

Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies



**IOC Editorial Board of the
International Bathymetric Chart of
the Central Eastern Atlantic
(IBCEA)**

Second Session

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For reasons of budgetary constraints, Annexes III and IV remain in English only.

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1. OPENING OF THE SESSION - PRACTICAL INFORMATION

Ing. Général André Roubertou welcomed all participants, and in particular Dr. John Jones, successor to Mr. Peter Hunter, who kindly accepted to be the Rapporteur of the meeting. Mr. Dmitri Travin, on behalf of Dr. Gunnar Kullenberg, Executive Secretary of IOC, welcomed the participants as well as Members of the Editorial Board and provided brief details of their backgrounds. Mr. Travin reviewed practical arrangements and schedules for each part of the meeting. Regret was expressed at the absence of representatives from Nigeria and Spain.

2. ADOPTION OF THE AGENDA - DOCUMENTATION, ADMINISTRATIVE ARRANGEMENTS

It was agreed to consider Item 6 of the Agenda immediately after Item 4, so that all SHOM (Service Hydrographique et Océanographique de la Marine, France) members could be present at the review of bathymetric charts for which they have been responsible.

3. REPORT BY THE CHAIRMAN ON THE PRESENT STATE AND FUTURE DEVELOPMENT OF THE IBCEA PROJECT

The IBCEA Editorial Board first met in Lagos (14-16 February 1990). The report of this meeting was tabled (IOC/EB-IBCEA-I/3). France and Portugal initially agreed to share production of the Eastern Atlantic sheets. It was decided to invite Spain to contribute and this country agreed in 1991 to participate. Responsibilities were agreed as follows: Sheets 1, 2, 3, 7 (Portugal), 4, 5 (Spain), 6, 8-12 (France) (See Annex VI of Lagos Report). Since the Lagos meeting, the work has been carried out by correspondence due to funding problems in organizing meetings, but this arrangement was felt not to be effective. It has become clear that future meetings of the Editorial Board should be organized at intervals of not more than two years to improve its working efficiency.

4. REPORT ON THE PROGRESS IN THE COMPILATION AND PUBLICATION OF IBCEA SHEETS BY THE EDITORS

The SHOM began to compile sheets in 1992, starting with Sheet 8. Requests for data had been issued to members of the Editorial Board and to bordering countries not represented at the Lagos meeting. GEBCO and NGDC were the main external sources of data. Commercial surveys and some expedition data (e.g., Russian data collected in the mid-1970s on behalf of Guinea) are not yet available. Problems were raised in relation to the difficulties of data communication between members of the Editorial Board and to incomplete review and belated comments on preliminary drafts of bathymetric sheets.

Captain V. Sobolev outlined sources of bathymetric data in the Russian Hydrographic Office. Soundings were recorded on many expeditions in the 1970s and 1980s. They have been compiled on 1:1,000,000 - 1:500,000 scales and much sounding data has been collected in transit. This can be supplied to the editors on request. It is proposed to advertize information through the IHO publication B-4 Information on recent bathymetric data.

The main criticism of Sheet 8 compilation n° 1 was that not all NGDC data were included. This sheet was re-contoured in 1995. Later, Mr. Hunter had offered constructive criticism of this new work and of Sheets 6 and 9.

Compilation n° 2 of Sheet 8 and the first compilation of Sheets 9 and 6 by SHOM were undertaken using new NGDC-DCDB (IHO) data supplied on CD-ROM and completed in 1995. Mr. T. Holcombe indicated that updated bathymetric data are now available. Sheets 6, 8 and 9 have been reviewed by Mr. Holcombe and Dr. George Sharman of NGDC.

In response to a question from Dr. Jones, Ing. en Chef Bouet-Leboeuf indicated that those interested in reviewing sheets 6-12 could make arrangements to visit Brest.

Sheets 10, 11 Have been prepared, but compilations are not yet complete.

Sheet 12: Work on this sheet has not yet started.

