



Report on the 5th Session of the IOC Working Group
on International Oceanographic Data Exchange

by
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The Working Group met at the Palais des Nations in Geneva on 21-25 September 1970. The session was conducted by the Chairman of the Group, Dr. T.S. Austin. Secretary was Mr. R.C. Junghans, IOC Assistant Secretary.

The major programmes of IOC were discussed together with their impact on international exchange of data. The Chairman of the IOC Working Committee for IGOSS, Dr. N.J. Campbell, noted that a new rôle for data centres would emerge as implementation of IGOSS progressed. He stressed that requirements would call for data products such as sea-surface temperature anomalies, salinity anomalies, etc. and suggested that selected data centres would have to consider aspects of data product formulation in support of certain IGOSS operations.

The Working Group received information on the data reporting codes, TESAC and BATHY, for ocean parameters. The codes were accepted in principle. The Group noted, however, that criteria still had to be developed for selecting data at significant depths with reference to temperature and salinity profiles being measured both by manual as well as automated methods. The Group requested that this matter be taken up by selected members of the Group with the ICES Working Group on the Development of Marine Data Systems.

(This joint meeting took place during the 58th Statutory Meeting of ICES. A proposal concerning the non-automatically digitized data was agreed upon whereas definitions for automatically digitized data were postponed to a later date. Cf. Procès-Verbal de la Réunion 1970, p.52.)

This proposal was submitted to the Working Committee for IGOSS for approval. It was here pointed out that the usefulness of the codes would, in certain areas, be greatly enhanced if provision were made to indicate whether or not the temperature (salinity) measured at the greatest depth was also the bottom temperature (salinity). The need for this information was expressed by both ICES and ICNAF. A method was therefore proposed for indicating bottom temperature (salinity) in TESAC and BATHY reports which was approved for consideration by WMO. So amended the data reporting codes have been endorsed by WMO for use in receiving or supplying ocean temperature, salinity or current data through WMO's Global Telecommunication System as of 1st January 1972. The codes have been distributed under cover of IOC Circular Letter No.336.)

The Chairman of the ICES Working Group on Development of Marine Data Systems, Dr. N.J. Campbell, presented the ICES criteria for XBT/STD data format standardization.

As difficulties had been experienced in attempting to conform stored STD data to ICES standards a small Task Team on XBT/STD Data Storage was established to meet with the ICES Working Group during the 58th Statutory Meeting of ICES.

(This joint meeting proposed that, for the time being, the criteria set up by ICES should remain unaltered and should be the subject of evaluation by a joint Study Group of the ICES Working Group on Marine Data Management and the IOC Working Group on International Oceanographic Data Exchange. The joint Study Group, working through correspondence, should report to ICES and IOC in 1971.)

The Group heard reports from representatives of FAO, ICES, Kuroshio Data Centre, Permanent Service for Mean Sea Level, WDC-A and WDC-B (Oceanography) and WMO.

Concern was expressed about the many different data inventory formats used. It was recognized that there is an urgent need for a single inventory format for exchange of information on oceanographic activities. The Group recommended the ROSCOP form for adoption by IOC as an interim inventory form to facilitate the initial exchange of marine data. A Task Team was appointed to develop a simple multi-purpose marine data and sample (plus related cruise information) form for reporting to national, regional and World Data Centres — an extended ROSCOP concept.

It was considered that another pressing problem was related to storage of continuous current measurements. A Task Team was appointed to determine feasibility and utility of adopting, for international exchange, the minimal requirements for processed current meter data (subsurface), in summary form, as proposed by SCOR Working Group 21.

The Group had been requested, as recommended by the 3rd Meeting of the Joint WMO/IOC Group of Experts on Coordination of Requirements (cf. Doc.C.M.1970/C:11), to develop a manual or appropriate guidance covering non-real-time storage and exchange of IGOSS data. Therefore, a Task Team was established for the preparation of a draft manual on all aspects of non-real time handling of IGOSS data.

Relevant to the work of this Task Team was a proposal from U.S. NODC for the establishment of "International Data Banks" to be maintained by "Responsible NODCs" on behalf of the WDCs. These "Responsible NODCs" would be analogous in concept to the rôle assigned to "Responsible Members" of the WMO in the exchange of data for climatology.

