Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices

Third Session (GE-BICH-III)
IOC Project Office for IODE
Oostende, Belgium
27-28 November 2006

UNESCO

Abstract

The 3[d] Session of the IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices was held at the IOC Project Office for IODE from 27 to 28 November 2006. The Session was attended by five regular group members and by the representatives from FAO/FIGIS, ETI, OBIS, TDWG, and ICES.

The Group analyzed the fulfillment of the action plan for 2004-2006 and adopted a detailed work plan for 2006-2008.

The Group considered the wish of Dr. Edward Vanden Berghe, GE-BICH chair, to step down the chair position and decided to have two co-chairs responsible for biological and chemical issues. Gwenaelle MONCOIFFÉ and Dr. Sergey KONOVALOV were elected as the Group co-chairs.

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ANNEXES

1. ORGANIZATION OF THE SESSION

1.1. Opening of the Session

The Session was opened at 09h00 on Monday 27 November 2006 by Edward Vanden Berghe, GE-BICH chair.

The participants then briefly introduced themselves. The Chair expressed his regret that only five members of the Group were able to attend and welcomed the observers attended the meeting. The Group welcomed Dr. Sergey Konovalov as a new group member. A list of the meeting participants is given in Annex 2.

1.2. Welcome on behalf of IOC Project Office for IODE

Vladimir Vladymyrov, Head of the IOC Project Office for IODE, welcomed the meeting participants on behalf of the Project Office. He described briefly the objectives of the Project Office, a history of its creation, and the Project Office recent activities.

1.3. Adoption of the Agenda

The Chair outlined the Provisional Agenda (version 3) for the meeting and invited comments. The Group adopted the Agenda, as given in Annex I.

2. PRESENTATIONS BY PARTICIPANTS

2.1. Chemical data quality control

Sergey Konovalov briefed the Group on the problems of the chemical data quality control. According to Group on Earth Observations (GEO) and MANUAL OF QUALITY CONTROL PROCEDURES FOR VALIDATION OF OCEANOGRAPHIC DATA [UNESCO/IOC/IODE, 1993]: The central goal of all earth observation investments and activities is to provide decision makers with more accurate and timely information about the Earth environment to help them respond to a multitude of societal needs. Many national and international programmes or projects like HELCOM, IGOSS, JGOFS, JMP, MAST, WOCE have or are carrying out investigations across a broad field of marine science. More are planned. In addition to these scientific programmes many research projects are carried out under commercial control. Large projects like offshore oil and gas production, deep sea drilling projects, shipping and fishery need complex information on the marine environment. Significant decisions are taken on the assumption that data are reliable and compatible, even when they come from many different sources.

Data quality is at the heart of every step of data management. The negative impact of erroneous or poor information could be serious and costly.

Quality control may take various forms including, proper instrument calibration, proper documentation of sampling and measurements, automatic and oceanographic quality control, quality flagging of data.

Following MANUAL OF QUALITY CONTROL PROCEDURES FOR VALIDATION OF OCEANOGRAPHIC DATA there are "No Agreed Standard QC Checks Available". This statement reveals the present day situation and the very real gap in chemical data management. This problem with chemical data quality control becomes exceptionally vivid, when compared to the existing system of CTD data quality control. References,

automatic and oceanographic control of CTD data are well developed and routinely applied within various programs and data centers.

Unlike for chemical data, quality assurance for biological data has been a subject of special activities and projects, though quality assurance and quality control for physical data is developed much better. For example, the EU-funded BEQUALM (Biological Effects Quality Assurance in Marine Monitoring) (http://www.cefas.co.uk/bequalm/default.htm) project has been running under the leadership of CEFAS at Burnham-on-Crouch, UK, with the objective of building an infrastructure in Europe that can provide QA/QC for most of the biological effects methods used in major marine monitoring programmes.

There are two major reasons for the absence of a developed chemical data quality control:
- Chemical data have been always considered as a part of either physical (as traces of physical processes) or biological (as aerobic background, nutrients and/or traces of biological processes) oceanography;
- For the above suggested reason and as far as it is known, any large scale project aiming to develop a Chemical Data Quality Control system has been never funded.

Still, chemical data are collected within almost every oceanographic program, even those addressed to issues other than chemical oceanography. It is explicitly true for oceanographic programs addressed to effects of eutrophication and marine pollution. Chemical data becomes a subject of quality control to support the activities of original programs and data exchange and to be incorporated in world ocean data bases of NODC, BODC, JODC, etc. To resolve the apparent problem, chemical data are considered and managed similar to either biological or physical data.

Formally, a range of checks should be carried out on the data to ensure that they have been imported into the Data Centre's format correctly and without any loss of information. For discrete water sample data, these should include (ICES WGMDM Guidelines For Discrete Water Sample Data):
- Check header details (station numbers, date/time, latitude/longitude, instrument type, data type/no. of data points, platform identifier)
- Plot station positions to check not on land
- Check ship speed between stations to look for incorrect position or date/time
- Automatic range checking of each parameter (e.g., WOD 1998, Maillard 2000)
- Check units of parameters supplied
- Check pressure increasing or decreasing as appropriate
- Check no data points below bottom depth
- Check depths against echo sounder
- Plot profiles (individually, in groups, etc)
- Check for spikes
- Check for vertical stability/inversions
- Check profiles vs. regional climatology
- Check calibration information available
- Compare parameters for predictable relationships (e.g., parameter ratios)
- Check for consecutive constant values

- Duplicate detection when comparing to archived data
- Flag suspicious data or correct after consultation with Principal Investigator (PI)

This list of checks would be good but it is rarely possible. Besides, the list of predictable relationships has never been published, methodology of this analysis is unavailable, and the possibility of this analysis explicitly depends on the availability of chemical experts and their experience.

2.2. Taxonomic Databases Working Group

Anton Güntsch informed the participants on the Taxonomic Databases Working Group (TDWG) activity and this year conference of the TDWG that took place at the Missouri Botanical Garden in St. Louis (October 15-22) and brought together about 200 participants from various disciplines related to biodiversity informatics.

The dominating topic of the conference was the discussion of results of the TIP project (Technical Implementation Project) funded by the Moore Foundation. TIP has made great progress over the last 12 months regarding professionalisation of the TDWG organisation and its standardisation processes. Important results are for example the new TDWG website (http://www.tdwg.org), the Proceedings of the TDWG (http://www.tdwg.org/my-account/available-services/proceedings-of-tdwg/) as well as new rules for the development and documentation of TDWG standards (see http://www.tdwg.org/homepage-news-item/article/one-year-into-the-25-year-contract/).

Other important issues discussed during the conference were the usability of the TDWG standard for taxonomic names and concepts TCS (http://www.tdwg.org/subgroups/tnc/frontpage/), the use of Life Science Identifiers (LSIDs) as globally unique identifiers for important biodiversity information objects, a draft TDWG ontology for "first class" biodiversity objects (http://www.tdwg.org/subgroups/tag/documents/) and the state of TAPIR implementation and its deployment (http://www.tdwg.org/subgroups/tapir/frontpage/).

To emphasize that TDWG considers itself a standardisation body rather than a databasing working group its name was changed to "TDWG - Biodiversity Information Standards". The name change is already reflected in the new TDWG logo.

2.3. ETI Bioinformatics

Marc Brugman gave a presentation on the ETI Bioinformatics. ETI BioInformatics is an NGO in operational relations with UNESCO. Its mission is to assist the scientific community in achieving worldwide access to quality taxonomic and biodiversity information. They design, develop and implement ICT services and ICT solutions to support the accessibility and interoperability of digital scientific and educational information.

