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INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

JOINT IOC-WMO STEERING GROUP ON GLOBAL TEMPERATURE-SALINITY PILOT PROJECT

Second Session, Obninsk (URSS),
15-19 July 1991

SUMMARY REPORT

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GENERAL SUMMARY OF THE WORK OF THE MEETING

1. OPENING OF THE MEETING

The meeting was opened by the Chairman of the IOC/WMO Steering Group on the Global Temperature Salinity Pilot Project (GTSPP) Dr.R.Wilson on 15 July 1991 in Obninsk, Kaluga Region, USSR. He welcomed the participants and outlined the objectives of the meeting by explaining that the meeting would review the progress made by GTSPP from September 1990 and then would focus attention on technical issues and future activities. He then called upon Dr. R. Reitenbach, Director of the Research Institute for Hydrometeorological Information – WDC (RIHMI–WDC) to address the meeting.

Dr. Reitenbach welcomed the participants and emphasized that it was a great privilege for him to host this meeting under the auspices of his Institute due to the importance of the programme and to the amount of attention being devoted in the USSR to international oceanographic data collection and exchange. He stressed the growing interest in investigation of the world ocean and that the successful implementation of GTSPP will give scientists and data managers an important instrument to achieve the objectives of the World Climate Programme and those of the Climate Change Programme. In closing he wished all participants a pleasant stay in Obninsk.

On behalf of the Secretary of IOC and the Director–General of WMO, Dr. I. Oliounine and Mr. M. Krasnoperov also welcomed participants and expressed thanks to local organizers for the facilities being provided. They supported the remarks made by previous speakers on the importance of the project and referred to decisions of the IOC Assembly and the WMO Congress in support of the GTSPP.

It was pointed out that recommendations which will be formulated by this meeting will be of a great importance not only for IODE and IGOSS but also for such scientific programmes as TOGA and WOCE.

The meeting was then addressed by the local organizer, Dr. Yuri Sychev, Director of the National Oceanographic Data Centre of the USSR, who explained the local arrangements.

The Agenda was adopted as given in Annex I. The meeting thanked Mr. D. Hamilton (USA) for volunteering to serve as Rapporteur for the Session. The list of Participants is given in Annex II.

2. PROGRESS REPORTS ON IMPLEMENTING GTSPP

Under this Agenda item, Canada, France, Germany, ICES, Japan, the USA, and the USSR reported on the progress made in implementing the GTSPP. Written versions of the presentations appear in Annex III.

It was noted by the meeting that all Member States of IOC and WMO who participate in the IGOSS or IODE programmes are participants and contributors to the GTSPP. Member States present at the meeting and reporting under this Agenda item have taken additional responsibilities to assist with the implementation of the GTSPP.

3. REVIEW OF OPERATIONAL GTSPP ELEMENTS

The elements of GTSPP that have been implemented during the past year were reviewed. This included the real time data flow, the real time formats, the content of the continuously managed database (CMD), the real time quality control (QC), and the monitoring of the real time data flow.

3.1 Real Time Data Flow

Inputs to the present real time data flow of the GTSPP include the BATHY and TESAC data sets received at the US National Weather Service (NWS), the US Fleet Numerical Oceanography Center (FNOC), and the BATHY and TESAC data received from the Marine Environmental Data Service (MEDS) GTS line.

Data from the three sources are used in the data flow because it was suspected that no single centre was succeeding in capturing the entire global data set. This was proven by comparing the data sets from the three sources. In fact initial comparisons of some data sets from Australia, Japan, the USSR, France, and Germany indicate that additional inputs are necessary to capture an acceptable percentage of the global BATHY and TESAC data for the GTSPP archives. To provide these additional inputs, France and Germany have agreed to supply monthly BATHY and TESAC data sets on floppy disks or magnetic tape. Japan agreed to supply copies of their January and February 1991 BATHY and TESAC data on an experimental basis to determine whether it would be advisable or possible to continue such an arrangement on a regular basis. MEDS and the USSR NODC will seek immediately to implement communication links using INTERNET for exchange of BATHY and TESAC data in near real time between the two centres.

Message routing information was provided by the representative of France who exchanged E-mail from USSR with colleagues in Brest, France during the meeting. MEDS will use the routing information to attempt to send some data to the USSR. Once a transfer from MEDS to Obninsk is successful, a transfer in the other direction will be attempted.

The meeting noted the importance of the TRACKOB data for additional sea surface temperature and salinity data and expressed a requirement that these data be included in the GTSPP data flow. MEDS and the US NODC agreed to develop and implement an appropriate mechanism.

The meeting agreed that it was appropriate to refer the data flow problems that have been identified to the IGOSS Operations Coordinator in Paris and to the meeting of IGOSS-VI to be held in Geneva 18-27 November 1991. MEDS agreed to prepare a report summarizing the problems that have been identified and to forward the report to the IGOSS Operations Coordinator and the Chairman of the Joint IOC/WMO Working Committee for IGOSS for consideration at IGOSS-VI.

3.2 Review of Real Time Formats

GTSPP is using three real time formats for temperature and salinity data. The formats are the GTS code forms for BATHY, TESAC and TRACKOB data; the BUFR format for receipt of data from the US NWS, and the US FNOC; and the GTSPP format for temperature and salinity data, QC flags and meta data. This third format is the one now implemented for exchange of data, data quality flags, and meta data between GTSPP centres and the WOCE UOT Scientific QC centres.

The meeting decided that the BATHY, TESAC, and TRACKOB code forms and BUFR format as presently implemented were performing their functions satisfactorily and that there was no need to alter their present usage in the GTSPP. The meeting reviewed the VAX binary implementation of the GTSPP format for temperature and salinity data as implemented for the exchange between GTSPP and WOCE QC centres. Annex IV contains a description of this format. It was decided that the content of this format was sufficient to carry the data, flags and meta data and

had proved sufficiently flexible to accommodate unanticipated fields. However it was noted that the format may have to be expanded in one area. The field that identifies the source of the data is only two characters long. This may have to be expanded to six characters to also include country and institute codes.

The US NODC identified a need to specify the core information which must be retained in this format by centres who receive the data and then transmit it to other GTSPP centres. This core information would comprise all the fields in the present format, as presented in Annex IV, except MKEY, IUMSGNO, STREAM_SOURCE, and UFLAG. These fields are only used in the MEDS and NODC processing systems and are not relevant to the data, flags, or meta data. If the core information is identified, other processing centres can add fields as necessary for their processing systems and then remove them before passing the data to another centre. MEDS agreed to update the format description to include this information.

The meeting agreed that GF3 and ASCII implementations of the format should be developed. Also an investigation of the possibility of a BUFR version should be made for discussion at the next Steering Group Meeting. MEDS and US NODC agreed to prepare the ASCII version to be implemented for providing data to TOGA modeling centres in the USA. The GF3 implementation is discussed under Agenda item 5.4 . The meeting decided that the contents of the ASCII format should correspond to the contents of the proposed GF3 implementation of the format. The proposed GF3 implementation is to contain the core information defined in the previous paragraph.

3.3 Content of the Continuously Managed Database

The CMD has grown to over 16,700 observations through the end of May 1991. Information about the format of data in the CMD, about update procedures, and about existing and planned client services from the CMD was presented to the group.

In response to a proposal for a single field to be used as a unique station identifier, it was agreed that MEDS and the US NODC will develop a method to identify each station. This will be used for delayed mode as well as near real time stations. Results will be passed to USSR NODC for inclusion in the GF3 Standard Subset for GTSPP Data and will be reported to the next meeting of the Steering Group.