The Group reviewed and reappraised international oceanographic data exchange in general. With a view to the proliferation of oceanographic data both in quantity and in type accruing from on-going and planned programmes such as LEPOR, Marine Pollution Monitoring and IGOSS the Group expressed concern over the ability of the WDCs to continue indefinitely accessioning

unlimited amounts of data and yet providing rapid and effective service. The Group considered therefore, with great interest a document by the IOC Secretariat which suggests, i.a., establishment of a "world data bank (or repository)" for oceanography. It is proposed that all such data held by NODCs, DNAs etc., for which inventories have been submitted to the WDCs, be considered part of such a world oceanographic data bank.

(As this document has recently (July 1971) by the IOC Secretariat been circulated for comments it has been appended to the present report.)

On this matter of relationships among the WDCs, NODCs, regional and specialized centres the Group recommended:-

1. that the IOC encourage NODCs, especially those with facilities for automation, to assume the rôle of regional data centres wherever the solution of regional problems or execution of regional projects would be aided by such an arrangement. It is further recommended that such NODCs acting as regional centres be urged to perform data processing and analysis services on a voluntary basis for data accessioned by participants lacking the requisite facilities and aid in the international exchange of automated data in the context of the WDC system, and further suggests that future revision of the IOC Manual on International Oceanographic Data Exchange include guidelines for the development of regional centres;
2. that the present rôle of the WDC system and ancillary specialized centres as described in the Manual on International Oceanographic Data Exchange in international data exchange continue to be supported by the IOC, but, in order to strengthen and augment the system, the concept of a 'World Data Bank' which is comprised of the various holdings of individual NODCs be explored and receive serious consideration by DNAs, NODCs and regional data centres, especially for such existing or new types of data and information not now commonly exchanged (e.g. data from continuous measuring devices, non-standard data, etc.). It is further proposed that the Secretary call attention to the possible utility of the World Data Bank concept in the management of voluminous records resulting from new initiatives such as IGOSS and Marine Pollution Monitoring;
3. that the Members participating in exchange of data be urged to give careful consideration to the problem of safeguarding and preservation of those primary data holdings which may be of value to future research (but are not held by the WDCs) and to bear in mind that such data constitute an important international resource. It is further recommended that the IOC continue to solicit the advice of scientific bodies of the ICSU/SCOR apparatus, ACMRR, and of appropriate other bodies concerned with IGOSS, LEPOR, etc., on what types of primary records are likely to have long-term use or significance;
4. that the IOC continue to draw on the good offices of SCOR and ACMRR to find ways to integrate the holdings of biological and fisheries centres into the international data exchange scheme and also consult appropriate advisory bodies on the implications of such new specialized centres as may be established."

Finally, the Group stressed that the present Manual on International Oceanographic Data Exchange is in need of updating, and pointed to a number of items where major revisions were considered necessary.

Appendix

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
COMMISSION OCEANOGRAPHIQUE INTERGOUVERNEMENTALE
COMISION OCEANOGRAFICA INTERGUBERNAMENTAL
МЕЖПРАВИТЕЛЬСТВЕННАЯ ОКЕАНОГРАФИЧЕСКАЯ КОМИССИЯ

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Your reference :

In reply refer to : SCE/9/89F/6
Circular Letter No. 342

2 July 1971

To: All Member States of IOC
President and Secretary: ACMRR, ACOMR and SCOR
WDC-A, WDC-B, Specialized and Regional Data
Centres (Oceanography)
Executive Heads of ICSPRO Member organizations
Executive Heads of ICSU Panel on WDC's, IAEA,
ICAO, ICES, ICNAF, IUGS and WHO

Subject: The Scope and Nature of the Arrangements for
International Oceanographic Data Exchange

The oceanographic community and many national and international bodies are initiating new oceanographic research and service programmes while continuing and expanding programmes already in existence. This increase in oceanographic activity will result in a corresponding increase in data requiring storage and retrieval. It also implies that new forms of data will be introduced into the international exchange system.

The Working Group on International Oceanographic Data Exchange has foreseen this flood of data and is considering means of dealing with it. One method of coping with this problem would be the widespread application of computer technology to data exchange, and another would be the exchange of inventory information as well as, and perhaps to some extent instead of, data among centres. The attached document discusses the latter aspect and proposes the establishment of an international referral-inventory system and a "World Data Bank"* with the continuation of the functions of the present World Data Centres. This new scheme received favourable consideration at the fifth session of the Working Group on International Oceanographic Data Exchange. There was general agreement that it should be explored further and that the secretariat should inform Member States of its possible utility.

