GTSPP Report

Introduction

The session opened at 0900 on 27 September at the Southampton Oceanographic Centre in Southampton, UK. The local host, Brian King, explained the local arrangements.

Bob Keeley, chair of GTSPP welcomed participants (Annex 1) noting that the last meeting had been in Hobart, Australia, over 2 years ago. Despite not having met, there were substantial developments that would be reported on at this meeting. Keeley introduced the agenda, noting one change. The review of actions from the Hobart meeting would be considered immediately after the introductions, so that actions not completed could be brought into the appropriate discussions of this meeting. The revised agenda is in Annex 2.

Actions resulting from this meeting are contained in Annex 4 and individual actions referenced in the text where the discussions took place.

Keeley reviewed both progress in GTSPP and developments in other oceanographic programs that impact on GTSPP operations. He noted the very rapid development of the Argo program. At the moment they are approximately 40% towards their target of 3000 operating floats. This has resulted n a dramatic increase in the number of real-time data being acquired by GTSPP. In contrast, the numbers of BATHYs is showing no substantial growth. Figures 1 and 2 show these statistics.

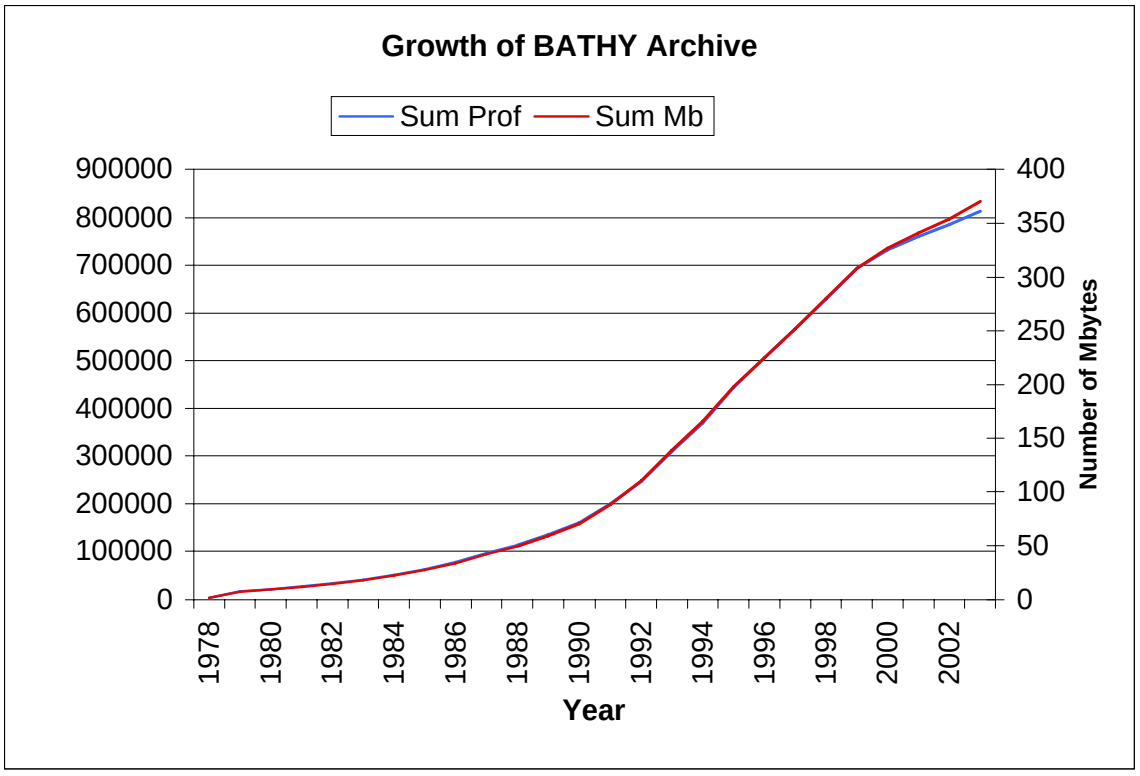

Figure 1: The growth of real-time BATHYs in GTSPP archives.