Research focuses of ETI are:
- Web-based taxonomy
- Species banks
- Catalogue of Life
- Ecological Niche Modeling
- Image analysis and automated identification
- 3-D imaging
- Automated Data Validation

2.4.   FIRMS and NEON

Marc Taconet (FAO) delivered a presentation in 2 phases:

Firstly the *Fishery Resources Monitoring System (FIRMS)* http://firms.fao.org was presented as a major breakthrough for FIGIS and its associated FIMES schema since GEBICH II. Through the FIRMS website published in May 2006, FIRMS Partners intend to provide to information users a means to better monitor the **state of world fishery resources** and **the status and trends of fisheries and their management**, based on authoritative information sources. The Partnership, currently composed of FAO and 9 Regional Fishery Organizations, is growing and plans to extend to national level as soon as the current platform proves able to tackle such drastic extension. The FIRMS Partnership Arrangement ensures sustainability and commitment, provision of authoritative information, and effective sharing of high quality information through development of an Information Management Policy (IMP). FIRMS recognizes data ownership as essential element of data quality, together with the application of agreed information standards and quality assurance rules. Inventories of marine resources, marine resources fact sheets, maps of fish stocks locations, and status and trends summaries are the current products disseminated by FIRMS. The Fisheries Global Information System (FIGIS) procures the mechanics behind FIRMS: the FIMES XML schema which builds on international Metadata and classifications, the engine powering the web-based dissemination and content management systems, as well as peripheral tools such as those enabling conversion from Excel or MSWord to XML.

Call for action: FIRMS interest with IODE/GEBICH members evolves from increasing focus on the Ecosystem Approach to Fisheries: FIRMS needs to share standards on environmental and biodiversity subject matters; and also needs to facilitate access to relevant environmental information. FIRMS also needs to raise awareness about its fisheries standards in the perspective of the extension at national level, and OBI could provide an opportunity for doing so.

Then the NeOn project (Networked Ontologies) was presented as a possible solution to interoperability between communities of users in the world of fisheries and oceanography. If XML DTDs and Schemas are sufficient for exchanging data between parties who have previously agreed on definitions, semantics are needed to achieve interoperability between numerous, independently developed and managed schemas and *Ontologies* provide the semantic underpinning enabling intelligent access, integration, sharing and use of data. NeOn, a 4 years project granted with Euro 10 millions to work on the development of web semantics, is set-up as a consortium of 11 agencies: cases studies are provided by 2 international non-profit organizations (including FAO for fisheries and AECE for pharmacy); research is conducted by 5 academic and research institutes; software development is taken care of by 4 private firms. Its overall goals are to support the creation, maintenance and enrichment of ontologies for new generation of semantic applications, and to create a service and an open infrastructure with cost-efficient solutions, oriented to users. The research component in particular aims at resolving issues of ontologies maintenance and updating, reported as major bottlenecks to viable solutions.

The NeOn FAO case study concerns three components: the fishery ontology repository which defines relationships between a set of knowledge organization systems, and the fish stock depletion alert system (FSDAS) to be understood as the first end user client application of the fishery ontology. Additionally, knowledge discovery tools, based on data mining software, will be crawling relevant text corpus in order to update the ontology and maintain its currency.

Call for action: the project now proceeds with identification and classification of a set of NeOn-usable fisheries-related information systems to be used for ontology-building and/or data sources for the fisheries alert system case study. Where they thematically fall within the scope of FSDAS, information resources/systems of participants to GEBICH are of interest to NeOn: in particular, taxonomic classifications, ecosystems descriptors (eg environment / habitat classifications, predator / prey relationships, measures and qualifiers of biodiversity, or primary productivity).

2.5. OBIS

Mark Costello presented the The Ocean Biogeographic Information System (OBIS). OBIS is the information component of the Census of Marine Life (CoML), a growing network of more than 1000 researchers in 73 nations engaged in a 10-year initiative to assess and explain the diversity, distribution, and abundance of life in the oceans - past, present, and future.

OBIS is a web-based provider of global geo-referenced information on marine species. We contain expert species level and habitat level databases and provide a variety of spatial query tools for visualizing relationships among species and their environment. OBIS strives to assess and integrate biological, physical, and chemical oceanographic data from multiple sources. Users of OBIS, including researchers, students, and environmental managers, will gain a dynamic view of the multi-dimensional oceanic world. One can explore this constantly expanding and developing facility through the OBIS Portal.

The OBIS Portal accesses data content, information infrastructure, and informatics tools - maps, visualizations, and models – to provide a dynamic, global facility in four dimensions (the three dimensions of space plus time). Potential uses are to reveal new spatial/temporal patterns; to generate new hypotheses about the global marine ecosystem; and to guide future field expeditions. The scope of OBIS offers new challenges in data management, scientific cooperation and organization, and innovative approaches to data analysis. Maintaining the principle of open access, the digital atlas developed by OBIS is expected to provide a fundamental basis for societal and governmental decisions on how to harvest and conserve marine life.

OBIS is structured as a federation of organizations and people sharing a vision to make marine biogeographic data, from all over the world, freely available over the World Wide Web through the OBIS Portal. OBIS elements agree to develop and promote standards and interoperability in concert with the standards and protocols being developed for other environmental data systems around the world. It is not a project or program, and is not limited to data from CoML-related projects. OBIS is not incorporated, it does not employ staff, own equipment, or apply for funding. Organizations involved in OBIS take on these responsibilities. Any organization, consortium, project or individual may contribute to OBIS (see FAQ and Technical Resources pages to find out how). OBIS is managed by an International Committee with advice from the CoML Steering Committee (see International Committee page for details).

The Chair of the OBIS International Committee, Mark Costello, is the OBIS Executive Officer, implements IC directives, arranges meetings, and facilitates communications. The Portal is under the direction of Dr. Frederick Grassle and Dr. Yunqing Zhang at Rutgers, the State University of New Jersey.

2.6. ICES and DOME

Julie Gillin gave a brief presentation on ICES (International Council for the Exploration of the Sea). ICES is the organisation that coordinates and promotes marine research in the

North Atlantic. This includes adjacent seas such as the Baltic Sea and North Sea. For more background information see ICES Convention.

It acts as a meeting point for a community of more than 1600 marine scientists from 20 countries around the North Atlantic. Scientists working through ICES gather information about the marine ecosystem. As well as filling gaps in existing knowledge, this information is also developed into unbiased, non-political advice.

Our advice is then used by the 20 member countries, which fund and support ICES, to help them manage the North Atlantic Ocean and adjacent seas. The 20 member countries of ICES are: Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Iceland, Ireland, Latvia, Lithuania, the Netherlands, Norway, Poland, Portugal, Russia, Spain, Sweden, the United Kingdom and the United States of America. The affiliates are: Australia, Chile, Greece, New Zealand, Peru and South Africa.

Scientists working through ICES gather information about the marine ecosystem. We have traditional strengths in fisheries, oceanography and the marine environment. This includes some of the largest databases in the world on these subjects.

DOME (Database on Oceanography and Marine Ecosystems) is under development now. The DOME is going to hold data for HELCOM, OSPAR, and ICES on contaminants in seawater, sediments, and biota, including biological effects and fish diseases. The database is a development from existing systems where these data are held in separate databases. The development of this database is concurrent with the development of the new reporting format.

DOME's development is supported by OSPAR, Cefas, and ICES. Integration of oceanographic data has presented several challenges including near-duplicated data, incompatible coding, loss of links between data, normalization breakers, etc. To provide guidance in dealing with these issues—and sometimes take hard decisions—OSPAR established an Intersessional Correspondence Group, ICG-DOME. ICG-DOME as well as Cefas are represented in DOME's steering group

2.7.   Russian NODC activity on chemical and biological data management

Alexander Kouznetsov presented information on the developments going on in Russian NODC in relation with biological and chemical data. He reported that the new version of the system for collection digital Cruise Summary Reports (CSR) had been developed. 7 institutions and centres of the Russian Federation are involved in submission of digital CSR, which are available for the world oceanographic community through the WEB-site www.data.oceaninfo.ru and WEB-site of the "Sea Search" Project.