During discussion of the CMD it was also noted that information about consistent errors in the incoming data should be passed on to appropriate centres or programmes so that procedures or techniques can be corrected. As centres become aware of errors that occur repeatedly, these errors should be reported to the IGOSS Operations Coordinator and to other GTSPP centres that are responsible for processing and distributing the data. It was recommended that the IGOSS Operations Coordinator should be responsible for referring information on errors to Ship of Opportunity (SOOP) managers and to the IGOSS Group of Experts on OTA. The meeting also discussed the content of the CMD and agreed that the CMD must, as a minimum, hold the core data, flags, meta data, and information as discussed in section 3.2 .

3.4. Quality Control of Real Time Data

The results of review of the experiences in MEDS in applying the QC tests described in the QC Manual was presented to the meeting. It was encouraging that approximately 75 % to 80 % of the IGOSS reports pass QC tests without data being flagged or changed. The tests that fail most

frequently are the climatology test (12 %) and the constant profile test (7 %). Other tests fail for of the order of 1 % to 2 % of the reports.

It was decided that the reason for such frequent failures of the climatology test should be investigated by France, Canada, and the USA. The first step is to plot on maps the locations where climatology failures occur. Both France and Canada will do this and provide the maps to Dr. Levitus for interpretation and advice on what should be done in regard to GTSPP procedures or on further investigations needed to understand the cause of the problem.

In regard to the failure of the constant profile test a representative sample of problem reports will be prepared by MEDS to be submitted to the XBT Bulletin, the IGOSS Operations Coordinator, and the next IGOSS Ship of Opportunity meeting for comment and advice.

As an additional quality control item it was agreed to investigate the practicality of adding a TS diagram test to the suite of tests now included in the GTSPP manual. Canada agreed to investigate whether this test could be implemented from the TS characteristics available in the Emery & Dewar climatology. A participant of the meeting noted that a TS atlas is available in France that might be of use for this investigation.

3.5. Data Flow Monitoring

The meeting reviewed the results of data flow monitoring carried out during the past few months and endorsed the continuation of this monitoring to include such additional data sets that may be supplied by France, Germany, Japan, and the USSR as described in section 3.1.

The meeting also discussed the task proposed by the IGOSS Group of Experts on OTA to review the counting methods used for reporting on IGOSS data flow. It was agreed that this monitoring task was complimentary to the GTSPP data flow monitoring and Prof. Kohnke was encouraged to proceed.

4. WOCE UOT Data Management

The Steering Group reviewed the performance of data flow and noted that GTSPP is supplying quality controlled data to WOCE UOT centres by the tenth of each month, as called for in the data management plan for the WOCE Upper Ocean Thermal Programme. It is expected that WOCE centres will soon begin returning data with quality flags from their scientific analyses.

Specific GTSPP–WOCE UOT data management issues will be discussed more fully at the WOCE UOT DAC meeting to be held in Washington DC, in early October 1991. Additional recommendations to the GTSPP can be expected from that meeting.

5. IDENTIFICATION AND PLANNING OF FUTURE GTSPP SUB–PROJECTS

5.1 Historical Aspects of the GTSPP and the Time Series Project

(i) Statement of a Relationship Between Real–time and Historical Data Acquisition Activities of GTSPP.

In addition to the requirements for historical data for climate research and global change programmes, and in order to perform quality control of real–time oceanographic data acquired

as part of the GTSPP, statistical descriptions of parameters are required. The only way to produce the relevant statistics is through the use of historical data. Because of the paucity of data in many parts of the world ocean the acquisition and digital archiving of all historical oceanographic data is considered to be an activity of great importance. This activity includes the digitization of data in manuscript and/or analog form as well as the acquisition of data in digital form not presently available to the international scientific community.

(ii) Planned Activities of the Historical Data Component of GTSPP for the Next Intersessional Period

a) To implement an enhanced exchange of digitized data between participating GTSPP data centres:

NODC/WDC–A, USA
NODC/WDC–B, USSR
ICES , Denmark
JODC , Japan
MEDS , Canada

and other interested data centres and organizations.

The meeting noted the kind offer of China expressed at the last session of the IOC Assembly (7–21 March 1991, Paris) to provide data for GTSPP and expressed a need to include WDC–D, Oceanography in the enhanced exchange of digitized data between the centres. The meeting requested the IOC Secretariat and the ICSU Panel on WDCs to bring this invitation to the attention of the Director, WDC–D, Oceanography.

b) To begin digitization of historical data that exist in manuscript and/or analog form. As the data become available in digital form they will be provided to the GTSPP through the WDCs.

• JODC will continue digitization of data collected by fishing vessels including hydrographic stations and digital BT profiles with surface salinities, in order to make it available internationally.

• NODC, USA will digitize at least 30,000 MBT profiles from the Pacific and Indian Oceans, 1000 C/STD profiles from the Arctic Ocean, and approximately 300 C/STD and/or Nansen casts from the Southern and Pacific Oceans.

• ICES will digitize historical hydrographic stations beginning with 5,000 profiles that comprise the Atlantic Slope Experiment conducted during the 1920–1939 period.

• NODC/WDC–B, USSR will begin digitizing MBT and hydrographic data.

c) The following data centres ICES, NODC USSR, NODC USA, and MEDS will collaborate by correspondence and meetings on the following topics:

• Determination of time–series that already exist in processed form. Preparation of a list describing these series.

• Preparation of a list describing the time series for regular exchange under IODE.

• Distribution of both lists to the international research community soliciting their opinion on what are the most important stations for future processing by the GTSPP.

d) Establishment of a consultative group consisting of a member from US NODC, USSR NODC, ICES, and MEDS to coordinate software development for processing historical data to be used in preparing the GTSPP historical data file.

e) Coordination of processing techniques for the preparation of the GTSPP historical data file such as additional quality control procedures. These techniques will be applied to existing archived data bases at each data centre. Joint publication of results in the refereed scientific literature is expected.

The meeting noted with appreciation that the US is planning to have the next workshop on data archaeology in the spring of 1992.

(iii) The following recommendations are made to IOC and WMO to assist GTSPP in achieving its goals:

a) The forty year time series at Ocean Weather Station Charlie is one of the most important sources of information on temporal variability in the world ocean. It is recognized that Charlie is unlikely to be reinstated as a long term fixed station. The IOC should encourage member states to make observations at the location of Charlie and submit the data to the WDCs as part of national and international programmes whenever possible to augment this valuable time series.

b) The IOC should recommend that automatic data processing equipment for data centres participating in GTSPP should be upgraded and standardized to facilitate the rapid exchange of large data bases. For example the common use of magneto-optical read/write disk units is desirable.

5.2 Development of GTSPP Products and Services

The meeting discussed the format and content of the GTSPP Monthly Report and reached the following decisions. The report cover should be made more attractive by preparing it in colour, adding the IOC and WMO logos and preparing a better layout. MEDS agreed to produce a design in consultation with the IOC Secretariat.

The content of the report is acceptable for reporting on the real time aspects of GTSPP but should have sections added to demonstrate progress as the historical data flows begin to be achieved. Also MEDS will contact other GTSPP participants each month to broaden the information on the milestones reached in the previous month. Annex VI identifies the agencies responsible for mailing the Monthly Report to the various classes of user on the distribution list.

The article for the August Monthly Report will be on the plan for implementing the historical and time series aspects of the GTSPP.

