Distribution: limited
Agenda Item 5.2

IOC/INF-499
Paris, 20 September 1982
English only

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of Unesco)

Twelfth
~~Tenth~~ Session of the Assembly
Paris, 3-20 November 1982

PROGRESS REPORT ON INTERNATIONAL OCEANOGRAPHIC DATA EXCHANGE

Prepared by the Chairman of the
Working Committee on IODE

(SC-82/CONF.218/COL.23)

I. General remarks on the 10th Session of the Working Committee on International Oceanographic Data Exchange

The Working Committee on International Oceanographic Data Exchange held its Tenth Session (IODE-X) in Hamburg (Federal Republic of Germany) from 5-13 August 1981. Representatives of 27 Member States and 13 international organizations attended the meeting (63 participants).

As a consequence of the expected developments resulting from the new ocean regime, from the objectives of a new international economic order and from enhanced importance for marine science, the Committee was conscious of the greater importance and value of the widespread and easy exchange of data and information.

The following major initiatives were identified and are given below in order of priority:

(i) Development of IODE's capability to render services and data products;
(ii) support in data management to major new scientific programmes, expecially in connection with the World Climate Research Programme;
(iii) development of strategies for coping with data from anticipated automated data collection systems;
(iv) establishment of an IOC structure for information exchange with special emphasis on document delivery.

The TEMA component of IODE is outside the priority being considered a mandatory function.

The Tenth Session of the Working Committee on IODE disbanded most of its Repporteurs and decided to continue their work more effectively by means of the establishment of Task Teams.

At the conclusion of the debates the chairman, Mr. Winterfeld, announced that he had to leave the post. Mr. Dieter Kohnke (Federal Republic of Germany) was unanimously elected new chairman of the Working Committee on IODE and Mr. Edward L. Ridley (USA), Vice-Chairman.

A consultative meeting with a few IODE officers (Paris, 30 November - 2 December 1981) has reviewed the results of IODE-X and has discussed the post-IODE-X development. An action plan for the intersessional period has been established which is to provide guidance to the IOC Secretariat and the W/C on IODE's subsidiary bodies for an orderly implementation of the decisions taken by IODE-X.

The Summary Report of IODE-X, the Resolutions and Recommendations were approved by the XVth Session of the IOC Executive Council (Paris, 1-6 March 1982).

II. Review of the Activities of the Subsidiary Bodies of the W/C on IODE

(a) Group of Experts on Responsible National Oceanographic Data Centres (RNODC)

At its tenth session the Working Committee on IODE recognized

the noticable progress achieved by the pilot programme in the implementation of an RNODC scheme. The Committee transformed the pilot programme into an operational network.RNODCs exist for IGOSS data (Japan, USA, USSR), for pollution data from MAPMOPP/MARPOLMON (Japan, USA), for wave data (U.K.), for the WESTPAC area of interest (Japan), for IOCARIBE (US NODC), and for data from the FGGE Operational Year (USA, France). In October 1981 the International Council for the Exploration of the Sea (ICES) assigned to its Hydrographic Service the function of an RNODC for the documentation of international marine environmental data formats. The RNODC-Formats will act as the archive centre for international marine environmental data formats and for code tables of international archival formats. It will also maintain user aids for the IOC General Format 3 (GF-3), including a programme library for processing of GF-3. (Recommendation IODE-X.3)

The first edition of the "Manual on Responsible National Oceanographic Data Centres" will be published in due course. It summarizes the functions of RNODCs and guidelines for the operation of this data centre type. The changing requirements of oceanographic programmes will continually call for the introduction of new elements and capabilities into RNODC operations. Therefore, rather than set rigid rules, the Manual offers guidance for the accreditation and operation of RNODCs. (Resolution IODE-X.2)

The Group of Experts held two sessions (Paris, 20-23 January, 1981; Washington, 7-9 September 1982).

(b) Group of Experts on Format Development

Detailed specifications of the IOC General Magnetic Tape Format (designated GF-3) have been published as Part I and Part II of Annex I of IOC Manuals and Guides No. 9. Both Parts have been published and translated into all working languages. Part III is planned as a non-technical document on the use of the format for a number of types of data sets. Standard subsets of GF-3 have been prepared by the Group covering CTD, drifting buoys, wave and current data, designed for clarity and easy utilization of the format. Concentrated efforts have been made on the promotion of GF-3 among a wider community of potential users.

