



# **IOC Consultative Group on Ocean Mapping**

## **Fourth Session**

Monte Carlo, 22-24 October 1990

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
3. 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 IOC-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 Intercalibration
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 Internacional 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 Intercalibration
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-CPPS 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 Intercalibration
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

**Intergovernmental Oceanographic Commission**  
*Reports of Meetings of Experts and Equivalent Bodies*

# **IOC Consultative Group on Ocean Mapping**

## **Fourth Session**

**Monte Carlo, 22-24 October 1990**

**IOC/CGOM-IV/3**  
**Paris, 30 November 1990**  
**English only**

**SC-90/WS-73**

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1. **OPENING OF THE SESSION**

1 The Fourth Session of the IOC Consultative Group on Ocean Mapping was opened by the Chairman, Mr. Desmond P.D. Scott, at the Musée Océanographique de Monaco, on Monday 22 October 1990, at 9:30.

2 The Senior Technical Assistant Secretary IOC, Dr. Viktor Sedov, welcomed the participants on behalf of the Secretary IOC, Professor Gunnar Kullenberg.

3 Apologies were received from the Chairman of the Joint IOC-IHO GEBCO Guiding Committee, Sir Anthony Laughton, and the Chief Editor GAPA, Dr. Gleb Udintsev.

4 A full List of Participants is given in Annex II.

2. **ADOPTION OF THE AGENDA**

5 The Agenda was adopted without any changes (see Annex I).

3. **CONDUCT OF THE SESSION. DOCUMENTATION**

6 The Chairman announced the arrangements for the Session. Dr. Sedov, in his capacity as Technical Secretary of the Session, presented the general documentation of the Session.

4. **INTERSESSIONAL IOC OCEAN MAPPING ACTIVITIES**

7 A list of the Principal Meetings of the IOC Ocean Mapping bodies in 1989-90 is given in Annex III.

8 The Chairmen of the IOC Ocean Mapping projects reported on the intersessional activities of their Editorial Boards.

4.1 **PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR GEBCO**

4.1.1 **Introduction**

9 In the absence of the Chairman of the Joint IOC-IHO Guiding Committee for GEBCO, the Permanent Secretary GEBCO, Mr. Desmond Scott, presented this item.

10 For some years since publication of the GEBCO (5th Edition) the GEBCO Guiding Committee has been studying the way ahead in the light of modern technologies. It was decided at an early date that the 5th Edition contours (and shiptracks) should be digitized and that a supporting structure would be needed to keep this database continually updated, so that there would always be world coverage of up-to-date material in existence from which future editions could be prepared.

11 This database has been named the "GEBCO Digital Atlas" (see item 5.1 below) and the new supporting structure has now been established, with the permanent appointments of a GEBCO Bathymetric Editor and a GEBCO Digital Atlas Manager. The GDA is expected to be fully operational by mid-1991 when digitization of the 5th Edition contours will be complete.

#### 4.1.2 Progress with digitization of the GEBCO

12 The present state of digitization of the 5th Edition is as follows:

13 Sheets 5.01, 5.04, 5.08 (see Annex IV) have been digitized and placed on sale. Sheet 5.02 had been received from the Head Department of Navigation and Oceanography (Leningrad) and awaits checking and editing. Sheets 5.03, 5.07 and 5.11 have been scanned at the Natural Environment Research Council Unit for Thematic Information Systems (NUTIS), Reading. Sheet 5.05, recently received from the Bureau Gravimétrique International (BGI), Toulouse, awaits checking and editing. Sheet 5.09 is due to be completed before the end of 1990. Sheet 5.12 is being revised and will be digitized during compilation. Sheets 5.13, 5.14, 5.15, 5.16 and 5.18 have been digitized and placed on sale. Sheet 5.17, received in 1989, will be checked for labelling of contours.

14 All shiptracks are being digitized by the Head Department of Navigation and Oceanography, Leningrad, and a digitized version of the GEBCO Gazetteer (see item 7.2 below) has been prepared. The regional supplements to the Gazetteer will also be digitized as they become available.

15 Digitized versions of the regional International Bathymetric Charts will be incorporated into the GDA to replace GEBCO (5th Edition) material which was originally digitized on a much smaller scale.

#### 4.1.3 Revision of GEBCO Regulations

16 GEBCO "Guidelines" (formerly "Regulations") are in preparation - a Provisional Edition will appear shortly. These "Guidelines" will contain:

- (i) a GEBCO Structural Diagram ;
- (ii) an explanation of this structure, including Terms of Reference/Post Descriptions, etc.;
- (iii) details of the IHO Data Centre for Digital Bathymetry, recently established in the U.S. National Geophysical Data Center (NGDC) at Boulder, Colorado, USA, together with services the Center will be able to provide ;
- (iv) the outcome of the deliberations of an IHO Working Group on Oceanic Plotting Sheets, at present operational, including guidelines for the digitization of traditional 1:1M and 1:250,000 plotting sheets ;
- (v) sections on Processing and Storing of:
  - a) Digital Bathymetric Data and
  - b) Geophysical Data collected concurrently with Digital Bathymetric Data.