New WEB-technology (/www.data.oceaninfo.ru/inf/index.jsp/) for entry and governance of metadata on marine environment has been constructed within the framework of the Unified System on the World Ocean Condition (ESIMO). The technology enables the users (institutions and data centres being involved in ESIMO) to enter via the Internet their metadata (descriptions of observational networks, data sets, procedures, documents) and to store and manage them in the framework of the Central Metadata Base under the Oracle DBMS.

In addition to the collection and QC of current data RIHMI-WDC continues to rescue and digitize historical data. Chemical data of 30 cruises (more than 1200 stations) digitized in 2006.

The QC of the historical and current data is a very important stage of the data processing. Different procedures are being applied to achieve high levels of the data quality assurance. As an example the data on phosphate and total phosphorus of more the 1200

cruises have been reconstructed when the inconsistency of these parameters in historical fisheries data was identified.

The work on the improving of parameter dictionary (PD) has been continued. In BODC the PD has been extended up to 16000 parameter's codes. The new additional classification schema of parameters in RIHMI-WDC PD has been developed. The mapping of the RIHMI-WDC and BODC PDs is underway.

The concept of the Unique Data Identifier proposed within the framework of the GTSPP project with respect to the chemical data has been considered as fruitful for management of the global data bases.

3.   REPORT ON INTERSESSIONAL ACTIVITIES

3.1.   OBI I Conference; pending matters (GEBICH II 5.1.1.)

The conference was successfully held in Hamburg. A series of papers resulting from the presentations was published as a Open Access Theme Section in Marine Ecology Progress Series http://www.int-res.com/abstracts/meps/v316/. Papers covering the remaining presentations will be published in the form of proceedings. These are nearly ready; the final page proofs should be ready in the course of December 2006.

3.2.   Questionnaire (GEBICH II 5.1.2.)
        See agenda item 4.1.1.

3.3.   Pilot projects

3.3.1.   Nomenclators (GEBICH II 4.4.3)

See agenda item 4.6.

3.3.2.   Distributed systems (GEBICH II 4.6.7)

See agenda item 4.5.2 for metadata, and 4.6 for nomenclators

3.4.   Document on need of data management (GEBICH II 4.1.1 – drafting team of Syd
        Levitus, Edward Vanden Berghe, Secretariat)

No action was taken. The point will be taken up between sessions by Edward Vanden Berghe, and an attempt will be made to finalize it before IODE 19.

3.5.   Contributions to OceanTeacher (GEBICH II 4.1.1)

See agenda item 4.9.

3.6.   Globalization of ITIS (GEBICH II 4.4.4)

See agenda items 4.6.1 and 4.6.2.

3.7.   XML Registry

Vladimir Vladymyrov introduced this item. He reminded to the Group that during its second meeting (2004) "the Group stressed that an XML registry is required and

recommended that the IODE Project Office takes on this responsibility. The IODE Project should deal with the management of the repository and the IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices should assist with content management. He reminded also that IODE -18 through its Recommendation IODE-XVIII.7:

Recommends *the establishment of a MarineXML Steering Group with the following terms of reference:*
   (i)   establish a Pilot Project to set up an ISO 19100 series of standards compliant standards register, with possible collaboration with IHO, to be hosted by the IODE Project Office;
   (ii)   monitor and assist with XML development activities in other IODE/JCOMM groups, such as ETDMP, GEBICH and SGMEDI.

Recommends *that the membership of the Steering Group shall included Belgium (VLIZ), China (NODC), The Netherlands (NODC), Russian Federation (NODC), United Kingdom (BODC), , the IODE Project Office and other relevant experts, and shall be coordinated by Mr Roy Lowry (UK);*

Further recommends *the MarineXML web site (MarineXML.net) be hosted by the IODE Project Office as a focal point for MarineXML activities;*

In the following discussion V. Vladymyrov informed the participants that technically the IOC Project Office for IODE hosts the MarineXML web site and it is ready to host the Registry, however it was not created yet. Edward Vanden Berghe underlined the necessity of the Registry and recalled that it was a preliminary agreement with Francisco Hernandez (VLIZ) that he would study a possibility to create the Registry.
Anton Güntsch informed the participants that TDWG use a simple database system to manage such registries and that TDWG can provide a sysmet as an example to GEBICH.

Action: Edward Vanden Berghe will contact Francisco Hernandez on this issue
Action: Francisco Hernandez will contact Anton Güntsch to study the possibility to use the TDWG system.

4.   DISCUSSION TOPICS FOR THE CEBICH-III

4.1.   OBIS and Regional Nodes, and Interaction with NODCs

4.1.1.   GE-BICH questionnaire

Work on the GE-BICH questionnaire started after the second GE-BICH meeting in Liverpool in March 2004. A straw man was circulated to members of the questionnaire sub-group in June 2004. The straw man was designed based on the revised objectives of the Liverpool meeting. Feedback was received in July and August 2004 from Bob Gelfeld, Renee Tatusko and Mary Kennedy. From the comments received, it was felt that the revised objectives had resulted in a questionnaire that was too broad in its scope and that had lost its focus on compiling information about biological and chemical data and data management systems already in place within the IOC community. Limited resource and lack of time brought the questionnaire project to an end but the following recommendations could be used if it were felt that there was still a need for a GE-BICH questionnaire:
   • need to stay focused on GE-BICH remit i.e. biological and chemical data management,
   • need to make sure the questionnaire reach the correct person(s): in many IODE countries, biological data are not managed by the NODC but this doesn't mean that

biological data are not being managed,

- need to be very specific in order to channel people in providing useful information,
- any reference to data types should be provided as check boxes using specific data type standards such as those used by e.g. CSR or MEDI,
- 3 broad categories: physical, chemical, biological on a first level and on a second level check boxes with more detailed data types,
- check boxes or drop down lists should be used as much as possible, and option to use free text answer should be avoided,
- need for specific information on archiving strategy, cataloguing, level and path of quality control, degree of standardization/integration (e.g. database, common format, common parameter description vocabulary…), distribution/access, etc.

4.1.2. *Which NODCs have biological data?*

Between April 2004 and December 2004, the IODE project office carried out a number of surveys in preparation to IODE-18. To a large extent, these surveys covered most of the wider issues that the GE-BICH II questionnaire had set itself to address. Some contained specific information related to biological and chemical data collection or management that could be of interest to GE-BICH if presented in a more synthetic way. Finally a later survey started in May 2006 (still opened) focus specifically on species distribution data holdings, management and contribution to OBIS. In the time available it was not possible to extract much information from these reports. Instead, a brief overview of the surveys' targeted audience, objectives, and main results of relevance to GE-BICH are presented below.

4.2. IODE-18 Country reports Apr-Dec 2004 (Word document)

- Directed at the national IODE co-ordinator
- Same range of questions as proposed by GE-BICH II, but no question was specifically about biological or chemical data.
- Contains potentially useful information for GE-BICH but embedded in individual word documents.
- Could be useful to GE-BICH in providing a snapshot of data management set up across IODE countries if information were parsed and summarised in a standardised form concentrating on the key elements: whether the country operates a centralised or distributed national oceanographic data management set up, whether it is connected or disjointed, whether data are collected for monitoring or for research, whether they come from government or university, use of ROSCOP/CSR, or MEDI/EDMED, etc.
- There were 59 valid responses
- A quick survey of the responses indicated that:
  - 61% of the responders named or implied some form of biological/chemical data management activities or mentioned collecting centres in their report (i.e. biological data are not always (and probably most often not) managed by the NODCs)
  - only 15% seem to suggest that biological/chemical data are either not collected or there is no system in place to deal with them.
  - Only 1 country clearly stated that there is no home for biological data at present.
- Notes
  - often no clear distinction is made between biological/chemical, environmental and fisheries,
  - the amount of information provided varied greatly from country to country
  - overall impression that national co-ordinators are not always well informed about if and how biological and chemical data collected in their countries are managed.