The Group of Experts held one meeting (Washington, D.C., 8-12 September 1980).

(c) Group of Experts on Marine Environmental Data Information Referral System (MEDI)

The publication and distribution of the first MEDI Referral Catalogue (IOC Manuals and Guide No. 10), and the publication and dissemination of a four-language popular brochure have been accomplished. As of January 1982 file descriptions have been received from 53 centres in 24 countries. Efforts have been made to link MEDI to scientific programmes such as the

World Climate Programme and UNEP's Regional Seas Programme. The WMO has taken account of MEDI in its data referral activities for the World Climate Data Programme (Recommendation IODE-X.4).

The Group of Experts held one meeting (Paris, 26-29 January 1981).

(d) Joint FAO/IOC/UN(DETB) Panel of Experts on the Aquatic Sciences and Fisheries Information System (ASFIS(FAO/IOC/UN))

ASFIS has now become a successful operational system. Future efforts will concentrate on the promotion and expanded utilization of the system. IODE-X recognized the importance of strengthening IOC's participation with ASFIS (Recommendation IODE-X.5).

The Group of Experts held one meeting (Paris, 8-12 April 1980).

(e) Task Team on Airborne and Satellite Remotely Sensed Oceanographic Data

The Task Team established contacts with the European Space Agency (ESA), with ICES, with the Joint Research Centre of the European Community, with SCOR and with WMO. Requirements for remotely sensed data have been found in the World Climate Programme and in pollution programmes. Although satellite data holders and distributors make efforts to advertise their data holdings and data products, potential users in the oceanographic community are generally insufficiently aware of the existence of such data. As a possible solution to this problem the Task Team in collaboration with the Group of Experts on Marine Environmental Data Information Referral System (MEDI) has decided that a special catalogue of MEDI shall be produced aiming to refer users to sources of satellite data from the oceans.

(Resolution IODE-X.3).

The Task Team is continuing its functions.

(f) IGOSS Data Archiving and Exchange

Close contacts have been established and maintained with the Joint IOC/WMO Working Committees on IGOSS. The Working Committees on IODE and IGOSS have established co-ordinated mechanisms for the exchange and archiving of IGOSS BATHY data on a non-real-time basis. This co-ordination needs to be further developed, as new types of data may be collected by IGOSS.

IODE-X decided to revise the Manual on IGOSS Data Archiving and Exchange (IOC Manuals and Guides No. 1) prior to the Third Session of the Joint W/C for IGOSS (Recommendation IODE-X.6).

The contents of IOC Manuals and Guides Nos. 1 and 3 have been co-ordinated with the Joint IOC/WMO Working Committee for IGOSS.

IODE-X decided to continue the functions of the Rapporteur on IGOSS Data Archiving and Exchange.

(g) Marine pollution data

IODE completed its work related to the processing and archiving of petroleum data collected in the Marine Pollution Monitoring Pilot Project (MAPMOPP). Data from that Project are archived in the Japan Oceanographic Data Centre in Syndarc format and in the US NODC in a special format on behalf of the WDCs (Oceanography). The two RNODCs-MAPMOPP were discontinued.

The US NODC, however, will act as an RNODC for MARPOLMON-P on a tempory basis until such time when a permanent RNODC for MARPOLMON has been identified.

IODE-X called upon international bodies concerned to co-operate in making marine pollution data available to the oceanographic community according to the principles of IODE. The role of the IODE Rapporteur for Marine Pollution Data was expanded and assigned to a "Task Team on Marine Pollution Data Exchange" (Resolution IODE-X.4).

(h) Marine biological data

A world-wide questionnaire survey on the need for international exchange of marine biological data was successfully completed. As a result, the practicality of beginning international exchang of marine biological data became apparent. An informal test of the ability of GF-3 to handle marine biological data proved to be successful.