17 The Thirteenth Session of the Joint IOC-IHO Guiding Committee and the Eighth Session of the GEBCO Sub-Committee on Digital Bathymetry will be held in Leningrad, USSR, 5-12 June 1991.

#### 4.2 PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR THE INTERNATIONAL GEOLOGICAL/GEOPHYSICAL ATLASES OF THE ATLANTIC AND PACIFIC OCEANS (GAPA)

18 The Deputy Editor GAPA, Mr. Scott, reported on the state of preparation of the Atlases.

19 Compilation of the Atlantic atlas has been completed and the atlas is in the final stage of printing.



20 It is expected that the Pacific atlas will be ready for publication in 1993.

21 The next session of the Central Editorial Board for GAPA is scheduled to be held in Tokyo, Japan; 9-13 September 1991.

#### 4.3 PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR IBCM

22 The Chairman IBCM, Professor Carlo Morelli informed the participants on progress with compilation and publication of the IBCM Geological/Geophysical Series:

- (i) the Bouguer Gravity Anomalies series was published in 1989;
- (ii) the second colour proof copy of the Seismicity series had been approved by the Editorial Board for publication, which is expected in the first half of 1991;
- (iii) the first black and white proof copy of the Plio-Quaternary/Messinian series had been discussed during recent informal consultations between the Members of the Editorial Board in Perpignan (France), 15-20 October 1990. It is expected that compilation will be completed in 1991 with a view to publication in 1992;
- (iv) the Unconsolidated Sea-Bed Surface Sediments series is in a good state of compilation. Publication is expected in 1993;
- (v) compilation of the six western sheets of the Magnetic Anomalies series has been completed. The four eastern sheets will be compiled by Prof. J. Makris with financial support from the IOC to fund technical work by students.

23 All these series will be accompanied by explanatory brochures; the seismicity series will be accompanied also by a catalogue of earthquake epicentres.

24 The Members of the Editorial Board decided also to make available digital versions of each series and a Digital Terrain Model of the IBCM bathymetry and land topography. The importance of Digital Terrain Models for the investigations of pollution dispersion and physical oceanographic modelling was emphasized.

#### 4.4 PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR IBCCA

25 The Chairman of IBCCA, Dr. Nestor Duch Gary, provided information on the state of compilation of the IBCCA sheets and presented colour proof copies of sheet 1.09 of this chart (see Annex V). The Group complimented the Chief Editor on the early production of his first colour proof. During discussions on the proof, concern was raised about the lack of track control in some areas. Mr. Peter Hunter, the GEBCO Bathymetric Editor, was asked to discuss this point and others with Mr. Troy Holcombe, the compiler, during an imminent visit to the USA. It was agreed as a general principle that all bathymetric charts from regional projects should display full track control.

26 Dr. Duch Gary reported also that the compilation of sheets 1.02, 1.03, 1.04, 1.06 and 1.14 is well advanced. However he expressed some concern with regard to compilation of sheets 1.10 and 1.16, that had been accepted by Professor Michel Vigneaux (France) at the First Session of the

Editorial Board (ref. IOC/EB-IBCCA-I/3, item 8).

27 The Group proposed that Prof. Vigneaux be requested to consider involving some other French scientists (as for example Dr. Philippe Bouysse from the Bureau de Recherches Géologiques et Minières (BRGM), Orléans, France) in the compilation of these sheets.

28 Dr. Duch Gary also informed the Group of the decision of the Editorial Board to begin digitization of the IBCCA contours as soon as each sheet has been completed.

29 Dr. Jones recalled the experience gained in digitizing the GEBCO (5th Edition) and the difficulties that were sometimes encountered in ensuring the proper identification of the depth of each and every contour. Such work required a very detailed examination of the consistency of labelling, of the line styles and the colour fill of contours, and provided a detailed quality control check on the content of the chart. It was suggested therefore that, in preparing other charts for publication, the contours should be digitized prior to printing and that any errors encountered should be fed back into the proof reading process.

#### 4.5 PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR IBCWIO

30 The Chairman of IBCWIO, Dr. Werner Bettac, informed the Group that two small intersessional meetings to plan the methods of plotting out data, have been held in Hamburg (Germany) and Taunton (UK).

31 During the Second Session of the Editorial Board for the IBCWIO (Quatre Bornes, Mauritius, 3-5 July 1990) the first results of the collection and plotting of data were discussed. The plotting sheets of two large areas of IBCWIO were displayed during the Editorial Board session.

