

*Working Group on Marine Data Management*

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International Council for  
the Exploration of the Sea

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Hydrography Committee

REPORT OF THE  
WORKING GROUP ON MARINE DATA MANAGEMENT

LISBON, 9 - 12 MAY 1989

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### *1. Opening of the Meeting*

The meeting was opened at 0930 on 9 May 1989 at the Instituto Hidrográfico, Lisbon, hosted by the Portuguese Oceanographic Datacentre. Participants were welcomed by the chief of the Data Centre, Mr J. F. Gaspar.

Members of the Working Group present were: J. Blindheim, Norway (chairman), B. Bouwmeester, Netherlands, C. Brockmann, F.R.G., J.F. Gaspar, Portugal, D. Hamilton, USA, R. Leinebø, Norway, M. Ostrowski, Poland, L. Rickards, UK, B.J. Robinson, UK, R. Siwecki, Poland, J. Szaron, Sweden, and P. Wainwright, UK.

P: Alenius, Finland, represented J. Sarinen. K. Medler, UK, participated on request from Fisheries Laboratory, Lowestoft, and P. Geerdens on request from the IOC Secretariat. The Council was represented by its Hydrographer, H.D. Dooley. Apologies for absence were received from R. Branton, Canada, E.V. Collins, USA, E. Henderson, UK, and F. Webster, USA. Good wishes and regret for no representation from G.D.R. was received from the Chairman of the Hydrography Committee, Dr. H.J. Brosin.

### *2. Adoption of the Agenda.*

The agenda for the WG-meeting was adopted as a resolution of the Statutory Meeting in Bergen (C.Res. 1988/2:23). In a letter of 9 March 1989 to the ICES Hydrographer, World Data Center A proposed the inclusion of an agenda item on the Global Temperature - Salinity Pilot Project (A Proposed IGOSS - IODE Program). The group found it useful to include this item. It was also found practical to change the sequence of some agenda items so that the meeting followed the agenda as it is given in Annex 1.

### *3. Review Blueprint'88 progress and make additional development if needed.*

During the discussion of this item the ICES Hydrographer informed the group that Blueprint'86 was requested as a format for exchange of HELCOM biological data. It is now being used without problems by the ICES Secretariat. Several group members claimed that Blueprint'88 is a better and more versatile data exchange protocol, particularly because of its variable format possibilities. To this the ICES Hydrographer responded that ICES accepts data in any format, including Blueprint'88.

It further arose from the discussion that technically, Blueprint'88 does not need any changing, but some documentation, with examples of using the format, and some further testing is required. As for the little progress made in using Blueprint'88, the reason might be that initially there was no goal for it. If it were to be used for a project, this would stimulate interest. The MDM group could in such a case provide the necessary support.

For the testing, H. Dooley proposed that someone from the group should take 2 complex data sets and convert them into Blueprint'88. He suggested using the HELCOM biological phytoplankton data set and "sea water in sediments" data. B. Robinson offered to do this and H. Dooley would provide documentation for the formats that these data are held

in. This was agreed by the group.

Following from this, if the exercise proved successful, then Blueprint'88 could be adopted for the SKAGEX experiment data set. It would then be necessary to present a description of it for the scientific community involved, and the MDM group may propose to the Hydrography Committee that it should be published in one of the ICES publications. Also there could be an announcement in the ICES Newsletter. B.J. Robinson and P. Geerders will write a summary on this and present it for the Hydrography Committee.

The group also noted that a Working Group under the Joint Global Ocean Flux Study (JGOFS) have been developing a format for use with JGOFS data on PCs which is compatible with GF3. It is still at the pilot stage, but will be tested during the JGOFS Pilot Project.

*4. Initiate the development of an ICES algal bloom data base through a synthesis of requirements and the design of a system set-up.*

There had been a request to set up a data base on algal blooms, which originally came from members of the ICES WG on Harmful Effects of Algal Blooms on Mariculture and Marine Fisheries, which is to be disbanded. However, its successor, the Phytoplankton Ecology WG, may have an interest in this.