The meeting discussed the plans for an IGOSS Products Bulletin containing a variety of products, some of which overlap with those that GTSPP has planned to issue as described in the Project Plan. It was decided that it would be appropriate for these GTSPP products to be issued through the IGOSS Products Bulletin so as to avoid duplication in two monthly bulletins. Therefore, if WOCE agrees, the products that are produced as part of the scientific quality control procedures at the GTSPP-WOCE UOT DAC centres will be offered to the IGOSS bulletin for distribution. GTSPP would expect that the bulletin would acknowledge the source of the products and the source of the data. The Chairman was requested to investigate with WOCE, and if WOCE agrees, to prepare a letter to the editorial group for the IGOSS Products

Bulletin with this request. In the future GTSPP may wish to prepare and distribute products other than those distributed by IGOSS.

However, the meeting re-iterated that the initial concentration must be on developing the databases of high quality data from which to prepare products and that the fundamental goal of GTSPP is the development of complete global databases of temperature and salinity data that have been quality controlled to the GTSPP standard. The generation of additional products at an early date must not divert attention from this most important first task.

5.3 CD-ROM / OCEAN-PC in the GTSPP

The meeting reviewed progress on the OCEAN-PC project and the role of OCEAN-PC in GTSPP.

It was pointed out that restricting this project to IBM DOS based PCs would not be wise as other systems including MACs and UNIX operating systems have a very significant market share.

It was also noted that a project such as OCEAN-PC must also be based on an electronic publication policy in order to achieve full potential in delivering data and information to GTSPP and IODE/IGOSS clients.

It became clear that a careful analysis of the role of OCEAN-PC in GTSPP should be prepared. Canada agreed to develop such an analysis for the next GTSPP Steering Committee meeting by evaluating GTSPP needs and coordinating with Dr.McLain who is leading the OCEAN-PC project for IOC needs.

Martine Michou, the representative of the TOGA office presented the results of the evaluation of the CD-ROM project to the meeting. She pointed out that it is necessary to study the needs of the intended users of the ROM, and to structure the file access and manipulate the data in several ways to serve these needs. Indeed much careful preparation and testing is required before the CD-ROM is produced if it is to be a successful project.

The US NODC presented two proposals for GTSPP CD-ROM products. The first proposal was for a CD-ROM containing temperature and salinity profiles for the world ocean. The second proposal was for a CD-ROM that would be devoted to time series data.

The following work will be started during the next year by MEDS and US NODC to prepare the global temperature salinity data set to be distributed on CD-ROMs. First, quality control procedures will be streamlined in preparation for checking this voluminous file. A plan will be developed in cooperation with the historical data project of GTSPP to combine, quality control, and eliminate duplicates to generate an appropriate global data set for the first GTSPP CD-ROM. The meeting agreed that the first CD-ROM will contain profile data, and the second will contain time series data.

At the same time, users of the US NODC CD-ROM will be questioned to determine requirements for data quality flags and other needs.

A detailed plan for the content of the first two GTSPP CD-ROMs will be presented to the next meeting of the Steering Group by MEDS and US NODC.

5.4. GF3 Subset for GTSPP

The Steering Group considered the GF3 subset for GTSPP data exchange proposed by USSR. The Steering Group accepted the subset as the draft GF3 format for GTSPP data exchange. The

Steering Group suggested that USSR NODC should finalize preparation of the GF3 subset and accepted the following recommendations for the intersessional period:

(i) to make the composition of the GF3 subset equivalent to the composition of the core information of the GTSPP temperature and salinity format;

(ii) to investigate the inclusion of a unique station identifier to be used for data management in the CMD;

(iii) to distribute the updated version of the GF3 subset to members of the GE–TADE, of the IOC Committee on IODE and the Steering Group members for consideration;

(iv) to test the subset by having the USA NODC and USSR NODC prepare, exchange and successfully read a test file;

(v) after comments and recommendations of GE–TADE and results of the test subset are incorporated, the subset should be submitted for final approval to the GE–TADE.

6. GTSPP Implementation Plan

The Chairman referred the Meeting to the GTSPP Implementation Plan presented in Annex D of the Summary Report of the First Session of the IOC/WMO Steering Group (17–19 September 1990, Brest, France). The Meeting was informed that the Implementation Plan was approved by the IOC Assembly and unanimously agreed on the need to modify the Plan in order to better reflect progress achieved in the implementation of the project.

The revised version of the Implementation Plan is presented in Annex V of the Summary Report. The Chairman of the Steering Group was requested to bring changes in the Plan to the attention of the Chairmen of the Committees on IGOSS and IODE.

7. Other Business

Mr. Hamilton presented a revised version of a draft brochure on GTSPP which incorporated comments and suggestions made by the participants at the First Session of the Group. The meeting expressed a desire to expedite publication of the brochure. The meeting decided that actions recommended for distribution and production of the brochure by the First Session are still valid and requested the US NODC to facilitate the publication of the brochure before the IGOSS VI Meeting, 18–27 November 1991. It was also suggested that the Steering Group Chairman and IOC and WMO Secretariats should provide all necessary support to the US NODC in order to keep to the agreed deadline for publication.

Dr.R.Wilson informed the Group on the preparation for the Workshop on Ocean Climate Data which is planned to be held by IOC, WMO, ICES and ICSU in Washington D.C. in February 1992. He explained that the progress in GTSPP and experience gained in its implementation will be brought to the attention of the Workshop's participants through one of the Case studies. He, as convenor of one of the Case Studies, presented the meeting with an overview of the programme and a list of individuals whom he proposed to invite to speak at the Workshop. The meeting suggested some additional names of persons who might be considered as speakers.

8. Adoption of the Summary Report

The meeting adopted the Summary Report and agreed on the list and content of annexes. The Chairman, Rapporteur and IOC and WMO Secretariat were requested to publish the Summary

Report and circulate it to all concerned before the end of September so as to make it available at the WOCE DAC meeting in October and at IGOSS-VI in November this year.

The Meeting recommended that the next Session be held in 1992 prior to IODE-XIV and requested the Chairman to bring this recommendation to the attention of IOC and WMO Secretariats. It was decided that if IODE-XIV is held in South-East Asia the Chairman will discuss with Australia the possibility of hosting the next Session. If IODE-XIV is in Europe or in the USA, Germany and Canada may be considered as other alternatives. The Meeting requested the Chairman and Secretariat to finalize the choice of the place and time of the next Session during the first months of 1992 and provide this information to potential participants well in advance of the next Session.

9. Closure of the Meeting

The Meeting was closed at 1330 h on Friday 19 July, 1991. In his closing remarks, Dr. R. Wilson thanked all participants for the constructive and friendly dialogue and assistance and expressed the appreciation of the meeting to local organizers for the excellent arrangements and for the warm hospitality.