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* The Working Committee for an Integrated Global Ocean Station System has suggested that "World Data Repository" be used rather than the term "World Data Bank"

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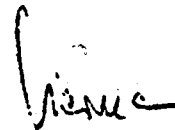
Vice-Chairmen : Capt. O.A. Amaral Affonso
Diretoria de Hidrografia e Navegação
Ministerio da Marinha
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Professor Carlo Morelli
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Secretary : Dr. S. J. Holt

Recommendation 12.4 of the Bureau and Consultative Council called upon the secretariat to prepare a detailed proposal for establishing an international information service for national and regional marine science programmes. Data and information management have been linked together, first in the Comprehensive Outline of the Scope of the Long-Term and Expanded Programme of Oceanic Exploration and Research and later by the Group of Experts on Long-Term Scientific Policy and Planning. The need for mechanisms to accelerate not only the flow of data in the narrower sense, but also of information of all kinds of research activities and plans was emphasized. The World Data Bank scheme could be applied to this broader aspect of information exchange and it is conceivable that the World Data Centre system could be the mechanism through which the information is exchanged.

Further consideration will be given to the World Data Bank scheme at the sixth session of the Working Group on International Oceanographic Data Exchange, to be held in Rome from 20 to 25 September 1971. As preparation for the session, Member States are invited to review and comment upon the attached suggestions. In the event that this new scheme is endorsed at the sixth session of the Working Group, Member States should be prepared to indicate their contribution.

Comments received at the secretariat by 30 August will be summarized in a single document for submission to the Working Group. As the time in which to prepare that document will be limited, the secretariat cannot guarantee its availability in the four working languages of the Commission (English, French, Spanish and Russian).



M. S. J. Holt

attachment

SUGGESTIONS FOR ADJUSTING THE SCOPE AND NATURE OF THE ARRANGEMENTS
FOR INTERNATIONAL OCEANOGRAPHIC DATA EXCHANGE,
AND DEVELOPING THESE INTO A COORDINATED SYSTEM

(Prepared by the Secretariat)

1. Background

Since the inception of the International Geophysical Year, the exchange of oceanographic data has been a foremost example of international cooperation in scientific endeavours. Through a series of evolutionary steps the arrangements for international oceanographic data exchange involve the following actions:

(1) Announcement of National Oceanographic Programmes, planned or completed - and the main data categories - in the publication, International Marine Science, with a voluntary declaration that all or part of the data will be available for international exchange. Such data is included in the 'Declared National Programme' (DNP);

(2) The submission of certain types of data, so far mainly physical and some biological, to the WDCs in accordance with provisions of the IOC Manual on International Oceanographic Data Exchange. The WDCs are maintained at the expense of the host country and their policies subject to review by the steering committee for WDCs under CIG-ICSU;

(3) The Manual for International Oceanographic Data Exchange, prepared by the IOC in accordance with IOC resolutions, is kept under constant review by the IOC Working Group on International Oceanographic Data Exchange. Its contents rely on the advice of SCOR and ACMRR.

(4) The WDCs for Oceanography exchange all data in their files, publish catalogues of their holdings (and of some types of DNP data not actually held) and provide copies of their data to any requesters on an equivalent exchange basis. Though authorized, the WDCs have not imposed direct charge for their services. Additionally, data not part of DNP have been donated to the WDCs;

(5) Additional arrangements for data exchange and distribution exist for special exchanges on a disciplinary or regional basis. Specialized centres exist for fishery and certain general biological data, and for tidal, sea-level, and bathymetric data. Regional arrangements are of two kinds - permanent regional centres such as that of ICES, established under international agreements, and decision that selected NODCs will serve for a limited duration as regional centres in connection with specific cooperative investigations. In each case working agreements of some kind must exist to define the relationships between these elements with the WDCs and generally within the world system.