The first ideas for this data base were that it should be an information data base rather than a number data base. It should contain information about the type of algae, toxicity, when and where it occurred and reference to the relevant literature. The WG set up a sub group, chaired by D. Hamilton, to discuss this further.

The Sub Group reported that two needs were identified - one data base to hold data from phytoplankton monitoring projects, and the other to identify specific algal bloom events.

It was noted that phytoplankton monitoring is undertaken by Helsinki Commission (HELCOM) countries in the Baltic Sea, but not by Oslo/Paris Commission (OSPARCOM) countries in the North Sea. It was further noted that a complete monitoring data base would require that OSPARCOM countries also monitor their regions. The HELCOM phytoplankton format might then be recommended for use also by the OSPARCOM countries.

A data base on specific algal bloom events should include information on the date and location of the event, phytoplankton species involved, and information on related publications and data sets, if any. The draft schema shows that each bloom has one event record which points to one or more species records, one or more publications and one or more data sets, if they exist. Whoever builds and maintains the data base must decide on some event numbering scheme, and other details such as how to identify species.

These recommendations, along with the draft schema for the event data base, are to be relayed by the ICES Hydrographer to the appropriate ICES Working Group.

ALGAL BLOOM EVENT DATA BASE SCHEMA (DRAFT).

May 11, 1989.

ALGAL BLOOM EVENT TABLE  
 EVENT NO.  
 START DATE  
 STOP DATE  
 REGION NAME  
 REGION LAT,LON BOX  
 SPECIES1, SPECIES2, SPECIES3,---

SPECIES  
 SPECIES  
 BIOLOGICAL CHARACTERISTICS  
 ECOLOGICAL CHARACTERISTICS  
 HAZARD

PUBLICATIONS  
 EVENT NO.  
 AUTHOR  
 TITLE  
 JOURNAL/PUBLICATION (OR INSTITUTION)  
 DATE

DATA CONTACTS  
 EVENT NO.  
 DATA TYPE  
 CONTACT NAME  
 CONTACT ADDRESS

The data base could be distributed on diskette and possibly it could be maintained at ICES. The ICES Hydrographer agreed to inform the chairman of the Phytoplankton Ecology WG, who are to meet in July, of the developments.

*5. Assess and design for modelling purposes a data base of North Sea digital bathymetry.*

The need for a digital bathymetry data base from which bottom topography as input for various numerical models for scientific purposes could be derived from, is seen by the WG on MDM.

To serve all requests a great variety of grid types, grid spacings and depth relation to mean sea level must be supported by such a data base. To achieve these aims it is necessary

- to set up a digital bathymetry data base of tidal corrected depth data and
- to use a digital terrain model to deduce from the data base the gridded depth values to be used as later input data. These values must be available in equal distances relative to distinct coordinate systems.

The above procedure requires skills available at IHB Hydrographic Service. They have started to compile digital survey data and/or digitize charts with the high standards required. Progress is made within these institutions to create the necessary digital terrain algorithms to convert corrected survey data into digital gridded depth values. The WG on MDM therefore proposes that the Chairman contacts IHB in this

matter. While the approach listed above will serve the need of modelers in a medium time scale, a temporary solution is necessary to serve the immediate needs. With assistance from the group members, C. Brockmann will compile a list of digital bathymetry data sets available in the North Sea/Baltic Sea modellers community with all information required. This list will be available from the ICES Hydrographer on request.

*6. Assess the methods for encouraging an improved data flow to regional data centres such as Service Hydrographique and assist the Hydrographer in developing an ICES code of practice for Data Exchange and Data Security.*

The importance of this item was stressed at the last Statutory Meeting and the Hydrography Committee urged the WG on MDM to find means for an improved data flow to regional data centres, and in particular to ICES. The intention with this is not only to widen the exchange possibilities, but also to improve data security.