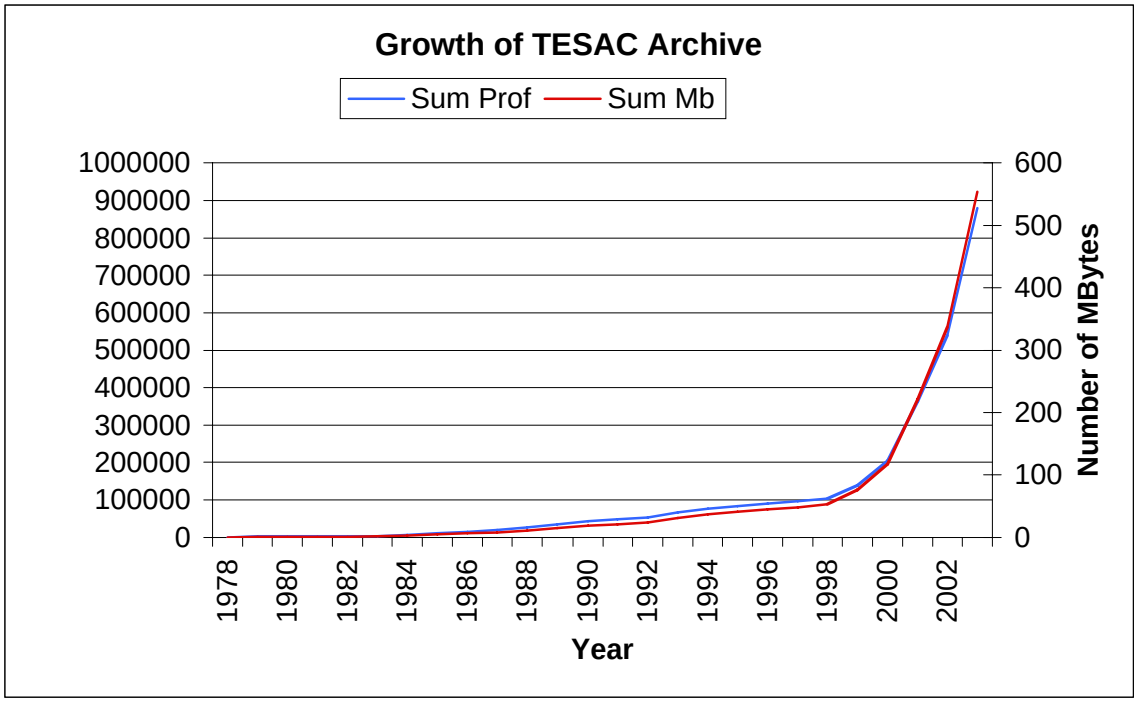

Figure 2: The growth of real-time TESACs in GTSPP archives.

The development of Argo raising questions about how these data should be handled within GTSPP and these will be discussed later in the meeting.

The Hobart meeting developed a plan for using the cyclic redundancy check (CRC) algorithm to control duplicates between real-time and delayed mode data. This meeting will hear about the progress in implementing the scheme and some preliminary results.

GTSPP has always accepted other profile variables if they accompanied temperature and salinity data. There will a further discussion of this. In a related issue, the meeting will hear about developments of an on-line data dictionary developed to support GTSPP activities, but which looks to have wider application.

The end of the WOCE program resulted in the WOCE Data Resource. GTSPP provided the data management infrastructure for the Upper Ocean Thermal component of WOCE. With the end of WOCE, it is necessary for some re-alignment of Science Centres that cooperate with GTSPP.

The JCOMM has also been developing particularly in the area of operational oceanography. There are initiatives from the Operations Programme Area to develop performance metrics to demonstrate present status and to show where additional resources need to be applied to reach GOOS objectives. GTSPP plays an important role in the SOOP program and so is contributing to the performance metrics.

Finally, GTSPP is cooperating with the GODAE in comparing quality assessments of data from models and from the GTSPP QC process. This is an important development and the session will hear more details.

Review of Hobart Actions

Annex 3 records the actions proposed from the Hobart meeting and a brief summary of what has been completed.

Data Processing and Data Flow

Charles Sun and Loic Petit de la Villeon reported that there were no substantive discussions concerning how NODC and IFREMER might operate a distributed archive. NODC also noted that its "best copy" data files had not been updated since May, 2004. It was suggested that GTSPP needed to operate an ftp site along the same lines as being done under the Argo program. So, the data files would be updated frequently and an index file available to allow users to determine which files had changed since the last time they had accessed the site. The session agreed that this had proven to be quite useful for Argo, was being developed in the GOSUD program and so GTSPP should follow along he same lines. Charles Sun agreed to put together a plan to be circulated to participants by 1 Dec, 2004 (Action 1).

Keeley noted that in his preparation of the 2003 Annual Review, he noted that there was no data from 2000 and on that had passed through scientific QC. This is true, in fact, with Australia still needing to complete the data from 1999 (Action 2). It was remarked that science centres wanted to receive yearly data when somewhere more than 65% of the data set was composed of delayed mode data. NODC was requested to check if this had been achieved for year 2000 and if so to send the data to the 3 science centres for review. (Action 3).

At the last GTSPP meeting, Peter Hacker from the APDRC had discussed cooperative agreements that were being developed between his organization and CSIRO. This has progressed and has resulted in a review of all data in the Indian Ocean (see the discussion on semi-automated QC procedures at CSIRO). He had also proposed that APDRC may be willing to take over the scientific quality control operation from Scripps. Since then, we have learned that Scripps is no longer available to do the scientific quality control for GTSPP. The session considered alternatives.