IODE Review questionnaire Apr-Sep 2004 (Word document):

- Contained four sections but only the first three would contain information relevant to GE-BICH work. These are sections targeted at: 1) collectors of marine scientific data (individual researchers, research departments, institutions and projects that collect data (involving one or more institutions), 2) oceanographic data processing and management facilities, and 3) users of oceanographic data products and services.
- No summary analysis of these reports is available at present.
- 101 forms available with one or several sections filled in.
- Seems to contain some important information relevant to GE-BICH work about e.g. the type of data collected, the type and proportion of data provided to the NODCs, quality control procedures, etc… but would be time-consuming to extract because information is embedded in a large number of WORD documents.

IODE-18 Priority survey Sep-Oct 2004 (online)
- Targeted at ocean data and information managers.
- Important information on the distribution of organisations collecting ocean data and organisations managing ocean data (not specifically biological and chemical).
- Results presented and summarized in IODE report IOC/IODE-XVIII/23
- Out of 73 valid responses from all regions of the globe:
    o Most of the responses indicated that ocean data were generated by more than 6 organisations in their countries (about 42% between 6 and 10, 19% between 11-50, and 7% more than 50).
    o around ½ of the responses indicated that less than 1/4 of these organisations submitted data to a data centre.
    o only 7 out of 49 said that there was only one data management facility in their country
    o only ½ of the countries with multiple data management facilities had them organised in a network.

IODE-18 International Oceanographic Community Survey Nov-Dec 2004 (online).
- Targeted at data collectors
- 950 respondents from 65 countries
- Results presented and summarized in IODE report IOC/IODE-XVIII/24
- Very important conclusions (quoted from report):

    o The survey pointed out a large lack of awareness of the IOC/IODE system in the international oceanographic community.
    o There is a great need to increase the capacity building in data and information management for the international oceanographic community.
    o The IODE website is under-utilized by the international oceanographic community.
    o There is a large amount of collected oceanographic data and information that is not making its way into the IOC/IODE system.
    o
OBIS and taxonomic data survey (online), May-Jun 2006
- Only 31 valid entries have been received so far.
    o 3 were already OBIS contributors
    o 61% responded that species distribution data were not managed by the NODC.
    o 74% responded they knew of organisations in their country who managed marine species distribution data.
    o All but 3 were willing to assist in contributing data to OBIS
    o More responses would be needed from NODCs in order to gain a fuller picture of the situation with regards to species distribution data management.

4.2.1.   Relationship with AfrOBIS through ODINAfrica

The Chair briefed the meeting about the ODINAfrica contribution to the African node of the OBIS network, AfrOBIS. Two biodiversity data management training sessions were held, one in Oostende, Belgium (in French), one in Mauritius (in English). In these training sessions, attendees were introduced to issues in taxonomy and biogeography relevant to data managers, and to some of the tools that are used in marine biodiversity data management in general, and in the OBIS network in particular (Access, SQL Server, DiGIR). Two data logging sessions have been organized, both in Oostende. One focused on mollusks, one on sponges. Species distribution records extracted from the scientific literature during these logging workshops will be made available to AfrOBIS.

4.2.2.   How should relationship develop?

Mark Costello, Chair of the International Committee of OBIS, noted with appreciation the growing links between IODE and OBIS. The questionnaire (see 4.1.1.) was seen as a useful first inventory of NODCs with data that are potentially relevant to OBIS. Further contact should be made, inviting NODCs to make biogeographical and other relevant data available to OBIS; this flow of data can either go directly to the international OBIS portal, or through the regional OBIS nodes.

Action point: letter from Mark Costello as a chair of the OBIS IC to all national oceanographic data points of contact building on the earlier letter from IODE this year.

4.3.   Relationships with ICES

4.3.1.   Role of ICES as standards organisation

ICES' Data Centre Manager described recent activities to coordinate ship codes in collaboration with key stakeholders, and to develop facilities for code audit trails and codelist reconstruction.

ICES offers to re-establish its role as responsible for the governance of ship codes. The governance model including supporting systems and the role of key stakeholders will be detailed and presented at the IODE-XIX for endorsement. If appropriate, other types of codes may be included in addition to ship codes.

4.3.2.   Status of MDM and its successor

ICES' data manager described the work of the former Study Group on XML (SGXML), and the recent merge of the Study Group on Management of Integrated Data (SGMID) and the Working Group on Marine Data Management (WGMDM). The SGMID comprised data users from all disciplines whereas the WGMDM comprised data managers primarily concerned with physical oceanography. Merging the two groups into the Working group on Marine Data Management (WGDIM) is an important step towards data integration to support the ecosystem approach. WGDIM will also ensure an appropriate balance of data stores and products available from the ICES Data Centre.

The WGDIM's Terms of Reference are very similar to those of GE-BICH's own goals. GE-BICH therefore considers participation of WGDIM to be not just advantageous but essential for GE-BICH. Other regional organizations such as PICES and CIEMS should also be encouraged to participate to ensure global coverage.

Action: GEBICH Chair – to invite representatives of PICES and CIESM to attend next group meeting.

4.4. Relationships with FAO, fisheries standards

This agenda item was started referring to the conclusions made on the two presentations by FAO.

FIRMS: in the context of increasing focus on the Ecosystem Approach to Fisheries, FIRMS needs:

- to share standards on environmental and biodiversity subject matters;
- to facilitate access to relevant environmental information.

in the context of extension of the FIRMS Partnership at national level, FIRMS needs:

- to raise awareness about its fisheries standards: this could be promoted through OBI II conference.

Action: FIRMS would play active role in activities on Marine Habitat, and could be interested in an active role in OBI II conference (see related agenda items)

NeOn:

The NeOn project could provide an opportunity to test, through integration in the NeOn ontology of fisheries, taxonomic, and oceanographic schemas, related classifications and APIs, how well NeOn tools could enable underlying systems to interoperate. It was noticed that NeOn could be a possible tool to implement the IODE/Gebich action entitled "Investigate tools to create distributed Metadata catalog" lead by Edward Van Den Berg and Roy Lawry, and that should the concept proves able to respond to the needs, IODE could consider if/how funding provisioned for this action could be contributing to the broader effort on Ontology development.

Among the relevant schemas should in particular be considered:
Metadata repositories and schemas:
- MEDI: the Marine Environmental Data Inventory of the IODE metadata system
- ISO 19115 with the extended Marine community profile
Taxonomic repositories and schema:
- TSC: Taxonomic schema (developed under the TDWG group)
- ITIS, the Integrated Taxonomic Integrated System, which is largely North American and not as global as either CoL or APHIA.
- APHIA, a repository of taxonomic lists (including UNESCO Register of Marine Organisms (URMO), ASFIS, ERMS, Global Species Databases (GSD)) which will eventually provide the foundation for the envisaged World Register of Marine Species (WoRMS).

Bio/ecological systems and associated schemas backed by protocols:
- BIOCASE schema and protocol
- DIGIR schema and protocol (used by OBIS)
- TAPIR schema and protocol
- SOAP
- ICES website: fisheries working group reports, other science document repositories about ecological-environment-oceanographic-ecosystems information.
- Ontology of Marine oceanography parameters (Roy Lawry)

Actions:
Short term (December 2006 to March 2007)
Taconet:

- these candidates will be considered as part of the Inventory of fisheries-related information resources conducted by NeOn project; the person responsible for the inventory will contact GEBICH members for collecting more details.

Vanden Berghe:

- look at the TCS schema and ensure that APHIA content can be extracted to TCS

- look at how many names from ASFIS will match with APHIA and OBIS lists, and provide summary figures as preliminary indicators of how easy/difficult such integration would be.

Julie Gillin:

- provide internet addresses of the ICES documents relevant to the NeOn expectations, for consideration by the inventory; Julie may be further asked to contribute to filling in the inventory form.

