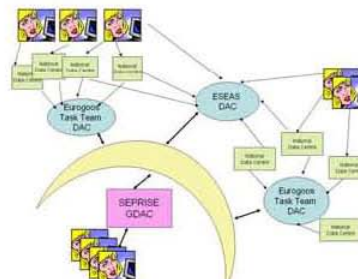
Annex 14: Presentation on XML future

MOTIIVE - members

- HR Wallingford, UK (Coordinator)
- ARGOSS b.v., NL
- CCLRC - Council for the Central Laboratory of the Research Councils, UK
- EDINA, Univ. of Edinburgh, UK
- EUCC - The Coastal Union, NL
- IDG (UK) Ltd, UK (Steering Committee Leader)
- NERSC - Nansen Environmental and Remote Sensing Centre, Norway
- Social Change Online Ltd, UK
- UK Hyrdographic Office, UK

MOTIIVE - objectives

- Provide a documented methodology for implementing and monitoring data harmonisation activities between INSPIRE 'Annex I' (core - elevation) and 'Annex II' (thematic - marine/coastal) datasets. This follows the steps required in the OGC Reference Model for interoperability, application of the CEN/TC 287 standards profiles for ISO 19xxx, with associated Feature Type Catalogues.

- Using the open standards and tools developed in early stages of the project, demonstrate this methodology applied to the data integration requirements of those GMES (Global Monitoring for Environment and Security) Service Element (GSE) pilot projects.

- Provide a cost-benefit assessment for using OGC interoperability specifications to harmonise INSPIRE Annex I (elevation) and Annex II (marine, coastal management) spatial data systems.

- Building on the pre-standardisation work of MarineXML [23], establish a marine data standards registry under the auspices of the Intergovernmental Oceanographic Commission (IOC) and International Hydrographic Organization (IHO).

Marine Metadata Interoperability

- „Our goal is to promote collaborative research in the marine cience domain, by simplifying the incredibly complex world of metadata into specific, straightforward guidance. MMI hopes to encourage scientists and data managers at all levels to apply good metadata practices from the start of a project, by providing the best advice and resources for data management."

- „MMI maintains this website to foster communication and collaboration among its hundreds of members, and provides forums for discussion of diverse topics related to marine data management. MMI is also developing web applications and standalone tools to enable sophisticated interactions across marine data systems."

- http://marinemetadata.org

SeaDataNet

- „SEADATANET objective is to construct a standardized system for managing the large and diverse data sets collected by the oceanographic fleets and the new automatic observation systems. The objective is to network and enhance the currently existing infrastructures, which are the national oceanographic data centres and satellite data centres of 35 countries, active in data collection. The networking of these professional data centres, in a unique virtual data management system will provide integrated data sets of standardized quality on-line."

- http://www.seadatanet.org

Standards

- ISO 19115:2003 Geographic information – Metadata :: defines the schema required for describing geographic information and services. It provides information about the identification, the extent, the quality, the spatial and temporal schema, spatial reference, and distribution of digital geographic data.
- ISO 19116:2004 Geographic information -- Positioning services :: specifies the data structure and content of an interface that permits communication between position-providing device(s) and position-using device(s).
- ISO/TS 19103:2005 Geographic information -- Conceptual schema language :: provides rules and guidelines for the use of a conceptual schema language within the ISO geographic information standards.
- ISO 19109:2005 Geographic information – Rules for application schema :: defines rules for creating and documenting application schemas, including principles for the definition of features.
- ISO 19110:2005 Geographic information – Methodology for feature cataloguing
- ISO 19118:2005 Geographic information – Encoding
- ISO 19135:2005 Geographic information -- Procedures for item registration
- ISO/DIS 19136 Geographic information -- Geography Markup Language (GML)
- ISO 19139 Geographic information -- Metadata -- XML schema implementation
- S-57 ed.4 (S-100) vector interchange format used for maritime charts

XML Specifications

- CSML
- ESML
- GRIB
- KeelyBricks
- MBARI
- MarineXML
- MIML
- MMML
- OBIS
- Others?