The first alternative took into consideration that QC at Scripps has been carried out by Marguerite Schultz under contract. Typically she would take about 2 weeks full time to complete a review of 1 year of data. Norm Hall noted that she was still willing to continue this work for a few more years and so if funds could be found (approximately $2K US). Considering the willingness of APDRC to take over this function, but that it was not expected that they could do so in less than 6 months, the session request Keeley to approach Peter Hacker to see if he would be willing to fund Marguerite's work for a review of the year 2000 data (Action 4).

It was recognized that APDRC has secure funding for about another 2 years at which time there will be a review. For GTSPP to rely on APDRC to carry out scientific QC on a long term basis means adopting some optimism that funding will continue. Still, considering the investment made to start the APDRC, that the work they are undertaking is highly relevant and that ensuring good quality data from the Pacific basin is fundamental to their work, it seemed likely that as long as APDRC had any funding, some cooperation in scientific QC of data would be a component of their work. Indeed, it may be helpful in securing follow on funding if APDRC was a science centre in support of GTSPP. It was also noted that APDRC is also part of the Regional Centre activities for the Pacific for Argo and this is highly complemented by scientific QC of GTSPP data. The session requested Keeley and Sun to discuss these issues with Hacker to clarify and develop the activities of APDRC in support of GTSPP (Action 5).

The session learned that if all other avenues are exhausted, that AOML would be willing to take over the scientific QC of Pacific Ocean basin data. The session thanked AOML for their offer, noting that GTSPP should pursue other possibilities first so as not to place a greater burden on AOML.

Participants noted that the other science centres of GTSPP, AOML and CSIRO/BOM, were also part of Regional centre activities in Argo. The session viewed this as a very complementary activity to GTSPP. It was noted that within Argo, regional centres were being encouraged to act as focal points for CTD data collected from their basins so that broad scale assessment and

comparisons of Argo data with CTDs could take place. GTSPP also is endeavouring to acquire CTD data, as well as other kinds, as quickly as possible and already has in place the data management infrastructure to acquire and carry out processing of such data. The session considered that GTSPP had much to offer the regional centres as an organization that could organize the CTD data flow and thereby remove this concern from their duties. The session instructed Keeley to approach Argo with this proposal (Action 6).

Yeun-Ho Chong noted that they routinely found duplications in the yearly files passed to AOML for scientific QC. She noted that though she had sent information to NODC about these, she did not see that these duplicates had been removed from the CMD. When asked if they had the same experience, Australia remarked that they had seen duplications but could not say whether or not the duplicates they detected had been removed from the CMD. The session asked that Australia check and if they find problems to report them with sufficient detail that NODC can identify the problem. AOML was asked to report details to NODC for corrective actions in the CMD (Action 7).

Lesley Rickards remarked that UK data are sent to WDC-A and asked if by doing so the data also entered the GTSPP archives. Sun replied that data were passed from GTSPP to the WDC and that NODC was nearing completion of the software that would have data flow in the other direction. He requested that with the next data submission, that he be notified by email so that he could follow up to be sure this happened (Action 8).

Code Tables

Keeley informed the session of activities within Canada that had started to provide an on-line data dictionary (http://www.meds-sdmm.dfo-mpo.gc.ca/meds/About_MEDS/standards/login_e.asp) to control the naming of variables within the Canadian data system. They have a database with a web interface that allows each institute in Canada to update or add to their own information about the variable names they use, the units in which the data are stored and the exact meanings of the variables names. The web interface also permits anyone in the public to search by a code or a phrase used in the meaning of a variable to see what exists in the database. Although a very simple idea, it allows participants to easily see what is being used by others and to use an existing variable name rather than create another one when they need it. It also forms the first step in providing a mapping of names from one participants archives to another.

Keeley explained that there were plans in place to expand the capabilities of the data dictionary so that it could store typical expected ranges for variables, to allow automatic connections to the NASA Global Change Master Directory, and to separate variable names from the units they are recorded in.

The data dictionary as it stands achieves a needed component of GTSPP that supports common naming conventions between the real-time archives at MEDS and the Continuously Managed Database, CMD, at NODC. NODC has agreed to become a partner in the dictionary are currently completing the compilation of their list of variable names. These will be passed to MEDS for loading in the dictionary. NODC will then appear as another participant with full privileges to modify their existing records or to add new ones.

Lesley Rickards noted that BODC has been building a data dictionary for some time and has done so in close cooperation with other European countries. They, too, were recognizing the desirability of separating names from units, but that certain precautions on this must be taken. Never-the-less, they noted the strong similarities between their activities and those undertaken by MEDS. They agreed that they, too, wished to contribute, but rather than send entries to MEDS would prefer to allow MEDS a database view that allowed direct queries of their database. This was considered the most sensible way to proceed with BODC and they agreed to pursue this actively (Action 9). The session considered this activity to be one of direct value to GTSPP and if it also helped in the broader picture of international data exchange, so much the better.

CRC Tags

The Hobart meeting proposed the use of the CRC algorithm as a way to uniquely tag data circulating on the GTS and the original profiles used to create the real-time messages. A successful tagging would greatly improve the matching together of the original data that arrives at NODC in delayed mode to the version of the same data arriving in real-time.

