Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies

IOC Editorial Board for the International Bathymetric Chart of the Western Pacific (IBCWP)

Third Session

Tianjin, People's Republic of China
25-30 September 2000

UNESCO

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1. OPENING OF THE SESSION

The representative of the IOC Secretariat Dr. Dmitri Travin opened the Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Pacific (EB-IBCWP) at 9:35 a.m. on Monday 25 September 2000 in the office of the National Marine Data and Information Service (NMDIS) of the State Oceanic Administration (SAO), Tianjin, China.

Mr. Zhao Jihao, Deputy Director-General, Department of Finance, State Oceanic Administration, welcomed the participants to China and commented on the importance of international cooperation in the area of ocean mapping. He recognized the IOC for its efforts in establishing and fostering the exchange of data and technical information between the many countries involved in the IBCWP and similar projects. Mr. Zhao Jihao stated that the IBCWP would continue to have the support of SOA.

Dr. Wang Hong, Director-General of NMDIS, welcomed all the participants to Tianjin and voiced his support for the work of Prof. Hou Wenfeng. He noted that the IBCWP covered a large area and stressed the importance of close participation so that substantial results may be made.

Members, observers, and Secretariat representatives who participated in the Session are listed in Annex II.

Dr. Dmitri Travin, IOC Secretary for Ocean Mapping, welcomed the members of the Board on behalf of the Executive Secretary of the IOC. Dr. Travin briefly presented the IOC Ocean Mapping activities including GEBCO, regional mapping projects, and the Geological – Geophysical mapping series (GAPA). Thanks to China for its strong support of the IBCWP and to the NMDIS for its gracious hosting of the session were expressed.

On behalf of the International Hydrographic Bureau (IHB), Mr. Michel Huet stated that the International Hydrographic Organization actively participated in the IBCWP through the actions of its Member States and the IHO Centre for Digital Bathymetry. He encouraged all members of the Board who were currently not members of the IHO to consider joining.

2. ADOPTION OF THE AGENDA

The issues of increasing participation in the IBCWP by the adding of new members as well as a future work plan were presented. These issues were added as numbers 10 and 11 to the provisional agenda. The Editorial Board adopted the provisional Agenda (see Annex I).

3. ELECTION OF THE CHAIRMAN AND DESIGNATION OF THE RAPPORTEUR

Prof. Hou proposed that Dr. Haiqing Li, SOA of China, would be an ideal candidate for Chairman of the 3rd Session of the IBCWP Editorial Board. Dr. Li was instrumental in the initiation of the IBCWP and had served as Technical Secretary at the first Session of theBoard. The candidate was unanimously elected. Dr. David Divins of the United States of America was selected as Rapporteur for the session.

4. ADMINISTRATIVE ARRANGEMENTS AND DOCUMENTATION

Mr. Zhao Xucai, Chief, Foreign Affairs Division, NMDIS, informed the session of the working arrangements and hoped that everyone would enjoy their stay in Tianjin.

5. PROGRESS REPORTS

5.1 REPORT ON THE OCEAN MAPPING ACTIVITIES IN OTHER REGIONS

Dr. Travin provided the Board a comprehensive report on the status and progress of ocean mapping activities in other regions and the importance of these projects to our better understanding of the features of the sea floor both in the open ocean and in countries' Exclusive Economic Zones. The connection between the IOC-IHO General Bathymetric Chart of the Oceans (GEBCO) and the regional mapping projects was discussed. Dr. Travin pointed out that the success of the regional mapping projects was due largely to two factors: effective cooperation and communication between the Member States and a strong project leader.

5.2 REPORT OF THE CHIEF EDITOR

The Chief Editor, Prof. Hou Wenfeng, presented his report on the status and progress of the IBCWP project (Annex III). A brief overview and history of the project was followed by a discussion on the progress in the various sub-regions.

In sub-region 1 for which Russia is the responsible country, a great deal of work has been accomplished. Twelve plotting sheets for the IBCWP, at a scale 1:500,000, including standard bathymetric data, track maps and depth contours have been completed. Draft copies of sheets 1-12, 1-13, and 1-14 are available for comment and discussion at the session.

In sub-region 2, Japan as responsible country has compiled and published four bathymetric charts of coastal regions of Japan at a scale of 1:1,000,000. It is still planned that these charts will be adapted to produce two sheets in accordance with the IBCWP specifications. In addition to Japan, both China and Republic of Korea are participating in sub-region 2. China has compiled the bathymetric contours for sheets 2-4, 2-8, and 2-11. Korea is actively collecting new bathymetric data for their coastal area; these data will be used in the compilation of sheets in sub-region 2 when their field acquisition programme is complete.

Sub-region 3, for which China is the responsible country, has now five sheets (3-6, 3-7, 3-11, 3-12, and 3-16) compiled by China according to the specifications of the IBCWP. In addition to the specified contour interval of 200 m, contours at a 500 m interval were added. Vietnam presented sheet 3-11 for review by the Board at the session. This sheet has also been digitised. Work is continuing on sheet 3-6. Malaysia is currently working on data acquisition for sheets 3-16 and 3-17. Philippines requested to become the producing country for sheet 3-12, thereby elevating their status to that of a producing country. Thailand has officially agreed to participate in the IBCWP and is actively compiling data for sheet 3-10.

Progress in sub-region 4, under Australia's responsibility, has been driven by a bathymetric mapping programme in Australia to support the UNCLOS activities. Sheets 4-12 and 4-14 have been compiled and were expected to be presented at the session; however, the Australian representative was unable to attend.

New Zealand has agreed to take responsibility for sub-region 5 and to provide contour data for the IBCWP.

The South Pacific Applied Geoscience Commission (SOPAC) has accepted the invitation of IOC to contribute to the IBCWP as the responsible country for sub-region 6.

Prof. Hou presented several suggestions and ideas for the future development of the IBCWP to the Editorial Board for consideration. Topics discussed included: the recruitment of new

Member States, data exchange and sharing issues, a revision to the specifications, the exchange of technical information, the guidance of the GEBCO sub-committee on Undersea Feature Names, future plans, and publicity of the IBCWP.

5.3 REPORT BY COUNTRIES

VIETNAM

Vietnam reported that a two-phase implementation plan for the project had been designed and that governmental financial support had been obtained.

Phase 1 consists of the collection of all available bathymetric data for the Bien Dong (South China Sea) from both domestic and foreign sources, the updating of the bathymetric database for near and offshore areas with recently collected data, the assessment of the collected materials, and the establishment of a special digitisation process for bathymetric charts for the Bien Dong area (sheets 3-11, 3-6 and 3-1).

Phase 2 involves the settling of technical issues related to the compilation of chart sheets of different scales and the production of draft copies of sheets 3-11 and 3-6 in accordance with specifications of the IBCWP.

UNITED STATES OF AMERICA

The United States reported that although it has no direct or indirect responsibility for compiling any IBCWP, they are willing to take responsibility for the compilation of a reasonable number of sheets in order to assist the currently responsible country. The US is interested in moving the IBCWP forward and closer to completion. In particular, the US is willing to work in "High Sea" areas, which are areas outside countries' EEZs.

The US has a database of Measured and Estimated Seafloor Topography that it can make available to all participants in the IBCWP. This database, also known as the Smith and Sandwell database after the creators, uses observation ship soundings where they exist. Where soundings are not available, a depth value is estimated using satellite derived gravity data. This data set does an excellent job in portraying the major trends in the bathymetry as well as in the identification of previously unseen features. The US has found this data set to be very useful when drawing bathymetry contours, especially in area where the data coverage is sparse. The IBCWIO is currently using this data to aid in the drawing of contours after having identified several rules for inclusion in the final product.

The US will make available plotting sheets with track line sounding data and Measured and Estimated Topography contours to any country requesting this information. Also, the US will provide any traditional bathymetric data in its holding to any IBCWP country who requests it.

The United States would like to propose a delivery mechanism for the IBCWP contours. Currently the US National Geophysical Data Center (NGDC) is developing a contour extractor to be included in its GEODAS system. The contour extractor would allow the user to display contours for a given region at variable resolutions, from very high to very crude. For example if you were to look at the entire western Pacific you would not need to plot every data point to see the major trends and shapes of the contours, however if you were to zoom into small coastal area, you may need every data point to accurately display the data. The contour extractor will also allow the use to save data for a selected region at whatever resolution is selected and in several output formats. The US would like to provide all the IBCWP participants with a CD-ROM containing all the contours data, along with the software that will allow them to take "quick looks" and the data and save the data in

a format that can then be imported into a graphic or map making utility for final presentation. All contours would need to be digitised and formatted for inclusion on the CD-ROM.

JAPAN

During the intersessional period between the 2nd and 3rd EB-IBCWP, Japan issued three new Bathymetric Charts at a scale of 1:1,000,000 in the Japanese EEZ.

At the 2nd session of the EB-IBCWP, Japan took responsibility to compile sheet 2-11. Work on this compilation is continuing.