32 Dr. Bettac reported also on difficulties in compilation of the chart by scientists from the countries of the region because of their lack of experience in bathymetric charting. The Editorial Board had therefore recommended that IOC organize a two to three weeks training course in bathymetric mapping. The Group fully supported this recommendation and considered that similar training courses would be beneficial in other regions.

#### 4.6 PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR IBCEA

33 The Chairman of IBCEA, Ing. Gén. André Roubertou, informed the Group on the outcome of the First Session of the Editorial Board. During this Session it was decided that the Chart would consist of 12 sheets, publication of which would be shared by the Hydrographic Services of France and Portugal. The division of responsibilities will be decided at a later stage.

34 The Editorial Board had adopted the "Specifications for the IBCEA" and an Assembly Diagram.

35 The digital version of each sheet will be published at the same time as the printed version.

36 The Editorial Board had expressed a strong wish that IOC should organize training courses in English and French on bathymetric mapping, for the personnel taking part in the project (ref: Annex II to doc. IOC/IBCEA-I/3). The Group supported this proposal.

4.7        **PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR AN INTERNATIONAL BATHYMETRIC CHART OF THE WESTERN PACIFIC (IBCWP)**

37        Mr. Scott informed the Group of the results and recommendations of the First Meeting of an IOC ad hoc Group of Experts on Ocean Mapping in the WESTPAC area (Tianjin, People's Republic of China, 12-14 June 1990).

38        The participants of that meeting had considered that the preparation of an IBCWP was of great importance for development in the region.

39        In view of the very large size of the WESTPAC area, the Group had divided up the western part of the region into six subregions. It was agreed that the compilation, printing and publishing of sheets from each of these subregions will need to be implemented in different ways and by a number of organizations.

40        The Group had adopted a recommendation to the IOC Assembly, proposing the creation of this project and the establishment of an Editorial Board for this purpose. Draft Terms of Reference had been prepared for this Board.

5.        **CONSIDERATION OF THE NEW STRUCTURE FOR GLOBAL AND REGIONAL IOC OCEAN MAPPING ACTIVITIES**

41        The Chairman introduced this item and presented the new GEBCO Structural Diagram for the consideration of the Group. This Diagram shows the linkage between the various components of the revised GEBCO Structure and their relation to the IOC Regional Ocean Mapping Projects. The final edited version of the Structural Diagram appears as an Annex to the Biennial Report of the CGOM to the Sixteenth Session of the IOC Assembly (item 8 below).

42        Mr. Scott reported that the British Government (Natural Environment Research Council) had agreed to finance from 1 April 1990, for an initial period of four years, the posts of GEBCO Bathymetric Editor and GEBCO Digital Atlas Manager, and also a Research project at Reading University to provide advice on the development of the "GEBCO Digital Atlas".

43        The Group considered it essential that the GEBCO Bathymetric Editor be kept fully informed of all the developments of the various Regional Ocean Mapping projects and recommended that he should attend meetings of the Editorial Boards whenever possible.

6.        **A NEW COMMON CARTOGRAPHIC BASE FOR ALL IOC OCEAN MAPPING PROJECTS**

44        The Chairman informed the participants on the necessity to have a modern common recent cartographic base for all IOC Ocean Mapping Projects to facilitate incorporation of the results into the "GEBCO Digital Atlas". The most suitable base would be the World Vector Shoreline (WVS) at a scale of 1:250,000, based on WGS-84, which had been recently prepared by the US Defense Mapping Agency.

45        The Chairmen of the IBCCA and IBCWIO reported on decisions that their Editorial Boards had taken to adopt the WVS as the cartographic base for their projects.

46           However, Prof. Morelli informed the Group that the IBCM will continue to use for the Geological/Geophysical series, which are at present in production, the original IBCM shoreline. But for the second edition of the IBCM, which is expected to follow the Geological/Geophysical series, the WVS will be adopted.

47           Dr. Meirion Jones agreed to provide the Chairmen of the Editorial Boards with copies of the WVS for the areas of their projects and invited them to check it against local maps and charts in order to build up confidence in the quality of the WVS.

7.           **PUBLICATIONS, "STANDARDIZATION OF UNDERSEA FEATURE NAMES" AND REGIONAL GAZETTEERS OF UNDERSEA FEATURE NAMES**

7.1          **REVISION OF THE PUBLICATION "STANDARDIZATION OF UNDERSEA FEATURE NAMES"**

48           Rear Admiral Alfredo Civetta provided information on the preparation of the second edition of this publication.

49           The second edition of the English-French version had been published in July 1989. The second edition of the English-Spanish and English-Russian versions are in a good state of preparation.

50           The first edition of the English-Chinese, English-German and English-Japanese versions are being prepared. Captain Torres Sobral offered to prepare an English-Portuguese version of the publication; this was gratefully accepted by the Group and the Chairman agreed to send him details of requirements.

