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**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION  
(of UNESCO)**

**IODE OFFICERS MEETING  
10-13 February 1998, Goa, India**

**SUMMARY REPORT**

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## 1. OPENING

The Chairman of the IOC Committee on International Oceanographic Data and Information Exchange, Mr. B. Searle, opened the IODE Officers Meeting at 10:00. on 10 February 1998 in the National Institute of Oceanography, Goa, India.

In his welcoming address, the Chairman briefly described the Meeting's objectives and made a reference to the place and role of the IODE Committee in providing services to numerous IOC programmes and groups of users around the world. A complete text of his welcome address is presented in Annex IV of the Summary Report.

Originally, this meeting was jointly planned with the IGOSS Bureau. However, due to unforeseen reasons, the IGOSS Officers were not able to participate in their full number and the IODE Officers were especially pleased to welcome the Chairman of the Joint IOC/WMO Committee for IGOSS, Prof. D. Kohnke.

The Meeting was also used as an opportunity to provide briefing to the IODE Regional Coordinators and for sharing views with them on the ways to facilitate ocean data and information management activities in different geographical regions. A full List of Participants is in Annex III.

The Technical Secretary presented the List of Documents and Timetable. The Agenda was adopted as presented in Annex I. The local organizer provided information on local arrangements.

## 2. REVIEW OF THE IMPLEMENTATION OF IODE-XV ACTION SHEET ITEMS

The IODE-XV Action Sheet was reviewed and information on the implementation of the IODE-XV decisions was updated. An updated version of the Action Sheet is given in Annex II.

A detailed discussion on the state of the implementation of projects and activities within the IODE programme was held under different agenda items and presented there. Below are the recommendations of the meeting on the IODE-XV decisions which have not been directly covered by the agenda items and require urgent actions.

- |                 |  |
|-----------------|--|
| 3.4 para. 56    | IOC is requested to send a letter to Member States urging them to submit information on the availability of moored current meter data to BODC.   |
| 4.1.1 para. 84  | IOC in consultation with the Chairman on IODE is requested to make amendments to the IOC Manuals and Guides N <sup>o</sup> 9, Annex II, regarding the Procedures for Selection and Nomination of new RNODCs.   |
| 4.1.1 para. 96  | The Chairman IODE jointly with the Head of BODC and in consultation with IOC and WMO will develop recommendations on the collection and exchange of global wave datasets after RNODC-waves terminated its activities in 1996. These recommendations will be sent to all IOC and WMO Member States for information and follow up. |
| 4.2.2 para. 147 | IOC is requested to send a letter of thanks signed by the IOC Executive Secretary to the Heads of ICSU, ICES, EU MAST for their contribution to the GODAR project and inviting them to continue co-operation in this field and to provide support to the GODAR global conference.  |

- 4.2.2 para. 160           The Director WDC-A, Oceanography is requested to provide IOC with updated information on the progress in declassifying oceanographic data after 1995. IOC is requested to include this information in a Circular Letter acknowledging the contribution of some Member States and inviting other countries to join the efforts.
- 4.2.4 para. 199-201       The Chairman IODE is requested to contact Dr. N. Flemming about the plans of updating the IOC/EC Quality Control Manual, to identify problems and recommend actions for implementing this important decision of IODE-XV. Keep IOC and Officers informed of the results of discussions with Dr. Flemming and actions taken.

## 2.1       GROUPS OF EXPERTS PROGRESS

### **GE/TADE**

This Agenda item was opened with the discussion of the results of the recent Meeting of the IODE Group of Experts on the Technical Aspects of Data Exchange (Dublin, Ireland, 20-22 October 1997). In the area of formats, work is progressing in the testing of BUFR and the intention was to use this avenue as a IODE contribution to the WMO distributed database system. More generally, TADE intends to promote the use of a few widely used formats rather than develop and promote a single, IODE format. TADE intends to complete a catalogue and to provide Internet and other access to the documentation of these formats and advise in their use. In this way, it was expected that IODE could converge to a few exchange formats.

The Group emphasized the use of the WWW Homepage to increase awareness of IODE products and services. The Meeting held an extensive discussion on the WWW presentation and the need for a closely integrated Homepage to display products and services. The Representatives of IGOSS and GOOS suggested that an integrated page with both IGOSS and IODE products displayed by topic would be of high interest to the user community including GOOS. **The Meeting supported** the concept of a joint activity as highly desirable.

The TADE Meeting discussed the difficulties of finding specific information on the Internet because of the vast amount available. The WAIS protocol and the mid-modem Z39.50 (as opposed to HTTP) was considered. The Chairman pointed out that the Z39.50 protocol be used instead of the WAIS protocol. Members of TADE will be pursuing a trial development of Z39-50 protocols for linking data in different WWW sites.

The Meeting was informed of GETADE's discussion on MEDI. The activities of the subgroup formed at IODE-XV had progressed with an intercomparison of common content in the EDMED and Australian systems. G3OS was keenly interested in the development of metadata systems and was building a pilot metadata system using the developing MEDI Pilot Project structure as the basis. IODE, through the AODC, was taking a lead role in supporting the G3OS metadata requirements. The next steps in the G3OS metadata project would be taken at the upcoming JDIMP Meeting. It is expected that this will result in an agreement on the needed content of a MEDI entry and that the next step would be to recruit individual data centres to construct entries describing their data holdings and to link this information, using the Internet.

The Meeting was briefed on the status of OceanPC. It noted that due to the lack of resources the project had essentially stalled. The software, while still useful, is becoming increasingly hard to run on modern hardware. Because of this, the project has been forced to develop along the lines that were not foreseen. It is still valuable as a training tool and as a means to access data on CDs. As such, it is developing in conjunction with training and capacity building activities. Software tools are added during training courses to meet the needs of the students.

The Meeting, while recognizing that there was a need to continue along the lines set forth in the Action Sheet of IODE-XV, noted that practically speaking this was not possible because of the lack of resources. **The Meeting directed** the Secretariat to send in the JCL to Member States soliciting funding for future development of OceanPC and include in the letter a status report on the project which would present the current state, and propose the future lines of development for the project.

### **GE/MIM**

The progress of co-operation between WOCE-DIU and IODE in NOPs circulation was reported. A few years ago WOCE-DIU offered to load the NOPs on the OCEANIC website. Accordingly, copies of all NOPs being received by the IOC Secretariat are (i) mailed to the IODE National Co-ordinators; (ii) published as IOC/INF documents; and (iii) forwarded to the Group of Mr. F. Webster for inclusion in OCEANIC. A list of NOPs received by the IOC in 1996, 1997 and 1998 was presented (Annex V). It was observed that despite discussions at IODE-XV, few NOPs are submitted and as such the continuing publication of NOPs was questioned.

**The Meeting recommended** to send a Circular Letter to the IOC Member States informing them on the state of submission of NOPs and thanking those who submitted NOPs to the IOC Secretariat. It will further invite Member States to continue and facilitate NOP submissions and to report on the usefulness of the NOPs in printed and on-line form.

OCEANIC will be requested to provide statistics on the use (visits to the website) of the OCEANIC NOP records. These statistics and details of NOP submissions will be included in the IODE website.

Mr. B. Searle reported that, despite the offer made by AODC to digitize paper-based CSRs for the Western Pacific region for submission to RNODC WESTPAC, no requests had been received for this service. AODC has published a copy of the CSR guidelines on its website URL <http://narwhal-2.aodc.gov.au/roscop/roscop.html> from where it can be freely downloaded.

With regard to MEDI it was reported that extensive work has been carried out on this item by the AODC. A comprehensive comparison has been made between AODC's >Blue Pages<, BODC's >EDMED< and USA's >FGDC<. As a result, a new MEDI metadata record format has been developed which will allow transcoding from/into the above-mentioned metadata systems. Software and a manual are being prepared and will be published on the AODC website shortly. It was observed that the new structure has been adopted by G3OS where the theme list will be expanded from the marine environment, to include climate and terrestrial coverage.

The Officers were informed that a project proposal is being prepared for submission to the European Union for the revision of EDMED, possibly involving a modification of the format. **The Meeting considered** that it is important that a revised EDMED maintains consistency with the MEDI Pilot Project to ensure the successful creation of a global marine metadata system.

**The Meeting recommended** sending a letter, under the signature of the IOC Executive Secretary, to Dr. M. Jones of the BODC inquiring for comments on the project proposal, in order to ensure that the revised EDMED will remain compatible with the new MEDI. Furthermore, an informal contact will be made by Ms. P. Simpson.

**The Meeting recommended** that guidelines for preparation of IODE national reports be completed by the Chair GEMIM and that they should be forwarded to the IODE National Co-ordinators by the end of 1998 so as to enable the Member States to prepare national reports for IODE-XVI in the appropriate format.

**The Meeting recommended** to organize an interagency meeting on MIM urgently, as a means to identify common objectives and to pool resources.

With regard to the identification of IODE Contact Points related to MIM, it was reported that IOC Circular Letter N<sup>o</sup>. 5129 was sent out on 29 May 1997 requesting the National IODE Co-ordinators to:

- (i) forward a list of national marine science libraries and information centres;
- (ii) identify a national MIM contact point;
- (iii) identify national MIM experts who could be called upon for the GEMIM.

Replies were received from Argentina, Chile, China, Croatia, Finland, Greece, Japan, Republic of Korea, Malta, Russia, Turkey and United Kingdom. Details on the replies are attached in Annex VI.

**The Meeting recommended** that IODE National Co-ordinators who have not responded to the Circular Letter, do so as soon as possible.