REPUBLIC OF KOREA

Korea presented the status of their survey programme in response to the UN Convention on the Law of the Sea as it relates to sheet 2-8. Surveying began in 1996 and is expected to be completed in 2003/2004. After the publication of the Korean "Basic Map of the Sea" project the newly collected survey data will be available for the compilation of sheet 2-8. The publication of sheet 2-8, including data for the coastal area of China, which is to be contributed by China, will be conducted on a yearly plan as soon as all data are received and the Korean national mapping programme is complete.

PHILIPPINES

On 14 January 1998, the Philippines communicated to the Chairman, Admiral Mohd Rasip Bin Hassan, and the Chief Editor, Prof. Hou Wenfeng, of the IBCWP its decision to elevate its participation status to that of a producing country. In the same communication, the Philippines reported that compilation work on the still unassigned sheet 3-12 had commenced, and recommended that sheet 3-12 be assigned to the Philippines. In reply, the Chairman expressed his agreement and promised to obtain a formal decision from the other members of the EB through correspondence. Apparently, a consensus was not obtained. As a result on 24 November 1998; the chairman advised that a decision would be made at the next session of the EB, even though it would delay completion of the work.

Nevertheless, a preliminary compilation of data from GEBCO and other sources was made for sheet 3-12.

MALAYSIA

Malaysia has been assigned the compilation of sheets 3-16 and 3-17. The compilation of these sheets has commenced with the scheming of these sheets in accordance with the specifications of the IBCWP and work plan.

Existing data have been incorporated in the compilation sheets. However, the compilation progress has been hampered by the lack of available data to complete the basic interval of 200 meters. Areas without adequate bathymetric data sources require contributions from other participating countries in sub-region 3. Request for source data and sample charts have been forwarded to the countries responsible for sub-region 3. The compilation is moving slowly as Malaysia is waiting to receive the requested data.

Malaysia's future plans include continuing with the compilation and the gathering of additional data from all available sources to generate the most complete and accurate compilation.

FEDERATION OF RUSSIA

During the intersessional period following the 2nd session of the EB-IBCWP, Russia has produced nine initial sheets at a scale of 1:500,000 and from these sheets they have compiled three sheets at a scale of 1:1,000,000, namely sheets 1-12, 1-13, and 1-14. Proof copies of these sheets were submitted to the EB for comment.

The preparation of these sheets was guided by proposals for the IBCWP cartographic standards submitted at the 2nd session of the EB as well as by experience gained during the production of the IBCM.

Currently three compilation sheets for IBCWP sheet 1-11 are being prepared.

The advice of the EB is solicited for 2 topics:

(i) Whether the title page will be the same for all charts, similar to the model of the IBCM, or will each sheet have its own title page, as in the IBCWIO. Russia recommends the adoption of the IBCWIO model, as it will expedite the production of the sheets.

(ii) The necessity for the approval of a uniform colour scale.

CHINA

Since the 2nd session of the EB-IBCWP in Bangkok, Thailand, China has made progress for the IBCWP project.

China has been active in the collection and processing of bathymetric data for sub-regions 2 and 3. These data will eventually be part of the China Bathymetric Database, which is currently in the design phase.

The compilation and production of 1:500,000 scale bathymetric charts for areas adjacent to China were initiated. More than 40 sheets from both sub-region 2 and 3 have been produced since 1996. These data have all been digitised. Five sheets from sub-region 3 have been produced in accordance with the specifications of the IBCWP at a scale of 1:1,000,000. In addition, these sheets contain the 500-meter interval contours, as a requirement for inclusion in the GEBCO Digital Atlas (GDA).

China presented a detailed overview of its computer cartographic system for the production of bathymetric charts.

China also presented plans and concerns for the future development of the IBCWP, these include:

Data exchange. It was stress that the need to establish the exchange of bathymetric data between participants in the IBCWP is critical to the success of the project.

Coastline. 1:250,000 and 1:500,000 coastline and topography contour files will be set up from new data to coincide with the bathymetric contour maps.

Multibeam Bathymetry. A multibeam acquisition system will be established to provide data for use in the revision and updating of previously compiled sheets.

Nomenclature. A list of geographical and undersea feature names should be established for sub-regions 2 and 3 in order to avoid the problem of conflicting names of the same feature.

Internet Data Exchange. The Internet should be established as the preferred mechanism for the exchange of data between the responsible country and the participating countries.

6. COMPILATION OF THE IBCWP

Two sub-items were added to the agenda, data exchange (6.1) and undersea feature names (6.6).

6.1 DATA EXCHANGE

The EB-IBCWP agreed that the issue of data exchange between the Member States is important. A major hindrance to the exchange of data has been how to handle data in sensitive areas and each countries internal data distribution policies. The Board agreed that it must find ways to exchange data that do not jeopardize national security issues. It was proposed that the exchange of "degraded" data in the form of contours or as a grid would be one way to achieve this goal. It was decided to request the IOC Secretariat to distribute a questionnaire to all Member States asking them what data they would be willing to exchange, where that data is located, and what form would the data be exchanged in (e.g. source data, contours, grid, etc.).

6.2 PREPARATION OF THE COMPILATION SHEETS

The Chief Editor reminded the Board that according to the Terms of Reference, responsible countries must submit a detailed implementation plan to the Chief Editor. The status of the implementation plans is given in the individual country reports. The Board agreed that proof copies of all sheets for evaluation by the EB-IBCWP should be sent to the members well in advance of the next session in order to allow for a thorough and detail review to be carried out.

6.3 PROGRESS ON THE ESTABLISHMENT OF THE IBCWP DATABASE

China presented a model for the development of a bathymetric database for the IBCWP similar to that already in place at NGDC and the IHO Data Centre for Digital Bathymetry (IHO-DCDB) co-located at NGDC in Boulder, Colorado. The Board recommended that NGDC and NMDIS of China cooperate to develop the database.

6.4 DATA CATALOGUE

The Board recommended that NMDIS and NGDC cooperate in the establishment of a data catalogue for the IBCWP. The catalogue should contain the essential metadata to allow the Member States to identify what data are available in their area of interest as well as enough information to be able to assess the value and quality of the data to their compilation efforts.

6.5 STANDARDIZATION AND QUALITY CONTROL

In order to standardize and quality control the bathymetric charts generated by the IBCWP, a set of guidelines for the preparation of the IBCWP sheets (Annex IV) was proposed and approved by the Board. These guidelines were modelled after those successfully employed in the IBCWIO.

6.6 UNDERSEA FEATURE NAMES

A very detailed and informative presentation was given by the IHO Secretariat on the workings and publications of the GEBCO Sub-Committee for Undersea Feature Names (SCUFN). The Board agreed that only names of undersea features in international waters that were previously

approved by SCUFN or those presented and subsequently approved would be included on the IBCWP sheets. In areas of undisputed national jurisdiction, the local English name would be included on the chart. A proposal was submitted by Vietnam (Annex V) for consideration of the EB on a procedure to select the feature names when there are multi-jurisdictional claims.

7. REVISION OF THE TERMS OF REFERENCE OF THE IBCWP

The Terms of Reference for the Editorial Board of the IBCWP have been approved by the IOC Assembly in 1991 (Annex to Resolution XVI-5), and therefore cannot be modified at this time.

Although the Terms of Reference cannot be modified, the Board would like to stress the importance of capacity building for all member countries active in bathymetric chart compilation. This should be achieved through the exchange of technical capabilities and procedures, metadata development, and database preparation. In order to best achieve this goal, a training workshop should be organized and implemented as soon as possible to facilitate the completion of the IBCWP and to generate the best and most accurate bathymetry for the region.

8. REVISION OF SPECIFICATIONS OF THE IBCWP

The IHB Secretariat presented some revisions to the original specifications (IOC/EB-IBCWP-I/3 Annex II) of the IBCWP. It proposed to adopt specifications based on the model developed for the IBCWIO. The Board approved the changes to the specifications as in Annex VI, with the following exceptions: Section 303 paragraph A and Section 208 numbers 7 and 8. The exceptions are to be forwarded to the CGOM for clarification and guidance.

A list of Cartographic Standards for the IBCWP, proposed by the Chief Editor at the EB-IBCWP-II, was reviewed by the Board and accepted as Annex VII.

9. REVISION OF THE IMPLEMENTATION PLAN

The Chairman expressed the opinion that it is never too late to develop a clear and directed implementation plan and to set that plan into action. Being that sub-regions 4, 5, and 6 were not represented at the session, it was decided to revise the implementation plan for sub-regions 1, 2, and 3.

The Board agreed on the necessity inform better on the responsible country, the producing country, and the participating countries for each sheet in a sub-region, as well as the coordinates for each sheet.

Japan proposed to revise the assembly diagram for sub-regions 1, 2, and 3. In addition to establishing a revised set of sheet coordinates, a new sheet, sheet 1-14, was added. NGDC, with guidance by the Chief Editor, will generate a table with the coordinates for each sheet in sub-regions 1-3 and circulate it to the members during the intersessional period.