ANNEX I

AGENDA

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ANNEX II

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ANNEX III

PROGRESS REPORTS ON IMPLEMENTING GTSPP

CANADA

The following paragraphs describe the tasks that were undertaken in MEDS during the past intersessional period to further the implementation of the GTSPP.

a) Final edits of the the GTSPP Project Plan and the GTSPP Quality Control Manual were carried out as directed by the GTSPP I Meeting, Brest (France), 17–19 September 1990. The two documents were submitted to the IOC Secretariat for publication.

b) Through the efforts of the US National Weather Service (NWS), the US Fleet Numerical Oceanography Center (FNOC), the US National Oceanographic Data Centre (NODC), and MEDS, capture of the most complete BATHY and TESAC data set from North American sources was initiated. The real time BATHY and TESAC data were coded into the WMO BUFR format by NWS and FNOC, and forwarded to NODC on a daily basis. MEDS copied the data from NODC via the SPAN (Space Physics Analysis Network), and combined that data with the data received from the MEDS GTS link. The resulting file was processed through duplicates analysis software to produce the best available global real time data file from North American sources. With implementation of these operations, GTSPP became an operational programme.

c) Development of the real time QC system was completed. This system implemented all the tests from the GTSPP QC manual except the Levitus monthly climatology test, the Emery and Dewar climatology test, the Asheville climatology test, and the waterfall test. There are no plans at present to implement the other climatology tests as these are considered to be alternate choices to the Levitus seasonal statistics climatology test already implemented. The waterfall test will be implemented when resources permit. This test is quite complex to program in an adequate fashion for an operator to interact usefully with the data.

d) Development and system testing of the duplicates management system software was completed using the techniques described in the December 1990 GTSPP Monthly Report. The database update software for the real time temperature and salinity data was also completed and system tested. Processing and loading of the backlog of data received in November and December 1990 was started.

e) Development, testing, and implementation of the GTS data flow monitoring software was completed. The software was used to produce an analysis of the North American data flow for the November 1990 BATHY/TESAC data set.

f) MEDS and NODC completed the initial design for the GTSPP Monthly Report and the first report covering the month of November 1990 was produced.

g) A data set containing the BATHY and TESAC data received for the month of November 1990 was obtained from the BSH. This data set was compared to the data acquired by the GTSPP for the same time period to provide an initial comparison of the data available in the North American and European systems.

h) The processing system in the Real Time Assembly and QC Centre in MEDS was streamlined so that updates to the CMD can be supplied to the US NODC twice per week.

I) During the spring months the backlog of GTSPP Monthly Reports, which had built up due to a priority project that took up all available spare time, was addressed and the reports from December 1990 to March 1991 were produced and mailed out.

j) The other activity related to GTSPP that was completed in the intersessional period was the preparation of several of the documents that were required for the GTSPP II Meeting.

FRANCE

The major component of the national participation to the GTSPP remains the activity of the TOGA Subsurface data Centre.

No major developments however have been achieved during the intersessional period in the implementation of GTSPP. Progress in implementing a new global system for the management of upper layer data for WOCE programme, has been slowed by the resignation of the programmer attached to the project. A new programmer should be engaged this autumn and the new system based on the DBMS ORACLE running on a SUN workstation should be working in early 92.

The TSDC continued to manage the data collected in the TOGA area since 1985. The procedures have been maintained and the major features are:

1. Data flow

• real time data collection: French IGOSS Centre on line transmission on a monthly basis;

• delayed mode data: TOGA operators on a yearly basis, others non periodic;

• data Centre: US NODC on a six monthly basis, others on request;

• new data submitters: Japan Meteorological Agency (ships of opportunity);

• data submission to WDC: on a six monthly basis;

• data distribution: years 85–86 distributed on the TOGA CD ROM. Yearly data CD ROM distribution planned by NASA.

2. Data collection

• data collection: 153 000 subsurface profiles in June 1991;

• data inventory: available on the TSDC catalogs on OMNET, updated monthly;

• data qualification: procedures unchanged, fully operational..

3. Products

• level III data (isotherm depths, heat content, temperature at standard depths) managed on PC microcomputer and available on request;

• statistics by geographical squares;

• data analysis and data plots in the Atlantic published in the monthly review "BOAT"

• reports (status of the TOGA subsurface data Centre, April 91).

Meanwhile IFREMER began the implementation of a new department called SISMER. Among the tasks of this department dedicated to scientific information, one of the major goals is to save and archive all the Hydrographic data collected in France. The priorities will be:

• for historical data, all the original data archived on magnetic tapes at BNDO will be transferred on optical disk (type of disk under examination);

• inventories of the archives put in an on-line base;

• for recent data (collected after 1985) a form will be sent to all the Institutes and data holders to check where and how these data have been stored and may be recovered.

Responsible of this operation: Ms Catherine MAILLARD

ICES

1. Project has been brought to attention of relevant working groups, especially working group on Oceanic Hydrography. Support has been promised.

2. Software is now in place designed to stimulate data flow to ICES, and to accelerate quality control procedures by ICES and originators.

3. Data now being received from a number of countries / institutes within one or two months of collection, stimulated also by the activities of the North Sea Task Force (NSTF).

Obstacles to Programme

1. Unconventional formats (data base tables etc.).

2. Unconventional record structures (tabs as field separators; record terminators not carriage return line feed (ASCII 13 + ASCII 10).

3. Ground rules for merging CTD / Nansen + chemistry stations.

JAPAN

JODC sent an expert for the 1st Session of IOC-WMO Steering Group on the IGOSS/IODE GTSPP held in Brest, France, 17-19 Sept. 1990, and expressed its interests in the Pilot Project and willingness to participate in and contribute to GTSPP positively.

As the activities of RNODC for IGOSS, JODC assembles BATHY and TESAC dataset which is provided by one of the IGOSS-SOC, JMA or the Meteorological Agency of JAPAN, applies basic QC and transmits it to WDCs with the data plots and statistics every six months, according to the terms of reference of RNODC for IGOSS.

Recognizing that the GTSPP significantly improves current IGOSS/IODE data flow in real time data exchange, compilation of the project global temperature and salinity dataset, circulation of the newly developed standardized QC algorithm et cetera, JODC is participating in the GTSPP and has the ability to contribute to GTSPP with its experience in IGOSS/IODE data flow obtained through activities as the RNODC IGOSS.

The present status of GTSPP implementation at JODC is as follows.

Regarding development of the real time data flow,

– It is under negotiation that IGOSS-SOC realize more rapid data exchange, in particular, for the RNODC IGOSS.

– JODC made an experiment of on–line data exchange with MEDS, which has been successful since last April. However, in order to make it in regular basis, it will be necessary to develop an operational system including budgetary arrangement.

Regarding compilation of the perfect global temperature and salinity dataset.

– JODC is locating available historical data sets. In June 1991, JODC asked the Fisheries Agency to release its historical temperature salinity dataset, and have obtained the data in July. JODC will apply QC procedure to identify the value of the dataset.

USA

The U.S. NODC has coordinated several activities to implement GTSPP in the U.S. Soon after the First Session of the GTSPP Steering Group, we arranged to have IGOSS BATHY and TESAC data routed through NDOC directly to MEDS from the U.S. National Weather Service and the Fleet Numerical Oceanography Center. Procedures were also set up with MEDS for transferring quality controlled near real–time data from MEDS to NODC.

The Continuously Managed Database was implemented at NODC, using the MEDS data format. Data began arriving from MEDS early in 1991 and have been added to the data base as they arrive. Our principal objective from the first has been to be able to send monthly data sets to the WOCE science QC centres.

Communications facilities were also established between NODC and the science centres at the Atlantic Oceanographic & Meteorological Laboratory (Miami) and the Commonwealth Scientific & Industrial Research Organization (Hobart). The SPAN network is used to communicate data to Miami and to the Scripps Institution of Oceanography, whereas data are sent to Hobart via the Internet network.

Data have been prepared for the WOCE science centres each month. Ocean area boundaries for the Pacific, Atlantic, and Indian Oceans were agreed to by the science centres, and are used each month to split data into three ocean data sets. The following table shows the number of stations sent each month in each ocean area.

Number of Stations

Shipment Month	Atlantic	Indian	Pacific
January	1589	236	2075
February	1736	123	2315
March	1337	139	1568
April	1320	144	2095
May	782	50	1364

Software developed at NODC and at MEDS has been shared with WOCE science centres to assist them in using GTSPP data.