7.2          **PREPARATION OF REGIONAL GAZETTEERS OF UNDERSEA FEATURE NAMES**

51           Rear Admiral Civetta also reported that the regional Gazetteer for the Mediterranean based on the IBCM and IHO INT chart series (IHB publication BP-0008 Supplement No. 1 (IBCM)) had now been published. He invited the Chairmen of the Editorial Boards to arrange for the preparation of similar lists for their projects at an early stage of the compilation of their charts, for subsequent publication by IHB as supplements to the GEBCO Gazetteer.

52           For all new names a standard proposal form should be completed and submitted to the IHB for approval by the GEBCO Sub-Committee on Geographical Names and Nomenclature of Ocean Bottom Features.

8.           **PREPARATION OF THE BIENNIAL REPORT OF THE CGOM TO THE SIXTEENTH SESSION OF THE IOC ASSEMBLY**

53           The Chairman invited comments on a first draft of this document (IOC/INF-822) which he presented to the Group.

54           The Members of the Group considered the draft item by item and provided further input for their sections of the document.

55           The Group agreed with the proposed changes and requested the Chairman to make the necessary modifications to the text, and to distribute a second draft to the Members of the CGOM for final approval before submission to the Assembly.

9. **SALES AND PUBLICITY**

56 The Chairman reported sales to date (including free issues) of the GEBCO (5th Edition), flat sheets and boxed sets, now amounted to over 56,000 sheets. This was considered to be most satisfactory. However, the sales arrangements for the IBCM and its Geological/Geophysical series are still unsatisfactory. There are unacceptable delays in fulfilling orders not only from individual customers but also from sales agents outside the Soviet Union.

57 Captain A. Popov informed the Group that negotiations were in progress with a company in the Netherlands which, it is hoped, will retail the IBCM and Geological/Geophysical Series in western countries.

58 The Group strongly recommended to the Chief Editor IBCM that the situation regarding sales arrangements be greatly improved as there is no point in spending large sums of money and effort in compiling and printing these excellent products, if it is impossible to set up a satisfactory sales system.

59 The Group agreed that provision of digitized products to Hydrographic Offices of Member States of the IHO would not be subject to any fees, i.e. only material and despatch costs may be levied.

60 Dr. Sedov provided information on publicity with the IOC Ocean Mapping products.

61 The Group requested that Dr. Sedov organize an exhibition of the IBCM Seismicity series, the GAPA Atlantic atlas and sheet 1-09 of IBCCA during the forthcoming IOC Assembly.

62 During a break in the session, the Chairman, Rear Admiral Civetta, and Dr. Sedov held discussions with Prof. Doumenge, Director of the Musée Océanographique, Monaco, and Commandant Philippe Roy, Secretary-General, concerning the possibility of mounting a permanent display of IOC Ocean Mapping products in the museum and selling certain of these products in the museum shop. The Chairman reported that Professor Doumenge had agreed to their proposals and had said that they would provide excellent background material for a planned exhibition of modern ocean mapping methods and techniques.

10. **ANY OTHER BUSINESS**

10.1 **TRAINING COURSES**

63 At the request of the Chairman, Dr. Werner Bettac, Chairman and Chief Editor IBCWIO, presented a paper entitled "Some ideas with regard to the objectives of the International Bathymetric Charts on a scale of 1:1,000,000" (Annex VI). This paper makes out a case, which was fully supported by the Group, for training courses in nautical cartography to be organised in regions which at present have no tradition, and therefore no national infrastructure, in this field. The Group decided that this requirement should be brought out in its next biennial Report to the IOC Assembly (doc. IOC/INF-822 - see item 8 above).

10.2 **PROPOSAL THAT THE IHO LOGO BE SHOWN ON THE REGIONAL BATHYMETRIC PRODUCTS**

64 The Representative of the IHO suggested that, in view of the

essential contribution of the Hydrographic Offices to the production of IOC's regional bathymetric products, the IHO logo should appear on the bathymetry series only of each project. The Chairmen of the various Editorial Boards present were all in favour of this proposal. The Chairman was invited to take up this matter with the Secretary IOC.

10.3 INTERSESSIONAL MISSIONS BY THE CHIEF EDITORS

- 65 As it is only possible to convene meetings of the Editorial Boards for the regional projects every two years, the Group recommended that instead of holding intersessional meetings of the project officers, the Secretary IOC should consider supporting missions by the Chief Editors of each project to their regions, to enable them to hold discussions with local participants on progress with their activities.

11. DATE AND PLACE OF THE NEXT SESSION

- 66 Tentative dates, 5-7 October 1992, were proposed, but the Chairman suggested that it might be advantageous to hold the session in conjunction with GEBCO Officers and Sub-Committee on Digital Bathymetry meetings which have very tentatively been scheduled for June 1992 at the British Oceanographic Data Centre, Bidston Observatory, Birkenhead. Dr. Meirion Jones welcomed the suggestion and said his Centre would be pleased to host the session. These possibilities will be reconsidered nearer the date.