Keeping in mind that many sensitive issues may arise, the Board began confirming and establishing roles in the implementation plan for sub-region 1. The responsible country for Sub-region 1 is Russia. The producing and participating country or organization for each sheet is listed in Annex VIII.

The responsible country for sub-region 2 is Japan. The producing and participating country or organization for many of the sheets in sub-region 2 were identified as shown in Annex VIII. Unfortunately, at this stage, several sheets are still without a producing country. Japan agreed to provide the EB-IBCWP with a decision on their interest in serving as the producing country for the as yet unassigned sheets in sub-region 2 at the next session of the EB.

Prior to beginning its discussions in sub-region 3 the IHB Secretariat reminded the session that it was an international meeting at that the spirit of cooperation should prevail so that national interests will not be put before the interests of mankind. Despite these remarks, discussion for the sub-region staled. A proposal by Malaysia, to suspend discussions until the next session of the EB, was agreed on. The Board decided that all countries involved in sub-region 3 should discuss with their national authorities, during the intersessional period, how to proceed in order to advance the project.

10. OTHER BUSINESS

10.1 IBCWP WORKSHOP

NGDC and the IOC Secretariat will explore the possibilities for funding and organizing a training workshop for the IBCWP, to be hosted by NGDC, as soon as possible. The Board unanimously agreed that such a workshop and the potential for technology sharing between all members was essential to the success of the IBCWP and should be made a priority for the IBCWP.

10.2 IBCWP WEBSITE

China presented a draft website for the IBCWP project. It was pointed out that NGDC currently hosts and maintains the website for the other five IOC regional mapping projects. As a result it was recommended that NGDC and NMDIS cooperate on the development of an IBCWP website in order to achieve consistency between all IOC regional mapping projects.

10.3 IHB ELECTRONIC CHARTS

A very informative discussion of the mission, history, and strategic issues of the IHO was given by the IHB Secretariat. This discussion preceded an overview of Electronic Navigational Chart (ENC) technology and the status of their worldwide production.

11. DATE AND PLACE OF NEXT SESSION

The Board agreed that the next session of the EB-IBCWP should be held in conjunction with the proposed training workshop. This session was tentatively scheduled for the fall of 2001 at the US National Geophysical Data Center in Boulder, Colorado.

12. ADOPTION OF THE SUMMARY REPORT

The Board agreed to review and adopt the Summary Report by correspondence after the IOC Secretariat, IHB Secretariat, and the Rapporteur confered and presented a draft to the Chairman who will subsequently distribute the report to the Members.

13. CLOSURE OF THE SESSION

The Chairman thanked all the participants for their exceptional cooperative spirit and strong sense of responsibility through the course of the session, even though there were times when no consensus was reach. The Chairman also thanked the IOC and IHB for their preparation and their valuable contributions to the session; the Chief editor for all his exhaustive efforts; the Rapporteur for taking on the arduous tasks of the position; the Editorial Board members who displayed a common goal for a successful project; and to Dr. Lin Shaohun of NMDIS for being such a gracious host; without the support of NMDIS the session would not have happened. Following his remarks, the Chairman officially closed the session.

ANNEX I

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ANNEX II

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ANNEX III

REPORT ON PROGRESS OF THE IBCWP PROJECT

Prof. Hou Wenfeng
Chief Editor, EB-IBCWP
22 September 2000

Honoured Mr. Chairman,

Firstly, on behalf of the Editorial Board and my colleagues let me express a warm welcome to the friends present at the meeting. With the support and promotion of the IOC, we take this opportunity to come to Tiajin to discuss our IBCWP project, so as to promote our project to develop and implement successfully. So I should express my sincere thanks to the IOC and Mr. Travin.

Please allow me to give a brief report on the progress of our project and the issues, which should be discussed in the meeting. I believe, and it has been testified by fact, that the Member States/Organizations have confidence in ability of the successful implementation of the IBCWP project. During the seven years from the first session of the EB-IBCWP up to now, a series of activities related to the project have been carried out. The overall progress is not so rapid, but we have made some pleasant achievements together. Today the third session of the Editorial Board is being held. We do believe that the project will be made obvious further progress in the future with the support of the IOC Secretariat and on the basis of seriously summing up the experiences, learning from other regional mapping projects and strengthening the international cooperation. Now let us briefly review the activities of the first and second sessions of the Editorial Board and the important and major progress of the project.

1. The first and Second Sessions of the EB-IBCWP

The most important task of the EB-IBCWP is to work out the specifications for the IBCWP by use of the international general criteria and then compile and publish the 1:1,000,000 bathymetric chart of the Western Pacific and the geological/geophysical chart series. The detailed work of the Editorial Board includes: sponsor and organize the project, work out implementation plane and activity plan, prepare the compilation sheets and publish and release the bathymetric chart of the WESTPAC and the geological/geophysical chart series mentioned above. These charts will play an important beneficial role in the survey, monitoring and description of the earth and environmental phenomena and build up a foundation for the future digital earth and ocean. Keeping the above objectives in mind, the first session of the EB-IBCWP was held in Tianjin, China in October 1993. Eight member States attended the meeting. The meeting discussed and approved such technical documents as (1) Specifications for the International Bathymetric Chart of the Western Pacific, (2) Terms of Reference of EB-IBCWP, (3) Recommendation for Preparation of Plotting Sheets for International Bathymetric Chart Produced Under regional Mapping Projects, and (4) Assembly Diagram for the IBCWP. The sub-regions were divided and the responsible countries/organizations of the sub-regions from 1st to 4th were decided in the meeting. Afterwards, the Official Meeting for the IBCWP was held in Bali, Indonesia in November 1994. The Philippines attended the meeting as a new Member State, and New Zealand and SOPAC attended the meeting as observers. Up to then, the foundation had been made for the initiation and implementation of the IBCWP.

Organized by the IOC Secretariat, the second session of the EB-IBCWP was held in Bangkok, Thailand in December 1996. Nine Member States attended the meeting. At the meeting I reported the progress of the project and the existing problems. And the responsible countries and Member States reported their own progress respectively. The following were discussed in the meeting: the development plan of the project, preparation of compilation sheets, progress of sub-regions 1 through 4, the establishment of IBCWP database, the joint data inventory, and such technical issues as standards and quality control. The meeting agreed to use the bathymetric chart of the Mediterranean as a model for the IBCWP project. And it was expected in the meeting that 13 sheets would be submitted to the third session of the Editorial Board for evaluation. After the above two meeting of the Editorial Board, the IBCWP project went ahead normally. I am expecting that you would bring some new information to show your great progress for this meeting.

2. Progress in Sub-regions

After the above two sessions of the EB-IBCWP, the members of the Editorial Board took the opportunity to do much organizing and technical work at national and international occasion to promote the development of the IBCWP project. I had got in touch with the responsible countries of the sub-regions and the Member States before I attended the GEBCO meeting held in Wellington, New Zealand in March 1998. At that time, I got the brief information about the project implementation in the sub-regions. At the GEBCO meeting I reported the progress of the IBCWP project. Up to now, two years have gone. It is estimated that changes have taken place in the project progress in each sub-region and each Member State.

2.1 Russian Head Department of Navigation and Oceanography takes the responsibility of 14 sheets of the 1st sub-region. They have tried best to promote the implementation of the project in Russia all along. They have done a great deal of work in the data collection and processing and the preparation of compilation sheets. At the second session, they submitted a sheet (1-13) of depth contour map for discussion. Since the second session of the IBCWP Editorial Board, they have prepared nine initial sheets at the scale 1:500,000 and on this basis they have compiled three charts sheets at scale 1:1,000,000 namely 1-12, 1-13, 1-14, copies of which are submitted to the Editorial Board. The sheet compilation has been guided by the experience that has been accumulated and used during the production of the International bathymetric Chart of the Mediterranean. At present three initial sheets for sheet 1-11 are being prepared.

2.2 Japan is the responsible country for sub-region 2. They have compiled and published eight bathymetric charts for Japanese adjacent sea areas at the scale of 1:1,000,000. Japan is now continuing to compile 2-11. China and the Republic of Korea would participate in sub-region 2 together with Japan. China participates in the chart making of sheet 2-4. They have not finished the compilation of bathymetric contour maps of sheets 2-4, 2-8, and 2-11. The Republic of Korea has conducted the single beam sounding survey at its 70% relation area. They have published 18 sheets of 1:200,000 bathymetric charts and completed the contour plotting sheets. Multibeam surveys have been carried out in Korea since 1996, from which the bathymetric data for some sheets of the second sub-region will be provided. All of them will provide important basis for IBCWP. They have conducted the survey for the Basic Maps of the Sea relating to sheet 2-8. After the publication of the Basic Maps of the Sea in 2003-2004, followed by an establishment of its database, the publication of sheet 2-8 will be conducted.