USSR

During the intersessional period the USSR RIHMI–WDC ODC:

• prepared documents related to the fulfillment of GTSPP elements;

• developed means of quality control, management and processing of the deep–water observation data set GLOBAL.

1. Development of GTSPP Elements.

The following draft documents have been prepared and distributed for consideration:

• GTSPP section "Historical Data Acquisition and Processing";
• GF3 subset for GTSPP data exchange;
• "List of ocean stations for creating time series data base".
• A solution has been found for creating "Global Inventory of Cruise Descriptions" on a PC which is expected to be used for implementing the first stage of data acquisition.

All these documents were presented at the GTSPP II session.

2. Development of Means for Quality Control, Management and Processing of Deep–Sea Observation Data.

ODC of RIHMI–WDC has completed the first stage of creating a data set of deep–sea observations (GLOBAL I) of the first level. Methodology and software are being developed for obtaining derived data sets on the basis of GLOBAL:

• GLOBAL II – temperature, salinity and density for standard depths.
• GLOBAL III – climatic temperature and salinity characteristics by Marsden squares;
• GLOBAL IV – grid point temperature and salinity climatic characteristics.

2.1 Data Reformatting to a Unified Format, the First Stage of Removing the Duplicates and Data Control.

The set GLOBAL includes water–bottle and BT data as well as STD/CTD measurements. Twenty–six sources of data (national, foreign and international) were used when preparing the data set. In the course of the preparation the following operations, were performed:

• reformatting the data to a unified format and sorting data with respect to the specified key.

• space–time characteristics soundings, temperature and salinity have been checked for limits;

• duplicate stations with similar space–time characteristics were removed.

2.2 Data Quality Control

A program was developed to quality control the set of GLOBAL I data using the algorithms of the GTSPP QC Manual.

2.3 Sets Derived on the Basis of GLOBAL I.

A station list for forming observation time series, as well as the formats for archiving GLOBAL II and III data have been developed using BUFR techniques and the programmes are being developed for obtaining derived data sets (data for standard depths, climatic characteristics).

ANNEX IV

GTSPP FORMAT FOR TEMPERATURE AND SALINITY DATA

1. The Station Record

The "Station" record is made up of five sections. The sections can be described as tables with rows and columns. The first section or table contains information that occurs only once per station, including the identification and location information. Thus section 1 of the station record always consists of a table with a fixed number of columns and a single row. The other sections contain fixed numbers of columns and a variable numbers of rows depending on the data that has been observed at the station.

TABLE 1 (Station Record) – Mandatory Key and "Header" Fields Table

Table1 has one row. The row contains such items as identification, and position and time information for the station. It also contains information on the source and time of receipt of the data, flags that have been provided during the quality control process, and a stream identification code that is used to identify the source of the data. Finally, this section contains an availability flag that controls distribution of the data and a unique record identifier that is used to determine an exact match if the record is sent to someone else for QC and is then returned.

The following variables make up the columns of this single row table.

MKEY (CHARACTER*8)

This message number is assigned sequentially from 1 as a file is created for processing and serves as the key in temporary ISAM files that are used at various stages of the processing in MEDS.

ONE_DEG_SQ (INTEGER*4)

The ONE_DEG_SQ is a one degree square number that is computed directly from the latitude and longitude and which is used for retrieval of the data by area. The method of assignment of the number has been optimized to simplify calculation and problems with changes of quadrants, the date line, prime meridian, etc.

CR_NUMBER (CHARACTER*10)

The CR_NUMBER is a 10 character cruise number.

OBS_YEAR (CHARACTER*4)

The 4 character year of the observations (e.g. 1990, 2001).

OBS_MONTH (CHARACTER*2)

The 2 character month of the observation.

OBS_DAY (CHARACTER*2) .

The 2 character day on which observations were made.

OBS_TIME (CHARACTER*4)

The time of observation as 2 character hour and 2 character minute field.

DATA_TYPE (CHARACTER*2)

A 2 character code to indicate the type of instrument or reporting method used in the data collection or the type of IGOSS radio message used to report the data. A partial list of codes follows. Note that this list is expandable as necessary.

BO = Bottle
CD = CTD down trace
CU = CTD up trace
XB = XBT
DT = Digital BT
MB = MBT
BA = BATHY message
TE = TESAC message

IUMSGNO (INTEGER*4)

This is a unique message number that is assigned arbitrarily by the duplicates identification software for a file processed through this software in MEDS. The duplicates identification software will recognize groups of two or more messages that have the same identification–date–time–subsurface information or same fuzzy–area, fuzzy–time, subsurface information. Each such group of duplicates is assigned the same unique message number. Using the unique message number one can then sort the file and process the groups of duplicates for data flow monitoring and other purposes. This field would generally be ignored by another centre receiving this data.

STREAM_SOURCE (CHARACTER*4)

The stream source variable is used by the duplicates identification/management system to determine whether the data originated in an existing database, or from an input stream of new data. This is required for the system to make decisions about whether an observation needs to be updated into the databases. This field would generally be ignored by another centre receiving this data.

UFLAG (CHARACTER*1)

The update flag is assigned by the duplicates identification/management software. This flag is then used by the update program to determine whether an observation is to be updated into a database, ignored in the input run (already in database or lower priority copy) or flagged inactive in a database (if a higher quality copy of the observation is now available in the databases). This field would generally be ignored by another centre receiving this data.

STN_NUMBER (INTEGER*2)

The STN_NUMBER is an assigned number such that CR_NUMBER and STN_NUMBER are unique in the database.

LATITUDE (REAL*4)

The latitude (in decimal degrees) of the station. (Negative is south)

LONGITUDE (REAL*4)

The longitude (in decimal degrees) of the station. (Negative is east from Greenwich)

Q_POS (CHARACTER*1)

A one character QC flag for the position. The IGOSS quality flags given in IOC/WMO Manuals and Guides 3 are used.

Q_DATE_TIME (CHARACTER*1)

A one character QC flag for the date–time of the observation. The IGOSS quality flags given in IOC/WMO Manuals and Guides 3 are used.

Q_RECORD (CHARACTER*1)

A single character quick quality control flag to indicate the result of the data quality checks undergone by the data in the record. This flag also uses the codes contained in IGOSS Manuals and Guides #3. If the user wishes to review further the history of processing and quality control for the record, he must examine the history table described below.

UP_DATE (CHARACTER*8)

This field is used when providing regular updates to users. Thus data can be retrieved for a given set of retrieval criteria further qualified by the date the data was added to the database or last modified in the database. This provides the ability to send a user all data entered or modified in the database after the date of his last shipment. The format of the date is 4 character year, 2 character month and 2 character day. As the data are reprocessed or edited, this date changes.

BUL_TIME (CHARACTER*12)

This field applies only to IGOSS reports. It is the time at which the bulletin was inserted on the GTS. This is recorded as a 12 character field of yyyymmddhhmm with yyyy being the 4 character year, mm the 2 character month, dd the 2 character day of the month, hh the 2 character hour and mm the 2 character minute. This field is used in providing data for the WMO twice yearly GTS monitoring activity or for GTSPP monitoring exercises as appropriate.

BUL_HEADER (CHARACTER*6)

For IGOSS data this field contains the GTS bulletin header indicating the bulletin type under which the data were reported. E.g. SOVD01

SOURCE_ID (CHARACTER*4)

For IGOSS data, this is the 4 character identifier of the GTS node inserting the data (E.g. KWBC). For delayed mode cruises, this field is a 4 character country–institute code for the institute submitting the data.