12. ADOPTION OF THE SUMMARY REPORT

- 67 The Group discussed the first draft of the Summary Report and adopted it with the necessary corrections.

13. CLOSURE OF THE MEETING

- 68 The Chairman closed the Session by 14:00 on Wednesday 24 October 1991.

**ANNEX I**

**AGENDA**

1. **OPENING OF THE SESSION**
2. **ADOPTION OF THE AGENDA**
3. **CONDUCT OF THE SESSION. DOCUMENTATION**
4. **INTERSESSIONAL IOC OCEAN MAPPING ACTIVITIES**
  - 4.1 **PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR THE GENERAL BATHYMETRIC CHART OF THE OCEANS (GEBCO)**
  - 4.2 **PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR THE INTERNATIONAL GEOLOGICAL/GEOPHYSICAL ATLASES OF THE ATLANTIC AND PACIFIC OCEANS (GAPA)**
  - 4.3 **PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR THE INTERNATIONAL BATHYMETRIC CHART OF THE MEDITERRANEAN AND ITS GEOLOGICAL/GEOPHYSICAL SERIES (IBCM)**
  - 4.4 **PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR THE INTERNATIONAL BATHYMETRIC CHART OF THE CARIBBEAN SEA AND GULF OF MEXICO (IBCCA)**
  - 4.5 **PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR THE INTERNATIONAL BATHYMETRIC CHART OF THE WESTERN INDIAN OCEAN (IBCWIO)**
  - 4.6 **PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR THE INTERNATIONAL BATHYMETRIC CHART OF THE CENTRAL EASTERN ATLANTIC (IBCEA)**
  - 4.7 **PROGRESS AND PLANNED FUTURE DEVELOPMENTS FOR AN INTERNATIONAL BATHYMETRIC CHART OF THE WESTERN PACIFIC (IBCWP).**
5. **CONSIDERATIONS OF A NEW STRUCTURE FOR GLOBAL AND REGIONAL IOC OCEAN MAPPING ACTIVITIES**
6. **A NEW COMMON CARTOGRAPHIC BASE FOR ALL IOC OCEAN MAPPING PROJECTS**
7. **PUBLICATIONS, "STANDARDIZATION OF UNDERSEA FEATURE NAMES" AND REGIONAL GAZETTEERS OF UNDERSEA FEATURE NAMES**
  - 7.1 **REVISION OF THE PUBLICATION "STANDARDIZATION OF UNDERSEA FEATURE NAMES"**
  - 7.2 **PREPARATION OF REGIONAL GAZETTEERS OF UNDERSEA FEATURE NAMES**
8. **PREPARATION OF THE BIENNIAL REPORT OF THE CGOM TO THE SIXTEENTH SESSION OF THE IOC ASSEMBLY**
9. **SALES AND PUBLICITY**