The Secretariat reported that a contractor was hired to revise the current ASFA input. The following work was carried out:

- (i) IOC records were downloaded from the Silver Platter ASFA database (1988-September 1997 update), converted into ASFISIS format and corrected;
- (ii) ASFA records were prepared for historical IOC records (i.e., those missing on the September 1997 update of the SilverPlatter ASFA database), using ASFISIS;
- (iii) ASFA records were prepared for current IOC records (1997) using ASFISIS.

The work resulted in 566 records. These will shortly be sent to Cambridge Scientific Abstracts where they will replace the old holdings. The contractor will continue to prepare input for new IOC publications.

The Chair GEMIM reported that, due to lack of new publications for the MIM Publication Series, the survey on the use of the MIM Publication Series (Workplan GEMIM-V) had not taken place. **The Meeting requested** Member States to alert their marine information experts to the MIM programme and for them to submit relevant papers for publication in the MIM Publication Series.

The Officers were given extensive information on the development of the Global Directory of Marine Scientists (GLODIR) database, launched by the IOC Secretariat in February 1997 as a web based directory of marine scientists. Between February 1997 and February 1998, the Directory collected over 3,100 entries from 100 countries, obtained through direct on-line input, as well as from the regional RECOSCIX-WIO's WIODIR, and the IOC/HAB programme's HABDIR Directories. However, it was pointed out that the Directory is still very incomplete and needs a concerted action at a national or regional level, as well as sustained publicity in the marine science community. The Officers were also informed that a project proposal for the development of a 'European Directory of Marine Research Resources' is being prepared for submission to the European Union in early 1998. The Officers requested that efforts should continue to involve other regional bodies or projects in GLODIR development.

**The Meeting recommended** to send a Circular Letter to the Member States inviting them to:

- (i) submit a list of marine science institutions in their countries so as to enable the IOC Secretariat to contact these institutions directly, inviting them to participate in the development of GLODIR;
- (ii) inform the IOC Secretariat on the existence of national/regional directories of marine science institutions and/or scientists and inviting them to consider the inclusion of their data in the GLODIR;
- (iii) encourage the marine science community to input their personal data to GLODIR.

With regard to electronic document delivery, the Meeting was informed that the ARIEL Pilot Project has been successfully implemented through co-operation with, and funding by IAMSLIC.

Since 1997, all new IOC Publications are loaded on the IOC web server as part of the IOC Electronic Library. Furthermore, the IOC has converted over 100 IOC publications into machine readable format and made these available through the IOC web server in PDF and html format.

Training Courses organized by the IOC were listed on the IOC website (conferences list). However, the Directory of Training Opportunities was not yet implemented and remained an action item of the MIM Programme. The GEMIM Chairperson was requested to contact the Chairman of the IOC TEMA Committee and identify joint actions for implementing the recommendation.

**The Meeting also invited** the IODE National Co-ordinators to provide information on national data and information management training opportunities (short term and long term) for inclusion in the IODE web server.

## 2.2 REPORTS OF PROJECT LEADERS

### GTSP

GTSP continues as a very active project. It has already held one full meeting (April 1996) and an *ad hoc* review (January 1998) during the intersessional period. Issues under discussion include the transfer of expertise from science centres to data centres, archive formats and functioning of the continuously managed database, inclusion of data from P-ALACE floats and moored buoys and improvements in data submission. After a brief stoppage in the scientific data quality assessment for Pacific Ocean data, this will now continue at Scripps. Highlights from these meetings were:

- GTSP is well integrated into the WOCE, is an integral part of SOOP and is focussing now on building links to NEARGOOS and GOOS/G3OS.
- As a component of the WOCE Upper Ocean Thermal Project, an update to the first GTSP CD-ROM will be issued as a WOCE CD in May 1998.
- The GTSP Steering Group felt that the project does not need the level of co-ordination which was in operation when GTSP was at a pilot level. However, there was a continued need to manage the project. It was recommended that instead there would be a Steering Group for IGOSS-IODE End-to-End Data Management Systems. It was further recommended that the Terms of Reference be revised to include, *inter alia*, other types of data.
- The GTSP Project Plan should be revised urgently to include new developments.

**The Meeting reviewed and accepted** the draft Terms of Reference of an IGOSS/IODE Steering Group on End-to-End Data Management Systems (Annex VIII) and **requested** that they be included in the revised version of the GTSP plan, although still subject to approval by IGOSS.

Due to the changes in the approach to the GTSP management, **the Meeting recommended** that the First Session of a new Steering Group be held prior to IODE-XVI. It was further recommended that a GTSP Review Paper be prepared for the publication in the journals to increase awareness of the scientific community of the GTSP success story. A second paper was requested to provide a generic framework for the establishment of an end-to-end data management programme (a series of tasks, activities and processes necessary to create an end-to-end mechanism). The Chairman of GE/TADE in co-operation with the GTSP Project Leader was requested to write these papers in consultation with the IGOSS and IODE Chairmen.

## GODAR

The GODAR project has completed preparation of its second set of CD-ROMs and will be distributing them shortly. This database is called AWorld Ocean Database 1998<sup>@</sup> (WOD 98) and is designated as an AInternational Year of the Ocean<sup>@</sup> product. The WOD 98 contains the following data not previously available :

- 174,000 Ocean Station Data casts;
- 190,000 CTD casts;
- 294,000 XBT profiles;
- 154,000 MBT profiles;
- 600,000 Plankton observations;
- 69,000 TAO buoy profiles;
- 30,000 Temperature profiles from fixed platforms other than the TAO buoys.

The GODAR project has completed six regional meetings and is planning an International GODAR Review Meeting to be held in Washington DC, in October 1998. A report describing the results of the GODAR project since its inception is planned for publication by June 1998.

**The Meeting emphasized** the need to implement the GODAR Review Meeting in 1998 and recommended that all efforts should be made for fund-raising in support of the Review Meeting. It acknowledged the readiness of the IODE Vice-Chairman to explore the interest of the European Union in providing financial support to the Review meeting. Other officers were invited to spare no effort in looking for additional funding.

**The Meeting recommended** that the Review Meeting should be open to as many people as possible including governmental people and policy makers, industrialists, scientists and data managers. The objectives of the Review Meeting should be to consider the progress in the implementation of the first phase of GODAR, identify goals of the second phase and investigate the possibility of including new data types.

**The Meeting recommended** that future IODE training courses should include lectures and practical sessions on GODAR and that the interest of having training courses fully dedicated to GODAR should be considered and draft course programmes developed for consideration at IODE-XVI.

### 2.3 TEMA AND RELATED ACTIVITIES

**The Meeting acknowledged** the progress achieved in the arrangements of short-training courses (usually up to two weeks) during the two years after IODE-XV. Seven courses were implemented in Asia (4), Europe (2) and Africa (1). Almost 10 courses are in the planning for the years left before IODE-XVI. The programmes of the courses cover different aspects of data and information management and are also used for making local experts acquainted with the IOC regional activities and IODE data and information exchange policy. This helps to increase awareness of the system, its benefits and provides an opportunity to improve national and regional data and information management capabilities.

It was noted that in accordance with the IODE-XV recommendations, centres of excellency for providing regular training were identified in some regions (Japan, Russia) and it was recommended to continue this practice.

The Heads of the Data Centres offering facilities for training courses should consider the possibility of arranging courses for trainers. The course programmes should be modified to include more practical sessions and dedicate more time for data management issues of the GOOS Programme and GODAR Project. **The Meeting agreed** to work closely with GOOS in developing training and capacity building activities. It noted that the WESTPAC Data Management Workshop held annually at the Japanese Oceanographic Data Centre had already added GOOS components to its curriculum. Co-



operation with GOOS in regional projects was also supported. The Director of the GOOS support office and the GODAR Project Leader were identified to provide the Vice-Chairman IODE with the titles of lectures and themes of practical work they deem necessary to bring to the attention of trainees.

**The Meeting reiterated** the need for specific subjects or data type oriented courses as those arranged in Copenhagen on OceanPC or in Gelendzik, Russia on marine geological and geophysical data management.

Regional approach in short-term training courses implementation should be continued. In this regard, the role of the IODE Regional Co-ordinators cannot be overestimated and they need to be consulted and informed on all planned training activities in the region. **It was recommended** to include in the programmes of regional training courses practical sessions on the development of regional plans for the data and information management. The IODE Regional Co-ordinators should be informed of the results of these sessions and may wish to use them in the development of the regional data and information management policies.

**The Meeting considered** and approved for circulation the questionnaire form developed by the Vice-Chairman. This form will be used for starting the IODE/TEMA evaluation process. The results of the evaluation work will be reported to IODE-XVI. The Vice-Chairman was also requested to identify other appropriate methods of evaluating the effectiveness of training courses and propose these to IODE-XVI.

The idea of the development of a pool of resource people was discussed and the Vice-Chairman was requested to explore all the pros and cons of implementing this approach and report his views to IODE-XVI.

**The Meeting noted** the readiness of several NODCs to provide facilities for long-term training with the understanding that travel and local accommodation expenses will be covered by other than the NODCs financial resources.

**The Meeting requested** the IODE Vice-Chairman to send a letter without delay to the Heads of NODCs and the IOC Contact Points in developing countries requesting them firstly to provide information on the interest of providing long-term training and on the conditions under which the training will be provided and secondly, on the needs for training. The resulting information gathered by this Circular Letter should be analysed and presented on the IODE Homepage.

After discussion, **the Meeting recommended** to continue efforts in looking for surplus equipment with the attention focussed on the equipment necessary for data and information processing and management. A Circular Letter will be sent to the IOC Member States and IODE data centres requesting them to explore national resources and provide the IOC Secretariat with a listing of surplus equipment they are prepared to offer to IOC within the framework of the IOC-VCP Programme.