Medium term: (March to September 2007)

Depending on outcomes of the inventory phase and preliminary tests implemented on the NeOn tools (at the end of NeOn phase 1 by September 2007), NeOn will make decision on the actual range of fisheries-related information sources which will be integrated in NeOn scope. In doing so, collaboration and synergies with GEBICH projects and funding sources may be exploited.

Taconet in close relationship with Van den Berghe:

- to ensure that GEBICH members (through chair(s)) could evaluate / be made aware of experimental results at the end of NeOn phase 1, in order to enable GEBICH chair to gauge if IODE/GEBICH human and/or funding resources could be mobilized in synergy with NeOn activities.

4.5.   Quality Control/Quality Assessment

4.5.1.   *Work by MDM on guidelines*

The ICES workgroup on Marine Data Management has since long had Quality Control and standard procedures high on its agenda. Several guidelines have been developed by this group; recently an inventory was started to list all relevant documents. Care should be taken not to duplicate efforts of this group, and to provide feedback on those topics that fall in the remit of GEBICH.

4.5.2.   *Work from MarBEF on standard procedures*

One of the work packages of MarBEF specifically deals with Quality control and Quality assurance. One of the activities undertaken is the compilation of a database with standard lab procedures, which will be searchable on line. A discussion forum was started to discuss topics of quality control, and is also available through the MarBEF web site; the discussion forum was initiated as a result of the joint IODE/MarBEF training workshop on Marine Biodiversity Data Management.

The issue of quality control flags and the different schema currently in use in the various databases and data management systems had been raised during Agenda items 2.1 and 2.7, and was further discussed by the group. It was noted that this issue was already being looked at in the frame of the SEADATANET project. The best way forward is therefore for GEBICH to liaise with SEADATANET to

1) gain knowledge of the current status of the QC flag issues within SEADATANET,

2) register our interest in the issue with the people involved, and

3) ensure that any issues or concerns specific to biological or chemical data is communicated to SEADATANET and discussed. Four GEBICH members were interested in

taking this task forward: Gwenaelle Moncoiffé, Mary Kennedy, Sergey Konovalov and Alexander Kouznetsov.

Action 1: Gwenaelle Moncoiffé to investigate who within SEADATANET is responsible for looking into the issue of QC flags.
Action 2: Gwenaelle Moncoiffé to communicate information on SEADATANET progress on this issue to the rest of the group.
Action 3: Gwenaelle Moncoiffé, Mary Kennedy, Sergey Konovalov and Alexander Kouznetsov to discuss any issues and concerns, and provide feedback to SEADATANET.

4.5.3. *GBIF documents on biogeography – how relevant for marine data?*

GBIF has commissioned several papers on quality control of biogeographical data, and makes these documents available through its web site (www.gbif.org):
*   Principles and methods of data cleaning, Arthur D. Chapman
*   Principles of data quality, Arthur D. Chapman

Both these documents contain very useful information, but clearly are inspired by terrestrial/freshwater science. It would be useful to check how applicable these documents are to marine biogeography, and how much it would take to build systems that implement the principles outlined in the documents to oceanography.

Action point: Mary Kennedy to report to meeting on the above

4.6.   Metadata

4.6.1.   *Collaboration with MEDI, ISO 19115 community profile*

Greg Reed from the Australian Ocean Data Centre Joint Facility (AODCJF) presented IODE metadata activities. He described the Marine Environmental Data Inventory (MEDI) as the IODE metadata system and the IODE Steering Group for MEDI that was established to support the MEDI system. He noted that IODE-XVIII recommended the development of a marine profile of ISO19115 and ISO19115 compliant metadata entry tool for the IODE community.

He gave a brief information on the International Standard ISO 19115 Geographic information — Metadata that defines almost 300 metadata elements, with most of these being listed as "optional." Individual communities may develop a "community profile" of the International Standard. A community may also establish additional metadata elements that are not in the International Standard. The rules for creating a community profile are described in ISO 19106:2004. AODCJF developed Marine Community Profile of ISO 19115.

Marine profile includes all ISO core metadata components, it extends 19115 to include new elements and customised code lists to meet the need of the marine community. More detailed description of the Marine Community profile is given in the Annex 3.

AODCJF identified the need for a common metadata entry and search tool (MEST). This on-line tool shall allow the preparation of metadata records and includes ability to implement the Marine Community Profile. AODCJF is going to make it available to other marine data providers. MEST provides web-accessible metadata creation, storage, edit, retrieval and display. It supports harvesting of metadata into Marine Catalogue (for access by Ocean Portal). It is freely available for distribution to universities and wider community.

AODCJF has found that GeoNetwork (FAO) met about 70% of the required functionality, it is Open-source and has the large user community. AODCJF is further developing GeoNetwork to include additional 30% functionality and to store metadata conforming to Marine Profile.

4.6.2. Review direction and progress on pilot project distributed metadata

The topic of the pilot project on distributed systems for metadata remains a very important one, but no progress has been made. In the discussion it was noted that GEBICH was probably not the right group to take the lead in this issue; and that any efforts in this connection might be better directed at a collaboration in the framework of the NeOn project of FAO.

4.7. Nomenclators

4.7.1. Status of pilot project; new development: ITIS proposal, involvement of ICES

Part of the objectives of the pilot project on distributed data was to gain experience with DiGIR and BioCASe in exchanging taxonomic information. No progress was made during the last intersessional, but the issue remains an important one. Several other groups, often under TDWG, are experimenting with distributed taxonomic systems. It is proposed that members of this group seek collaboration with these initiatives. The funds allocated to the pilot project on distributed databases could be made available for this purpose.

The codes ITIS assigns to species are used by some organizations, including ICES, in their data management. Unfortunately, ITIS has problems fulfilling this role. A concept paper for a proposal was developed, together with ITIS, ICES, GBIF, OBIS and VLIZ (as custodians of ERMS), to start activities to support ITIS in providing ITIS codes for marine species names.

4.7.2. OBIS activities; WoRMS and URMO

Bringing URMO on-line through the IODE project web site was the subject of one of the pilot projects. Plans for this have been discussed further with Jacob van der Land. Initial test have been done to check how data could be uploaded in a database, and made searchable.

OBIS needs a global list of taxonomic names to support its activities. Funding is being sought for 'WoRMS', the World Register of Marine Species.

A possible structure was discussed how WoRMS, Catalogue of Life (CoL), URMO, regional lists like ERMS, NWARMS and RAMS, and global species databases (GSDs) like Porifera, AlgaeBase and Hexacorallia, might fit together. CoL is a combination of all available GSDs, where areas not covered by a GSD are taken from ITIS. A similar structure could be the basis of WoRMS, which would consist of all available marine GSDs, supplemented with URMO. In case of WoRMS, also regional lists, and names available though the OBIS, would be integrated. Obviously, integration of information not coming from GSD will be labour-intensive, as conflicts between the information from different sources seem unavoidable, and have to be resolved. OBIS can call on a large community of taxonomic experts to assist in this. VLIZ has created the technological platform to facilitate the editing of the register on line.

Taxonomic names that are 'approved' by the taxonomic editor, and that are not yet in ITIS, will be communicated with ITIS for inclusion. This will require an initial matching of ITIS names with names in WoRMS, so as to know which names are missing in ITIS. The concept paper mentioned above is looking for funding for this.

Further QC on URMO will be needed, to judge how well suited it is to play the role as outlined in the structure above, and to assess how much work will be involved in the integration.

4.7.3. *Canadian work*

The Canadian Department of Fisheries and Oceans (DFO) needs to establish procedures to map archived data to ITIS code numbers. Why? The ITIS TSN code may be used as an international standard for data exchange. Procedures have been written that can utilize these codes to:
a.. extract accepted spelling for taxonomic name and authority
b.. link to the valid taxonomic name and authority
c.. extract hierarchy (taxonomic tree) from the ITIS database

This information, not stored in the original databases, is required for data interpretation/exchange with organizations such as the Canadian Centre for Marine Biodiversity, OBIS, etc.