2.3 China, the responsible country for sub-region 3, has extensively collected bathymetric data for the South China Sea. 27 sheets of 1:500,000 bathymetric charts for the South China Sea have been compiled in 1996. Now, five sheets (3-6, 3-7, 3-11, 3-12, 3-16) have been compiled according to the IBCWP specifications. The depth contour selected 500 m, 1500 m, 2500 m at 500 m intervals as Dr. Scott had proposed. The multibeam sounding survey was initiated for Chinese adjacent sea

areas in 1998. So it is expected that the bathymetric data and contour maps of the compiled sheets will be updated. At the same time China has provided and updated some hardware and software. They have also designed data inventory and database framework for IBCWP. Vietnam has been collecting available data since 1995. They updated the database by new bathymetric data obtained from new several surveys. Up to now, they have finished compiling and producing sheet 3-11 and digitising the sheet 3-6. In Malaysia, the compilation of the IBCWP has commenced with the scheming of 3-16 and 3-17 in accordance to the IBCWP specification and work plan. Existing data have been incorporated in the compilation sheets. The compilation progress was hampered by the lack of available data. So they hope to do extensive cooperation in data exchange. The Philippines has commenced the digitisation of its nautical charts and automation of its hydrographic surveys and chart production systems. They have decided to elevate their status of participation in the IBCWP to that of a producing country and proposed to produce sheet 3-12. They hope to get the approval from the Editorial Board. Ms. Mathuros Sumipan faxed me a letter in April 1999. She said the participation of the Thailand Hydrographic Department in the IBCWP project had been approved and supported by government. They are collecting data and compiling sheet 3-10.

2.4 Progress has been made in sub-region 4, the responsibility of the Australian Geological Survey Organization (AGSO). In recent years, the AGSO has been carrying on a project about the UNCLOS, the bathymetric mapping of which contains and supports the IBCWP project, especially in sub-region 4. The AGSO is developing a national marine database covering all the Australian sea areas. It is an arduous task and will need a long time. Though the digitised bathymetric data cannot be obtained directly from the AGSO database, some contour data necessary for sub-region 4 will be provided. They have compiled sheets 4-12 and 4-14. They want to submit the twp sheets at this meeting for evaluation, but AGSO was unable to attend the meeting.

2.5 New Zealand has agreed to take charge of sub-region 5. They are collecting the bathymetric data of their continental shelf margin to produce and update the 1:1,000,000 charts of New Zealand sea areas. They decided to take account of the IBCWP project when they do these work and they agreed to provide contour data for the IBCWP.

2.6 SOPAC has close relations with IOC and IHO in the GECO program. SOPAC has accepted the invitation of the IOC and agreed to contribute to the IBCWP project as the responsible organization for sub-region 6.

3. Suggestions/Considerations/Ideas on Future Development of the IBCWP

The IBCWP project involves a vast ocean area and a number of Member States. It is undoubted that there exist various factors having impact on the project development in the initiation and implementation period of the project. It is necessary to overcome them timely in the process of the project implementation. At present, the sub-regions make different progress. Its overall progress is not so rapid as other regional mapping projects. So we do need to seriously discuss the future of the project: What should we do and how to do?

3.1 Admitting new Member States

In order to get more support for the IBCWP, wide participation is necessary. Concerning the participation of New Zealand, we hope they are not only participating country, but also should be responsible countries of the 5th sub-region. We should also make endeavour to invite such countries as the UK, France, Indonesia, etc. to participate in the IBCWP. Their technology and data are necessary for the project. We know that participation in the IBCWP reflects the scientific and technological prospering and progressing of the participating country. The Member States should try best to create conditions to successfully fulfil their own undertakings. The Member States

should build up good cooperative relationships between each other and try to carry out all kinds of academic exchange and technician visit exchange related to the IBCWP. Concerning invite the UK, France, and Indonesia to participate in the project, we hope that IOC Secretariat provide assistance.

3.2 Data resource

The bathymetric data are most important for the development of the IBCWP project. Deficiency of the hydrographic survey data and new nautical charts is the issue that the coastal countries of the Western Pacific are facing at. The Member States should try to broaden the channels of data collection. Even the exchange of contour data or historical bathymetric data is useful for the sea areas lack of data. Data exchange and then data sharing is the key problem of the IBCWP. If it can be conducted successfully, a breakthrough will be made in the progress of the IBCWP. IHO data centre, U.S. NGDC and WDC-B hold a large number of data. We hope they provide support for the IBCWP in data collection.

The US has a database of Measured and Estimated Seafloor Topography that it can make available to all participants in the IBCWP. The United States would like to propose a delivery mechanism for the IBCWP contours. Currently the US National Geophysical Data Center (NGDC) is developing a contour extractor to be included in its GEODAS system. The contour extractor would allow the user to display contours for a given region at variable resolutions, from very high to very crude. The contour extractor will also allow the use to save data for a selected region at whatever resolution is selected and in several output formats. The US would like to provide all the IBCWP participants with a CD-ROM containing all the contours data, along with the software that will allow them to take “quick looks” at the data and save the data in a format that can then be imported into a graphic or map making utility for final presentation. All contours would need to be digitised and formatted for inclusion on the CD-ROM.

The United States of America has had a kind of new useful grid bathymetric data which are deduced from the satellite altimeter. These data will be helpful for the quality control. NGDC will distribute these useful data to the Member States/Organizations. And they would like to support IBCWP in data and technology.

We should also pay more attention to the development of the multi-beam sounding technology. We should know that it would entirely change the development of traditional sea sounding technology. It is the hope of future development of the IBCWP.

3.3 Revision of specifications

The contour interval is 500m in the GEBCO digitised atlas. But it is 200 m in the IBCWP. So the contour maps of IBCWP cannot coincide with those of GEBCO. Article 76 para. 5 of UNCLOS provides the 2500 m contour in bathymetric chart for reference. In order to meet these requirements, the contours in 500 m interval should be added in the IBCWP charts. So it is necessary to discuss the revision of related articles of original specifications in this meeting.

3.4 Technological development

In recent years, new development has been made in integrating and developing an effective and high-speed mapping system by use of the general data format on the basis of computer cartography/GIS. The system includes following functions: graphical scanning input, graphical vectorization, data processing, graphical edition and design, multi-media making, colour printing, internet transmission of data, etc. We should make endeavour to promoting the technological exchange and development among the IBCWP Member States. So we need the support of U.S.

NGDC. We hope that the technical training course that had planned to be supported by the U.S. NGDC could be conducted next year.

3.5 Geographic names

For the geographic names, there also exist problems in the WESTPAC. For example, the same island, reef, shoal or seamount is named differently in different countries' charts. It is a very important and also quite complicated problem in the future compilation and publication of the IBCWP. So the Editorial Board should pay more attention to it. We hope that the IOC Secretariat and GEBC subcommittee on geographical names provide support in this matter. All IBCWP charts should be presented to SCUFN for adjusting and evaluating geographical names before they are published.

3.6 Future plan

At the Second Session of the Editorial Board, in order to support the data exchange it was agreed that the Member States should submit their own data inventory to the Chief Editor who should work out a joint data inventory and then distribute it to each Member State. According to the terms of reference of EB-IBCWP, the countries/organizations responsible for compiling the International Bathymetric Chart for sub-regions of Western Pacific should prepare a detailed implementation plan and submit this plan to the EB-IBCWP. However, due to some reasons, the above two plans have not been carried on up to now. So, I hope that we make endeavour together to realize the two plans in the near future. So it would be appreciated if all responsible countries and Member States submitted their implementation plan to the Editorial Board as soon as possible, so that the Board is able to work out the overall plan to be submitted to IOC ad GEBCO.

3.7 Further participation

The Philippines has carried out much work for IBCWP. They want to compile and publish the sheet of 3-12 as producing country. And the Thailand wants to compile and produce the sheet of 3-10. Both of them hope to get the approval of the Editorial Board.

3.8 Postcard

Maybe you know that Russia published a postcard for the Mediterranean Sea. Concerning compilation and publication of a postcard for the Western Pacific, Mr. Travin proposed a suggestion to us. Please discuss it.

The mapping activities sponsored by the IOC are scientific and practical. They have made significant achievements. The fact that we gather here to discuss the further development of the IBCWP project in the first year of the 21st Century makes us be of a strong sense of mission. In order for the prosperous future of the IBCWP, it is necessary for us to cooperate sincerely, make endeavour to go ahead and develop technology. And I do believe that the meeting must be successful through our efforts together.

Thanks for Chairman and my friends. Thank you for your co-operation.

ANNEX IV

GUIDANCE ON PREPARATION OF IBCWP SHEETS

1. DEFINITION OF SHEET COORDINATES

Accurate determination of the geographical limits for each IBCWP sheet, according to the specifications, will be performed by the Chief Editor and distributed to the Sheet Coordinator of the Responsible Country.