The Working Committee on IODE is co-operating closely with the ICES Working Group on Marine Data Management which is working on the establishment of an appropriate taxonomic code also suitable to be used in IODE's General Format 3 (GF-3).

IODE was represented at the BIOMASS FIBEX Data Interpretation Workshop (Hamburg, September 1981). The Working Committee on IODE expressed its strong feelings that every effort should be made to preserve the workshop's data base, even if this means placing the set in "cold storage" until all the workshop participants are prepared to release them. The IOC Secretary was requested by IODE-X to strongly urge SCAR/SCOR to act on this matter.

IODE-X decided to replace the two co-rapporteurs by the "Task Team on Marine Biological Data" (Resolution IODE-X.5).

(i) Oceanographic Data Management during the First GARP Global Experiment Operational Year (FOY)

The National Oceanographic Data Centres (NODCs) of France and

the USA act as RNODCs-FOY. They will continue until at least 1984 under the commitment to produce an inventory of oceanographic data received from the FGGE operational year, and to create a global ocean data base including all specified FGGE data, with the exception of sea level data.

Cruise plans (the Global Ocean Data Inventory-GODI) have been compiled and distributed by the RNODCs-FOY in hard-copy form (Volume I). The final edition of GODI is obtainable from the US RNODC-FOY on microfiches.

(j) Marine Information Management (MIM)

The Working Committee on IODE considers Marine Information Management to be one of its important tasks. MIM activities need financial support for the implementation of large scale development plans through extra-budgetary funds, contributions to the IOC Trust Fund by IOC Member States and co-ordination with the General Information Programme (PGI) of UNESCO. IODE-X agreed that a resource handbook on marine scientific and technological information resources shall be compiled and published with the assistance of national and international organizations.

Lately, however, the usefulness of this handbook has been questioned by experts. Therefore, the "Task Team on IODE's Role in Marine Information Management", established by IODE-X (Resolution IODE-X.6), will have to study the need for such a handbook first, before the compilation of its contents can be commenced.

(k) Wave data management

The Marine Information and Advisory Service (MIAS) of the U.K., acting as the RNODC for instrumentally recorded wave data, has published the second issue of the "Catalogue of Wave Data".

A list of parameters and supporting documentation for the international exchange of wave data as well as GF-3 sub-sets for wave data have been developed. The "User Guide for the Exchange of Measured Wave Data in GF-3" has been drafted and can be made available through the RNODC-Format (ICES). Due to engineering and climate requirements data standards for the exchange of wave directional spectral data still remain to be developed.

IODE-X decided to establish a "Task Team on Measured Wave Data Management" (Resolution IODE-X.7).

(l) Marine geological/geophysical data management

IODE-X decided to establish a "Task Team on Data on Non-Living Resources in the Oceans" to review the status of existing data management systems. Contact has been established with UN (OETB), aiming at increased contributions of IOC Member States to OETB's data base for non-renewable resources data (Recommendation IODE-X.10).

(m) Oceanographic data management for climatic studies

The Joint CCCO/JSC Meeting on Time Series of Ocean Measurements (TSOM) and CCCO-II (both held in Tokyo in May 1981) addressed the WC on IODE for support or assistance in the establishment of an ocean data management plan. Some types of data which are required in the WCP have been identified by CCCO. There is now a need for continuous review of, and advice on, IODE activities in support of the WCP. IODE-X therefore decided to establish a "Task Team on Ocean Data Management for Climate Studies", because several questions need to be studied in greater detail (Recommendation IODE-X.9).

CCCO considers the IODE system to be the main means of exchange of non-real-time oceanographic data. The Joint Scientific Committee for the WCRP offered to hire a consultant who shall draft a data management plan for TSOM under the guidance of the Task Team leader. The W/C on IODE was invited to advise on a competent expert.

(n) Declared National Programme (DNP) and National Oceanographic Programme (NOP)

In spite of many efforts and a slightly increasing amount of information, the submission of information on DNPs and NOPs is far from adequate. Only a small percentage of the DNPs actually submit data to the World Data Centres for Oceanography. Obiously, the difference between DNPs and NOPs is misunderstood by some Member Countries. Some countries have expressed concern about notification before the cruise has taken place. Therefore, a "Task Team on Review of DNP/NOP Announcements" has been established to examine the usefulness of planned and realized DNPs and NOPs (Resolution IODE-X.9).

