INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of Unesco)

Ad hoc Consultation of Experts
on Data Monitoring in the IODE System
Ottawa, Canada, 7-8 July 1988

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1. OPENING

The Ad hoc Consultation of Experts on Data Monitoring in the IODE System was opened at 10:00 a.m. on 7 July 1988 at the Marine Environmental Data Service, Department of Fisheries and Oceans, Ottawa, Canada. Dr. J.K. Wilson, Director of MEDE, welcomed the participants to MEDE. He noted that in the autumn, MEDE, in collaboration with the US NODC, would be starting a project to set up a continuously updatable thermal-salinity database and this would be a test of data monitoring both on GTS for ICOSS data, and within the IODE System using the ROHCP form to track data. He was therefore very interested in the results of the Consultation which would be taking a close look at IODE data monitoring and in particular at the ROHCP form. He concluded by inviting participants to a demonstration of real time data monitoring activities now being performed as a daily routine by MEDE.

Mr. T. Sankey, Assistant Secretary, briefly welcomed participants on behalf of the IOC.

A list of participants is given in Annex II.

2. ARRANGEMENTS FOR THE SESSION

The Consultation appointed Prof. D. Kohake to be its Chairman.

The Consultation adopted the Agenda as given in Annex I.

Dr. Wilson outlined local arrangements and the IOC Assistant Secretary summarized the documents for the Consultation. The List of Documents is given as Annex III.

The IOC Assistant Secretary was requested to prepare the Summary Report.

3. GOALS OF IODE DATA MONITORING

The Chairman introduced document IOC/Ad hoc IODE Mon./5, "Goals of IODE Data Monitoring", and suggested that the Consultation should concentrate on a overall view of data monitoring arrangements in IODE and to avoid unnecessary technical detail. The Consultation agreed to this. It was pointed out that some evaluation of technical possibilities and alternatives is essential in forming a sound overall framework for data monitoring.

The Consultation agreed that the main goals of data monitoring are:

(i) To know what oceanographic data has been collected.

Meeting this goal supports IODE data centres in identifying data to be acquired and in referral of enquiries to data originators for data not yet within the IODE System.

(ii) To know what data is held in the IODE System.

In reality considerable amounts of data within the IODE System will remain at the NODC or RNODE level. Meeting this goal is essential to providing the user with access to all available IODE data relevant to his enquiry and also helps to track data flow to RNODEs and the WDCs.

A data file with 40% data duplication was quoted to illustrate why data tracking is now so important to IODE. This type of problem is expected to get worse as increasing amounts of data are transmitted in both real-time and delayed modes, unless the IODE System is suitably adapted.

The Consultation then discussed the role and interrelation of the various IODE data monitoring systems in meeting these goals.
Two systems, National Oceanographic Programmes and the ROSCOP System, track data collection activities and thus help to meet the first goal.

National Oceanographic Programmes (NOP) provide for the exchange of information on planned research cruises. They are valuable to scientific managers, especially in identifying opportunities for collaboration, and are also used by some Data Centres to monitor submission of ROSCOP forms. (See Agenda Item 4.1.1.)

The ROSCOP System provides for the collection of information on oceanographic observations made by the filling in of a form for each oceanographic research cruise or equivalent observational activity.

The Consultation emphasized the central importance of the ROSCOP System in tracking data inputs to the IODE System and in providing referral to oceanographic data not acquired by IODE. (See Agenda Item 4.1.2.)

In support of the second goal, there are three levels at which the task of describing data held within the data centres of the IODE System can be tackled, the Directory level, the Catalogue level and the Inventory level.

At the Directory level, only brief descriptions of organizations and the data sets they hold are included. The MEDI System exists at this level at which it is possible to aim for a comprehensive coverage and wide and timely dissemination of the information. Such a database informs users on the data centres that exist to serve them and the scope of their activities and data holdings.

The Consultation stressed that in its revised version, the MEDI System is an excellent way to provide an overview of the oceanographic data held by data centres. Such an overview is an essential tool for the management, promotion and use of the IODE System. (See Agenda Item 4.1.3.)

At the Catalogue level, data holdings are described at the level of the research cruise or its equivalent. Examples are the data catalogues issued by the WDCs on oceanography.

The Consultation was of the view that such catalogues, covering a particular data centre, ocean science project, or oceanographic data type should be produced when a definite user need for them existed which could not be met in other ways.

At the Inventory level, data holdings are described at the level of the individual data station (BT, CTD, current meter station, net haul etc.)

The Consultation noted that this level of inventory information is essential for the precise identification of data to meet an enquirer's requirements, e.g. to answer the questions - what phosphate measurements were made in the Gulf of Guinea in August or September from 1954 to 1958? A number of IODE Data Centres hold such inventory information for all or part of their data holdings.

The Consultation recommended that such inventories, which will be large and will need substantial effort to maintain, should remain the responsibility of each data centre.