2. DATA COLLECTION

The Chief Editor will Collect all available data for each sheet and distribute the relevant data to each IBCWP Sheet Coordinator. These data include: soundings, digital and analog, existing bathymetric contours, relevant literature describing the morphology of the area, geographical names and any other useful information, including measured and estimated sea floor topography derived from satellite altimetry and original ship soundings. In some circumstances, a sheet coordinator may receive bathymetric data directly from a source. In such a case, the sheet coordinator should inform the Chief Editor accordingly. Data will continue to be distributed as the Chief Editor receives it.

3. DATA PREPARATION AND EVALUATION

The Sheet Coordinator will reduce data to a common scale. This scale will preferably be 1:250,000. During this phase a selection process may begin. Digital Carter's Tables, available from NGDC upon request, will account for sound velocity.

In doing so, the following principles should be respected:

- Keep data from different sources on separate overlays. For instance digital data from underway trackline marine geophysics (TRKDAS), digitised data from the analog GEBCO OPS and data from a particular source agency, i.e. SOC or DNO.
- Make colour coded plots. Use existing data sets such as the contours from the GEBCO Digital Atlas (GDA) as a further check on the same plot to indicate the general bathymetric trends.
- Make plots at scales that suit the density of the data.
- Use a gridding package to make contour plots and 3D views. These will help to identify anomalous tracks and aid later in the hand contouring of the data.
- Obtain representative depth profiles with which to construct morphological map.
- Obtain existing maps of the region, including geophysical maps.
- Correct data if possible, but be prepared to exclude data.
- Do not ignore data simply because they are old or analog.

4. DATA COMMPILATION

Draw contours from bathymetric data at the same scale as above, keeping in mind the following recommendations:

- Identify any multibeam tracks. Obtain the contours from the original surveys. Do not attempt to replace a multibeam map with a hand-contoured version.
- Generalize complex contours if necessary, but do it carefully such that bathymetric features with small relief, such as channels are not lost.
- Make use of other data sets such as satellite altimetry and side scan sonar images and maps showing the seismicity, gravity, geologic structure and magnetic anomalies of the region.

5. TECHNICAL REVIEW

Review of contour overlays by the Chief Editor. Comments will be sent to the relevant Sheet Coordinator for correction.

Notes

A) Iteration of steps 3 and 4 may be required.
B) New undersea feature names may be proposed as a result of the compilation work.

6. PREPARATION OF 1:1 MILLION SCALE SHEETS

Assembling of the contour overlays contained in the concerned sheet, either by the Sheet Coordinator or the Chief editor.

7. SCIENTIFIC REVIEW

The 1:1 million scale sheets will be sent by the Sheet Coordinator for review to a scientific expert and if possible to the Editorial Board.

8. CORRECTION CONTOUR OVERLAYS

The Chief Editor and the Sheet Coordinator will collaborate for revision of the contour overlays.

9. PREPARATION OF A PROOF FOR THE EDITORIAL BOARD

Combination by the Chief Editor or by the Sheet Coordinator in liaison with the Chief Editor, of final contours and other map elements (land topography, geographic names, spot depths, legend, etc.) in a colour proof of the sheet for review by the Editorial Board.

10. PRINTING AND PUBLISHING OF THE IBCWP SHEET

Preparation of colour plates, printing and distribution by the Chief Editor.

11. REPORT ON PROGRESS

Progress for each sheet will be communicated to the Vice-Chairman, who will ensure that the website is updated.

ANNEX V

VIETNAMESE PROPOSAL FOR THE ADOPTION OF GEOGRAPHIC AND UNDERSEA FEATURE NAMES

EB-IBCWP-III
26 September 2000
Tianjin, People's Republic of China

The names of geographical features, such as islands and the names of undersea features that are not located in international waters is a sensitive matter in the IBCWP, particularly for Sub-regions 2 and 3. It is proposed that these features be divided into two categories, undisputed and disputed. In areas of undisputed national jurisdiction, the local name would be included on the chart.

Where national jurisdiction is disputed, it is proposed to proceed in accordance with Annex II, IOC/EB-IBCWP-1/3, Section 500, and article 501. It is in the benefit of the IBCWP to have a common chart for international use, it is recommended that the approved international name for a disputed geographic or undersea feature be adopted. This is a neutral position and a very suitable means for overcoming recent obstacles to the advancement of the IBCWP. In order to respect a country's interests, each country should prepared and submit a list of proposed names of features located in disputed areas to the EB-IBCWP. It is important to point out that it is not necessary for all geographic names to be shown on an international bathymetric chart. However, it should be the responsibility of the Editorial Board to approve the list of disputed feature names for inclusion on IBCWP sheets. In this way, the absence of a feature name would be avoided in most cases.

It is also proposed that a table be included in the margin of each sheet showing a list of selected feature names, both national and international, for reference purposes.

ANNEX VI

SPECIFICATIONS FOR THE INTERNATIONAL BATHYMETRIC CHART OF THE WESTERN PACIFIC (IBCWP)

SECTION 100 - GENERAL

101 - Introduction

A The International Bathymetric Chart of the Western Pacific is a continuation and further development of the General Bathymetric Chart of the Oceans (GEBCO), under the general guidance of the IOC Consultative Group on Ocean Mapping. This chart is prepared and published with the co-operation of IHO Volunteering Hydrographic Offices (VHOs) and/or groups of scientists from appropriate institutions.

B The Editorial Board for the IBCWP was established by Resolution of the ??? Session of the IOC Assembly (Paris, 199X), for the purpose of technical direction of its compilation and publication.

SECTION 200 - BASIC SPECIFICATIONS

201 - Projection

Sheets for IBCWP will be portrayed in Mercator Projection using the WGS-84 reference ellipsoid.

202 - Scale

A A scale of 1:1,000,000 at 33^{o} latitude shall be used for the western sheets as shown in the sheet Assembly Diagram (see Appendix 1). At a later stage it may be found desirable to produce some of the eastern sheets on a smaller scale.

203 - Graticule

A A scaled border of each sheet shall be shown subdivided into 1 minute increments of latitude and longitude.

B Meridians and parallels shall be drawn every 2°.

C Labelling of the graticule shall be every 1°.

D The tropics of Capricorn and Cancer shall be shown.

E Latitude and longitude for each corner of the sheet shall be shown.

204 - Size

The neat line size of each sheet shall not generally exceed 740 x 900 mm.

205 - Numbering

A For each chart a consecutive sheet number shall be used as shown in the Assembly Diagram. (see Appendix 1), followed by the edition number in parenthesis, e.g. sheet 3-11 for the 11th sheet of the 3rd sub-region, in its 1st edition..

B Sheet numbers shall be printed in 8 mm Arabic figures in the lower right-hand and top left-hand corner of each sheer.

206 - Dating

The date of the chart publication to be shown on each sheet shall be the date of going to press.

207 - Units of measurement

Depths and topographic heights shall be shown in metres. Depths should be corrected from either *in situ* sound velocity profile measurements or the latest edition of the Echo-Sounding Correction Tables, published by the United Kingdom Hydrographic Department, and this should be stated on the face of the chart.

208 - Marginal information

A All marginal information shall be in English and French.

B This shall include:

1. The general title of the chart.
2. Sheet number.
3. Projection, ellipsoid and scale (see 201,202).
4. Unit of measurement used for depths and heights.
5. Code of colours used to portray hypsometry.
6. Code of colours used to portray bathymetry.
7. An index of areas and names of countries whose Hydrographic Offices or groups of scientists prepared plotting sheets for the sheet.
8. The names of scientific co-ordinators of the chart series and of scientists responsible for the scientific content of the sheet.
9. The logos of the Intergovernmental Oceanographic Commission (IOC), of Unesco, and of the International Hydrographic Organization (IHO).
10. Edition number and date of publication (see 206)) followed by the statement:
    "Published by the ….. (name of publisher)
    under the auspices of the IOC (of Unesco) and the IHO"
11. List of the sources of the data used.

B This shall include:

1. The general title of the chart.
2. Sheet number.

3. Projection, ellipsoid and scale (see 201,202).
4. Unit of measurement used for depths and heights.
5. Code of colours used to portray hypsometry.
6. Code of colours used to portray bathymetry.
7. An index of areas and names of countries whose Hydrographic Offices or groups of scientists prepared plotting sheets for the sheet.
8. The names of scientific co-ordinators of the chart series and of scientists responsible for the scientific content of the sheet.
9. The logos of the Intergovernmental Oceanographic Commission (IOC), of Unesco, and of the International Hydrographic Organization (IHO).
10. Edition number and date of publication (see 206)) followed by the statement:
"Published by the ….. (name of publisher)
under the auspices of the IOC (of Unesco) and the IHO"
11. List of the sources of the data used.

208 cont' Disclaimer: The words NOT TO BE USED FOR NAVIGATION are to be included in bold 5 mm Arabic figures in the top right hand corner of each sheet.

SECTION 300 - TOPOGRAPHY

301 - C

302 - The best available agreed upon coastline shall be used. The coastline shall be shown as a firm line in black.

303 - A Contours on land shall be at 200 m intervals. These contours shall be shown in black.

B The thicker lines shall be at 200, 1.000, 2.000, 3.000, etc. m. intervals.