XML usage space

· Datasets metadata
· Datasets storage
· Datasets presentation
    · SVG
· Service metadata
· Service configuration files
· Data exchange communication protocols
· XML technologies
    · XSLT
    · XQUERY
    · XPATH
· Others?

XML works in Poland

- **IMGW** – SeaSearch / SeaDataNet
- **IOPAS** – XML/XSLT, works on SVG data output, cooperation with Sea Fisheries Institute to develop data exchange protocols,
- **Maritime Institute in Gdańsk** – Data Demonstrator for FTP BOX, configuration based on XML
- **Sea Fisheries Institute** – cooperation with IOPAS
- **University of Gdańsk** – Development of GIS applications

Future actions of MDM

· Continue actions monitoring XML development
· Cooperate with XML relevant initiatives
· Publishing on the MDM website informations for XML users

Action Point 27

Evaluate and document XML work at the national level as a mechanism for the efficient exchange of oceanographic data

Action Point 21

Check that everything in the guidelines has a place in XML structure

Annex 15: Presentation on Open Source GIS investigation

Action 29 – Investigate the use of Open Source GIS as compared to commercial ones

Siegrid JANS
Management Unit of the Mathematical Models
for the North Sea (MUMM)

1. Definitions
2. The needs
3. GIS sources... an endless exploration...
4. What is in use in WG-MDM countries?
5. Advantages/Disadvantages of Open Source GIS
6. Advantages/Disadvantages of commercial GIS (ESRI)
7. Demo
8. Discussion
9. Future

1. Definitions

- Free distribution
- Source code
- Derived works
- Integrity of the author's source code
- No discrimination against Persons or Groups, against fields of endeavor
- License: distribution, not specific to a product, not restricting other software, technology-neutral

Copyright 2006 by the OSI

1. Definitions (cont.)

- GIS = Geographic Information Systems
- = tool to visualise the data
- = tool to interpret the data
- = tool to model scenarios and to test different hypotheses
- → useful to analyse the phenomenon
- → useful to understand the environment
- → useful for decision making

2. The needs

No need to develop the usefulness of GIS, but why Open Source GIS?

- GIS commercial softwares do not always correspond to our needs; necessity to adapt the tools.
- More compatibility with database systems (?)
- Cost is an important obstacle for developing countries

→ important challenge for the GIS community to find ways to build "faster, cheaper, smaller" GIS technology.

3. GIS... an endless exploration...

Thuban, MapServer, TerraLib, 3Map, SVG, OpenMap, QGIS, MapObjects, GeoTools, GRASS, OpenEV, eSpatial, MapInfo, OpenEV, Geomedia, ERmapper, GoogleEarth, MapMatrix, EASyGIS, ArcGIS, C-squares

4. What is in use in WG-MDM countries?

- Belgium - BMDC : ESRI (ArcGIS + extensions, ArcIMS), tests with WMS
- Belgium - VLIZ : MapObjects, SVG, MapServer
- Canada : Mapster, Fish wizard
- Denmark: ESRI, SURFER, SVG, Winchips, Idrisi, Erdas Imagine
- Faroe Islands - FFL : MapInfo (plan to use ESRI)
- France - IFREMER : ESRI
- Germany – BSH: ESRI
- Poland - IOPAS : ESRI
- Portugal - IPIMAR : ESRI   Portugal - HIDROGRAFICO : ESRI
- Spain - IES : ESRI
- Sweden: ESRI (plan to use Open GIS)
- The Netherlands – NIOZ : ESRI, GoogleEarth, EASyGIS
- Norway – IMR: ESRI, Manifold, other open source GIS
- Russia: ESRI
- UK - BODC : ESRI

5. Advantages/Disadvantages of Open Sources GIS

- Free ?
- Code source available
- Tools developed by users; interactivity; access to a wide range of tools

- Programming needed
- Different programming languages for different softwares/tools
- Need investigation to know which one to use (so much possibilities), depending on own needs and competences
- Not always widely used
- Not always longer supported

6. Advantages/Disadvantages of commercial GIS (ESRI)

- Not free of charge
- Code source not available ?