STREAM_IDENT (CHARACTER*4)

The stream identification parameter is used by the "Replacement Management Processors" for the continuously managed database to

determine whether a message duplicating one already in the database should replace the database version. For example, a delayed mode record that has passed scientific quality control should replace a radio message version of a record. A delayed mode CTD should replace an IGOSS TESAC.

QC_VERSION (CHARACTER*4)

This field contains a code identifying the last level of quality control that the record has passed. Note that the value of the quick quality control flag corresponds to this level of QC. If the user wishes to review further the history of processing and quality control for the record, he must examine the history table described below.

AVAIL (CHARACTER*1)

The data availability flag is used to restrict distribution of data if required by the person or organization that submitted the data to MEDS. The flag is set to "A" if the data are generally available or "P" (protected) if the data are not generally available.

NO_PROF (INTEGER*2)

The number of parameter profiles archived for the station and reported in the PROF structure (table 2).

NPARMS (INTEGER*2)

The number of surface parameter variables reported in the SURFACE PARAMETER structure (table 3).

SPARMS (INTEGER*2)

The number of surface code variables reported in the SURF_CODES structure (table 4).

NUM_HISTS (INTEGER*2)

The number of history group entries, or table rows, to be found in the HISTORY structure (table 5).

TABLE 2 (Station Record) – Profile Information Table

The profile information table contains information about each of the profiles collected at the station. The parameter NO_PROF above contains the number of rows in the PROFILE table.

The following variables make up the columns of this table that will have one row for each profile record associated with the station record.

NO_SEG (INTEGER*2)

A number which records the number of segments into which a profile has been split. A single profile record can contain up to a maximum of 1500 depths.

PROF_TYPE (CHARACTER*4)

A 4 character parameter code indicating the type of profile. Where possible the first four characters of the GF3 parameter code are used.

DUP_FLAG (CHARACTER*1)

A single character to indicate if this profile duplicates the information contained in a profile for another station. This is set to "N" if there is no duplication or "D" if this is a duplicate.

DIGIT_CODE (CHARACTER*1)

The code specifying how the data were digitized. A sample of such a table follows with the IGOSS equivalent noted.

0 = Unknown
7 = Digitized at selected intervals (equivalent to k1=7 for BATHY/TESAC data)
8 = Digitized at inflection points (equivalent to k1=8 for BATHY/TESAC data)
D = Digital data logger, unreduced

STANDARD (CHARACTER*1)

A code to indicate the standard to which the observations were made. Available codes for salinity are:

0 = No salinity measured
1 = In situ sensor, accuracy better than 0.02 (PSU assumed)
2 = In situ sensor, accuracy less than 0.02 (PSU assumed)
3 = Sample analysis (PSU assumed)
S = pre 1982 salinity units (PPT)
P = practical salinity units (PSU)
U = Unknown salinity units

DEEP_DEPTH (REAL*4)

The depth in meters of the deepest observation in the profile.

TABLE 3 (Station Record) – Surface Parameter Table

The surface parameter table contains all data that are observed at the surface only including both oceanographic and meteorological variables. There is one row in the table for each variable observed. The parameter NPARMS above contains the number of rows in the table.

The optional parameters would include such things as sounding depth, met parameters, surface temperature from the engine intake, surface current speed and direction (IGOSS), BT surface reference temperature, etc.

A 4 character parameter code is used to differentiate between the variables reported in this table. Where possible the first four characters of the GF3 parameter code is used. All variables are represented by real numbers and a one digit QC flag is provided.

The following variables make up the columns of this table that will have one row for each ocean or meteorological variable observed at the surface.

PCODE (CHARACTER*4)

A 4 character parameter code. Where available a GF3 parameter code will be used.

PARM (REAL*4)

The value of the parameter specified by the parameter code.

Q_PARM (CHARACTER*1)

A single character code to indicate the level of data quality for the parameter. This field uses the IGOSS flag codes contained in IOC/WMO Manuals and Guides #3.

TABLE 4 (Station Record) – Surface Codes Table

The surface codes table contains alphanumeric information that applies to the station as a whole. There is one row for each item of information. The parameter SPARMS above contains the number of rows in the table. An example of its use would be to record a special name for the station such as OWS PAPA.

The following variables make up the columns of this table.

SRFC_CODE (CHARACTER*4)

The 4 character parameter code. Where available a GF3 parameter code will be used.

SRFC_PARM (CHARACTER*10)

The 10 character field used to record alphanumerics information about the station.

SRFC_Q_CPARM (CHARACTER*1)

A single character code to indicate the level of data quality for the surface observations. This field uses the IGOSS flag codes contained in IOC/WMO Manuals and Guides #3.

TABLE 5 (Station Record) – Processing History Table

The processing history table contains information about the processing and quality control history of the station. It is also used to store the original value for any numeric parameters that may be changed in the QC process.

IDENT_CODE (CHARACTER*2)

A 2 character code to indicate the organization responsible for creating the history table entry.

PRC_CODE (CHARACTER*4)

A 4 character code to indicate the computer program which created the history table entry.

VERSION (CHARACTER*4)

A 4 character code to indicate the version of the program which created the history table entry.

PRC_DATE (CHARACTER*8)

The date, as YYYYMMDD, on which the history table entry was created.

ACT_CODE (CHARACTER*2)

A 2 character code to indicate what action was taken with regard to the station or parameter.

ACT_PARM (CHARACTER*4)

The 4 character parameter code against which an action was taken.

AUX_ID (REAL*4)

A real number which may be required to further specify the data against which an action was taken. For subsurface salinity, AUX_ID would contain the depth of the observation to which the history table entry referred.

O_VALUE (REAL*4)

The original value that was present and against which an action was taken if the original value was changed.

2. The Profile Record

A profile record is made up of two sections. The first table contains information that occurs only once per station and contains the single key connecting a profile record to a station record. Thus section 1 always consists of a table with a single row. The second section contains a variable numbers of rows depending on the data that has been observed at the station.

TABLE 6 (Profile Record) – Mandatory Key and "Header" Fields Table for the Profile Record

ONE_DEG_SQ (INTEGER*4)

The ONE_DEG_SQ is a one degree square number that is computed directly from the latitude and longitude and which is used for retrieval of the data by area. The method of assignment of the number has been optimized to simplify calculation and problems with changes of quadrants, the date line, prime meridian, etc.

CR_NUMBER (CHARACTER*10)

The CR_NUMBER is a 10 character cruise number.

STN_NUMBER (INTEGER*2)

The STN_NUMBER is an assigned number such that CR_NUMBER and STN_NUMBER are unique in the database.

PROF_TYPE (CHARACTER*4)

A 4 character parameter code indicating the type of profile. Where possible, MEDS uses the first four characters of the GF3 parameter code is used.

PROFILE_SEG (CHARACTER*2)

A two character digit indicating the segment number of this profile. Leading zeros must be encoded into the field using the format I2.2

NO_DEPTHS (INTEGER*2)

The number of depths at which subsurface observations are to be found in the PROF DATA table (table 7).

D_P_CODE (CHARACTER*1)

A single character code to indicate if the DEPTH_PRESS field contains depth or pressure observation. The code "D" is used to indicate depth and "P" to indicate pressure.

TABLE 7 (Profile Record) – Profile Data Table

The PROFILE DATA table contains the depths and parameter values for the profile.

DEPTH_PRESS (REAL*4)

A field used to store either the observed depth or pressure of the observation. The content of D_P_CODE determines which variable is stored in this field. Values are in either meters for depth or decibars for pressure.