In a note to the Group, the ICES Hydrographer described his procedures for exchange and data security. He informed the group that there are now many signs of improved data submission to ICES at the institute level, and even at Data Centre level in some cases, although there are some black, black spots, specifically France, Norway and Ireland. In most of the Baltic countries the situation is better, and he thinks it is a result of the reputation Service Hydrographique got in handling the PEX data. Possibly in the same context, World Data Centre B has called on ICES to be a Centre for Baltic Data.

With regard to data security and exchange issues the following protocol is currently being used by ICES:

- If submitted data is to be used for statistical purposes, only by ICES, then the data are stored in a separate data base (called SECRET).
- All requests that require the extraction of data collected in the past 10 years, are referred back to the originating institute, if that institute has so requested. However, in most cases institutes are happy that use is being made of their data, and deliver recent (unpublished) data without restriction.
- All requests from fishery scientists are reacted to promptly, irrespective of the reputation of his institute. However the opportunity is taken to ask him to put pressure on data gathering colleagues.
- If the requester is a data supplier then he will be satisfied by return, or as soon as possible thereafter.
- If the requester is a data gatherer, but not a data supplier then the request will not be satisfied in any circumstance until he can be removed from the ICES "blacklist".
- If the requester is not specifically a data gatherer, but is in a position to put pressure on those who are, then the request is accorded low priority, resulting in a delay of ca 1 year.
- In all cases third parties are requested to state the intended



use before data are submitted from ICES.

In the first place this protocol is introduced to improve the data flow to ICES, but to some extent it is also forced on the ICES Hydrographer by lack of resources. The WG on MDM supports the Hydrographer on this code of practice, which will be amended as deemed necessary.

In order that the Group could obtain a clearer view of the data flow to ICES, persons present in the Group with responsibility for submitting data to ICES summarised the current status. The conclusion of this was that it is difficult to get a clear view since the practice differs in various countries. In some countries, even in some with national data centres, the submission of data to ICES takes place on a personal level. Some countries submit data only from purely oceanographic cruises while environmental data from fishery/biological cruises are not exchanged. In general there is a backlog in the great majority of the member states, mainly because the screening which is necessary before data can be exchanged, for various reasons is given low priority.

*7. Consider the design of a booklet to advertise ICES Data Services.*

In an effort to improve the flow of data to ICES from Member States, the Hydrography Committee asked the WG on MDM to consider the design of a booklet to advertise ICES Data Services.

In the Group there was first a general discussion on the distribution of the brochure and what type to be recommended. The Group agreed that the most effective form of advertising would be to produce a brochure of the folder type, explaining what data services and information are available. It should advertise a service for environmental data rather than be restricted to the hydrographic data which traditionally have been handled by Service Hydrographique, and it was proposed that advertising an "ICES Environmental Data Service" is now more meaningful than to use Service Hydrographique.

It should be stressed why and how ICES and scientists should cooperate to provide a better data set, and thus a better service for mutual benefit.

The brochure should be distributed to scientists and stocks maintained at national data centres, or institutes where no national centre exists.

A small group was set up to discuss this topic further and a first draft of the brochure was produced on one of the Apple Macintosh machines at the Portuguese Data Centre. This was then discussed and amended by the whole group. It was agreed that the final wording would be agreed during the inter-sessional period by a small group comprising H. Dooley, J. Gaspar, P. Geerders and L. Rickards. A copy of the draft brochure is attached to this report as (Annex 2). In the final wording it should be made clear that the advertised service shall comprise all environmental data while fisheries data are outside its scope.