Two issues need to be resolved in order to handle the cases where an ITIS code is not available:
1) the procedure to add new records to ITIS is time consuming and slow;
2) many records in our code tables do not fit the ITIS model and will never be assigned an official ITIS code. Therefore we must develop procedures to handle these taxa in order to access the additional taxonomic information normally extracted from ITIS

Another issue relates to quality control of species names, i.e. the authenticity of the species entry itself. Currently new taxa are appended to database code tables as requested. No procedures/protocols exist to verify that a requested taxon is valid for the sampled area. A first compilation of taxonomic species found in the North West Atlantic (NWARMS) has been compiled by the Atlantic Research Centre. However, NWARMS, itself, must be verified before this list should be used to authenticate other species lists (for more info re NWARMS see http://www.vliz.be/vmdcdata/narms/).

4.8. Species databases

4.8.1. *SeaLifeBase*

The SeaLifeBase project is being implemented in the Philippines under supervision of Nicolas Bailly. Its aim is to compile information on taxonomy and general biology for all marine species. The project focuses on groups for which no GSD exists. The taxonomic names compiled by SeaLifeBase are available for the WoRMS project. No information is visible on the internet yet, but will become visible very soon.

4.8.2. *SpeciesBase*

Speciesbase is a concept in the pre-proposal stage, and willbe submitted to the EU for funding under FP7. The project's objectives are to pull together existing species portals, and to create a single page with biological information for each species on earth (marine and

other), in a standardized way. SpeciesBase will build on other species information systems like SeaLifeBase, AlgaeBase and FishBase.

4.9.   Observatories

4.9.1. LifeWatch

The objectives of LifeWatch are to
- Integrate data from direct observation, existing monitoring programmes and large-scale biological and geological collections
- Gap analysis of existing monitoring programmes, and set up structures to deal with gaps

More information can be found on the LifeWatch web site, http://www.lifewatch.eu. It will be submitted as an ESFRI proposal to the EU.

4.10. Contribution to OceanTeacher

Dr. Murray Brown (USA), the Leading OceanTeacher editor was invited to give a presentation on the OceanTeacher (www.oceanteacher.org) using his availability at the Project Office. Hi informed the meeting participants that the mail OceanTeacher objective is to provide training tools for Oceanographic Data and Information Exchange. These tools are used during IODE Training Courses but can also be used for self training and continuous professional development. The OceanTeacher structure is as follows:
- Digital Library
- Software
- Data Examples
- Exercises
- Course Manuals
- OceanPortal – Separate, but integrated website

The Digital Library is used during 6 years for testing and use and it includes:
- 7500 resource documents
- 4400 illustrations
- 17,500+ internal links
- 16,000+ external links
- 1.5 GB

Dr. Murray Brown, underlined the major OceanTeacher shortcomings:
- Biology data
- Operational data
- Modeling methods & data
- Time-series data in general
- Quality-control, all areas

He especially underlined insufficient situation with the Biological entries to the OceanTeacher Digital library and training courses.

It was noted that QC procedure course for the chemical data presented by Sergey Konovalov will be a good input to the OceanTeacher.

Action: a special group will be created within GEBICH to deal with this issue. It will contain Edward Vanden Berghe, Mark Costello, Gwenaelle Moncoiffe, and Sergey Konovalov.

5.   INTERSESSIONAL WORK PLAN

5.1.   Preparation of the "Ocean Biodiversity Informatics-II" Conference

The meeting was briefed by Mark Costello and Edward Vanden Berghe about the present state of preparations of OBI 07. Originally, the meeting was planned to be taking place in Halifax, Canada, from 27-29 November 2007. After it appeared that a CoML meeting planned to be held in New Zealand might interfere with participation in the meeting, arrangements were placed on hold. After discussion in the meeting it was felt that OBI 07 should take place as close as possible to the original date. The local organizer, Bob Branton, will be contacted by the chair.

The participation in different committees of OBI was discussed. It was decided to replace JG, convener of the 'Concepts' group, by Marc Taconet.

5.2.   Topics arising from the meeting

5.2.1.   Habitats

Mark Costello briefed the meeting on different activities related to marine habitat classification and mapping. A document was circulated: 'Towards a global classification of marine habitats for marine data and information exchange (Dr Mark J. Costello). All members with biological background are invited to comment on this document.

5.2.2.   Globally Unique Identifiers

Anton Guentsh the briefed the meeting on several issues related to Globally Unique Identifiers, Life Science Identifiers, Document Object Identifiers… A discussion ensued on the high importance of these GUIDs, and on the need for the GEBICH group to keep itself informed on these matters. Background information can be found on the TDWG site: http://www.tdwg.org/subgroups/guid. Anton Guentsh will report progress in this field during the next meeting.

5.2.3.   Quality control flags

It was noted by the group that several different systems are in use in oceanography, but that none of the systems adequately address the whole field; quality assessment of taxonomic identifications was quoted as one example that lacked international standardization. A small working group was set up, consisting of Sergey Konovalov, Gwenaelle Moncoiffé, Alexander Kouznetsov and Mary Kennedy to take this further. Organisations to be contacted are SeaDataNet, US NODC and BioChem

6.   ELECTION OF THE GE-BICH CHAIRPERSON

Edward Vanden Berghe, GE-BICH chair, reminded to participants that he has chaired the Group from its first meeting (June 2002) and due to other growing obligations he have no possibilities to continue this work and would like to step down this position. The Group discussed a possible candidate for this position and concluded that it would be more effective to have two co-chairs: one responsible for the biological data management issues and one responsible for the chemical data management issues. Gwenaelle MONCOIFFÉ (BODC) and

Sergey KONOVALOV (MHI) were unanimously proposed for these positions. However, both of them declared that they need some consultations at their home institutions to agree for this.

Finally, both Gwenaelle MONCOIFFÉ and Sergey KONOVALOV confirmed that they will serve as the Group co-chairs.

7.   DATES AND PLACE OF THE NEXT SESSION

The Group decided to have its next meeting in 2008. Two possible venues were proposed – Ostend, Belgium (IOC project Office for IODE) and Copenhagen, Denmark (ICES). The final decision on the meeting dates and venue will be made at the meeting preparation stage.

8.   OTHER BUSINESS

None other issues were discussed. All recommendations and action items approved during the Group meeting are collected in the Annex III.

9.   CLOSURE

The GE-BICH Chair thanked everybody for contributing to the meeting. He especially thanked the Session's host, IOC project Office for IODE for the excellent arrangements and hospitality.

The Chair closed the Session on Tuesday 28 November 2006 at 16:00.

ANNEX I

AGENDA

1. 1. ORGANIZATION OF THE SESSION
    1.1. Opening of the Session
    1.2. Welcome on behalf of IODE Project Office – Vladimir Vladymyrov
    1.3. Adoption of the Agenda

2. PRESENTATIONS BY PARTICIPANTS
    2.1. Sergey Konovalov
    2.2. Anton Guentsch: TDWG
    2.3. Marc Brugman: ETI
    2.4. Marc Taconet: NeOn, FIRMS
    2.5. Marc Costello: OBIS
    2.6. Julie Gillin: ICES and DOME
    2.7. Alexander Kouznetsov: parameter dictionaries

3. REPORT ON INTERSESSIONAL ACTIVITIES
    3.1. OBI I Conference; pending matters (GEBICH II 5.1.1.) [evb]
    3.2. Questionnaire (GEBICH II 5.1.2. – see 4.1.1)
    3.3. Pilot projects
        3.3.1. Nomenclators (GEBICH II 4.4.3 – see 4.6)
        3.3.2. Distributed systems (GEBICH II 4.6.7. – see 4.5.2 for metadata, 4.6 for nomenclators)
    3.4. Document on need of data management (GEBICH II 4.1.1 – drafting team of Syd Levitus, Edward Vanden Berghe, Secretariat) [evb]
    3.5. Contributions to OceanTeacher (GEBICH II 4.1.1 – see 4.9)
    3.6. Globalisation of ITIS (GEBICH II 4.4.4 – see 4.6.1, 4.6.2)
    3.7. XML registry (GEBICH II 4.6.3) [vv]