C Additional contours which may be required by the data must be shown.

D A colour change for hypsometry shall be used at the following intervals: 0-200. 200-1.000, 1.000-2.000.etc. m.

E Glaciers shall be shown by contours or by symbols. The significant heights shall be shown.

304 - **Hydrology of the land**

On the chart shall be shown, as appropriate:
- rivers and channels;
- lakes;
- lagoons.

305 - Major cities and towns, priority being given to those on the coast.

SECTION 400 - BATHYMETRY

401 - The 1:250 000 and/or 1:500 000 plotting sheets prepared, if necessary, by the participants in the Project, according to their zones of responsibility, shall form the basic bathymetric data to be used for the compilation of the chart.

The plotting sheets, if necessary, shall be prepared according to Appendix 2 of these specifications.

402 - Soundings

A A sparse pattern of numerical soundings shall be shown to indicate maximum and minimum (and other significant) depths, where known, over major undersea features in such a way as not to detract from the paramount objective of indicating sea floor relief by means of contours.

The exact position of all numerical soundings shown shall be indicated by a dot. The depth shall be written as cartographically convenient against the dot using 1.5 mm sans-serif figures. Where space does not permit the juxtaposition of the figures they may be offset and linked by a fine line to the dot placed in the exact position.

B Actual data control will be shown as dots representing discrete soundings or as lines representing continuously sounded traverses. Areas of detailed surveys where sounding lines are closely spaced may be delineated using numbered boxes, which are referenced in the margin. Margin reference information will include essential information regarding the source of the data.

403 - Depth contours and colours

A Basic contours shall be at 200 m intervals, however all the 500 m contour intervals will also be prepared for use in the GEBCO Digital Atlas (GDA). These contours shall be shown in black.

B The 200 m contour line and all contours at 1.000 m intervals shall be drawn using thick lines.

C 20, 50 and 100 m contours, if necessary, shall be drawn using thin lines for enhancing continental shelf areas. Additional contours may also be included to define the bottom of basins etc.

D A colour change for the bathymetry shall be used at the following intervals: 0-200, 200-1.000, 1.000-2.000, 2.000-3.000, etc. m.

E Depression contours shall be indicated by short thin lines on the deep side, at right angles to the contour line.

SECTION 500 - NOMENCLATURE AND GEOGRAPHICAL NAMES

501 - A A proposed list of names for inclusion on each sheet will be forwarded by the Chief Editor to the GEBCO Subcommittee on Undersea Feature Names (SCUFN), with a request for guidance on any that might be controversial. In preparing this list, account should be taken of the guidelines contained in the IOC-IHO publication. B-6 "Standardization of Undersea Feature Names". Names already in use, referring to the IOC-IHO GEBCO Gazetteer, will be accorded preference, with new names being given only to previously unnamed features.

B As a general policy, local names (cities, towns, mountain ranges, rivers, etc.) shall be in exact agreement with the form prescribed by the most authoritative national source. However, in those cases where the national names differ substantially from the normal English usage, the English version shall be shown alongside in parenthesis.

C The nomenclature for undersea features shall be shown in the English language.

D Underwater features (e.g. seamounts) shall be shown in italics, in blue; sea surface features (e.g. seas) in upright style, in blue; and above water features (e.g. islands) in upright style, in black. The character size shall be in accordance with the extent and importance of the feature. All names shall be in sans serif style.

E Underwater features (e.g. seamounts) shall be shown in italics, in blue; sea surface features (e.g. seas) in upright style, in blue; and above water features (e.g. islands) in upright style, in black. The character size shall be in accordance with the extent and importance of the feature. All names shall be in sans serif style.

F Names in contention should be referred to the Editorial Board, which will in turn refer the issue to an appropriate international authority for resolution.

APPENDIX TO ANNEX VI

RECOMMENDATIONS FOR PREPARATION OF PLOTTING SHEETS FOR INTERNATIONAL BATHYMETRIC CHARTS PRODUCED UNDER REGIONAL MAPPING PROJECTS

1. For plotting and contouring purposes the British Admiralty's 1:250,000 plotting sheets for oceanic soundings may be utilized.
2. Soundings should be in metres, corrected using either *in situ* sound velocity profile measurements or the latest edition of the "Echo Sounding Correction Tables".
3. The position of the sounding should be the central point of the group of figures representing it. But the position may also be indicated by a dot with the sounding figure alongside, and if necessary, by a thin line drawn to connect the two.
4. The soundings figures should be inscribed across the track: the figures should be easily readable, the recommended average size being 1.5-2 mm in height.
5. The largest possible number of soundings should be shown on the plotting sheets so long as their clarity is not impaired. When soundings are very dense, the number may be reduced if care is taken not to eliminate the more important soundings: maxima and/or minima.
6. The margin of each plotting sheet should contain the following legend:
   "Compiled by .."
   "Last brought up to date on .."
   "Prepared under the auspices of the IOC-IHO (International Bathymetric Chart of the Western Pacific)".
7. Each plotting sheet should be accompanied by two overlays:

   (i) overlay contour lines with contouring made through each 100 metres, additional contours may be drawn through 50 and 10 metres, where warranted (on the shelf and abyssal plains);

   (ii) overlay source materials on which should be shown the following:
      (a) areas of soundings and position of isolated soundings with the appropriate legends required the source and the date of such soundings;
      (b) information on the method of navigation and its precision;
      (c) information on the type of the echosounder and its precision.

8. On each plotting sheet and overlay the date of completion of compilation should be indicated.

ANNEX VII

CARTOGRAPHIC STANDARDIZATION FOR THE INTERNATIONAL BATHYMETRIC CHART OF THE WESTERN PACIFIC

1 DATA

According to the useful data holdings for the chart-making areas, the 1:250,000-1:500,000 sheets of the bathymetric data and the sounding lines should be compiled in advance. On this basis, the bathymetric the bathymetric contour chart will be plotted and then the compilation sheet of the 1:1,000,000 bathymetric chart will be worked out.

2. ACCURACY

Computing accuracy of the border of chart:	0.1 mm
Length error of the border of chart:	$\leq \pm$ 0.2mm
Diagonal error of the border of chart:	$\leq \pm$ 0.3mm

3 THICKNESS OF LINES

Thickness of the coastline and island coastline:	0.2-0.25mm
Thickness of the single line for rivers:	0.15-0.2mm
Thickness of the double line for rivers:	0.2-0.25mm
Thickness of the contour line:	0.12-0.15mm
Thickness of the isobath:	0.12-0.15mm
Thickness of the sounding line:	0.12-0.15mm
Thickness of the line defining the limits of the comprehensive survey:	0.4-0.5mm
Thickness of the circular line for the major coastal cities and towns: (The diameter of the circle is 1.4-1.6mm)	0.12-0.15mm
Thickness of the lines for the geographic mesh and the border scale:	0.12-0.15mm
Distance between two borders of scale:	2mm
Thickness of the bold line of the outer border:	1.2-1.3mm
Distance to the border of scale to the bold line of the outer border:	8-9mm

4 CHART LETTERING

Height of the character of chart name:	5.8-6.2mm
Height of the character lettering for standards of IHO and IOC:	3mm
Height of the character for projection scale:	2-2.5mm
Height of the character for the illustration for heights and depths:	2-2.5mm
Height of the character for publisher illustration:	1.8-2.0mm
Height of the character for country name:	3.8-6.0mm
Height of the character for coastal city or town:	2-2.5mm
Height of italic character for river, trench, canal, and lake:	2-2.5mm
Height of italic character for sea, strait, bay (gulf), channel:	3-8mm
Height of the character for islands, archipelago:	2.5-5mm
Height of the character for island, peninsula, reef, reefs, shoal, submarine mountains, sea ridge, sea basin, etc.:	2-6mm
Height of the character for other kinds of illustration:	2-2.5mm

5 QUALITY STANDARD OF PAPER

The kinds of paper are various. Each country has its own industrial standards. The bathymetric charts for the Western Pacific require to be printed on the map paper (or copperplate). Other standards for paper are as follows:

Size:	≥ 780 x 1080mm
Weight:	100-120 g/m2 (± 5)
Thickness:	0.1-0.15mm (± 0.001)
Folding Endurance:	300 times (normal)
	20 times (wet)

ANNEX VIII

RESPONSIBLE, PRODUCING, AND PARTICIPATING COUNTRIES
SUB-REGIONS 1 & 2

SUBREGION 1

Sheet	Responsible Country	Producing Country	Participating Countries
1-1	Russia	Russia	Russia, Japan, USA/IHO DCDB
1-2	Russia	Russia	Russia, Japan, USA/IHO DCDB
1-3	Russia	Russia	Russia, Japan, USA/IHO DCDB
1-4	Russia	Russia	Russia, Japan, USA/IHO DCDB
1-5	Russia	Russia	Russia, Japan, USA/IHO DCDB
1-6	Russia	Russia	Russia, Japan, USA/IHO DCDB
1-7	Russia	Russia	Russia, Japan, USA/IHO DCDB
1-8	Russia	Russia	Russia, Japan, USA/IHO DCDB
1-9	Russia	Russia	Russia, Japan, USA/IHO DCDB
1-10	Russia	Russia	Russia, Japan, USA/IHO DCDB
1-11	Russia	Russia	Russia, Japan, USA/IHO DCDB
1-12	Russia	Russia	Russia, Japan, USA/IHO DCDB
1-13	Russia	Russia	Russia, Japan, USA/IHO DCDB
1-14	Russia	Russia	Russia, Japan, USA/IHO DCDB