8. *Identify relevant ICES activities in relation to proposals for a European network for marine data and information.*

At the beginning of this session, P. Geerders presented a brief overview of activities and developments within IOC/IODE and CEC with relevance to this item. Especially he noted the trend for regionalisation within IOC and the successful EURO-MARES meeting in the Netherlands, held November 1988. Following this, there was some discussion relating to proposals for a European network for marine data and information. Within Europe various networks are operational (i.e. EARN, JANET) and the EODAN feasibility study has been set up to investigate what networks and protocols exist, in general to look at the existing infrastructure at a technical level. A report is in preparation which will include an inventory of what is available and what can be done technically. Members of the Group expressed their interest in these developments and wished to ensure that ICES becomes fully integrated into any scientific network for marine data and information, but insisted that care should be taken to protect ICES from political or commercial constraints. ICES activities deemed relevant include the ROSEARCH/ROSLIN package, the current meter inventory and possibly the algal bloom data base. Under appropriate control, the ICES environmental data bank may also contribute usefully. It was also noted that OMNET may set up a European operation and that they were also looking into the possibility of transferring binary data files across networks, as well as a spectrum of other services requested by the marine user community.

9. *Review the ways PCs are being used in primary data processing and investigate the feasibility of exchange of software.*

The chairman introduced the topic and suggested that each member describe how PCs (and other micro computers) are used at their centres/institutes and what software is in use. In this way the group could build up an overall picture and identify areas of overlap and common interest. Some cooperation between national centres, ICES and IOC in this area might in some cases be important both in terms of efficiency and to prevent the "re-invention of the wheel" at each institute.

The statements given by the Group members indicated that PCs are in widespread use. The most frequent application is probably for logging of CTD-data since software for this purpose now is supplied by the CTD manufacturers. The wide variety of other applications is in most cases based on some type of commercially available software.

The Group was informed by P. Geerders that IOC/IODE is very interested in this. UNESCO - Division of Marine Sciences and IOC/IODE are considering to develop a series of PC software packages, if possible based upon existing packages, as a service to marine science worldwide. A main characteristic of these packages would be a common user interface. Ideas include plotting stations from DBASE III onto maps, data editing software and plotting routines. This is currently still in the planning stage. The members of the Group agreed to provide written details of the software in use at their national centres/institutes to D. Hamilton so that he can compile an inventory.

Some products were brought to the meeting for consideration:

- The ICES Hydrographer has installed the ICES ROSCOP Data Base on a PC and produced software (ROSEARCH) for searching. He also demonstrated software (ROGIN) for input of entries. This software was operational on a PC throughout the meeting and the group members were invited to try it out.
- The ICES current meter inventory retrieval software was demonstrated by L. Rickards, BODC, who has compiled the inventory. Comments were invited from the group members for improvements and additions to the package which will soon be distributed to contributors.
- The latest version of the new ROSCOP form, known as Oceanographic Cruise Summary Report, was available to group members during the meeting. Copies were distributed with sample cruise information, and the group was requested to complete the forms to check that the instructions, included with the form, were clear.
- D. Hamilton reported to the group that a Compact Disk (CD-ROM) containing 1.3 million temperature and salinity profiles from the Pacific Ocean, including XBTs and CTDs, with variances of temperature and salinity. PC software has been written to extract files and to plot profiles. 200 copies of the CD-ROM has been produced. A similar project will be carried out for the Atlantic Ocean.

#### 10. Global Temperature - Salinity Pilot Project.

D. Hamilton introduced this item which is a proposed IGOS-IODE program (Annex 3) and is the result of a growing demand for oceanographic data for climate studies, in particular the World Climate Research Program. A large number of temperature and salinity data will be compiled into a data base. Copies of portions of the data base and selected analyses will be distributed to interested users. Initially the USA, Canada and Australia are participating, but it is hoped that other centres will join this effort.