4. Discussion topics for GE-BICH III
    4.1. OBIS and regional nodes, and interaction with NODCs
        4.1.1. Which NODCs have biological data? Results of on-line survey; information extracted from NODC country reports for IODE 18 [gm]
        4.1.2. Which NODCs are collaborating with OBIS already? [gm]
        4.1.3. Relationship with AfrOBIS through ODINAfrica [evb]
        4.1.4. How should relationship develop? [mc]
    4.2. Relationship with ICES [jg]
        4.2.1. Role of ICES as standards organisation?
        4.2.2. Status of MDM and its successor?
    4.3. Relationships with FAO, fisheries standards [mt]
    4.4. Quality control/Quality Assessment
        4.4.1. Work by MDM on guidelines [jg/evb]
        4.4.2. Work from MarBEF on standard procedures [evb]
        4.4.3. GBIF documents on biogeography – how relevant for marine data? [evb]
    4.5. Metadata
        4.5.1. Collaboration with MEDI, ISO 19115 community profile [evb]
        4.5.2. Review direction and progress on pilot project distributed metadata [gm/ag]
    4.6. Nomenclators
        4.6.1. Status of pilot project; New development: ITIS proposal, involvement of ICES
        4.6.2. OBIS activities; WoRMS and URMO
        4.6.3. Canadian work [mk]
    4.7. Species databases [ag]
        4.7.1. SeaLifeBase
        4.7.2. SpeciesBase

4.8. Observatories [evb]
    4.8.1. LifeWatch
4.9. Contribution to OceanTeacher [evb]

5. Intersessional work plan
    5.1. OBI II conference preparation [mc]
    5.2. Others, following from discussion points

6. Election of GE-BICH Chairperson

7. Dates and place of next meeting

8. Any other business

9. Closure

ANNEX II

LIST OF PARTICIPANTS

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ANNEX III

RECOMMENDATIONS

Recommendation IODE/GE-BICH-III.1

GE-BICH-III ACTION PLAN FOR 2006-2008

The IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices,

Having reviewed its completed and on-going activities,

Being aware of the resource constraints (staff and funding) under which IOC and its IODE are operating,

Stressing the importance of Biological and Chemical Data Managemen,

Adopts a plan of action for the intersessional period 2006-2008, as given in the Annex to this Recommendation.

Annex to Recommendation IODE/GE-BICH-II.1

XML Registry (agenda item 3.7)

Action: Edward Vanden Berghe will contact Francisco Hernandez on possibility to create a registry

Action: Francisco Hernandez will contact Anton Güntsch to study the possibility to use the TDWG system.

How should relationship develop? (agenda item 4.1.4)

Action: Letter from Mark Costello as a chair of the OBIS IC to all national oceanographic data points of contact building on the earlier letter from IODE this year.

Status of MDM and its successor (agenda item 4.2.2)

Action: GEBICH Chair – to invite representatives of PICES and CIESM to attend next group meeting.

Relationships with FAO, fisheries standards. FIRMS (agenda item 4.3)

Action: FIRMS would play active role in activities on Marine Habitat, and could be interested in an active role in OBI II conference (see related agenda items)

Relationships with FAO, fisheries standards. NeOn (agenda item 4.3)

Actions: <u>Short term</u> (December 2006 to March 2007)

M. Taconet:

- these candidates will be considered as part of the Inventory of fisheries-related information resources conducted by NeOn project; the person responsible for the inventory will contact GEBICH members for collecting more details.

E. Van Den Berghe:

- look at the TCS schema and ensure that APHIA content can be extracted to TCS

- look at how many names from ASFIS will match with APHIA and OBIS lists, and provide summary figures as preliminary indicators of how easy/difficult such integration would be.

J. Gillin:

- provide internet addresses of the ICES documents relevant to the NeOn expectations, for consideration by the inventory; Julie may be further asked to contribute to filling in the inventory form.

Actions:<u>Medium term:</u> (March to September 2007)

Depending on outcomes of the inventory phase and preliminary tests implemented on the NeOn tools (at the end of NeOn phase 1 by September 2007), NeOn will make decision on the actual range of fisheries-related information sources which will be integrated in NeOn scope. In doing so, collaboration and synergies with GEBICH projects and funding sources may be exploited.

M. Taconet in close relationship with Van den Berghe:

- to ensure that GEBICH members (through chair(s)) could evaluate / be made aware of experimental results at the end of NeOn phase 1, in order to enable GEBICH chair to gauge if IODE/GEBICH human and/or funding resources could be mobilized in synergy with NeOn activities.

Work from MarBEF on standard procedures (agenda item 4.4.2.)

Action: Gwenaelle Moncoiffé to investigate who within SEADATANET is responsible for looking into the issue of QC flags.

Action: Gwenaelle Moncoiffé to communicate information on SEADATANET progress on this issue to the rest of the group.

Action: Gwenaelle Moncoiffé, Mary Kennedy, Sergey Konovalov and Alexander Kouznetsov to discuss any issues and concerns, and provide feedback to SEADATANET.

GBIF documents on biogeography – how relevant for marine data? (agenda item 4.4.3)

Action: Mary Kennedy to report on this issue

Contribution to OceanTeacher (agenda item 4.9)

Action: a special group will be created within GEBICH to deal with this issue. It will contain: Edward Vanden Berghe, Mark Costello, Gwenaelle Moncoiffe, and Sergey Konovalov.

Preparation of the "Ocean Biodiversity Informatics-II" Conference (agenda item 5.1)

Action: OBI 07 should take place as close as possible to the original date. The local organizer, Bob Branton, will be contacted by the chair.

Habitats (agenda item 5.2.1)

Action: All members with biological background are invited to comment on this document prepared by Dr Mark J. Costello.

Globally Unique Identifiers (agenda item 5.2.2)

Action: Anton Guentsh to report progress in this field during the next meeting.

Quality control flags (agenda item 5.2.3)

Action: A small working group was set up, consisting of Sergey Konovalov, Gwenaelle Moncoiffé, Alexander Kouznetsov and Mary Kennedy to take this further. Organizations to be contacted are SeaDataNet, US NODC and BioChem.

Annex IV

<u>Marine Community Metadata Profile of ISO 19115</u>

The Australian Ocean Data Centre Joint Facility, a joint venture between six Australian Government marine data agencies, has defined a marine community of practice metadata profile of the ISO 19115 standard to support the documentation and discovery of marine datasets.

The International Standard ISO 19115 *Geographic information – Metadata* defines around 300 metadata elements, with most of these being listed as optional. The ISO Standard specifies the process where individual communities can develop a "community profile" of the international standard. A community can adopt parts of the standard and also extend the elements, keywords and code tables to suit that community. The Marine Community Profile is compliant with ISO 19106 *Geographic information - Profiles* which describes the rules for developing profiles of the 19100 series standards.

The Marine Community Profile is a subset of the standard and includes all ISO 19115 core and mandatory metadata elements. In addition, the Marine Community Profile has defined supplementary elements, codelists and controlled vocabularies to assist in the description of marine resources. The diagram illustrates the relationship between the core metadata components, the comprehensive metadata profile and the Marine Community Profile (*adapted from ISO 19115:2003*).

The Marine Community Profile has defined four new metadata elements and two new code tables. The extended metadata elements are:
    Revision Date. Describes the date on which the metadata was modified.
    Sampling Frequency. Describes the temporal sampling frequency of the resource, e.g. daily, weekly, monthly.
    Currency. Describes the temporal currency of the resource. Values are described in the Currency Type Code list.
    Temporal Aggregation. Describes the temporal aggregation of the resource. Values are described in the Temporal Aggregation Unit Code list.