Since that meeting Keeley and Steve Cook, manager of the SEAS program, have worked to implement what was proposed. This implementation has become part of the new SEAS2000 software, and a part of the real-time data processing at MEDS. MEDS began attaching CRC based tags in April, 2004 and the first data from the SEAS program started to arrive at NODC in July of 2004 from a few ships.

The tagging scheme works as follows. XBT data are collected on board ship at the full 0.6m resolution and a unique SEAS ID is generated. The SEAS2000 software then sends ashore either the full resolution, a profile at 1 or 2 m resolution, or reduced resolution as typically seen in a BATHY message with data at selected depths along with the SEAS ID. On shore, the BATHY message is constructed and the exact contents of the message following the 888k1k2 group including the call sign is sent as input to the CRC algorithm and results in a 32 bit number. This number is attached to the file with the data that came ashore and the SEAS ID and sent on to NODC. At MEDS, the BATHY message is received from the GTS and the same piece of the message is used to construct the CRC which is also attached into the file. MEDS carries out QC and sends the data to NODC 3 times a week. NODC then matches the MEDS BATHY with QC to the file received from SEAS by looking at the CRC values in both files and stores the data in the CMD along with the SEAS ID. When the ship reaches port, the original data are recovered from the ship and sent to NODC as the full resolution profile. NODC then matches the SEAS ID in the incoming file to the ID in their archive and so completes the link between the real-time and delayed mode data.

To date, NODC has received 365 stations from the SEAS2000 program with CRCs and SEAS Ids. In examining the data they found 358 matches between the CRC values in the MEDS real-time data stream and the stream from SEAS. These same 358 also matched using the traditional comparison of time (to within 15 minutes) and position (to with 5 km). Of the 7 others, they matched using the traditional techniques but did not match in CRC. On examination of these, 6 proved to be different profiles even though they matched using traditional methods. The one remaining profile appears to be the same as the real-time but the CRC did not match. No occurrences were found of CRC matches with no match of traditional techniques.

The session was quite encouraged by these results, but wanted follow up to understand the one station that appeared to fail (Action 10). The session was informed that by the end of 2004, it is expected that all of the 40 SEAS equipped vessels will be using the new software. This should provide a better test of the procedure. A question was raised about whether or not the same scheme was being used for the data collected by CTD and reported in TESAC. Keeley replied that MEDS builds the CRC for every TESAC received from the GTS so that if these were also receiving CRC tags by the SEAS2000 software they should also be handled. Keeley was asked to follow up on this question with Steve Cook (action 11).

Lisa Cowen informed the meeting of progress towards implementation of the same scheme for Australian XBT data. She remarked that the new Devil XBT data acquisition system had the calculation built into the software, but due to some recent hardware changes had suffered delays in implementation. They projected that the system should be in service within 6 months at which time their delayed mode data deliveries to NODC would also have the CRC attached. In the meantime, though, Cowen noted that they did already calculate the CRC value for their own internal purposes and that it should be a fairly simple matter to connect the value to the 2004 data that would soon be sent to NODC. The session considered this to be a useful thing to do as it

would add to the volume and variety of data with the CRC and so broaden the test of its effectiveness. The session asked that this action be taken (Action 12).

The French expressed interest in participating in the testing. They remarked that they thought that inserting a CRC calculation at the appropriate place in their XBT handling procedures should be straightforward and so could be accomplished quickly. The session asked they MEDS and IFREMER cooperate to make this happen as expeditiously as possible (Action 13).

The session considered that it was important for the ocean data management community to learn about this work. Therefore, Keeley, with help from Hall were asked to prepare a report to be presented to IODE in April, 2005 to describe how well this CRC scheme is working (Action 14).

Thierry Carval noted that use of the CRC could be quite beneficial in connecting the real-time TESAC versions of Argo profiles and the real-time and delayed mode versions existing at the Argo GDACs. He noted that although the real-time and delayed mode profiles of Argo were uniquely connected by the Argo platform ID and cycle number, that the cycle number was not able to be sent in the TESAC code form and so the unique link from the TESAC to the Argo data was severed. It was suggested that Argo DACs could do the CRC calculation on the TESAC messages, and then insert this identifier into the field reserved for Data Centre Identifier in the Argo netCDF format. The session judged this to be a sensible idea which could immediately be undertaken by GTSPP participants who also participated in Argo (Action 15).

Thierry Carval also raised the issue of how to control duplicates when there was no real-time data circulating on the GTS. In this case, duplicates or near duplicates can be created when data as sent to a data centre, then pass through further scrutiny at the originating institution and are resent to the data centre. Unless both the originator and data centre retain identifiers that link the original and resent data, it may be difficult to make the connection between the two submissions because of changes in time, position or perhaps even identifying information. The session noted that this is a recurring problem. The CRC scheme could also be used here, or any other scheme that uniquely tags the data. The key point was that the scheme be unique, that the tag be attached as soon after data collection as possible, and that both originator and receiver retain the identifier. The session thought that this element should be included in the report on CRC being prepared for IODE (Action 14) and asked Keeley to include it.