**The Meeting recommended** that possibilities should be considered for providing on-the-job training since such schemes of training allow personnel to gain relevant experience by working in an actual data centre environment. The experience gained by the EU/MAST project MEDATLAS proved this type of training to be very successful. The same approach is now considered within the MEDAR/MEDATLAS project for training experts from the Northern Africa.

The Meeting considered two proposals for the development of modern ways of providing training:

- (i) IODE training CD-ROM;
- (ii) usage of Internet.

The ODINEA CD-ROM was developed during the Regional Training Course on Ocean Data Management, Mombasa, Kenya, 1-11 December 1997. Its purpose is to enable students of the training courses to re-visit the topics covered during the course and to utilize the software tools on local datasets.

Details on the ODINEA CD-ROM, based on the core document 'A Toolkit of Data and Information Management Modules for ICAM and Coastal Oceanography Programmes' were presented. The document describes steps involving data and information management in the marine science research process, from the scientific programme design to the data products and reports. The system utilizes an html interface which provides great flexibility for adding content or for opening external files in a variety of formats (necessary plug-ins are provided) , or for running external applications, in DOS or WINDOWS environment.

Throughout the document, students can open additional information sources (GO! button), install software (INSTALL button), run applications (RUN button) without leaving the WWW browser client. The ODINEA CD-ROM contains over 500 MB of information and data. The current version includes ArcExplorer, ATLAST, CDS/ISIS, Collage, OceanPC (OPC1, OPC2, ODB1), QuickBASIC 4.5, ROSWin and Surfer as scientific applications, as well as plug-ins for viewing PDF files (Acrobat Reader 3.0), MS Excel 97 spreadsheets, and MS Word 97 documents. It also contains Microsoft Internet Explorer 3.0 as the HTML browser client.

**The Meeting expressed their great satisfaction** with the product in general, and with its concept in particular, and **recommended** the development of a Pilot Project on the development of a computer-based tool based on the ODINEA CD-ROM, which will be called 'IODE Resource Kit' and will compliment and follow-up IODE training activities. As a first step, **the IOC Secretariat was requested** to distribute the CD to the IODE Officers for evaluation and comments. **The Meeting recommended** that the Pilot Project beta version CD-ROM should be presented to IODE-XVI with a recommendation to fully implement the 'IODE Resource Kit' as a comprehensive IODE product. An *ad hoc* Working Group was established which wrote the Terms of Reference for the Pilot Project as presented in Annex VII.

**The Meeting also considered** the proposal entitled 'Internet Course on Marine Data and Information Management (INMADIN)' submitted by Mr. P. Geerders. INMADIN aims at demonstrating the feasibility of an Internet-based training course on marine data and information management. If successful, INMADIN will be followed by the implementation of future Internet-based courses on this and other related subjects and by the setting up of an Internet-based Help Desk for support and advice on marine data and information.

**The Meeting appreciated** the objectives and considered its concept as a complementary tool to the 'IODE Resource Kit CD-ROM'. **The Meeting requested** the Vice-Chairman, in consultation with the Secretariat to liaise with Mr. Geerders to better understand how INMADIN could be used to support the 'IODE Resource Kit'.

## 2.4 WDCs AND RNODCs ACTIVITIES

The Directors of WDCs Oceanography and MGG, and RNODCs present at the Meeting informed on the state of data submission to the centres, of the progress in providing services and developing products, and identified the problems which almost all data centres are facing. The main common problems are lack of funds and shortage of human resources, and weak and slow data flow from data holders to RNODCs and WDCs.

**The Meeting appreciated** the efforts of JODC to despatch expertise in ocean data management to Malaysia under the JICA project, to support the establishment of an NODC and requested JODC to continue this project.

The Meeting felt that it would be possible to increase effectiveness of data centres by providing wider services of high quality to users and by increasing awareness of the centres objectives and benefits

of co-operating with them. Directors of data centres should be more proactive in getting data from institutions, individuals and data centres.

**The Meeting recommended** that the main function of RNODCs - to support WDCs activities, should continue to be implemented and strengthened.

Noting that some RNODCs stopped publishing data catalogues and newsletters in a hard copy version and put them on relevant websites, **it was recommended** that NRLs be provided to the IOC Secretariat for inclusion, information in the IODE Homepage and developing hyperlinks between websites. The WDCs-Oceanography were requested to continue publishing annual catalogues and reports of data exchange in the format compatible with the WDC-A publications and circulate them to the IODE Data Centres and National Co-ordinators.

From the experience gained by WDC-A and RNODC-Drifting Buoys, it was recommended to study ways of becoming closely related to existing or planned research and monitoring projects. This may give an opportunity to considerably increase the submission of data to data centres.

**The Meeting agreed** on the need to review the entire IODE system in order to identify ways to meet effectively data requirements of emerging scientific and monitoring programmes such as GOOS, Climate Change and Biodiversity-related activities, and cope with the technological developments. The Chairman IODE was requested to take a lead in preparing a proposal for IODE-XVI on the revision and improvement of the system. The Chairman IGOSS was invited to co-operate in this important activity. The role and place of the IODE system in the total G3OS scheme should be clearly identified.

### 3. NEW DEVELOPMENTS IN CO-ORDINATION OF DATA MANAGEMENT ACTIVITIES IN SUPPORT OF GOOS

The Meeting was led through a review of the relevant documents. The GOOS Representative assured the Meeting that the existing systems such as IODE and IGOSS were of great importance to GOOS as building blocks of the GOOS Data and Information System. **The Meeting noted** that overall it could respond to the data and information needs of GOOS in a very cost effective manner. Within IODE there is a large reservoir of expertise to handle a wide variety of data and information management issues.

The GOOS Data and Information Management Service (DIMS) was described and the functions of the Data Co-ordinator within that context in a capacity building were provided. The activities of the DIMS were reviewed and the relationship between GOOS and IODE was presented.

The attention of the Meeting was drawn to the Annotated Agenda for the forthcoming GOOS/GCOS Implementation Meeting (Sydney, Australia, 4-7 March 1998) and to the documents that will be associated with that meeting, in particular, the requirements presented in the document describing Global Ocean Data Assimilation Experiment (GODAE).

**The Meeting noted** that the response time for preparation of the Sydney meeting documents was exceptionally fast making it difficult to get the reaction of the entire system to the various important issues being presented. The Representative of GOOS noted this and said that GOOS would make every effort to make its documents available to IODE and the other existing systems in a more timely manner. The Representative of MIM also noted the difficulty of referencing G3OS documents when they often contained 3 or more document numbers (e.g., INF, GOOS, GCOS). The GOOS Representative agreed to work with the other global observing systems to seek a solution to this problem.

With respect to the Action Document for the Sydney Meeting, the Officers felt that the items on strengths and weakness of IODE did not fairly depict the situation within the system. IODE shares the same broad perspective that the WWW shares and thus there is a difficulty in telling how the system will

respond to particular data issue. A strength in one data centre may be a weakness in another data centre. **The Meeting reviewed** the strengths and weaknesses of the system and agreed on the following list:

### **Strengths**

- experience in managing large amounts of different data types;
- in place infrastructure to manage global data;
- ability to provide services and develop products, such as CD-ROMs on GTSP, GLOSS, GEBCO, Global Ocean Data Base of 1994 and 1998, etc.;
- funding stability;
- redundancies in archives ensures no loss of data;
- demonstrated successful program in GODAR, GTSP, MEDATLAS;
- demonstrated capability to partner with scientific organizations (e.g., WOCE DACs..., UOT, Sea-level, ADCP, SVP).

### **Weaknesses**

- large organization sometimes more difficult to move;
- rely on voluntary contribution of MS;
- uneven levels of skill across the system.

**The Meeting formulated** some text for the IODE Chairman's presentation at the Sydney meeting and also noted some minor omissions and corrections in other parts of the section on IODE to be included in the Chairman's text.

**The Meeting agreed** to table the IGOSS/IODE Data Strategy document at the Sydney meeting as it felt that as a high level document it was still suitable for submission.

Realizing the difficulty of anticipating all the points of discussion at the Sydney meeting, **the Meeting reaffirmed** its support to the Chairman and their confidence that he could ably respond to those points of discussion on behalf of the system. This was particularly true when it came to responding to the data requirements of GODAE. **The Meeting noted** that IODE and IGOSS could already commit to handling a large portion of the requirements presented and that they could be more cost effective in ramping up to meet the remaining requirements compared with developing totally new data management and exchange mechanisms. GOOS is an important client for IODE but not the only client. IODE needs to maintain a balanced view of the global ocean data and information environment so that it can respond to the needs of all its clients.

The Officers felt strongly that IODE should be represented on the Steering Committee set up by GOOS for co-ordination. **The Meeting noted** that the issue of restructuring presented in the GOOS background document had been discussed in the previous agenda item and as such this process was anticipated. This would be accomplished in co-operation with IGOSS to provide for an end-to-end integrated approach. The GOOS Representative pointed out the benefits of adopting a topical approach to identifying IODE data centres. **The Meeting decided** that restructuring was the next step to be taken after the development of the IGOSS/IODE Data Management Strategy and that a proposal should be prepared for presentation to the next session of the Committee on IODE.

#### 4. NON-STANDARD DATA MANAGEMENT AND IODE'S ROLE IN IT

##### (i) Biological and Chemical Data

The Meeting was informed of the discussions held at the Hamburg Workshop on Oceanographic Biological and Chemical Data Management (20-23 May 1996) as well as on the progress in rescuing and processing phytoplankton and chlorophyll data.