The extended code lists are:
    Currency Type Code. Values to describe the temporal currency of the resource, e.g. most recent, historical, predicted.
    Temporal Aggregation Unit Code. Values to describe the temporal aggregation unit, e.g. day, month, multi-month.

An XML encoding schema, based on ISO19139, has been developed to describe, validate and exchange Marine Community Profile metadata.

Further details on the Marine Community profile can be found at
http://www.aodc.org.au/index.php?id=37

Comprehensive metadata profile

Marine Community Profile

Core metadata components

Extended metadata
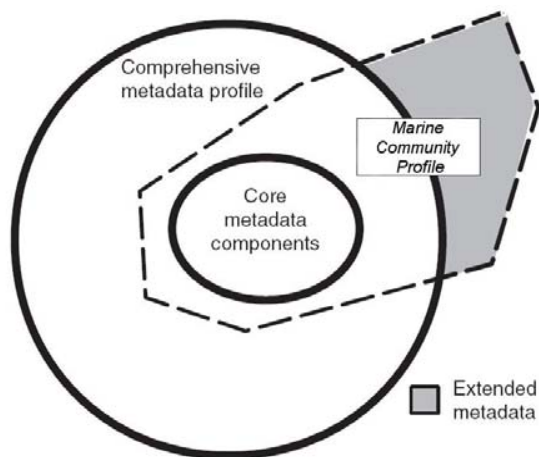
ANNEX V

LIST OF ACRONYMS

ABCD	Access to Biological Collection Data
AGMES	Agricultural Metadata Element Set
AGROVOC	: is a multilingual thesaurus on agricultural information systems
AMAP	Arctic Monitoring & Assessment Programme
ARGO	: is a broad-scale global array of temperature/salinity profiling floats
ASFA	Aquatic Sciences & Fisheries Abstracts
ASFIS	Aquatic Sciences & Fisheries Information System
BIO	Bedford Institute of Oceanography (Canada)
BioCASE	Biological Collection Access Service for Europe
BODC	British Oceanographic Data Centre (UK)
CENDOC	Chilean National Center of Oceanographic Data (Chile)
CLIVAR	Climate Variability & Predictability
CODATA	Committee on Data for Science & Technology (ICSU)
CoML	Census of Marine Life
COOP	Coastal Ocean Observations Panel (GOOS)
CSIRO	Commonwealth Scientific & Industrial Research Organization
CWP	Co-ordinating Working Party on Atlantic Fishery Studies
DADI	Data Access & Data Interoperability
DFO	Dept. of Fisheries & Oceans (Canada)
DIAS	Database on Introduction of Aquatic Species
DiGIR	Distributed Generic Information Retrieval
DIGIT	Digitisation of Natural History Collections (of GBIF)
DMAC	Data Management and Communications Subsystem
DOD	Deutsches Ozeanographisches Datenzentrum (Germany)
DOME	Database on Oceanography & Marine Ecosystems
ECAT	Mediterranean Electronic Catalogue of Known Organisms
EDMED	European Directory of Marine Environmental Data
EnParDis	Enabling Parameter Discovery
ERMS	European Register of Marine Species
ETDMP	Expert Team on Data Management Practices (JCOMM/IODE)
ETI	Expert Centre on Taxonomic Identification (Netherlands)
EurOBIS	Europa Ocean Biogeographic Information System
FAO	Food & Agriculture Organization of the United Nations
FGDC	Federal Geographic Data Committee (USA)
FIGIS	Fisheries Global Information System (FAO)

FiMES	Fisheries Metadata Element Set
FIMR	Finnish Institute of Marine Research (Finland)
FIRMS	Fisheries Resources Monitoring System (FAO)
FIStatXML	Fisheries Statistical XML
FONDECYT	National Fund for Science & Technology Development
GBIF	Global Biodiversity Information Facility
GCMD	Global Change Master Directory (USA)
GETADE	Group of Experts on Technical Aspects of Data Exchange
GF3	General Format No. 3
GNU	GNU stands for GNU's not UNIX and is thus a recursive acronym. The GNU project is an effort by the Free Software Foundation (FSF) to make all of the traditional UNIX utilities free.
GODAR	Global Oceanographic Data Archaeology & Rescue Project
GOOS	Global Ocean Observing System
GTSPP	Global Temperature-Salinity Profile Program
HELCOM	Baltic Marine Environment Protection Commission
IABO	International Association of Biological Oceanography
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICES	International Council for the Exploration of the Sea
IHO	International Hydrographic Organization
IMARPE	Instituto del Mar del Perú (Peru)
IMR	Institute of Marine Research (Norway)
IOC	Intergovernmental Oceanographic Commission (of Unesco)
IODE	International Oceanographic Data & Information Exchange
ITIS	Integrated Taxonomic Information System (USA)
JCOMM	Joint Commission on Marine Meteorology
MARBEF	Marine Biodiversity and Ecosystem Functioning
MDM	Marine Data Management
MedECAT	Mediterranean Electronic Catalogue of Known Organisms
MEDI	Marine Environmental Data Information Referral System
MedOBIS	Mediterranean Oceanic Biogeographical System
MHC	Marine Habitat Committee
MHM	Marine Habitat Mapping
MSDE	Microsoft SQL Server Desktop Engine
NERC	Natural Environment Research Council (UK)
NOAA	National Oceanic & Atmospheric Administration (USA)
NODB	National Oceanographic Data Bank
NODC	National Oceanographic Data Centre
NPL	National Physical Laboratory

NSBS	North Sea Benthos Survey
OASIS	Organization for the Advancement of Structured Information Standards
OBIS	Ocean Biogeographic Information System
OBISSA	Ocean Biogeographic Information System for South America
OCB	Outreach And Capacity Building
ODIMeX	Integrated Expert and Training System for Oceanographic Data and Information Management (IOC/IODE)
ODINAFRICA	Ocean Data & Information Network for Africa
OIT	Ocean Information Technology
OMEX	Ocean Margin EXchange
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
OWL	Ontology Web Language
PDF	Portable Document Format
PIT	Program of Innovation Technology (Chile)
POGO	Partnership for the Observation of Global Oceans
RDF	Resource Description Framework (RDF) / W3C Semantic Web Activity
RIHMI-WDC	All Russian Research Institute of Hydrometeorological Information-World Data Centre (Russia)
RIKZ DONAR	National Institute for Coastal and Marine Management (RIKZ) – DONAR: the database for various data for Rijkswaterstaat
RIVO	Netherlands Institute For Fisheries Research
RNODC	Responsible National Oceanographic Data Centre
ROSCOP	Report of Observations/Samples Collected by Oceanographic Programmes
SADCO	Southern African Data Centre for Oceanography (South Africa)
SCIDAT	Dataset Inventory (Canada)
SEA-SEARCH	Pan European network for oceanographic and marine data & Information management
SHOA	Servicio Hidrográfico y Oceanográfico de la Armada (Chile)
SIDP	FAO Species Identification and Data Programme
SISMER	Marine Scientific Information Systems (France)
SMEBD	Society for the Management of European Biodiversity Data
SMHI	Swedish Meteorological & Hydrological Institute (Sweden)
SPC	South Pacific Commission
SVG	Scaleable Vector Graphics

TDWG	Taxonomic Databases Working Group
UDP	Uniform Dictionary of Parameters
UNESCO	United Nations Educational, Scientific & Cultural Organization
URMO	UNESCO/IOC Register of Marine Organisms
USNODC	United States National Oceanographic Data Centre
VLIZ	Vlaams Instituut voor de Zee

9.1.   VMDC   Vlaams Marien Data- en Informatiecentrum (Belgium)

W3C	World Wide Web Consortium
WADI	WAter Data Infrastructure (Netherlands)
WDC	World Data Centre
WMO	World Meteorological Organization
WOCE	World Ocean Circulation Experiment
WODB	World Ocean Database
XML	eXtensible Mark-up Language
XSLT	XSL Transformations, a language for transforming XML documents into other XML documents

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