4. FUTURE DATA MONITORING ARRANGEMENTS

4.1 DEVELOPMENT OF EXISTING IODE MECHANISMS

4.1.1 National Oceanographic Programmes

The Consultation noted that the information provided by NOPs is valuable to scientific managers, particularly in identifying opportunities for scientific collaboration through uptake of spare berths and by fostering co-ordination between cruises with related objectives. For this the timeliness of the information is vital and it is important to include the code for Type of Work. NOPs may also be useful in monitoring submission of ROSCOP forms.
The Consultation recommended that the Secretary IOC encourage the continued submission of
NOPs by Member States.

The Consultation noted that use of an electronic bulletin board as a rapid way of distributing
NOP lists is complementary to an online searchable ship schedule database and recommended that the
IOC Secretariat follow-up their preliminary investigation with the aim of establishing such a bulletin
board.

The Consultation suggested that preliminary cruise information where available could also be
distributed in this way, because early access to cruise plans is helpful to scientists even when these are
later changed.

The Consultation recommended that the IOC Secretariat continue to reproduce and circulate
NOPs in hard copy form.

The Consultation recognized the value of the ship schedule information now being mounted on
an experimental basis on the online SONYC System at the University of Delaware and expressed the
hope that this service could be continued.

4.1.2 ROSCOP System

The Consultation first discussed some general points concerning the ROSCOP System.

The Consultation recommended that the revised ROSCOP form should be primarily designed
for oceanic observations made using ships. Under special circumstances it may also be used for
data gathered from other platform types.

The Consultation was of the opinion that ROSCOP entries should be sought for ships of
opportunity making oceanographic observations even if the data were initially transmitted through IG OSS.
In such cases the scientist responsible for the observation programmes should be approached to provide
the ROSCOP information. The Consultation requested Prof. D. Kohlme to liaise with the IODE
Rapporteur for IG OSS, Mr. G.W. Withee, and the IOC Secretariat in order to promote the use of
ROSCOP forms for observations made under the IG OSS Ships of Opportunity programme.

The Consultation recognized that the usefulness of ROSCOP information is enhanced if it can
be made rapidly available to users and recommended that the target should be to obtain ROSCOP
information in the national data centres within one month of the end of the cruise and to make it
available internationally within two months.

Dr. M.T. Jones then introduced document IOC/GETADE-IV/12, "Revision of the ROSCOP
form". He noted that the form intended to provide a common facility that could be applied by all
Member States and within all oceanographic research programmes. In some cases supplemental
information might be needed to meet the particular requirements of a project or data centre. He
pointed out the need to make the form straightforward and quick to fill out using only information
which a Chief Scientist would have readily to hand at the end of a cruise. However the users of the
form should equally be guided to provide sufficient details for the form to fulfill its purpose.

Following discussion of the revised draft of the form included in the document, the Consultation
accepted the proposed form in general, but felt that certain details of the layout such as the order of
columns and the abbreviations used needed some adjustment.

The Consultation underlined the value of track charts in applying ROSCOP information in
national data centres and recommended that the instructions for the revised form should strongly
encourage their submission. A box on the form should be included to cross-reference the inclusion of
a track chart with the completed form. If track charts are not available then 10 degree squares (or
lines) should be listed in addition to being marked on the chart printed with the form.
The Consultation then discussed the data type code. One idea considered was to use only very general type of observation codes with all data type details being given in plain text form. The Consultation rejected this idea as experience suggested that many forms would be submitted without sufficient details. The Consultation also rejected the idea of continuing with the present codes with minimal additions as this would lead to inconsistencies. The Consultation believed that a totally radical revision of the code with full separation of parameters from instrumental techniques and space/time sampling characteristics, while theoretically desirable, would cause disruption to major ROSCOP users and undesirable delay in issuing the revised form.

The Consultation therefore recommended that revision of the code table should meet the following criteria:

(i) One to one mapping of all existing codes which would all be acceptable in ROSCOP databases.

(ii) Omission from the list on the ROSCOP form of any codes no longer recommended for use.

(iii) Addition of consistent codes to reflect the types of data now being collected by the oceanographic community. Particular care should be taken to include codes for all data types to be collected by the WOCE and IGOFS experiments.

The Consultation recommended that:

(i) the Chairman of the IODE Group of Experts on Technical Aspects of Data Exchange (GETADE), Dr. M.T. Jones, and the ICES Hydrographer, Dr. H.D. Dooley, be requested to prepare a revised draft for the ROSCOP form by November 1988;

(ii) comments on this draft be invited from IODE National Coordinators;

(iii) an updated version of this draft be submitted for approval (possibly at a session of the IODE Consultative Meeting) in May/June 1989;

(iv) the Secretary IJC make provision for the rapid publication and distribution of the form in English and for the preparation of other language versions.

The Consultation accepted with thanks an offer by Mr. R. Keasley to look into the possibility that Canada might undertake translation of the French version of the form.

The Consultation recognized that standards for the computerized storage of ROSCOP information, including the fields needed for tracking data acquisition and transfer, would be valuable, and referred this topic to the Group of Experts on TADE.