**The Meeting acknowledged** the progress achieved and supported the recommendations made at the Hamburg meeting. The IOC and GODAR Project Leaders were requested to invite GIPME, HAB, OSLR and other relevant bodies to nominate experts to a special body which may help to bring together scientists, data managers and users to jointly tackle the problems related to oceanographic biological and chemical data. The Workshop on chemical pollutants was recommended for implementation jointly with GOOS and GIPME.

As a matter of urgency, **the Meeting requested** the Chairman IODE to finalize a list of experts for the Rapporteurs Group on Marine Pollution. A special letter of invitation should be sent by IOC to the Heads of Officers of Regional Conventions for protecting the oceans from pollution, inviting them to nominate representatives to the Group.

**The Meeting appreciated** the efforts taken by WDC-A, Oceanography under the GODAR project in adding new variables to the archive of digital data they maintain. Chlorophyll data and plankton data along with appropriate metadata are now available as part of the Global Ocean Database 1998.

WDC-A, Oceanography, in a co-operative effort with the Murmansk Marine Biological Institute of Russia, has developed a lexicon driven input format for the digitization of plankton data, as well as chemical and physical oceanographic data. Quality control checks are built into this software. The software is available from WDC-A, Oceanography, upon request. Suggestions to improve this software will be welcomed and considered. The use of this software was strongly recommended by the Meeting since its use will speed up the incorporation of data into the WDCs archives.

The MEDI Pilot Project software was recommended to be used for a survey of NODCs and national institutions to determine the existence and availability of biological data. It was stressed that the Committee on IODE is responsible and is an appropriate body for managing biological data. The IODE centres were invited to increase participation in these activities. To help the centres in this task, the Director WDC-A, Oceanography was requested to share the experience gained in managing plankton data among NODCs by providing them with the required software and description of the necessary data processing and management operations.

**The Meeting recommended** to include questions related to chemical, biological, CO<sub>2</sub> and pollution data in the agenda of the coming GODAR Conference.

##### (ii) Remote-Sensing Data

The Meeting was informed of the current activities in remote sensing and in particular CEOS and its Working Group on Information Systems and Services (WGISS). **The Meeting noted** the recent effort by CEOS to prevent the inadvertent loss of important remote-sensing data through the CEOS Purge Alert Service. The Officers decided that IODE was best positioned to handle, process and achieve *in situ* data and work closely with space agencies in the production of merged products. **The Meeting supported** continued participation in the WGISS, both to co-ordinate the merging of data and information streams and to monitor the development of new data and information management technology. IODE will continue to monitor the situation and take appropriate action in concert with the space agencies, should it become necessary for IODE to take on additional responsibility for space data and information management.

**(iii) Coastal Data**

The Meeting was informed on the status of the collection of input from the JCL, soliciting information from the Member States of coastal data. The Officers reviewed the report of IODE-XV regarding this activity and decided to approach it along two avenues. The first was to take the input thus far received from Member States and produce the information paper. Australia volunteered to provide a Rapporteur to assist with this effort as set forth in the IODE-XV Recommendation. The second avenue was to distribute MEDI software to National Co-ordinators and NODCs, and encourage the entry of metadata on coastal zone datasets as a priority. The metadata collected as a result of this effort will be put on a CD-ROM to be published along with the information paper. This product will be given wide distribution in light of the significant importance of coastal data. A particular effort would be given to distribute this information at future conferences and symposia on the coastal zone.

**5. OUTCOME OF THE MARINE DATA SYMPOSIUM**

The Officers were informed on the conduct of the Symposium (Dublin, Ireland, 15-18 October 1997) and the excellent support provided by the Irish Marine Data Centre, EU-MAST, NOAA, IOC. They reviewed the recommendations and implementation strategies adopted by the Symposium. **The Meeting noted** with concern that the recommendations were quite broad and efforts should be made at future symposia to formulate more specific recommendations through the adoption of a more focussed approach to the organization of the symposia. The Officers noted in particular, the Recommendation to hold another symposium in 2-3 years and decided to work to achieve this goal. They decided to take immediate action to formulate the objectives of the next symposium and look for a prospective venue. The IODE Chairman will lead this effort and report to IODE-XVI.

**6. STATUS AND CHALLENGES OF IODE REGIONAL CO-ORDINATORS**

The Meeting was reminded of the background of establishing IODE Regional Co-ordinators to assist with the promotion and co-ordination of the IODE programme at the regional level as it was recommended by IODE-XV. The Technical Secretary described briefly the deliberations of IODE-XV and the resulting Resolution IODE-XV.4 on the IODE Regional Co-ordinators. He also outlined the overall role and responsibilities of the Regional Co-ordinators in supporting the National Co-ordinators and improving communications with the Regional Bodies.

The IODE Regional Co-ordinators from WESTPAC, IOCINDIO, IOCEA, IOCINCWIO and the Mediterranean were present at the Officers Meeting and each gave a presentation on IODE activities in their regions. During these presentations a number of common themes appeared. In the different regions, the communication between regional bodies and the IODE Regional Co-ordinators was generally poor, as was the communication with IODE National Co-ordinators. A lack of information flow restricted the understanding and knowledge of IODE-related activities. **The Officers felt** that the IODE Regional Co-ordinators should make every effort to develop close contacts with their IODE National Contacts and Regional Bodies and be proactive in doing so. **The Meeting strongly recommended** that the Co-ordinators should be members of the relevant IOC Regional Committees. **The Meeting requested** to bring this decision to the attention of the IOC Regional Committees and Regional Officers. **The Meeting urged** the Technical Secretary and the IODE Chairman to send a letter to the IODE National Contacts inviting them to co-operate in assisting the Regional Co-ordinators in implementing these duties effectively.

A further issue presented by the IODE Regional Co-ordinators was a lack of awareness of available capabilities and available datasets. **The Meeting recommended** the use of the MEDI software as one mechanism to help identify relevant datasets and to assist with creating regional data directories. Further concerns related to general training issues and to a lack of resources, the Officers felt that these problems could be addressed through workshops and in particular, through such projects as the ODINEA

CD-ROM Pilot Project activity. **The Meeting further suggested** that the Regional Co-ordinators bring their proposals regarding workshops for National Co-ordinators to IODE-XVI in order to improve the communication channels and increase knowledge of IODE activities and regional data management issues. Further resource support through the VCP should be sought by IODE Regional Co-ordinators in support of specific national needs in each region.

## 7. PUBLIC RELATIONS AND INFORMATION SERVICES

This agenda item was opened with an overview of the WWW-based information services developed by the IOC Secretariat since September 1995. Details were provided on the IOC website, the IODE sub-site and the 1998 International Year of the Ocean website. It was noted that the re-designed 1998 IYO site, launched on 25 January 1998, has proven to be a big success with nearly 3,000 visits to its Homepage in two weeks.

The IOC Secretariat explained that the IOC and IODE visits have diminished since the end of 1997 due to the lack of updating of these sites. This has resulted from the workload associated with the development of the new IYO site and poor response of the IODE Officers and secretariat staff to the need of providing updated information regularly. It was pointed out that lack of additional staff at the IOC Secretariat will cause further delays in updating the sites, lack of development of new pages and services, and thus reducing interest and therefore reducing visits to the sites.

The Officers commended Mr. P. Pissierssens of the IOC Secretariat on the hard work and successes achieved with the IOC, IODE and IYO websites, and regretted the lack of staff at the IOC Secretariat.

**The Meeting recommended** that (i) efforts should be made to attract university students, possibly free of charge, with web design capabilities to assist the IOC Secretariat; (ii) some funds should be allocated to enable part-time (paid) assistance; (iii) an advertisement should be placed on the IOC website to attract (free) assistance.

With regard to the IODE web pages, the IOC Secretariat regretted that requests to the IODE National Co-ordinators to provide input for the IODE pages had remained largely unanswered.

**The Meeting called on** the IODE National Co-ordinators to urgently provide the IOC Secretariat with updated information on NODC activities, products and services, as well as relevant URLs (local and external), and to use the [ioc-iode@unesco.org](mailto:ioc-iode@unesco.org) listserv to exchange information on new developments at the NODCs, RNODCs and WDCs. The IODE Chairman, jointly with the IOC Secretariat, will issue a Circular Letter on this subject.

The IOC Secretariat reported that the IODE website was not as successful as the IOC and IYO sites with an average of only 1,200 visits per month. It was stated that this might be due to the fact that the site is structured according to the IODE operational structure, which does not necessarily correspond with the target audience needs. In this regard, it was noted that the target audience of the site should include not only the IODE community (who called for the development of the site), but also to the marine science community at large. It was suggested that the use of themes would be an appropriate strategy. It was concluded that this would require a re-designing of the site with more emphasis on IODE products and services.

**The Meeting recommended** to re-design the IODE website. It was agreed that Mr. B. Searle, Mr. B. Keeley and Mr. P. Pissierssens of the IOC Secretariat would take charge of this task, and that suggestions for the new structure would be posted on the [ioc-iode](mailto:ioc-iode) listserv for commenting by the IODE National Co-ordinators. Subsequently, the site will be re-designed *as per* the agreed structure by the IOC Secretariat.

The IODE Officers were shown a draft of the IGOSS/IODE brochure. They were informed that the brochure had been accepted by the IODE Chairman and would be made available for distribution in March 1998. It was noted that the brochure needed to be distributed to a wide audience and invited the IODE National Co-ordinators to provide a list of relevant addresses and encouraged the widest possible distribution.

A further suggestion was made regarding using the content of the IGOSS/IODE brochure to create a number of posters which could be displayed at appropriate venues including Expo 98 and the planned Coastal Zone Symposium. The Officers requested the Secretariat to discuss this possibility with WMO.

The Meeting discussed a number of possibilities in relation to increasing the awareness of IODE activities within the marine community including scientists, policy makers, environmental managers and commercial organizations.