Semi-automated QC procedure development at CSIRO

Ann Gronell summarized the state of development of these procedures. She noted that CSIRO had undertaken a data quality review of all data ever collected in the Indian Ocean. This review was being funded by APDRC. In consists of a statistical screening of 11 variables. There are a variety of tests performed as well including duplicate checking, surface spike removal and visual inspection of those that fail any test. They have assembled all of the data available from WOCE, CSIRO and WODB archives, from Japanese fisheries data and other sources.

The procedures work well for the Indian Ocean. To confirm they carried out complete manual inspection of a subset of data and then the same data were passed through the semi-automated procedures. They found that 96% of the problems were caught by the semi-automated procedures. Those not caught were small spikes and problems that no automatic procedure can hope to find with generating many false failures. They are now working on data from the western Indian Ocean which they expect to complete by mid year in 2005.

A novel approach to finding duplicates was to sum levels, and T and S values on all levels. The stations are then sorted in different ways looking for adjacent stations after the sort having identical sums. They found some duplicates this way that were separated by many 100s of kilometers and years of time. The session found this to be an interesting procedure and requested them to make the documentation of the procedures available as soon as it was completed (Action 16).

Keeley asked if the duplicates so found were reported back to WODB or whoever were the data originators. Because CSIRO had not stored the necessary information to pinpoint the stations, it was not possible to provide detailed enough information. This reinforces not only the need for a unique station identifier, but that it be carried along in various QC practices so that information about problems found can be communicated back to originators.

SOOP Line Sampling and Performance Metrics

Keeley introduced this item. At OceanObs99 the SOOP was urged to modify its sampling procedures to transition to frequently repeated and high density line mode sampling. At a recent OOPC meeting there was some discussion about how well this was happening. In order to tackle this problem, Keeley tried several ways. The most successful seemed to be simply to choose a particular ship and the compute time and space differences between stations. It was usually reasonably clear what was the usual sampling practice and whether or not the data were meeting the sampling procedures.

It was pointed out that ships on high density sampling do not send every profile on the GTS and since this was the data stream used by Keeley, he would not properly catch these sampling runs. It was also noted that there still remained work to connect the stations collected along particular lines to the time and space sampling that he showed to really complete the picture.

Finally, he still needs to generate some overall simple way to classify how well the transition is happening. Australia suggested using the ship with call sign S6FK as a test of his procedures since this was used regularly on IX01 and this might simplify connecting time and space sampling to lines. Keeley thanked the session for comments and would report next time on progress.

Keeley also informed the meeting of an initiative by the JCOMM OPA manager, Mike Johnson of the US, to develop a simple graphic of SOOP performance that can be used as a quick and reasonably accurate assessment of how well the OPA is meeting its global sampling needs. Keeley had been working with Mike to present this from the GTS data stream. They hope to have a figure ready by early 2005 that would be produced quarterly.

GODAE QC Intercomparisons

GTSPP was approached to take part in an intercomparison of QC results in cooperation with the GODAE Server in Monterey. As a consequence, MEDS now send the data it has QC'ed 3 times each week to GODAE where they are now available. Thierry Carval noted that in the experience of Coriolis, there were still a number of errors that get through and that additional work must be done to clean the data before they can be used by modelers. They carry out a statistical analysis looking for anomalous values and clean these out before forwarding the data to the Mercator models. Because their procedures combine the observations close in space and time into a super sample, there is no ready way to get back to original observations. Still, it is instructive to hear about these requirements to know how to streamline the data system to produce readily available data to modelers.

GTSPP and Argo

All of the Argo data circulating on the GTS in TESAC code form now come through the GTSPP data stream via MEDS. Just like all other real-time data, they are subjected to visual QC and the results passed to the NODC 3 times per week. At NODC, the data available from the GDACs are downloaded daily as part of their role in Argo. At present the data downloaded from the GDAC are not reconciled with the data received from MEDS.

The session felt that from a GTSPP viewpoint there is no reason to consider Argo data to be treated differently, rather they are just one more instrument reporting temperature and salinity

profiles. However, there are some characteristics that need to be carefully considered to be sure the GTSPP contains the highest resolution, highest quality data. These include:

- Argo profiles at the GDACs have passed through an automated quality control procedure which is less thorough than is done by GTSPP
- Argo profiles at the GDAC have higher precision in T and S variables and have observations that failed the automated QC procedures and so were stripped from being distributed on the GTS
- MEDS visual QC of Argo profiles finds and flags errors not caught by the automated procedures.
- Delayed mode Argo profiles as they appear at the GDAC should be considered of higher value than the real-time data from either MEDS or the GDAC and so should "replace" the real-time profiles at NODC.

These factors will require some thought about how best to incorporate the Argo data into GTSPP. The session requested NODC to prepare a proposal to achieve this noting that it was the desire of the session that updates should occur at approximately the same rate as real-time data are added to the GTSPP archives (3 times per week) (Action 17).