DP_FLAG (CHARACTER*1)

The depth–pressure flag is a single character code to indicate the level of quality for the depth or pressure value. This field uses the IGOSS flag codes contained in IOC/WMO Manuals and Guides #3.

PARM (REAL*4)

The value of the parameter at the specified depth or pressure.

Q_PARM (CHARACTER*1)

A single character code to indicate the level of data quality for all subsurface observations without specific data dictionary entries. This field uses the IGOSS flag codes contained in IOC/WMO Manuals and Guides #3.

ANNEX V

GTSPP IMPLEMENTATION PLAN

INTRODUCTION

The implementation of GTSPP can be described in terms of the following 4 general tasks.

1. Develop an improved real-time data capture to prevent loss of data; provide an awareness of the existence of data to assist with later acquisition of the data; provide more data to operational programmes and managers of research programmes.

2. Implement a documented and uniform QC for data being archived in the CMD including a rational approach to the management of duplicates, and the inclusion of the necessary meta data in the database and associated files.

3. Identify sources of delayed mode and historical temperature and salinity data, acquire and digitize it where necessary, QC and input it to the CMD.

4. Develop, prepare and distribute data, data products, and data flow monitoring products at all time scales to meet the needs of users at all time scales.

OVERVIEW OF PRIORITIES

For the past intersessional period following GTSPP-I, ORSTOM, Brest (France) 17-19 September, 1990, the project concentrated on the following tasks.

1. Establish the real time data flow and the CMD to stem the loss of real time BATHY and TESAC data which was not all being captured for the archives.

2. Establish the flow of BATHY and TESAC data to the WOCE Scientific QC Centres established within the data management plan for the WOCE Upper Ocean Thermal Data Assembly Centre.

3. Implement the QC procedures as published in the GTSPP QC Manual and the specified duplicates checking algorithms .

4. Implement the real time data flow monitoring .

5. Implement the production of the GTSPP Monthly Report.

These tasks were completed in the past intersessional period. For the coming intersessional period the general priorities are as follows.

1. Expand the capture of the real time data flow to include inputs from other centres in Europe and Asia to increase the capture of BATHY and TESAC data. Include TRACKOB data in the GTSPP data flow.

2. Implement the remaining aspects of the GTSPP-WOCE UOT DAC data flows.

3. Implement the historical data and the time series aspects of the project with a series of tasks designed to acquire, QC, and archive both digitized and non-digitized data.

4. Implement real time data provision to at least one TOGA modeling centre.

5. Develop a detailed specification and plan for the first two GTSPP CD-ROM products.

6. Define a role for the IOC OCEAN-PC in the GTSPP.

The implementation plan for GTSPP has been developed in terms of the eight elements of GTSPP in the following sections. Specific tasks and target dates follow.

IMPLEMENTATION OF THE ELEMENTS OF GTSPP

1. Near Real-Time (RT) Data Acquisition

- MEDS to implement processing of Canadian GTS, US NWS, and FNOC real-time data streams received from the US RNODC for IGOSS with QC according to the GTSPP QC Manual, and transfer of data on a weekly basis to NODC for inclusion in the CMD and for distribution to the Scientific QC Centres.

  Target Date: Completed
  Lead: MEDS

- MEDS and NODC to conduct a test of the data flow, formats, and QC system with the WOCE Scientific QC Centres and the TSDC during the month of December 1990 using the November 1990 dataset.

  Target Date: Completed
  Lead: MEDS, NODC

- As a one-time special project, MEDS, USSR, France, Australia and USA to compile best real time data sets back to January 1, 1990, and produce comprehensive data flow monitoring reports.

  Target Date: End 1991. (Deferred for discussion with WOCE UOT Programme, October 1991)
  Lead: MEDS

- As a one-time, special project, NODC to add the January 1, 1990 to present data to the CMD database, arrange for scientific QC, and acquire and add the flags to the database.

  Target Date: End 1991. (Deferred for discussion with WOCE UOT Programme, October 1991)
  Lead: US NODC

- France (Centre ORSTOM de Brest) and Germany (BSH) to implement providing a copy to BATHY and TESAC data sets to MEDS on a monthly basis to enhance the capture of the total global real time data set. The data are to be collected and forwarded approximately 30 days after the end of the month.

  Target Date: Monthly beginning September 1, 1991 for the July 1991 dataset
  Lead: Centre ORSTOM de Brest, BSH, MEDS

- Japan to supply a copy of the BATHY and TESAC data for January and February 1991 to MEDS for a comparison with the GTSPP data set for these months. MEDS is to carry out the comparison and provide a copy of the results to Japan.

Target Date: End of October 1991 for completion of transfer of data and comparison
Lead: JODC, MEDS

- MEDS and US NODC to develop and implement systems to capture and process TRACKOB data and make the data available within the GTSPP data flow.

  Target Date: End of 1991
  Lead: MEDS and US NODC

- MEDS to prepare a summary of the results of the GTSPP real time data flow monitoring studies highlighting the problems identified to date and forward the summary to the IGOSS Operations Coordinator and the Chairman of IGOSS for consideration at IGOSS-VI.

  Target Date: End of September 1991
  Lead: MEDS

- Prepare an ASCII implementation of the GTSPP Format for Temperature and Salinity Data and implement its use in providing near real time data to TOGA modeling centre in the US.

  Target Date: End of October 1991
  Lead: MEDS and US NODC

2. Delayed Mode Data Acquisition

- Participating Member States to contact countries in their region, as agreed at the First ad-hoc Meeting of the GTSPP, and encourage and arrange more complete and rapid submission of delayed mode data to the GTSPP through the IODE system

  Target Date: March 1, 1992 (Deferred from previous intersessional period)
  Lead: All Participants

3. Communications Infrastructure

- US RNODC for IGOSS to establish links to provide the NWS and FNOC data streams to MEDS for implementation of the daily BATHY and TESAC data acquisition and QC.

  Target Date: Completed
  Lead: NODC

- MEDS to complete establishment of an efficient link to the US SPAN network for the transfer of real-time BATHY and TESAC data to and from the US RNODC for IGOSS.

  Target Date: Completed
  Lead: MEDS

- AODC to specify means of exchange of the real-time BATHY and TESAC data with other GTSPP participants and the WOCE Scientific QC Centre in CSIRO.

  Target Date: Completed
  Lead: AODC

- France and USSR to specify communications links that are available for data exchange with other participants in GTSPP and requirements for data exchange on each. (May be exchanged by tape or floppy disks if appropriate or necessary.)

  Target Date: Completed
  Lead: France and USSR

- MEDS and USSR NODC to seek to implement a communications link via Internet between the two centres to implement exchange of BATHY and TESAC data in real or near real time to augment the real time data flow for GTSPP and for the USSR NODC.

  Target Date: End of September 1991 (Carried over from past intersessional period)
  Lead: MEDS and USSR NODC

4. Quality Control

- GTSPP to complete development and review of QC Manual for Real-Time Data and submit to the IOC for publication.

  Target Date: Completed
  Lead: MEDS

- MEDS and NODC to implement the tests and flagging of data as described in the GTSPP QC Manual in the processing and archival of the temperature and salinity data in the CMD.

  Target Date: Completed
  Lead: MEDS and US NODC

- The reason for the unexpectedly high frequency of occurrence of data failing the climatology test is to be investigated. France and Canada are to supply maps of the location of stations that have failed the climatological test to Dr. Levitus of the US NODC for consideration and advice.