The Meeting was informed of the progress in meeting the International Year of the Ocean (IYO) objectives, specifically through IODE participation at Expo 98 and development of products dedicated to the IYO. IODE activities would be presented at different Expo 98 pavilions. For example, the concept of the end-to-end marine data management would be a theme within the Pavilion on the Future; IODE exhibits will also be a part of the exhibition within the UN Pavilion. Some IODE products were used for the development of the UN Atlas of the Ocean. The following contributions to IYO were highlighted:

- development of WDC-A, Oceanography and WDC-B, MGG CD-ROMs labelled as contributions to IYO;
- development of the IODE-TEMA CD-ROM.

The Meeting discussed the possibility of quickly revising the ODINEA CD-ROM to create a more general information CD-ROM which would highlight IODE activities, capabilities and successes. (see agenda item 2.3). The Director, WDC-A, Oceanography agreed to assist by providing some data products from the new WDC-A CD-ROM. It was requested that the Secretariat provide copies of the ODINEA CD-ROM to the Officers who would quickly supply suggestions of improving the ODINEA CD to produce a valuable promotional product. The Officers requested the Secretariat to investigate sources of funding to enable publishing of this revised CD-ROM and to assist with its distribution to a wide an audience as possible.

In addition to these activities, **the Meeting recommended** that IODE National Co-ordinators should be invited by the Chairman of IODE to explore the possibility of labelling their new 1998 products with the IYO logo and publishing them as national contributions to the IYO activities.

#### 8. DATA POLICY ISSUE - COST EFFECTIVENESS OF IODE AND WHAT ARE THE WAYS TO INCREASE IT

The Chairman opened this agenda item with a brief review of the IODE data policy reiterating the need to maintain a free and open exchange of marine data and information to facilitate the improvement of our understanding and knowledge of the ocean, improve safety at sea and provide information to support sustainable use of the marine resource. **The Meeting endorsed** these views and strongly recommended that the IODE Data Policy be protected from change. The Officers requested all those involved in IODE activities to continue promoting the benefits of this data policy.

The Technical Secretary then informed the Meeting of the World Intellectual Property Organization (WIPO) proposed Treaty on Databases (WIPO Diplomatic Conference, Geneva, 2-20 December 1997) which had the potential to cause significant problems in data exchange and management



activities, impacting scientific endeavour. The Meeting was told that the WIPO meeting had postponed discussions on the Treaty on Databases to some future date.

The Vice-Chairman informed the Meeting on data policy issues within EU/MAST projects (Code on Data Management, Guidelines for project data management and guidelines for better practice in data documentation), on products from EU/MAST supporting initiatives (MEDATLAS climatological Atlas and OMEX-I and MTP datasets) recently published in CD-ROMs, as well as on forthcoming EU/MAST concerted actions, namely MEDAR, EURONODIM (continuation of MAST Data Committee) and EUROCOR (new data types).

The Meeting discussed the implications of the WIPO Treaty on Databases and agreed that the entire IODE community needed to keep a close watch on developments in this area. It was recommended that Member States alert their national bodies with responsibilities for discussing WIPO issues of the concerns of IODE. **The Meeting requested** two specific actions regarding WIPO:

1. For the Chairman IODE and Technical Secretary, IOC to write to National Co-ordinators requesting them to keep a close watch and notify the IOC Secretariat of any developments regarding the Treaty and keep them informed of the countries perspective on this issue.
2. For the Executive Secretary IOC to write to the IOC National Contacts and request them to discuss the potential dangers of the Treaty on Databases with the responsible national agency.

The Chairman informed the Meeting of the development by Elsevier of a Journal on Marine and Atmospheric Data Management. **The Meeting recognized** the value of such a scientific journal in promoting the benefits of marine data and information management, and also its potential to improve the profile of this activity and **requested** its Chairman to use the Journal for promoting IODE activities.

## 9. DATE AND PLACE OF IODE-XVI

The Technical Secretary informed the Meeting of the progress in the preparation for the Sixteenth Session of the IOC Committee on IODE. The letter of invitation was received from Turkey offering facilities in Istanbul under the auspices of the Turkish NODC for IODE-XVI.

**The Meeting expressed appreciation** to the Turkish Government and the Director of the NODC for the kind offer and **recommended** to have the next session in the spring of the year 2000.

**The Meeting discussed and approved** the Draft Agenda for IODE-XVI as presented in Annex IX. **The Meeting requested** the IODE Chairman and Technical Secretary to finalize arrangements for the meeting and despatch letters of invitation and documents well in advance of the session.

## 10. ADOPTION OF THE SUMMARY REPORT

**The Meeting adopted** the report and requested the Chairman and the Secretariat to finalize the editorial changes without delay and distribute it to the participants, IODE Co-ordinators and international organizations concerned.

## 11. CLOSURE

The Officers Meeting was closed on 13 February 1998 at 17:00. The Chairman and Officers expressed appreciation to the National Institute of Oceanography and the staff of the Indian National Oceanographic Data Centre for the excellent facilities and generous hospitality.



**ANNEX I**

**AGENDA**

- 1. OPENING**
- 2. REVIEW OF THE IMPLEMENTATION OF IODE-XV ACTION SHEET ITEMS**
  - 2.1 GROUPS OF EXPERTS PROGRESS
  - 2.2 REPORTS OF PROJECT LEADERS
  - 2.3 TEMA AND RELATED ACTIVITIES
  - 2.4 WDCs AND RNODCs ACTIVITIES
- 3. NEW DEVELOPMENTS IN CO-ORDINATION OF DATA MANAGEMENT ACTIVITIES IN SUPPORT OF GOOS**
- 4. NON-STANDARD DATA MANAGEMENT AND IODE-S ROLE IN IT**
- 5. OUTCOME OF THE MARINE DATA SYMPOSIUM**
- 6. STATUS AND CHALLENGES OF IODE REGIONAL CO-ORDINATORS**
- 7. PUBLIC RELATIONS AND INFORMATION SERVICES**
- 8. DATA POLICY ISSUE - COST EFFECTIVENESS OF IODE AND WHAT ARE THE WAYS TO INCREASE IT**
- 9. DATE AND PLACE OF IODE XVI**
- 10. ADOPTION OF THE SUMMARY REPORT**
- 11. CLOSURE**



**ANNEX II**

**IODE-XV ACTION SHEET IMPLEMENTATION  
(as of 10 February 1998)**

**1996 - 1999 ACTION SHEET BASED ON THE DECISIONS OF IODE-XV**

<b>Agenda Item</b>	<b>Subject</b>	<b>Responsibility</b>	<b>Period</b>
3.2	Establish closer & formal relations with Oceanic	Chairman IODE, IOC/PP	1 <sup>st</sup> half '96 Letter sent
	Load NOPs on WWW server	GETADE, GEMIM, IOC/PP	In process
	Continue NOPs distribution in hard copy	IOC/PP, Member States	Continuously. See annual statistics
	Explore ways of merging CSRs & NOPs	GETADE, IOC/PP	GETADE-VII
	Procedures for monitoring drifting buoys data	GTSP RNODC Drifting Buoys	Under development
	Monitoring real-time data flow	Chairman IODE Member States, IOC	
Rec. XV.1	Implement pilot project	GEMIM, GETADE, IOC/PP	mid-96 onwards
	Arrange Technical Workshop	GEMIM, GETADE, IOC/PP	1998
3.3	Development of common data exchange format(s)	GETADE, IOC/JW	GETADE-VII
	Identify reasons of low number of CSRs received by WDC-B	GETADE, WDCs A&B, IOC/PP	Problem resolved, digitized, copy sent to WDC-B
	Digitize CSRs for Western Pacific area	Australia RNODC-WESTPAC, IOC/PP	Available on JODC Homepage Done
	Develop guidelines on how to operate the ICES CSR software	Australia RNODC-WESTPAC, IOC/PP	Done
3.4	Request Member States to submit current meter data to BODC	IOC/YO	1 <sup>st</sup> quarter '96
	Request Member States to provide data from Indian Ocean to RNODC-INDO by end of year	IOC/YO	1 <sup>st</sup> quarter '96 Implemented. Letter of announcement about RNODC-INDO

Agenda Item	Subject	Responsibility	Period
	Publish national reports as IOC/INF document (make it available on-line, paper & CD-ROM)	IOC/SRU	Done. Available under IODE HomePage
	Develop guidelines for preparation of national reports	GEMIM, IOC/PP	3 <sup>rd</sup> quarter '98
3.5 Rec. XV.2	Prepare draft of IGOSS/IODE data management: initial draft final draft	Chairman IODE OceanPC Project Leader	Done Done
	Prepare skills & capability report	N. Flemming (past Chairman IODE) & his drafting group	Done
	Nominate IODE Contact Point for GCOS	Chairman IODE	1 <sup>st</sup> half '96. B. Searle
4.1.1 Rec. XV.3	Make amendments to IOC Manual 9, Annex 2 on procedures for establishment of RNODCs	IOC/YO, Chairman IODE	1 <sup>st</sup> half '96
	Establish <i>ad hoc</i> Strategy Sub-Committee	Chairman & past Chairman IODE, IOC/YO	
	Arrange meeting of Sub-Committee	Chairman IODE, IOC/YO	
	Organize high-level expert consultation	Chairman Sub-Committee Chairman IODE, IOC/YO	
	Make updates & editorial changes to TR of RNODCs & publish changes in next issue of IODE Handbook	IODE Officers, IOC/PP	
	Recommend ways of maintaining IODE services in collecting & exchanging global wave datasets	Chairman IODE IODE Officers, IOC/YO	
Res. XV.1	Inform Member States on establishment of RNODC-INDO	IOC/YO	Done
4.1.2	Forward GETADE TR for approval of IOC EC	Chairman IODE, GETADE	Done
	Implement decisions of GETADE-VI	GETADE Members	Continuously in accordance with GETADE-VI Action Plan
	Arrange GETADE-VII meeting	GETADE Chairman, IOC/YO	Done, Oct.-97, Dublin