Given these differences between the data arriving directly in GTSPP through the GTS and from the GDAC, the session considered it to be important for the GTSPP web pages to note these differences in appropriate documentation. It suggested that clients be advised that if they were interested in Argo data only, the primary source should be the Argo GDACs. If they wished a combination of data from different instruments, this could be obtained from GTSPP It was noted that this perfectly aligns with NODC's responsibilities as the Global Argo Data Repository responsibilities it has.

Charles Sun noted that the version of netCDF used at the GDACs was not COARDS compliant, that is data did not have x, y, z and t as declared coordinates. He had built a NODC netCDF form that is compliant and he offers both Argo and GTSPP data in this form. The session considered this to be a valuable service. In addition, there will be Argo data users who have software tuned to the Argo netCDF form and it would be important for them to offer GTSPP data in that form as well (Action 18).

Annual Report

Keeley had prepared a draft report for calendar year 2003 which was circulated as a document for the meeting. He noted that this was the second such that he had produced and the content was primarily an update to last year’s figures. He also noted that it was a convenient vehicle to report progress on the GTSPP to our parent bodies giving both updated statistics and new developments.

The meeting was largely satisfied with the report. It was suggested (later) that some statistics be provided on web site usage. Keeley was requested to complete the report in time for the IODE meeting in April 2005 and to complete the 2004 report in time for the JCOMM meeting in September, 2005, (Action 19) with help from NODC.

CD Production

The idea of producing a GTSPP CD was raised at Hobart, but although considered a useful idea was not acted upon. Chong noted that such a CD is very useful because it allows a single and readily available source for data and she strongly urged that this work proceed. The session restated their support for such an idea. The session noted that the data on the CD should be identical in form to the structure of the data on the ftp site. The session also noted that certain of the data characteristics generated for the Annual Reports may also be suitable for the CD and this would make the CD production a more streamlined process.

Sun noted that he was prepared to proceed, but that a letter requesting such work from the chair and other international bodies would be very helpful in securing resources to carry out the work. Keeley agreed to compose the letter with contributions from Rickards as chair of IODE and with the help of Chong (Action 20). In the meantime, Sun agreed to propose a draft CD for comment (Action 21).

Other Business - Additional Profile Types and Codes

NODC raised a few questions related to profile types in addition to T and S. This was driven by work they are carrying out to reconcile data in the WODB to data in the GTSPP archives. The session re-iterated the original objectives of GTSPP to handle all profile types that arrive with T and S data.

It was noted that some profiles arrive with values in units other than those used by GTSPP. It was remarked that it is best practice to archive in the units received, but that it is a valuable service to users to deliver data of one variable in one unit. At present it is the practice at most GTSPP centres to convert data to the archive units rather than store original units and convert on output. In all cases to date, this has meant a simple multiplication of one unit by a constant to derive the other unit. Such a practice is more problematical in converting from volume to mass units since in this case a density is required. In this case, conversions are usually accomplished with a non-linear polynomial that may cause some loss of precision if converted back and forth too often. It was remarked that just such a case arises with oxygen data that are starting to be reported by Argo floats. Here the Argo data system requires data to be reported in micromoles / kg, whereas the usual units in GTSPP are millimoles / m**3.

It was also noted that there are no more sophisticated QC procedures for oxygen than simple gross range checks. These clearly are less than adequate. Rickards remarked that a book published by JPOTTS about 15 years ago touched on quality assurance procedures and that she would investigate and report if there were procedures of use there (Action 22).

The session noted that Argo would also be facing this problem very quickly as well and that it would be best to combine forces with Argo to have uniform procedures. The chair was asked to bring this to the attention of the Argo Data Team and seek their assistance (Action 23).

Relating to codes and units used in GTSPP, Keeley informed the session of a data dictionary project at MEDS that allowed for on-line queries of the names of variables used by the different institutes in Canada. This is web based and allows owners of entries to update their information themselves. NODC was preparing the lists of their variables and were already entered as an owner in the database. This activity meets a need to GTSPP for standardization of codes used. MEDS and BODC were discussing if they could cooperate and if so how. Both MEDS and BODC will be pursuing this (Action 9).

Finally, the meeting was informed of developing procedures to attach CTDs to diving marine animals. Carval showed data collected from elephant seals, with some dives to 1000 m or more. Keeley noted that some Canadian researchers were also pursuing this, attaching CTDs to seals. Gronell noted that Australians were tagging tuna in a similar way. Because these animals are frequently in areas that are rarely visited by ships, they can provide valuable data. As a consequence of the nature of the telemetry system, profiles are limited to 10-20 levels, but still are informative. French researchers are particularly interested in pursuing sending these data in real-time and Coriolis is investigation how such data may be put onto the GTS. The session encouraged them to continue to lead this activity, and offered participants support as needed to help.