SUBREGION 2

Sheet	Responsible Country	Producing Country	Participating Countries
2-1	Japan	TBD*	Japan, USA/IHO DCDB
2-2	Japan	TBD	Japan, USA/IHO DCDB
2-3	Japan	TBD	Japan, USA/IHO DCDB
2-4	Japan	China	China, Korea, USA/IHO DCDB
2-5	Japan	TBD	USA/IHO DCDB
2-6	Japan	TBD	USA/IHO DCDB
2-7	Japan	TBD	USA/IHO DCDB
2-8	Japan	Korea	Korea, China, Japan, USA/IHO DCDB
2-9	Japan	TBD	China, Japan, USA/IHO DCDB
2-10	Japan	TBD	China, USA/IHO DCDB
2-11	Japan	TBD	China, USA/IHO DCDB
2-12	Japan	TBD	China, USA/IHO DCDB
2-13	Japan	TBD	China, USA/IHO DCDB

*TBD – To Be Determined

ANNEX IX

LIST OF ACRONYMS

ACUF	Advisory Committee on Undersea Features (SCUFN)
AGU	American Geophysical Union
BODC	British Oceanographic Data Centre
CERESCOR	Centre de recherche scientifique de Conakry (Guinea)
CGOM	IOC Consultative Group on Ocean Mapping
CHS	Canadian Hydrographic Service
DTM	Digital Terrain Model
EB	Editorial Board
EMSCS	European Mediterranean Seismological Centre (France)
GAPA	International Geological/Geophysical Atlases of the Atlantic and Pacific Oceans
GDA	GEBCO Digital Atlas (GEBCO Data base)
GEBCO	General Bathymetric Chart of the Oceans (IOC-IHO)
GLOSS	Global Sea Level Observing System (IOC)
HDNO	Head Department of Navigation and Oceanography (Russian Federation)
IASC	International Arctic Science Committee (Norway)
IBCCA	International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
IBCEA	International Bathymetric Chart of the Central Eastern Atlantic
IBC	International Bathymetric Chart
IBCM	International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series
IBCWIO	International Bathymetric Chart of the Western Indian Ocean
IBCWP	International Bathymetric Chart of the Western Pacific
IFREMER	Institut francais de recherche pour l'exploitation de la mer
IGOSS	Integrated Global Ocean Services System (IOC-WMO)
IHB	International Hydrographic Bureau (Monaco)
IHO	International Hydrographic Organization (Monaco)
INEGI	Instituto National de Estadistica, Geografia e Informatica (Mexico)
IOC	Intergovernmental Oceanographic Commission (UNESCO)
IOS	Institute of Oceanographic Sciences (UK)
ISM	International Sea Mapping
NERC	Natural Environment Research Council (UK)
NGDC	National Geophysical Data Centre (USA)
ORSTOM	Institut francais de recherche scientifique pour le développement en cooperation
SAREC	Swedish Agency for Research Co-operation with Developing Countries
SCAR	Scientific Committee on Antarctic Research (UK)
SCDB	Sub-Committee on Digital Bathymetry (GEBCO)
SCOR	Scientific Committee on Oceanic Research (USA)
SCUFN	Sub-Committee on Undersea Feature Names (GEBCO)
SHOM	Service hydrographique et océanographique de la Marine (France)
SOC	Southampton Oceanographic Centre (UK)
SOPAC	South Pacific Applied Geoscience Commission (Fiji)
UNCLOS	United Nations Conference on the Law of the Sea
UNESCO	United Nations Educational, Scientific and Cultural Organization
WVS	World Vector Shoreline
WWW	World-Wide Web

In this Series, entitled

Reports of Meetings of Experts and Equivalent Bodies, which was initiated in 1984 and which is published in English only, unless otherwise specified, the reports of the following meetings have already been issued:

1. Third Meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans
2. Fourth Meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans S. Fourth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño' ***(Also printed in Spanish)***
4. First Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in Relation to Living Resources
5. First Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources
6. First Session of the Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
7. First Session of the Joint CCOP(SOPAC)-IOC Working Group on South Pacific Tectonics and Resources
8. First Session of the IODE Group of Experts on Marine Information Management
9. Tenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies in East Asian Tectonics and Resources
10. Sixth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
11. First Session of the IOC Consultative Group on Ocean Mapping ***(Also printed in French and Spanish)***
12. Joint 100-WMO Meeting for Implementation of IGOSS XBT Ships-of-Opportunity Programmes
13. Second Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
14. Third Session of the Group of Experts on Format Development
15. Eleventh Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
16. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
17. Seventh Session of the IOC-UNEP Group of Experts on Methods, Standards and lntercalibration
18. Second Session of the IOC Group of Experts on Effects of Pollutants
19. Primera Reunión del Comité Editorial de la COI para la Carta Batimétrica lnternacional del Mar Caribe y Parte del Océano Pacífico frente a Centroamérica ***(Spanish only)***
20. Third Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
21. Twelfth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
22. Second Session of the IODE Group of Experts on Marine Information Management
23. First Session of the IOC Group of Experts on Marine Geology and Geophysics in the Western Pacific
24. Second Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources ***(Also printed in French and Spanish)***
25. Third Session of the IOC Group of Experts on Effects of Pollutants
26. Eighth Session of the IOC-UNEP Group of Experts on Methods, Standards and lntercalibration
27. Eleventh Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans ***(Also printed in French)***
28. Second Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in Relation to Living Resources
29. First Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
30. First Session of the IOCARIBE Group of Experts on Recruitment in Tropical Coastal Demersal Communities ***(Also printed in Spanish)***
31. Second IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
32. Thirteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asia Tectonics and Resources
33. Second Session of the IOC Task Team on the Global Sea-Level Observing System
34. Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
35. Fourth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
36. First Consultative Meeting on RNODCs and Climate Data Services
37. Second Joint IOC-WMO Meeting of Experts on IGOSS-IODE Data Flow
38. Fourth Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
39. Fourth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
40. Fourteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
41. Third Session of the IOC Consultative Group on Ocean Mapping
42. Sixth Session of the Joint IOC-WMO-CCPS Working Group on the Investigations of 'El Niño' (***Also printed in Spanish)***
43. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
44. Third Session of the IOC-UN(OALOS) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources
45. Ninth Session of the IOC-UNEP Group of Experts on Methods, Standards and lntercalibration
46. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
47. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
48. Twelfth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans
49. Fifteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
50. Third Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
51. First Session of the IOC Group of Experts on the Global Sea-Level Observing System
52. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean
53. First Session of the IOC Editorial Board for the International Chart of the Central Eastern Atlantic ***(Also printed in French)***
54. Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico ***(Also printed in Spanish)***
55. Fifth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
56. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
57. First Meeting of the IOC *ad hoc* Group of Experts on Ocean Mapping in the WESTPAC Area
58. Fourth Session of the IOC Consultative Group on Ocean Mapping