4.1.3 MEDI System

The IJC Assistant Secretary reported that implementation of the revised and greatly simplified MEDI System agreed at the IODE Officers Meeting, Wernley, UK, February 1988, is now in progress. So far MEDI entries have been received from eleven countries and two international organizations covering a total of fifteen institutions and approximately one hundred and twenty data files. Certain entries did not provide all the details specified in the instructions and follow-up action would be needed.

Mr. J. Churgin distributed copies of draft fly sheets describing sections of NODC's data holdings in a form similar to MEDI and noted that the same information about NODC holdings on the SONIC System of the University of Delaware available over the SPAN and Sciencesnet networks had received several enthusiastic comments from scientists. Recently the facility to access subsets of this information, based on keywords, had been added to SONIC, so that for example, data file descriptions containing references to current measurements could be selected for display.

The Consultation believed that the IJC Secretariat is the most appropriate location for the operation of MEDI and strongly recommended the continued development and operation of the revised MEDI System.
While recognizing that the MEDI System should describe all significant oceanographic data holdings available for international exchange, and that it is not restricted to the data centres of the IODE System, the Consultation recommended that a particular effort be made to obtain complete entries from all IODE System data centres, thus giving a comprehensive description of data held by the IODE System.

The Consultation noted that once the MEDI database has been compiled it can be disseminated through online services such as SONIC, or storage media, such as floppy disk (for small databases), and in hard copy form. These methods of dissemination serve different users, and the Consultation recommended that they should be operated in parallel.

Prof. D. Kohnak pointed out that for MEDI to be effective it was important that sufficient detail is given in the entries to highlight significant or unique data holdings. For example, the DOD temperature-salinity file contains several very long records from light vessels. Although long time series were not the only unique form of data, if they could be systematically identified in MEDI, this would provide an alternative to producing IOC Manual and Guides No. 2, which is a catalogue of long time series, and the list of N. Pacific Time Series compiled by Tabata. Prof. Kohnak agreed to send a copy of this latter list to the IOC Secretariat.

The Consultation therefore recommended that the IOC Secretariat make follow-up requests for MEDI entries with instructions that highlight the need to identify long time series and other unique data holdings and to provide entries at the level of detail specified.

4.1.4 Other IODE Directories, Catalogues and Inventories

The Director of WDC-A, Oceanography reported that a joint project to develop a unified automated catalogue of WDC data holdings was planned by WDCs A and B. On the US side, work was scheduled to start in October this year.

The Consultation recommended that the RNODC-Waves catalogue should be continued but that the Catalogue of Long Time Series should remain in abeyance until it can be seen whether the proposed adaptation of the MEDI System fulfilled this need.

The Consultation noted that other useful catalogues exist, for example at ICES.

4.2 ANALYSIS OF NEED FOR OTHER MECHANISMS

The Consultation discussed further the provision of detailed inventories at the data series level.

The Consultation was of the opinion that such an inventory of data holdings was an essential management and access tool for every IODE data centre. Recognizing that many data centres already maintain this information, the Consultation recommended that all IODE data centres be made aware of the need for good inventories of their holdings, in order to respond to enquiries. It was noted that the MEDI System includes descriptions of inventories and catalogues as well as of data holdings themselves. The Consultation requested the IOC Secretariat to follow up MEDI entries to stress the value of description of catalogues and inventories which cover data outside their own holdings, and to include details of their in-house inventory facilities in the description of their organization.

Mr. J. Churg described the work being done to include graphic presentation on SONIC for WOCE N. Pacific sections and Dr. J.R. Wilson briefly summarized the planned Canadian Ocean Information System (COIS).

The Consultation rejected as impractical the standardization of national inventory systems at the present time as their design is constrained by national needs. In order to facilitate outside use, the Consultation recommended that, where possible, National Oceanographic Data Centres provide simple external online interfaces that anyone can use without needing documentation or any prior knowledge of the system. The Consultation believed that the possibility of setting functional standards for such interfaces should be explored and recommended that the Fourth Session of GETADE examine this idea.
Apart from these interfaces, the Consultation was of the opinion that IODE Data Monitoring needs could best be met by strengthening existing systems and therefore concluded that there is no need for additional mechanisms.

5. ADOPTION OF THE SUMMARY REPORT

The Consultation adopted the text of the Summary Report, and instructed the Secretary IOC, in consultation with the Chairman, to prepare the final edited version, corrected as necessary.

6. CLOSURE

The Chairman closed the Consultation at 17.00 on Friday 8 July 1988 and thanked all participants for their constructive and friendly contribution to the success of the meeting. The IOC Assistant Secretary, on behalf of participants, thanked the Chairman for his leadership and thanked MEDS for providing excellent facilities for the meeting.
ANNEX I

AGENDA

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4. FUTURE DATA MONITORING ARRANGEMENTS
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      4.1.2 ROSCP System
      4.1.3 MEDI System
      4.1.4 Other IODE Directories, Catalogues and Inventories
   4.2 Analysis of need for other mechanisms
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ANNEX II

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# ANNEX III

## LIST OF DOCUMENTS

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This list is for reference only. No stocks of these documents are maintained.