#### 11. Any other business

- (i) *Baltic Bibliographic data base*: J. Szaron drew the attention of the Group to a Baltic Bibliographic data base (BALTIC) which has been set up in Sweden by the National Environmental Protection Board, on behalf of the Helsinki Commission. Originally it contained entries for pollution, but this has now been expanded to cover other environmental aspects such as hydrography, flora, fauna, fisheries, etc. The data base includes 2700 entries from journals, books, conference proceedings, articles, etc. All Baltic countries have been involved in the project.
- (ii) *Report from WDC-A*: This was presented by D. Hamilton and included the following items:
  - 1) International exchange of data which was proceeding well.
  - 2) An inventory for long time series in the Pacific has been

- prepared. A total of 27 time series data sets have been identified. In the North Atlantic a total of 53 standard sections have been identified and preparation of a final manuscript is near completion. Work proceeds on the third Time Series Data Inventory which includes the North, Baltic and Mediterranean Seas of the North Atlantic.
- 3) For support of the Global Change Program, researchers require comprehensive data sets, including data types which have not been dealt with by WDC-A previously, for example sea level data, data from drifting buoys etc.
- (iii) *Data security*: There was some discussion on security of the data archived at ICES (i.e. in terms of the physical deterioration of the tapes). Some concern was expressed that some (archival quality) magnetic tapes had not been touched for several years. Although 2 copies of the tapes were stored in fireproof cupboards at the ICES Secretariat, they were not refreshed at regular intervals. Thus the WG stressed the need that ICES be provided with the necessary resources to enable this valuable data archive to be adequately backed up.
- (iv) *Report from IOC/IODE*: This was presented by P. Geerders. He referred in his presentation to the IODE Consultative Meeting of March 1989. Several activities were mentioned: The Global T/S project, a workshop on remotely sensed SST's, the new set-up of MEDI, ROSCOP and the International Marine Scientists Directory, training in marine data and information management and remote sensing of the oceans. He drew the attention of the Group to the IODE tape/slide show and the IODE Brochure. Finally, he announced that IODE XIII will be held in New York, second half of January 1990, and briefly presented the provisional agenda.
- (v) *Time and place of next years meeting*: Following the kind invitation of the Polish members of the Group, the WG expressed the wish that its next meeting should be held at the Institute of Oceanology, Polish Academy of Sciences, in Sopot, Poland between the 8th and 11th May 1990.
- (vi) *Agenda for the next meeting*: The following items were suggested for inclusion in next years agenda
1. New storage devices.
  2. Data security in relation to new storage techniques.
  3. European networks.
  4. Algal bloom data base.
  5. Inventory of available software.
  6. Management of SeaSoar and ADCP data.
  7. Report from HELCOM.
  8. Data centre reports.
  9. North Sea and Baltic Sea Bathymetry.
  10. Blueprint'88 - conversion of data from other formats to Blueprint'88.
  11. New computer configuration for MEDIS.

In closing the meeting the Chairman thanked the participants for their active and valuable contributions, and expressed his appreciation, and that of the Group, to J. Gaspar and his colleagues for an efficiently arranged meeting and excellent hospitality.

## ANNEX 1.

## ICES WORKING GROUP ON MARINE DATA MANAGEMENT

9-12 May 1989

## AGENDA

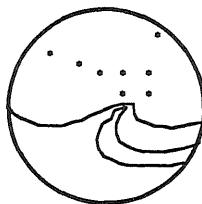
- 1) Opening of the meeting.
- 2) Adoption of the Agenda.
- 3) Review Blueprint'88 progress and make additional developments if needed.
- 4) Initiate the development of an ICES algal bloom data base through a synthesis of requirements and the design of a system set-up.
- 5) Assess and design for modelling purposes a data base of North Sea digital bathymetry.
- 6) Assess the methods for encouraging an improved data flow to regional data centres such as Service Hydrographique and assist the Hydrographer in developing an ICES code of practice for Data Exchange and Data Security.
- 7) Consider the design of a booklet to advertise ICES Data Services.
- 8) Identify relevant ICES activities in relation to proposals for a European network for marine data and information.
- 9) Review the ways PCs are being used in primary data processing and investigate the feasibility of exchange of software.
- 10) Global Temperature - Salinity Pilot Project.
- 11) Any other business.

**YOU CAN HELP US TO  
ASSIST YOU BY . . .**

- Making your data available as soon as possible after collection.
- Providing information to ICES on your research cruises.
- Adhering to recognised international standards and guidelines for collection, management and exchange of your data.
- Participating in ICES intercalibration exercises.