59. Second Session of the IOC-WMO/IGOSS Group of Experts on Operations and Technical Applications
60. Second Session of the IOC Group of Experts on the Global Sea-Level Observing System
61. UNEP-IOC-WMO Meeting of Experts on Long-Term Global Monitoring System of Coastal and Near-Shore Phenomena Related to Climate Change
62. Third Session of the IOC-FAO Group of Experts on the Programme of Ocean Science in Relation to Living Resources
63. Second Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
64. Joint Meeting of the Group of Experts on Pollutants and the Group of Experts on Methods, Standards and Intercalibration
65. First Meeting of the Working Group on Oceanographic Co-operation in the ROPME Sea Area
66. Fifth Session of the Editorial Board for the International Bathymetric and its Geological/Geophysical Series
67. Thirteenth Session of the IOC-IHO Joint Guiding Committee for the General Bathymetric Chart of the Oceans ***(Also printed in French)***
68. International Meeting of Scientific and Technical Experts on Climate Change and Oceans
69. UNEP-IOC-WMO-IUCN Meeting of Experts on a Long-Term Global Monitoring System
70. Fourth Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
71. ROPME-IOC Meeting of the Steering Committee on Oceanographic Co-operation in the ROPME Sea Area
72. Seventh Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño' ***(Spanish only)***
73. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico ***(Also printed in Spanish)***
74. UNEP-IOC-ASPEI Global Task Team on the Implications of Climate Change on Coral Reefs
75. Third Session of the IODE Group of Experts on Marine Information Management
76. Fifth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
77. ROPME-IOC Meeting of the Steering Committee for the Integrated Project Plan for the Coastal and Marine Environment of the ROPME Sea Area
78. Third Session of the IOC Group of Experts on the Global Sea-level Observing System
79. Third Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
80. Fourteenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans
81. Fifth Joint IOG-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
82. Second Meeting of the UNEP-IOC-ASPEI Global Task Team on the Implications of climate Change on Coral Reefs
83. Seventh Session of the JSC Ocean Observing System Development Panel
84. Fourth Session of the IODE Group of Experts on Marine Information Management
85. Sixth Session of the IOC Editorial Board for the International Bathymetric chart of the Mediterranean and its Geological/Geophysical Series
86. Fourth Session of the Joint IOC-JGOFS Panel on Carbon Dioxide
87. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Pacific
88. Eighth Session of the JSC Ocean Observing System Development Panel
89. Ninth Session of the JSC Ocean Observing System Development Panel
90. Sixth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
91. First Session of the IOC-FAO Group of Experts on OSLR for the IOCINCWIO Region
92. Fifth Session of the Joint IOC-JGOFS CO, Advisory Panel Meeting
93. Tenth Session of the JSC Ocean Observing System Development Panel
94. First Session of the Joint CMM-IGOSS-IODE Sub-group on Ocean Satellites and Remote Sensing
95. Third Session of the IOC Editorial Board for the International Chart of the Western Indian Ocean
96. Fourth Session of the IOC Group of Experts on the Global Sea Level Observing System
97. Joint Meeting of GEMSI and GEEP Core Groups
98. First Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
99. Second International Meeting of Scientific and Technical Experts on Climate Change and the Oceans
100. First Meeting of the Officers of the Editorial Board for the International Bathymetric Chart of the Western Pacific
101. Fifth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
102. Second Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
103. Fifteenth Session of the Joint IOC-IHO Committee for the General Bathymetric Chart of the Oceans
104. Fifth Session of the IOC Consultative Group on Ocean Mapping
105. Fifth Session of the IODE Group of Experts on Marine Information Management
106. IOC-NOAA *Ad hoc* Consultation on Marine Biodiversity
107. Sixth Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
108. Third Session of the Health of the Oceans (HOTO) Panel of the Joint Scientific and Technical Committee for GLOSS
109. Second Session of the Strategy Subcommittee (SSC) of the IOC-WMO-UNEP Intergovernmental Committee for the Global Ocean Observing System
110. Third Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
111. First Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate
112. Sixth Session of the Joint IOC-JGOFS C02 Advisory Panel Meeting
113. First Meeting of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS)
114. Eighth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of "El Niño" ***(Spanish only)***
115. Second Session of the IOC Editorial Board of the International Bathymetric Chart of the Central Eastern Atlantic ***(Also printed in French)***
116. Tenth Session of the Officers Committee for the Joint IOC-IHO General Bathymetric Chart of the Oceans (GEBCO), USA, 1996
117. IOC Group of Experts on the Global Sea Level Observing System (GLOSS), Fifth Session, USA, 1997
118. Joint Scientific Technical Committee for Global Ocean Observing System (J-GOOS), Fourth Session, USA, 1997
199 First Session of the Joint 100-WMO IGOSS Ship-of-Opportunity Programme Implementation Panel, South Africa, 1997
120. Report of Ocean Climate Time-Series Workshop, Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate, USA, 1997

121. IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional Global Ocean Observing System (NEAR-GOOS), Second Session, Thailand, 1997

122. First Session of the IOC-IUCN-NOAA *Ad hoc* Consultative Meeting on Large Marine Ecosystems (LME), France, 1997

123. Second Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), South Africa, 1997

124. Sixth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico, Colombia, 1996 ***(also printed in Spanish)***

125. Seventh Session of the IODE Group of Experts on Technical Aspects of Data Exchange, Ireland, 1997

126. IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), First Session, France, 1997

127. Second Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LME), France, 1998

128. Sixth Session of the IOC Consultative Group on Ocean Mapping (CGOM), Monaco, 1997

129. Sixth Session of the Tropical Atmosphere - Ocean Array (TAO) Implementation Panel, United Kingdom, 1997

130. First Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), France, 1998

131. Fourth Session of the Health of the Oceans (HOTO) Panel of the Global Ocean Observing System (GOOS), Singapore, 1997

132. Sixteenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), United Kingdom, 1997

133. First Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), France, 1998

134. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean (IOC/EB-IBCWIO-IW3), South Africa, 1997

135. Third Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), France, 1998

136. Seventh Session of the Joint IOC-JGOFS C02 Advisory Panel Meeting, Germany, 1997

137. Implementation of Global Ocean Observations for GOOS/GCOS, First Session, Australia, 1998

138. Implementation of Global Ocean Observations for GOOS/GCOS, Second Session, France, 1998

139. Second Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Brazil, 1998

140. Third Session of IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS), China, 1998

141. Ninth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño', Ecuador, 1998 ***(Spanish only)***

142. Seventh Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series, Croatia, 1998

143. Seventh Session of the Tropical Atmosphere-Ocean Array (TAO) Implementation Panel, Abidjan, Côte d'Ivoire, 1998

144. Sixth Session of the IODE Group of Experts on Marine Information Management (GEMIM), USA, 1999

145. Second Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), China, 1999

146. Third Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Ghana, 1999

147. Fourth Session of the GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC); Fourth Session of the WCRP CLIVAR Upper Ocean Panel (UOP); Special Joint Session of OOPC and UOP, USA, 1999

148. Second Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), France, 1999

149. Eighth Session of the Joint IOC-JGOFS CO2 Advisory Panel Meeting, Japan, 1999

150. Fourth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), Japan, 1999

151. Seventh Session of the IOC Consultative Group on Ocean Mapping (CGOM), Monaco, 1999

152. Sixth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), France, 1999

153. Seventeenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), Canada, 1999

154. Comité Editorial de la COI para la Carta Batimétrica Internacional del Mar Caribe y el Golfo de Mexico (IBCCA), Septima Reunión, Mexico, 1998

IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (IBCCA), Seventh Session, Mexico, 1998

155. Initial Global Ocean Observing System (GOOS) Commitments Meeting, IOC-WMO-UNEP-ICSU/Impl-III/3, France, 1999

156. First Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, Venezuela, 1999 ***(also printed in Spanish and French)***

157. Fourth Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), China, 1999

158. Eighth Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series, Russian Federation, 1999

159. Third Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), Chile, 1999

160. Fourth Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS). Hawaii, 2000

161. Eighth Session of the IODE Group of Experts on Technical Aspects of Data Exchange, USA, 2000

162. Third Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LME), France, 2000

163. Fifth Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Poland, 2000

164. Third Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), France, 2000

165. Second Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, Cuba, 2000 ***(also printed in Spanish and French)***

166. First Session of the Coastal Ocean Observations Panel, Costa Rica, 2000

167. First GOOS Users' Forum, 2000

168. Seventh Session of the Group of Experts on the Global Sea Level Observing System, Honolulu, 2001

169. First Session of the Advisory Body of Experts on the Law of the Sea (ABE-LOS), France, 2001 ***(also printed in French)***

170. Fourth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, Chile, 2001

171. First Session of the IOC-SCOR Ocean CO_2 Advisory Panel, France, 2000

172. *Cancelled*

173. Third Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, USA, 2001 ***(also printed in Spanish and French)***

174. Second Session of the Coastal Ocean Observations Panel and GOOS Users' Forum, Italy, 2001

175. Second Session of the Black Sea GOOS Workshop, Georgia, 2001

176. Fifth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), Republic of Korea, 2000

177. Second Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Morocco, 2002 ***(also printed in French)***

178. Third Session of the Coastal Ocean Observations Panel and GOOS Users' Forum, Vietnam, 2002

179. Fourth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), France, 2002

180. Second Session of the IOC-SCOR Ocean CO_2 Advisory Panel, Honolulu, Hawaii, U.S.A, 2002 ***(electronic copy only)***

181. IOC Workshop on the Establishment of SEAGOOS in the Wider Southeast Asian Region, Seoul, Republic of Korea, 2001 (SEAGOOS preparatory workshop) ***(electronic copy only)***

182. Third Session of the GOOS Users' Forum and Coastal Ocean Observations Panel, Vietnam, 2002

183. Fourth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), France, 2002

184. Seventh Session of the IODE Group of Experts on Marine Information Management (GEMIM), France, 2002 ***(electronic copy only)***

185. Sixth Session of IOC/WESTPAC Coordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS), Republic of Korea, 2001

186. First Session of the Global Ocean Observing System (GOOS) Capacity Building Panel, Switzerland, 2002 ***(electronic copy only)***

187. Fourth Session of the ad hoc Advisory Group for IOCARIBE-GOOS, 2002, Mexico ***(also printed in French and Spanish)***

188. Fifth Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean (IBCWIO), Mauritius, 2000

189. Third session of the Editorial Board for the International Bathymetric Chart of the Western Pacific, Chine, 2000