III. Co-operation with international organizations

(1) World Meteorological Organization (WMO)

Information about IODE's wave data management has been passed on to WMO's Committee on Marine Meteorology to permit co-ordination of efforts in wave data exchange and archiving for use in wave forecasting. Informal planning meetings with WMO and IODE officers were held.

IODE representatives have participated in Informal Planning Meetings (IPM) on World Climate Programme (WCP) Data Management and on WCP Data Referral Systems (organized by WMO in 1981). The IPM on WCP Data Management has recognized the existence of IODE's mechanisms for archiving oceanographic data and has stated that any oceanographic data collected by other international organizations should be included in the IODE system. The IOC through its W/C on IODE is responsible for the development and implementation of the oceanographic component of the World Climate Data Programme.

The IPM on WCP Data Referral Systems reached agreement that

parts of IOC's Marine Environmental Data Information Referral System (MEDI) be integrated into the World Climate Data Referral System (INFOCLIMAT).

(2) Scientific Committee on Oceanic Research (SCOR)

IODE-X recommended that WDCs (Oceanography), NODCs and relevant national institutions record all data collected at sea after 1st January 1982 on the new practical salinity scale and the international equation of state of sea-water (Recommendation IODE-X.2).

The IOC Secretariat has distributed copies of UNESCO Technical Papers in Marine Science No. 36 (Tenth Report of the Joint Panel on Oceanographic Tables and Standards) to all National Co-ordinators for IODE for further dissemination to all relevant oceanographic institutions in their respective countries.

(3) International Council for the Exploration of the Sea (ICES)

A very close co-operation exists between the W/C on IODE and ICES's Working Group on Marine Data Management by regular participation in the meetings of bodies of the partner organization. ICES experts collaborate in IODE subsidiary bodies. The ICES Hydrographic Service has accepted the functions of IODE's RNODC for Formats. Data management practices in the ICES community have been developed in accordance with the IODE procedures. The ICES mailing list for the dissemination of planned national cruise schedules has been made available to the IOC Secretariat, in order to suit IOC's respective mailing list.

(4) United Nations Environmental Programme (UNEP)

The IODE activities of most interest to UNEP are pollution data management, exchange formats (particularly GF-3), and the ASFIS and MEDI information system. The co-operation between UNEP and the IODE system is entering a new dimension. UNEP, establishing the data management within its Regional Seas Programme, has indicated interest in making practical use of the existing IODE data centre system instead of establishing its own exchange infrastructure.

UNEP's plan is to ask NODCs in the respective regions to accept responsibility in addition to their national activities for handling oceanographic data which have been collected in a Regional Seas Programme. The data shall be treated by the centre in accordance with existing IODE procedures. In doing so, UNEP would give a clear precedent as to how the interorganizational co-operation could work in the field of international exchange of oceanographic data.

IV. Participation in the implementation of regional programmes

(1) Biological Investigation of Marine Antarctic Systems and Stocks (BIOMASS)

The BIOMASS Programme is co-sponsored by ICSU (through SCOR and SCAR) by IABO and by ACMRR. BIOMASS has not yet established a data centre though it is still determined to do so. BIOMASS' Technical Group for Data, Statistics and Resource Evaluation approved a data management plan, but rejected a recommendation to invite IOC to help establish the BIOMASS data centre. The IOC was aked to participate in establishing the centre, once chosen.

(2) MEDALPEX (Oceanographic part)

The Permanent Service for Mean Sea Level (PSMSL) agreed to accept the responsibility of a data centre for sea-level data. The Regional Data Centre for the Co-operative Investigations in the Mediterranean (CIM) volunteered to act as the centre for conventional MEDALPEX oceanographic data.

(3) El Niño / ERFEN

The activities of ERFEN in the frame-work of IODE have been exclusively confined to the processing of data and information in each of the participating countries on an individual basis with a minimum exchange of data. One of the data management problems is the lack of a designated focal point or RNODC in the region.