  Target Date: End of 1991
  Lead: Centre ORSTOM de Brest, MEDS, US NODC

- The reason for the unexpectedly high frequency of occurrence of data failing the constant profile test is to be investigated. A representative sample of failures is to be prepared by MEDS and circulated to the IGOSS Bulletin, the IGOSS Operations Coordinator, and the next IGOSS SOOP meeting for comments, explanations, and advice.

  Target Date: End of October 1991
  Lead: MEDS

- Investigate the practicality and usefulness of adding a TS diagram test to the suite of QC tests used by the GTSPP.

  Target Date: End of 1991
  Lead: MEDS

- Develop additional quality control procedures appropriate to historical data files.

Target Date: Next GTSPP Steering Group Meeting
Lead: US NODC, USSR NODC

5. Continuously Managed Database

- GTSPP to complete review of the initial strategy and algorithms for the operation of the continuously managed database.

  Target Date: Completed
  Lead: GTSPP I Meeting, Brest, France, 17–19 September 1990.

- MEDS and US NODC to implement the strategy and algorithms for the operation of the continuously managed database, evaluate its adequacy during operation of the project, and report and submit recommendations to the next meeting of the GTSPP Steering Committee.

  Target Date: Completed
  Lead: MEDS and US NODC

- Revise the description for the GTSPP Format for Temperature and Salinity Data to identify the core data and information that must be retained in data centre databases and included when the data are passed to other centres.

  Target Date: End of September 1991
  Lead: MEDS

- Develop an algorithm for assigning a unique station identifier to be attached to each station of data or IGOSS report to permit identification of the station in the CMD at any time in the future. Supply the characteristics of the identifier to the USSR for inclusion in the GF3 subset.

  Target Date: End of August 1991
  Lead: MEDS and US NODC

6. Project Products and Information

- GTSPP to complete development and review of the Project Plan and submit it to IOC for publication.

  Target Date: Completed
  Lead: MEDS.

- GTSPP to review and update the Implementation Plan.

  Target Date: Completed
  Lead: GTSPP–II Meeting, Obninsk, USSR, 15–19 July 1991 and subsequent Steering Committee meetings.

- Prepare and publish the GTSPP Brochure.

  Target Date: End of October 1991. (Deferred from previous intersessional period)
  Lead: US NODC

- Prepare a more attractive cover for the GTSPP Monthly Report incorporating colour, IOC and WMO logos, and a better layout

  Target Date: End of 1991
  Lead: MEDS and IOC Secretariat

- Implement additional sections in the GTSPP Monthly Report to cover the historical and time series aspects of the GTSPP as they become operational.

  Target Date: Throughout the intersessional period
  Lead: MEDS

- Prepare an analysis and options for the role of OCEAN-PC in GTSPP.

  Target Next GTSPP Steering Group Session
  Lead: MEDS

- Conduct studies and prepare recommendations for the content of the first two CD-ROMs to be published by the GTSPP.

  Target Date: Next GTSPP Steering Group Session
  Lead: US NODC and MEDS

7. Data Flow Monitoring

- MEDS to complete data flow monitoring study for the September, October, and November 1989 data already submitted by France, the USA, and the USSR augmented by data to be requested from the RNODC for IGOSS (Japan), and the AODC.

  Target Date: Completed for September 1989 only.
  Lead: MEDS

- MEDS to continue monthly analysis and reporting of all real-time data flow comparisons between Canadian GTS, NWS and FNOC streams and others as they become available. MEDS is to continue this function for as long as it is needed.

  Target Date: Continuing
  Lead: MEDS

8. Historical Data Acquisition and Processing

- GTSPP participants should study the USSR document regarding time series stations and provide comments and suggestions to the USSR.

  Target Date: December 31, 1991 (Deferred from previous intersessional period)
  Lead: All participants

- JODC to continue digitization of the Japanese Fisheries Data including hydrographic stations and digital BT profiles with surface salinities and make the data available to the GTSPP through the WDCs.

  Target Date: Continuing throughout the intersessional period
  Lead: JODC

- NODC, USA will digitize at least 30,000 MBT profiles from the Pacific and Indian Oceans, 1000 C/STD profiles from the Arctic Ocean, and approximately 300 C/STD and/or Nansen casts from the Antarctic Ocean and Pacific Ocean and make the data available to the GTSPP through the WDCs.

  Target Date: Continuing throughout the intersessional period
  Lead: US NODC

- ICES will digitize historical hydrographic stations beginning with 5,000 profiles that comprise the Atlantic Slope Experiment conducted during the 1920–1939 period and make the data available to the GTSPP through the WDCs.

  Target Date: Continuing throughout the intersessional period
  Lead: ICES

- NODC/WDC–B, USSR will begin digitizing MBT and/or hydrographic data and make the data available to the GTSPP through the WDCs.

  Target Date: Continuing throughout the intersessional period
  Lead: USSR NODC

- Review Data Centre holdings to identify time series stations or sections that already exist in processed form and prepare a list of same.

  Target Date: Next GTSPP Steering Group Session
  Lead: ICES, USSR NODC, USA NODC, MEDS

- Prepare a list of time series stations or sections that are not yet in the data centres but should be exchanged under IODE.

  Target Date: Next GTSPP Steering Group Session
  Lead: ICES, USSR NODC, USA NODC, MEDS

- Circulate both lists of time series stations to the international research community soliciting their opinion on which are the most important stations or sections for further processing by the GTSPP.

  Target Date: Next GTSPP Steering Group Session
  Lead: USSR NODC

9. Other

- GTSPP Centres and the WOCE Scientific QC Centres to consult and agree on the formats to be used for the first year of the project for the exchange of temperature and salinity data pending further study of format issues.

  Target Date: Completed
  Lead: MEDS, NODC, TSDC in consultation with all other centres.

- MEDS to submit data monitoring reports to interested South American centres to indicate to them the data which are available through the IGOSS system.

  Target Date: End of December 1991
  Lead: MEDS with WMO assistance

- Review and coordinate software development and sharing for use in preparing the GTSPP historical data file.

  Target Date: Next GTSPP Steering Group Meeting
  Lead: Consultative Group composed on one member from each of US NODC, USSR NODC, ICES, MEDS

- Update the proposed GF3 subset for GTSPP temperature and salinity data to have the same core information content as the GTSPP format for T&S data, circulate the updated version to the GE–TADE and members of the Steering Group for comment, incorporate comments and forward the resulting version to the GE–TADE for final approval.

  Target Date: Next GTSPP Steering Group Session
  Lead: USSR NODC

- Prepare a GF3 PROC application program to translate GTSPP data in both directions between the VAX implementation of the format and the GF3 subset and test the GF3 implementation of the format.

  Target Date: End of June, 1992
  Lead: US NODC and USSR NODC

- Centres processing GTSPP data on a regular basis who become aware of consistent errors that are occurring should inform the IGOSS Operations Coordinator and other GTSPP centres of the nature of the errors

  Target Date: Continuing
  Lead: All

ANNEX VI

MAILING LIST FOR GTSPP PRODUCTS AND RELEVANT DOCUMENTS

BASIC GROUPS OF ADDRESSES	RESPONSIBLE ORGANIZATION
1. National Coordinator for IODE	IOC
2. IGOSS National Representatives	WMO
3. WOCE/TOGA/IGBP Community	MEDS
4. Individuals active in GTSPP	MEDS
5. Individuals and operational centres involved in GTS and preparation of IGOSS monthly statistical summary sheets.	WMO

MEDS will provide IOC and WMO Secretariats with its distribution lists. Organizations responsible for mailings may wish to confirm from time to time whether the addressees wish to continue to receive the various GTSPP publications.