IODE Poster

Keeley informed the meeting that the next IODE meeting would be taking place in new IODE facilities in Oostende, Belgium in April, 2005. As part of the inauguration ceremonies, NODCs and sponsored programmes were invited to submit posters for display. He recommended, and the session agreed that GTSPP should provide a poster. It was noted that content for the poster could be derived form the GTSPP brochure and from a recent poster prepared by NODC for a CLIVAR conference. A small grouped was asked to prepare the poster and circulate for comments (Action 24).

Closure

The chair sought advice from the session about whether yearly meetings are desirable or if a 2 year schedule was better. Most members preferred yearly meetings and in conjunction with another session such as was done here. Keeley requested members to consult their calendars and to advise him of likely meetings to be held in the next year. Of course, holding a meeting in conjunction with the ADMT is a prime candidate.

The meeting ended at 1730 on 27 September with the chair thanking participants for their help.

Annex 1 : List of Participants

Carval, Thierry	IFREMER	thierry.carval@ifremer.fr
Chong, Yeun-Ho	AOML	yeun-ho.chong@noaa.gov
Cowen, Lisa	Australia BOM	l.cowen@bom.gov.au
Gronell, Ann	CSIRO Marine Research	ann.thresher@csiro.au
Gunn, John	ESR	gunn@esr.org
Hall, Norman	US NODC	norman.hall@noaa.gov
Keeley, Bob	MEDS	keeley@meds-sdmm.dfo-mpo.gc.ca
Petit de la Villeon, Loic	IFREMER	petit@ifremer.fr
Rickards, Lesley	BODC	ljr@bodc.ac.uk
Sun, Charles	US NODC	charles.sun@noaa.gov
Tran, Anh	MEDS	tran@meds-sdmm.dfo-mpo.gc.ca
Vladymyrov, Vladimir	IOC/IODE	v.vladymyrov@iode.org

Annex 2: Agenda

1. Introduction (Canada)
The chair will review the status of GTSPP and its objectives.

2. Data Processing / Flow (US, Canada, Australia, France)
We will be provided with a summary of the data flow into the CMD at NODC. Problems or changes will be discussed.

3. Review of action items from Hobart 2002 (All)
We will review the action items noting those that are completed, in progress or not done. For the latter two categories we will review the actions to verify their suitability.

4. Code Tables (Canada)
The Project uses a variety of code tables that have evolved through the years. Recently, MEDS has put up these lists on its web site. In doing so, certain problems and inconsistencies have been found. These need to be corrected. But it will be useful to have a more general discussion of the availability, common usage, maintenance (other functions?) of these tables.

5. Status report on the use of the CRC tag. (US, Canada)
In April, 2004, the SEAS program and MEDS installed software that allows for a unique tag based on a calculation of a CRC value to be used as a way to identify duplicates. A status report will be prepared describing how well this is working so far. We will then get an update on contributing work in Australia and discuss if extensions to other participants is warranted.

6. Links to other programs (France, all others)
Data handled and functions performed by participants of GTSPP contribute to or have some overlaps with other programs. We will have a brief review of these and then discuss what changes may be required in how GTSPP functions. At this time we should also consider what additional partners should be pursued.
(ones that I can think of are Argo, CLIVAR, GODAE QC project, SOT, national programmes)

7. GTSPP Annual Report (US, Canada)
MEDS prepared an annual report for GTSPP for the year 2002. This was presented to the JCOMM SOT meeting in 2003. The 2003 version will be presented at this meeting and participants can comment directly on its contents and usefulness.

8. Other business
    a. netCDF for GTSPP (Australia)
    b. Additional profile types (USA)
    c. Poster for IODE (Canada)

Annex 3: Hobart Actions

Item 1: Review status of WOCE V3CD production

- Charles was asked to consult with Bert Thomson to see if he can use the HDX lines listed by the DIU. - Done
- Bob will circulate ideas for a GTSPP CD to be produced in about 2 years time. - Will be discussed in Item 7
- Bob will try to make use of another meeting at which a significant number of GTSPP participants are present to discuss the ideas of the CD for GTSPP. - Will be discussed in Item 7

Item 2: Review new Project Plan draft

- Loic and Charles to explore the technical issues of IFREMER and NODC operating a distributed archive for GTSPP. - Will be discussed in Item 3
- Peter (Hacker) will circulate the draft proposal of cooperation between APDRC and CSIRO for information. - Not done but will be discussed in Item 3
- Participants to send comments by the end of May to Bob, Rick, Kurt about the draft GTSPP project plan - Done

Item 3: Review new draft brochure

- Bob and Loic to distribute PowerPoint versions of draft brochures to participants for comment. - Done with more discussion in Item 8c