IODE-X recommended the establishment of a pilot project within the IODE strategy for regional action aimed at strengthening the capabilities in the processing and exchange of data. A consultant will be hired to draw up a draft of the pilot project (Recommendation IODE-X.7).

(4) IOCARIBE

Virtually no data have been collected which are specifically identified as IOCARIBE data. The RNODC-IOCARIBE (U.S. NODC) decided to make data from any project, collected in the area, available to IOCARIBE participants. Member States doing work in the region are urged to submit their data promptly to the RNODC-IOCARIBE.

The greatest need, however, in the region is the development of an information exchange network for marine sciences.

(5) WESTPAC

The W/C on IODE has been represented at the Second Session of the IOC Programme Group for the Western Pacific (WESTPAC-II). A data management plan has been approved which is in accordance with existing IODE procedures. The plan has been published as "Manual on WESTPAC Data Management". The Japan Oceanographic Data Centre is functioning as the RNODC for WESTPAC. A newsletter containing information on marine science activities in this region has been published by the RNODC-WESTPAC.

(6) CCOP/SOPAC (Committee for Co-ordination of Joint Prospecting for Mineral Resources in South Pacific Offshore areas)

Contacts have been established with CCOP/SOPAC through a consultant who, inter alia, has investigated the requirements and the possible ways of providing technical and financial support by IOC with respect to data exchange and information management. It was agreed that scientific SOPAC data shall be exchanged through the World Data Centre system, whereas resource data should be handled by UN (OETB).

V. Perspectives for the future work of the W/C on IODE

Four spheres of responsibility will be a particular challenge to the activities of the W/C on IODE in the future:

a) Strengthening of IODE's services

Large volumes of scientific data have been compiled and are archived in various data centres. However, it is a small spectru of oceanographic data collected at sea which is being exchanged. In future, data of other marine disciplines and of new data collection systems have to be included in the international exchange system of IODE in order to allow a more complete analysis of the marine environmental processes. The usefulness of the oceanographic data banks is recognized by a wide variety of users. However, an increasing number of secondary users is not always primarily interested in the original data, but wishes to receive from the centres condensed scientific information in the form of statistics or graphics. IODE centres must develop their capabilities to render services which fully meet the requirements of secondary users.

b) Support in data management of to major scientific programmes, such as the World Climate Research Programme

Well developed exchange mechanisms are essential for an effectiv planning and conducting of international and multidisciplinary projects. Thus, IODE will play an important role in the World Climate Research Programme and World Climate Data Programme. Data relevant to climate studies must be compiled as completely as possible. The climate data should be processed in accordance with standard scientific criteria, and products such as statistics, graphics and grid point values must be prepared for subsequent use by scientific groups.

c) Development of strategies for coping with data from anticipated automated data collection systems

Automated data collection systems are being developed the data of which will be telecommunicated in most cases. Mechanisms have to be developed which warrant the entering of the original data into the IODE exchange channels.

New processing methods, such as compression methods, and more advanced archival systems (Data Bank Management Systems) have to be developed and applied, respectively. The response mechanisms to new measuring techniques must be developed by IODE for a quicker response to the requirements of secondary users. On the other hand, the attention of manufactures should be drawn to the productionof oceanographic instruments which allow for a multiple use of the data and the processing of the data on large commercial computer facilities. The data carriers must be compatible with the large machines.

d) Establishment of an IOC structure for information exchange

Another important task for IODE is the accelerated establishmen of an effective information management. There are comparatively few problems in information exchange among developed countries, but the flow of information into developing countries needs to be established or strengthened. The most striking problem for the developing countries in this respect is the insufficient accessto scientific literature. Many donators and a great amount of money are required to widen this bottle-neck. An urgent task of the W/C on IODE is the development of an information service which should be of use to both IOC Member Countries and international organizations. Information available to the public e.g. about research vessels and their equipment, oceanographic institutes, meetings related to marine sciences, ocean-related satellites and their data (type, processing stage, repository, access conditions), and publications from international scientific programmes (central documentation) is required for a more effective management of marine scientific activities. All this information can be useful for political decision making purposes relating to marine sciences.