10. ANY OTHER BUSINESS

10.1 TRAINING COURSES

10.2 PROPOSAL THAT THE IHO LOGO BE SHOWN ON THE REGIONAL BATHYMETRIC PRODUCTS

10.3 INTERSESSIONAL MISSIONS BY THE CHIEF EDITORS

11. DATE AND PLACE OF THE NEXT SESSION

12. ADOPTION OF THE SUMMARY REPORT

13. CLOSURE OF THE MEETING



ANNEX II

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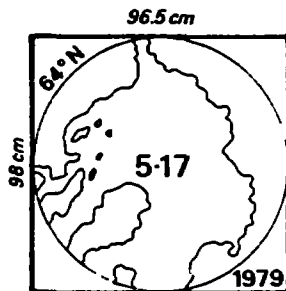
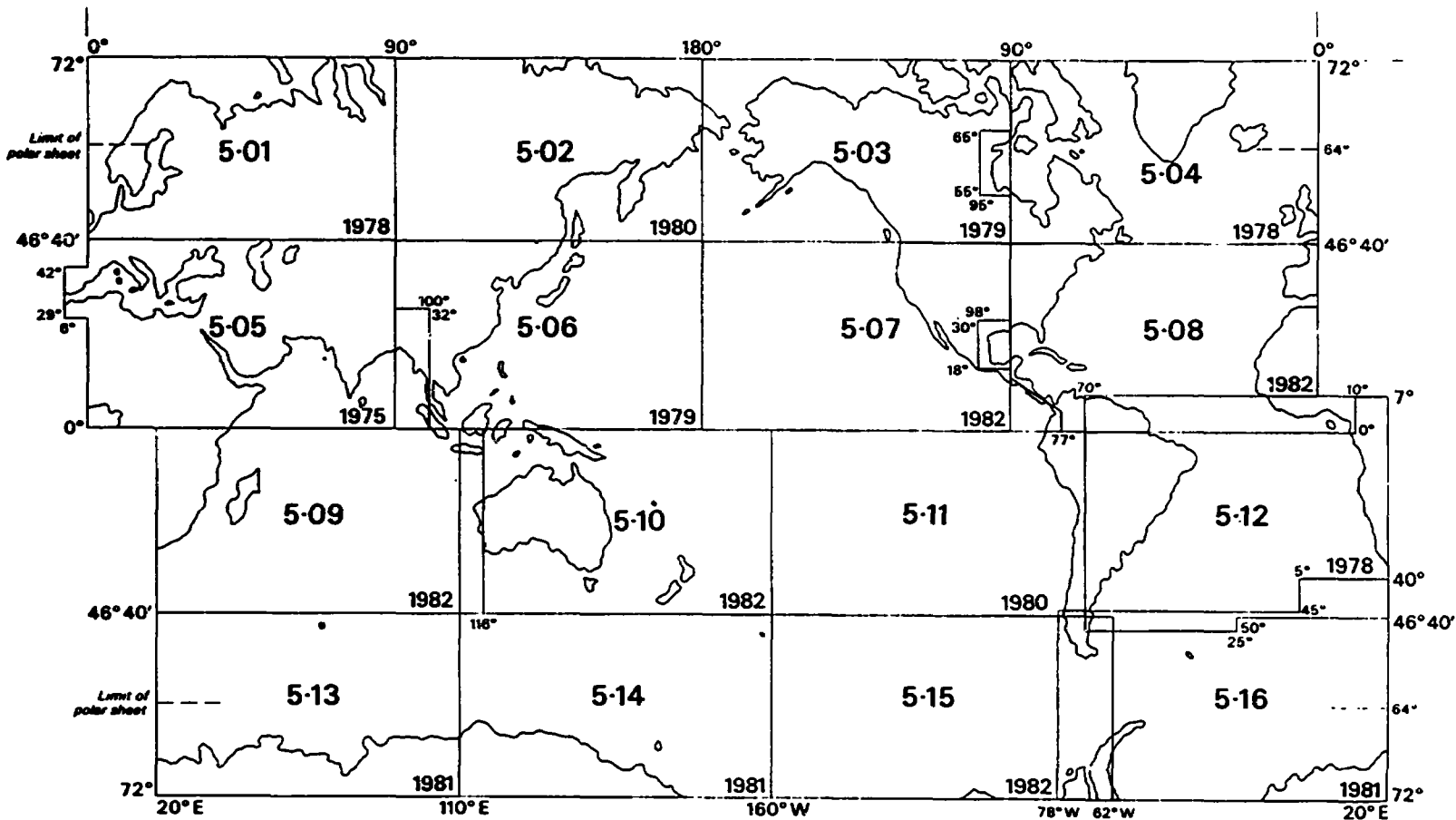
IBCM Secretary

ANNEX III

LIST OF PRINCIPAL MEETINGS OF THE  
IOC OCEAN MAPPING BODIES IN 1989-90

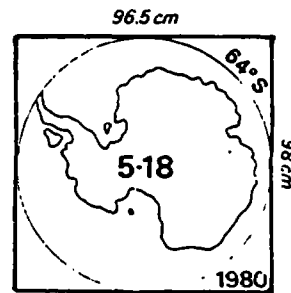
	1989	1990
Consultative Group on Ocean Mapping (CGOM)	-	Fourth Session, Monte Carlo (Monaco), 22-24 Oct.
IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO)	Twelfth Session Boulder, Colorado, (USA), 16-17 May	Seventh Meeting of Officers, Bremerhaven, (FRG), 30 May-1 June
GEBCO Sub-Committee on Digital Bathymetry	Sixth Meeting Boulder, Colorado, (USA), 10-12 May	Seventh Meeting Bremerhaven, (FRG), 28-30 May
GEBCO Sub-Committee on Geographical Names and Nomenclature of Ocean Bottom Features	Eighth Meeting Monte Carlo (Monaco), 10-12 May	- -
Central Editorial Board for the International Geographical/Geophysical Atlases of the Atlantic and Pacific Oceans (GAPA)	Ninth Meeting Yuzhno-Sakhalinsk, (USSR), 11-17 Sept.	Tenth Meeting Moscow (USSR), 5-8 June
Editorial Board for the International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series (IBCM)	Fourth Session Paris (IOC), 11-13 December	Ad-hoc Meeting of Members of the EB, Perpignan, (France), 15-20 October
Editorial Board for the Intern. Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (IBCCA)	First Meeting of the Officers, Mexico City, (Mexico), 22-24 May	Third Session, Caracas, (Venezuela), 16-18 January
Editorial Board for the Intern. Bathymetric Chart of the Central-Eastern Atlantic (IBCEA)	- - -	First Session, Lagos (Nigeria), 14-16 February
Editorial Board for the Intern. Bathymetric Chart of the Western Indian Ocean (IBCWIO)	First Session, Antananarivo, (Madagascar) 4-7 April	Second Session, Quatre-Bornes, (Mauritius), 3-5 July
Intern. Bathymetric Chart of the Western Pacific (IBCWP)	- - -	First Meeting of the IOC <u>ad hoc</u> Group of Experts on Ocean Mapping in the WESTPAC area, Tianjin (China), 12-14 June