Sheet 1: Work was begun in 1990 by Instituto Hidrografico of Portugal (IHPT). The Sheet was completed in 1993 in co-operation with Prof. J. R. Vanney. A reduced (A3) copy was tabled by Lt. Fialho Lourenço. An earlier request for a change in chart dimensions was agreed so features off NW & SW Iberia could be included. Some features have been named; about 90 new names will be submitted for formal approval.

Sheet 2: Compilation and contouring is expected to begin in 1997.

Sheet 3: Compilation has started with Prof. J. R. Vanney. Expected date of completion is end 1997/early 1998.

Sheet 7: Contours will be based on IHPT data in the Cape Verde oceanic area up to 1974 and more recent data from NGDC and SHOM.

Sheets 4, 5: No direct response has yet been received from Spain. Dr. Niang-Diop suggested that the Chairman of the Editorial Board should request a formal report on the progress. Information has been provided through the Eastern Atlantic Hydrographic Commission.

See List of Recommendations in Annex II

5. PROBLEMS OF COMPILATION - USAGE OF NON-BATHYMETRIC DATA

Production of sheets 6, 8 and 9 is managed by SHOM. Sheets are primarily based on GEBCO data plotted at 1:500,000. Soundings are automatically selected to prevent overprinting, using hydrographic software, which is not always appropriate for morphological representation: acceptance of the shallowest sounding in areas of dense data may not be a reliable criterion for data selection prior to contouring. Contouring by hand is always employed.

For recompiling sheets 6, 8 and 9, suggestions are:

- (i) to decide on a closing date for data acceptance for the paper edition;
- (ii) to update continuously in digital form.

Ing. en Chef Bouet-Leboeuf reported that re-contouring of sheets 6, 8 and 9 is to be carried out in 1997. This will be followed in 1998 by completion of sheets 10 and 11 and possibly sheet 12 in 1999. It is anticipated that the French contribution to the map series will be published by 1999.

The Editorial Board expressed the wish that the whole map series be available in year 2000.

Dr. Niang-Diop suggested that references to all data sources be explicitly stated on the maps. Mr. Holcombe proposed that the product should appear in two forms: (a) paper charts; (b) in digital form on CD-ROM. SHOM agreed to take into account additional published data to ensure that maps are as up-to-date as possible.

Mr. Holcombe indicated that GEOSAT data is in the public domain and may be used for bathymetric compilations. Radar altimetry is valuable for locating and determining the shapes of fracture zone ridges, sea mounts and other features in the deep-sea.

Mr. Holcombe presented GEOSAT - derived maps of the area covered by of Sheets 6, 8 and 9 which had been prepared by Messrs. Walter Smith and David Sandwell. They show predicted bathymetric contours derived by combining GEOSAT short-wavelength, geoidal variations with long-wavelength topography provided by filtering digital bathymetry. These maps provide valuable information on fracture zones and sea mounts where bathymetric data are sparse. The maps were handed to SHOM members to help in their contouring. It is expected that the whole dataset will be available by the end of 1996. Ing. en Chef Bessero emphasized that geoidal anomalies can be produced by features which have no bathymetric expression. Therefore, caution must be taken in interpreting altimeter data.

6. PROCEDURE FOR REVIEWING COMPILED SHEETS BEFORE PUBLICATION

It is considered essential that each sheet be reviewed by experts who have not participated in the preparation of the sheet. It is proposed that specific extra funding should be sought for the review process.

7. OPPORTUNITY AND SPECIFICATION OF A DIGITAL CARTOGRAPHIC BASE SUPPLEMENTING THE CONVENTIONAL PAPER SHEETS

Ing. en Chef Huet reviewed the current situation. The contours of the 18 GEBCO sheets at 1:10 million scale have been digitized to form the GEBCO Digital Atlas (GDA). Coastlines have been provided by the US Defense Mapping Agency. The Atlas also contains the names of undersea features. The GDA has been available from the British Oceanographic Data Centre since 1994. Its present price is £ 230, reduced to £ 99 for educational institutions and those submitting data for GEBCO use. A new edition of the GDA will be issued in early 1997. This will incorporate new data from the South Atlantic, Southern Indian Ocean, Bay of Biscay and Mediterranean. Questions were raised on the necessity for paper maps. Dr. Niang-Diop indicated that these must be made available since not all research groups can make full use of a digital database. For many, the Internet is not yet an option for financial reasons.