Data flow diagram

background within  
IODE system



For further information contact:

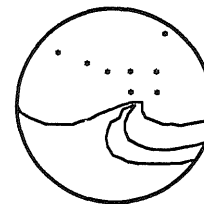
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**Marine Environmental  
Data and Information  
Services**

from

ICES

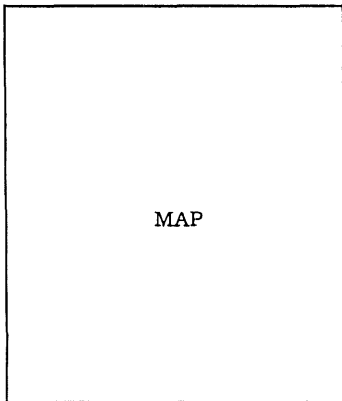


*International Council for the  
Exploration of the Sea*

## WHO ARE WE?

- ICES is an intergovernmental organisation established at the start of the 20th century. Amongst other things, it seeks to promote the exchange of oceanographic data of relevance to Fisheries Research.

Its 18 member countries border the North Atlantic Ocean and its adjacent seas.



## WE HAVE . . .

- A data bank of approximately half a million oceanographic stations.

Data on:

- temperature
- salinity
- nutrients
- oxygen
- contaminants

- A comprehensive library of data reports.

- A computerized information system on oceanographic cruise activities.

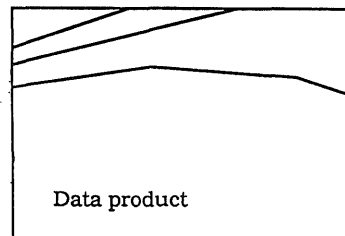
- Descriptions of formats and methods of exchange of marine data and information.

## WHAT CAN WE DO FOR YOU ?

- Provide quality controlled data from 1902 to the present.

- Provide information on oceanographic cruises.

- Provide support and advice for marine research projects, including data products and services.



## ANNEX 3.

GLOBAL TEMPERATURE-SALINITY PILOT PROJECT  
(A PROPOSED IGOSS-IODE PROGRAM)

## GOALS

1. To create a timely and complete data and information base of ocean temperature and salinity data of known quality in support of the World Climate Research Program and of national requirements.
2. To improve the performance of the IODE and IGOSS data exchange systems by actively seeking data sources, exercising data inventory, data management, and data exchange mechanisms, and recommending changes where necessary to meet requirements.
3. To disseminate, through a widely distributed monitoring report produced on a regular basis, information on the performance of the IODE and IGOSS systems.
4. To improve the state of historical data bases of oceanographic temperature and salinity data by developing and applying improved quality control systems. Improve the completeness of these historical data bases by digitizing historical data presently in analog or manuscript form and by including digital data not presently in the World Data Centers.
5. To distribute copies of portions of the data base and selected analyses to interested users and researchers.

## PARTICIPANTS

Initially, the national oceanographic data centers and research scientists from Australia, Canada, and the U.S. have been involved in the planning process. It is hoped that other centers will join this effort.

## PROCEDURES

Near real-time data will be acquired daily through IGOSS by MEDS, quality controlled, and sent to the U.S. NODC about one week later (see Figure 1). NODC will add these data to the GTSP data base, checking for duplicate records.