- Widely used, compatibility with many users
- User-friendly to use and to create website interface (no programming needed)
- Number of tools/features available
- Improvements possible with programming
- Extensions allow very specific analyses

7. Demo

- http://193.74.120.20/gnosisCatalog/index.jsp
- http://www.mumm.ac.be/EN/Monitoring/Belgica/odas.ph
- Helge
- Taco

8. Discussion

- Majority uses ESRI, why?
- Who uses Open Source: developers? geographers?
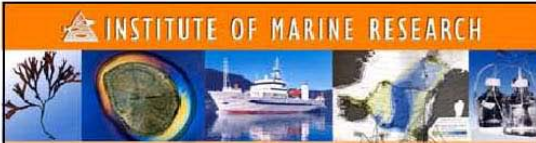- Do you develop your own GIS or do you use the ready-to-use interface (if any)?

9. Future

- Continue investigate this subject (action item 29).
  - Internal use   AND/OR?   Web applications
- To define important tools/functions that should be available for oceanographic researchers.
- To choose few GIS and try them concretely: compare what we are able to do (with and without programming).
  - ESRI
  - GRASS?
  - Map Server, OpenMap, GeoTools?
- To participate to Open Source meetings/conferences?
- Other suggestions?

INSTITUTE OF MARINE RESEARCH

Jonas F Henriksen

Open Source GIS
Some tools in use at IMR

Open Source GIS-tools at IMR

Tools in use:

- PostGIS – GIS addon for the PostgreSQL-database
- UDIG – Desktop java GIS-application
- JUMP – Desktop java GIS-application
- GeoServer – WMS, WFS and WCS server
- Deegree – WMS, WFS and WCS server
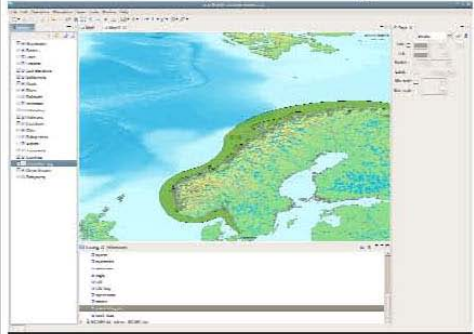- QuickWMS – javascript client / frontend for WMS-data

PostGIS – GIS extention for PostgreSQL

PostGIS is a set of functions, operators and objects that GIS-enable the open source database PostgreSQL. It enables functionality such as transformation between different projections, calculations on geometries (area, distances, addition, subtractions etc), various output formats like svg, gml, wkt (OGCs Well-Known-Text) and wkb (OGCs well-Known-Binary). IMR uses it to store spatial data.

PROs
- Good standard support
- Supported by most open source GIS products
- Platform independant
- Supports spatial indexing
- Active development

CONs
- Bad support by commercial GIS-systems

UDIG – java desktop GIS

UDIG – java desktop GIS

UDIG is a java application built on the Eclipse framework (a java development framework). It is used for displaying and editing maps from WMS, WFS, PostGIS, Oracle Spatial DB and various files such as shapefiles etc. Used to some degree at IMR to display WMS, PostGIS and shape-data.

PROs
- Good support for OGC-standards
- Easy to use
- Supports editing a PostGIS-database and WFS map layers directly in the map
- Platform independant (Java)
- Can be used to generate a SLD (Styled-Layer-Description: xml-document used for styling WMS or WFS output)

CONs
- Some bugs
- Limited export options
- Only for display, not for GIS-calculations
- Size and complexity makes it unattractive to use as an embedded component in other applications
- Generally limited functionality
- Active but slow development

JUMP

JUMP is a fairly small java desktop application and library for viewing GIS-maps. It supports shapefiles, WMS (1.0.0), WKT, gml. Currently not in use at IMR.