The GEBCO Guiding Committee has under consideration the possibility of printing the 6th Edition of GEBCO using 'print on demand' technology from a gridded dataset, when this has been sufficiently developed. It was confirmed that the digitized version of the IBCEA (and all other regional projects) will be incorporated into the GEBCO Digital Atlas, as and when they become available.

It was noted that Dr. Galina Agapova is reviewing Equatorial Atlantic bathymetry for the Joint IOC-IHO Guiding Committee for GEBCO. Messrs. P. Hunter and D. Monahan are responsible for areas to the north. Their responsibility is to advise annually the Guiding Committee on the availability of new data (see Report of the 15th Session of Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans, Monaco, 15-17 May 1995).

8. LIAISON WITH GEBCO GUIDING COMMITTEE AND THE OTHER REGIONAL BOARDS FOR IBC

Ing. en Chef Huet spoke on liaison between the GEBCO Guiding Committee and regional groups. The Chairman of EB-IBCEA and Mr. Travin supply Mr. Desmond Scott (Chairman CGOM) with reports on the IBCEA and other regional groups. The CGOM covers all IOC Ocean Mapping projects including GEBCO and regional IBC projects. As a parent organization of GEBCO, the IHO, through the IHB, is a *de facto* liaison authority between GEBCO and these projects.

Ing. Lobo Zertuche (Chairman IBCCA) outlined progress on the production of bathymetry sheets for the Caribbean Sea and Gulf of Mexico (17 IBCCA sheets; 3°S - 35° N; 50° W - 100°W). He presented charts already published. There was also a general discussion of the preparation of bathymetric sheets in other areas.

See List of Recommendations in Annex II.

9. FUTURE DERIVED PRODUCTS, ESPECIALLY IN VIEW OF THE ESTABLISHMENT OF THE CLCS FOLLOWING UNCLOS

Article 76 of UNCLOS deals with the problems of the outer limit of the legal continental shelf. To prevent excessive claims of continental shelf areas, the Commission on the Limits of the Continental Shelf (CLCS) should approve cases submitted to it by coastal states. The recommendation of the CLCS to the coastal states regarding the outer limit of the continental shelf depends *inter alia* on a good knowledge of geodesy, bathymetry/hydrography, geology and geophysics. The role of GEBCO and regional bathymetry groups may need clarification. The Editorial Board was addressed by Mr. Li Haiqing (from the IOC Secretariat working on Law of the Sea matters) on possible future needs of expertise from CLCS. He informed the meeting that a synthesis on science and technology associated with the definition of the continental shelf under the UNCLOS is being prepared by IOC-IHO in relation to Article 76.

Article 76 addresses the following formulae for delimiting the outer edge of a continental shelf:

- (i) 200 nautical miles from the baseline (Article 76 (1));
- (ii) thickness of the sedimentary rock (Irish formula, Article 76 (4) (a) (I));
- (iii) foot of the continental slope + 60 miles (Article 76 (4) (a) (ii));
- (iv) 350 miles from the baseline (Article 76 (5) & (6)); and
- (v) 2500 m isobath + 100 miles (Article 76 (6))

So GEBCO and Editorial Board data potentially provides an important input to CLCS. The IOC is recognized as a competent international organization to assist CLCS in discharging its responsibilities. The IOC-IHO synthesis will address the technical issue of how data are obtained and how data are interpreted.