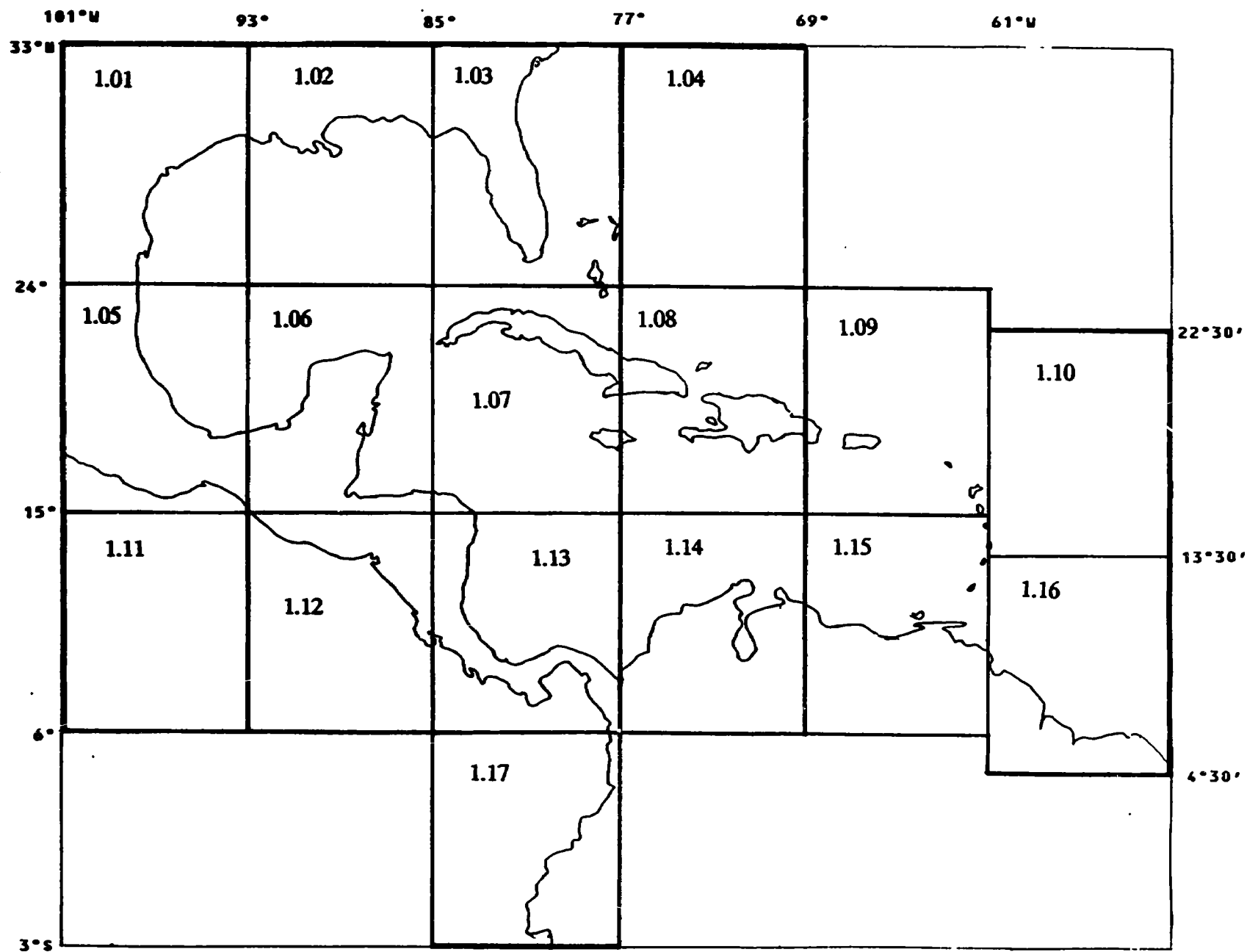
ASSEMBLY DIAGRAM OF THE  
GENERAL BATHYMETRIC CHART OF THE OCEANS



WORLD MAP

The 5th edition of GEBCO has been assembled into a single map of the world at a scale of 1:35 000 000 with the polar regions at 1:25 000 000.  
This world map is identified as GEBCO 5-00.