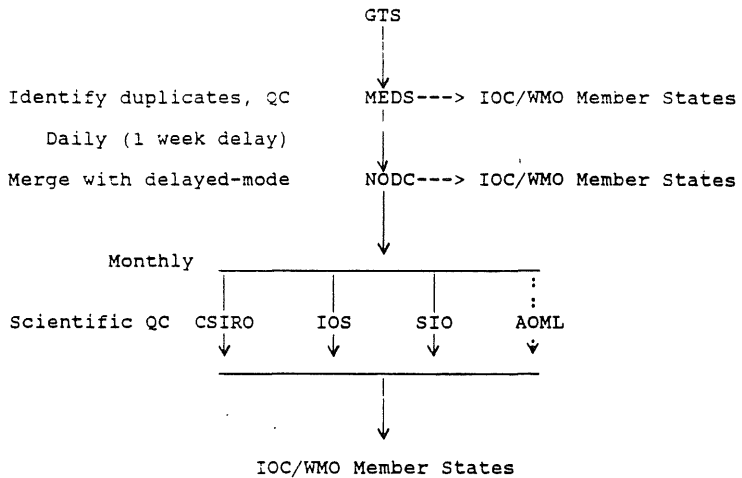


Figure 1. Schematic Diagram of Near-real-time Data Flow

Delayed mode data, including historical data not presently in the World Data Centers, will be acquired by participating centers, digitized if necessary, and sent through normal IODE exchange to the U.S. NODC (see Figure 2). These data will be quality controlled and added to the GTSPP data base, displacing any duplicate near real-time records that exist.

Each month, NODC will distribute subsets of the data base to regional analysis centers (e.g. Scripps Institution of Oceanography, Canada's Institute of Ocean Sciences, etc.) where the data will receive scientific analysis and quality control. Periodically, analysis centers will return copies of their scientifically quality controlled data to NODC, where they will be incorporated into the GTSPP data base. These data will again displace previous versions as the "best presently available" version of the data.

#### PRODUCTS

Monthly products, such as data distribution plots, analyses of sea surface temperature/salinity anomalies, mixed layer depth charts, and so forth, will be distributed by analysis centers for their region of interest. In addition, information on performance of the ocean data acquisition and exchange system will be available.

Annual products from each participating center will report on performance of the GTSPP, as well as show data distributions and regional and global scientific analyses and summary statistics.

The GTSPP data base of course is the primary product of this project. Distribution of portions of the data base on Compact Disk (CD-ROM) optical media is being considered.

#### SCHEDULE

July 1990 is the planned date on which the complete system is to be operating.

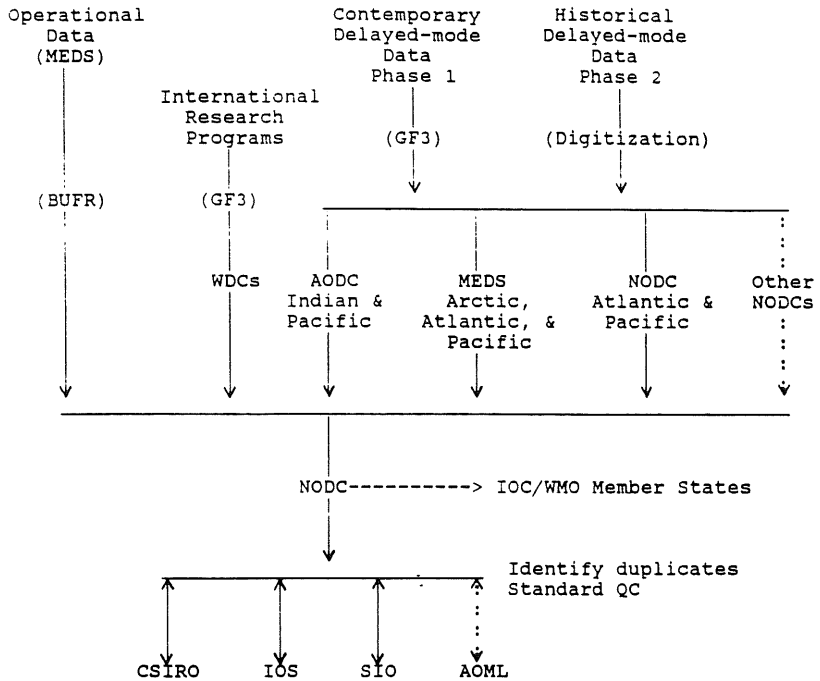


Figure 2. Schematic Diagram of Delayed-mode Data Flow