Agenda Item	Subject	Responsibility	Period
	Project on encoding & decoding data into BUFR	GETADE Members, ICES, US NODC, MEDS	Continuously report progress to GETADE-VII
4.1.3	Arrange interagency meeting on MIM	Chair IODE, Chair GEMIM, IOC/PP	Postponed until '98
	Circular Letter to IODE contact points related to MIM	IOC Secretary, IOC/PP	Done. May '97 CL
	IOC ASFA input	IOC/PP	Continuously
4.2.1	Arrange GTSP- VI meeting	Chairman GTSP- VI IOC/YO & WMO	Done, Wash. DC, Apr.-96
	Continue close interaction with WOCE	GTSP- VI Members	Continuously
	Implement decisions of GTSP- VI & report progress to IODE- XVI	Chairman & members GTSP- VI IOC/YO & WMO	Intersessional period (1996-1999)
4.2.2	Production of second set of CD-ROMs known as " <i>Global Ocean Database 1998</i> "	GODAR Project Leader US NODC, IOC, ICSU/WDC	1 <sup>st</sup> half '98 Done
	Arrange GODAR-V for Central & South America	GODAR Project Leader, Nat. Co-ord. Colombia, IOC/YO	Done, Oct.-96, Cartagena
	Arrange GODAR-VI for Western Africa	GODAR Project Leader, Nat. Co-ord. Nigeria, IOC/YO	Done, Apr.-97, Ghana
	Arrange an International Conference on GODAR, Washington, DC, USA	GODAR Project Leader US Nat. Co-ord., IOC/YO	Oct. '98
	Implement recommendations of regional workshops & International Conference	GODAR Project Leader IODE Member States, IOC/YO	Continuously
	Send letter of thanks to Heads of ICSU, ICES & EU MAST Programme for their contribution to programme	IOC/YO	mid-96
	Explore possibilities & arrange training in GODAR	GODAR Project Leader IOC/YO/TEMA	1998
	Address concerns expressed by ICES & take them into account while developing " <i>Global Ocean Database 1998</i> "	GODAR Project Leader, ICES	Done
	Extend co-operation between GODAR & EU MAST programme. Report findings to IODE Officers Meeting	GODAR Project Leader, IOC/YO	Continuously
		IOC	end '98

Agenda Item	Subject	Responsibility	Period
	Bring proposal of WDC-B, MGG on new data types to attention of International Conference on GODAR	Director WDC-B, MGG IOC/YO	
	Send Circular Letter on declassification of naval data	IOC	mid-96
4.2.3 Res. XV.2	Identify Project Co-ord.	IODE Chair, IOC/PP	Done
	Establishment of working group for updating M&G N <sup>o</sup> 5		Done
	Update & publish M&G N <sup>o</sup> 5		Done, Nov.-97
	<u>MIM Pub. Series</u> Survey Member States on use of MIM Pub. Series	Chair GEMIM IOC Secretary, IOC/PP	
	<u>Global Directory</u> Merging national & regional directories	Chair GEMIM, IOC/PP	Directory for East Africa finalized & available. CD-ROM will be completed for IODE-XVI
	<u>Electronic Document Delivery</u> Pilot Project ARIEL	Chair GEMIM IAMS LIC President, IOC/PP	End >97
	<u>IOC WWW</u> - Loading list of acronyms on IOC WWW; - Loading meeting list IOC & others on IOC WWW; - Circulate letter to Member States on national activities	IOC/PP IOC/PP IOC/PP; IOC/YO	Done Done Done
Rec. XV.5	Develop WWW servers & inform IOC on URL	Member States, IOC/PP	Continuous, by end >96. 1250 URLs >96 in database
	Develop standard structure national IOC Homepage	IOC/PP	
	Setting up national IOC Homepage	Member States	Jun.'96
	Hosting of Member States Homepage	IOC/PP	Continuous
	Assist Member States in establishing WWW server	IOC/PP	Continuous
	Printing of IOC WWW pages	IOC/PP	Upon request



Agenda Item	Subject	Responsibility	Period
4.2.4	Collect quality control standards from range of programmes & propose list of new texts which should be included in second edition of quality control manual	N. Flemming, IOC/YO	Apr.'96
	Publish second edition of quality control manual both in hard copy & electronic form	Secretariat/YO	1997
	Explore with officials of EU MAST Programme possibility of cost sharing in publication of quality control manual	Secretariat/YO	1996
4.3.1	Continue to promote & develop the present version of OceanPC, Windows version	Secretariat, H. Dooley M. Brown, IOC/JW	On-going
	Seek funds for re-engineering of system providing fully-integrated system based on modular framework using modern graphical user interface	Member States, Chairman, IOC/JW	Continuous Windows version
	Issue Circular Letter exploring Member States interest for an IODE project to develop an enhanced OceanPC including draft proposal & questionnaire requesting user needs	IOC/JW, Chairman IODE	Done
	Pass responses to JCL & details regarding potential funding sources to IOC Secretariat	Member States, IOC/JW	Jan.'97
	Keep Member States informed of progress & development of OceanPC Project	IOC/JW	On-going
	Meeting of experts on OceanPC	IOC/JW, Project Leader	2 <sup>nd</sup> half '98
4.3.2	Send letter of thanks to Japan for JODC contribution to IODE/TEMA activities	IOC/YO	1996
	Establish closer links of co-operation with UNESCO Regional Offices & IOC regional programmes (keep informed on plans & activities; implement joint ventures)	IODC Chairman, IOC/YO	Continuously

<b>Agenda Item</b>	<b>Subject</b>	<b>Responsibility</b>	<b>Period</b>
	Explore possibilities & if possible provide study grants & fellowships to meet IODE needs	IOC/YO/TEMA Vice-Chairman IODE	1996 & then continuously
	Implement training activities as specified in Rec.XV.11	Chairman/Vice-Chairman IODE IOC/SRU/TEMA Respon. Nat. Co-ords.	Intersessional period
	Include directory of IODE training opportunities on IOC WWW server	GEMIM Chairperson, IOC/PP	
	Evaluate IODE/TEMA activities & report findings to IODE Officers Meeting & IODE-XVI	Vice-Chairman IODE, IOC/YO	beginning '99, end '99
	Recommend training tool to substitute training modules	IODE Officers, IOC/PP	mid-97
4.3.3	Send Circular Letter inviting Member States to provide surplus equipment	IOC/YO	1996
	Make surplus equipment available to developing countries	IOC Member States, IOC/YO	Continuously
5.1.1	Watch for situations that may result in loss of satellite imagery or other remotely-sensed data & encourage partner programmes to continuously consider final archives for their data to prevent their loss	Member States	Oct.-97 CL sent Done
	Pass new terms of reference to next session of OSRS	Secretariat	Done
	Appoint 2 experts from IODE to OSRS group	Chairman, IOC/JW	1997
	Identify expert to represent IODE interests & work closely with CEOS to provide market arrangements for remotely-sensed data	Chairman, IOC/JW	mid-97 Done
	Identify 2 potential pilot projects & prepare appropriate documentation for presentation to next session of the Committee	Chairman, IOC/JW	IODE-XVI

Agenda Item	Subject	Responsibility	Period
	Encourage active participation of Member States in these projects in their respective regions. Report to IODE-XVI	Chairman, IOC/JW	IODE-XVI
	Insure that importance of remote-sensed data for scientific & monitoring studies is adequately covered in the IGOSS/IODE data management strategy, as well as in GOOS data management plan	Chairman	Done
5.1.2	Implement workshop on biological & chemical data management	US NODC, Nat. Co-ord. Germany, IOC/YO	Done, May-96, Hamburg
	Study problems of managing pollution data by group of rapporteurs	Chairman IODE Chairman of group of rapporteurs, IOC/YO	1996
	Prepare joint action with EU MAST Programme related to management of marine pollution data & implement it during intersessional period (report to GIPME & IODE)	Chairman of group of rapporteurs, IOC/YO	1997-1999
	Support to GOOS project of monitoring petroleum hydrocarbons in seawater: who & how?	Chairman IODE & group of rapporteurs Directors of RNODCs-MARPOLMON, IOC/YO	Intersessional period
	Review of TR of RNODCs for MARPOLMON	IODE Officers Directors of RNODCs-MARPOLMON, IOC/YO	1996
5.1.3	Send Circular Letter to IODE data centres requesting information on coastal zone data management activities in which they are involved	Secretary IOC/JW	CL May -97
	Appoint Rapporteur to: (i) compile material from IODE centres into an information paper; (ii) contact international & regional bodies already engaged in coastal zone activities to solicit information on their objectives & data management plans to be included in the above-mentioned information paper.	Chairman, IOC/JW	mid-96