2. Problem

New national and international initiatives in oceanography will no doubt result in a rapid proliferation of data both in quantity and in variety with the parallel development of new instruments and methods. At the same time increased demands for types of data not fully exchanged in the past, especially geological, geophysical and biological, must be anticipated. Apprehension that the present arrangements for exchange will prove inadequate to manage the coming flood of data

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and thus fail to create an international resource yielding the full scientific benefits from these new initiatives has been expressed by various groups of the scientific community (cf. Global Ocean Research - Ponza Report; Comprehensive Outline of the Scope of the Long-term and Expanded Programme of Oceanic Exploration and Research - LEPOR). The IOC early recognized the need for strengthening procedures for data exchange with these considerations culminating in Resolution V-20A which directs the Working Group on International Oceanographic Data Exchange to reappraise the international data exchange system and to find means to make it more responsive to the needs of new programmes (such as LEPOR and IGOSS). The ad hoc group on Format Standardization, considering the technical and financial implications to WDCs of managing the eventually very voluminous data bases accruing under the present concept, recommended that the WDCs gradually become automated documentation centres and urged that exchange of data be facilitated through development of international acceptance of standard formats for all types of oceanographic data. Work on the latter has proved to be a lengthy and difficult process and possibly somewhat premature to expect the achievement of effective results for some time to come. In this respect the emergence of a growing number of NODCs with their diverse computer capabilities and practices have added a new dimension to the problem, and possibly to the solution, of standard formats. Meanwhile, other bodies, notably those concerned with the planning of LEPOR, IGOSS and cooperative investigations, look to the Working Group on International Oceanographic Data Exchange to develop procedures for an oceanographic data exchange system.

3. Proposed action

It is suggested that the Working Group consider the following matters concerning the revision and redefinition of components of the international oceanographic data exchange arrangements:

(a) Establishment of an international referral-inventory system.

Under this concept each Member nation would:

- (1) on a timely and continuing basis, report the types of data and samples resulting from ongoing national or cooperative programmes which it intends to make available for international exchange. This report would serve as the equivalent of the DNP;
- (2) periodically provide an inventory of the types, volume and distribution of data available for international exchange that are held in processed form by its NODC, DMA, designated regional or special centre. Such individual data holdings may represent the national effort or be a compendium of existing data from various sources providing coverage for a specific area. The WDCs would be requested to assume responsibility for compiling, maintaining, and providing service from these two types of indexes/inventories.

(b) Establishment of a 'world data bank' for oceanography. It is proposed that all such data held by NODCs, DMAs, etc., for which inventories have been submitted to the WDCs, be considered part of a world oceanographic data bank. Participants in the world data bank would have the following obligations:

- (1) maintaining, safeguarding, and providing documentation and reviewing quality of all WDB data;

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- (2) exchange WDB data and documentation, on request, with Member nations, at their own expense, either directly or through the WDCs. Until such time as internationally or regionally agreed standards for specific data types have been established, provide the data, as feasible and practicable, in formats and media appropriate to the requester's and the data centre's data-processing capability, especially in the case of developing countries.

(c) Continuation of WDC data functions. It is proposed that the WDCs continue the present system of data services for (1) all Member nations which do not have an NODC or DNA and which wish to use the WDCs as a repository of their internationally exchangeable data and (2) any other data voluntarily contributed by any source to the WDC for international exchange. The WDCs would continue to catalogue their own holdings.

(d) The rôle of the IOC Manual. It is proposed that the Manual be revised in format and content so as to serve as an authoritative and timely source of information on all aspects of data exchange. Under this concept the Manual would report on the substance and detail of:

- (1) intergovernmental agreements and resolutions concerning data exchange;
- (2) specific obligation to declare inventory and/or exchange data and information resulting from cooperative ventures, or under the aegis of international programmes such as LEPOR, IDOE, IGOSS, etc.;
- (3) details and mechanics of the established data exchange system including the role and responsibility of the NODCs, DNAs, regional and disciplinary specialized centres, etc.;
- (4) standardization of formats, methods, and procedures to enhance the quality and exchangeability of data.

In accordance with existing IOC resolutions, preparing specific proposals for revision of the Manual would be the responsibility of the IOC Working Group on International Oceanographic Data Exchange, in cooperation as necessary with other subsidiary bodies of the IOC that may be concerned, with the advice of the Commission's scientific advisory bodies, and in consultation with ICSU and other organizations concerned with related aspects of international exchange of environmental and resource data.