PROs
- Fairly small
- Can easily be embedded in a java application
- Suports WMS
- Recent development in a new branch (OpenJUMP)

CONs
- Low development activity (Stopped?)
- Bugs
- Missing features

GEOSERVER

GEOSERVER is a java WMS-, WFS- and WCS- server cabable of showing data from many datasources. The WFS is fully transactional meaning you can use the WFS-interface to update the data in the data-source. Geoserver also has quite good support for SLD, which can be used to style the maps returned by the server. Possibly to be used to serve WMS-data at IMR.

PROs
- Platform independant
- Supports many datasources (PostGIS, MySQL, Oracle Spatial, ArcSDE, shape)
- Active development
- Good support on userforums
- Good standard support
- Simple configuration

CONs
- Some bugs
- Missing some features
- Included frontend / client is not good

GeoServer
Open Gateway for Geospatial Data

DEEGREE

DEEGREE is a WMS-, WFS- and WCS- server, written in java, certified by OGC. It has many of the same features as GEOSERVER. IMR currently use it to serve some WMS-data.

PROs
- Good standard support (OGC-certified)
- Support several datasources
- Includes a client / frontend

CONs
- Low development activity
- Difficult configuration
- Small user base

deegree

QuickWMS

QuickWMS is a javascript WMS-client / frontend that can easily be embedded in a web-application. It is small, simple and well-written and supports most web-browsers. It is used by IMRs AIS-system, as well as in other projects.

PROs
- Small
- Simple
- Easily customizable
- Well-written
- Fast
- Many users

CONs
- Low development activity
- Some missing features

Conclusions

- Many good Open Source GIS solutions
- Especially on the low level (storage, WMS/WFS/WCS)
- Can be combined to form good solutions
- Good competence is needed to get good results
- Advanced frontends can be built by using existing applications as framework (QuickWMS for web, Jump or UDIG for desktop-applications)
- No good, easy to use general Open Source GIS-desktop tools
- ☺

INSTITUTE OF MARINE RESEARCH

Helge Sagen and Kareen Bröker

Manifold

An alternative GIS system to ArcGIS?

What is Manifold?

- http://www.manifold.net/
- GIS system (overlay, buffers, map projections, cartography,…) for vector and raster data, 2D and 3D data
- Based on .NET (maybe possible to run on Linux in the future?)
- Supports various data formats and database formats (ODBC, OLE DB, Jet)
- Built-in network functions as shortest path, ….

- Easy to publish GIS data on the Internet
  - Easy to create OGC/WMS compatible web services
  - Example created with a wizard: http://osea5369/temperatur/
  - ASP pages with JavaScript code are created automatically
  - Internet pages are also based on .NET (VBscript, C#, JavaScript,…)

- Efficient extension of SQL for spatial analysis and selection
  - Same SQL functions as OGC: disjoint, touches, within, overlaps, crosses, intersects
  - In addition to other SQL functions: voronoi, shapehull, raster functions, …

Manifold – products and prices

- http://www.manifold.net/products/products_set.html
- Available in several product versions; can be enhanced with 3 extensions: Business Tools, Surface Tools, and Geocoding Data

- All prices are the same worldwide for all customers: e.g.
  - Professional Edition $ 245,-
    http://www.manifold.net/products/mfd50pro/mfd50pro_home.html
  - Universal Edition (all Enterprise Edition features plus Business Tools and Surface Tools extensions) $ 545,-
    http://www.manifold.net/products/mfd50pro/mfd50ent_home.html

- Discounts for quantity purchases (from the 5th license) and academic buyers (Academic License deal: procure a single license and get a fully-paid up license for the entire institution)

- Free stuff:
  - scripting examples and tutorials
  - Free maps and data

Manifold at IMR

- IMR uses mainly ESRI products as GIS tools
- 19 Manifold licenses at IMR: mostly Manifold 6.50 Universal and some Professional Editions, purchased recently

- Advantage with Manifold:
  - reasonable price
  - contains many functions in one package (network, raster/interpolation, map web server, …)
- ESRI products (very expensive) are covering the same functions (plus some more) but in different extensions.

- Advantage with ESRI products:
  - Covers more platforms (except for ArcView desktop)
  - Easier to develop programs/add-ons
- You have to be quiet good in .NET programming to develop add-ons for Manifold.