Agenda Item	Subject	Responsibility	Period
	Include relevant coastal zone issues in IGOSS/IODE data management strategy	Chairman	Done
	Establish close contacts & offer assistance to LOICZ in preparation of the management plan & policy document for coastal data management	Strategy Sub-Committee, IOC/JW	On-going
	Create inventory of marine data already available in coastal zone	Member States, IOC/JW	1997
	Establish & facilitate list of co-operation with JGOFS, AMAP & other programmes dealing with CO <sub>2</sub> pollution & biological data. Report to IODE Officers meeting	Chairman IODE, IOC/YO	1996-1997
5.2.1	Submission URLs to IOC Secretariat	see 4.2.3	Partly, ongoing
	Experiences related to Internet compilation	Member States, R. Keeley, IOC/PP	01 Apr.'96
	Circular Letter on need to provide Internet access to national marine science institutes	IOC Secretary, IOC/PP	May '96
	IOC Secretary to contact ORSTOM to request assistance access Internet for IOCEA Member States	IOC Secretary, IOC/PP	1 <sup>st</sup> half '98
	Bookmark list on relevant URLs for inclusion in CD-ROM	IOC/PP	Done
5.2.2	Publication electronic version of IODE project report	IOC/PP	Done
5.2.3	Implement regional activities as presented in Rec.XV.11	Chairman/Vice-Chairman IODE IODIE Nat. Co-ords. of France, Bulgaria, Kenya, Iran ROPME/PERSGA reps. IOC/SRU	Intersessional period
	Designate IODE Regional Co-ordinators with TR as presented in Res.XV.4	Chairman/Vice-Chairman IODE, IOC Regional Programmes, IOC/SRU	Done, IOC CL, 18 Aug.-97

<b>Agenda Item</b>	<b>Subject</b>	<b>Responsibility</b>	<b>Period</b>
	Arrange meeting of IODE Regional Co-ordinators co-jointly with IODE Officers meeting	Vice-Chairman IODE, IOC/YO	End >97, Done, 10-13 Feb.-98, Goa
5.3	Review IODE/IGOSS co-operation to improve its effectiveness	Chairman IODE, IOC/YO	1998
	Consider possibility of developing Global Ocean Velocity Project	Chairman of IODE Strategy Sub-Committee, IOC/JW	1997
5.4	Develop a partnership with aid agencies to address agreed-upon problems & report progress to IODE Officers meeting & IODE-XVI	Chairman/Vice-Chairman IODE IODE past Chairman, IOC/SRU	Intersessional period
	Consider secondment of national experts to IOC Secretariat to deal with IODE programmes	All IODE Nat. Co-ords. IODE Chairman, IOC/YO	Intersessional period
	Explore mechanisms for providing temporary assistance through financial contributions for hiring local people or sending people for short-term periods	All IODE Nat. Co-ords. IODE Chairman, IOC/YO	Intersessional period
5.5	Development of joint IGOSS/IODE brochure	Contractor, IOC/YO	Done
	Development of IODE input to IOC Exhibition for International Year of the Ocean (posters, logo)	IODE Nat. Co-ords. Chairman/Vice-Chairman IODE, IOC/SRU	Done, partly
	Discuss ways of co-operation with EU MAST Programme in demonstration of IODE exhibit	IOC/YO	1 <sup>st</sup> half '96
	Publication of IODE Handbook	IOC/PP	1 <sup>st</sup> half >98
6.	Preparation of IODE-XV Executive Summary	Present & past IODE Chairman	Done
8.	Fix dates & place for IODE-XVI	Chairman IODE, IOC/YO	Done, Apr.2000, Istanbul
	Arrange software demonstration, publications, exhibition, poster session & scientific presentations in conjunction with IODE-XVI	Chairman/Vice-Chairman IODE IODE Nat. Co-ords., IOC/SRU	end '99 - beginning 2000

<b>Agenda Item</b>	<b>Subject</b>	<b>Responsibility</b>	<b>Period</b>
9.	Finalize IODE-XV SR, Resolutions & Recommendations & give for publication	Present, past Chairman IODE, Vice-Chairman IODE, IOC/SRU	Done
	Prepare Action Sheet	Present, past Chairman IODE, Vice-Chairman IODE, IOC/SRU	Done
	Present Executive Summary, Resolutions & Recommendations of IODE-XV to 29 <sup>th</sup> Session of IOC EC for approval	Chairman IODE, IOC/SRU	Done

## ANNEX III

### LIST OF PARTICIPANTS

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## ANNEX IV

### WELCOME ADDRESS OF THE CHAIRMAN IODE

It gives me great pleasure to be able to welcome you to the IODE Officers Meeting. Originally this Meeting was to be held in conjunction with the IGOSS Bureau and while this is not occurring, I am very happy to be able to welcome Dr. Kohnke, the Chairman of IGOSS to this Meeting. We are fortunate to be holding this Meeting in such a wonderful venue, in this beautiful location of Dona Paula. Our hosts, the National Institute of Oceanography of India have done an excellent job with the arrangements and I am sure that we will have both a productive and enjoyable time during the next few days. I understand that this week is Carnival time, which should provide some excitement. I have been fortunate enough to have visited Goa previously during the GODAR-III Workshop in December 1994, so I hope that you all are able to experience the beauty and culture of this wonderful region.

The IODE is continuing to develop and is receiving support from an increasing number of countries. The introduction of the United Nations Convention on the Law of the Sea is turning the eyes of the public and governments of many countries towards the sea. The significance of understanding the newly acquired marine resources available to these countries is beginning to be acknowledged. The development of this understanding arises from scientific research and monitoring. However, the best research and monitoring efforts are wasted if the data resulting from these experiments are not effectively managed or made available to those that make the decisions, provide the environmental management functions and look to use the marine environment in a sustainable way.

I believe that IODE is already playing a vital role in improving our knowledge of the marine environment through the development and implementation of data management and data exchange programmes which result in the delivery of large quantities of high quality data and related products. Some of the obvious successes of IODE include the Global Temperature and Salinity Pilot Project (GTSP), a joint activity managed by both IODE and the Integrated Global Ocean Services System (IGOSS) programme.

Another flagship activity is the Global Ocean Data Archaeology and Rescue (GODAR) project. This effort is co-ordinated by the World Data Centre 'A' for Oceanography and is led with considerable enthusiasm by Dr. Sydney Levitus.

I strongly believe that IODE is a success story. We have demonstrated innovation through a number of projects and activities, we have a proven track record in effective co-operation with the scientific community and other marine environmental agencies. As an example, IODE is held up as a model of co-operation by the ICSU Panel on World Data Centres. However, acknowledgment of our expertise and capabilities is not wide spread. We are not automatically considered when marine data activities are discussed. Our profile within the scientific community needs to be strengthened and we need to make ourselves known to the marine administrator, environmental manager and government policy makers. The commercial sector is also an area we need to promote ourselves to.

Technology is greatly assisting our data management efforts, however, it is also increasing the quantities and types of data now being collected. In addition to this, technology has also raised the expectation of the user community, a group which is growing every day. We must continue to meet the challenge of these increasing user demands, many of which are arising from the multi-disciplinary needs of the global observing systems and are driven by the need to more fully understand climate change issues.

We are at the beginning of a new era in marine science. The creation of the Global Ocean Observing System and the Global Climate Observing System is placing an emphasis on practical outputs from data collection and research programmes. The implementation of these operationally driven

programmes will stretch our abilities to meet data management and exchange requirements. IODE must take a strong lead in supporting these global programmes.

In response to these challenges, IODE is already strongly supporting the G3OS Joint Data and Information Management Panel in the area of metadata and through GTSPP as two examples. The adoption of the IGOSS/IODE Data Management Strategy by GOOS as a data management framework through an 'end-to-end' data management process is a further step forward.

However, we have much work to do. Over the next few days we must review progress and look towards the rest of the intersessional period. We must ensure that IODE continues to develop in support of the changing user needs. I hope that this Meeting can work in a constructive way. In doing this, I believe that we need to question and challenge the way we presently do our business in an effort to understand the processes and to find better and more productive ways to address the customers needs. We need to ensure that we have very frank and open discussions, focussing on problem areas and looking at how to solve them.

I would like to conclude this welcome by once again thanking the organizers and our hosts for this Meeting.



ANNEX V

LIST OF NOPs SUBMISSION FOR 1996 AND 1997

	<u>DATE</u>	<u>NOP MAILED</u>
IOC/INF-1019	5 February	NOP of Australia (1996) & Research Schedule
IOC/INF-1022	5 February	NOP of Germany
IOC/INF-1023	5 February	NOP of Brazil
IOC/INF-1024	8 March	NOP of UK
IOC/INF-1025	8 March	NOP of Norway
IOC/INF-1029	19 April	NOP of Germany for 1996 (Planned) & Cruise Plans 1996 of the Baltic Sea Research Institute
IOC/INF-1030	19 April	NOP of Turkey (Planned)
IOC/INF-1031	19 April	Research Plans 1996 & Cruise Reports 1995 of the CSIRO, Australia
IOC/INF-1032	19 April	NOP of Finland (Planned)
IOC/INF-1034	31 May	NOP of Korea (Planned)
IOC/INF-1036	18 June	NOP of Netherlands for 1995 & 1996 (Planned)
IOC/INF-1037	18 June	NOP of Germany <i>ARV Meteor</i> ® Cruise N <sup>o</sup> . 36 & <i>ARV Professor Albrecht Penck</i> ® Cruise N <sup>o</sup> . 40
IOC/INF-1038	18 June	NOP of Australia
IOC/INF-1041	30 July	NOP of Japan
<b>TOTAL:</b>	<b>14</b>	

1997

	<u>DATE</u>	<u>NOP MAILED</u>
IOC/INF-1047	24 January	NOP of Brazil (Planned)
IOC/INF-1048	7 February	Cruise Reports of Germany
IOC/INF-1049	7 February	Cruise Reports <i>AFranklin</i> ®, Australia
IOC/INF-1056	28 February	NOP of Sweden
IOC/INF-1057	28 February	Cruise Programmes of UK
IOC/INF-1066	11 April	NOP of Finland
IOC/INF-1067	11 April	NOP of Turkey
IOC/INF-1068	11 April	Cruise Report of Germany
IOC/INF-1069	11 April	Cruise Report of Colombia
IOC/INF-1076	18 June	NOP of Korea
IOC/INF-1077	18 June	Cruise Reports of Australia
IOC/INF-1080	25 June	Cruise Plan - Tropics 97 of Australia
IOC/INF-1081	25 July	NOP of Japan
IOC/INF-1082	25 July	NOP of Argentina for 1997 (Planned) & 1996
IOC/INF-1083	22 August	Cruise Summaries & Plan - Tropics 97 for Australia
IOC/INF-1085	12 September	Cruise Report of Germany <i>RV AProfessor Albrecht Penck</i> ®
IOC/INF-1087	24 October	Cruise Report of Germany <i>RV AMeteor</i> ® 1997/1998
<b>TOTAL:</b>	<b>17</b>	

1998

	<u>DATE</u>	<u>NOP MAILED</u>
IOC/INF-1088	9 January	Cruise Plan RV A <i>Franklin</i> @Fr 01/98
IOC/INF-1089	9 January	NOP of Brazil
IOC/INF-1090	9 January	Cruise Report - Cruise N <sup>o</sup> . 44/97/16 RV AA.v. <i>Humboldt</i> @ - 23 October - 9 November 1997
IOC/INF-1093	28 January	Cruise Reports of Germany - Cruise N <sup>o</sup> . 41 RV A <i>Meteor</i> @ & RV AA.v. <i>Humboldt</i> @ Cruise N <sup>o</sup> . 44/98/01

All above NOPs have been mailed to the IODE National Co-ordinators and to F. Webster for inclusion in OCEANIC.