There was a discussion on whether the EB-IBCEA should become involved in producing maps of sedimentary thickness and other information of potential use to CLCS. It was felt that additional funding and personnel support would then be needed. However, such a new effort will depend on the success of the present bathymetric project.

See List of Recommendations in Annex II

10. PUBLICITY AND SALES

All IOC mapping products, including those from the GEBCO and the regional mapping projects, are sold through a central sales organisation: Ocean Mapping (IOC), Cumbers, Mill Lane, Sidlesham, Chichester, West Sussex PO20 7LX, United Kingdom (Fax: +44 1243 641 222). Ing. en Chef Huet indicated that GEBCO maps are also sold through the Canadian Hydrographic Service (Hydrographic Chart Distribution Office) and the IHB.

Mr. Travin reported that he has advertised the work of the IOC on the Internet for the past three months. Ing. Lobo Zertuche suggested additional use of the Internet. Presently details of the maps can be found on the Internet and in IHO and IOC catalogues. Mr. Holcombe suggested that more all-embracing information on bathymetric maps be made available on the Internet to assist marketing. Mr. Travin suggested that postcards be used for advertising purposes, as at present with the International Bathymetric Chart of the Mediterranean and its Geological-Geophysical Series (IBCM).

See List of Recommendations in Annex II.

11. ANY OTHER MATTERS

Dr. Niang-Diop suggested that IOC again contact bordering countries to inform them of the work of the EB-IBCEA, and invite them again to participate.

12. DATE AND PLACE OF NEXT MEETING

Members of the IOC Editorial Board of IBCEA agreed to hold their next session in the second half of 1998, possibly in Dakar (Senegal).

ANNEX I

AGENDA

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ANNEX II

LIST OF RECOMMENDATIONS

In the course of its Second Session, the IOC Editorial Board of IBCEA made the following recommendations:

- (i) Further attempts should be made to obtain additional bathymetric data from IFREMER and ORSTOM (France) and CERESCOR (Guinea) and other organizations in order to complete bathymetric charts. Compilers need to identify areas where data are sparse so requests to individual investigators can be well focussed (item 4);
- (ii) Two members of EB-IBCEA (e.g. the Chairman and one other) should be invited to the next GEBCO Guiding Committee session to facilitate collaboration (item 8);
- (iii) The three national editors must seek an agreement to ensure that all East Atlantic Margin charts are printed in the same presentation and to ensure that all contours match at sheet boundaries. The specifications of GEBCO should be extended for IBC (item 8);
- (iv) Liaison with Editorial Boards for other regions should be facilitated through CGOM and the IOC Secretariat (item 8);
- (v) The IOC Assembly should examine whether its global data compilations should be extended in the future to sedimentary and other data potentially relevant to the work of CLCS (Item 9);
- (vi) Producers of Eastern Atlantic maps should only recover the price of printing (item 10);
- (vii) The whole map collection should be available at each producer point (item 10);
- (viii) Each bordering country should be asked to set up a local selling point for whole sets of maps (item 10);
- (ix) Marketing of Eastern Atlantic maps should be continued using established methods (item 10).

ANNEX III

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ANNEX IV

LIST OF ACRONYMS

CGOM	IOC Consultative Group on Ocean Mapping
CERESCOR	Centre de recherche scientifique de Conakry (Guinea)
CLCS	Commission on the Limits of the Continental Shelf
EB-IBCEA	Editorial Board for the International Bathymetric Chart of the Central Eastern Atlantic
GEBCO	General Bathymetric Chart of the Oceans
GEOSAT	Geodetic Satellite (USA)
IFREMER	Institut français de recherche pour l'exploitation de la mer (France)
IHB	International Hydrographic Bureau
IHPT	Instituto Hidrografico (Portugal)
NGDC	National Geophysical Data Center (USA)
NGDC-DCDB(IHO)	Data Centre for Digital Bathymetry (at NGDC, USA)
ORSTOM	Office de la recherche scientifique et technique d'outre-mer
SHOM	Service Hydrographique et Océanographique de la Marine (France)