Item 4: Technical Issues

- Bob will circulate a document that describes how the unique tag proposed by BOM could be used in GTSPP. - Done and progress will be discussed in Item 5
- Participants to send comments by the end of May to Bob on the use of Data State Indicators in GTSPP. - no comments received, no further actions
- Participants to send comments by the end of May to Bob on the minimum file content for delivering GTSPP data. - none received and no further actions
- Charles will use the new GTSPP domain name in the GTSPP web site revision he is completing. - Done
- Participants should review the new GTSPP web site at NODC and provide comments to Charles as soon as possible. - Done
- Participants were asked to consider if GTSPP data should be made available in Argo formats. Comments should be sent to Bob. - Will be discussed in Item 6

Item 5: Data Issues

- Loic to distribute as soon as possible a document that compares MEDS and Meteo France data streams for real-time data. - Not done, but processing has changed and this is no longer valuable.
- Bob will ask Steve Cook about the details of how SEAS data will be transmitted ashore. - Done
- Ann will look into testing data from many ocean areas to see how well the semi automated QC procedures developed by CSIRO could be used elsewhere. - Done and progress to be reported in Item 6

Item 6: Issues arising from JCOMM SOT meeting

- Participants agreed to produce an annual GTSPP report .- Report for 2002 done, draft for 2003 to be reviewed in Item 7

Item 7: Other business

- Charles was asked to discuss with Scripps how activities at APDRC might complement the work carried out at Scripps in support of GTSPP. - Done with further discussion under Item 3

Annex 4: Actions from this meeting

Item	Action	Who	When
1.	Prepare a plan to develop a frequently updated ftp site with a facility to allow users to determine what changes have appeared since the last time they accessed the site.	Sun	1 Dec, 2004
2.	Australia to complete the scientific review of 1999 data	Cowen	Immediate
3.	NODC to determine if data from year 2000 were ready to send to science centres and if so to send them for review	Sun	Immediate
4.	Approach Peter Hacker of APDRC to see if he would be willing to fund the QC of Pacific basin data from year 2000 Email sent 19 Oct, 2004, Positive response received	Keeley	Immediately
5.	Discuss the longer term plans of APDRC and their willingness and ability to perform scientific QC activities for Pacific data for GTSPP Email sent 19 Oct, 2004, Positive response received	Keeley, Sun	Immediately
6.	Propose that GTSPP gather the global CTD data on behalf of Argo and regularly forward the data to regional centres for their use in the evaluation of Argo data.	Keeley	Immediately
7.	Australia and AOML to check if duplicates they have detected have been removed from the CMD at NODC and if not to work with NODC to correct the problems. Chong reports duplicates are properly handled	Gronell, Chong, Sun	next meeting
8.	BODC to notify Sun of its next data submission to WDC-A	Rickards	On submission
9.	MEDS and BODC to pursue linking their respective data dictionaries to allow on-line queries.	Rickards, Keeley	April, 2005
10.	Follow up on an investigation of why one instance of a real-time and a delayed mode stations appear the same but have different CRCs Done: 1 BA sent, 2 SEAS files built. BA ==1st SEAS, NODC used 2nd SEAS. Bug produced 2nd SEAS. CRC tag okay.	Keeley, Hall	April, 2005
11.	Determine if the TESACs originating from US operated vessels are being generated within the SEAS2000 software and therefore if they have a CRC tag attached. Done: TESACs not generated by SEAS so no CRCs	Keeley, Cook	1 Jan, 2005
12.	Australia to insert the CRC value into the delayed mode data submission of 2004 data to NODC	Cowen	Apr, 2005
13.	MEDS and IFREMER to share the software for the CRC calculation and IFREMER to begin implementation.	Keeley, Carval	1 Jan, 2005
14.	Prepare a report for submission to IODE in April, 2005 to document the success of the CRC	Keeley, Hall	1 Jan, 2005

	tagging scheme.		
15.	GTSPP participants who also insert Argo profile data on to the GTS to begin calculating CRC tags and insert them into the Data Centre Identifier field in the Argo netCDF format	All appropriate participants	As soon as reasonable
16.	Provide GTSPP with documentation of the semi-automated QC procedures when available	Gronell	When available
17.	Prepare a proposal on the best way to incorporate Argo data into the GTSPP data stream	Sun	1 Dec, 2005
18.	NODC to offer GTSPP data in the Argo netCDF structure	Sun	30 Mar, 2005
19.	Complete 2003 Annual Report for IODE meeting in April and 2004 report for JCOMM meeting in September 2003 report posted on GTSPP web site	Keeley, Sun	Jan, 2005, May, 2005
20.	Prepare a letter to go to NODC requesting their cooperation in producing a GTSPP CD	Keeley, Rickards, Chong	1 Dec, 2004
21.	Prepare a draft form of the GTSPP CD to circulate to participants	Sun	1 Dec, 2004
22.	Investigate what QC procedures are offered for oxygen measurements in the JPOTTS book published in about 1990 and report to Keeley.	Rickards	As possible
23.	Cooperate with the ADMT in devising QC procedures for oxygen profiles	Keeley	next meeting
24.	Prepare poster for upcoming IODE meeting in Oostende	Keeley, Petit de la Villeon, Sun	Jan, 2005