**ANNEX VI**

**REPLIES TO IOC CIRCULAR LETTER N° 5129 (29 May 1997) as of February 1998**

1. China: list of centres, NMDIS as national MIM contact point, Mr. Li Wenhai as MIM expert (18/6/97) - H. Wenfeng
2. United Kingdom: identified Ms. Pauline Simpson as MIM contact point; no list of centres, no list of experts (10/6/97) - M. Jones
3. Malta: list of libraries, Mr. A. Drago as MIM contact point, no list of experts (8/8/97) - A. Drago
4. Croatia: list of centres, no contact point, no list of experts (18/8/97) - V. Dadic
5. Argentina: list of centres , Director CEADO as contact point, MIM expert (20/6/97) - A. Gil Villanueva
6. Japan: list of centres, contact point: JODC (12/8/97) - T. Nagai
7. Russia: list of centres, RIHMI-WDC as contact point, list of experts (10/7/97) - V. Smirnov
8. Korea (Rep. of): list of centres, contact points: H-W Choi, C-M Kang, list of experts (22/8/97) - S. Hahn
9. Finland: list of centres, contact: L. Parkkonen, list of experts (20/8/97) - R. Olsonen
10. Chile: list of centres, contact: S. Alarcon, list of experts (3/9/97) - H. Gorziglia
11. Turkey: list of centres, point of contacts for each centre, no list of experts (22/9/97) - H. Yuce
12. Greece: list of centres, contact: NCMR Library, list of experts (27/11/97) - E. Balopoulos





## ANNEX VII

### TERMS OF REFERENCE FOR THE PILOT PROJECT ON THE IODE RESOURCE KIT CD-ROM

An *ad hoc* Working Group established by IODE Officers Meetings formulated the objectives and the Terms of Reference for the Pilot Project as follows:

The objectives of the IODE Resource Kit CD-ROM will be:

- (i) to constitute a computer-based tool as a follow-up and complement to IODE data and information management activities;
- (ii) to contain a number of modules which address marine data and information management requirements in the marine research process, going from programme design to programme report;
- (iii) to support the development of marine data and information management capabilities.

The Pilot Project shall:

- (i) review and revise the ODINEA Course-in-a-box CD-ROM's core document entitled *A Toolkit of Data and Information Management Modules for ICAM and Coastal Oceanography Programmes*;
- (ii) identify suitable data, metadata and information (including IOC Documents) to include in the IODE course-in-a-box CD-ROM;
- (iii) identify suitable data formats and format translation utilities to include in the IODE Resource Kit CD-ROM;
- (iv) produce a beta version of the IODE Resource Kit CD-ROM including insert booklet with necessary installation, acknowledgment and copyright information, for submission to IODE-XVI.

It was agreed that as a Pilot Project the activities will concentrate on one region. It was proposed to use the IOCINCWIO region, in view of the work already carried out on the ODINEA CD-ROM.

The Participants in the Pilot Project:

The Pilot Project will be carried out by a Working Group composed of:

- Chairman IODE (Mr. B. Searle)
- Kenya National Oceanographic Data Centre (KeNODC)
- Chairman GE-MIM (Ms. P. Simpson)
- Chairman GE-TADE (Mr. B. Keeley)
- GOOS Data and Information Management Service
- IOC Secretariat

Work Plan and Timing

The results of the Pilot Project Development will be reported to IODE-XVI. The Working Group will work, as much as possible, by e-mail. However, if necessary a 2-3 day Technical Meeting may be held.



## ANNEX VIII

### **TERMS OF REFERENCE OF THE IGOSS/IODE STEERING GROUP ON END-TO-END DATA MANAGEMENT SYSTEMS**

The IGOSS/IODE Steering Group will operate a programme for the development of end-to-end data management systems for the collection and management of datasets required to support the variety of requirements including the Global Ocean Observing System with the following responsibilities:

1. In conjunction with user groups and data collectors, develop and specify QC, metadata standards, analysis procedures and data flows to provide the data required by the various international and regional users at the time-scales appropriate to their needs.
2. Design and implement data flow monitoring systems to ensure that the data are collected, processed and distributed according to agreed schedules and responsibilities. (Support the IPOs where appropriate).
3. Develop and ensure the production of data analysis and presentation products to provide the necessary datasets and graphic presentations to meet the needs of the variety of users including GOOS.
4. Design and implement electronic distribution standard and procedures to distribute the datasets and data products to users at time-scales consistent with their needs.
5. Recruit volunteer centres to undertake the work keeping in mind opportunities for sharing the workload and acquiring the required expertise to accomplish the tasks at hand.
6. Support where possible the relevant project offices including GOOS and CLIVAR in their data management endeavours.
7. Report to IGOSS and IODE.



## ANNEX IX

### IODE-XVI DRAFT AGENDA

1. OPENING
2. ADMINISTRATIVE ARRANGEMENTS
  - 2.1 ADOPTION OF AGENDA
  - 2.2 DESIGNATION OF RAPPORTEUR
  - 2.3 SESSION TIME TABLE AND DOCUMENTATION
  - 2.4 LOCAL ARRANGEMENTS
3. **STATUS OF IODE**
  - 3.1 CHAIRMAN'S REPORT
  - 3.2 ACTIVITIES OF WORLD DATA CENTRES AND RNODCS
  - 3.3 NATIONAL DATA AND INFORMATION MANAGEMENT ACTIVITIES
  - 3.4 REGIONAL CO-ORDINATORS REPORTS
4. **STATUS OF DATA FLOW AND DATA MONITORING PROCEDURES**
5. **CO-OPERATION AND ACTIVITIES RELATED TO GOOS**
  - 5.1 DATA REQUIREMENTS FOR GOOS MODULES
  - 5.2 RESULTS OF THE GOOS/GCOS IMPLEMENTATION MEETING
6. STANDARD AND NOT YET ROUTINELY EXCHANGED DATA TYPES
  - 6.1 BIOLOGICAL AND CHEMICAL DATA
  - 6.2 POLLUTION DATA
  - 6.3 COASTAL DATA
7. **PROGRAMME MATTERS**
  - 7.1 GROUPS OF EXPERTS
    - 7.1.1 **Group of Experts on Technical Aspects of Data Exchange (GETADE)**
    - 7.1.2 **Group of Experts on Marine Information Management (GEMIM)**
  - 7.2 IODE PRODUCTS AND SERVICES
    - 7.2.1 **Global Temperature Salinity Pilot Project (GTSP)**
    - 7.2.2 **Global Oceanographic Data Archeology and Rescue Project (GODAR)**
    - 7.2.3 **Marine Information Management (MIM)**
    - 7.2.4 **Publishing and Information Products**
  - 7.3 CAPACITY BUILDING
    - 7.3.1 **OCEANPC**
    - 7.3.2 **IODE Resource Kit CD-ROM Pilot Project**
    - 7.3.3 **Training Activities in Marine Data and Information Management**
    - 7.3.4 **Voluntary Co-operation Programme (VCP)**

**8 USE OF NEW MANAGEMENT, EXCHANGE AND DELIVERY TECHNOLOGIES IN THE IODE SYSTEM**

- 8.1 INTERNET COMMUNICATION AND WWW
- 8.2 DISTRIBUTED DATABASES
- 8.3 METADATA SYSTEMS
- 8.4 DATA AND INFORMATION EXCHANGE SOFTWARE TOOLS
- 8.5 INTEGRATED DOCUMENT AND DATA MANAGEMENT
- 8.6 NEW ARCHIVAL TECHNOLOGIES

**9. ELECTRONIC DATA AND INFORMATION DELIVERY SYSTEM**

- 9.1 IODE WWW HOMEPAGE
- 9.2 CD-ROM
- 9.3 INTERNET CAPABILITIES / DISTRIBUTED DATABASES

**10. REVIEW OF IODE SYSTEM**

- 10.1 REVIEW - ACTIVITIES/PROCESS
- 10.2 PROPOSAL

**11. AVAILABLE RESOURCES AND PLAN OF ACTION FOR 2000-2003**

**12. PROMOTION OF IODE ACTIVITIES**

**13. ELECTIONS**

**14. DATE AND PLACE OF IODE-XVII**

**15. ADOPTION OF THE SUMMARY REPORT**

**16. CLOSURE**

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