ANNEX V  
ASSEMBLY DIAGRAM OF THE  
INTERNATIONAL BATHYMETRIC CHART OF THE CARIBBEAN SEA AND THE GULF OF MEXICO

## ANNEX VI

### SOME IDEAS WITH REGARD TO THE OBJECTIVES OF THE INTERNATIONAL BATHYMETRIC CHARTS ON A SCALE OF 1:1,000,000

(by Dr. Werner Bettac, Chairman and Chief Editor IBCWIO)

Undoubtedly, one of the objectives of IOC's regional International Bathymetric Charts is to make available to the various scientific, technical and economic disciplines a chart established according to standardized guidelines and on identical scales. The contents of different International Bathymetric Charts are thus directly comparable. They contain the total data material available in each case at the time of compilation, which is chosen according to standardized criteria.

Geological/Geophysical series, taking into account special parameters, e.g. Bouguer gravity anomalies, complement the bathymetric chart.

Most advanced is the work on the International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series (IBCM), for which the actual bathymetric chart and two of the Geological/Geophysical series are already available. The Editorial Board and the participating Scientific Co-ordinators consist of representatives of Hydrographic Services and scientific institutions, most of them having access to the latest technical equipment and the expertise to work with modern technologies. This applies to most of the countries of this region, permitting the use of highly sophisticated methods in the course of production of the various sheets.

In the other regions to be covered by International Bathymetric Charts, however, the situation is different.

In the region of the International Bathymetric Chart of the Western Indian Ocean (IBCWIO), for example, with the exception of France (Ile de Reunion), no country has a Hydrographic Service. Therefore, in my opinion, in addition to the objective stated above, namely to create a standardized chart for scientific and other tasks, there has to be a further objective - which may even be the main one - and that is to rouse a general interest in hydrography in the countries of the region, to make them familiar with its methods and to point out its economic importance (e.g. with regard to Exclusive Economic Zones). This target can only be achieved if these countries are fully involved in the process of the production of an International Bathymetric Chart and can participate actively in this task.

In the case of IBCWIO - and I assume this applies also to the International Bathymetric Charts from other, similarly composed regions - most source material originates from the important, long-established Hydrographic Offices and Institutions (in USA, UK, France, South Africa, etc.), which are also responsible for processing the data. The best - i.e. the quickest and presumably also the cheapest - way to produce International Bathymetric Charts would be to have them compiled and published by experienced Hydrographic Services, well equipped with modern techniques, but in this event the countries of the regions would then only play a supernumerary role, with an alibi function at best. The target mentioned above - to rouse their interest in hydrography and to make them realise its importance - could not be reached in this manner.

In regions like the Western Indian Ocean, it is - in my opinion - absolutely necessary to integrate the countries of the region fully into the working process. In this connection it has to be accepted that the results - mainly the construction of depth contour lines - have to be verified and will possibly have to be redrawn subsequently. Furthermore, the anachronism has to be accepted that data available originally in digital form will have to be transported to analogue form for processing, but on the understanding that it will be necessary to digitize them again later. A general enquiry during the first session of the IBCWIO Editorial Board revealed that no country in the region is in a position to work with digital data. There was therefore no other way out.

Some of the countries of the IBCWIO region possess very efficient land survey services, but no hydrographic services. Other countries have neither. Thus, it is not sufficient to give the sounding sheets to these countries and to expect them to construct depth contours, and select the soundings which have to be incorporated into the final product. For this task training will be necessary. In the future, it will not only be necessary to make sure that there is an appropriate authority which agrees to compile the originals and take care of the printing of the charts, but funds for a training course will also have to be made available.

Such a training course could be held in a number of different ways. It could consist of a short training period with special emphasis on the respective tasks, such as for example, evaluation of the fair sheets, assessment of the depth soundings, construction of the depth contour lines, and selection of soundings. But, on the other hand, it would be much more desirable if the training course could cover the complete spectrum of nautical cartography. Such a course would have to last for a longer period - at least one year - it would be rather expensive and could be held for a small number of participants only.

For the IBCWIO, plotting sheets on a scale of 1:250,000 for one complete section of the region are now available. For a further section they will be completed by the end of the year (1990). Therefore, time presses for a training course in which at least two participants from each country of the region should take part. The participants should already possess basic knowledge in skilled techniques of cartography. In this phase, the target is to study the construction of depth contour lines which, however, can only be the first step in training in hydrography. Therefore, participants in the course should be cartographic draughtsmen rather than scientists of geology, geography or similar disciplines.

The scientific revision of the depth contour line representation will follow later. This will have to be done by geoscientists sufficiently experienced in this field. Such expertise, however, cannot be obtained on a short training course.

As Chief Editor of IBCWIO, I appeal to all relevant institutions to make available funds and to work out solutions, in order to enable the training of hydrographic draughtsmen for the processing of the 1:250,000 plotting sheets for the International Bathymetric Charts.